

**Centre for International Environment  
and Development Studies, Noragric  
Agricultural University of Norway**



**Report from a PRA workshop and study  
in Asmat sub-province, Eritrea.  
Prepared for Redd Barna through the  
SSE program**

Elisabeth Molteberg and Jan Erik  
Studsrød in conjunction with  
workshop participants and local  
people

**NORAGRIC**  
BIBLIOTEKET  
Postboks 2  
N-1432 AS-NLH

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*On our first morning in Molobso, we climbed a great ficus tree near the Ministry of Agriculture offices to get a view of the surroundings. We sat for a while on the sturdy branches and contemplated the beauty and pain of the landscape around us. Shapes and silhouettes of mountains against the clear and lofty morning sky, serene wide open valleys and dramatic steep slopes, glowing burnt colors interspersed with bright greens, but arid and marked by war – the erosion gullies, the barren lands, the washed-out soils, the shrapnel and trenches... And we felt quite humble and awed about the diligence of its people, whom we could see as little ant-like specks moving about on the slopes. They belong here, and their ambition in life is modest but demanding: to make a living off these lands. This requires enabling the land to give them what they need, which is a struggle and an enormous challenge, but they have taken that challenge. Day by day they add a few meters more each to the hundreds of miles of terraces and check dams, season by season they create growth on their cropland terraces, and over the years they raise young trees from little seedlings. It is through their efforts that the maimed lands are nursed back to life.*

*This report is dedicated to the people of Asmat, and particularly to the people in Twareba, Rehey, Ketin, and Gerbet, who shared with us their time and knowledge and thus provided the backbone of the report.*

## **Acknowledgements**

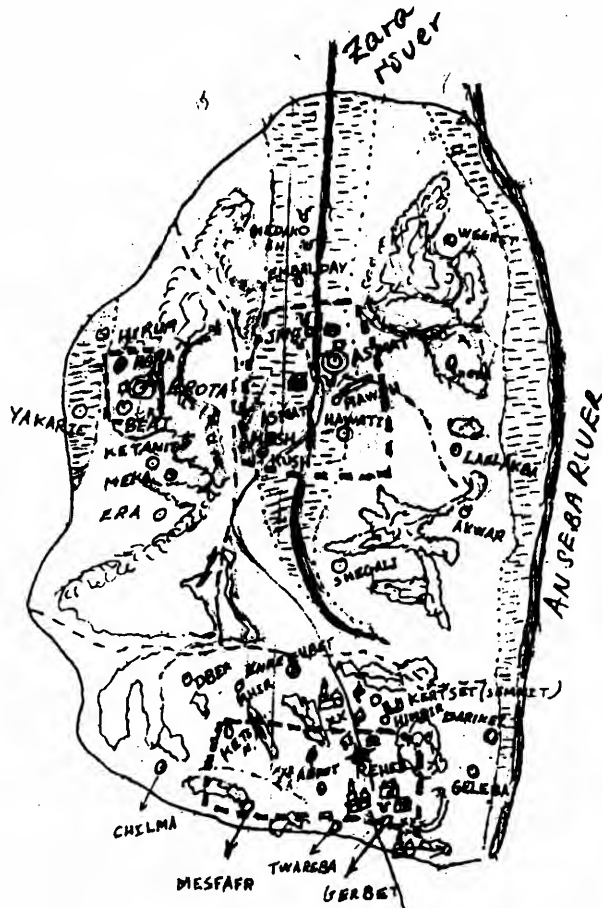
There are many people and institutions to which we are very grateful for their involvement in the PRA workshop, fieldwork and subsequent report write-up. We would like to convey our heartfelt gratitude and appreciation to the following:

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All of the above contributed hugely to making our mission and our work an unforgettable experience as well as a fruitful and inspiring enterprise. We thank you.

ASMAT SUB-PROVINCE  
MAP

River



Key

- |  |                      |  |                 |
|--|----------------------|--|-----------------|
|  | High land            |  | Town            |
|  | low land             |  | Well            |
|  | Mountain             |  | Dam             |
|  | main road            |  | Diversion canal |
|  | sub-district borders |  | Mosque          |
|  | enclosed area        |  |                 |
|  | Project area         |  |                 |

The History of Ato Mahmud Jdris Ali - Cattle herd

Reason

Time

effect on livestock.

1 cow sold since  
it was old.

1 cow sold since  
it was old.

1 cow bought  
in 1965.

1956	His father gave him two cows.
1957	Increased the no. by 2F calves. Now the no 4F
1958	They both of them again gave birth to 1M & 1F calves. Now the no 5F & 1M
1959	Again they both of them gave birth to 2F calves. Now the no 7F & 1M.
1960	Again they both of them gave birth to 1M & 1F calves. Now the no 8F & 2M.
1961	Now four cows gave birth to 2M & 2F. Now the no 10F & 4M.
1962	Three cows gave birth to 2M & 1F. Now the no 11F & 6M.
1963	four cows gave birth to 2M & 2F. Now the no 8M & 13F.
1964	five cows gave birth to 2M & 3F. Now the no 10M & 16F.
1965	four cows gave birth to 2M & 2F. 1 old cow sold. Now the no 17F & 12M.
1966	five cows gave birth to 3M & 2F. 1 old cow sold. Now the no 20F & 15M.
1967	five cows gave birth to 2M & 3F. Now the no 22F & 17M.
1968	Six cows gave birth to 4F & 2M calves. Now the no 26F & 19M.
1969	Since 1 cow sold. Now the no 25F & 19M.
1970	Except three they all of them died of draught. Then he remained 2F & 1M.
1975	The remained cattle also died. Because the ate flour.
1976	He emigrated (left his village).
1989	He bought one donkey after he worked at project.
1991	He got crops from the helpers. Then he <del>bought</del> sold the crops & bought 1 goat & 1 sheep.
1992	He cameback again at his village.
1995	He has four goats and three sheep.

29-4-95

prepared by

Group three :-

Berhane Haile  
Michael Araya  
Mussie Tekie  
Saleh Adem  
Ghirmathan Tekeste  
Saedia Mohamed  
Saba Mesfin.

The History of Ato Mahmud Jdris Ali - Cattle herd  
effect on livestock.

<u>Reason</u>	<u>Time</u>	
	1956	His father gave him two cows.
	1957	Increased the no. by 2F calves. Now the no 4F.
	1958	They both of them again gave birth to 3M & 1F calves. Now the no 5F & 1M.
	1959	Again they both of them gave birth to 2F calves. Now the no 7F & 1M.
	1960	again, they both of them gave birth to 1M & 1F calves. Now the no 8F & 2M.
	1961	Now four cows gave birth to 2M & 2F. Now the no 10F & 4M.
	1962	Three cows gave birth to 2M & 1F. Now the no 11F & 6M.
	1963	four cows gave birth to 2M & 2F. Now the no 8M & 13F.
	1964	five cows gave birth to 2M & 3F. Now the no 10M & 16F.
1 cow sold since it was old.	1965	four cows gave birth to 2M & 2F. 1 old cow sold. Now the no 17F & 12M.
1 cow sold since it was old.	1966	five cows gave birth to 3M & 2F. 1 old cow sold. Now the no 19F & 15M.
	1967	five cows gave birth to 2M & 3F. Now the no 22F & 17M.
	1968	Six cows gave birth to 4F & 2M calves. Now the no 26F & 19M.
1 cow sold & bought 15 goats.	1969	Since 1 cow sold, Now the no 25F & 19M.
	1970	Except three they all of them died of draught. Then he remained 2F & 1M.
	1975	The remained cattle also died. Because the ate flour.
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## Acronyms

EPLF	Eritrean Peoples Liberation Front
ERA / ERRA	Eritrean Relief Association / Eritrean Relief and Rehabilitation Agency
MoA	Ministry of Agriculture
MoH	Ministry of Health
MoE	Ministry of Education
SSE	Sahel-Sudan-Ethiopia Program
NGO	Non-Government Organization
NUEW	National Union of Eritrean Women
TBA	Traditional Birth Attendant
MCH	Mother and Child Health care
FFW	Food for work
CFW	Cash for Work
PRA	Participatory Rural Appraisal
AGG	Asatafi Gimgema Geter ("Participatory Rural Appraisal" in Tigrinya)

## Notes

### Weights and Measures

1 Quintel	100 kg
1 tsimdi	the amount of land one pair of oxen can plough in one day (local unit)
4 tsimdi	= roughly one hectare

### Currency (Exchange rates as of early May 1995)

1 birr/100 cents	0.162 US dollars = 1.016 NOK
1 US dollar	6.15 birr = 6.25 NOK

### Administrative units (Tigrinya terms)

Hamlet	Kushet	ex. Entsahetet, Anker, Berar in Rehey village)
Village	Adi	ex. Twareba, Rehey, Gerbet, Ketin. A purely administrative term as settlement is scattered in hamlets.
District	Wareda	ex. Jani, Erota, Molobso
Sub-province	Nius Awraja	ex. Asmat
Province	Awraja	ex. Senhit

## **Spelling**

The spelling of Tigrinya and Tigre words in text and diagrams varies somewhat. This is due to the fact that Tigrinya and Tigre are written in Gez scripture, and translation to Roman letters is somewhat problematic, especially regarding local names and terms.

The diagrams, maps and field notes from the PRA fieldwork contain some misspelt English words. These diagrams and notes, which are the basis for the report, were prepared by workshop participants whose proficiency in English is, in several cases, limited. However, it is the villagers' and participants' data and work. We have decided to keep the spelling used in the diagrams and field notes untouched to the greatest possible extent, correcting it only where there is a danger of spelling discrepancies and errors becoming a source of confusion.

## **Presentation of maps and diagrams**

Most of the maps and diagrams produced during the fieldwork are included in the report. These are presented on separate pages next to the page where the information they convey is first discussed in the text. They are numbered for easy location in the cases where they contain information regarding more than one issue.

## **PRA concepts and terminology**

Readers not familiar with PRA may wonder about terms used or about the merits and background of material presented. A section on this approach, including a short introduction to its central concepts and explanations of the techniques used and mentioned in the report, can be found in the Appendix.

## INTRODUCTION

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The purpose of this report is fourfold.

First, it is a short description and analysis of life in the Asmat Sub-Province in Eritrea. As such it covers the conventional socio-cultural, natural resource management, and farming system assessment of the situation in the area – it includes the headlines one would expect to find. But although the report has been written up by two outsiders it is very much the result of an effort by local extension workers, community leaders and villagers to jointly assess, analyse and report upon their own situation. As such, this report is only the first step on a long journey. The role of the outsiders has been that of facilitators and recorders or scribes, not that of traditional experts.

Second, the report covers minutes and reports from a workshop aimed at strengthening local staff's competence in using participatory methods for community development, including communication and project monitoring.

Third, a short discussion lists suitable indicators to monitor project impact with particular reference to food security issues.

Fourth, the reports identifies potential areas for further studies – survey and research topics.

Regrettably, a number of constraints have had an impact on this work, as reported in the section on "Limitations of the study". However, in spite of these limitations some achievements have been made. Maybe the most important one is that 31 workshop participants and numerous villagers have embarked upon a learning process that, if successful, will empower them. Not only will it involve them in analysing their own situation, but it will enhance their participation and capabilities in planning their own future.

## Background

The first phase of the Asmat Reforestation, Soil and Water Conservation Project started in 1989 with financial support from the Norwegian Save the Children (Redd Barna). The implementation of the project came after initial discussions between Redd Barna and representatives from Eritrean Relief Association (ERA) in Khartoum 1986. Subsequently a project document was prepared and submitted to Redd Barna in September 1986. The main thrust of the project was to improve food production and help restore ecological balance in the area. In 1987 Redd Barna decided to support the project. In early 1988 NORAGRIC prepared a feasibility study of the project area<sup>1</sup>.

During the initial phase of the project ERA had the overall responsibility. The Agricultural Commission was to co-ordinate and follow up the project. In April 1992, the overall implementation responsibility was handed over to the Ministry of Agriculture (MoA).

In November and December 1993 a project review was carried out.<sup>2</sup> The overall review was largely positive and particularly emphasised the good organisation of the work and the dedication and enthusiasm of the project staff. The fact that seasonal migration has all but stopped was pointed out as an important positive socio-economic effect of the project. The ecological effects of the project were also positively reviewed, provided necessary follow-up and maintenance of structures be included in the project activities. The review further emphasised a necessary expansion of the project regarding agronomy, agroforestry, farming systems, horticultural production and its systems, and irrigation. Other areas which the review identified as relevant for project expansion included adult literacy programmes, credit and other forms of support to female-headed households, TBA and MCH training, public school expansion, and adult training in technical skills.

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<sup>1</sup> Redd Barna - ERA project on Reforestation and Soil and Water Conservation in Asmat Eritrea, A Feasibility Study. NORAGRIC Report march 1988. J. Deelstra, Y. Gauslaa and T. Mesghina

<sup>2</sup> Asmat Project Review, 14. nov. - 6. dec. 1993. Redd Barna Eritrea. M.E. Grøva, G. Synnevåg, W. Araia

The review pointed to the need for baseline studies in order to carry out proper long-term project preparation. It was recommended that the project during an interim period of two years should undertake basic studies and data collecting, as well as competence building.

## **Asmat reforestation, soil and water conservation project – SSE 001 - 222 Asmat**

### ***Background and history***

Traditionally, people in the area have been primarily pastoralists engaging in supplementary crop production, both activities on a subsistence level. During the sixties, the population in the area grew to a point where the resource base started to erode – a shortage of grazing land for people's livestock led to overgrazing. The war and the draughts in 1974 and 1984/85 added to the pressures on the environment. The population was decimated due to deaths and massive migration, livestock and property were lost and destroyed, and farmland and natural vegetation was destroyed, leading to soil erosion.

Since liberation in May 1991, people who were displaced during the war have returned to their former homes. Resettlement is taking place largely on people's own initiative. However, the resource base of their former livelihood is no longer there. The area suffers from serious environmental degradation and cannot support a population of around 50,000 nomadic and semi-nomadic pastoralists. A main objective of the Asmat project is thus to provide them with alternative means of subsistence. The strategy is to promote sedentarization and focus on crop production, by means of inputs like improved soil conservation measures, irrigation and water harvesting projects, afforestation, distribution of tools and implements like seeds, and training.

Sedentarization is now virtually complete. There has been a shift towards more focus on agriculture although livestock is still seen as a vital component of subsistence by most people. Agricultural practices have changed some, but a shift from subsistence agropastoralism in the direction of more intensive, high-input cash-crop practices promoted by the Ministry of Agriculture is still only at its initial stage. Food security is still very low, and the vast majority of the population in the area are dependent on supplements. The major source, apart from the relief and FFW programmes conducted by ERRA and the local Administration (mainly road construction and maintenance), is the Asmat project CFW program. The CFW program aimed to organize work related to soil and water conservation, afforestation, and infrastructure, and to provide a livelihood to the population.

When the project was initiated in 1989, it covered Jani and Erota districts. Molobso district was a frontline site or under Ethiopian control, but was included in 1991 upon liberation, and the project now covers the entire Asmat sub-province, some 1,500 sq.km. All the villages in Molobso are included, as well as most of the villages in Jani and Erota. All villages benefit from activities which take place in the central areas of the districts, such as training and salaries from CFW activities. Due to lack of infrastructure and to understaffing, however, a few remote Erota communities and some Jani villages which are located in the Western mountain range, where there is no road, cannot be reached for implementation of activities within the communities.

### ***Project activities – current status***

Information on ongoing project activities is found in the Asmat Project Review (Dec. 1993), MoA and Redd Barna annual progress reports, travel reports<sup>3</sup>, and in an information handout prepared by the Ministry of Agriculture for the PRA workshop participants (see Appendix). A summary of project activities follows. Some of the activities have been explained and covered in greater detail in the sources, especially in the 1993 project review. The latter also

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<sup>3</sup>Rikke Iversen, 25. - 27. March 1992; Redd Barna Oslo. Jaqueline Langeslag, 13. - 16. April 1993, Redd Barna Oslo.

contains a fairly detailed review of project organization and staffing, and of accounting and reporting routines. We see no reason for repeating all this information here. This is to give an update on the various activities, including developments after the 1993 project review. We refer to the review for details.

### **Terracing**

A total of 845 hectares of cropland have been terraced during the period from 1989 to the first half of 1993, primarily in the highland areas. Most of this (700 ha) was achieved during 1992 and the first half of 1993. During the same period, a total of 244 hectares of non-cropland were terraced. 485 km of terraces covering 193.9 hectares were constructed in 1993, almost exclusively (192 ha) in Molobso. A total of 2,063 farmers participated, 1,825 of them in Molobso. (Asmat Project Review 1993)

More than 1,150 km of cropland terraces were completed in 1994; 1,101.76 km of stone bunds and 33.85 km of soil bunds were constructed in an area of 2,791.74 plus 84.6 hectares (a total of 2,876.34 ha). 5,538 farmers participated in the stone bund work and 667 in the soil bund work. A total of 156,846 man-days were utilized. (Asmat annual report 1994).

The workshop information handout states that 2,791.74 hectares of cropland has been terraced and 84.6 ha of non-cropland. These are the same figures as for stone and soil bund terraces, respectively, in the annual report. It is not clear which source is correct, although the annual report should be given more weight. RB Eritrea comments on the figures in the annual report: "The crop terracing is listed as totally dominant, but here there is probably some confusion of terms on the part of the Ministry." (RB Annual Report 1994) Although there appears to be a vast amount of hillside terraces, much of these are actually on cropland, so the annual report figures may well be correct.

There is a separate section on non-cropland terracing in the 1994 Asmat annual report, which contains the following information: In 1994, 16.96 km of hillside terraces were constructed in an area of 6.78 hectares of land in Entirga village, using 2,424 man-days of labor. 28,000 micro-basin terraces were constructed in Molobso (Asmat annual report 1994).

Maintenance work has been done on 18 ha of cropland terraces in 1991, on 100 ha of cropland terraces in 1992, and on 274.25 ha of cropland terraces in 1993. (Information handout to PRA workshop participants). According to the travel report by Jaqueline Langeslag 1993, a total of 76,552 km of terraces in Molobso had been subject to maintenance work by March 1993. It is not clear what time period this figure covers. There is no mention of maintenance work in the 1994 annual report from Asmat, nor in the information handout for the workshop.

### **Afforestation /reforestation**

Afforestation efforts include terracing and area closure, as well as planting of seedlings. The 1994 annual report states that 13,688 seedlings have been planted to reforest an area of 5.5 hectares; 4,028 *Olea Africana* and 9,660 *Eucalyptus Saligna* (Asmat project annual report 1994). No figures from earlier years have been found.

### **Area closure**

1230 hectares of land were closed in the project area at the time of the 1993 project review (Asmat Project Review 1993). No more closures have been added in 1994. The areas are fenced to keep livestock out. Tree felling is prohibited, so is fodder cutting for the first few years.

### **Nursery**

Seedlings were previously provided by the Halhal nursery because there was no nursery station in the project area. A nursery station situated in Twareba has now been operational

for several months. Seedlings of various indigenous species are grown from seeds collected locally. There are also some exotic species, primarily eucalyptus. The seedlings are planted on terraces, in front of stone bunds in check dams (sisal), and in enclosures. The seedling station is next to the river and is irrigated with river water, using buckets as there is no pump or other lifting device.

The Asmat project review (1993) states that a nursery in Jani was also being planned. We do not know whether this nursery is operational.

## **Irrigation and water conservation**

### **CHECK DAMS**

In 1993, 8.2 km of checkdams had been constructed by the time of the semi-annual report. (Asmat Project Review 1993) In 1994, 66.57 km of 1 meter wide check dams have been constructed in sixteen villages. (Asmat project annual report 1994)

### **PONDS**

We have no figures or other information on project pond construction, but the 1993 project review mentions ponds as one water harvesting technique, as well as improvements which had been made to a pond, without explicitly stating that the project was involved. (Asmat Project Review 1993)

### **DAMS AND WELLS**

An earthdam and twelve wells (of which one failed to yield water) have been constructed in the project area during the past three years.

The earthdam or micro-dam was constructed in Kertset, Molobso to alleviate a critical shortage of drinking water for humans and livestock. The work was done without machinery. The dam is 6 meters high, with a normal filling depth of 4.5 m. There are some discrepancies between sources regarding the capacity of the dam. According to the 1993 project review, the volume at normal filling capacity would be about 30, 000 m<sup>3</sup>, and at its full depth of 6 m, estimated volume of the dam is 71, 000 m<sup>3</sup>. (Asmat Project Review 1993) The 1994 annual report from the project states that estimated total capacity is 150, 000 m<sup>3</sup>. 400 families benefit from the dam. (Asmat project annual report 1994) The dam is now in its second season of use. During the first season, it reached normal filling capacity.

Before the dam was finished, there was some discussion on a water use scheme, particularly related to the use of water for irrigation. The dam has turned out not to be used for irrigation so far, only for drinking water for humans and livestock on a free-for-all basis.

An important secondary effect of the dam is that it charges the groundwater table downstream. It will thus be possible to dig wells below the dam. These wells may provide water for irrigation, but there was no plan for the distribution of rights to irrigation. Any such plan would have to take into consideration land tenure, and currently issues involving land tenure are left aside in wait of the implementation of the imminent national land reform.

Nine of the wells have been constructed in Jani district in the lowlands. The purpose of the wells is irrigation. One of the wells failed. The remaining three wells were constructed in Molobso. Eleven wells were constructed in 1993, the twelfth one was constructed at the Jani demonstration field in 1994, using cement blocks. (Asmat Project Review 1993, Asmat project annual report 1994)

### **DIVERSION CANALS**

A permanent diversion canal is constructed in Jani, replacing a temporary one. The length of the canal is 734 meters, of which 644 meters are main canal and 90 meters are secondary



canal. There is 19 meters bridge canal with one diversion control main gate and three distribution gates. The present beneficiaries are 170 farmers with an average of 200m<sup>2</sup> land each, a total of 8.6 hectares irrigable land. The major crops grown are maize, pearl millet, onions, and tomatoes. (Asmat project annual report 1994)

#### “GERIF” FLOOD IRRIGATION

A flood irrigation project has been developed along the river Zara in Jani, farmers there are practising flood irrigation on a limited scale. (Workshop information handout)

#### “SHADOUF” LIFT IRRIGATION<sup>4</sup>

In 1994, two reservoirs for shadouf irrigation were constructed (Asmat project annual report 1994). Apart from this, individual farmers are constructing temporary water division canals, water wells, and shadoufs on their own initiative (Workshop information handout).

### **Training**

Various types of training of local people has been carried out in 1994:

- FORESTRY AND SOIL AND WATER CONSERVATION:

49 farmers were trained for 14 days in Asmat.

- HOME ECONOMICS:

60 women were trained for fourteen days in Molobso.

- AGRICULTURAL EXTENSION:

Twenty-four farmers were trained for ten days in Molobso.

(Asmat project annual report 1994)

### **Purchase of tools and equipment**

Provision of tools has been considered necessary, since the majority of the farmers in the project area are too poor to have their own tools for farming and project/community work. The following tools was distributed to farmers in 1994:

2, 300 shovels

2, 300 pick-axes

150 hoes

4, 750 farmers have received tools. Tools and implements for project work have also been purchased, including 2, 300 shovels and 2, 300 pick-axes.

### **Credit**

Credit schemes related to farming activities are organized by the MoA Marketing and Credit department. Redd Barna funds a credit scheme for water pumps. The pumps cost 21, 000 Birr, and the repayment period is ten years. The credit is given to individuals, but sometimes a group of people buy a pump together in one group member's name and cooperate on the repayment.

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<sup>4</sup> Shadouf irrigation is the traditional water lifting technique in the area. Water is lifted from shallow wells (2-3 m) using a counter-balance system. Efficiency is low, for several reasons including poor construction and lack of maintenance.

## ***Implementation, reporting and monitoring***

MoA is very diligent at their project implementation, the organization of the work seems efficient. Achievements have been impressive during the latter, stable period of the project's life. There is a high level of enthusiasm among the staff, both in Keren and in the field. Also, there seemed to be a reasonably good dialogue and cooperation between staff and representatives of the local population, especially through local Baitos, and project activities seemed to be well integrated into the yearly working cycle of the local population, taking the seasonal fluctuations of their workload into consideration regarding timing. However, we have to agree with the '93 Asmat project review (p. 20-21) that the information stream (we would rather use the term "decision stream") seems to be top-down, and that there is a lack of real understanding on the part of lower-level staff concerning long-term development goals and sustainability effects of activities. This also affects local people's understanding of and opinions on the project's impact on their lives in the long run, since the lower-level staff are their link to the project.

There have been regular reporting routines since 1993, and the frequency of reporting between levels seems satisfactory. However, current project reporting does not adequately capture the effect of project activities. This is due to the indicators used in monitoring. The majority of the indicators found in the annual project reports can be classified as *output indicators*, i.e. measuring what has been done. A more informative approach regarding the objectives of the project would be to monitor *impact indicators*, i.e. measuring the effects of what has been done. The goal should be to monitor the impact which project activities have on household food security as well as on ecological rehabilitation. One example: Currently, terracing activities are monitored using the output indicator *total length of terraces constructed*. An impact indicator in this case, which would provide more directly valuable information regarding project objectives, would be *the effect of the construction of terraces on yields on terraced land*. See the section on food security indicators and monitoring for details on this, and the section on continuing the participatory process for recommendations on future monitoring and reporting.

## ***Activities in the project area which are not funded by Redd Barna***

MoA also engage in other project activities in the Asmat area which are not directly funded by Redd Barna. These include the provision of seeds and oxen.

To alleviate a serious seeds shortage, seeds are distributed according to identification of needs by local community leaders. The amount distributed thus varies according to need (Table 1). 1993 was a very bad year due to lack of rainfall and heavy infestation of army worm, tree locust (in the lowland) and stalkborer. Pest caused considerable damage. Many farmers had to replant their crops twice. According to staff at MoA / Keren, on average farmers lost about 50% of their crops due to pests and diseases. The army worm stayed in the highlands for more than one month. All grasses were destroyed and army worms were found even inside houses. By contrast, 1994 was a relatively good year. Army worm and stalkborer caused only slight damage. Even with the relatively good yields, however, there was still some demand for seeds. Most likely this was due to the low yields of the previous year which rendered people with limited possibilities to set aside seeds for sowing.

A problem has been that seed varieties distributed have sometimes been unsuitable for the local climatic conditions, resulting in poor yields. Farmers are now suspicious of the origins of seeds distributed. They often prefer to eat them, and replace them with seeds from local farmers who have succeeded with their crops and have seeds to sell. Farmers consider these local seeds to be better, as they have proven themselves by giving good yields locally.

Some seed distribution data are presented in the table below.

*Table 1 Distribution of seeds in 1992 through 1994, Asmat sub-province*

Crop	1992 (quintal)	1993 (quintal)	1994 (quintal)
Barley	0	55	137
Wheat	0	155	0
Pearl millet	100	102	160
Sorghum	100	110	109
Linseed	0	60	65
Neug	0	5	5
Total	200	487	476

Apart from the Redd Barna pump credit program, MoA also has its own pump credit scheme for ex-fighters. MoA has also assisted farmers in Asmat by providing 83 oxen as part of a credit scheme and 39 oxen for free in 1994. The program was funded by a German and an Italian NGO whose names we have not obtained. Free oxen are distributed to people who are unable to meet the repayment terms. To apply for credit, a statement from the village baito is required, saying that one has land, but no oxen. For a free ox one needs an additional statement saying that one is unable to meet the repayment requirements of the credit scheme.

### **Food distribution and relief**

Food distribution in Molobso is carried out by ERRA. The monthly ration per person is 15 kg wheat, 1.5 kg lentils and 0.75 l oil. Per year, this totals 180 kg wheat. Distribution normally takes place once every two months. Distribution to children has the same intervals.

Erota is another district and the food distribution there is organized separately, but Molobso and Jani are under the same distribution unit. Around 50% of the population there receive aid.

The estimated yields from MoA is used as a basis for the estimates of food aid needs. These estimates are very inaccurate, and it seems a well-known fact that many people get more aid food than they actually need. People often sell part of what they receive to buy clothes or other necessities. We have no information on the amounts of aid food on the market, or on the significance of their presence to prices.

In 1995, ERRA has changed their policy from one of direct food aid to FFW. ERRA and the Catholic Church are organizing the FFW work through the local administration. The work is mainly road construction and cleaning up the environment (there is a lot of metal debris and other pollutants from the war). The policy is that handicapped and elderly people, and others who cannot work on FFW project activities, are exempted, and will continue to receive direct aid. People who have lost all their crops and have no food from their own harvest will also continue to receive direct food aid. Those needy (and worthy) of direct aid will be identified through the local baitos, who will report to ERRA.

According to the Molobso District Baito leader, only about 5% of the population in Molobso can sustain themselves without any form of support (relief aid, FFW, or CFW). This group mainly comprises traders and some rich farmers. In Jani, about 10% can do without support because there is more livestock there than in Molobso.

### **Adult literacy program**

The adult literacy rate in the project area is very low, apparently below 10%. The National Service is responsible for an adult literacy program, teaching the curriculum of 1<sup>st</sup> to 3<sup>rd</sup> grade. They have worked in Jani, but so far not in Molobso and to our knowledge not in Erota.

## **The PRA study**

### ***Objectives***

In June 1994, NORAGRIC was requested to assist in a baseline study / project planning process. The importance of using participatory methods for data collection and analyses was emphasized. A short preliminary mission took place from November 5 - 14 1994. This included a short visit to the project area as well as discussions with MoA and selected NGOs in Asmara. A proposed outline for a baseline study and a project planning process was submitted to Redd Barna in December 1994<sup>5</sup>.

After an initial planning period, which included the preparation of a detailed PRA manual as well as discussions with Redd Barna, a PRA workshop was carried out in Keren from April 24 to April 27, 1995. This was followed by a 5 day fieldwork period (April 28 to May 2). The 31 participants included local community leaders, extension workers and staff from MoA in Keren in addition to representatives from local chapters of NUEW and a youth organisation.

The information collected by the workshop participants is presented in this report. It is supplemented by other data. These include background data collected from MoA in Keren and previous reports related to the project (including a socio-economic study which was translated from Tigrinya to English), as well as interviews and discussions with MoA staff members and local people, and our own observations in the project area.

The workshop was intended to serve several purposes. One was to assess the current situation in the project area with particular reference to problem analysis. This included the collection and analysis of relevant social, agricultural, natural resource and health data from the project area. The data is to be used in the planning of new project activities, as well as for providing a benchmark for assessing project impact. Identifying development and food security indicators to be monitored was therefore an important aim for the data collection.

While the scope of a short workshop fieldwork does not permit in-depth studies, it allows for the identification of areas where more knowledge is required and where in-depth studies should be undertaken. Identification and initiation of special surveys and potential research topics was thus another objective.

Yet another major purpose of the workshop, and the reason why this approach was chosen rather than merely sending a team of researchers into the field, was local competence building. The objective was to strengthen local staff's competence in using participatory methods for community development including communication and project monitoring. The PRA workshop was designed to familiarize the participants with PRA methodology and teach them to facilitate community members' own analysis of their situation and assessment of their needs, while enabling ministry staff to do better project monitoring and data collection. Enhanced co-operation and communication between communities and ministry staff is a longer-term goal of the participatory process initiated by the workshop.

### ***The PRA training***

The first phase of the workshop was a three-day seminar in Keren, the district capital in Senhit province, where participants familiarized themselves with the core thinking, the group-visual techniques and the behavioral approaches involved in PRA. Learning by doing, group work and discussions, games and role play, and visual aids (drawings and diagrams pre-made and made on the spot, overhead transparencies, videos) were extensively used during the seminar.

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<sup>5</sup> The Asmat Project. Enhancing local participation and competence-building. Proposed outline for a baseline study and a project planning process for the Asmat Conservation project. NORAGRIC, nov. 1994. Sidsel Grimstad and Jan Erik Studsrød.

The second phase was a fieldwork period of five days in Molobso district in the project area. The fieldwork base was in Molobso village, located some two hours' drive from Keren. MoA has, with support from Redd Barna, constructed a district office on the outskirts of the center with simple facilities, including two small offices for MoA field staff. These offices constituted the base for the fieldwork part of the PRA workshop.

Participants formed four groups. Each group worked in one "adi" or "village", trying out the techniques and approaches learned and collecting data for the study. The villages were Twareba, Ketin, Rehey, and Gerbet. On the final day, all the groups presented their findings in plenum.

The fieldwork had to strike a balance between the potentially conflicting objectives of training and data collection. A true learning experience requires that participants do as much of the fieldwork design as possible themselves, including making decisions on what data they need and how to go about eliciting these data. This is only up to a point compatible with the other objectives of the exercise, which required extensive and thus, considering the time frame, very efficient data collection – and allowed no time to make mistakes. Most of the participants had no training in research and were unfamiliar with the concepts and methodological requirements governing in data collection. and analysis All they had was the three days of training in Keren.

We provided the participants with guidelines on issues to explore and techniques which could be used, presenting to them a "smorgasbord" of options. We also asked the groups to start by facilitating the drawing of a census map, including census information on all households in the village. If the whole *adi* included too many households, they were to concentrate on one section of it (settlement is scattered in smaller clusters and lone compounds, a pattern which lends itself to this approach). The map should further be used for a wealth ranking of the households. A wealth ranking is a sorting of households into groups according to local criteria of wealth segmentation. "Wealth" is a relative term in this context, referring to relative material standard of living and food security. The criteria used can provide vital information on conditions which people live under and on their aspirations. – The groups were to use the wealth ranking as a basis for a stratified sample during later stages of the data collection involving individual households or people. Towards the end of the fieldwork period, we gave them an interview guide and asked them to carry out a small series of semi-structured interviews to support their other data.

There was generally a very good understanding of the techniques, and groups were good at creating rapport with locals and inventive when it came to eliciting their cooperation under difficult circumstances ( it was the start of the rainy season and everybody was busy working their fields). The groups worked very hard and managed to come up with a lot of information in the few days we had. We are confident that if led by someone with experience in research and/or data collection, and if enough time is spent on discussions of what data is needed (in concrete terms) and why, they will be able to do a very good job. Abilities increase with experience, and they have access to literature which can help them when continuing the development of their skills.

## Limitations of the study

Apart from the aforementioned conflicting demands of training and data collection, we faced various other constraints which, to varying degrees, have influenced the end results both concerning training and data collection:

It was included in the Noragric project proposal (Grimstad & Studsrød 1994) that a pilot test of PRA methods to collect basic socio-economic data was to be carried out in six villages, two in each district, before the actual PRA workshop / fieldwork took place. Due to problems of communication and security this did not materialize. Subsequently the PRA fieldwork also had to include the collection of a variety of basic socio-demographic data. This slowed down the process of data gathering and analysis considerably.

Due to a tri-lingual group of participants, a two-stage simultaneous translation from English to Tigrinya and then from Tigrinya to Tigre was required during lectures. Although an

enthusiastic spirit prevailed, this complicated the process of communicating PRA techniques and approaches to the participants. The slow pace resulted in a shortage of time, thus considerable simplification was required. Moreover, “communication pollution”, i.e. translation errors and misunderstandings, is unavoidable under such circumstances. Verbal communication between trainers and most participants had to pass through a translator, thus restraining mutual feedbacks and severely limiting the trainers’ ability to sense to what extent issues were understood by the participants. Much emphasis was thus put on non-verbal modes of communication (drawing, learning by doing, role play). This is a superior way of teaching group-visual aspects of the material, but there were problems related to communicating central issues of a more complex nature, particularly related to behavior and attitude.

The original plan was that the detailed PRA field survey following the PRA workshop was to be conducted in six villages, two in each district. Due to the security situation in the province, however, the fieldwork had to be limited to four villages relatively close to Molobso. It was thus not possible to visit villages in Erola and Jani districts and this obviously limits the scope of the findings and recommendations in this report. However, some of the workshop participants came from these two districts, and they produced maps and diagrams on conditions in Erola and Jani during the theoretical part of the workshop. Some of this information is presented in this report.

The selection of study villages was based upon a discussion with workshop participants and MoA staff. Before the actual fieldwork was carried out, a discussion among the workshop participants highlighted differences and similarities between the villages in the area. It was discussed how to maximize the quality and representativity of our data and minimize biases, considering the logistic and security constraints we were facing. Based on this discussion, four villages relatively close to Molobso were selected as sites for the PRA fieldwork, giving the fieldwork a central bias which must be kept in mind during analysis and use of the findings.

The PRA fieldwork was carried out at the end of April. Due to unexpected early rainfall, the farmers in the area spent most of the daylight hours ploughing their fields, and were reluctant to spend time discussing with the workshop participants. Coming back after dark was impossible in most cases for security reasons. The workshop participants considered this a major constraint to the quality of their field work.

The workshop was intended to last for 10 days. It was cut one and a half day short. Due to a series of unfortunate circumstances, time constraints forced several participants to drop out of the course towards the end of the field work, and continuing without most of the participants was meaningless. A more thorough analysis and feedback to communities which should have finalized the workshop was thus rendered impossible. This was a serious and unfortunate shortcoming, as a vital source of cross-reference to researchers and to empowerment of communities is the presentation of findings back to the communities at the end of a fieldwork period. We can only hope that this shortcoming was to some extent offset by the fact that community representatives participated in the teams, working in their own communities, as well as by the fact that all the original materials produced will be returned to the communities upon conclusion of the report write-up, in the recognition that it is their data. – Another consequence of this premature conclusion was the poorer quality of the training. We feel that it suffered from this cut in fieldwork exposure, particularly regarding the participants’ understanding of behavior and attitude issues and of progressive on-the-spot data analysis, two vital aspects of the approach. Too much emphasis was put on the making of as many diagrams as possible, and less on what information was actually put into them and on the interviewing of the maps and diagrams when they were finished. The groups were to varying degrees inclined to processing the information presented by analysts and/or imposing their own criteria; they converted local time units into hours and tried to make estimated nominal quantities out of relational data. There were also examples of groups in other ways imposing their views and criteria onto analysts while they were working.

In general, the bulk of the information we present in this report came from men – in some cases also that directly concerning women’s and children’s activities. Also, the baito leaders

were heavily represented. In other words, there is almost certainly a gender, age, power, and possibly wealth and center bias in our data.

A third consequence was that the more thorough final analysis and report write-up had to be conducted by the trainers, who had limited knowledge of the processes of data collection in each particular group and thus faced problems of interpretation and incomplete information. Moreover, the groups' process notes were of varying quality, and did not really describe the processes of each session. It thus has to be kept in mind that the analysis, conclusions, and recommendations in this report are probably to some extent influenced by the results of possible misunderstandings and misinterpretations deriving from this fact.

## THE PROJECT AREA

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### Physical description

#### *Geography*

The Asmat sub province consists of the three districts of Molobso, Jani and Erola. Molobso and Erola are highland districts (around 1400 and 1700 m, respectively), whereas Jani is located in the lowlands (about 600 – 850 m), on both sides of the Zara river, a tributary to the Anseba river. This river and a few small streams are the only perennial surface waters.

The bedrock is mainly old, crystalline rock. Soils are shallow and rocky due to prolonged sheet erosion (Deelstra et.al. 1988). There are also several erosion gullies on the slopes and valley floors of Molobso. The best agricultural lands are found in Jani, on the silty alluvial plains. Soils in the highlands are generally less fertile and more arid. Farmers in Molobso identified the following soil types: sandy, sandy loam, clay, and red soil.

Jani consists mainly of alluvial plains, Erola and Molobso of an undulating plain. The area has been classified as Sahel Acacia woodland and deciduous woodland (White 1983 in Deelstra et.al. 1988). Overgrazing and tree felling has led to serious deforestation. Most of the trees in Molobso were felled by the Ethiopians during the war, to clear the land for fighting as well as to cover their own needs and for sale. Half a million trees were felled in Rehey (oral comm.). The Molobso plains and hillsides can thus not be classified as woodland at present.

#### *Climate*

The climate is relatively dry and hot, with rainfall in the summer and a mean annual temperature higher than 18°C. The lowlands often have less than 200 mm rainfall per year while the highlands can have as much as about 500 mm (Deelstra et.al. 1988). There are great temporal and spatial variations in the rainfall pattern. Seasonality diagrams from Ketin (I) and Twareba (II) depict a cold season during December, January and February. March is a transition period to the hot season in April and May. Around the end of April / beginning of May the rains start, they last until the end of September / beginning of October. Most of the rains normally fall in July and August. During June there is again a transition to a medium temperature season which lasts from July to November.

In 1994, some rain came already in March, but in April there were no rains. In May there were large amounts of rainfall, and the crops got a very good start, but June and July were virtually without rains, and there were serious concerns that there would be crop failure and famine. Then in August, there were again large amounts of rainfall, as well as some in September, which prevented a total crop failure. (Gerbet seasonality diagram (III), oral comm.)

Rainfall data from the period 1990 – 1994 have been provided in a historical matrix from Jani made by participants during the workshop in Keren (IV), and in a bar diagram from Twareba (V). Both show that 1992 was the year with the most rainfall, followed by 1994. 1990 – 91 were the driest years.

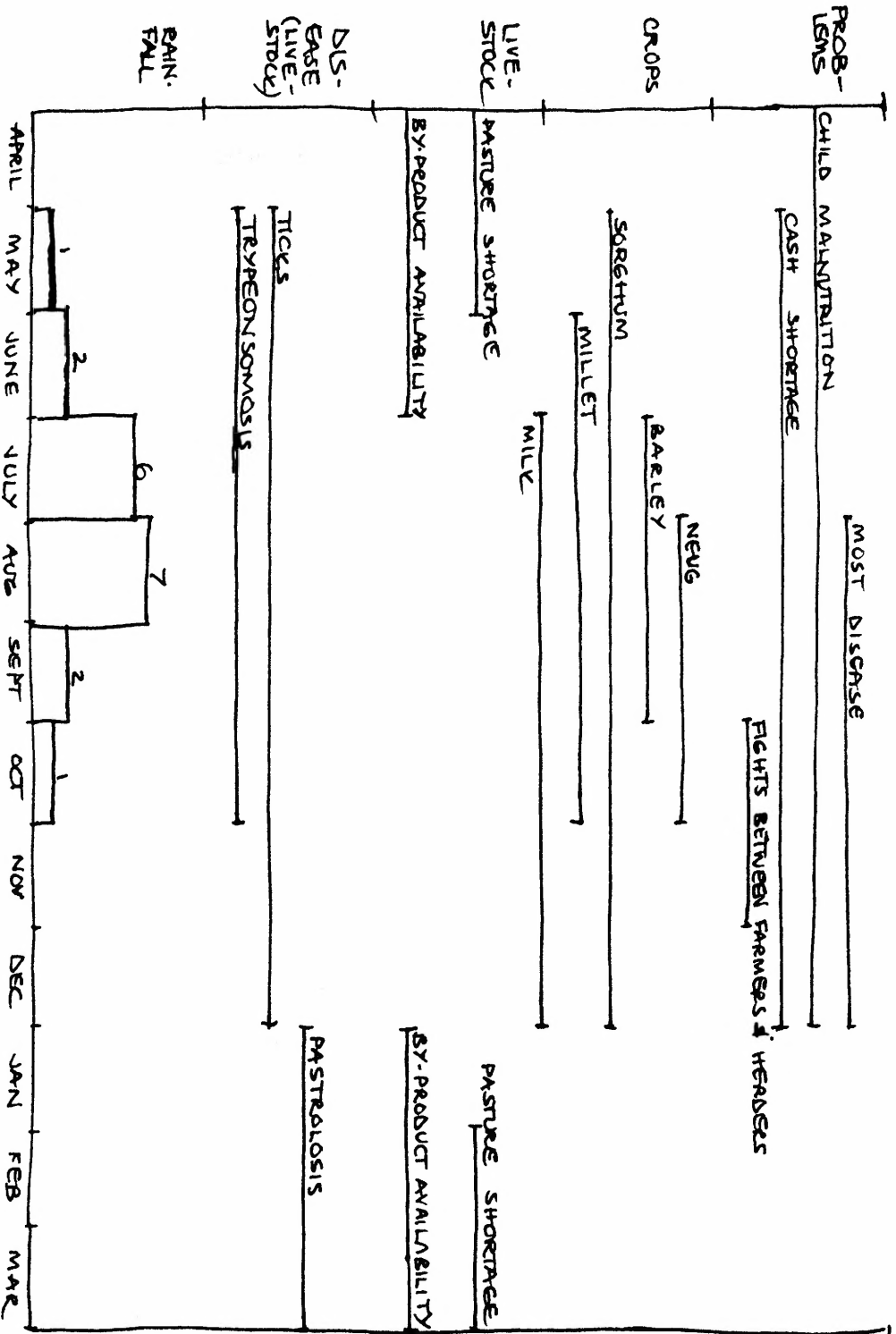
#### **Rainfall – historical data**

Data on rainfall fluctuations are provided by Twareba (V) and Ketin (VI). Ketin has shown it in the matrix as the general rainfall situation during the different time periods, described with the terms below. There is no definition of the terms (for instance, it is not clear what “sufficient” is sufficient for), but a general idea of relative conditions over time can be derived. The percentage figures in the matrix should be seen merely as illustrations of



SEASONALITY DIAGRAM - VARIOUS INFORMATION, YETIN VILLAGE

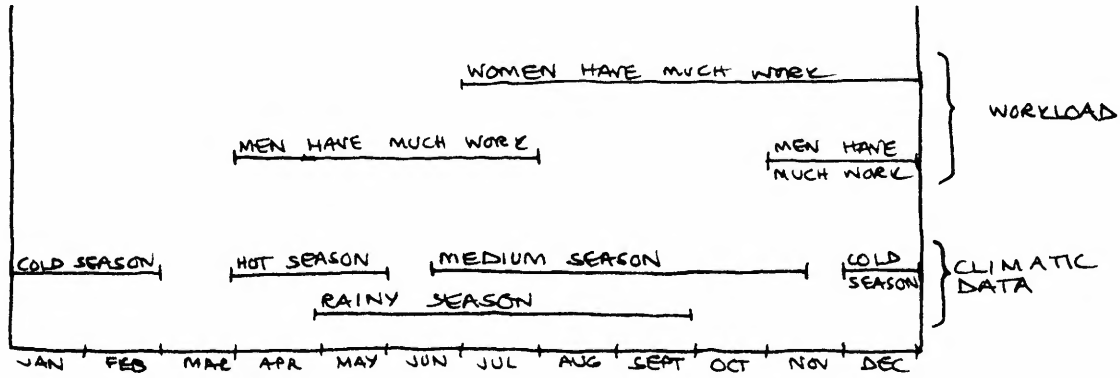
GROUP 2



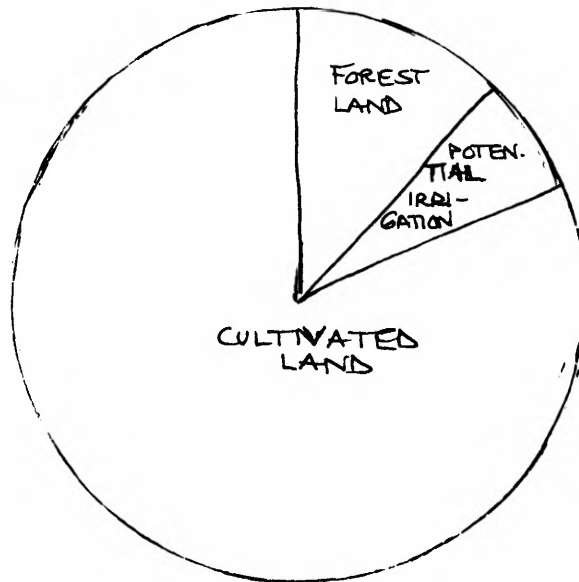
ANALYSTS :

- MATIMUD ADEEM
- FATNA IBRAIS
- OSMAN NUHAMMED

SEASONALITY DIAGRAM - RAINFALL, CLIMATE/TEMPERATURE, PEAK WORKLOAD PERIODS FOR MEN AND WOMEN IN TWAREBA VILLAGE.

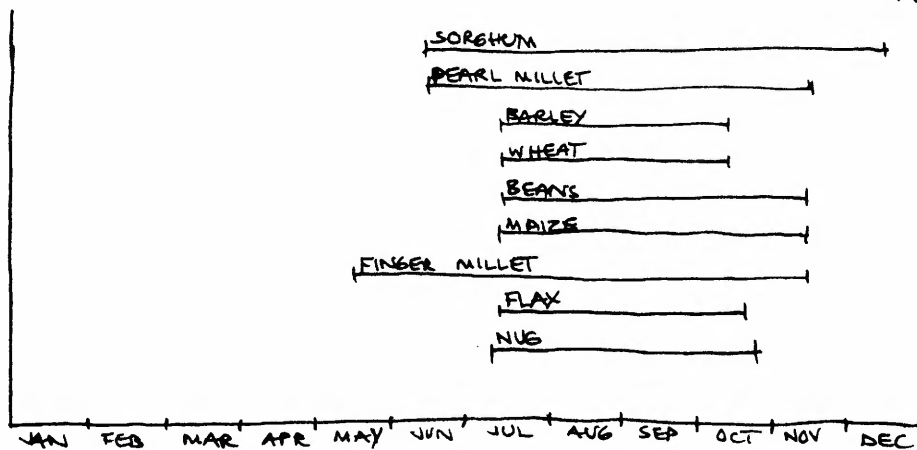


PIE CHART - LAND USE, TWAREBA VILLAGE



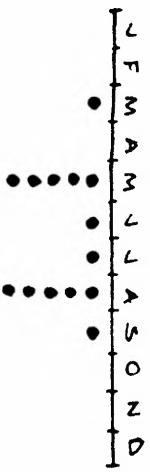
ANALYSTS:  
 OSMAN AQEM OSMAN  
 MEHAMED ALI HASE  
 OSMAN EBRAHIM

SEASONALITY DIAGRAM - PLANTING & HARVESTING OF DIFFERENT CROPS, TWAREBA VILLAGE.



GROUP I

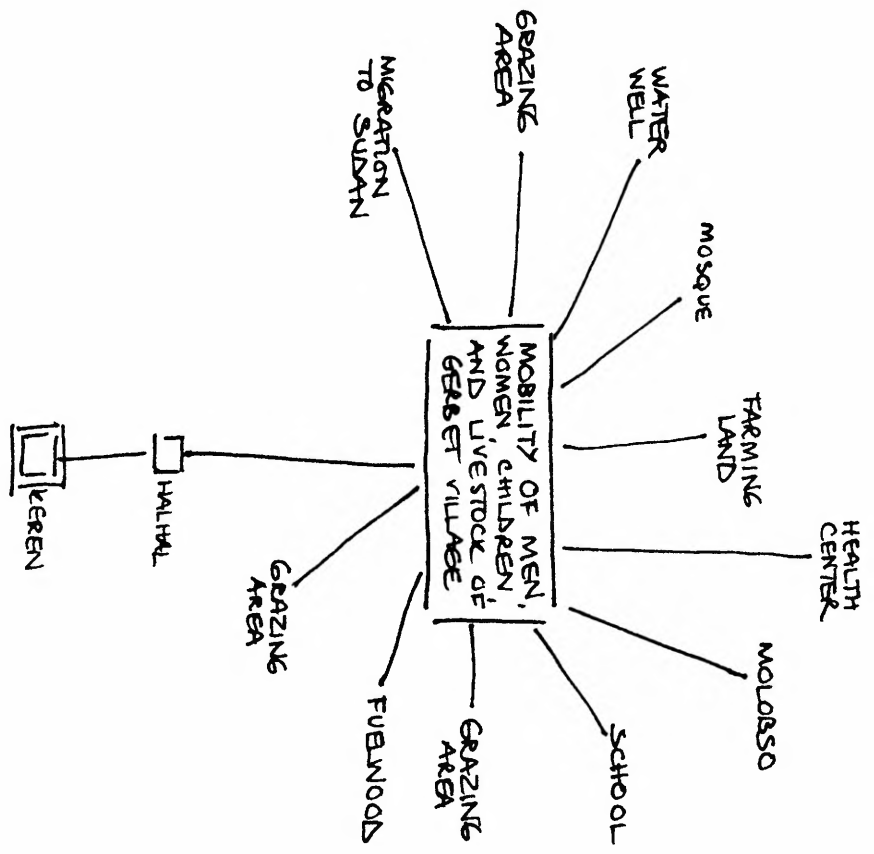
PLANTING SEASON	MAY	JUNE	JULY	AUGUST
MILLET	•			
SORGHUM	•			
MAIZE		•		
BARLEY		•		
WHEAT		•		
FINGER MILLET	•			
FLAX	•			



RAINFALL DISTRIBUTION 1994

MOBILITY MAP, SEASONALITY DIAGRAMS —  
GERBET VILLAGE.

ANALYSTS : IBRAHIM ADAM OSMAN  
MOTAMED ABRAHIM I.  
MAHOMDE ADAM A.



GROUP 4

# HISTORICAL MATRIX OF RAINFALL, PASTURE, AND LIVESTOCK, JANNI DISTRICT

YEAR	RAINFALL	PASTURES & LIVESTOCK
1990		
1991		
1992		
1993		
1994		

WORKSHOP PARTICIPANTS

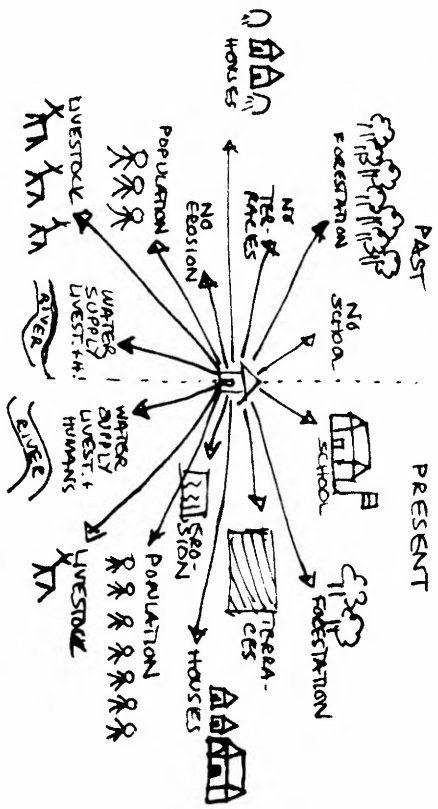
## SCORING MATRIX - ANIMAL DISEASES, AGMAT SUB-PROVINCE

AFFLICTION RATE	5%	10%	35-40% *	20%	25%	5%
SYMPTOMS	INTERNAL PARASITES	EXTERNAL PARASITES	T. B.	DIARRHOEA	TRIPS	ANTHRAX
EMASCINATION	••• 5	•• 3	•• 4	•• 3	• 1	
STERING COAT	• 1	• 1	•• 4	• 1	•• 2	
WEAKNESS	•• 4	•• 2	••• 5	•• 3	•• 2	
KILLS			•• 4	•• 2		••• 5
DECREASE IN MILK PROD.			••• 5	•• 3	•• 2	••• 5
COARSE BREATHING			••• 5	•• 2	•• 3	••• 5
TOTAL	10	6	27	14	10	15

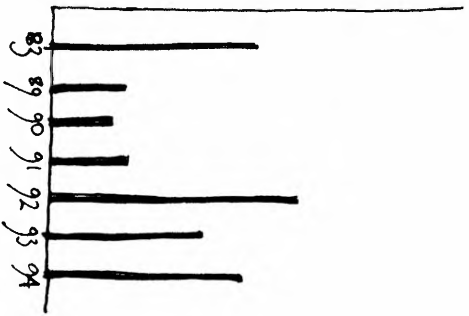
\* / SEASONAL

WORKSHOP PARTICIPANTS

# HISTORICAL MAP - VILLAGE TWAREBA



## RAINFALL HISTOGRAM - VILLAGE TWAREBA

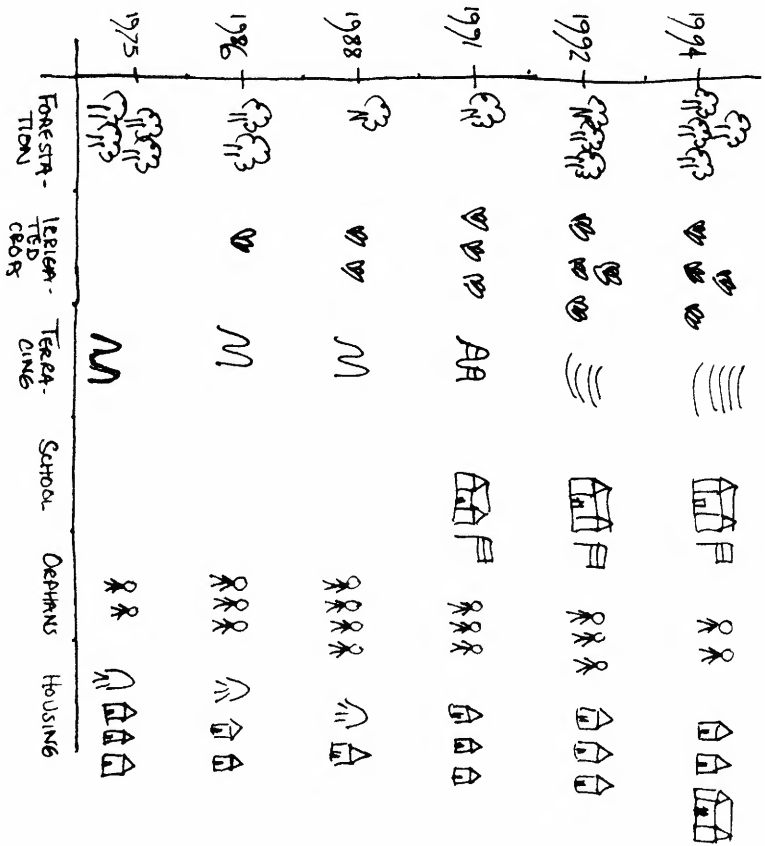


### Group 1

ANALYSTS:

HAMED ALI  
MATHMAES  
HAMED ALI  
HEBTAISE

## HISTORICAL PROFILE - VILLAGE TWAREBA



### LEGEND:

- UNTER- RAGES MOUNT.
- TEGELA- CROPS MOUNT.
- CRIBLANDS TEBARAINS

17

# HISTORICAL MATRIX OF KETIN VILLAGE

GROUP 2

SOURCES: METHAMED ALI BEGET  
 METHMED METHAMED  
 METHAMED MESMER

YEAR	POPULATION (No HOUSEHOLDS)	CATTLE	SHEEP	GOATS	DONKEYS	VEGE- TATION	WILD ANIMALS	PAIN- FALL	YIELD	FIRE- WOOD
1950	120	200	-	300	10	MANY (100%)	MANY (100%)	PLENTY (100%)	PLENTY (100%)	ENOUGH (100%)
1960	150	300	-	200	15	MANY BUT FEWER (70%)	MANY BUT FEWER (70%)	SUFFICI- ENT (80%)	PLENTY (90%)	ENOUGH (100%)
1970	180	180	-	150	10	MEDIUM (60%)	FEN (20%)	LITTLE (40%)	ENOUGH (50%)	ENOUGH (90%)
1980	170	170	-	150	20	FEN (20%)	FEWEST (5%)	LESS (30%)	LESS (20%)	LITTLE (50%)
1990	165	120	15	30	15	FEWEST (10%)	NONE (0%)	LEAST (20%)	LEAST (15%)	LESS (30%)
1995	200	150	30	50	25	FEN (25%)	NONE (0%)	LITTLE (35%)	ENOUGH (50%)	LEAST (10%)

relative conditions. The trend is a decline from “plenty” (100%) in the fifties to “sufficient” (80%) in the sixties. In the seventies there was “little” (40%) rainfall, even “less” (30%) in the eighties, and “least” (20%) around 1990. Conditions now are about the same as in the seventies; “little” (35%).

Twareba provides relative information from the period 1988 - 1995. The best year was 1992, followed by 1988 and 1994. The period 1989 - 1991 had little rainfall. 1993 was a moderately good year in relation to the others.

## **The people**

People in the area belong to the Tigre ethnic group, and their language is Tigre. They are predominantly Muslims.

As mentioned, people in the project area have traditionally been pastoralists and agropastoralists, with some degree of nomadism. The lowlands was a more purely pastoralist area with more nomadism both in terms of frequency and distance of mobility, whereas agropastoralism was more dominant in the highlands. That said, there was a continuum of adaptations in the whole area according to individual and group variations in assets, access to natural resources, as well as to fluctuations in fodder resources, crop yields, livestock herd sizes etc. There is little detailed information on this.

At present, the vast majority engage in sedentary subsistence agriculture and animal husbandry. In addition, most people depend on income from work. Redd Barna's CFW activities is the single most important source of work in the area. On a rare occasion there are opportunities to work for private people, doing work like well digging, house construction, or farm work. There is some work migration, to Keren and beyond.

## **Social organization, tenure, and access to resources**

Kinship is the traditional organizing principle of social relations as well as of access to resources, through patrilineages. The patrilineages were traditionally endogamous, and endogamy is still widely practised. Polygamy is common, and levirate is a common way of caring for the widow and family of men who die.

Traditional settlement patterns are patrilocal, sons establishing their new households in or adjacent to their parents' compounds. This is still practised, and kinship-based networks are still of major importance both socially and materially. Most of the responsibility for providing for the needy lies with relatives. However, these obligations and ties do not extend into everyday economic activities. A married couple and their dependent children are an economic and self-contained unit, with their own fields and livestock which they manage alone, and the produce of which they consume. To marry, a son must be economically independent and able to provide for a family. Married children do not contribute to their parents' household, nor do the parents contribute to those of their children.

There is conflicting information regarding land tenure. Some sources claim that land tenure was previously organized through patrilineages, with corporate ownership of grazing land and cropland and distribution among lineage members according to need at certain intervals. There was right to land usufruct, but not individual ownership.

According to the NORAGRIC 1988 project report, however, land was privately owned in the Asmat region, and handed down from father to son(s), resulting in a fragmentation of land; and grazing land was owned by a few people. Women had no tenure rights, and could not inherit land unless there were no sons, in which case they had to choose between the land of their father and the land of their husband. This is referred to as the Tsilmi land tenure system. A land reform in 1984 introduced the Diessa land tenure system, in which every peasant family got an area in accordance with family size; on the average 1 ha. Grazing lands became commons, and more land was brought under cultivation. Divorcees were to share land between them. Redistribution was to take place every 7 years to adjust for changes in household needs (Deelstra *et.al.* 1988).

Whatever is correct concerning the past, the current tenure system in Molobso is that cropland ownership is organized according to the description in the 1988 Noragric report on conditions prior to the land reform. Sons receive a section of their fathers' land upon marriage. A widow keeps the croplands owned by her husband, but when she dies, the remaining land is distributed among the sons. It was difficult to establish in detail what tenure forms and management systems governed use of non-cropland, but they are commonly held. It was stated that tree tenure is private if a tree is planted by a private individual.

Tenure issues are touchy at the moment because a land reform is under way, and we were advised to be careful when discussing this issue. The uncertainty of future tenure has in some cases had a subduing effect on individual initiatives regarding long-term land or holding improvements, such as planting trees. Others have faith in the Government's promise that investments will be compensated.

Water, trees and tree products (unless the tree is planted by someone), and other natural vegetation are common goods. The conflicting information on tenure regimes prevents us from making any statements on traditional natural resource management schemes – whether lands and the resources deriving from them have been privately owned or common property regulated by patrilineages. Currently, due to the serious degradation of the environment, natural resource management is to a large extent supervised by external bodies. Local *baitos* are responsible for the management of common resources, but have to abide by laws, rules, policies and advocacies imposed on them by the MoA regarding these matters. An example of this: Due to deforestation, it is illegal to cut down living trees, and the punishment is steep – cases are taken to court and felons can get a stiff fine or jail for six months to a year. – There is fairly close supervision of common lands and resources. For instance, *Baito* permits have to be given for any cutting of trees or branches for construction of houses or “*das*” (temporary structures made from leafy branches). There is an elaborate system of fines. Dry wood can be utilized freely, and grasses can be cut freely for fodder. Only people who live in an *adi* (village) are entitled to use of its common resources.

In the past, people hunted and ate various species including birds and rabbits, and there were communal hunts for antelopes. However, wildlife has declined along with the general degradation of the area. Antelopes are hardly ever seen anymore. Any hunting is now illegal.

*Baitos* can allocate common lands to individuals if there is a need. It is not uncommon that non-cropland, traditionally common land, is put under cultivation by individuals after having been terraced.

According to some MoA sources, local resource management schemes regulate resources well, reflecting a more detailed knowledge of use and demand, as well as existing within a local social and administrative framework with a possibility for closer supervision of conditions than MoA has. MoA staff plan to collect information on local resource management schemes, and MoA aims to replace current regulations with the local ones to a great extent, it was stated. Other sources, however, claimed that the traditional schemes are not designed for a sedentary lifestyle and a mode of production with more emphasis on growing crops, and that the local sense of common responsibility for common resources, and the mechanisms for acting on this responsibility, are inadequate. They state that this is evident particularly in the management of common resources and in the lack of maintenance of project improvements on common land, such as non-cropland terraces, seedlings planted on common lands, fences around enclosures. One might add that this can also be interpreted as a consequence of these activities not having been carried out in a sufficiently participatory manner, resulting in locals not understanding the rationale behind such improvements, perceiving them as beneficial, or feeling that the improvements are their property or responsibility.

### ***Local government***

Eritrea's political government is organized in a system of *baitos* – committees governing administrative units. There are *baitos* for all the administrative levels: Village, district, sub-



province, province, and national baitos. It is a successive system where the chair(wo)men of the baitos at one level are members of the baito at the next level. It is thus based on local government, as the whole system is based on the local village elections.

Elections proceed as follows: There is open nomination of candidates at a general meeting, followed by voting. A baito committee normally has around five to ten members; the number of candidates nominated for election has to be three times the number of committee members required. People are nominated on the basis of personal merits and standing in the community.

Baito members have different areas of responsibility, but collective discussions should precede any important decision.

## Demographic data

A village census was collected jointly by MoA, District administration and ERRA in 1994. The information deriving from this census which we received is conflicting. The summary states that the population in Sub-province Asmat was found to be around 48 000 in 1994 with 14 974 in Molobso, 10573 in Erota, and 22 795 in Jani. The average family size was estimated to be 4.5, and about 50% of the population was below age 16. The disaggregated figures we received (Appendix 3, table 12) don't add up to the same sums for the districts, however. Here, the total sub-province population was 36 677, with 13 630 in Molobso, 8 588 in Erota, and 14 459 in Jani. The average household size in the sub-province adds up to around 4.45. We received no disaggregated figures on age structure. – Due to a large influx of returnees and the fact that no proper census has been carried out, these data should be seen as estimates only.

Older population data are lacking for Molobso, while a socio-economic study carried out in the then liberated areas in 1988 gives some idea of the changes that have taken place over the last seven years in the districts of Jani and Erota. While data are inconclusive, the population estimates from 1987 as compared to the ones from 1994 where relevant (Appendix 3, table 12) indicate a significant growth in population over the last 7-8 years.

Due to the discrepancies between data from the various sources, and to add more detail to the 1994 data, MoA / Molobso collected selected demographic data in 15 villages in Molobso district in early 1995 (appendix 3, table 13). According to this survey, the total population in the district was estimated to be 13655 or about 8% less than previous estimates. In addition to information on the number of households and farmers, MoA also collected details on the number of people in different age categories as well as on the total amount of farmland available in each village. These data will be discussed in greater detail later in the report.

MoA's data are complemented by PRA data from the four study villages, compiled through mapping sessions. Due to the semi-structured manner of these sessions and the fact that the teams did not develop a common interview guide, the results produced differed slightly from village to village. However, consistency was great enough to permit the compilation of data into tables (appendix 4, tables 14 – 18, details on the mapping sessions can be found along with the tables).

According to the PRA information, there are 357 households in Rehey – the MoA sample survey state that there are 307 families and a total of 1571 people there. – The Ketin map shows a total population size of 965, divided into around 200 families, 33 of which are female-headed. This means that the average household size is about 4.8. The MoA sample survey states that there are 181 households and a total of 923 people in Ketin, and thus an average family size of around 5.1. There are 24 female farmers.

According to the MoA sample, there are 195 households and 965 people in Twareba, meaning an average household size of around 4.9. Information from the PRA study is somewhat conflicting. One source states that the total number of people is 1048, another that it is 1014 divided into 188 families – giving an average family size of around 5.4.

Gerbet has 190 households and a total of 908 people, according to the MoA sample survey – giving an average family size of around 4.8. This information is in complete accordance with the census map made in the village.

It is difficult to “count heads” in these communities due to the constant influx of returnees and the work migration; there have doubtless also been some discrepancies regarding definitions of families, households, etc. Overall, however, although the discrepancies between the different figures cannot be overlooked, they point in the same general direction. It seems relatively safe to infer that the average family size in the area is around 5 people, and that the population is rather young.

The maps referred to are included at the end of this section (VII through XI).

### ***Age and sex structures***

Table ii indicates age and sex structures of the villages in Molobso, according to the MoA / Molobso sample survey. The figures state that a total of 13655 people live in the district, and more than 50% of these are below 18 years old (Table 2). It is also worth noting that in spite of the recent war, the male/female ratio shows a male dominance in every age category. The figures suggest a higher child mortality in female children, and a lower average life expectancy in females than in males.

*Table 2 Age and sex structure in Molobso district*

Age	Male	%	Female	%	Total	%	Male/female ratio (%)
Below 18	3831	52.5	3311	52.1	7142	52.3	54/46
18 - 66	3044	41.7	2828	44.5	5872	43	52/48
66 +	419	5.7	222	3.4	641	44.7	65/35
Total	7294	100	6361	100	13655	100	53/47

*Data from MoA / Molobso April 1995*

The only PRA data on age and sex structures come from Twareba (appendix 4, table 16). These data support the trends derived from the MoA sample survey data. Here, too, the population is very young – around 59% of the population is below 20 of age. Moreover, the male/female ratio shows the same male dominance in the “below age twenty” age category (52%/48%), although the “age 20 - 60” category has a ratio of 50%/50%.

### ***Social stratification***

The population in the project area appears to be quite homogeneous, with small differences between rich and poor. However, on closer examination, differences emerge.

A central trait is the small size of land holdings. Individual household data confirms that the amount of land available per household varies in most instances between 0.5 and 1.0 hectare. Data from some 35 household in three different villages (Ketin, Twareba and Rehey) collected among different wealth groups found that only 2 households or 6% of the sample had more than 1 hectare of land. 46 % had between 0.1 and 0.5 hectare, 27% had between 0.5 and 1 hectare. However, a sizeable proportion of the population – 21% – were landless, and the contrast between their situation and that of those with even a little land was quite sharp. (See section on livelihood analyses and food security later in the report)

Livestock herd size and species mixture is one of the more conspicuous differences, as is housing standard. Others are whether a family has oxen for plowing and whether the children go to school. Female-headed households are often among the poorest, and the degree of diversification of a household’s income sources, or resource base, is an indicator of relative wealth: A more diversified household economy is more robust.

Wealth ranking, according to local criteria for relative wealth, was carried out in all the study communities. The local analysts generally split the population into the following three or four groups:

The households seen as rich have big herds (e.g. five to ten cattle, ten or more goats, at least one donkey); they have at least one hectare of land and often a vegetable garden; they have sturdy traditional or brick houses; FFW or CFW have little or no significance to the household economy; and they eat varied food in sufficient amounts throughout the year.

The middle group have smaller herds (maybe one to four cattle, around five to ten goats, often a donkey), are dependent on CFW and/or FFW for supplementing their economies, and generally have to adjust their food intake during the lean season. This group is heterogeneous regarding criteria such as whether they grow vegetables, whether they have oxen for plowing, their housing condition, and children's school attendance.

Households in the poor group have few or no livestock (maybe a couple of goats or a cow), and depend very heavily on CFW or FFW for their living. They generally live in poorer quality houses, and mostly eat porridge, only rarely injera. The children rarely go to school, and it is often difficult to raise money for clothing and other necessities. Female-headed households are mostly found in this group. – There is also a group of destitute people who are dependent on aid from others for their livelihood. This group also includes orphans and handicapped.

Gerbet and Ketin has supplied information on the relative size of the wealth groups (IX and X, tables 15 and 18 in appendix 4). In Ketin, 7,5% of the population is in the best-off group, in Gerbet the number is 21%. The discrepancy may derive from differences in criteria between the groups, although the information we received on the criteria does not suggest this (see field notes, appendix 7, and XII). – The District Baito leader estimated that 5 - 10% of the people in the district were well enough off not to depend on the project CFW programs for income; which is a central criterion for belonging to the "rich" wealth category, but this category also comprises people who do get some income from the program. Our general impression is that somewhere around 10-15% of Molobso's population belong to the "rich" category.

In Ketin, around 20% of the population belong to the middle category, while 27% do in Gerbet. The "poor" category differs accordingly between the two villages: 72,5% of Ketin's population belong there while 52% of Gerbet's population do.

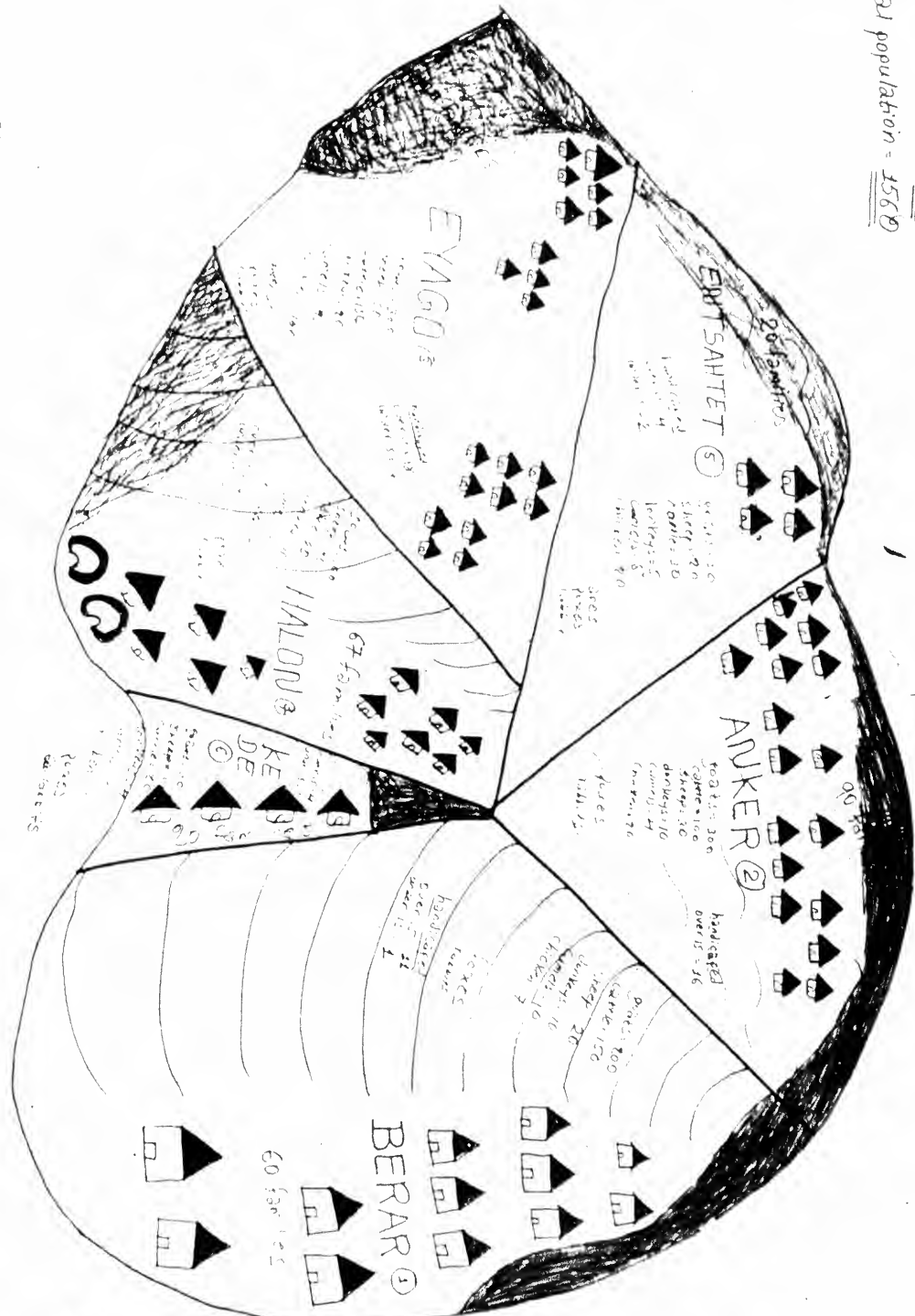
Gerbet is located next to the district center and near the road to Halhal and Keren, whereas Ketin is the most distant of the study villages. When Jan Erik visited Ketin with the PRA team, he was celebrated as the first white man in Ketin in a hundred years. This distance may be related in some way to the apparent difference in wealth between the two communities.

The overall trend suggested by these figures, even if we are to be cautious and consider the Gerbet figures as representative for the whole district, is that at least half of the population in the district are in the "poor" wealth category, and that around 80% have inadequate means to get by without the project CFW income. The bearings of these tendencies on the food security situation will be dealt with later in the report, but it is evident that the situation is grave.

It should also be noted that of the 33 female-headed households recorded on the census and social map from Ketin (X), 28 were defined as "poor" and 5 as "medium", and that the two female-headed households included in the SSI were also in the "poor" category. This evidence is anecdotal, but is supported by numerous statements from locals in all the study villages and from workshop participants to the effect that female-headed households were almost always among those worst off.

These issues will be explored further in the food security section later in the report. More detailed figures are found in Appendix 4.

Total population = 1560

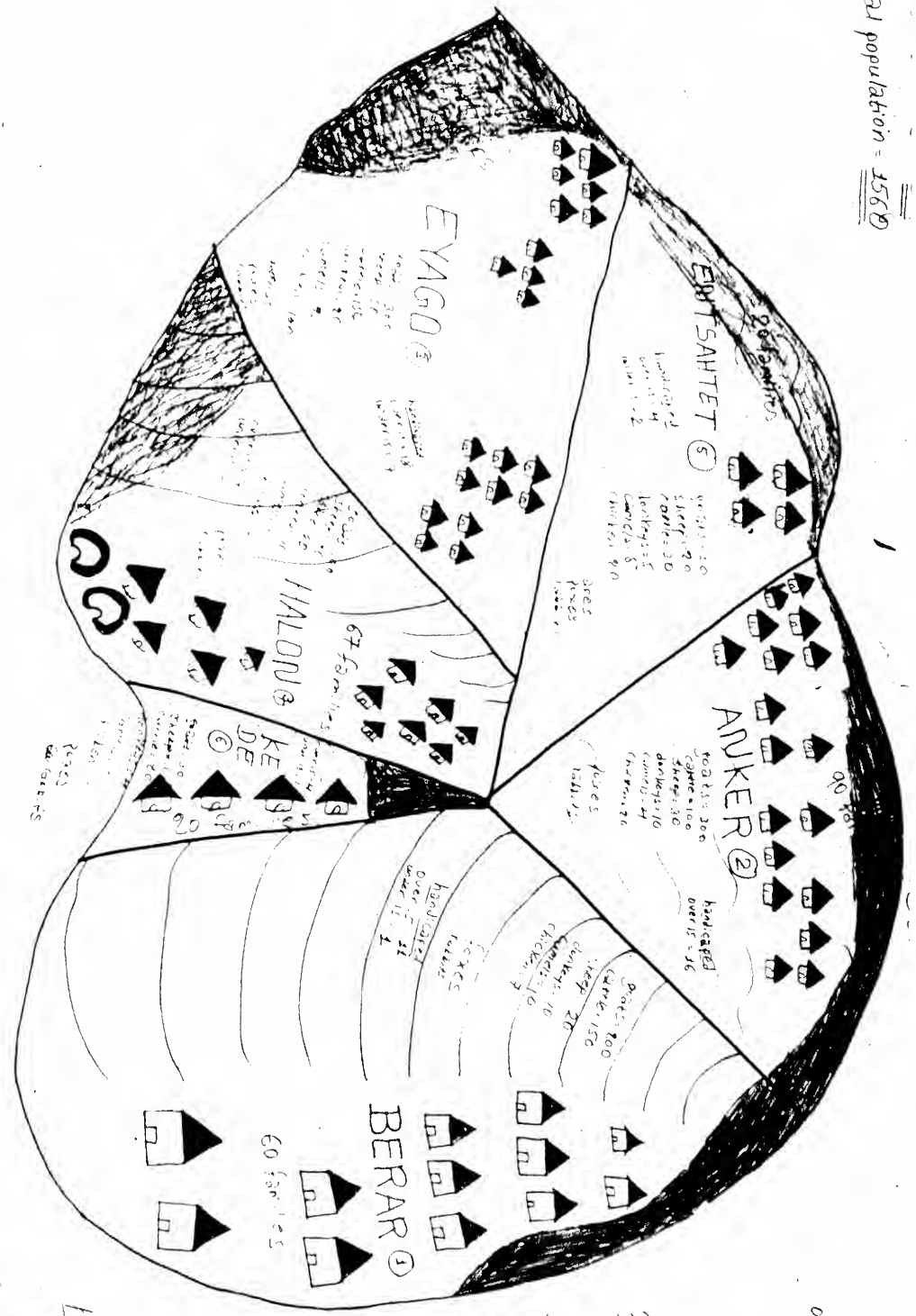


Scale  
 one house represents  
 to 5 houses.

KEY  
 non terraced farm land  
 terraced farm land  
 grazing area

Prepared by  
 Parthiv Mehta  
 M. Chaitanya  
 - MUSEUM TOOLS  
 - CHITRAKARTHA  
 - SABA MESHIN  
 - SADDIA MATHAN  
 - SAID AD

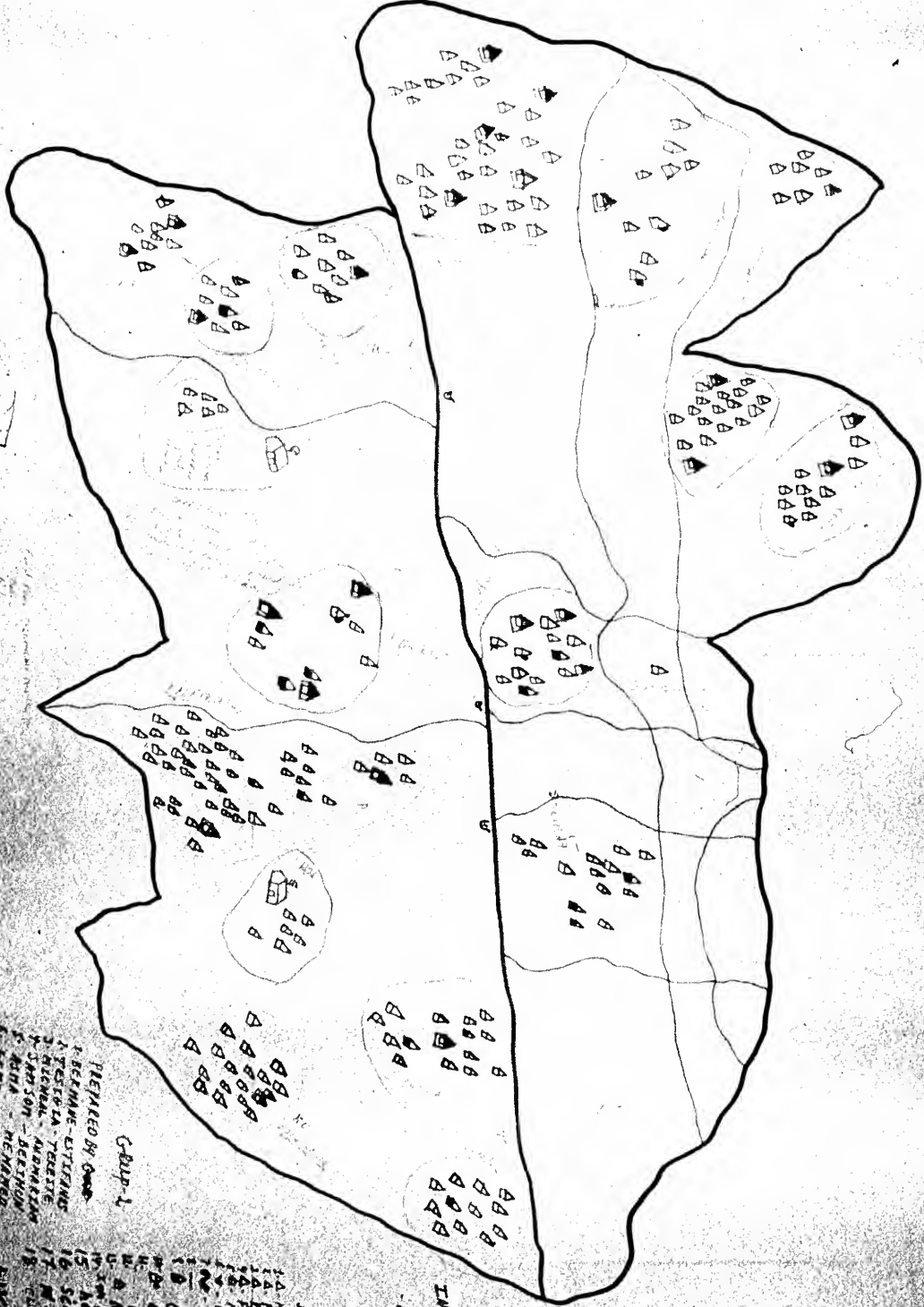
Total population = 1560



Scale  
one house represents  
to 5 houses.

KEY  
 ~~~~~ non terraced farm land  
 ===== terraced farmland  
 ■■■■ grazing area

Prepared by  
 - PORHANE WAHE  
 - MICHAEL AYAP  
 - MUSTIC TEGES  
 - GHIRMAKHAN TONG  
 - SABA MUSTIN  
 - SARDIA MAMAND  
 - SAID AD



IN FORMATION  
 FIELD  
 MAHMUD - AEDM

KEY

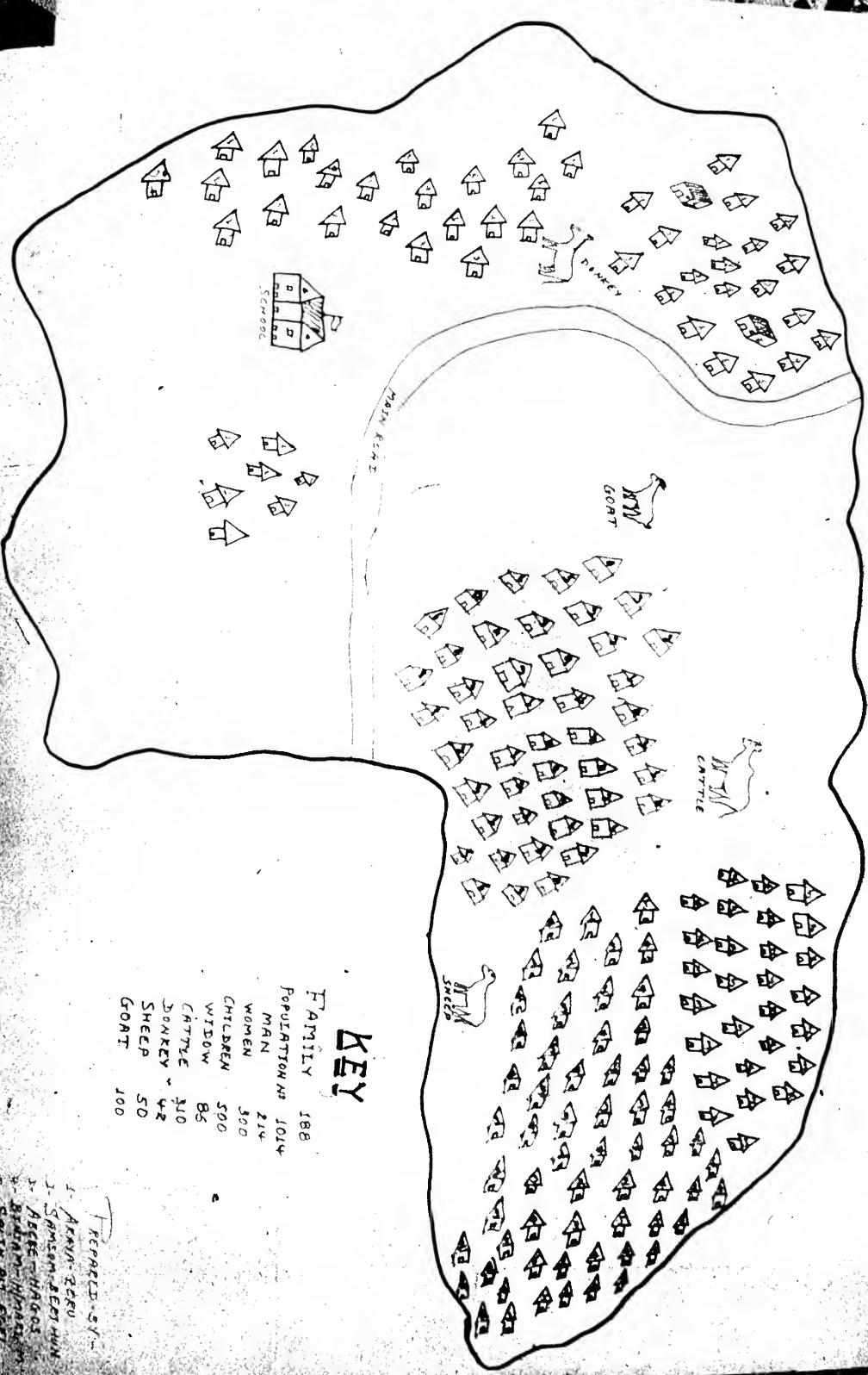
- 1. MEDIAN 100'
- 2. FISH
- 3. FEMALE HEARD 3X
- 4. MOSQUE
- 5. WATER POINT
- 6. RIVER
- 7. CHILD BORN 2/1/50
- 8. BIRTH
- 9. POPULATION 150
- 10. AT
- 11. AT
- 12. AT
- 13. AT
- 14. AT
- 15. AT
- 16. AT
- 17. AT
- 18. AT

Group 1

- PREPARED BY
- 1. BEHNAVE - ESTERLING
  - 2. RESERVA - TRISTING
  - 3. NICKOLA - ADAMKIAN
  - 4. JAH SON - BEHROUZ
  - 5. KUNA - MEHROUZ
  - 6. BEHLE - MEHROUZ
  - 7. MAHMOUD - QUTUB
  - 8. FATMA - NUS - JAHN
  - 9. JAHN - NUS - JAHN
  - 10. JAHN - NUS - JAHN

FIELD

# POPULATION & FAMILY SIZE, LIVESTOCK TIWAREBA



**KEY**

|                           |      |
|---------------------------|------|
| FAMILY                    | 188  |
| POPULATION N <sup>o</sup> | 1014 |
| MEN                       | 214  |
| WOMEN                     | 300  |
| CHILDREN                  | 500  |
| WIDOW                     | 85   |
| CATTLE                    | 310  |
| DONKEY                    | 42   |
| SHEEP                     | 50   |
| GOAT                      | 100  |

RESEARCH BY:  
 1. AKAMU-2280  
 2. SAMSON-2280  
 3. ABEE-2280  
 4. BISHAM-2280  
 5. SAKIN-2280  
 6. GONDA-2280  
 7. SAKIN-2280  
 8. MEMBERS

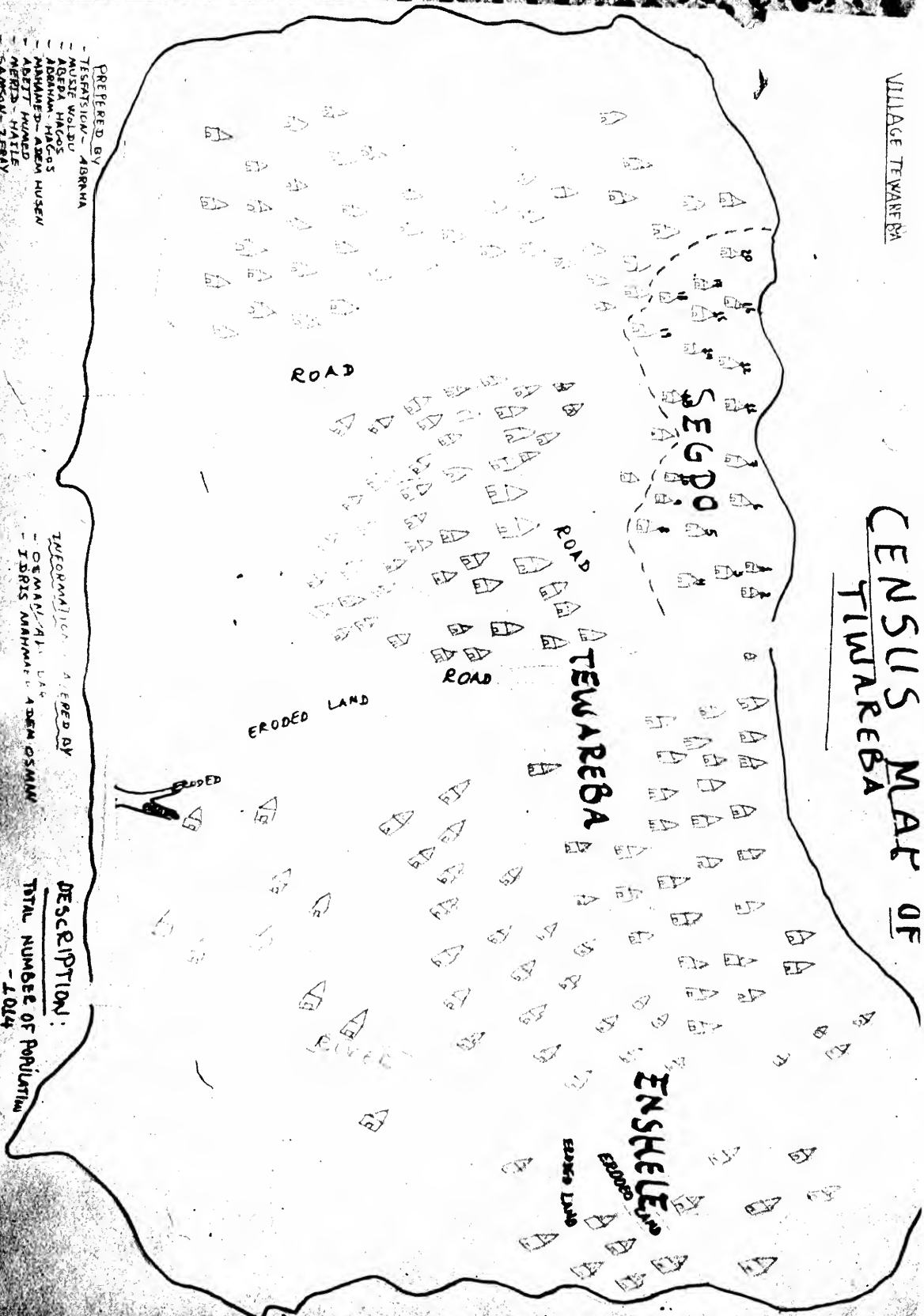
VILLAGE TEWARABA

# CENSUS MAP OF TIWARABA

- PREPARED BY
- TESPATON - ABRNA
  - MUIE WALDIU
  - ADEBA HARGOS
  - ABDHAM - HARGOS
  - MAHAMED - ABEM HUSEN
  - ABETI HAMED
  - MERID - HAILE
  - SAMSON - ZERIA
  - SAH - ADEBA

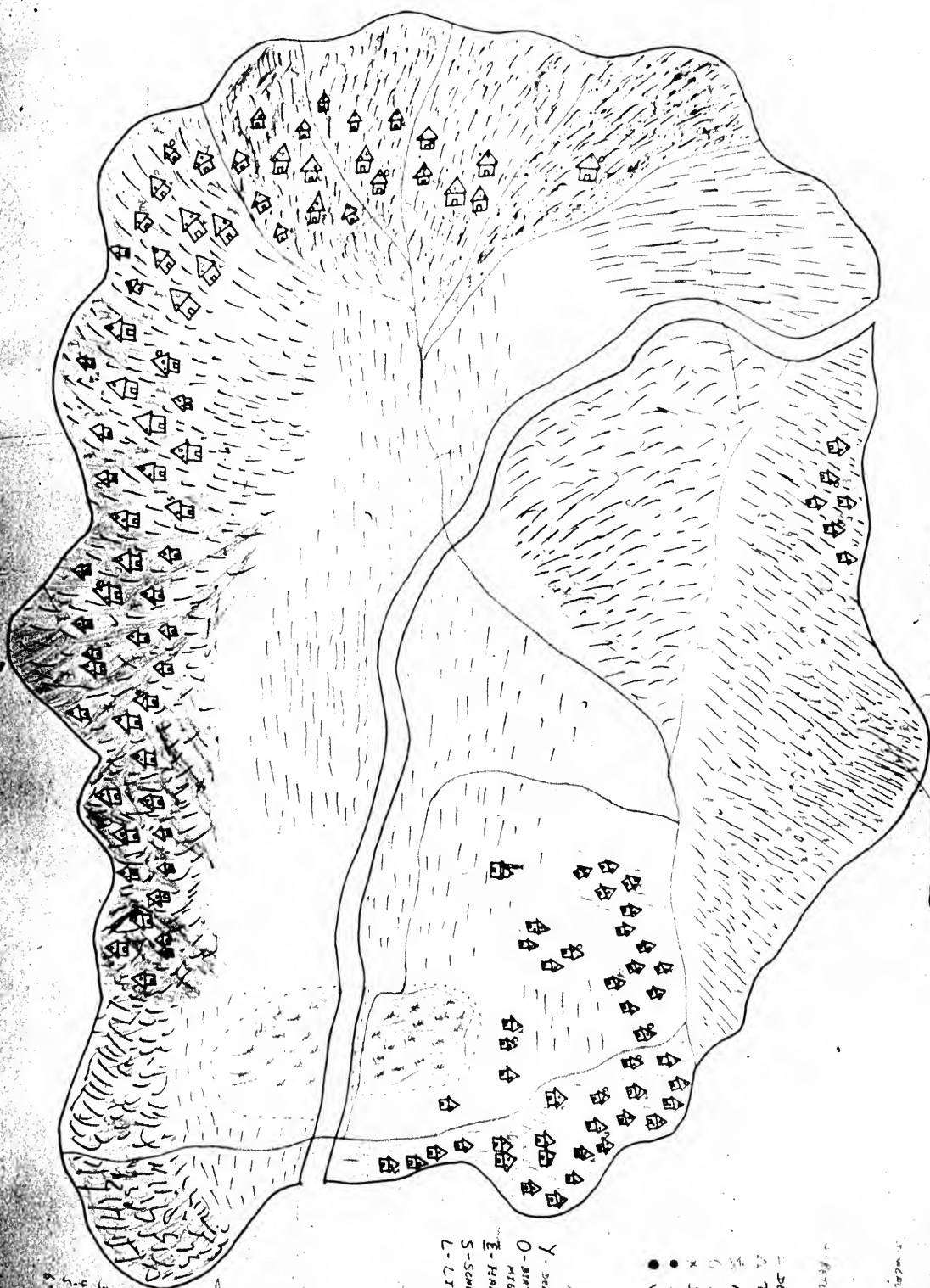
- TRANSFORMED BY
- OSMAN ALI LAH
  - IFRIS MAHAMED ABEM OSMAN

DESCRIPTION:  
 TOTAL NUMBER OF POPULATION - 1024  
 TOTAL NUMBER OF HOUSEHOLDS - 196





# GERBEI



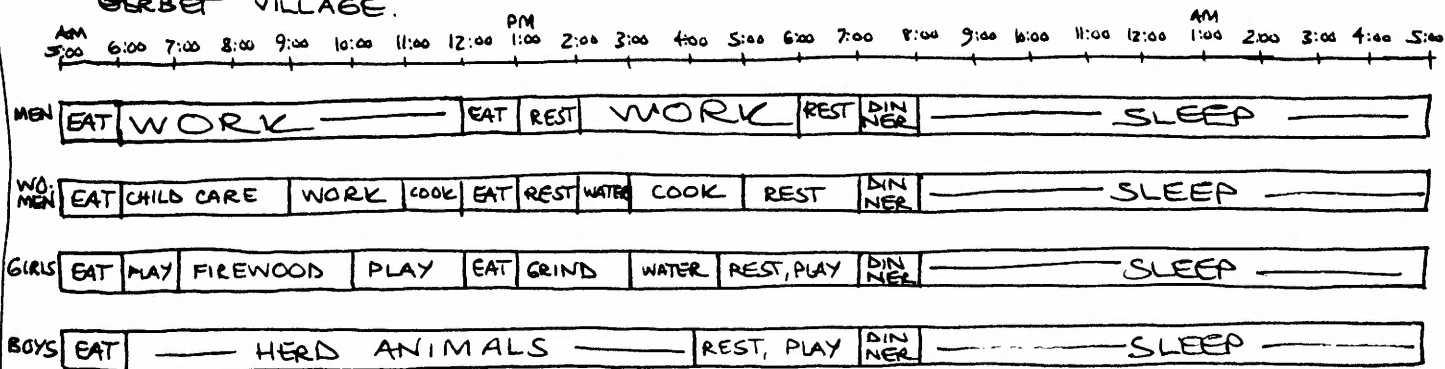
CENSUS DATA  
 1- 100  
 2- 100  
 3- 100  
 4- 100  
 5- 100  
 6- 100  
 7- 100  
 8- 100  
 9- 100  
 10- 100

HEALTH MAP  
 - DEFICIENCY OF NUT  
 A T.B. / TUBERCULOSIS  
 - ABORTION  
 O POLIO  
 X DIARRHEA  
 ● MERSLEAS  
 ● WOODPINE CUNT





SOCIAL MAP  
 Y - BIRTH RATE IS HIGHER THAN  
 O - BIRTH RATE IS LOWER THAN  
 E - HANDED CAPED MS  
 S - SCHOOL ATTENDANCE  
 L - LITERACY - 60

1- ARAYA  
 2- BUNIN  
 3- TORAN  
 4- ANNA  
 5- SAKIN  
 6- TERIK

## DAILY ACTIVITY PROFILE OF MEN, WOMEN, GIRLS, AND BOYS IN GERBET VILLAGE.



## WEALTH CLASSIFICATION - GERBET VILLAGE

| CLASSES                                                                                       | CRITERIA                                                                                            | FAMILIES | POPULATION |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------|------------|
| RICH         | 1. ANYONE WHO HAS 5-10 COWS<br>2. ANYONE WHO OWNS 2 HA LAND<br>3. ANYONE WHO HAS 20+ SHEEP OR GOATS | 40       | 188        |
| MEDIUM      | 1. ANYONE WHO OWNS 3 GOATS/SHEEP AND 1 COW<br>2. ANYONE WHO OWNS 4-5 GOATS/SHEEP AND 1 DONKEY       | 52       | 255        |
| POOR       | ANYONE WHO HASN'T ANY LIVESTOCK AND LIVES BY DAILY WORK                                             | 68       | 375        |
| VERY POOR  | ANYONE WHO HASN'T ANY LIVESTOCK AND DEPENDS ON OTHERS FOR LIVELIHOOD. ORPHANS, HANDICAPPED, ETC.    | 30       | 90         |

GROUP 4

## THE FARMING SYSTEM

---

People in Asmat have traditionally grown crops for subsistence as a supplement to or in conjunction with animal husbandry. While the importance of livestock has been reduced considerably and more focus is shifted to land cultivation, the vast majority of the population still produce primarily for subsistence.

Conditions for farming differ between highlands and lowlands. We are not able to describe conditions in the lowlands in this report due to lack of data. Our description will be based on conditions in Molobso. More information from the other districts is needed to identify similarities and differences.

### Crop production and animal husbandry

#### *Land cultivation and land use*

According to MoA data from 1994, cultivated land per capita is 0.097 ha in Molobso, 0.134 ha in Erota, and 0.128 ha in Jani. In 1995, a total of 1983 ha of farmland was found to be cultivated in Molobso district (MoA / Molobso-1995), some 12% more than in 1994 (Table 3). Population increase due to influx of returnees from Sudan probably accounts for most or all of this increase. Similar data from Jani and Erota was not available.

*Table 3 Crop area Asmat sub-province 1994*

| District | Area cult (ha) | Barley | Maize | Sorghum | P. millet | Beans | Linseed |
|----------|----------------|--------|-------|---------|-----------|-------|---------|
| Jani     | 2935           | 38     | 996   | 1370    | 487       | 28    | 16      |
| Erota    | 1413           | 234    | 237   | 514     | 368       | 18    | 42      |
| Melobso  | 1749           | 146    | 189   | 770     | 574       | 36    | 34      |
| Sum      | 6097           | 418    | 1422  | 2654    | 1429      | 82    | 92      |

*Collected by asking 7 - 8 households in each village (MoA-Molobso)*

Local analysts have presented some information on land use.

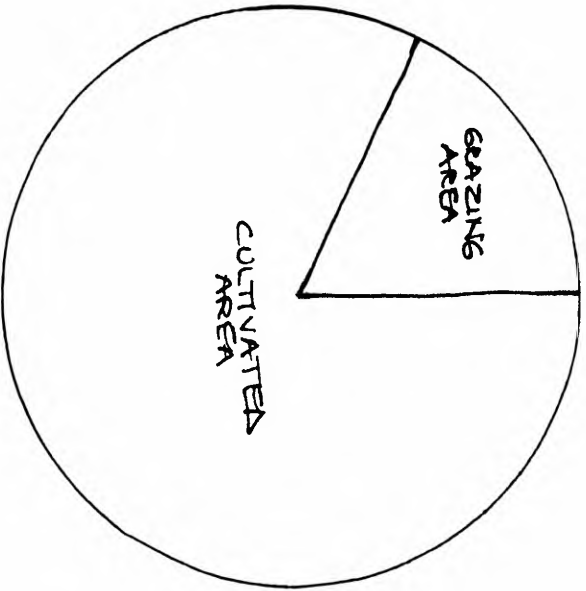
In Rehey (XIII), approximately 1/6 of the land used for agriculture is grazing land; the rest is cultivated. About one third of the total land area is mountains, the rest is plains. There is no estimate of the proportion of the plains which are or can be put under cultivation.

In Twareba (II), about 80% is cultivated land, some 12-13% is common "forest land" (i.e. scattered shrubs and very few trees), and about 6-7% is land with a potential for irrigation. It is not clear whether this land is now under cultivation. There is no category for grazing land (the "forest land" is used as grazing land), and no information on what proportions of the total land area which are being put to the various uses mentioned above.

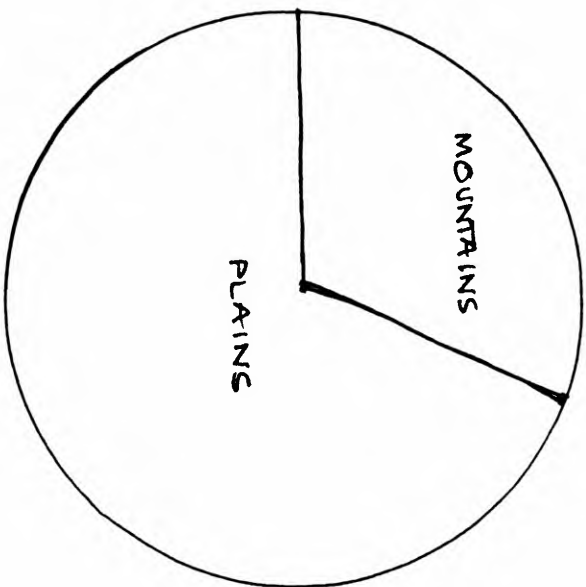
Gerbet has provided some information concerning developments over time regarding total amount of land under cultivation (XIV). There was none prior to initial settlement in the fifties, but considerable stretches of land were cultivated as settlement increased. The onset of the war and the following migration initiated an almost equally dramatic decrease in the latter part of the sixties, the seventies, and the first years of the eighties. The all-time low was reached in 1983, then more land was cultivated in 1984. In 1988 the war intensified in the area, and the area under cultivation again shrank to almost nothing as people fled to Sudan. Then came liberation, and resettlement once again brought a marked increase in cultivated land. In the last couple of years, conditions are said to have been quite stable, which is a bit surprising considering the fact that people are still resettling in the area.

INJERA DIAGRAMS - LANDS TYPES, REHEY VILLAGE. 1/5/95

GROUP 3



FARMLANDS



TOTAL LANDS

HISTORICAL MATRIX - VILLAGE GERBET

|                    | TREES                            | WILDLIFE                                             | LIVESTOCK                                    | CROP PRODUCTION                              | MAIN EVENTS                                           | PASTURE LANDS           | FARM- LAND                                      |
|--------------------|----------------------------------|------------------------------------------------------|----------------------------------------------|----------------------------------------------|-------------------------------------------------------|-------------------------|-------------------------------------------------|
| CA.<br>1935 - 1955 | △△△△△△△△<br>△△△△△△△△<br>△△△△△△△△ | XXXXXXXXXX<br>XXXXXXXXXX<br>XXXXXXXXXX<br>XXXXXXXXXX | (no people)<br>○○○○○○○<br>○○○○○○○<br>○○○○○○○ | (no people)<br>○○○○○○○<br>○○○○○○○<br>○○○○○○○ | (no people)<br>Settlement of people began             | <br>     <br>     <br>  | (no people)<br>~~~~~<br>~~~~~<br>~~~~~<br>~~~~~ |
| 1955               | △△△△△△<br>△△△△△△                 | XXXXXXXXXX<br>XXXXXXXXXX<br>XXXXXXXXXX               | ○○○○○○○<br>○○○○○○○<br>○○○○○○○                |                                              | <br>     <br>                                         | ~~~~~<br>~~~~~<br>~~~~~ |                                                 |
| 1967               | △△△△                             | XXXXX                                                | ○○○                                          | ○○                                           | <br>                                                  | ~~~~~<br>~~~~~          |                                                 |
| 1969               | △△                               | XX                                                   | ○○                                           | ○                                            |                                                       | ~~~~~                   |                                                 |
| 1983               | △                                | XX                                                   | ○                                            | ○                                            |                                                       | ~~~~~                   |                                                 |
| 1984               | △△△                              | XXX                                                  | ○○○                                          | ○○○                                          |                                                       | ~~~~~<br>~~~~~          |                                                 |
| 1988               | △                                | X                                                    | ○                                            | ○                                            |                                                       | ~~~~~                   |                                                 |
| 1991               | △△△△△                            | XXXXXX                                               | ○○○○○                                        | ○○○○○                                        |                                                       | ~~~~~<br>~~~~~<br>~~~~~ |                                                 |
| 1994               | △△△<br>△△△                       | XXX<br>XXX                                           | ○○○<br>○○○                                   | ○○○○○                                        |                                                       | ~~~~~<br>~~~~~<br>~~~~~ |                                                 |
| 1988 - 1995        | △△△△△<br>△△△△△                   | XXXXX<br>XXXXX                                       | ○○○○○<br>○○○○○                               | ○○○○○○○<br>○○○○○○○                           | There is a lot of damage bc cause of blue ground bomb |                         | ~~~~~<br>~~~~~<br>~~~~~                         |

Group 4

## Soils

A soil classification from Rehey (XV) includes *hutsa* (sandy), *duka* (sandy loam), *waleka* (clay), and *keih hamed* (red soil). Shallow red soils dominate in Molobso. There are a few pockets of clay or clay loam, and the valley floor often has a cover of sandy soils transported from the hilltops.

According to the classification, the properties of these soils make them suitable for different uses, including cultivation, brick making, and as sites for house construction. *Keih hamed* (red soil) is a highly valued soil type because it is excellent for all the uses above, as well as not being too heavy and therefore manageable. *Waleka* (clay) is also good, it gives the best yields of all the soil types. However, it is rather heavy and difficult to plow. It is good soil for brick making, but is not a good foundation for a house because it cracks during the dry season.

*Duka* (sandy loam) and *hutsa* (sandy soil) are less valued. *Duka* gives poorer yields, but is light and easy to plow. It is of limited value as construction site or material, and *hutsa* cannot be used at all. *Hutsa* is easy to plow but gives the poorest yields.

The analysts from Rehey were also concerned with the susceptibility of the soils to erosion. The susceptibilities of *Waleka* (clay) and *Keih hamed* (red soil) are low, *duka* (sandy loam) is moderately susceptible and *hutsa* (sandy soil) highly susceptible.

MoA staff have classified soils into silty and clay loam, sandy silt and silty clay. Soil preference of various important crops are as follows: Silty loam is good for sorghum and maize, maize also grows well in clay loam. Millet and barley grow best in sandy silt. Silty clay is most appropriate for neug, flax, and beans.

## Crops

A variety of crops are grown in Molobso. Ketin has provided an overview of major crops grown there (VI), which may serve as an example for illustration: Before 1960, there was sorghum, maize, barley, wheat, neug, and linseeds. Groundnuts were introduced in the first half of the sixties, but disappeared again after a few years. Millet has been grown since the beginning of the eighties.

The rainfed crops are predominantly cereal crops, some oil crops and beans or cowpeas as nitrogen fixers. Sorghum and pearl millet are the most important crops, maize and barley are also widely grown. Other crops are neug, flax, wheat, finger millet, beans, and cowpeas. (There may have been some translation errors regarding the beans; MoA sources suggest that what is termed beans may actually be cowpeas.) Groundnuts and oil crops are included in the information as well, although according to MoA sources they are not grown in the Molobso area.

Vegetables are predominantly grown in well-irrigated gardens. Onions are the most popular vegetable crops, others are tomatoes, potatoes, cabbage, pepper, and salad. Two crops with the local names *kusta* and *jirjir* are mentioned in the records, unfortunately their English names are not included.

Local information on crop properties and on preferences have been collected for several crops: Sorghum, pearl millet, maize, barley, wheat, black wheat, finger millet, flax, neug, beans, and groundnuts (XVI through XIX). Similar information has been collected on the following vegetables: onions, tomatoes, potatoes, cabbage, pepper, salad, *kusta*, and *jirjir* (XIX).

Important criteria for crop preferences are related to suitability for cooking the staple dishes, suitability of crop residues for other purposes (like thatching and animal fodder), manpower need and workload involved, and resistance to drought, weeds, pests and diseases. Yields and profits from sales were of secondary importance.

It is a subsistence logic which governs preferences. Traditional cash-crop concerns like high yields and high profits are of secondary importance in low-input subsistence farming (little manuring, no chemical fertilizers or pesticides, small plots, ox plowing). What is of primary

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“Thanks to God and the project”

Report from a PRA workshop and study in Asmat, Eritrea  
January 1996



PROBLEM RANKING MATRIX - LIVESTOCK DISEASES, REHEY VILLAGE.

| DISEASES<br>CRITERIA                      | EXTERNAL<br>PARASITES | DIARRHOEA | (TRAPANSAMA)<br>JAN | ANTHRAX | LESHLESH<br>(PASTROLOSUS) | FOOT AND<br>MOUTH DISEASE |
|-------------------------------------------|-----------------------|-----------|---------------------|---------|---------------------------|---------------------------|
| DANGEROUS                                 | •                     | ••        | ••                  | ••••    | ••••                      | ••••                      |
| COMMON                                    | ••••                  | •••       | •••                 | ••      | ••                        | ••                        |
| CANNOT BE<br>CURED WITH<br>MEDICINE       | •••                   | •••       | ••                  | ••••    | ••••                      | ••                        |
| CANNOT BE<br>CURED WITH<br>LOCAL MEDICINE | ••                    | •••       | ••                  | ••••    | ••••                      | •••                       |
| TOTAL                                     | 21                    | 19        | 18                  | 32      | 30                        | 19                        |

PREFERENCE RANKING - SOIL TYPES, REHEY VILLAGE.

| SOIL TYPES<br>CRITERIA           | HUTSA<br>(SANDY) | DUKA<br>(SANDY LOAM) | WALEKA<br>(CLAY) | KEIH HAMES<br>(RED) |
|----------------------------------|------------------|----------------------|------------------|---------------------|
| GOOD YIELDS                      | ••               | •••                  | ••••             | •••                 |
| GOOD FOR BUILDING<br>HOUSES ON   |                  | •••                  | •••              | ••••                |
| GOOD FOR BUILDING<br>HOUSES WITH |                  | •••                  | •••              | ••••                |
| EASY TO WORK<br>(PLOW ETC.)      | ••••             | ••••                 | ••               | •••                 |
| NOT SUSCEPTIBLE<br>TO EROSION    | ••               | •••                  | •••              | ••••                |
| TOTAL                            | 13               | 33                   | 39               | 45                  |

GROUP 3

300495



SCORING MATRIX - DIFFERENT CROP VARIETIES, TWAREBA VILLAGE.

| CROPS<br>CRITERIA  | SORGHUM | BARLEY | MILLET | WHEAT | MAIZE | BEANS |
|--------------------|---------|--------|--------|-------|-------|-------|
| FORDLAGE           | •••••   | ••     | ••••   |       | ••    |       |
| INJERA             | •••     |        | •••    | ••••  |       |       |
| LOCAL BREAD        | •••     | ••     | •••    | ••••  |       |       |
| BOILED             | •••     |        |        |       | •••   | ••••  |
| ROASTED            | ••      | ••••   |        | •••   | •••   |       |
| HOUSE CONSTRUCTION | •••     |        | •••    |       |       |       |
| FORAGE             | •••     | ••••   |        |       | •••   |       |
| MAKING MATS        |         |        |        | ••••  |       |       |
| LIGHT WORKLOAD     | ••      | ••     |        |       | •••   | ••••  |
| PEST RESISTANT     |         |        | •••    |       |       | •••   |
| DROUGHT TOLERANT   | •••     |        | •••    |       |       |       |
| TOTAL              | 58      | 32     | 54     | 38    | 30    | 26    |

GROUP 1

ANALYSTS: ABRAHIM MUHAMMED  
ALI ADEM

RANKING OF CROP VARIETIES: KETIN VILLAGE

| VARIETIES          | SORGHUM | MILLET | BARLEY | FLAX  | WUG |
|--------------------|---------|--------|--------|-------|-----|
| CRITERIA           |         |        |        |       |     |
| DROUGHT RESISTANT  | ::      | :::    | :::    |       |     |
| DISEASE RESISTANT  |         | :::    |        | ::    | ::  |
| HIGH YIELD         | ::      | :::    | ::     | ::    | .   |
| ROBBER FOR ANIMALS | ::      | ::     | :::    |       |     |
| CASH CROP          | ::      | :::    | ::     | (105) | ::  |
| OWL                |         |        |        | ::    | ::: |
| PORRIDGE           | ::      | :::    | ::     |       |     |
| ROASTED            | ::      |        | :::    |       | ::  |
| ENGERA             | ::      | :::    | ::     |       |     |
| LOW MANPOWER NEEDS | ::      | ::     | :::    | .     | ::  |
| TOTAL              | 28      | 38     | 32     | 10.5  | 18  |
| RANK               | 3rd     | 1st    | 2nd    | 5th   | 4th |

THE INFORMATION WAS GATHERED FROM OSMAN, IDAISKY. ADEM.

GROUP 2

111

Group 4

RANKING OF CROP TYPES - GERRET VILLAGE

| CROP TYPES        | Sorghum   | Millet    | MAIZE     | BARLEY    | NEUG     | FLAX      | INGERA MILLET |
|-------------------|-----------|-----------|-----------|-----------|----------|-----------|---------------|
| INGERA            | •••       | ••        | •         | ••        | •        |           | •             |
| BREADS            |           | •••       | ••        | •••       | •        | •         | •             |
| POBIDE            | •••       | ••        | ••        | ••        |          | •         | •             |
| TIKO              | ••        |           | •••       |           |          |           |               |
| BIGTULA           | ••        | ••        |           | •         |          |           |               |
| ROASTED           | •••       |           | •••       | ••        |          |           |               |
| THIN POBIDE       | ••        | ••        |           | ••        |          |           |               |
| GREEN, FRESH      | •••       | ••        | •••       |           |          |           |               |
| MEDICINE          | •••       |           | •••       | ••        |          | •••       |               |
| BUILDING MATERIAL | •••       | •••       |           | •••       |          |           | ••            |
| FODDER            | •••       | ••        | ••        | •••       |          |           | ••            |
| LEATHER MAKING    |           |           |           |           |          | •••       |               |
| ESTUTE            |           |           |           |           |          |           | •••           |
| <u>Total</u>      | <u>43</u> | <u>27</u> | <u>23</u> | <u>23</u> | <u>2</u> | <u>12</u> | <u>11</u>     |

PREFERENCE SCORING OF VEGETABLE TYPES, REHEY VILLAGE, 290495

| VEGETABLES<br>CRITERIA | ONION | TOMATO | POTATO | CABBAGE | PEPPER | SALAD | KUSTA | VIRJIR |
|------------------------|-------|--------|--------|---------|--------|-------|-------|--------|
| GOOD PRODUCTION        | ••••  | ••••   | ••••   | ••      | ••     | ••••  | ••    | •      |
| PROFITS                | ••••  | ••••   | ••••   | ••      | ••••   | ••••  | ••    | ••     |
| NO NEED FOR HARD WORK  | ••    | •      | ••     | ••••    | ••••   | ••••  | ••••  | ••••   |
| TOLERANCE FOR DISEASE  | ••    | ••     | ••••   | ?       | ••••   | ••    | ••••  | ••••   |
| TOTAL                  | 22    | 22     | 24     | 15      | 24     | 20    | 22    | 24     |

PREFERENCE SCORING OF CROPS, REHEY VILLAGE, 290495

| CROPS<br>CRITERIA           | SORGHUM | MAIZE | BARLEY | WHEAT | BLACK WHEAT | MILLET |
|-----------------------------|---------|-------|--------|-------|-------------|--------|
| GOOD ON PRODUCTION          | ••••    | ••••  | ••••   | ••••  | ••••        | ••••   |
| NO NEED FOR HARD WORK       | ••••    | ••••  | ••••   | ••••  | ••••        | •      |
| FODDER                      | ••••    | ••••  | ••••   | ••••  | ••••        | ••••   |
| TOLERANCE TO DISEASE, WEEDS | ••••    | ••    | ••••   | ••••  | ••••        | ••••   |
| GOOD FOR BREAD              | ••••    |       |        | ••••  | ••••        | ••••   |
| GOOD FOR INNERS             | ••••    |       |        | ••••  | ••••        | ••••   |
| GOOD FOR PORRIDGE           | ••••    | ••••  | ••••   | ••••  | ••••        | ••••   |
| GOOD AS KOLA (ROASTED)      | ••••    | ••••  | ••••   | ••••  | ••••        |        |
| GOOD AS TITIKO (BOILED)     | ••••    | ••••  |        |       |             | ••     |
| PROFIT/SALES                | ••••    | ••••  | ••     | ••••  | ••••        | ••••   |
| TOTAL                       | 80      | 60    | 59     | 71    | 63          | 61     |

GROUP 3

importance is that the crops can be grown with a reasonably high possibility of getting some returns (resistance to weeds, pests/diseases, drought), and by the family alone (low manpower needs and light workload), and that it can provide food for people and livestock. Some of it should also be suitable for thatching.

Millet and sorghum, closely followed by barley and maize, are the most popular crops because they can fill all of the most important criteria. But some of the other crops have one specific importance, such as the making of one specific dish, the use of neug and flax for making oil, the use of flax for making leather or the use of wheat stalks for weaving mats.

Millet, sorghum and barley give the best yields, and millet, sorghum and maize are the best crops to sell to raise cash.

Properties considered important in vegetables are different from those mentioned for the other crops. They include good production (good yields), profitability, no need for hard work, and tolerance to diseases. Taste or suitability for different dishes or other purposes are not mentioned at all. Regarding vegetables, people are mainly interested in the work and problems involved in production and in profits from sales. Vegetables are mainly grown by those who have access to irrigation, and primarily as cash crops; they do not play a significant role in the local diet.

The most profitable vegetables are onions and tomatoes, they also give good yields, but they are demanding in terms of work and are susceptible to diseases. Potatoes and pepper give somewhat smaller profits and yields, but are easy to work, and diseases are not much of a problem. This is also true of *jirjir* and *kusta*, but they are not profitable crops and give rather modest yields.

Salad and cabbage are often considered more trouble than they're worth, as they are comparatively demanding, susceptible to diseases which affects the yields, and give modest profits.

Some workshop participants in Keren compiled the table below (Table 4), presenting information on some key characteristics of important crops in Asmat sub-province. Stalk borer and army worm are the major crop pests, diseases include smat, rust, leaf curling and seed bolting.

*Table 4 Major crops, their soil preferences, major pests and diseases*

| Crop type | Soil preference | Insects     | Major diseases |
|-----------|-----------------|-------------|----------------|
| Sorghum   | Silty loam      | stalk borer | leaf curling   |
|           |                 | army worm   | smat           |
| Millet    | Sandy silt      |             | rust           |
|           |                 |             | smat           |
| Maize     | Silty loam      | stalk borer | leaf curling   |
|           | Clay loam       | army worm   | rust           |
| Barley    | Sandy silt      |             |                |
| Nueg      | Silty clay      |             |                |
| Flax      | Silty clay      |             |                |
| Beans     | Silty clay      |             | seed bolting   |

*Compiled by workshop participants*

A group of workshop participants in Keren analyzed different sorghum varieties in a preference scoring and ranking exercise. They gave four varieties scores on a scale from 5 (highest) to 1 (lowest). Criteria were suitability for food, for fodder, for thatching, for manure(!), and for beverages, as well as pest resistance and profitability. One of the varieties scored high on pest resistance and suitability for a beverage, as well as on suitability for food, but low on suitability for fodder and for thatching. The other three scored high on the latter, as well as on profitability (the first one got a medium score on this), but low on suitability for brewing the beverage and on pest resistance. (All scored poorly on manure.) People would grow some of the first variety and some of one or more of the others, according to their needs – they would thus have some for brewing and which grew better in the event of pest attacks, and some for thatching and animal fodder.

#### RELATIVE SIGNIFICANCE OF CROPS GROWN

The table below (Table 5) shows the distribution of crops grown in the project area in 1993 and 1994. Jani has most cultivated land, with sorghum growing on almost 50% of the land in 1994. The other important crops are maize and pearl millet. In Erota and Molobso there is less cultivated land. Here, too, sorghum is the major crop – it grows on 1/3 of Erota's cultivated land and on almost half of Molobso's. Maize and pearl millet are the secondary crops here, too. A notable difference from Jani is the greater significance of barley, especially in Erota.

Table 5 Crop area Asmat sub province 1994

| District | Area cult (ha) | Barley (ha) | Maize (ha) | Sorghum (ha) | P. Millet (ha) | Beans (ha) | Linseed (ha) |
|----------|----------------|-------------|------------|--------------|----------------|------------|--------------|
| Jani     | 2935           | 38          | 996        | 1370         | 487            | 28         | 16           |
| Erota    | 1413           | 234         | 237        | 514          | 368            | 18         | 42           |
| Melobso  | 1749           | 146         | 189        | 770          | 574            | 36         | 34           |
| TOTAL    | 6997           | 418         | 1422       | 2654         | 1429           | 282        | 82           |

Collected by asking 7 - 8 households in each village (MoA - 1994)

#### YIELDS AND OVERALL CROP ASSESSMENTS

MoA and ERRA carried out crop assessments of the Asmat Sub Province in 1993 and again in 1994 (Table 6). Under rainfed conditions on well-prepared land with adequate rainfall, it is possible to achieve yields of up to 1600 kg/ha of sorghum and 1200 kg/ha of pearl millet, according to MoA. As seen from the table below, this is a far cry from the reality of the farmers in the area.

Table 6 Crop assessment of Asmat Sub Province

| Crop         | Area in ha | Total yield in quintal | Average yield per ha (kg) | Area in ha | Total yield in quintal | Average yield per ha (kg) |
|--------------|------------|------------------------|---------------------------|------------|------------------------|---------------------------|
| Sorghum      | 3 501      | 3326                   | 95                        | 2 224      | 7 344                  | 330                       |
| Pearl millet | 5 184      | 4355                   | 84                        | 1 667      | 16 670                 | 1000                      |
| Barley       | 2 340      | 2 167                  | 92                        | 276        | 3 312                  | 1200                      |
| Wheat        | 1 750      | 1 573                  | 90                        | -          | -                      | -                         |
|              | 12 775     | 11 421                 | 89                        | 4 167      | 27 326                 | 656                       |

From MoA / Keren

### *Yield on terraced versus non-terraced land*

Cropland terraced with soil bunds often gives poorer yields during the first period after terracing. The reason is that the topsoil between the bunds is often used to build them. However, the rains wash the soil back out on the terraces and adds silt from above the bunds, which makes the depth of the topsoil improve considerably over time. After about 5 to 7 years, yields are much higher than on unterraced lands. During discussions with farmers it was commonly stated that yields were more stable on terraced lands. Unfortunately, no exact or conclusive figures on yields are available to show the extent to which an increase takes place on terraced land.

### *Trends in agricultural yields and crop production*

Local analysts in Ketin have provided us with information on developments in crop yields over the past decades (VI). The matrix indicates a decline from initially good yields, which started already before 1960 and became quite sharp in the sixties. By 1970, yields were down to about half of those in the fifties, but people still had “enough”. During the seventies, yields halved again, and reached the bottom around 1990 with around a third of the 1970 level. Now, yields are up to around half of the initial amounts, the term “enough” is used, but this must be an exaggeration since very few people can get by without contributions from the project or ERRA. – It is not clear what is the basis of the figures – they should probably be taken subjective expressions of trends. Nor is it clear whether the information concerns yield per unit of land or merely total amount harvested.

In Gerbet, the term used in a similar analysis (XIV) is “crop production”, which means the total amounts of crops produced on a farmer’s land. In the fifties, this amount was high, but by the onset of the war it had declined severely, and by 1970, hardly any crops at all were produced. There is no information on conditions in the seventies, but production is still at a low point in 1983. It improved some in 1984, then shrank to almost nothing again due to draughts and the intensification of the war in 1988. In 1991, production had picked up some, and there has been another small increase since then.

### *Seeds*

The amount of seeds needed for one hectare of land varies with type of soil, type of crop and climate. From MoA Keren the following rates were given (Table 7):

*Table 7 Amount of seeds needed per unit of land*

|              |            |
|--------------|------------|
| Sorghum      | 10 - 15 kg |
| Pearl millet | 8 - 10 kg  |
| Maize        | 8 - 10 kg  |
| Barley       | 50 - 60 kg |
| Ground nut   | 35 - 40 kg |
| Linseed      | 10 - 15 kg |
| Neug         | 10 - 15 kg |

### **Irrigation**

The most significant types of irrigation in the highlands are the traditional shadouf lift irrigation and modern diesel pump irrigation. Shadouf lift irrigation is practised in areas where a high water table permits the lifting of water from shallow wells (2-3 m), using a lifting device known as a shadouf (see box below). Pump irrigation has been introduced by MoA over the last few years. In the lowland Jani district flood irrigation is practised along the river.

*Box II Shadouf lift irrigation*

In Rehey, several farmers had their plots along the seasonal river bed along the bottom of the slopes. We counted 14 wells, one for each plot. They all grew vegetables. The plots were laid out as squares with grass-covered, slightly elevated irrigation channels criss-crossing them in a pattern of smaller squares. The wells were located in one corner of the plots. Only one farmer had a diesel pump; the rest of the wells were operated by lifters (shadoufs) – a long pole, fixed to a stand at the middle allowing its ends to move up or down, with a weight at one end and a bucket on a rope at the other. The bucket would be thrown down into the water, would fill with water, and the momentum and the weight at the other end of the pole would pull it up to surface level where the farmer could empty the bucket into the irrigation channel. All kinds of shrapnel, metal parts from tanks and the like were used as weights.

*Box III The farmer with the diesel pump well*

We talked to the owner of the diesel pump – a young ex-fighter turned farmer. He demonstrated the pump to us, and we admired his onions, maize, tomatoes and other vegetables. He told us that his well had been dug by Redd Barna, and he had bought the pump through a MoA credit scheme for ex-fighters. He lets other people use his pump if they pay him one third of their yields in rent, and provide their own fuel. The land that he cultivates is owned by two other farmers, he rents it from them and pays part of his yields in rent. He markets his crops in Keren. Onions are his major crop; he will grow about 10 quintals of onions this year and sell half of it. Transport is not a problem, he says; there are trucks going to Keren all the time. He is “marra”, he said – exceedingly happy. However, low prices are a problem; there are too many onions on the market now. He got six birr per kilo for his onions last year; this year the price has dropped to two birr per kilo.

## Livestock

Prior to the project, livestock constituted the backbone of the local economy. In spite of sedentarization, deterioration of grazing resources, and a greater focus on crop production, livestock continue to play a key role. In the highland areas goats, cattle, sheep, and donkeys dominate. In the lowland area of Jani, there are numerous camels as well.

### LIVESTOCK IN THE PAST

The following information, provided by all the study villages, provides an idea of herd size fluctuations and related circumstances over the past few decades.

**Ketin** (VI) has never had many livestock. Around 1960, there were around 150 households. There was an average of roughly two heads of cattle and about 1.3 goats per household. In the sixties and seventies, average number of cattle per household went down to about one, and there was less than one goat per household. There were now about 170 - 180 households in Ketin. The eighties brought a further decimation of livestock. There were only about 30 goats in Ketin divided by 165 households, and roughly 120 heads of cattle. Sheep had been introduced, there were fifteen sheep in Ketin by 1990.

The current situation is not much improved. There has been an increase in numbers of livestock, but it is outweighed by the population increase.

**Rehey** (XX) was initially wealthy in terms of livestock, with big herds of cattle, goats, and sheep. A decline in numbers of both cattle, goats, and sheep started during the first half of the sixties. During the next ten years, however, livestock were all but gone from the area, just

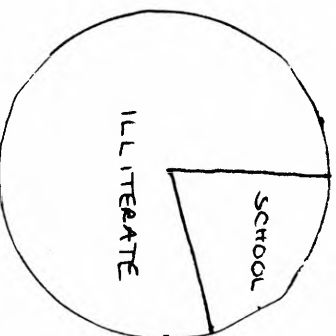
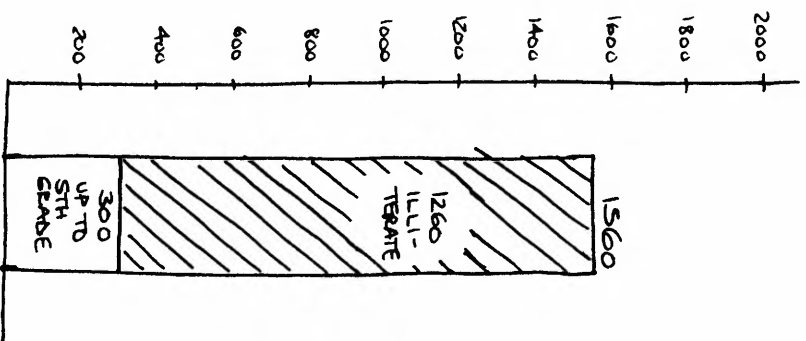




# HISTORICAL MATRIX, REHEX VILLAGE

| ASPECTS / PERIODS | No OF HOUSEHOLDS | EDU- CAMIUN                                        | CROPS                                              | LIVE-STOCK                                                  | No OF HOUSES     | ONLY CROPS              | WILD ANIMALS                                                                                   |
|-------------------|------------------|----------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------|------------------|-------------------------|------------------------------------------------------------------------------------------------|
| BEFORE 1960       | 500              | NONE                                               | SORGHUM<br>MAIZE<br>BARLEY<br>WHEAT                | CATTLE 10 000<br>GOATS 20 000<br>SHEEP 1500<br>BONKEYS 1200 | 1500             | NUG<br>LINSIBA          | AGAZIEN<br>HYENA, HYENA,<br>RABBIT, FOX,<br>MONKEY<br>WILDBOBE<br>SETHA, QUINER<br>POWL, KARRE |
| 1961-65           | 500              | NONE                                               | SORGHUM<br>MAIZE<br>BARLEY<br>WHEAT                | C: 7000<br>G: 16000<br>S: 1000<br>D: 1000                   | 1500             | NUG<br>LINSIBA<br>G-NUT | SAMBS                                                                                          |
| 1966-70           | 100              | NONE                                               | SORGHUM<br>MAIZE<br>BARLEY<br>WHEAT                | C: 500<br>G: 400<br>S: 500<br>D: 30<br>OMALS: 10            | ETHIOPIAN ARMY 0 | NUG<br>LINSIBA<br>G-NUT | SAME                                                                                           |
| 1971-75           | 100              | NONE                                               | SORGHUM<br>MAIZE<br>BARLEY<br>WHEAT                | C: 300<br>G: 200<br>S: 25<br>D: 20<br>OM: 10                | 100              | NUG<br>LINSIBA          | SAME                                                                                           |
| 1976-80           | 150              | NONE                                               | SORGHUM<br>MAIZE<br>BARLEY<br>WHEAT                | C: 500<br>G: 800<br>S: 100<br>D: 40<br>OM: 15               | 150              | NUG<br>LINSIBA          | HYENA<br>RABBIT<br>FOX<br>MONKEY<br>KARRE                                                      |
| 1981-90           | 200              | ELBENBTRA<br>RY SCHOOL<br>(GRADE 1-5)<br>FROM 1970 | SORGHUM<br>MAIZE<br>BARLEY<br>WHEAT<br>+<br>MILLET | C: 700<br>G: 700<br>S: 150<br>D: 60<br>OM: 35               | 200              | NUG<br>LINSIBA          | RABBIT<br>FOX<br>MONKEY<br>KARRE                                                               |
| 1991-95           | 357              | ↙                                                  | SORGHUM<br>MAIZE<br>BARLEY<br>WHEAT<br>MILLET      | C: 300<br>G: 400<br>S: 50<br>D: 20<br>OM: 10                | 600              | NUG<br>LINSIBA          | RABBIT<br>FOX<br>MONKEY                                                                        |

Group 3



XX

a few heads per family. – This development is related to a decline in the quality and abundance of grazing land, and of natural resources in general, which started in the sixties and accelerated between 1965 and 1975 when the war exacerbated conditions. The decline led to out-migration, the number of households went down from about 500 to about 100 during the latter half of the sixties, but also to a decimation of the number of livestock owned by each household.

The next fifteen years (1975 – 1990) brought only a slight increase in livestock numbers, largely outweighed by the population increase. During the last five years there has been another decline in livestock numbers and a further population increase. Currently, there is a rough average of 0.8 cattle, 1.1 goats, and 0.15 sheep per household.

**Gerbet** analysts have provided a general abundance overview, not broken down into species nor indicated by numbers (XIV). There is a sharp decline in livestock numbers from the fifties to the start of the war. The decline in grazing land during the same period indicates overgrazing. – There is a further decline during the seventies, both in grazing lands and livestock. A low point was reached in 1983 through 1988, while the conditions of grazing lands improved some. – In 1991, the numbers of livestock had increased, and there has been a small further increase up to now. Grazing lands, on the other hand, have deteriorated again.

**Twareba** (V) only reports a general decline in livestock numbers, without providing information on species, average herd sizes or time frames.

There is some information on Jani and Erola in the 1988 socio-economic study (Abraha, 1988). A large number of livestock in the project area (then Jani and Erola) perished during the drought of 1984/85, or were taken to Gash and Setit (outside the district) where conditions were better. After the rains in 1987, cattle started to come back to the area again and during that year the cattle were able to find sufficient feed.

The general trend is one of decline particularly during the war and the draught periods in the mid-eighties, but of some increase since the project started.

MoA sources think the decrease in herd sizes (especially of browsers) can be explained, at least partly, by people's increased focus on growing crops, which has made them less willing to accept the browsers' encroachment on their land. There is little to support this, we think, in the PRA material or local people's statements. On the contrary, livestock, especially small ruminants, appear to be of vital importance to their owners' well-being. The decline is not something people have chosen, it was forced on them by the circumstances and has had detrimental consequences to them. The signs of livestock increase during the project period support this impression. Crops are of vital importance to people's livelihood, but so are livestock.

#### LIVESTOCK DISEASES

Apart from lack of fodder and water, problems related to animal husbandry include a variety of pests and diseases. Three of the workshop participants (extension workers) completed the following account of livestock diseases found in the area, species affected, local treatments, and economic loss estimates (Table 8).

Table 8 List of livestock diseases, local treatments and an estimate of economic loss in percent

|                        |                  |                                              |                                              |     |
|------------------------|------------------|----------------------------------------------|----------------------------------------------|-----|
| Trypanosomiasis        | Jan, jane        | cattle<br>camels<br>sheep & goats<br>donkeys | lemon<br>branding<br>other herbs             | 5%  |
| External parasites     | Gedomue?? baleat | All livestock                                | Carbon<br>Calpurnia aurea (Tree)             | 10% |
| Internal parasites     | Wesheta baleat   | All livestock                                | salt                                         | 5%  |
| T.B                    | Abai seai        | Livestock + humans                           | -                                            | 25% |
| Bloat                  | Menfahti         | All livestock                                | Borbore<br>omo<br>cooking oil<br>powder milk | 2%  |
| P.P.R.C                | Masot ghulay     | Goats & sheep                                | -                                            | 5%  |
| Rinderpest             | Ghulhay          | Cattle                                       | -                                            | 18% |
| Anthrax                | Nefri            | Livestock + humans                           | Branding                                     | 15% |
| Infection lorenga      | Teriacya         | Poultry                                      | -                                            | 1%  |
| Taloya species         | Nai aini hemam   | Camels<br>Cattle<br>Goats & sheep            | Washing hot water + salt                     | 3%  |
| New castle...          | Hmam derho       | Poultry                                      | -                                            | 1%  |
| African horse sickness | Mendef           | Mules & donkeys                              | Branding                                     | 1%  |
| Foot and mouth disease | Anaso            | Cattle<br>Sheep & goats                      | -                                            | 3%  |
| Foot rot disease       | Hmam egri        | Sheep & goats                                | Washing hot water + salt                     | 4%  |
| Rabies                 | Hmam kelbi       | Dogs                                         | -                                            | 2%  |

Information from Michael Araya (Animal health technician), Samson Berthun (Livestock production) and Mogos T/ Mariam (Animal health technician).

The diseases with the greatest economic significance are T.B., rinderpest, and anthrax.. External parasites also have some significance.

In a ranking exercise in Keren done by some ministry staff (XXI), anthrax is considered a dangerous, but rare disease. External parasites is not considered serious, and is not rated as a very common affliction in this ranking, contrary to the local information below, whereas diarrhoea is rated as moderately frequent and not very serious. – In addition to these diseases, three other afflictions were included in the Keren exercise: TB (very dangerous and high frequency), internal parasites (rare and moderately serious), and trips (not very serious but quite a few cases).

According to information from Rehey (XV), the most common diseases are external parasites and trypanosomiasis (*jan*, recorded as “trapansama” in the diagram). External parasites are considered quite harmless, there is no medicine for them but there are local remedies – the leaves of a tree can be rubbed onto the animals’ skin and will keep parasites away. Trypanosomiasis is not considered a very severe disease either. There is medicine for it, and also a local herb cure, although the latter is not as effective.

There is also a moderate frequency of diarrhoea and some foot and mouth disease. Diarrhoea is not considered a dangerous disease. There are medicines and local remedies for it but neither are very effective. Foot and mouth disease is more serious although not among the very severe diseases, and for this, too, there are medicines and local cures which are both moderately effective, it is stated.

There is little pastrolosus (a disease which is not included in the information from MoA sources) and anthrax, but both these diseases are considered serious. Anthrax is very severe, killing the animals that get sick. There are no cures for either of them.

### *The seasonality of livestock diseases*

The seasonality of livestock diseases has been diagrammed twice in Ketin (XXII, I) and twice in Twareba (XXIII, XXIV). There appears to be significant incoherence between the information in these diagrams, and there is no information in the field notes to shed light on these incongruences. This makes it difficult to analyse the diagrams. A very general conclusion, however, is that livestock are subject to a whole range of diseases throughout the year, with a more intense period (major season of more diseases) during the latter half of the year. Note also that these diagrams include the following diseases not included in the information from MoA sources: Pastrolus, leptospirosis, and prusula.

External parasites is listed as an off-and-on affliction throughout the year in one diagram from each adi (village). According to the remaining two diagrams, the major season is during May through December and September through December, respectively. Pastrolus seasonality differs even more; in Ketin it is placed in January through March and January through June, and in Twareba in April and September – October and in May through August, respectively.

Trypanosomiasis occurs in September through November and in April through October, according to Twareba diagrams. In Ketin, they have put it in May through October. Foot and mouth disease is diagrammed as a more or less continuous and permanent affliction in Ketin and one of the Twareba diagrams, whereas the other one from Twareba has listed the period April – July as its season.

African horse sickness occurs mainly in February through April according to the Ketin diagram, in the Twareba one it comes and goes throughout the year, as does anthrax in both diagrams. Diarrhoea (in goats) primarily is a problem during the first six months of the year, according to one Twareba diagram, whereas rinderpest comes and goes throughout the year. So does P.P.R.C. according to one Ketin diagram.

The remaining livestock diseases occur primarily from the middle to the end of the year, according to the same Ketin diagram. Internal parasites are a problem from April (with the onset of the rains?), brucellosis from May. The major Prusula season is from June to January, that of foot rot is from July until the end of the year, and Leptospirosis occurs from September to the end of the year.

### **Prices, marketing, and credit**

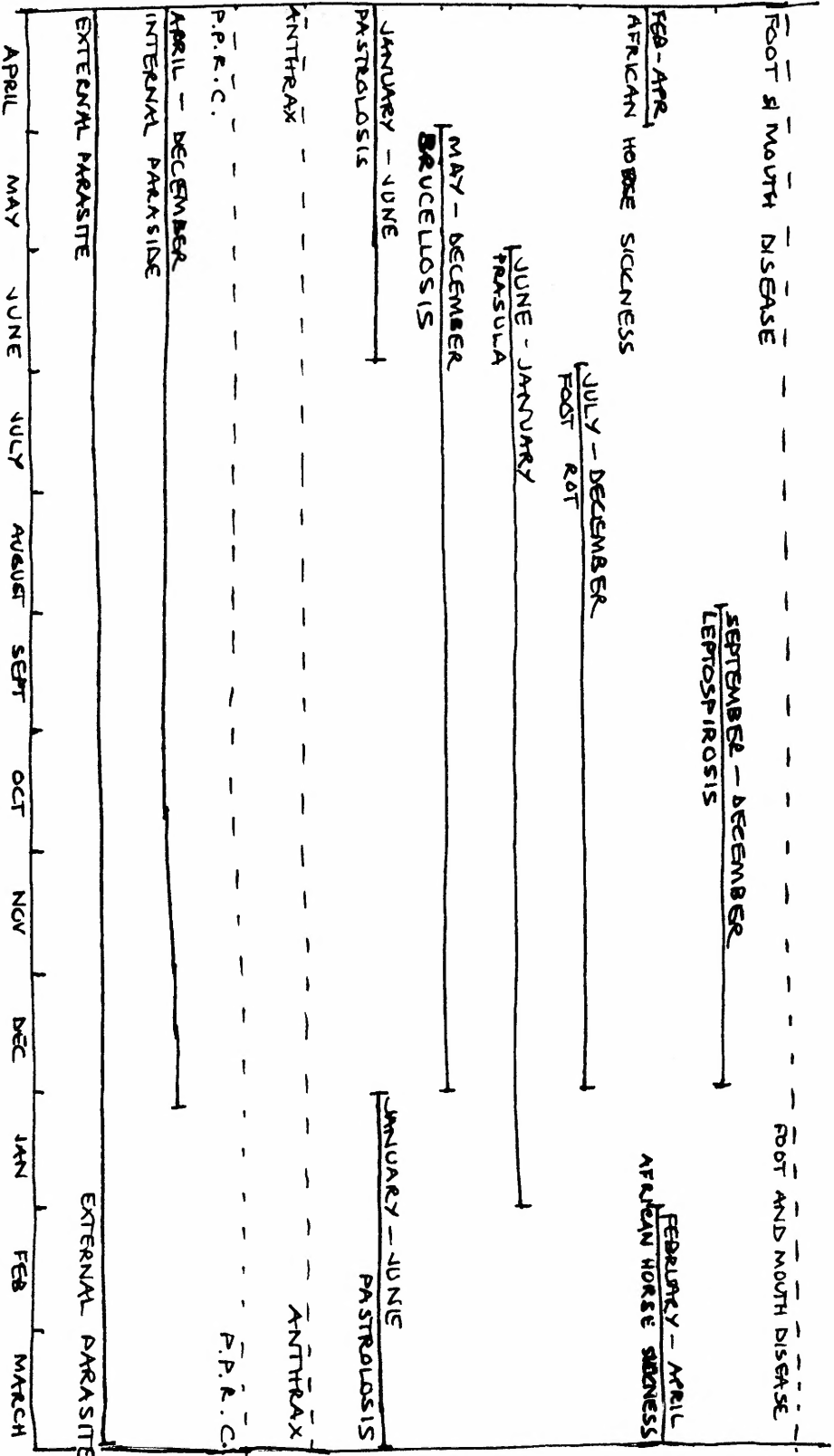
The most significant item marketed from Asmat is livestock, particularly goats. They go via Keren to markets in Asmara, Sudan and beyond. The price of a kid is 30-40 birr, the price of a two-year-old goat is 55 birr at the market in Molobso.

Vegetables, particularly onions, are also marketed outside the local markets, particularly in Keren and, secondly, Halhal. Onions sell for two birr/kilo, potatoes for one.

Infrastructure and transport are constraints especially to the marketing from Erota and Jani, we were told. This problem did not seem as acute in Molobso, according to farmers we talked to. Traders visit the markets in Molobso but people prefer to transport their goods to Keren where prices are better. The local weekly markets in Molobso, Jani, and Erota mainly serve as marketing opportunities for those who operate on a small scale and those who sell small amounts of goods because they need cash.

In addition to the credit schemes presented in the introduction chapter, a lot of people borrow money on the private market. Interests can be high, up to one third of the yields. To many families, credit from the store is a prerequisite for making it through the lean season; the debt is normally paid back with money raised by selling one or more goats. We don't have any information on the extent of interest on this type of credit.

SEASONAL VARIATIONS IN LIVESTOCK DISEASES - KETIN VILLAGE

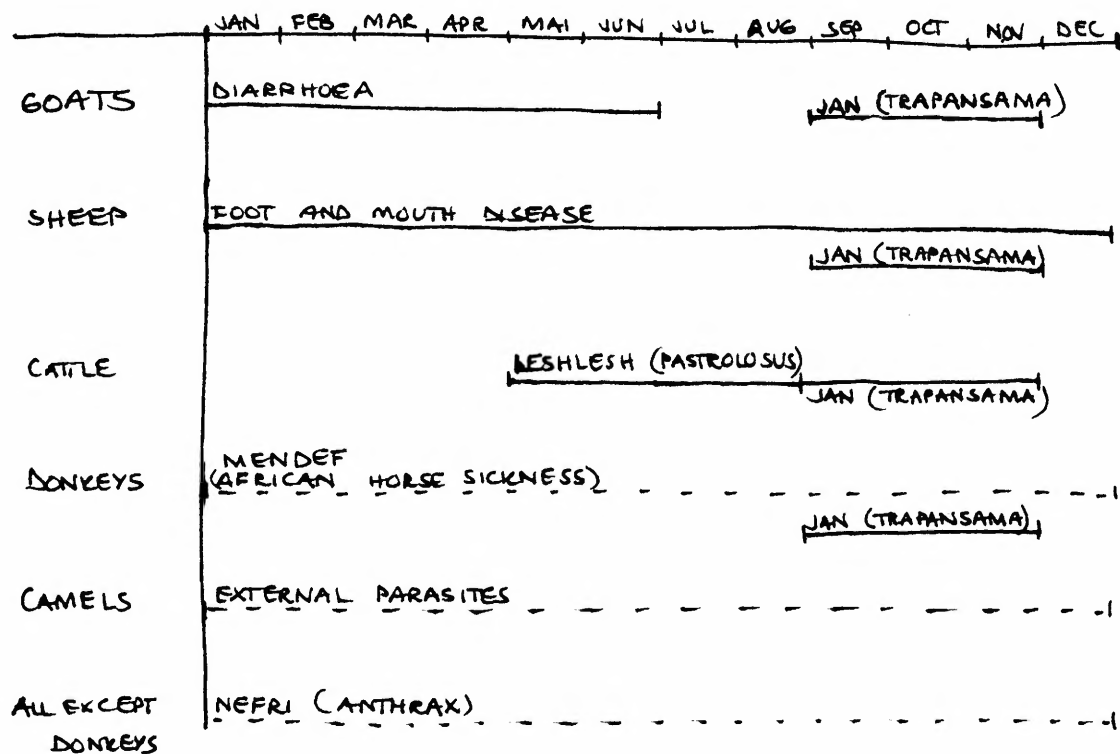


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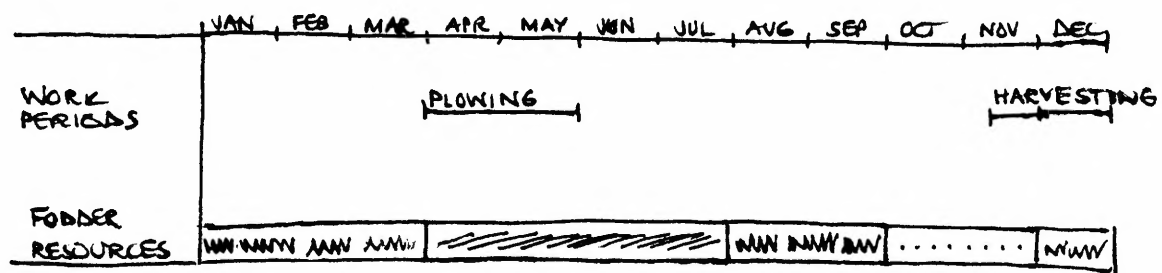
INFORMATION GIVEN BY

- ABEDA ADEM
- MATHEW IDRIS
- AMENA EHMAREIL

SEASONALITY DIAGRAM - LIVESTOCK DISEASES, TWAREBA VILLAGE.



SEASONALITY DIAGRAM - AVAILABILITY OF FODDER, WORK PERIODS FOR TRACTION ANIMALS. TWAREBA VILLAGE.



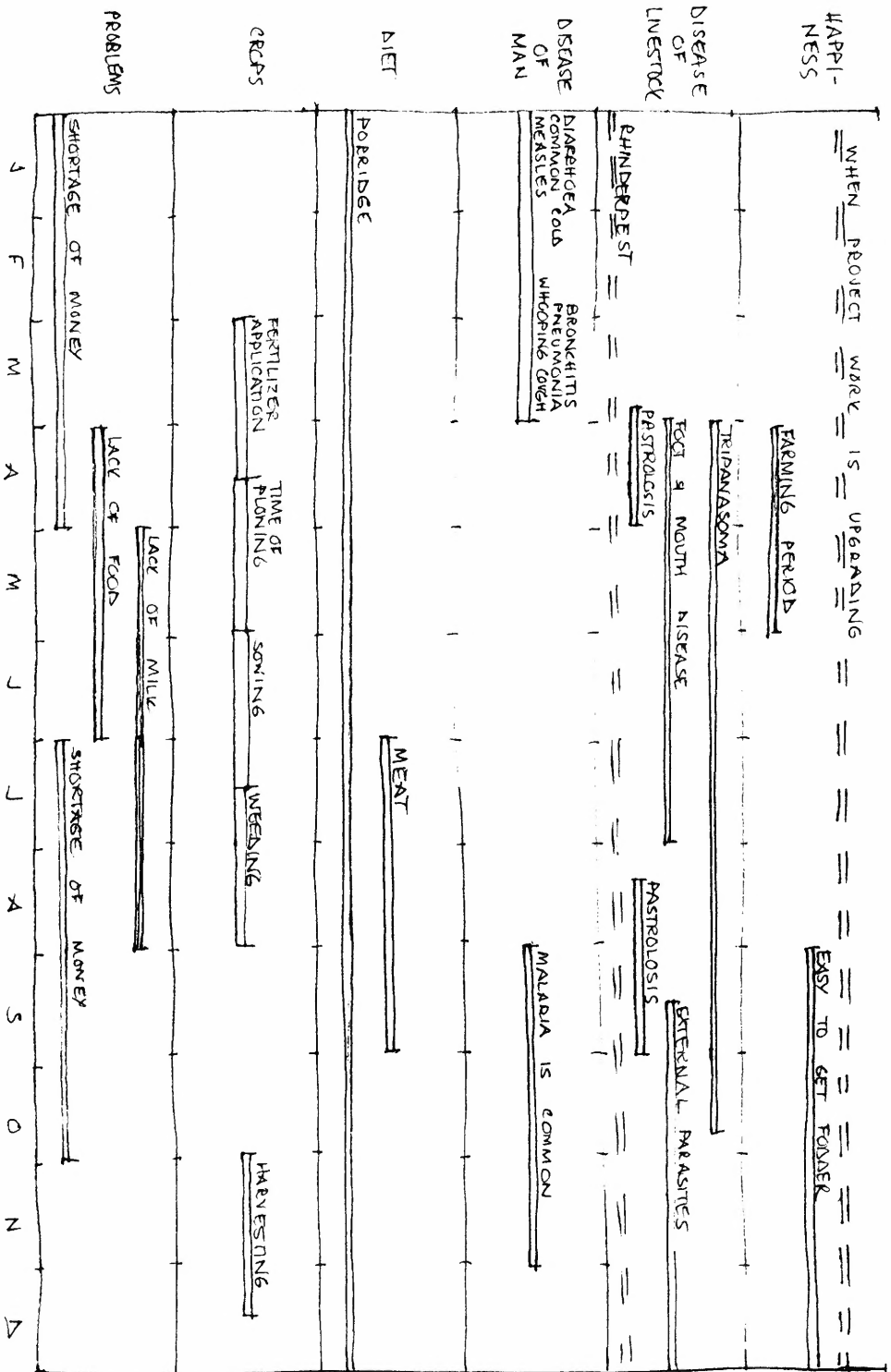
|||| GRAZING LAND  
..... HAY, STRAW, MAIZE  
... MIGRATION INTO OTHER AREAS (ANSEBA, BARKA)

ANALYSTS: SULEMAN MOHAMMED ALI  
 MOHAMED NUR OSMAN  
 SALEH MOHAMED ALI OSMAN  
 SALEH IDRIS MOHAMED

GROUP 1  
 290495

SEASONAL CALENDAR - VARIOUS ISSUES, VILLAGE TWAREBA.

GROUP 1



= CONTINUOUS  
 = OFF AND ON

ANALYSTS: EDRIS MALI  
OSMAN SALLIH





## Labor input

### *The cropping cycle*

This section is a synthesis of information derived from seasonality diagrams from Ketin (I), Gerbet (III, XXV), and Twareba (II, XXIV) and from various oral sources.

The agricultural season starts with the onset of the rains in April/May. People plow their fields using oxen and wooden plows. It is possible to plow 1/4 ha per day. Hoe cultivation is non-existent. There is a shortage of oxen, and those who don't have any, have to rent oxen from others. In 1993, the daily rental of a pair of oxen was 40 Birr. Today, the rent can be 70-80 Birr per day. They have to wait for the owners to finish their plowing first, which means a delay in their cropping cycle. Those who have camels (very few in Molobso) use them. Some who have cows choose to plow with them, but this is considered poor animal husbandry.

Fields are fertilized with the manure produced by livestock when they graze on crop residues and grasses in the fields during the non-growing season. Systematic manure collection (collecting manure from livestock when they are grazing freely, or for moving manure found close to the fields onto them) or the use of chemical fertilizers are virtually non-existent. There is also no appreciation of the decrease in value of the manure as it dries out.

Plowing is men's work. Female farmers who have no men in their household have to pay a man to plow for them.

The sowing of cereal crops takes place in May/June. Finger millet is the first crop to be sowed, as it has a long growing season. Second are sorghum and flax, and maize, barley, and neug can be sowed in June.

The traditional form of crop rotation is sorghum in the first year, pearl millet in the second year, and beans in the third year. Intercropping of cowpeas with sorghum or millet is common. Beans and cowpeas are nitrogen-fixing crops which enhance soil quality.

About a month after sowing, there is a weeding. The weeds are used as animal fodder. Some crops may require a second weeding after another month.

Harvest starts in October/November. The first crops are barley, wheat, flax, and neug (October). Millets, beans, and maize are harvested in November, and sorghum has the longest growing season, it is harvested in December.

After the harvest, barley and wheat are threshed and stored in sacks in the house, sometimes it is ground in grinding mills, then stored as flour in sacks. The grains of sorghum, maize, and millets are broken off the stalks. These crops are not threshed or ground until they are to be used. They are stored whole, covered with stalks, on platforms in trees or on stilts high enough to prevent livestock to get at them. The airiness of this form of storage keeps them from getting moldy in the sometimes humid climate during the rainy season. Storage losses are relatively modest according to MoA, but some households in the study reported considerable losses.

Weeds from the fields and crop stalks are used as animal fodder and stored on similar platforms. Sorghum stalks are also used to thatch houses, and barley stalks can be used for weaving mats.

### **Household labour division**

This section is a synthesis of information derived from seasonality diagrams from Rehey (XXVI), Twareba (II), and Gerbet (XXV), as well as from various oral sources.

Labor division is based on age and sex.

The major work period for men is from April through July, as they are the ones who plow, and they also participate in sowing and weeding the crops. They have another heavy work period in November/December during harvest.

| ACTIVITY/CRDP              | TIME | HOT/DAY SEASON   HOT/WET   COOL/WET   COOL/DRY |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
|----------------------------|------|------------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|--|--|--|
|                            |      | J                                              | F | M | A | M | J | J | A | S | O | N | D |  |  |  |  |  |  |  |  |  |
| MILLET                     |      |                                                |   |   |   | W | P | S |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| SORGHUM                    |      |                                                |   |   |   |   | P | S |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| F. MILLET                  |      |                                                |   |   |   |   | P | S |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| FLAX                       |      |                                                |   |   |   |   | P | S |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| MAIZE                      |      |                                                |   |   |   |   | P | S |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| BARLEY                     |      |                                                |   |   |   |   | P | S |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| NEWG                       |      |                                                |   |   |   |   | P | S |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| MALARIA                    |      |                                                |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| COLLECTION FIRE WOOD       |      |                                                |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| FETCHING WATER             |      |                                                |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| FEEDING SMALL LIVESTOCK    |      |                                                |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| COOKING                    |      |                                                |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| CHILD CARE                 |      |                                                |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| CATTLE HERDING             |      |                                                |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| CONSTRUCTION AMBULIF HOUSE |      |                                                |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| CONSTRUCTION WOODENY FENCE |      |                                                |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |

N F M A M J J A S O N D

SEASONALITY DIAGRAM -  
 FARMING & LABOR AC-  
 TIVITIES ETC.  
 VILLAGE GERBET

GROUP

LEGEND:

- W = WEEDING
- P = PLOWING
- S = SOWING/PLANTING
- H = HARVESTING
- ST = STORING
- C = CULTIVATING
- ♣ = SCORPION SCARPING
- X = BIRD SCARPING

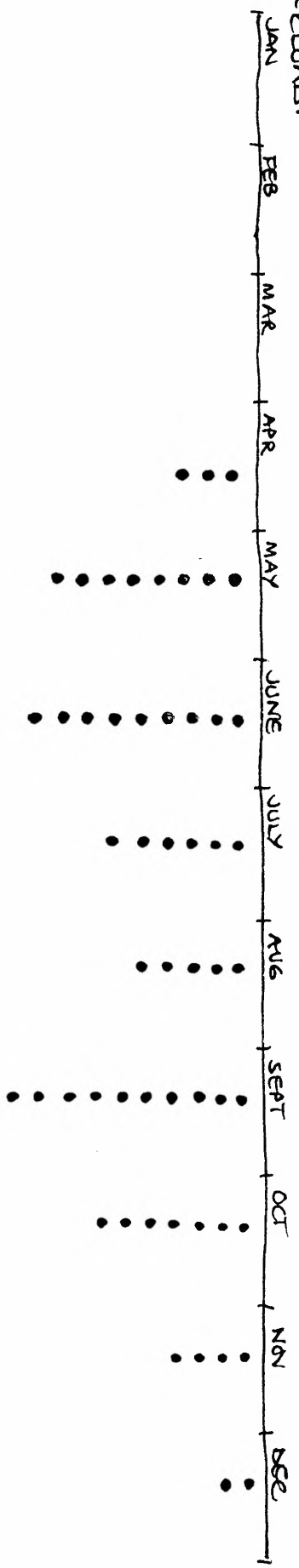
- O = MALE
- Δ = FEMALE
- = MALE CHILD
- ▲ = FEMALE CHILD

XXX

SEASONALITY DIAGRAMS - WELLBEING AND WELFARE; WORKLOAD; RELATIONS. GROUP 3

|                  | JAN                 | FEB                | MAR              | APR                                    | MAY                       | JUNE                | JULY                | AUG                       | SEPT                              | OCT | NOV                                  | DEC |
|------------------|---------------------|--------------------|------------------|----------------------------------------|---------------------------|---------------------|---------------------|---------------------------|-----------------------------------|-----|--------------------------------------|-----|
| ATD IDRUS ADEM   | I SEE MY LIVE STOCK | UNHAPPY AND FAMINE | UNHAPPY, DROUGHT | I DO IN MY GARDEN                      | PLUGH-ING                 | SOWING SEEDS        | SOWING SEEDS        |                           | HAPPY, I GET CROPS AND MILK       |     |                                      |     |
| ATD ISMAEL OSMAN | IF I GET OTHERWISE  | WORK I SIMPLY SIT. | WORK I WORK.     | UNHAPPY, SINCE I FINISHED ALL MY CROPS | UNHAPPY BECAUSE OF FAMINE | PLUGHING AND SOWING | PLUGHING AND SOWING | UNHAPPY BECAUSE OF FAMINE | HAPPY SINCE I GET CROPS, MILK ... |     | SINCE THERE IS NO WORK I SIMPLY SIT. |     |

-WORKLOAD:



XXXX

The beginning of women's major work period in the fields starts later than that of the men, as they are not involved in the plowing. But men and women sow, weed, and harvest together.

Men's other seasonal tasks are construction and maintenance of houses and fences, which they do during October through March. They start with the fences and do the houses after the harvest. Men are also responsible, together with women, for firewood and herding cattle.

The exclusive female tasks include domestic work (preparing food, washing utensils and clothes, cleaning and tidying the house and compound, caring for children), fetching water, and responsibility for small livestock. Threshing and grinding of crops is female work and is seen as part of food preparation.

Children contribute according to age and gender, an important contribution is livestock herding (young children herd small livestock only), other chores are fetching firewood and water. Girls help women with child care and food preparation (grinding). During weeding, children are sometimes engaged to chase away birds.

The major task related to livestock management is to feed and water them. We were told that herding of cattle is the responsibility of older boys or men, women and smaller children are responsible for smaller livestock. However, we saw both women and small children herding cattle and other livestock together.

### ***The seasonality of livestock management***

Livestock fodder sources vary according to what resources are available to the individual farmer. Fodder supplies are linked to the amount of agricultural land which the livestock owner has access to. Non-cropland grazing is not sufficient. The animals must also graze in the farmer's fields during the fallow season, and be fed hay and supplementary fodder if available.

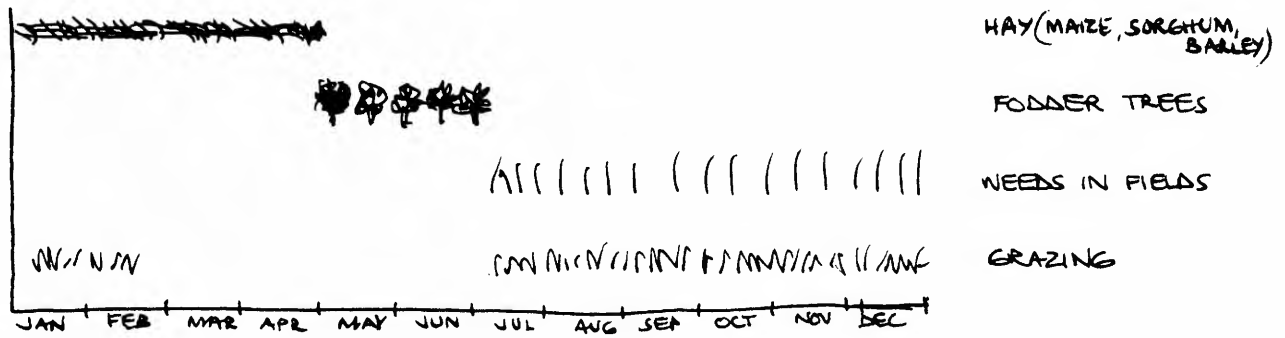
According to information from Twareba (XXIII, XXVII + oral comm.), livestock graze on crop stalks and in open grazing lands from harvest through to March/April, when preparations for the new crop-growing season start. Those who have good supplies of hay and grasses, supplement the grazing with hay during January – February. Others must save what they have for the lean season during April/May through June/July, when there is no grazing. During the non-grazing period, animals subsist on different combinations of hay, straw, some maize (for those who can afford it) or, in some cases, fodder trees. Grazing starts again in July/August. Some have to migrate with their animals during the last period before harvest, in October – November. Others can feed their animals during this period by supplementing their grazing with weeds from the fields.

The non-grazing season is shorter for those with more agricultural lands than for those with less. Access to fodder trees is another asset, meaning that crop residues can be used as a supplement during the cold season. Foliage cannot be collected from common property trees, but some farmers have trees on their own land.

According to diagrams and other information from Ketin (I, XXVIII), crop residues are the major source of fodder during January through May. There is a pasture shortage during the period February – May. During the remainder of the year, animals subsist on open grazing supplemented with hay. One reason for this apparent contradiction to conditions in Twareba appears to be that there is more uncultivated land in Ketin. During the rainy season and for a few months after, there is enough vegetation for animals to subsist on this land (and on the hay supplement), but there is not enough vegetation to support livestock through to the start of the next rains. During this period, one has to resort to crop residues.

Assuming that people strive to increase the size of their herds (an assumption which is supported by numerous statements from local people), fodder is a limiting factor to the number of livestock the area can support. Another limiting factor is water. Livestock drink from open waters where available, and are also watered from wells. Livestock faeces and urine contaminate water sources also providing drinking water to humans.

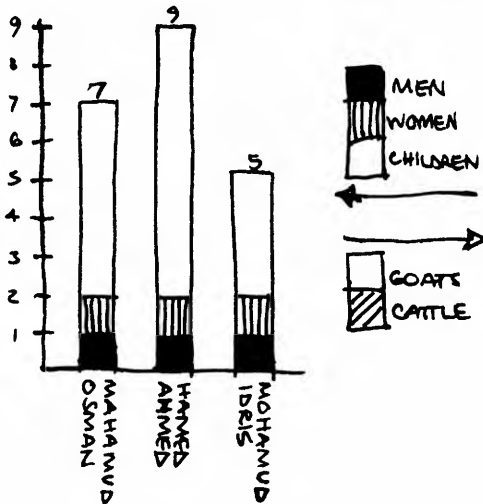
SEASONALITY DIAGRAM - FODDER SOURCES OF LIVESTOCK, TWAREBA VILLAGE



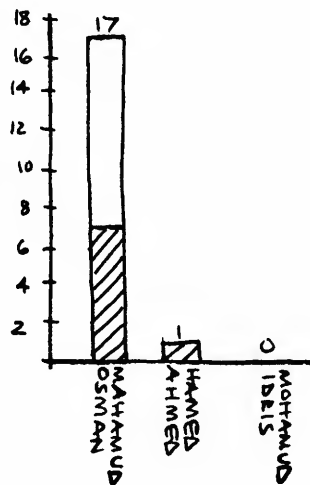
ANALYSTS: OSMAN ABRAHIM MHAMED, MHAMED MHMUD ALI HAG.

LIVELIHOOD ANALYSES OF THREE HOUSEHOLDS IN TWAREBA VILLAGE.

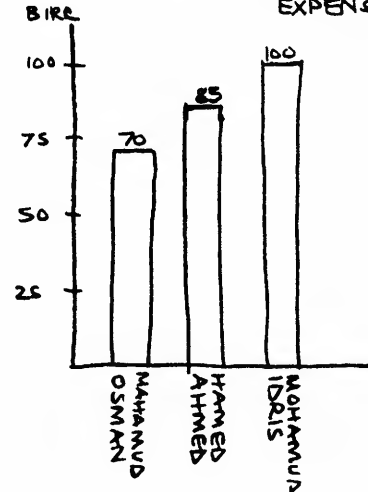
1. -HOUSEHOLD CENSUS-



2. -LIVESTOCK CENSUS-



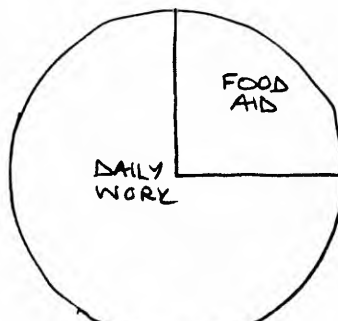
3. -MONTHLY CASH EXPENSES-



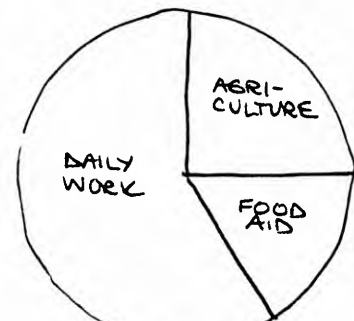
4. -SOURCES OF INCOME



MAHAMUD OSMAN



HAMED AHMED



MOHAMUD IDRIS

GROUP 1



The main work periods for traction animals are during the plowing season in April and May, and during harvest in November and December.

## Wild vegetation and its uses

The 1988 survey report (Deelstra *et. al.* 1988) describes the biomass resource situation in the project area (Jani and Erota) then. Species mentioned in the report include *Tamarix aphylla*, Acacias, *Ziziphus mauritiana*, *Calotropis procera*, *Capparis decidua*, *Cadaba glandulosa*, *Commiphora cf. Quadricincta*, *Boscia senegalensis*, Doberaglabra, and *Balanites aegyptiaca* in the lowlands. The two latter and some other species no longer regenerated due to overgrazing by goats. There were also signs of a deterioration of the firewood supply. In the highlands, few trees remained at the time, except *Euphorbia abyssinica*, a giant succulent. "Grazing pressure is too high most places to allow a satisfactory natural regeneration" (Deelstra *et. al.* 1988). There were *Ziziphus mauritiana* and Acacia species along river beds and on mountain tops, and a few scattered and heavily lopped *Olea Africana*. Some *Maytenus serrata*, *Teclea nobilis*, *Pavetta cf. Subglabra*, and *Commiphora spp.* were seen. A low shrub, *Dodonea viscosa*, densely covered some of the slopes. It is grazing resistant and too slender to be of much importance as fuelwood, the report states.

An enclosure had been established in 1987 by the Agricultural Commission with the consent of the farmers. Some grasses had managed to establish there. (Deelstra *et.al.* 1988)

The description of the highlands in the report could have been from Molobso today. There are very few trees, and shrubs seem confined to certain areas. Resource maps from the study villages often have every tree outside enclosures drawn in. Trees mainly grow on valley floors around river beds and where the water table is high, and near people's compounds. However, vegetation is regenerating in the enclosures; so far mainly grasses and shrubs, but trees have started to grow, too. Some farmers have used the skills learned during project afforestation work and adapted the idea of enclosures, making their own little fenced enclosures near their compounds and planting a few trees in them. These enclosures are generally very well managed, and grasses, shrubs and trees to be used as lean-season fodder grow there.

Below is a table (Table 9) showing a variety of tree species currently found in the project area, along with their major uses and an indication of relative importance. It is not exhaustive; some of the species on which people in the study villages have provided information are not included. According to villagers in Ketin, , Tahses (*Dodonia viscosa*) is the most common in the highland Molobso area of the tree species appearing on this list, while Gaba (*Ziziphus Mauritiana*), Awli (*Olea africana*), and Woiba (combrum) are becoming rare. Tchaa (*Acacia seyal*) is ranked as the most important tree together with Gaba and Seraw (*Acacia etbaica*). This information is in accordance with the 1988 report.

Table 9 Trees and shrubs, vernacular and scientific names, their uses, places of growth and relative importance. (T) = Tigrinya, (Ti) = Tigre.

| Species name                          | Family      | Vernacular name | Uses              | App. height | Where found             | Indication of economic importance |
|---------------------------------------|-------------|-----------------|-------------------|-------------|-------------------------|-----------------------------------|
| Dodonia<br>augustifolia or<br>viscosa | Sapindaceae | Tahses (T)      | construction      | < 2 m       | Molobso<br>Jani<br>Erot | 13%                               |
|                                       |             | Tansesfin(Ti)   | fuelwood          |             |                         |                                   |
|                                       |             |                 | conservation      |             |                         |                                   |
|                                       |             |                 | fodder            |             |                         |                                   |
| Olea africana                         | Oleaceae    | Awli (T)        | construction      | < 6 m       | Molobso<br>Erot         | 5%                                |
|                                       |             | Wegre (Ti)      | beverage(smoking) |             |                         |                                   |
|                                       |             |                 | tools             |             |                         |                                   |
|                                       |             |                 | conservation      |             |                         |                                   |
|                                       |             |                 | shade<br>fuelwood |             |                         |                                   |



|                             |            |                               |                                                                                       |        |                          |      |
|-----------------------------|------------|-------------------------------|---------------------------------------------------------------------------------------|--------|--------------------------|------|
| Acacia etbaica              | Mimosaceae | Seraw (T)<br>Keleze (Ti)      | construction<br>fuelwood<br>conservation<br>fodder<br>shade<br>tanning                | < 7 m  | Molobso<br>Erota         | 12%  |
| Ziziphus mauritiana         | Rhamnaceae | Gaba (T)<br>Kisla (Ti)        | medicine<br>human food<br>fodder<br>construction<br>conservation<br>shade             | < 10 m | Molobso<br>Erota<br>Jani | 20%  |
| Eucalyptus camaldulensis    | Myrtaceae  | Kelamitos (T)<br>Senebar (Ti) | construction<br>furniture<br>conservation<br>Medicine                                 | < 20 m | Molobso<br>Erota         | 3%   |
| Ficus sycamorus             | Moraceae   | Sagla (T & Ti)                | conservation<br>food<br>fodder<br>shade                                               | < 15 m | Molobso<br>Erota         | 1%   |
| Tamarix aphylla             | Tamariceae | Aubel (T & Ti)                | furniture<br>conservation<br>fodder<br>shade<br>construction                          | < 10 m | Molobso<br>Erota'        | 7%   |
| Ficus vasta                 | Moraceae   | Daro (T & Ti)                 | conservation<br>food<br>fodder<br>beverage (smoking)<br>shade                         | < 15 m | Molobso<br>Erota         | 1%   |
| Acacia raddiana / fortfolie | Mimosaceae | Aella (T)<br>Twey (Ti)        | fuelwood<br>fodder<br>shade<br>construction                                           | < 10 m | Molobso<br>Erota<br>Jani | 5 %  |
| Acacia seyal                | Mimosaceae | Tchaa (T)<br>Aecba (Ti)       | tools (plough)<br>fuelwood<br>fodder<br>conservation<br>shade<br>construction         | < 8 m  | Molobso<br>Jani          | 30 % |
| Tamardindus indica          | Fabaceae   | Humer (T)<br>Ketse (Ti)       | medicine<br>conservation<br>shade<br>fodder<br>construction<br>beverage<br>decoration | < 12 m | Molobso<br>Jani          | 2 %  |
| Adansonia digitata          | Bombaceae  | Duma (T)<br>Himerai (Ti)      | conservation<br>food<br>fodder (stem)<br>rope making<br>shade                         | < 10 m | Jani                     | 1 %  |
| (combrum)                   |            | Woiba (T)<br>Tshehat (Ti)     | medicine<br>construction<br>fodder<br>tools<br>furniture                              |        | Molobso (+?)             |      |
| (sisal)                     |            | Eka                           | rope making<br>thatching<br>conservation                                              | < 2 m  | Molobso (+?)             |      |

*Adapted from a table prepared by workshop participants Tesfastion Aebra, Aeraya Zeraau and Michael Andimariam (all extension workers MoA).*

Additional information derives from three different preference ranking and scoring matrixes prepared by people in Twareba (XXIX) and Rehey (XXX), as well as by a group of workshop participants in Keren (XXXI). All species mentioned below were included, but only a few in more than one matrix. Criteria used also varied. It has thus not been possible to cross-check all the information in the matrixes. Also, not all the species names have been found, so some of the species are only presented under their vernacular names.

*Kesla* [Tigre] or *ghaba* [Tigrinya] (*Ziziphus mauritiana*) stood out as a particularly versatile species with multiple properties and uses. It can be used as shampoo and detergent, it got top score for its medicinal properties, and it has edible fruits, popular among children and with some significance as “crisis food”. It is also a good shade and ornamental tree, and is one of the species used for soil and water conservation. The wood makes excellent firewood and very good material for house construction and fencing, as well as for farm tools. The foliage is valuable as livestock fodder, and it is possible to make ropes from the bark, although these ropes are not very durable. *Kesla* was mentioned to us time and again both by ministry staff and local people, as a very useful and important tree. (Included in two matrixes.)

*Kelamitos* (*Eucalyptus camaldulensis*) is excellent for house construction, has medicinal properties, and is a very good source of firewood. It is also possible to make ropes from the bark – they are slightly better than *kesla* ropes, but of secondary quality. This species is also used for conservation, and can be used to make furniture. – The evergreen shrub *Tahises* (*Dodonia augustifolia* or *Dodoni viscosa*) is also among the species which can be used for thatching and fencing. It is also used for soil and water conservation, and for decoration. The foliage can be used for livestock fodder, but mainly as a supplement. (Included in all matrixes.) *Tahises* is listed both in the table above and in the matrixes as a source of firewood, in the matrixes even as a good source, although it is a slender shrub and not very well fitted, as pointed out in the 1988 Noragric report (Deelstra et.al. 1988). This illustrates the problematic fuelwood situation in the area. People generally burn whatever can be burned.

*Tsehat* (Tigre) or *woiba* (Tigrinya) (species name unknown) is important for medicine and for building. It can be used but is not among the best species for animal fodder, and the same applies for farm tools and furniture – it is used, but is not among the preferred species. (Included in two matrixes)

The best species for making good quality tools and furniture is *wogre* [Tigre] or *awuli* (*Olea africana*), because the wood is hard, and it has beautiful colors. *Awuli* is also excellent for house construction and for farm tools and furniture, as well as for firewood. It is among the preferred ornamental trees, due to its beauty and the shade it provides. The foliage can be used as supplementary livestock fodder. There is no information on the “beverage (smoking)” entry in the table above, presumably the word beverage is misused and the leaves are used as a substitute for tobacco. This species is also used for conservation.

*Eka* (sisal) is the best species for making ropes, and for house construction (thatching the roof). It is also promoted by ministry staff and increasingly used for conservation, because its shallow and wide root system creates a mat which holds the soil on the edges of the terraces in place.

Other species which have some importance in soil and water conservation are *humer* (*Tamardindus indica*) and *daro* (*Ficus vasta*). *Daro* is a very good fodder tree. Its fruits are eaten to some extent, and it can be used as firewood. Again, there is information in the table to the effect that this species is smoked; there is no information on this in the matrix. *Humer* is important for medicinal purposes and has excellent fruits, in addition to being a good shade tree.

*Keret* (species name unknown) is excellent for fences and house construction, gives very good fuelwood, and has soil and water conserving properties. It is a good shade and ornamental tree, and the foliage has some use as supplementary livestock fodder. Among the best species for the latter, however, is *Rekus* (species name unknown), which is also in some



# SCORING MATRIX OF CONSERVATION ACTIVITIES, TWAREBA VILLAGE

## GROUP 1

| ACTIVITY USES               | TERRACING | CHECKDAMS | AFFORESTATION/CLOSURE | DAM CONSTRUCTION |
|-----------------------------|-----------|-----------|-----------------------|------------------|
| CHECKING FLOODS             | •••• 8    | ••••• 10  | •••• 6                | ••• 4            |
| IMPROVING DRINKING WATER    | •••• 6    | ••••• 8   | ••• 4                 | ••••• 10         |
| SOIL & WATER CONSERVATION   | ••••• 10  | ••••• 8   | ••• 4                 | •••• 6           |
| FACILITATES PLOUGHING       | ••••• 10  | ••••• 8   |                       |                  |
| LEVELLING                   | •••• 8    | ••••• 10  |                       | •••• 6           |
| SOIL PERCOLATION            | •••• 6    | ••••• 8   | ••• 4                 | ••••• 10         |
| GROWTH OF GRASSES           | •••• 6    | ••••• 8   | ••••• 10              |                  |
| NOT REQUIRING MORE ENERGY   |           |           | ••••• 10              |                  |
| ENHANCES GROUND WATER TABLE |           |           |                       | ••••• 10         |
| TOTAL                       | 54        | 60        | 38                    | 46               |

# SCORING MATRIX OF TREE SPECIES, TWAREBA VILLAGE

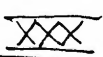
| SPECIES USES          | ANLI     | KERET   | KESLA    | TAKSES | REKUS    | LESHEM   | SHAYAT   | HAFALA   |
|-----------------------|----------|---------|----------|--------|----------|----------|----------|----------|
| FODDER                | •••• 5   | •••• 5  | ••••• 10 | •••• 5 | ••••• 10 | ••••• 10 | ••••• 10 | ••••• 10 |
| EDIBLE FRUITS (HUMAN) |          |         | •••• 8   |        | •••• 5   | •••• 6   | •••• 4   | •••• 5   |
| HOUSE CONSTRUCTION    | •••• 10  | •••• 8  | •••• 9   | •••• 6 |          |          |          |          |
| FENCES                |          | •••• 10 | •••• 10  | •••• 4 |          |          |          |          |
| FARM TOOLS            | •••• 8   | •••• 3  | •••• 10  | •••• 2 |          | •••• 5   | •••• 1   |          |
| CONSERVATION (S&W)    | ••••• 10 | •••• 8  | •••• 8   | •••• 8 | •••• 4   | •••• 7   |          | •••• 10  |
| SHADE                 | ••••• 10 | •••• 8  | •••• 9   | •••• 1 |          | •••• 1   |          |          |
| FUELWOOD              | •••• 10  | •••• 10 | •••• 7   | •••• 8 | •••• 6   | •••• 7   |          |          |
| ORNAMENTAL            | •••• 10  | •••• 10 | •••• 8   | •••• 7 | •••• 6   | •••• 6   | •••• 3   | •••• 1   |
| TOTAL                 | 63       | 62      | 79       | 41     | 31       | 42       | 18       | 26       |

## GROUP 1

PREFERENCE RANKING OF TREES — KETTER VILLAGE, 30049S

GROUP 3

| SPECIES                             | VELAMITOS<br>(EUCALYPTUS) | TAHISES<br>(ROBENIA<br>EQUISILIFOLIA) | WOIBA<br>(COMBESUM) | EKA<br>(SISAL) | SHABA<br>(ZIZUBES) | HAK      | WOGRE<br>(GUA AFRICANA) |
|-------------------------------------|---------------------------|---------------------------------------|---------------------|----------------|--------------------|----------|-------------------------|
| BUILDING                            | 10 ●●●●●●●●               | 8 ●●●●●●●                             |                     | 8 ●●●●●●●      | 7 ●●●●●●●          | 6 ●●●●●● | 8 ●●●●●●●               |
| FOR MEDICINE                        | 9 ●●●●●●●●                |                                       | 10 ●●●●●●●●         |                | 10 ●●●●●●●●        |          |                         |
| EDIBLE FRUIT                        |                           |                                       |                     |                | 10 ●●●●●●●●        |          |                         |
| ROPES                               | 5 ●●●●●                   |                                       |                     | 10 ●●●●●●●●    | 4 ●●●●             |          |                         |
| AGNETT (A HAT<br>LIKE AN ARMY TANK) |                           |                                       |                     |                | 10 ●●●●●●●●        |          |                         |
| CLEANING HAIR<br>OF CLOTHES         |                           |                                       |                     |                | 10 ●●●●●●●●        |          |                         |
| FIREWOOD                            | 8 ●●●●●●●●                | 7 ●●●●●●●                             |                     | 3 ●●●          | 9 ●●●●●●●●         | 7 ●●●●●● |                         |
| TOTAL                               | 32                        | 15                                    | 10                  | 21             | 60                 | 13       | 8                       |



RANKING/  
SCORING MATRIX OF TREE SPECIES, ASMAT SUB-PROVINCE

| SPECIES<br>USES     | AWLI        | TAHSES     | DARO        | HUMER       | WEYIBA      |
|---------------------|-------------|------------|-------------|-------------|-------------|
| FARM TOOLS          | ••• 5<br>•• | • 1        |             |             | ••• 3       |
| HOUSEHOLD FURNITURE | ••• 5<br>•• |            |             |             | •• 2        |
| FUELWOOD            | ••• 3<br>•• | •• 4<br>•• | •• 3<br>•   | • 1         | •• 2        |
| S A W CONSERVATION  | ••• 3       | •• 2       | •• 4<br>••  | ••• 5<br>•• | • 1         |
| EDIBLE FRUITS       |             |            | •• 3<br>•   | ••• 5<br>•• |             |
| FODDER              |             | •• 2       | ••• 5<br>•• |             | •• 3<br>•   |
| CONSTRUCTION        | •• 4<br>••  | •• 3<br>•  | •• 2        | • 1         | ••• 5<br>•• |
| MEDICAL PURPOSES    |             |            |             | ••• 5<br>•• | •• 4<br>••  |
| SHADE               | ••• 3       |            | ••• 5<br>•• | •• 4<br>••  | •• 2        |
| TOTAL               | 25          | 12         | 22          | 21          | 22          |

WORKSHOP PARTICIPANTS

use as firewood and as an ornamental tree. It has edible fruits, but they are not among the most significant ones.

*Leshem* (species name unknown) is another excellent fodder tree. Its fruits are slightly better than those of *rekus*. It is among the secondary firewood species and ornamental trees, and has modest soil and water conservation value. The primary use of *shayat* (species name unknown) and *hafala* (species name unknown) are as fodder trees, for which they are very good, and *hafala* is valuable for soil and water conservation. Both species have edible fruits, but they are not among the preferred ones.

Several of the tree species above are disappearing, the following are particularly mentioned: *Olea africana* is rare, so are *tsehat/woiba* and *Ziziphus mauritiana*. *Ficus vasta* is also a dwindling species, although some still exist. *Dodonia viscosa* is still among the most common species.

### ***Firewood and other fuel***

Some sources claim that people do not burn manure in the area. This information is however contradicted by information from Ketin. In this village they use fuelwood during approximately seven months of the year, and during the remainder they use crop residues and manure.

We have no estimates of the extent to which people still cut down living trees for fuelwood or other uses, but one must assume that it happens, or even that people damage trees so they can cut them down when they die. For the most part, however, people seem to rely on dry wood which they can find on the ground, and on buying firewood. Considering the sorry state of vegetation cover in general and trees and shrubs in particular, the needs for manure and crop residues for other purposes, and the number of people in the area, the situation is problematic. A study of the demand as well as of sources of supply for firewood (and secondarily, wood for other uses) is sorely needed.

## DAILY LIFE

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### Homes

People's compounds rest on the rockiest patches of the slopes, often high up where the soils are poor and not suitable for cultivation. Small clusters of houses are surrounded by fences, trees and platforms for crop and fodder storage, and pens for livestock.

Traditional houses are cylindrical structures with a diameter of about three meters. They have stone foundation walls, about 80 cm high, with upper walls built from branches and poles. The roof is made from a frame of gaba poles resting on the wall and tied together at the top, then circles of thinner gaba branches are tied to the poles, and this frame is thatched with sisal sprouts and pearl millet and sorghum stalks. The style stems from the period when people in the area were semi-nomadic pastoralists, with 3-4 dwellings in different places.

The sedentary lifestyle permits more elaboration and requires more solidity. Another type of houses is emerging which meets these demands. It is based on the traditional type, but is larger (about five meter diameter) and more solid. The walls are about 2 meters high and are made entirely from stones, local clay bricks, and plaster made from mud and manure. The roofs are about the same, but more solid. The transition from traditional to more modern housing is still going on. It is those with the most resources (material and other) and/or skills who take this step first. – Some have also built square brick houses with corrugated iron roofs or roofs made of poles with thatching and/or plaster on top. These houses are considered the most modern and give status to their owners, although the modified traditional houses can be as big and comfortable (or more; they are always cool, whereas the brick and iron sheet houses can become regular baking ovens when the sun heats the iron sheets).

Men construct the house, women furnish it. They make all the furniture, weave mats, plaster the walls and floor, and decorate. Mats are woven from date palm leaves, barley straws, and other plant materials, dyed into brilliant colors or mixed with modern nylon fibres to add color. Silk bands decorated with sea shells, glass beads, tresses, and colored ribbons are fixed onto them.

Women also make utensils for domestic uses. They make water containers out of black clay, which are burned for at least 24 hours in the fire. They are very solid and make a metallic sound when one knocks on them. They keep water nice and cool for days.

Men make farming tools, notably wooden plows, out of hardwood. Men also make ropes out of plant fibres and tan skins into leather.

Consumer goods like clothes, shoes, soap, other utensils, paraffin lamps, and several food items are bought on the market or in the stores in Molobso or beyond.

Shortage of resources, both natural resources as materials (wood, fibres etc.) and general household wealth, is a serious constraint both on the manufacture of items like those mentioned above and on access to consumer goods. Only the better-off families are able to furnish their houses to the standard described above.

### Daily activities

People in the villages gave us some glimpses into their daily lives and conditions through diagrams and discussions. The following is a synthesis of this information (diagrams from Gerbet (XII), Twareba (XXXII), and Rehey (XXXIII). The times mentioned should be considered approximations.

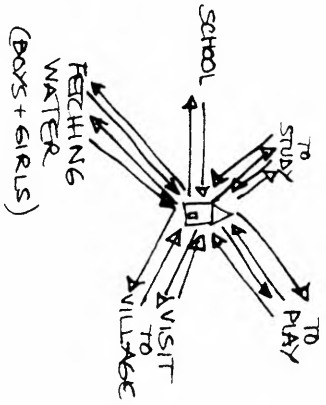
People normally get up at around five or six AM and have a small meal, usually cold porridge or injera from the previous day. Adults often pray before the meal. After the meal the working day starts. Men leave for work in the fields or on the project and return from



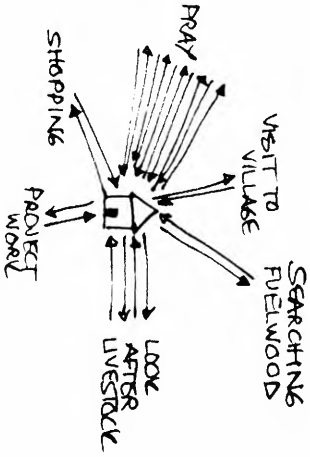
DAILY ACTIVITY PROFILES - VILLAGE TWAREBA

GROUP 1

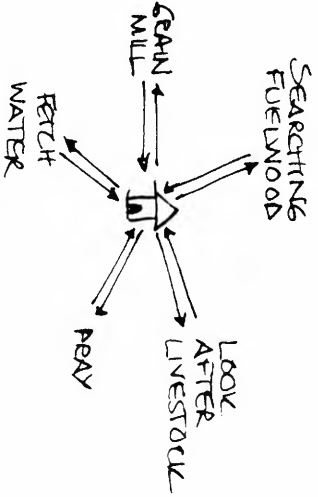
CHILDREN



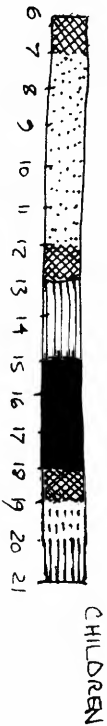
MEN



WOMEN



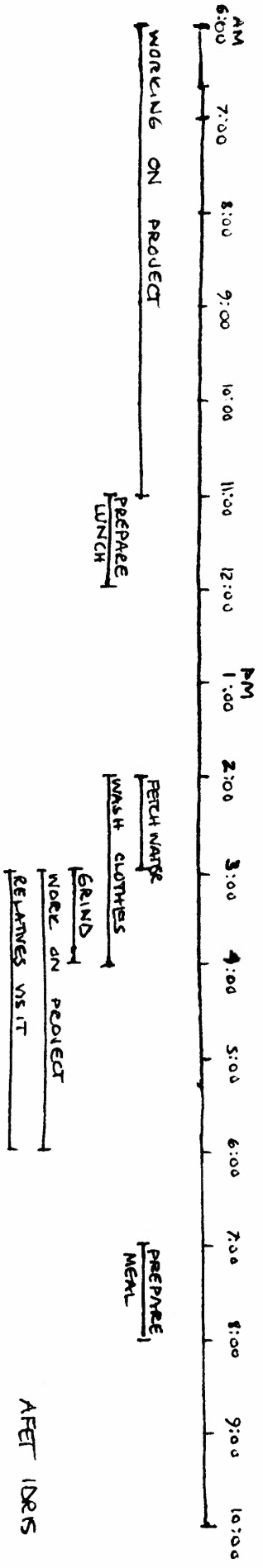
TIME USE - VILLAGE TWAREBA  
(WAKING HOURS)



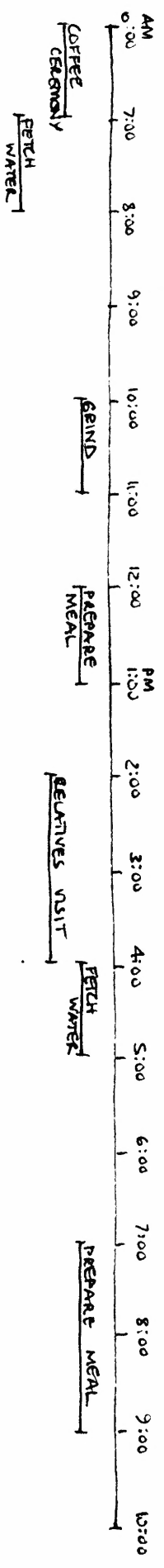
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DAILY ROUTINES OF TWO WOMEN IN BETHEY VILLAGE, 300495

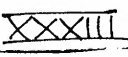
GROUP 3



AFET IDRIS



ASHTA SULEMAN



work at noon. Women who work outside the house, in the field or on project work, also leave and stay out until eleven, then they cook the midday meal. Women who stay at home spend about three hours looking after the children, then from nine to eleven AM they work (it is not stated what type of work), then cook a meal which is ready by the time the men return.

Around noon, those who are at home eat the midday meal, and the adults rest for about an hour afterwards. Many adults pray after the meal.

The afternoon work session starts some time between two and three PM. Men go back to work, but many take breaks for prayers at around four PM. Women work until around five PM if they have work in the fields or on the project, then cook the evening meal. If they have no work outside the house, they fetch water which takes an hour, then cook for about two hours, and from around five PM they have some free time. Men come back at six PM, pray, and rest for about an hour before dinner.

School children leave in time for school at nine AM – those who live near the school can leave rather late and come back for the midday meal, others have to leave as early as six AM and don't come back until late afternoon. Those who come back early have to work in the afternoon. – Children who stay home often have the following routines: Girls start working at about seven AM, they fetch firewood which takes up to three hours. Afterwards, they are free until lunch at noon. At around one PM, they grind grains, which takes around two hours, and then fetch water, which takes an hour to an hour and a half. Then they are free for two to three hours until dinner. Boys herd animals, they leave in the morning at six AM and don't return until four PM. Then they have three hours of rest before dinner.

The family has dinner together (after prayers) at around six or seven PM, then relax and talk. School children may do their homework. People normally go to bed at around eight.

The information was presented in the form of general profiles for men, women, and children. It does not account for individual or group differences, and it is not stated which segments of the population the information concerns. Also, there is no information on seasonal variations in any of the profiles.

The fact that much of this information was provided by men should also be kept in mind. Women's and children's activities may thus be misrepresented. The cases in the box below are included as an attempt to balance the information somewhat.

*Box IV Two women in Rehey*

In Rehey, two women belonging to different wealth groups have given us their daily activity profiles. Afet Idris is poor, Asha Suleiman is rich. The information is rendered in terms of exact times, these must not be taken literally but as rough estimates of general trends.

Afet Idris gets up at six AM and immediately, without breakfast, goes to work on the project's CFW program. She works until eleven AM. Then she goes home and prepares lunch, this takes up to an hour. From noon until about two PM she has a lunch break, she eats with the children and rests. Then she starts working again. – Afternoons vary. She has to fetch water, this takes about an hour. At regular intervals she washes clothes, which takes two hours, and grinding takes an hour. Sometimes relatives visit her for two or three hours in the afternoon. On days when she has no other afternoon work than fetching water and receives no visitors, she goes back to work for three more hours on the CFW project. – At six PM she finishes whatever work she is doing, rests and talks to the children for an hour, and at seven she starts preparing the evening meal. At eight PM the family eats, and then they go to bed.

Asha Suleiman gets up at six AM, too, but her first task is to make a coffee ceremony for her husband and family. She roasts coffee beans, grind them, and cooks spiced coffee in a ceramic vessel. At seven AM she goes to fetch water, which takes her an hour. Then she has two hours off. At ten she grinds, which takes an hour, and at noon she prepares a meal which the family eats at one PM. – In the afternoon, she regularly has visitors for a couple of hours. At four PM,

“Thanks to God and the project”

Report from a PRA workshop and study in Asmat, Eritrea  
January 1996

she again fetches water. At seven PM, she prepares the evening meal which is eaten at nine PM. After eating, the family goes to bed.

There are great differences in the time use of the two women; Afet works between five and eight hours on the CFW program and spends between three and four hours doing housework, a total of between eight and twelve hours. Asha works for about seven hours, and five of them are spent in the house. However, both these daily activity profiles describe the slow season before agricultural activities involving women start. Asha will have a much heavier workload as the agricultural season starts than she has now. Afet will also have a lot of agricultural work to do, but her CFW work will cease, because project work is generally not scheduled for the peak seasons of agricultural work.

Several tasks are not included in the diagrams. There is no mention of who fetches firewood, who cleans the house and plasters the walls, who washes the clothes in Asha's house, and so on. It must be assumed that not all Asha's days are as leisurely as her activity profile suggests, even when she has no work in the field. However, the fact that she does no project work constitutes the major difference between her and Afet. Afet undoubtedly has a heavier workload, and the quality of her domestic work and child care must suffer when she has to spend a major part of the day doing project work. She only fetches water once a day as compared to Asha's two trips, and she spends less time cooking, which may mean that there is less and simpler food. There is no additional information on the nature of the consequences of this difference in time use, but it is probably safe to assume that they must be there.

### *Who goes where, and why?*

Ranges and frequencies of mobility, as well as reasons for it, give information on access to and use of resources and facilities. The following information has been assembled by people in Gerbet (III), Rehey (XXXIV), and Twareba (XXXII, XXXV).

Molobso provides several facilities to people in the surrounding villages. The market and health center are there, the work programs are organized from there, and ERRA distributes food there. These facilities and opportunities are used by both genders. There is also a mosque which men in Rehey use. The mosque in Gerbet is used by the men there. Men from Twareba use both these mosques. Children from Twareba and Gerbet go to school in Segdo in Twareba; children from Rehey go to school in Rehey.

There are also links with Keren and Halhal. Both men, women and children go to Keren to visit relatives or to hospital for serious health problems, and men also go there for work and for marketing their goods. The market in Keren is preferred to the one in Molobso provided transport can be found – prices are better in Keren. Halhal can offer work (generally it is men who go to find work there) and has a health center with greater capacity than the one in Molobso. Halhal is also another option for buying items, but not mentioned as a site for marketing own goods.

There is even some traffic to Sudan. One reason given is to visit relatives, another is work migration (for both men and women). There was no mention of livestock migration to Sudan.

Mobility related to resource use includes going out to collect fuelwood and to the water well, going to grazing areas and farming lands, and looking for wild foods.

### **Daily mobility in Twareba**

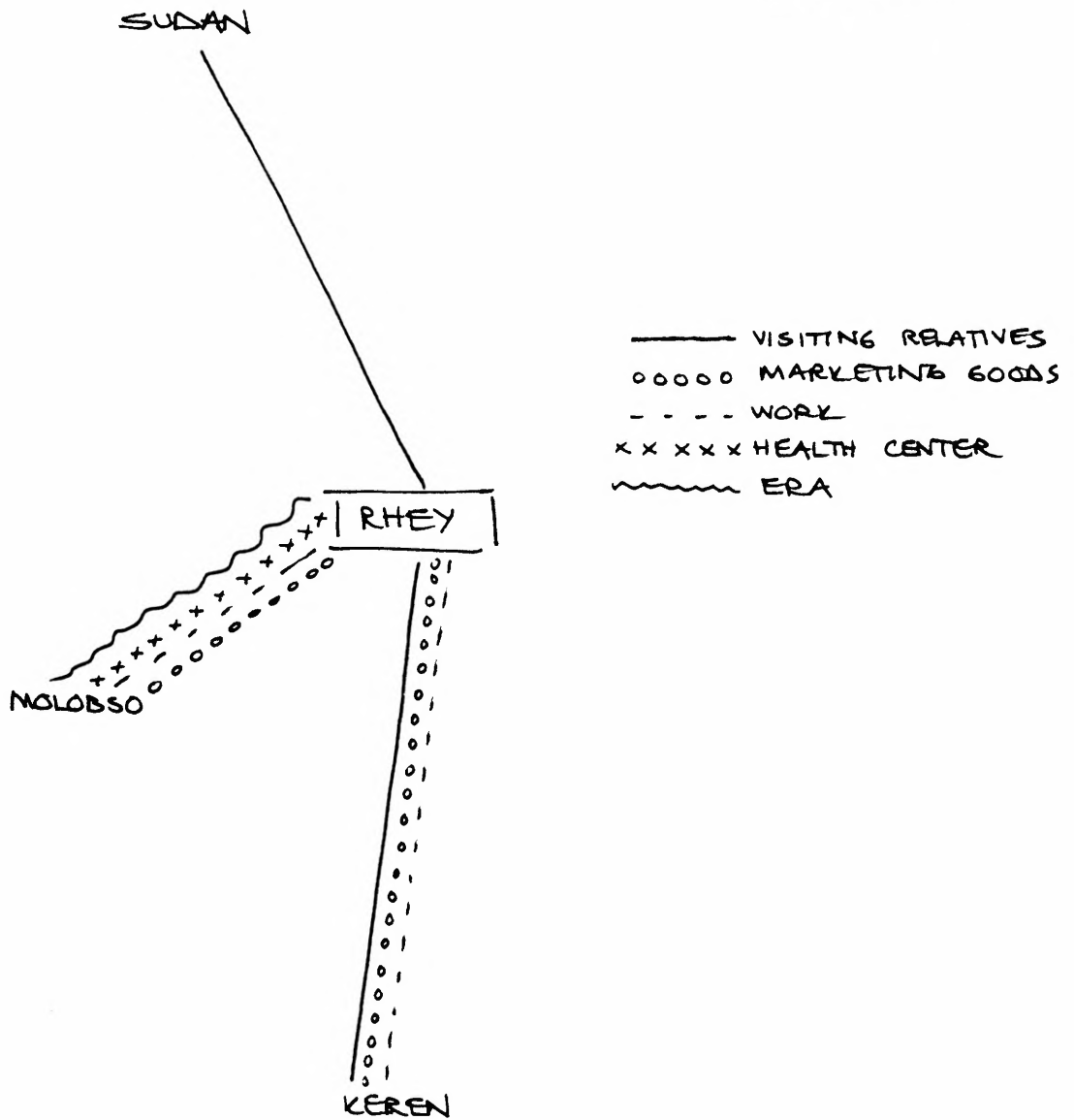
People in Twareba have made three different daily mobility maps – for women, men, and children (XXXII). While not distinguishing between girls and boys nor between people of different wealth categories, they provide some interesting insights into differences and trends.

Men's daily mobility generally includes one trip to Molobso to work with the project, and two herding periods. Where they herd depends on what fodder is available, which varies with seasons. During the period after stocks have been eaten and before new rains, from February through May, they may have to go as far as Mesfar (the neighboring village). Men also pray

MOBILITY MAP - REHEY VILLAGE

290495

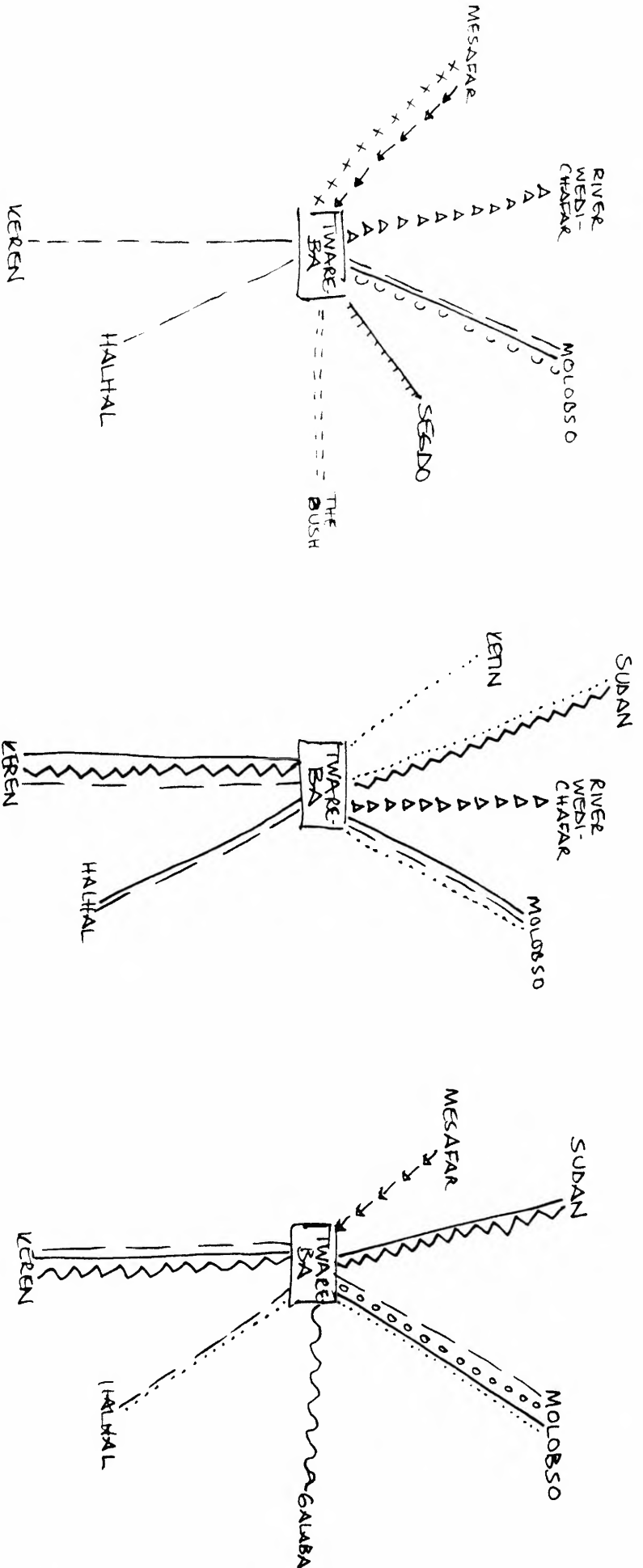
GROUP 3





# MOBILITY MAPS - VILLAGE TWAREBA

GROUP 1



- CHILDREN -

- WOMEN -

- MEN -

- HEALTH CENTRE
- WORK
- EDUCATION
- VISITING
- SHOPPING

- TO FARM
- MUSQUE
- GRAZING
- WATER WELL
- PLAY

= = = TO GET EDIBLE FRUITS ETC.  
 → → → FUELWOOD

ANALYSTS:  
 EDRISS MB NUR  
 AU BESTHE

XXXX

five times a day, sometimes they go to the mosque in Molobso. There are also other activities which influence men's daily mobility, but which are not necessarily engaged in every day. These include collecting firewood, visiting the village, and shopping. For firewood they may have to go to Mesfar, and they generally buy things in the stores and on the market in Molobso. – Some people have farmland in Geleba, a village far away, and they go there to farm this land.

There are of course individual variations. Some people don't have livestock, some have others to herd for them, some people work more on the project than others, and so on. Also, this diagram shows mobility during the off-season of the agricultural cycle. There is no information on seasonal changes.

Women's daily mobility involves searching for fuelwood and fetching water, looking after livestock, going to the grinding mill, and praying (once a day, not in the mosque). Project work is not drawn into the mobility map, because women generally engage in it more sporadically than men do, and married women to a lesser degree than female household heads. Some of their activities are not carried out every day (grinding, fetching fuelwood). For water, women go to the well in the Wedi-Chafar river nearby, and for firewood they may have to go as far as Mesfar, like the men.

Seasonal changes occur in the mobility and range of activities of women, too. These diagrams show the situation during the agricultural off-season. There are of course also individual changes. A feature which varies a lot is the frequency of engaging in paid work outside the home.

Children go to school, in Segdo, between Twareba and Molobso. They have one or two periods of studying afterwards. They also have two major periods of play during the day, which often takes place in the village. Children also roam the area looking for edible fruits, and often go to Molobso to play and when they need to buy something. Fetching water is a chore which both boys and girls often have. They go to the river well to collect water, and often all the way to Mesfar to collect fuelwood and to graze livestock. When they get sick they go to the health center in Molobso or to the facilities in Halhal or Keren, like the adults do.

The major individual differences between children are between those who go to school and those who don't. Herding their own and/or others' animals is a major task for those who stay home – some children manage to get paid jobs herding other people's livestock. Older boys (from the age of around twelve) may also work on the project CFW program. Older girls will have varying responsibilities related to domestic work, depending on the extent to which their mothers work outside the home. Some women, predominantly female household heads, work daily on project CFW programs or FFW programs run by the local government, and their daughters have most of the responsibilities for cooking, child care, and other domestic tasks. The amount of work children are expected to do varies according to the amount of land the household has, the amount of labor which is required to work it, and the household labor force. It can also vary with crops, extent and technical means of irrigation, occurrence of pests, and so on. There are also seasonal variations related to this. Children work some in the fields, but their major contribution lies in taking over other responsibilities to allow their parents more time for agricultural work.

For those children who go to school, the major seasonal mobility changes are between school and holiday seasons. Schools are closed in July and August. During this time, children work at home, herding animals and doing domestic work, fetching water and searching for firewood. For those who don't go to school, seasonal changes derive from the variations in amount and type of work to be done in the fields, influencing their workload and mobility directly and indirectly as outlined above. Seasonal changes in the supply of water, fodder, and firewood also influences mobility, workload, and time use.

Women's time use, mobility and workload are important issues to consider if and when introducing money-generating activities or promoting new practices to improve nutrition, hygiene, or other features of their lives. Therefore, it is necessary to investigate more into these issues and to get information from women. The Rehey cases in the box above, though



anecdotal, suggest that it is the women in the most vulnerable segments which have the least time to spare for additional activities. It is particularly important to assess the situation of women in these segments.

The information about women's mobility is interesting. The maps do not include information on frequencies, but even assuming that women's mobility outside or even in Twareba is less frequent than men's, the fact remains that their total range is rather similar. A particularly interesting fact is that they go beyond their community to find work. The information is in accordance with statements from young women and men in communities visited, teachers, and home economics representatives, to the effect that women have more freedom of movement and more influence on decisions affecting their lives now than earlier, and that young people don't necessarily follow traditions as strictly as their parents, e.g. related to influence on the issue of marriage. It is not clear how much weight should be given to these facts and statements, but they may indicate that women are becoming more free to meet, to organize themselves, and to engage in activities outside their homes. This bodes well for future project engagements related to improving women's conditions.

### **Social relations, networks, and communal cooperation**

People in Molobso<sup>6</sup> describe themselves as hard-working and honest. They do not appreciate liars, and are tolerant regarding dissent and criticism.

The most important network for material assistance is relatives, they are obliged to assist in any emergency. But friendship is also important, although in a different way. A friend's responsibilities are primarily of an emotional nature; to be good company, to discuss and to give advice if it is needed. A friend might assist financially, with labor, or in other material ways if there is no other option, but this is considered a potential strain on the relationship and thus a poor solution.

There are many examples of developments initiated and implemented by communities, such as school buildings and cemeteries. Communities provide labor and materials and sometimes even money.

Communities help newly repatriated refugees in many ways. Every household contributes a small amount of grains, and the community may also give a returnee family some goats or even a cow if they have no livestock.

Communities have a responsibility for looking after orphans. For example, Twareba has 42 orphans which they look after. The orphans normally live with relatives, and the community contributes food and money to them so that the orphan can be provided for.

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<sup>6</sup> Most likely, what is said about Molobso is true also about Jani and Erota.

## THE PAST

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All the study villages have supplied information on historical trends and developments in matrixes and profiles (diagrams from Rehey (XX), Ketin (VI), Gerbet (XIV), and Twareba (V). The information includes main events and development trends regarding natural resources (forestation, wildlife, grazing lands, and firewood), conservation activities and agricultural data (terracing, irrigation, size of farmlands, yields, crops grown, livestock species and numbers), rainfall, demographic data (size of population in number of households, number of orphans), schools, and housing standard. The following is a synthesis of this information.

### Main events

In a historical matrix from Gerbet (XIV), some major events are included. Settlement began in the fifties, but was disrupted when the war started in 1967. "Houses were burned, livestock slaughtered, more people killed by King Haile Selassie". Two years later, there was a lot of migration to Sudan due to drought and famine. The next major event was mass migration to Sudan in 1983 because of the war. Many people returned in 1984, but fled again in 1988. In 1991, after liberation, people started returning. In 1994, a mosque was built in Gerbet. In the period from 1988 up to the present, "there is a lot of damage because of the ground bomb" (i.e. land mines?).

### Natural resources

**Deforestation** information is included in all the matrixes and profiles except the one from Rehey. They all describe a forested area prior to the war, although with a decrease with settlement (in the fifties). Deforestation escalated with the onset of the war. In Gerbet (XIV) there seems to have been little forest already around 1970, whereas in Ketin (VI) deforestation mainly took place around 1983-88. There has been some afforestation after liberation. In Gerbet, most of what was left also disappeared during the 80s, with a severe decline in 1984 due to the drought and an all-time low in 1990. Since then, some afforestation has taken place both in Ketin and Gerbet. – The profile from Twareba (V) only extends back to 1978. There seems to have been some forest there then, but almost none left by the end of the 80s. The low point seems to have been reached in the period 1988-1991, after which reforestation has begun. The profile claims that there is about the same amount of forest now as in 1978; either this is wrong or there was not much forest before the war. Trees grow mainly along the river and in the two enclosures.

**Wildlife** has declined or disappeared in all communities which have provided information on this (Ketin (VI), Gerbet (XIV), and Rehey (XX)). Ketin and Gerbet have indicated proliferation, presumably as a combination of numbers and number of species, although this is not stated. There is no definition of wildlife; presumably, mainly species which are of use and conspicuous species are included. The trend is closely linked to that of deforestation: In Ketin, the major decline took place in the sixties, and what was left disappeared gradually during the next two decades. After the war, there has been no wildlife. In Gerbet, the decline was linked to the settlement of the fifties and sixties, and there was little left when the war started. There were some fluctuations during the next decade, with a decline related to the 1984 draught. The low point was reached in 1988, when the fighting increased in the area and wildlife all but disappeared. In 1991, however, some regeneration had already taken place, and this trend has continued.

In Rehey, lists of species per time interval indicate trends in the variations of species proliferation – no estimates of numbers per species are included. The first time interval in the matrix is "before 1960". The following species are listed in the matrix for this period: Greater kudy (Tigre: *agazien*), "tigers" (probably cheetahs), hyena, rabbits, foxes, monkeys, wild boars, antelopes (Tigre: *sesha*), guineafowls, and *kakre* (not translated into English). The same species were represented up to about 1975. In the latter half of the seventies,

greater kudy, “tigers”, wild boars, antelopes, and guineafowls disappeared. Hyenas disappeared during the first half of the 80s, and *kakre* during the latter half. Now, only rabbits, foxes, and monkeys are left.

One of the project initiators, Tekleab Mesghina, who worked in the agricultural commission of the Eritrean Relief Association (ERA), gave us the following information (oral comm.): In order to clear the land for trenches and good vision, the Ethiopians cut down around half a million trees in Rehey during the war and sold a lot of the timber in Asmara, in addition to providing for their own needs. This apparently happened during the period 1975 – 1985, when many species disappeared from the area.

Salih Ali Egel, the Baito leader for Molobso district, said that for some time the area was virtually emptied of any conspicuous or useful wildlife species, but during the last few years, the numbers of birds, rabbits, monkeys, and foxes have increased. He also informed us that recently, four “tigers” (it was suggested that this meant leopards, it is more probably cheetahs or another smaller feline species) had been observed in the mountains in the Rehey/Molobso area, they had killed some goats.

The only information on **abundance of grazing lands** is from Gerbet (XIV). The trend is the same as that of forestation and abundance of wildlife in the area – a marked decline (overgrazing due to population pressure and draught) already in the fifties and sixties, exacerbated during the first few years of the war. Conditions became better during the 70s and first years of the 80s, but the draught in 1984 caused another severe decline. Conditions again improved some in the period up to 1988, then yet another decline accompanied the fighting, and conditions have not improved since then.

Information on **firewood** has only been given by the Ketin analysts (VI). There was “enough” firewood from 1950 (the start of the matrix time period) up to the end of the sixties. A slight decline began around 1970, but there was still enough. During the seventies, there was a sharper decline, and by the end of the decade there had been a decrease of about half of the abundance in the initial period. The decline continued further in the 80s and 90s; now, the estimate is that there is about one tenth as much firewood as there was initially. There is no explanation of how one has reached these estimates – they may be related to the time spent searching for firewood or to some observations of fluctuations in woody biomass, but this is not stated.

## Housing

Around 1978, about one fourth of the people in Twareba (V) lived in the traditional houses, three fourths in the newer type. In 1986, many houses had been levelled and about a third lived in traditional houses. By 1988, the area was even more devastated by war and half of the people lived in traditional houses. The population declined throughout this period. – In 1991, the traditional housing type had all but vanished, and the population was up to the mid-eighties level. It has not increased much since then. – The latest development is the appearance of quite a few “modern” houses.

The average number of houses per household in Rehey (XX) until the mid-sixties was three. In the latter half of the sixties, the Ethiopian army levelled Rehey completely, and few or no houses were left. For the rest of the war, there was one house to a household. Since liberation, the average number has risen to almost two (357 households, about 600 houses).

## General trends

The information on the different issues is consistent enough to allow for a few conclusions regarding the general development in Molobso during the past decades, which again sheds light on that of the whole of Asmat.

Not surprisingly, the outbreak of the war, the mid-eighties drought and war intensification, and the liberation in 1991 seem to be the three watershed events. The late seventies and the mid-eighties (1983 - 88) are critical periods overall, and conditions have improved overall since liberation. It is also possible to see the impact from the soil and water conservation

project. There is great accordance between these events and developments regarding natural resources, agricultural conditions, and private assets.

Incidentally, the time line “The history of Ato Mahmud Idris Ali’s cattle herd”, at the beginning of the report, may serve as a good illustration of how developments during the past decades have influenced individuals.

## WOMEN

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Women in Asmat have traditionally been subject to customs and regulations related to Islam, their role in society has been subordinate to that of men. They have mostly been confined to their homes and compounds, and have taken little part in public life. Women have no right to own land unless their husband dies, they have no inheritance rights to land or livestock, and have traditionally not taken part in agricultural work. Religion is practised at home, as they are not allowed to enter the mosques. Polygamy and child marriage is widespread, and young girls are often married to much older men. Women have a heavy workload related to domestic work, including grinding, cooking, fetching water, and child care. Most of the adult women are illiterate, and only about ten percent of school-age girls in the district go to school. Clitorectomy is widely practised.

Changes to women's situation are taking place, some are very subtle and it is difficult to assess their significance. Particularly in the areas which were held by the EPLF during the war, women have achieved a freer position, not least due to their significant role as fighters. Female ex-fighters both as policy-makers, organizers and ordinary women have worked to redefine the role of women. From what we were told, women in Jani, who have had the most exposure to this trend, have more personal freedom and are more independent than women in Molobso.

A significant change is the fact that women's participation in agriculture is increasing. This may strengthen their role versus men, but also means a greatly increased workload. Women now take part in weeding, watering, and harvesting as well as in preparations for storage and cooking of the food. Plowing is still men's work, however. Female household heads should be helped by relatives or the local community, but may also have to employ someone to plow for them. If they don't have oxen, they must wait for the helpers to finish their fields first, and their crops will be sowed late. Most female-headed households are in the poor segment of the population (see section on stratification earlier in the report). – Women are also more involved in livestock management. Cattle are still mainly men's domain, but it was stated to us that women have responsibilities for the smaller livestock together with the children, and we observed a couple of women herding cattle. – Women's overall mobility appears to have increased, women are visible on roads, in fields and in the trading center and are clearly not all confined to their compounds anymore (see section on mobility earlier in the report).

Women have benefited from the possibility of earning cash through the project CFW program. This is the only significant income-generating activity open to women. There are no adult literacy programs in Molobso as yet, nor any training possibilities for women.

There is an increase in women's participation in public decision-making. 37 out of 81 members of the Baitos in Molobso district are women, that is 45.7%, and they are represented at all Baito levels. The National Union of Eritrean Women (NUEW) are also organizing women in the project area in a range of activities, and are used as a channel of contact by home economics extension staff and as a partner for project implementers. We were unable to locate any representatives from NUEW in Molobso, and were told that there are none as yet. The two NUEW representatives who participated in the workshop were both from Jani.

Women's health situation leaves a lot to be desired. In addition to the general health problems, women are afflicted with health problems related to circumcision and to giving birth. The latter is considered one of the major health problems in the area both by locals and health personnel (see health section later in the report). There is little information on the nature and prevalence of health problems related to circumcision in the area, and there are problems related to discussing the matter with locals due to its sensitive nature. However, the following facts indicate that this is a major health problem: First, local health personnel claim that it is. Second, the form of circumcision practised is the gravest one (pharaonic), where all external parts of the genitals are cut off. Third, health facilities in the area are few, and circumcisions are carried out at home under the same unhygienic conditions which apply to women delivering babies. Last, but not least: The demographic figures we have indicate

that female child mortality is significantly higher than male child mortality. (See section on demographics earlier in the report) – It should also be noted that women’s life expectancy appears to be significantly lower than men’s, according to the information on demographics – even in a post-war period where many men must have died young. If this is true, the health problems outlined above and the general conditions of hard work and little / low-nutrition food may be explanatory factors.

To sum up, women face a lot of hardships and constraints in their lives, and their dependence on men for a livelihood is great. It is difficult to assess the nature and extent of changes taking place, or to predict what these changes will mean to women’s situation in the long run. Individual differences should not be forgotten in the analysis, and these may prove to increase as the generation of girls who go to school grow up along with their friends who do not. The main conclusion remains, however, that women as a group are in a subordinate position versus men both juridically, materially, medically, in terms of food security, and in terms of personal freedom and growth.

Two individual stories may illustrate some of the trends mentioned. They are about two young women, almost the same age but leading very different lives:

*Box V The bride*

We were invited for tea in the house of a bride in Rehey. She is 16 years old, her husband is 22. She has gone to school for four years, and reads Arabic.

They got married 4 months ago, and during this time, plus for another two months, she is not to go outside. Her only work in this period is to keep the house, apart from this she lies in the bed and eats fatty foods to gain weight and become fair-skinned and beautiful. Brides get the best food – more meat, more butter, and they don’t have to fast during Ramadan. Bride periods can last up to a year, this woman is going to be a bride for a total of six months, after which she will become a wife, and will go outside and work there.

Marriage is arranged by the families, and in principle the woman cannot refuse a marriage. A man can refuse more easily, but hard pressure is put on him as well. This woman knew about her husband in advance and approved of him.

Normal marrying age for a woman is 15 years, for a man at least 20. Older men often marry younger girls. Polygamy is not uncommon, more than ten families in Rehey are polygamous. But polygamy is a source of many conflicts among wives and children. Child marriages are relatively common – the bride stays in her parents’ house until she is old enough to keep a house. Then her husband’s family builds a house for her and her husband in their compound, and she moves into this house. If the woman does not bear a child, they get divorced, and both can remarry.

It is the husband who should make all decisions. A good husband must discuss with his wife, but he has the final word. Husband and wife do not call each other by their names, but as “father/mother of [child’s name]”. Marriage customs are traditionally in accordance with the Sharia, but there are changes both to them and to other customs. This woman said she would not permit her husband to take another wife, and that they call each other by name.

At the school in Rehey we met a young teacher, Fatna Abderhama. She is Tigre, her father works at the health center in Jani. She has 10 years of education. She has worked at the school for three years. She teaches Tigre, science, and geography. She has asked for a transfer, because she wants to continue her education and then return to Rehey to teach. Her dream is to become a medical doctor. She had a copy of "Where there is no doctor" in Tigrinya, and said "I try to do what I can about the children's health problems" – this means treating wounds and other ailments and trying to teach them about nutrition. Malnutrition is a widespread problem among the children, she said.

Fatna lives at the school in a room with another female teacher, in close contact with male teachers. She spoke freely and looked straight into our eyes, also those of the men. The following day we met her at the market at the trading centre, sitting in a tea house and talking to colleagues and other men. This appeared to be quite natural to all present.

## CHILDREN

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Children have suffered all the hardships that the adults have endured during the last decades, and more. There are many problems that need to be addressed concerning children's lives, such as health, nutrition, and education.

### Children about their lives

Some school children in Rehey told us about their lives. Considering the fact that the information derives from only a handful of children, it doesn't necessarily describe general conditions in every detail. We discussed the issue of its representability with some teachers at the school. They said that overall, the information is in accordance with their impression of what school children's lives in general are like. One exception is the distance from these children's homes to school. These children live in Kertset, which is quite far from Rehey (see map of Asmat Sub-Province at the beginning of the report), and they have to walk for hours to and from school every day. While many of the children come from outside Rehey, none have to walk as far as the children from Kertset (some 30 children).

It is also important to keep in mind the fact that the information derives from school children, a small minority of children in Molobso.

The information from the children is presented below, unedited as far as possible from the conversational form in which we received it.

### *Food and nutrition*

The children eat some wheat porridge or injera at 5:30 in the morning, before they leave for school. They take no tea or milk. They don't return from school until 6:00 – 7:00 PM, this is when they get their second meal of the day – another meal of wheat porridge. None of them bring food to school. They rarely drink tea or milk, or eat vegetables, fruits, meat or fish. They eat some wild fruits.

When asked to show the period of the year where they had more or better food in a seasonal diagram, they put one very small pebble in every month, and then explained that there was always too little food, even after harvest, because they must always save food. But if there was more food they would be very happy.

They eat some wild foods: *Gaba* fruits, and in the summer there are some vegetables which grow wild in the forest, which they eat. They also eat *tiktigie*. The best vegetables are *tigre*, *edir*, and *shembilo*. Unfortunately, we were unable to see or get information about the species of these wild foods.

### *School*

Several sources have informed that a fraction of around 20% of the children in Molobso go to school. These children verified this; they broke off a piece of a stick which represented the fraction of children who go to school – 20%.

(The teachers told us the following about school attendance: Both girls and boys go to school, in rather equal numbers. However, there is still a tendency in families which cannot send all their children to school to send boys, because of the tradition that girls should not leave the house or compound when they are older than 12 years. Giving education to a girl is therefore considered a bit of a waste, one does not think girls can use an education for anything.)



### ***Daily activities and household chores***

These children have to walk for about three hours to get to school, which starts at 9:00 AM. When school ends at 2:00 PM, they spend about four more hours walking home – they are tired and hungry and often thirsty, so it takes longer than walking to school in the morning.

All felt that being in school was good, but the girls thought it exhausting to walk that far five days a week, “we get very thirsty and tired, more tired than the boys”, they said. The boys agreed that it was a hard walk, but they explained that when they are not in school, they must stay out all day herding the animals or working on project CFW activities, which is even harder because they walk all day and don’t eat. At least at school they can sit down and rest in the middle of the day, they said. We asked the girls what their chores are when they are not in school, and they said they look after smaller children, look for firewood, grind grains, and make injera. They said sometimes it is very hard work to stay at home, too, but sometimes it is easier than going to school.

Work at home also includes collecting firewood, this can take up to two hours and is very difficult because there is so little firewood. Nine of them fetch water, in a 5 litre can. Some have to walk for thirty minutes to get to the water source, others for up to an hour.

### ***Health***

April and May is the period of sickness, everybody gets sick, because the climate gets warm and wet.

When asked about their major problems, their answers were all health-related: Fatigue/tiredness, shortage of food, and diseases; they mentioned “geded”, “enkanifo” (unfortunately, we were not able to have these translated), headache, and dysentery. They all looked small for their age; about nine or ten years old (they were 13-14). No measurements of height or arm circumference were taken, and their clothing made any assessment of thinness of limbs, bulging stomachs, or hair damage difficult, but considering their diet they were probably malnourished.

### ***What makes a child happy or unhappy?***

The answers to these questions were related to work and exertion, climate, health and food.

Saleh is most happy in January, because there is no work at home in these three months, and the climate is good. It is easier to walk to school in a cooler temperature. He is most unhappy in July – August, because it is difficult to go to school due to the rainfall, and their house is no good when it rains.

Yasi is most happy in July, because it is the rainy season and they start school. Amna is most happy in March, because then she is no longer cold when she goes to school, and Kadijz is most happy in September because then there is no school.

A discussion regarding the significance of school to their happiness followed this information. They did not agree on this. The reasons were related to the long distance they had to walk, and the weighing of the exhaustion from the walk against the work they would have to do if they stayed at home.

Two girls stated that they were most happy in November and December because that was the time of year when there was most food. They are most unhappy in July and August, because then there is little food, and in April and May because then everybody gets sick due to the heat and humidity.

They all agreed that enough food would make them very happy. Their major problems were fatigue/tiredness, shortage of food, and diseases.

## Children's situation in general

Based on this information as well as information presented elsewhere in the report (see sections on demographics, diet, health, mobility, women), the following general description can be made:

Children's health situation is grave. Malnutrition is widespread. Most small children have protruding stomachs, school staff report widespread fatigue and lethargy among the school children, who only receive two small meals a day, and health center staff continuously receive parents who bring their children in with malnutrition-related diseases hoping that some medicine can be administered. The local diet is dominated by cereal foods, and lacking in dairy products, vegetables and fruits, and meat/fish – it is high in starch but low in proteins and vitamins. In view of this, children's food security situation is highly unsatisfactory. – The child mortality rate is high, both due to unhygienic birth conditions and to the prevalence of diseases. In addition to children's diseases, respiratory and waterborne diseases are prevalent, which affects small children severely.

There is an additional health hazard to girls in that they are subjected to severe clitorrectomy. Demographic information collected suggests that child mortality rate in girls is higher than in boys – this should probably not be seen isolated from the clitorrectomy practice.

The effects of these health problems apparently combine with relatively heavy workloads to wear children out. Their workloads differ between school children and children who are not in school, and also between wealth categories, it seems – it is better-off households who send their children to school, and it is households with only one adult (especially female-headed ones) who must place the heaviest burdens on the shoulders of their children. Particularly older boys who don't go to school have heavy workloads, herding animals or working on CFW activities. Older girls may take over their mothers' domestic responsibilities to allow them to spend more time on income-generating activities or agricultural production. Considering the fact that only a fraction (around 20 - 25%) of the children in the area go to school and the size of the poor wealth category, it is probably safe to assume that at least half of the children in Molobso have health problems (notably, malnourishment) and heavy workloads.

*Box VII The workers on the terraces*

We stopped to talk to a group of 5-6 boys we met at the roadside, carrying shovels and spades. They were about twelve to fourteen years old, and were on their way to do terracing for cash from the project. They told us they would get 6 birr for 6 metres of terrace at the end of the day; if they made less than 6 metres, they would not get paid. They could make from 6 to 10 metres of terrace in one day.

The fact that school attendance is so low also means that literacy is going to be low in the generation who are school children now, as they grow up. The current literacy rate appears to be between five and ten percent – it will rise some, but not enough.

## Orphans

Many children have lost one or both parents during the war. This group, especially the ones who are orphaned, is in a particularly difficult position. As mentioned earlier, the local communities have a responsibility to contribute to the livelihood of orphans, but the primary responsibility lies with relatives, and locals informed that the support is not always there and that the extra responsibility is often a severe strain on the household economy. Other local sources claimed that the orphans are sometimes treated as second-rate to the family's own children, and that they are often acutely aware of the difficulties which their presence is causing to their foster family, and are miserable due to this. Similar tendencies can be seen in the many cases of levirate; a widow marrying her husband's brother.

Twareba has provided information on the number of orphans in their village (V). There was a relative increase from 1978 to 1986, and a further increase to 1988. Since then, there has been some decline as the generation of orphans from this period are now becoming adults, but there are still many. The number now is about the same as in 1978.

## Schools and education

### *The education system and opportunities*

The school system in Eritrea is organized as follows:

|                    |                                           |                    |
|--------------------|-------------------------------------------|--------------------|
| Elementary school: | 1 <sup>st</sup> to 5 <sup>th</sup> grade  | 7 to 11 years old  |
| Secondary school:  |                                           |                    |
| Junior             | 6 <sup>th</sup> to 7 <sup>th</sup> grade  | 12 to 13 years old |
| Senior             | 8 <sup>th</sup> to 12 <sup>th</sup> grade | 14 to 18 years old |

There are two elementary schools in Molobso – one in Twareba and one in Rehey. Neither of them teach further than 5<sup>th</sup> grade at the moment. There is also an elementary school in Erola, which also teaches up to 5<sup>th</sup> grade. People in Kertset have tried to build a school building themselves, but the project was stopped because the construction job was not properly done, and because of the shortage of teachers which made it difficult to find teachers for the school.

The nearest school which offers further education is the boarding school in Jani, which has 1<sup>st</sup> through 7<sup>th</sup> grade. There is no possibility of getting education above 7<sup>th</sup> grade in Asmat sub-province. The nearest full secondary school is a boarding school in Nakwa. Since both the schools in Molobso started in 1990, no children in the district have finished primary school yet, and are thus not eligible for the boarding school in Nakwa at present. When asked whether they thought that any Molobso children will go there once they graduate from primary school, teachers at the school in Rehey thought it unlikely. It is beyond the financial capacity of most families, and the school offers only a few scholarships, they explained.

The headmaster of the school in Rehey was concerned about this. He felt that it is more important to build a secondary school so that students can at least have education up to 7<sup>th</sup> grade, than to build more elementary schools, because teachers are a very scarce resource, and there is a need to educate young people from the area who will be interested in coming back there to work as teachers. It is difficult to get people who are not originally from the area to come there and work, as it is fairly remote and basic.

Ideally, there should be a boarding secondary school, preferably in Rehey which is at the geographical center of Molobso district, the headmaster argued. The construction of such a school would cost 1.5 million Birr, after which there would be running expenses. Problems regarding staffing the school would have to be anticipated.

### **The Rehey school**

The school was built in 1990. It teaches grade 1-5, and has 250 students divided into six classes (two fourth grade classes), which is an average of 41,67 students per class. Nine teachers are employed at the school. Four of them are Tigre, the remaining five are Tigrinya. School facilities include three classrooms in old fighter quarters, and three “das” classrooms (walls and roof made from leafy branches tied to a frame of thicker branches). The latter are exposed to wind and rains, and get very cold during the cold season.

New cinderblock classrooms are being constructed for the elementary school, to be ready for the new school year in July 1995. The construction is funded by an Italian NGO, we did not manage to get its name. The construction costs will be approximately 565 000 Birr. The

building is being carried out by a contractor from Asmara. Once the new classrooms are ready, the school will expand up to 7<sup>th</sup> grade.

Facilities for teachers include a two-room mud brick and stone house with a corrugated iron roof. Four male teachers sleep in one room, two female teachers in the other. The remaining three have lodgings outside the school. The rooms are about 15-16 m<sup>2</sup> big. There is room for the beds, a table, some stools and a chair, and some sacks of flour in each room. Private belongings go in suitcases under the beds. There is also a kitchen in a separate house in traditional style, and the MoE has sent a cook from Asmara to cook and clean for the teachers.

The school has students from Rehey, Kertset, Meher, and Himber. About 30 of the students in the school walk there from Kertset and Samait. The children who have to walk this far get exhausted, have more absences due to disease, and generally discontinue school earlier than the ones who live nearer to the school. They are all malnourished, and get headaches and fatigue problems from walking the great distances.

### **The Twareba school**

The school was built in 1990. It teaches grade 1-5. Unfortunately, our census materials from this school is missing, thus we are unable to present the number of students or classes. However, this school is bigger than the one in Rehey – it has more students (we venture to estimate around 8-10 classes). It also has better facilities – two large cinderblock houses contain all the classrooms as well as an office for the headmaster, with a solar-powered lamp. There are nine teachers at the school; six of which are Tigre, and the remaining three are Tigrinya. One of the teachers is a female; she is married to one of the male teachers and they have a small daughter. They are both Tigre.

The teachers live in cinderblock and sturdy traditional houses in a compound next to the school. They have more room and more furniture than the teachers in Rehey do.

In both the schools in Molobso, equipment is a problem. There are only teachers' copies of textbooks, the children copy from the blackboard onto notebooks. It is not clear whether children are equipped with pencils and notebooks at school or whether they have to buy them themselves. There are no school fees, we were told.

### **School attendance**

About 20% of the children of school age in Molobso district go to school. There are two major reasons for not going to school: About half of the children in the district live too far away from the schools to go there, the remaining 30% are too poor – the children's labor is needed at home, and their parents cannot afford to buy the books and equipment they need.

About 50% of the seven-year-olds in the district start school, but quite a few children discontinue school. The major reason for girls to discontinue is marriage. They get married at about fifteen, but often get engaged earlier, at about eleven or twelve. Upon the engagement it is often considered unnecessary for them to get more education, and they discontinue. The major reason for boys to discontinue is that they are needed at home for herding the family's animals, or that the family needs the income from their labor (working on the project cash for work activities or herding other people's animals). In the second grade of the Rehey school, there are 17 boys and 32 girls, this was explained by the teacher as being due to boys staying home to herd animals.

A central feature of the overall health status of the school children is the prevalence of malnutrition. The estimate of the teachers at the school in Rehey is that around 80% of the children suffer from malnourishment, this is based on their observations of a child's height relative to its age, on the thinness of its limbs, on whether it has a bulging stomach, and on the fact that many of the children are weak. Many children have absences from school which are related to malnutrition-related diseases. There have been a very few cases of children getting so exhausted and lethargic due to malnutrition that they stopped school altogether.

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“Thanks to God and the project”

Report from a PRA workshop and study in Asmat, Eritrea  
January 1996

In the school in Rehey there were 8 children who had lost one parent, none who had lost both parents. The children were cared for by the remaining parent, often helped by an aunt and uncle. The situation of children who have lost a parent (in most cases, their father) relative to other children is more problematic. Almost none of them go to school. Those who do, have shabbier clothes, and often haven't had any breakfast or brought any food. Orphans are even worse off; there is one orphan in the school in Twareba, none in Rehey.

There are quite a few cases of widows marrying their late husband's brother, even if he has a wife and children of his own. This practice provides some care for the children, but it also poses problems because these families tend to become very big with a lot of children, and often the adults cannot afford to feed and clothe them all properly, let alone send them to school.

## HEALTH

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The population in Molobso suffer from a host of health problems. Women and children are particularly affected. A range of these problems are related to unclean water and lack of hygiene, as well as to deficiencies in the diet. Information given by locals includes malnutrition (of which anaemia in women and children and Vitamin A deficiency in children were mentioned in particular), diseases related to contaminated water, malaria, respiratory diseases (influenza, pneumonia), and children's diseases, as well as poliomyelitis and tuberculosis. Health problems affecting women also include abortions and maternal mortality.

Analysts in Ketin and Twareba have made diagrams showing the causes and range of the most important health problems in the communities. In Ketin (XXXVI), these are malnutrition, children's diseases (whooping cough, measles, chicken pox), diarrhoea, malaria, polio, tuberculosis, and maternal mortality. It is stated in the diagram that malnutrition is caused by lack of nutritious food, and maternal mortality by "bad habitual system of delivery". Malaria is spread by mosquitoes near the river, tuberculosis derives from drinking unboiled milk, and polio, whooping cough, measles, chicken pox, and diarrhoea are caused by lack of vaccinations (sic).

The major health problems in Twareba (XXXVIII) are malnutrition, malaria, maternal mortality, tuberculosis, diarrhoea and amoebas, polio, whooping cough, measles, and chicken pox – the list is almost identical to the one from Ketin. Here, too, lack of vaccination is given as the reason for the four latter diseases. It is stated that diarrhoea and amoebas derive from unclean water, tuberculosis from drinking unboiled milk, and malaria from mosquitoes near the river. Malnutrition is related to a lack of nutritious food, and maternal mortality to bad circumstances during delivery. It is also stated that diseases in general spread fast due to shortage of utensils in homes, forcing all family members to use the same ones.

Supplementary information was provided by a group of women workshop participants who drew a health map of Twareba (not included) during the theoretical part of the workshop in Keren. A summary of the information from the health map is found below (Table 10).

Stomach diseases, i.e. diarrhoea, dysentery, and other diseases related to contaminated water, is the most frequent type of disease. This must be related to the fact that the water in the stream which is a major water source to the communities in Twareba is of poor quality.

Livestock drink and defecate in the water, and the stream is seasonal, so that at certain times of the year there is only still water in puddles. These are perfect conditions for waterborne diseases to spread.

Malnutrition related to protein deficiency (kwashiorkor, marasmus(?)) is another health problem which is fairly widespread; the frequency is almost one child in every four households. Tuberculosis is also mentioned.

Table 10 Diseases and other social issues in Twareba

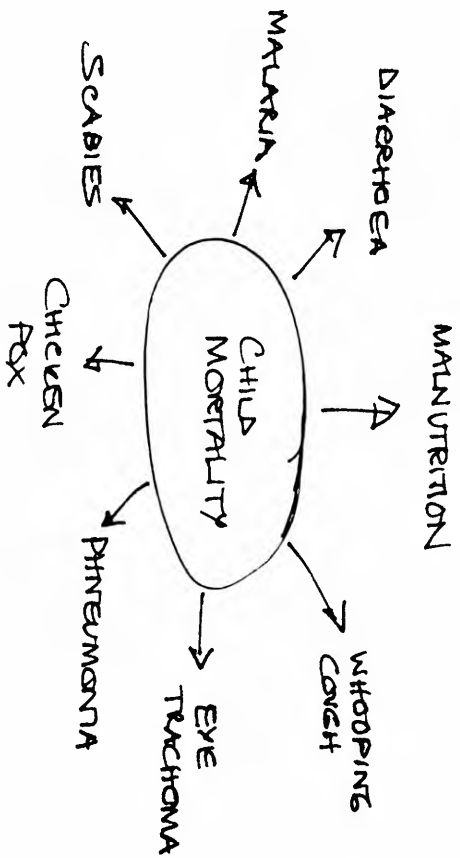
| Disease / social issue         | Number affected |
|--------------------------------|-----------------|
| Disease due to lack of protein | 20              |
| Stomach disease                | 80              |
| Merasmus                       | 12              |
| T.B                            | 5               |
| Widows                         | 80              |
| Men without wife               | 10              |
| Number of houses               | 127             |

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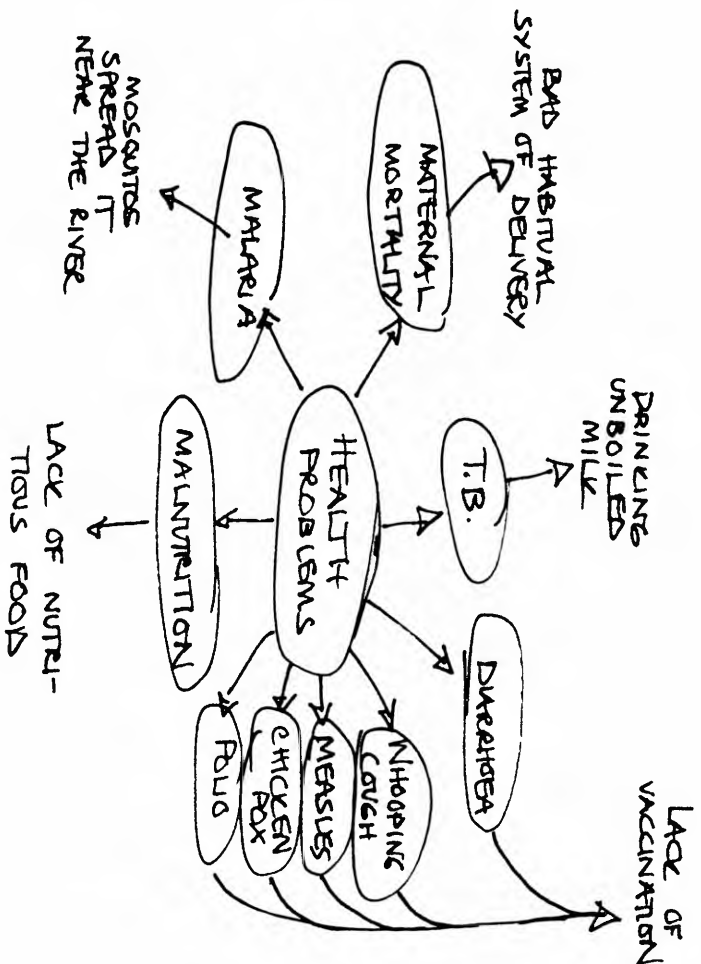
*Prepared by Tsige Tekeste, Saba Mesfin, Fatma Aumer, Amna Edris, Sadya Mohamed (Workshop participants - extension workers + NUEW representatives)*

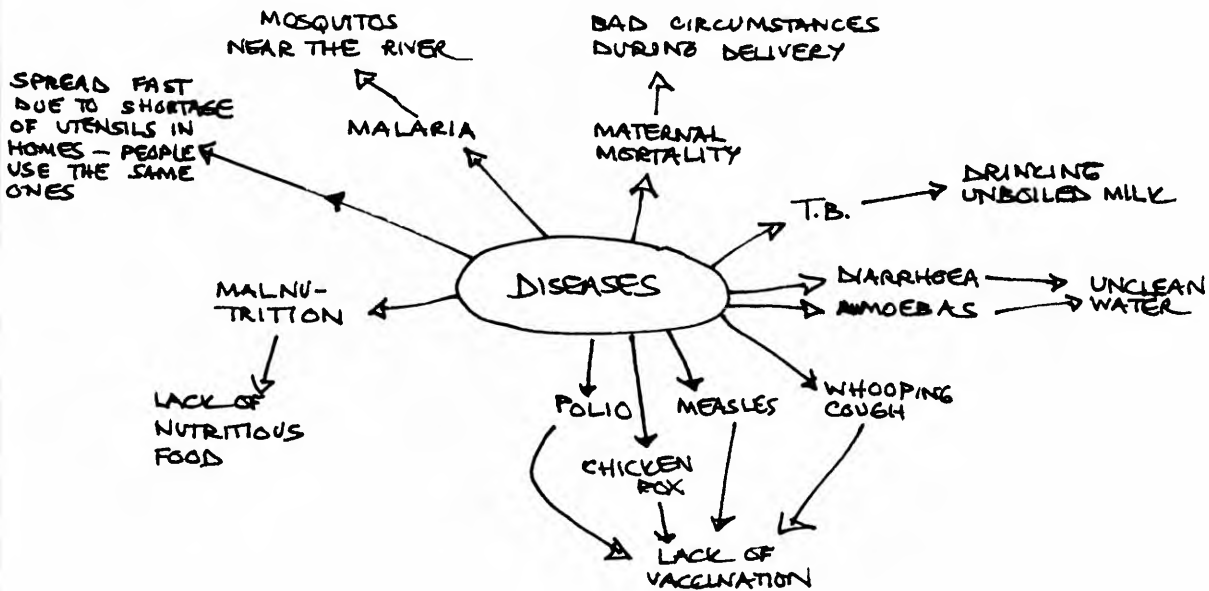
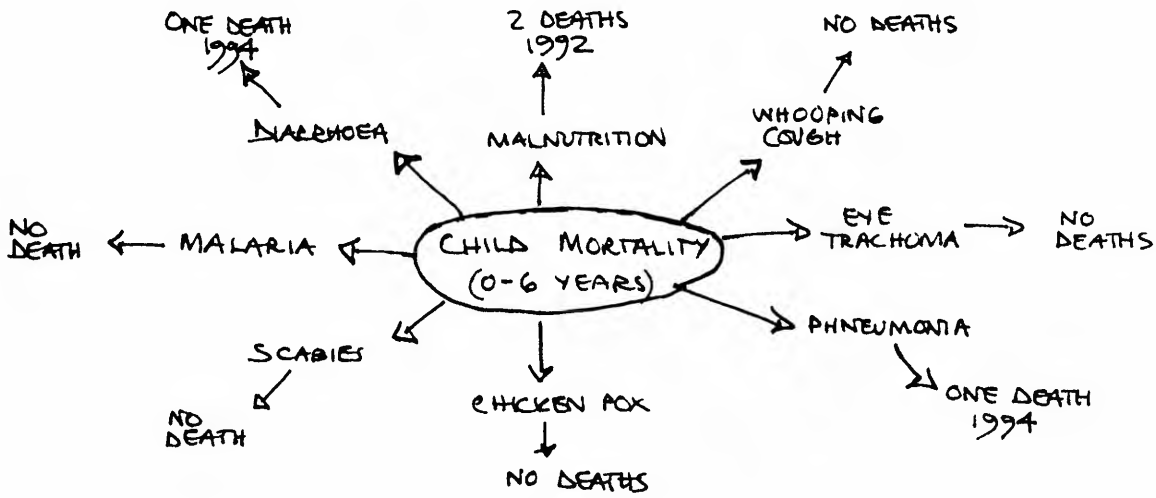
CAUSAL DIAGRAMS  
LENN VILLAGE

GROUP 2

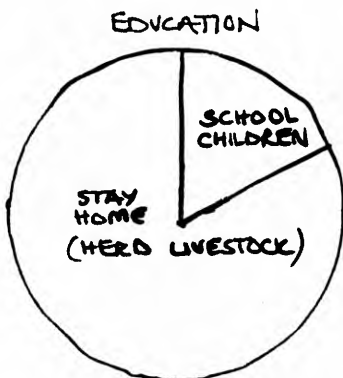


INFORMATION GATHERED  
FROM: FATMA IDRIS  
MEHAMED ADEM





OTHER DATA :



MIGRATION: NONE FROM INDEPENDENCE UNTIL RECENT YEARS

ANALYSTS : MOLOBSO CLINIC  
OSMAN ABRATHIM  
SALEH ABDELA



The information presented by the different sources is relatively consistent regarding major health problems – they can be grouped in malnutrition-related problems, problems related to contaminated water and poor hygiene, respiratory diseases, childhood diseases, malaria, polio, and gynaecological/reproductive health problems.

## Child health

The total number of children under five years of age in Molobso district is estimated to be 3093.

Common health problems affecting children derive from shortage in proteins and vitamins, especially vitamin A and D, as well as from unclean water. Respiratory diseases (bronchitis, pneumonia, TB) are also widespread, partly due to poor clothing. A lot of children have eye trachoma, and also eye problems related to deficiency of Vitamin A. We were told that a lot of children in the area were blind. One theory is that this is related to genetic disorders arising from the widespread practice of endogamy (cousins marrying each other). Malnutrition could be a better explanation.

Many children have absences from school which are related to malnutrition-related diseases. The immune defence system of the children is weaker due to malnutrition, and they are more susceptible to diseases.

Staff at the Molobso health center informed us that people often come to the health centers with malnourished children hoping to get medicine. The health centers give them advice on nutrition.

Traditional remedies in general use include the following: Stomach ache in children is treated with a mixture of spices mixed with water, or resin of *Commiphora erythraea*. Diarrhoea in children is treated with highly concentrated coffee.

Breastfeeding is the only source of food for infants, additional foods are not given early enough. In a few cases supplementary food is prepared for children but it is of poor quality and unhygienic.

Information given by villagers in causal diagrams on child morbidity and mortality (from Ketin – XXXVI; Gerbet – XXXVII; and Twareba – XXXVIII) largely fits into this picture. According to local people, children are affected by health problems ranging from malnutrition-related ailments (marasmus, kwashiorkor, eye trachoma) via children's diseases (whooping cough, measles, chicken pox, mumps) and diseases deriving from unclean water and poor hygiene (diarrhoea, diphtheria, scabies) to respiratory diseases (influenza, pneumonia), malaria, tuberculosis, poliomyelitis and evil spirits.

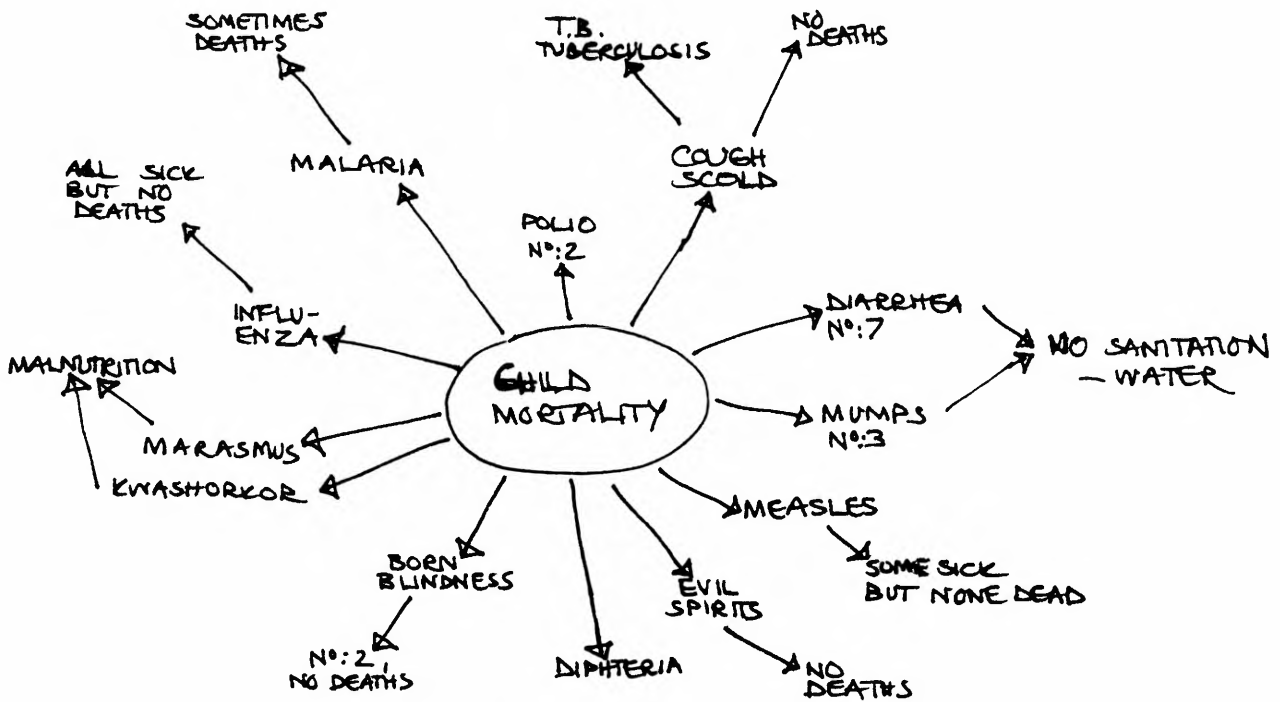
In Twareba (XXXVIII), one child died of pneumonia, and one of diarrhoea in 1994. Two children died of malnutrition-related causes (not specified) in 1992. It is not clear whether more children died. There is no information on causes for children's deaths from Gerbet (XXXVII), but two were registered at the health center with polio, seven with diarrhoea, and three with mumps. Most children in Gerbet had bouts of influenza, and some had measles. Two children were born blind. Sometimes children die from malaria.

In Gerbet, the analysts stated that diarrhoea and mumps derive from unclean water and bad sanitary conditions, and that marasmus and kwashiorkor are caused by malnutrition.

## Female health

In addition to the health problems experienced by people in general in Molobso, women are afflicted with additional problems. These are problems related to clitorrectomy (infections related to the operation itself as well as mechanical injuries and infections related to the poorer hygiene and to sexual practices and labor later in life), and to maternal morbidity.





ANALYSTS: FATMA AW  
 HALIMA EDRIS

GROUP 4

CAUSAL DIAGRAM: CHILD MORTALITY IN GERBET VILLAGE -  
 1994

## **Clitorectomy**

Clitorectomy is widely practised in the area. All external parts of the genitals are cut off, and the tissue is sown together for it to grow, leaving only a small hole for urinating (pharaonic clitorectomy). This is performed when the girl is 7 years old.

A mother who does not have clitorectomy performed on her daughter is considered irresponsible. A woman who has not had a clitorectomy is not considered a proper woman, and may have trouble with her husband when she marries.

## FOOD SECURITY

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One of the objectives during this study was to identify key indicators to be able to monitor project impact in the future. The present system of MoA reporting is not adequate in this respect, as annual report and the like mostly focus on efforts made, e.g. the number of people who participate in a given activity, the number of meters of terraces built, the amount of water held in a dam. The effects of project activities, such as increase in soil fertility, increased water retention capacity of the soil, increased yields, or increased number of months a household is able to feed itself from own land have not been focused on. Moreover, this system of reporting does not reflect degree of sustainability – e.g. whether terraces, check dams etc. are properly maintained.

During the PRA workshop and fieldwork the issue of indicators was continuously explored. Households in various wealth groups and villages contributed information on their livelihood and food security as well as on coping mechanisms in the face of food insecurity. From the analysis of this information we were able to identify some indicators of food security status, also drawing on a number of suggestions for indicators of wealth and food security which workshop participants and locals in the villages came up with. These indicators could be monitored for assessment of project impact on food security and welfare in the future.

### Food security and social stratification in Twareba

Food security was a major theme of the PRA fieldwork. Household food security data were collected through the use of livelihood analyses. After an analysis of collected diagrams and other data, a semi-structured interview guide was developed and used by some of the groups for collecting further information (Appendix 2). The following section presents outlines of these conversations, as they provide a good illustration of similarities and differences. Afterwards, key findings are summarised according to wealth groups in a table and discussed.

#### FATNA OSMAN (WIDOW, VERY POOR, TWAREBA)

Two male and six female children live in the same household (not all are hers). Before the invasion of the Ethiopian army in this area she used to have her own land. Then the soldiers made her land into a fortress and now she is left with uncultivated land. She cannot grow any food, and she has no livestock. Her four-year-old daughter is deaf and dumb, and her brother of 21 has sustained brain injuries after being exposed to carbonmonoxide during the war. He was a fighter. His face was very old, and his movements were jerky, but he sat down and discussed with us, and told us the story about his ill fate himself. He said he faints about 5 times a day. Because Fatna has to look after her brother and daughter, it is difficult for her to participate in the cash-for-work activities of the project. She says she used to get relief food from ERRA, but that they have changed their practice this year to a food-for-work approach which excludes her since she is unable to work. She now depends almost entirely on relatives who live in the neighboring compounds.

Sometimes she gets some aid every three months. She eats whatever she can get from aid and food for work. Most of the time her family eats porridge, only sometimes are they able to eat injera. Yesterday they had three meals, morning porridge, afternoon injera + lentils and the same in the evening.

Her family was very poor during the war and they were often hungry. After EPLF came to power things have changed, but there was still hunger. More recently, life is OK, thanks to God and to the project.....

### **MEGA MOHAMMED (POOR, TWAREBA)**

She is a widow of 48, and has four female and three male children in the household.

They have 0.5 ha land, but the soils are very infertile and they get only 100 kg grains from it. Other people in the village help her by ploughing the fields as they have no oxen of their own. She borrows money to get food for her family and pays it back with money earned at the cash for work programme. She also participates in road construction and maintenance projects (FFW programme).

Last year she planted sorghum but her fields were destroyed by army worms at an early stage. To compensate for this loss she planted barley, but it didn't grow.

They eat what they can get, porridge, injera and roasted wheat. The diet does not change between good and bad seasons. Yesterday they ate roasted wheat for breakfast, they did not have any lunch and for dinner they ate only porridge.

When her husband was alive everything was fine, there was no trouble at all. But when he died the family got poor, they spend a lot of time talking about food, but it is impossible to get it. They collect some wild food.

### **IBRAHIM MOHAMED NUR (POOR, REHEY)**

The household consists of himself, his wife and one child. He has about one hectare of land. He has no oxen, but borrows from his brother when he needs them. He owns one part of a cow and has five goats. He sold one to get money. He will need 250 kg of grains this year to support his family. From his own land he got 150 kg of sorghum and barley. He needs to save about 50 kg for seeds. This leaves him with 100 kg, which will last them for less than five months. During a good season he will eat three meals daily, mostly porridge with butter. During a bad season he will reduce the number of meals to two. Yesterday he ate porridge only, no butter.

Ten years ago he used to eat both porridge and injera and life was according to him better than now.

He has no food in storage (May 1-95) and says that somewhat more than 50% of his food comes from food aid (=food for work??). About 30% from own sorghum and 15% from own barley. He uses no wild food. He gets some credit from the shop and he pays for this by selling his goats.

### **MOHAMED ALI BERET (AVERAGE)**

He has one hectare of land and six people live in the household. He owns one ox and arranges with another ox owner when he needs two oxen for ploughing etc. He has three goats and a cow.

He needs about 800 kg of grains a year (400 kg of sorghum, 200 kg of wheat, 200 kg of pearl millet) in addition to lentils. He and his family shares a house with his goats, his cattle and his food. Sometimes food in storage is attacked by weevils and according to his own estimates 2 kg out of 7 kg is lost while in storage.

When there is a critical shortage of food, mostly from April to June, he usually sells a male goat to get money to buy food. When times are really critical he might sell a cow. He sold one cow this year to supplement his food need and to buy clothing. Last year's harvest (1994) was really bad due to army worm infestations.

In a good season his family will eat three meals a day, while one a bad season they might reduce this to only once a day.

**AHMED MOHAMMED ADEM (MEDIUM WEALTHY, TWAREBA)**

She is married, age 40. There are four males and three females in the household: Her husband's parents, herself and her husband, two male children aged 8 and 5, and a two-year-old daughter. The family has one hectare of land and no oxen. When he needs oxen for ploughing he begs others to lend theirs to him. He has two cows. Last year they grew pearl millet, barley and sorghum, but it was partly destroyed by army worm. They got 400 kg which will feed them for about 2-3 months. (This seems a very short time; probably some of the crops are sold or saved for seeds or lost in storage.) The diet does not change much between good and bad days. Yesterday they ate injera for breakfast, injera and lentils for lunch, and porridge and milk for dinner.

Their main source of income is from farmland and from livestock (milk). Before liberation there was hunger, but afterwards they started to get food for survival from food aid, from their own farm land, and from other projects.

**MEDINA MOHAMED ALI AHMED SHEK (MEDIUM RICH, KETIN)**

The household consists of herself, her husband, and four children. They have three tsimdi of land, about 3/4 ha. They have one ox and one cow. In addition they have 10 goats and a donkey. When asked about chicken she responds that she does not now how to keep them.

They get credit from the shopkeeper and sell goats when they need money. They get 300 kg of grains from their own fields and get salt, pepper and coffee from their son who is a shop-owner.

They grow one tsimdi of sorghum - 100 kg, one tsimdi of pearl millet - 100 kg, and one tsimdi of barley - 100 kg. In addition they get 50 kg of beans that are intercropped with the above. This makes a total of 350 kg. They sell about 5% of the crops, lose about 8% in storage and save 20 kg sorghum, 8 kg pearl millet, 4 kg beans and 100 kg barley for seed. This leaves them with about 175 kg for food. They have 50 kg pearl millet and 4 kg sorghum in storage for food now, in addition to the seed grains. They recently lost four kg beans that were infested with weevils. They eat some wild food, like gaba, huner, rabbit and gamebirds but it does not play an important role in their diet.

On good days (seasons) they eat three times a day, injera and porridge etc. One bad days they still eat three times a day but only half of what they eat when times are better.

Yesterday they had coffee and kollo in the morning, and boiled sorghum for lunch and dinner.

Before independence times were bad but things started to improve in 1988. These days they eat, work and get water.

The food they get from their own fields lasts them for about five months. They supplement this with 365 kg of milk per year and 2 kg of butter. They sell three goats a year and get enough food for two more months.

**MOHAMMED ALI IDRIS (RICH, TWAREBA)**

The household comprises himself, his wife and three children, two boys aged 15 and 8 and a girl aged 9. They have one hectare of land, one ox and three cows. In a normal year they grow enough food from their own land to feed themselves for 10 months (approx. 600 - 700 kg). Last year they planted sorghum, pearl millet, neug and flax. Their major source of income is agriculture and sale of livestock. He is old and he does not work anymore at the project. They eat injera, porridge, and roasted barley.

Before liberation times were terrible. Since the house is located in the mountains, soldiers took over the house to use it for guarding the area and the family was forced to flee into the mountains. There was hunger, but after liberation things have changed thanks to God and EPLF.

Previously they used to eat gaba [*Ziziphus Mauritiana*] fruits but these days they do not do this any more.

### OSMAN MOHAMED IDRIS (RICH, REHEY)

The household comprises himself, his wife and three children. He has one hectare of land and his livestock herd is quite sizeable: two oxen, five cows, 40 goats, two donkeys and five camels. In a normal year he sells 10 male goats, one male camel and one male donkey. In one year the family consumes 800 kg of sorghum, millet, barley and maize.

From his own fields he gets 300 kg of sorghum, 100 kg millet, 300 kg barley and 100 kg of maize – a total of 800 kg. Of this 100 kg is stored as seed. About 50 kg is lost in storage. This leaves him with 650 kg. In addition they get 200 kg grains from food aid. They have a garden that over a 5 months period gives them a cash income of some 4000 birr. From sales of livestock they get 2350 birr. Their total cash income is thus 6350 birr.

Their diet is injera, bread and tsebhi (using vegetables from their own garden), during the whole year. Bad times don't affect their diet. Yesterday they also had this food. At the moment they have 150 kg sorghum and 150 kg barley in storage. No wild food is used by the family.

During the war (1985-90) they used to eat more porridge and milk since they "did not know how to cook" (this probably means they were not able to cook better dishes due to lack of food). Since 1991 they started to cook bread, injera, vegetables, boiled milk and meat.

Table 11. Summary of information collected through SSIs. Changes over the past 10 years.

|                    | No. persons in fam. | Land holding | Cash/income sources                                                                                  | Oxen                        | Other livestock                             | Quantity crops grown last year (food from own land)                                         |
|--------------------|---------------------|--------------|------------------------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------|---------------------------------------------------------------------------------------------|
| Poor widow         | 9                   | none         | don't know                                                                                           | 0                           | 0                                           | 0                                                                                           |
| Poor widow         | 8                   | 0.5 ha       | CFW, FFW                                                                                             | 0 (get help from others)    | 0                                           | 100 kg                                                                                      |
| Poor farmer        | 3                   | 1 ha         | credit from shop – pay by selling goat                                                               | 0 (borrow from his brother) | 1 part of cow, 5 goats (sold one)           | 150 kg. 50 kg seeds, 100 kg for food (enough for 5 months)                                  |
| Medium poor farmer | 6                   | 1 ha         | sell goat to buy food; even sell cow if abs. necessary                                               | 1 (teams up w/ neighbor)    | 3 goats, 1 cow                              |                                                                                             |
| Average farmer     | 7                   | 1 ha         | Crops, milk, CFW                                                                                     | 0 (borrows)                 | 2 cows                                      | 400 kg (enough for 5-6 months)                                                              |
| Medium rich        | 6                   | 0.75 ha      |                                                                                                      | 1                           | 1 cow, 10 goats, 1 donkey                   |                                                                                             |
| Rich               | 5                   | 1 ha         | Crops, livestock sales                                                                               | 1                           | 3 cows                                      | 6-700 kg (enough for 10 months)                                                             |
| Rich               | 5                   | 1 ha         | 2350 birr from sales of 10 male goats. 1 male camel, 1 male donkey. 4000 birr from vegetable garden. | 2                           | 5 cows<br>40 goats<br>2 donkeys<br>5 camels | 800 kg (100 kg seeds, 50 kg lost in storage = 650 kg for food. Enough for almost 10 months) |



Table 11 cont.. Summary of information collected through SSIs. Changes over the past 10 years.

|                    | Food requirements /year | Food sources                                                                        | Food amount stored now | Meals (no, dishes)                                                                                   | Wild foods on diet                                                | Situation now compared to ten years ago                                                                                                                   |
|--------------------|-------------------------|-------------------------------------------------------------------------------------|------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Poor widow         | don't know              | FFW, food aid and from relatives                                                    | none                   | Porridge, sometimes injera and lentils                                                               |                                                                   | Lost her land and husband in the war, depends on relatives. Still, better situation now. Hunger during + right after the war but now OK thanks to project |
| Poor widow         | don't know              | Borrow money, CFW, FFW                                                              | none                   | Porridge, injera, roasted wheat. 2 meals/day.                                                        | some                                                              | Situation is worse now, because since she is a widow she has become poor. They talk a lot about food, but they can't have it.                             |
| Poor farmer        | 250 kg                  | 50% FFW and 50% own crops                                                           | none                   | Good season: 3 meals a day . Bad season: 2 meals a day. Porridge with butter                         | none                                                              | The situation is worse now. They ate both porridge and injera then, not anymore.                                                                          |
| Medium poor farmer | 800 kg                  | Own crops, livestock sale                                                           |                        | 3 meals/day good season, 2 meals /day bad season.                                                    |                                                                   |                                                                                                                                                           |
| Average farmer     | 800 kg                  | Own crops and milk, CFW                                                             |                        | Injera, porridge, milk. No difference between seasons.                                               |                                                                   | There was hunger during the war, now they have food from own land and FFW. Better now.                                                                    |
| Medium rich        | 800 kg                  |                                                                                     |                        |                                                                                                      | gaba and humer fruits, rabbit, game birds. Not important in diet. | Times were bad before independence, improvements started in 1988. Now they eat, work and get water.                                                       |
| Rich               | 800 kg                  | Livestock sales, FFW, own crops                                                     |                        | Injera, porridge, roasted barley. No seasonal variations.                                            | Used to eat gaba fruits earlier                                   | Terrible during the war – chased away from their home. Now better thanks to God and EPLF.                                                                 |
| Rich               | 800 kg                  | Own crops and vegetables, livestock produce: sell crops, livestock, vegetables; FFW | 300 kg                 | Injera, bread, tsebhi with own vegetables. Boiled milk, meat. No change between bad or good seasons. |                                                                   | Mostly porridge and milk during the war. After independence injera, bread, vegetables, boiled milk, meat.                                                 |

## Farmers' own livelihood analyses

Eleven farmers from three villages have put together simple livelihood analyses containing some information on inputs and outputs in their household economy. They have made diagrams showing the number of people in each household, livestock numbers, monthly cash expenses, and sources of income. There is no information on amount of land, but the farmers from Rehey have included crop yields last harvest. None have stated what wealth groups their households belong to, thus they don't provide information on differences between segments or strata of the village population, but must merely be seen as examples shedding some light on living conditions in general.

Three farmers from *Twareba* have analysed their household economies (XXVII). All the households comprise a couple and their children. Their monthly cash expenses are in the range 70 – 100 birr (April 1994). Their income derives from livestock sales, crop sales, food aid, and daily work. The two latter terms are somewhat unclear. "Food aid" may well mean FFW, because only those unable to work get food aid under ERRA's new system, but the term is still widely used to refer to the ERRA food distribution program as such. "Daily work" could mean any form of compensated activity, including FFW. The major source of paid work in Molobso is Redd Barna's CFW program, but there is also some work in the private sector and work migration out of the project area. The relative significance of project and non-project paid work is not known. The reason for including FFW/food aid as a possible income source is the fact that selling these supplies on the market is a fairly widespread practice, either because a household has received more than they need or because they need to buy other items.

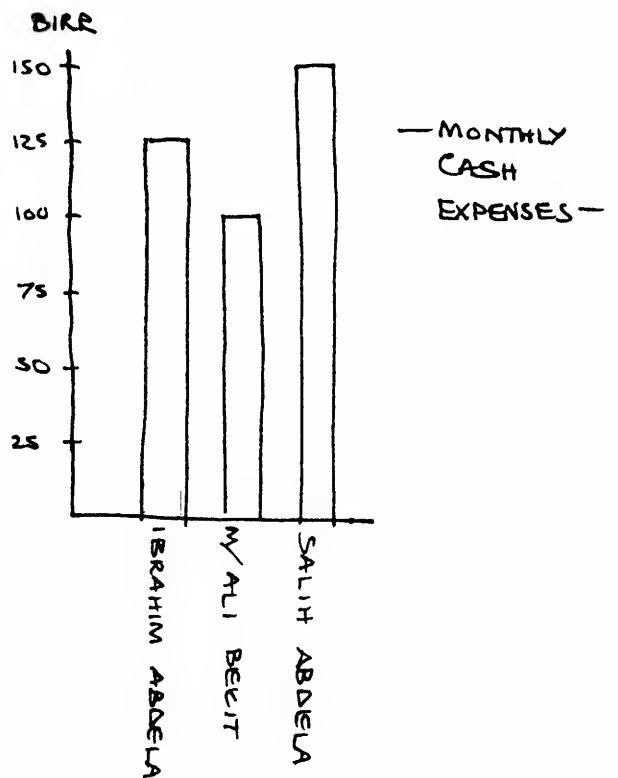
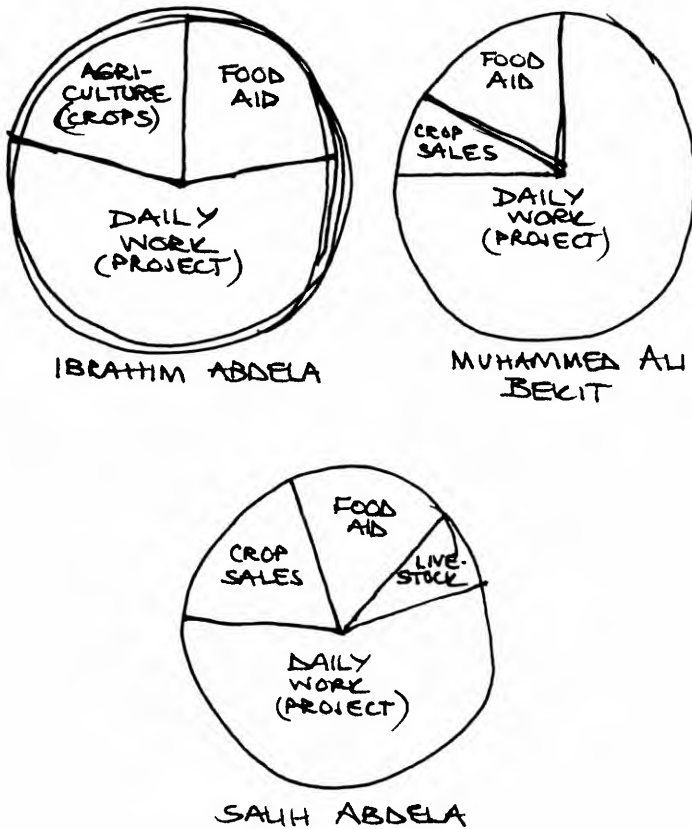
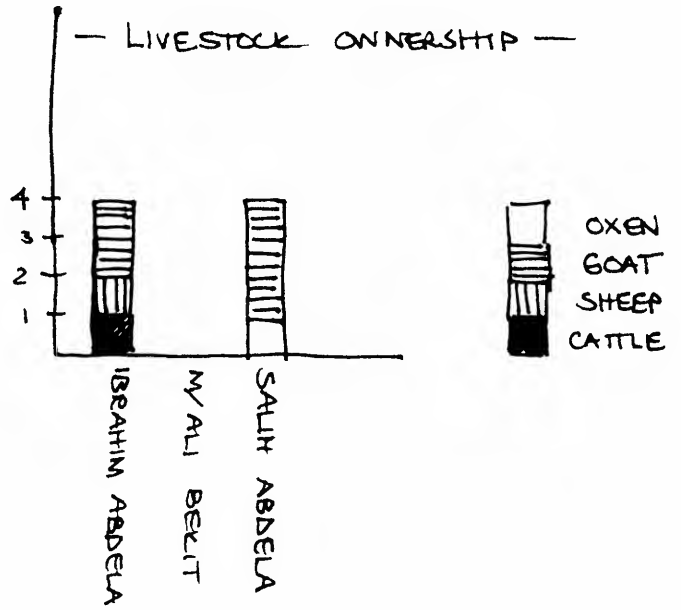
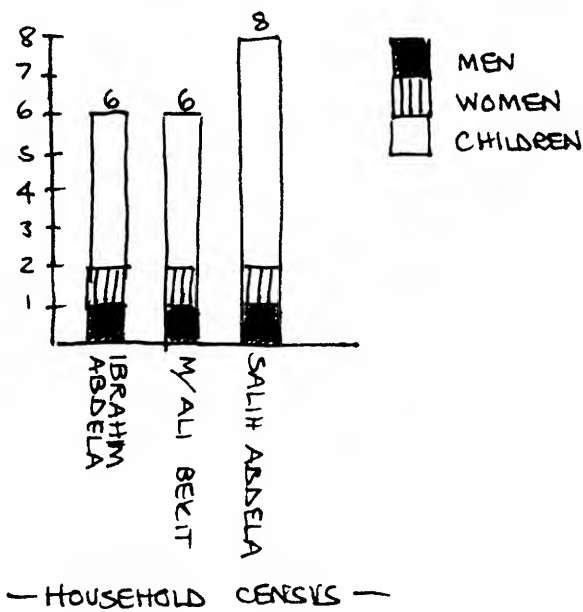
The size of Mahamud Osman's herd indicates that he is among the rich farmers, and livestock sales account for about two thirds of his family's income. Less than twenty percent derives from "food aid", which is probably more a supplementary than a necessary income. Hamed Ahmed and Mohamud Idris rely much more heavily on "daily work" and "food aid" – Hamed Ahmed entirely, whereas about a quarter of Mohamud Idris' income derives from agriculture.

There is not much difference between the *Twareba* and *Ketin* households (IXL), although the dependency on project work is more evident in all three households, CFW and FFW combined being the source of around 75-90% of their revenue. It is stated in this diagram that daily work means project work, which is the Redd Barna CFW program. *Ketin* is further away from Molobso, and there may be fewer opportunities for paid non-project work here than in *Twareba* which is a neighboring community to Molobso trading center. The level of monthly expenses is slightly higher, and none of these households have a large number of livestock. The differences relate more to wealth groups than to villages, these households are probably all poor or average.

In *Rehey*, five households contributed to the analysis (XL). The major trends are about the same as in *Ketin* and *Twareba* although cash expenses are in a higher range (200-300 birr). Project work (not specified further) is shown in the diagrams to be virtually the only source of income, but all the households have higher monthly expenses than the income from the project work, so there must be other sources of income as well. Unfortunately, there is no information on what they are or on proportions, except that Muhammed Idris Nafti who has a sizeable herd earns 30 birr per year from livestock sales (the price of one two-year-old goat). This appears low.

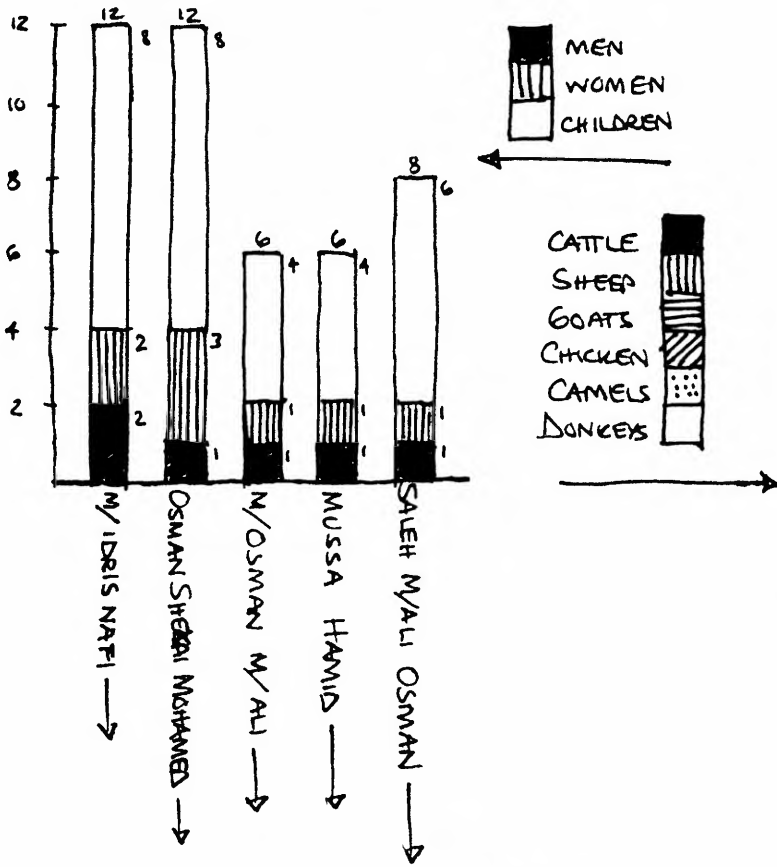
The information from the analyses is scarce, incomplete, and not always comparable, but it gives the impression that the project has significance to most or all household economies, in all villages. It also provides a reference for the household food security and livelihood data presented below.

LIVELIHOOD ANALYSIS OF 3 HOUSEHOLDS IN KEYN VILLAGE  
GROUP 2

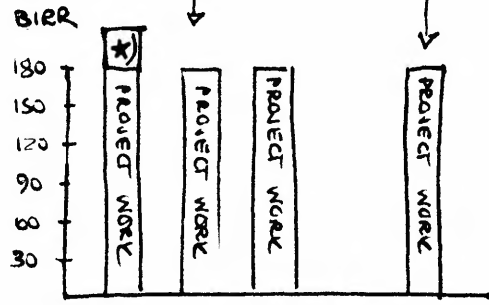
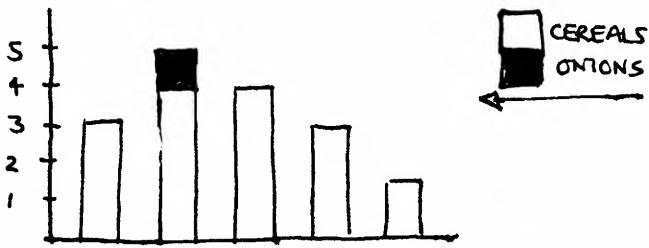
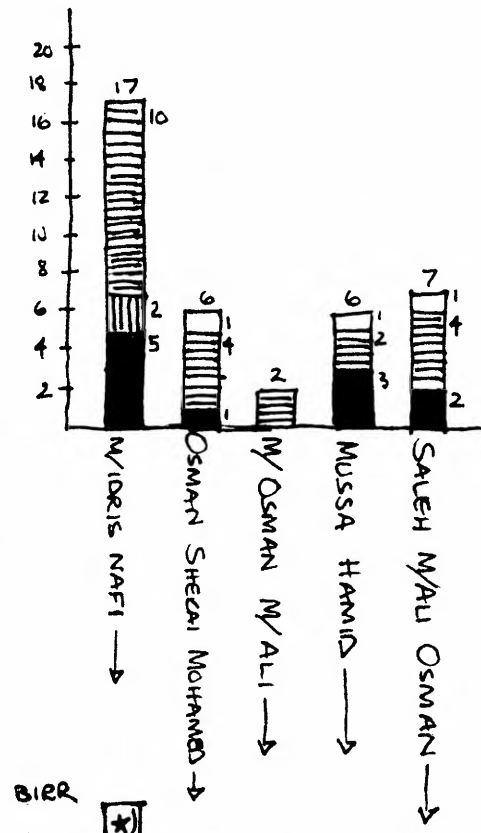


# LIVELIHOOD ANALYSIS OF 5 HOUSEHOLDS IN REHEY VILLAGE

1. - HOUSEHOLD CENSUS -



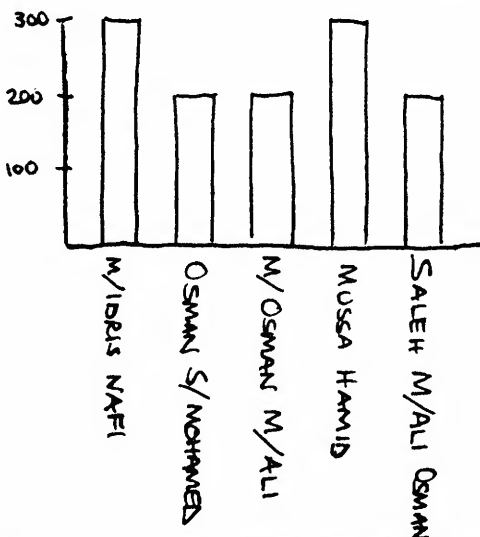
2. - LIVESTOCK OWNERSHIP -



3. - CROP YIELDS (QUINTALES/YEAR)

4. - SOURCES OF INCOME - BIRR/MTH

5. - MONTHLY CASH EXPENSES -



\* 30 BIRR/YEAR FROM LIVESTOCK

GROUP 3

## The household food security situation in Molobso

The diagrams and interviews, supported by other findings, indicate that although there is little social stratification in Molobso, there are considerable differences in food security and comparative wealth. Some families depend entirely on external help (food aid, relatives) in order to feed themselves, others produce all they need and have considerable herds and a sizeable cash income. Most are not able to grow enough food to feed themselves throughout the year, and even after livestock sales, the vast majority – even comparatively wealthy families – depend on FFW or CFW to make ends meet. Below is a discussion on the findings and on common livelihood and food security strategies:

Diversity of production and income is a key to food security and (in local terms) wealth. Central to such diversity are of course land and livestock.

**Land** is very evenly distributed, in fairly small plots. It is rare to come across a household which has more than an acre of land. However, there are quite a few households which have less or no land, or who can't grow anything on their land because there are trenches and "fortresses" on it from the war. Their situation illustrates the significance of land to wealth and food security. They can't grow food, and their ability to keep livestock is severely restricted because they have no land to graze them on and no crop residues to feed them. These families are dependent on borrowing money, on food aid and on help from relatives. – Land has great potential, but there are great variations in yields. Even the meagrest yields contribute to feeding the family, however, and those who get better yields can also sell some of their crops to acquire cash for other items.

Interestingly, there is a clear tendency in the families in the table that the more resources a family has, the better yields they get, or vice versa. There may be several reasons for this trend. Good yields can certainly be the source of better resources. On the other hand, having access to oxen early in the plowing season gives a head start (those who don't have oxen must wait for those who do to finish plowing before the oxen can be lent or rented out), enough personnel is important (the two poorest households in the table are female headed), richer families have more livestock which probably means better fertilizing, and these families may also invest in chemical fertilizers and pest control (although the use is very limited, according to MoA staff), or irrigation, which also opens up the possibility of growing vegetables. Vegetables can enhance food security and nutrition greatly in an area where cereal foods dominate, and they are good cash crops.

**Livestock** herd sizes vary widely, and herd size is a vital component of wealth. Generally, people's first priority is goats – most people have a number of goats (or sheep, but to a lesser degree) per head of cattle. Goats provide milk, meat, and hides, they can feed on the thorny vegetation which prevails in the area, and they constitute a liquid asset and are important sources of income through sales of both by-products and live animals. Cattle are more expensive per unit and less hardy, and thus a greater and more risky investment, but serve the same purposes on a bigger scale for those who can afford it. Oxen are needed for plowing and harvesting, and donkeys and camels for transport, but they have secondary priority to goats. Individual household networks have some influence on herd species composition: Some people have to rent oxen and pay cash or part of their yield, and they would benefit greatly from having their own oxen. Many can borrow from relatives or neighbors for free, however, and to them it is better use of resources to invest in other livestock. Many also buy one ox and team up with someone else who only has one. They thus avoid having to pay rent and also get away with half the investment.

When considering one's options and choosing investment strategies, be it in livestock purchases or other things, people consider not only needs and potential returns but also – even more carefully – potential losses if this investment fails. How big a proportion of their resources can they afford to bind in an investment, and maybe lose? As can be seen from the above, families in all wealth groups (or rather on all points of the wealth continuum) have options regarding their resource allocation, but there are more options open to the wealthy, they can afford to risk more, and the potential returns are often greater. To spread one's efforts into more areas, thereby ensuring a diversified household economy and improving its

resilience, one needs to have a certain amount of resources to go around. Poorer families operate on a more modest scale than wealthier families and are more vulnerable to setbacks.

The impact that this difference has on actual food security in terms of diet is expressed in range of food items and dishes, frequency of meals and amount of food per meal, as well as in seasonal changes in diet. In general, porridge is the poor man's diet, injera is for those better off. An increase in the frequency of porridge relative to injera is thus a common lean season coping strategy. People also make several other adjustments to their diet during the lean season or if they are poor, such as cutting down on the amount of butter or milk used, on the amount of food served for a meal, or on the number of meals per day. Only a few families can afford to eat meat or vegetables on a regular basis. These families do not have to resort to food cutbacks during the lean season, which is the reason why cutting back on these food items is not mentioned as a coping strategy.

### ***Food security categories***

Food security is not only about immediate fulfilment of nutritional needs, and cannot be measured simply by looking at family diet on a randomly picked day. Food security is tightly linked to the wider livelihood of the family and to long-term strategies to enhance it.

People thus often choose to forego short-term food security in order to ensure or enhance long-term livelihood security. E.g. they would rather cut down on their food intake and narrow in on the number of food items in their diet than sell a head of livestock, because the latter action is so much more irreversible and definite, constituting a potential erosion of household capital. Reversibility thus decreases with increasingly grave coping strategies.

There is a distinction between temporary responses to declining access to food and long-term permanent changes in the mix of productive activities. The former can be termed *coping strategies* and are characteristic of structurally secure livelihood systems. The latter can be termed *adaptive strategies* and are characteristic of systems vulnerable to food insecurity. As the livelihood data from Molobso demonstrate, what is a coping strategy to one family may be an adaptive strategy to another (e.g. cutbacks in diet).<sup>7</sup>

Differences in household food security is a central feature of social stratification in Molobso. We have used Arne Oshaug's<sup>8</sup> classification of households according to sensitivity to shocks and resilience to recover as a tool for analysing the nature of these differences. Oshaug differentiates between *enduring* households, with continuous food security, *resilient* households with transitory food insecurity but long-term food security, and *fragile* households which are unable to maintain food security.

Let's look at the social stratification and livelihood data again. Molobso district has a few rich households which can be considered "enduring", with a high degree of food security. Not all the households in the "rich" wealth group of the local classification belong there, as many of these households depend on project work for their livelihood. Based on the data in the section on social stratification early in the report, only about 10-15% of the population live in enduring households with food security.

The group which in the local classification is termed "middle", "medium" or "average" is slightly larger. This is the "resilient" group. Its households may have to resort to coping strategies like making adjustments to their diet during the lean season or even selling livestock, and thus experience food insecurity in transitional periods, but have long-term food security. This segment of the population appears to be around 20-30% of the population.

But there is also a large group of "fragile" households which are unable to maintain their food security, and where the adjustments to diet which are seasonal coping strategies in the

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<sup>7</sup> Based on Davies in Nyborg and Haug (7/1995) (ibid.).

<sup>8</sup> Oshaug (1988), cited in Nyborg and Haug (6/1995). Measuring Household Food Security: A Participatory Approach. Noragric Working Papers, No. 6. Agricultural University of Norway

resilient group have become permanent adaptive strategies. This group is by far the largest one; somewhere between 50% and 70% of the population in the district.

This division would look very different without the support activities in the area, of which the project CFW activities are by far the most important ones. Between 80% and 90% of the households would then be in the “fragile” category, and the food security situation of the “resilient” and “fragile” groups, comprising the vast majority of the population in Molobso, would be exacerbated if these activities were to stop. They are a vital part of most people’s livelihood.

This is what we know about people’s coping strategies in the three food security categories: Enduring households have little or no need for lean season coping strategies in the present situation. Their strategy in the face of additional stress would be to sell more animals and/or make adjustments to their food consumption. – Resilient households reduce their food intake during the lean season. If the need for graver measures were to arise, they would have to reduce more, and sell livestock. The fragile households have already made the lean season diet changes permanent, have little or no livestock to sell, and often already depend on others. If a crisis were to hit them, they would be very vulnerable to the conditions of their helpers. The family might disintegrate, and/or they might be forced to migrate.

### ***Monitoring wealth and food security***

Based on the information presented above, the following monitoring guidelines are suggested:

Monitoring and reporting should be carried out by a PRA team including MoA staff and locals. A stratified sample of households should be monitored, including households in all the food security categories above and representative of conditions in all adis. For food security it is particularly important to monitor conditions in the fragile and, secondarily, in the resilient categories, but from a broader project impact point of view it is interesting to gather data on all the three categories: It is important to find out which segments of the population benefit from the project, and to avoid a situation where the positive project impact is greater in the wealthy and enduring households than in the poorer resilient and fragile categories.

For this reason, a random stratified sample based on wealth rankings and controlling for central and status bias is the recommended sampling method. Households should be identified through wealth rankings carried out by local people (see appendix on PRA for explanation), and a random sample should be picked from each wealth group. Facilitators should take care to collect all information on the criteria used for the ranking, in order to understand the differences and similarities between these and the food security classification presented above.

If this approach is not feasible, a second (but inferior) strategy would be to have a PRA team do its own “wealth ranking” as a basis for a stratified sample, using the following wealth indicators as proxies to assess household wealth :

- Number of livestock per household, number of oxen per household, number of small ruminants per household.
- Diversification of household economy (crops, livestock, vegetables, paid work...), proportion of household income (i.e. resources produced or received by the household) deriving from FFW, CFW, or aid.
- Number of children in school relative to number of school-age children not in school, housing quality, number of months crops will last.
- The following more indirect indicators can support but should not be used as proxies: Female-headed households are generally poor and in the fragile food security category. Those with irrigated vegetable gardens are mostly well off.

These indicators can also be used to monitor development in the general standing or average wealth of a community and its different segments over time, counting average numbers. It should be noted that information on livestock is often difficult to acquire, particularly if

locals suspect that the information will have economic consequences (i.e. bearings on taxes, aid). Having local people on the team, triangulating, ensuring a high degree of information and participation, and omitting the figures in the reports may be ways of overcoming such difficulties.

Once a sample of households has been identified, the following food security indicators can be monitored to follow the impact and development of the project in terms of food security:

- diversification level of household economy: number and proportions of income sources last month
- number and species mix of livestock in household at present (numbers), sales last month (numbers)
- diversification of crops grown now/last growing season: total amount of land, number and proportions of crops grown, amount of land covered by each crop
- proportion of family income or food supply this month deriving from CFW, FFW or food aid

All the information above can be compiled in a livelihood analysis diagram, using pie charts to show proportions, and bar charts to show nominal amounts or relative decline or growth. A discussion of the livelihood and recording of additional information and the family's views should accompany this compilation. – People may find it useful also to themselves to record developments in a series of such diagrams.

- number of months food harvested last harvest will last /have lasted
- average number of meals per day this month
- amount of food, dishes: How many food items/ingredients in food yesterday? Was this a normal situation for this month, better, or worse?
- relative proportion of injera and porridge in diet (per day, per week) during good season and during lean season

These issues can also be shown in a food situation analysis, much the same as an livelihood analysis with bar and pie charts. A general discussion of the current food security situation should accompany this analysis, and additional information and views should be recorded.

Other indicators giving a general idea on the food security status of a community could also be monitored:

- number of households using adaptive strategies in diet
- number of households using coping strategies in diet
- number of households depending partly on CFW/FFW for subsistence (this data will be available in the sample livelihood analysis)
- number of households depending wholly on CFW/FFW for subsistence (this data will be available in the sample livelihood analysis)
- number of households with work-migrating members (this data will be available in the sample livelihood analysis)
- prices of food – seasonal fluctuations, long-term trends. Make a check-list of staple foods, popular foods, highly nutritious foods and major cash crops, check prices in local markets (and important markets outside sub-province) every few months (2 or 3 month intervals?).
- prices of livestock. If prices fall considerably and there are a lot of livestock for sale, this is a warning sign. Make a check-list of common species and check prices in local markets (and important markets outside sub-province) every few months (2 or 3 month intervals?).
- number of cases reported to health stations/clinics of the various malnutrition-caused health problems. Have clinic and health station record this in a bar chart (numbers of each specific disease/ health problem) and report every few months (3 or 6 month intervals?).



- number of children in schools showing symptoms of malnourishment. Have teachers record this and report to their headmaster, who compiles the figures in a bar chart and reports every few months (3 or 6 month intervals?).

The approaches and methods suggested above are just that – suggestions. If the idea of a PRA team promoted in this report is not feasible, other methods and approaches may have to substitute these. Even if a PRA team monitoring routine will be established, one may want to adjust details like time intervals (twice a year may be enough but remember that conditions vary with seasons and amounts of crops left in storage), or to omit some of the indicators above and replace them with others as familiarity with conditions in the area increases. In the words of the first commandment of PRA: Use your own best judgement at all times.

A few final words about sampling: It is probably wise to follow one sample of households throughout a year to account for seasonal variations, then make a new sample to avoid bias.

Reports should be received and filed by MoA, specifically by the person who has primary responsibility for the execution of the project. Report should be kept short and to the highest degree possible in diagrams, permitting an overview of developments at a glance. More on reporting routines in the Recommendations section later in the report.

## THE PEOPLE AND THE PROJECT

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Asmat Soil and Water Conservation Project has been a part of people's lives in the sub-province for a few years now. They relate to the activities both as such and as a source of income. This chapter presents some findings related to people's perceptions of the project and the activities, as well as to their feelings about them.

### Problems and possibilities

A transect walk in Gerbet resulted in a causal diagram (XLI) showing major problems and suggestions for solutions. This diagram also says something about the degree of local dependence on the project, and about people's perceptions of the project's activities and role.

Problems listed include scarce and unclean drinking water for people and animals, health problems (no vaccination and a long distance to the Molobso clinic), orphans and poor people who cannot care for themselves, and trenches and mounds dug by the Ethiopian army during the war, which now ruin farmland and contribute to erosion. People have also stated that they are unhappy with the current settlement pattern, they would like to live closer together to be able to help each other, and that they lack farm implements "like motors", i.e. well pumps.

A few explanatory remarks about the trenches mentioned: Trenches and piles from the former front lines cover a lot of farmland. They often constitute whole villages underground. Dismantling these fortresses by hand is a monstrous task, and there is a great need for a bulldozer to come in and level the land again. Many farmers are in effect landless due to these trenches and piles. They also exacerbate the erosion situation on the slopes. 23 families in Molobso, 8 families in Araza, and 15 families in Kertset and Rehey – a total of 46 families – are left landless due to this, we were told by Baito members. The potential area which could be gained by bulldozing the trenches is 30 ha.

To solve the problem of unclean and scarce drinking water, it is suggested to dig wells and drill for water, and to build dams for watering livestock. A better system of vaccination and an ambulance or a health center in the village is suggested as a solution to the other health problems. To level the farmland ruined in the war, people would like a bulldozer or tractor to come in and level the land. People would also like the project to aid them in building houses "because we cannot build them", they would like to see that the orphans and the poor get "free gifts" and long-term credit, and regarding the farm implements "we ask that the project give us the agricultural articles as a gift".

While most of the problems are legitimate community problems, and – as far as we can tell – there is sense in the solutions suggested, there is an underlying sentiment here which perhaps should make those responsible for the project feel a bit uneasy. The "possibilities" or proposed solutions generally have to do with the project providing things, and it is stated clearly in more than one place that this should be "as a gift", no returns should be demanded. Nowhere are there any suggestions regarding what people can do themselves. This may be an expression of unrealistic expectations, and it is probably related to the fact that some of the team members introduced themselves in the field as being "from the Ministry of Agriculture" and were therefore probably conceived as being project representatives, thus people seized the opportunity to present their wish lists. Volunteering suggestions for own contributions has probably been thought a poor point of departure for bargaining. For whatever reason, the mentality expressed in the diagram suggests that greater care should be taken in the future not to undermine people's self-reliance, they should not come to expect or hope that the project will solve their individual or common problems, but look to it as a partner. An important aim of a more participatory approach to future activities is to give people the chance and responsibility to do this.

"WE WANT THE PROJECT TO AID US IN BUILDING HOUSES BECAUSE WE CANNOT BUILD THEM."

"WE ARE LIVING SCATTERED, SO THAT WE CANNOT HELP EACH OTHER. BUT WE WANT TO LIVE IN GROUPS AS ONE ENVIRONMENT."

"WE ASK THAT THE PROJECT GIVE US THE AGRICULTURAL ARTICLES AS A GIFT"

"OUR LAND IS PREFERABLE FOR GARDENING, BUT WE CANNOT GET AGRICULTURAL IMPLEMENTS LIKE MOTORS [FOR WELL PUMPS]"

"MOST OF OUR LAND IS NOT LEVEL BECAUSE OF THE LIBERATION WAR" [DEFENSE IRONICUS & MOUNDS]

"WE NEED THAT LIVE DOZER, TRACTOR THAT CAN LEVEL OUR LAND."

**POSSIBILITY:**  
"BECAUSE OF THE PROJECT MORE, OUR FARMLAND IS KAPT FROM EROSION. AS A RESULT OUR YIELD PRODUCTION BECOMES MORE FROM YEAR TO YEAR. IF THE PROJECT CONTINUES, I HOPE WE CAN CAREY OVERSEAS IN A SHORT TIME."

"THERE ARE ORPHANS AND VERY POOR PEOPLE. THEY CANNOT CAREY [CARE FOR] THEMSELVES."

**POSSIBILITIES:**  
• FREE GIFTS [AID]  
• CREDIT WITH LONG-TERM REPAYMENT SCHEME

"THERE IS A LOT OF DISEASE WHICH IS CAUSED BY THE DIRTY DRINKING WATER."

**POSSIBILITIES:**  
• DIGGING WELLS  
• DRILLING FOR WATER [BOREHOLES]

"THERE IS NO VACCINATION, SO THERE IS A LOT OF CHILDREN WHO DIE. THERE IS A LONG DISTANCE FROM OUR VILLAGE TO THE MOULBIO CLINIC."

**POSSIBILITIES:**  
• PEPPER VACCINATION  
• BUILDING CLINIC/HEALTH CENTER IN OUR VILLAGE, OR HAVING AN AMBULANCE

"BECAUSE OF THE RAINY SEASON IS SHORT, THE WATER FOR OUR ANIMALS IS NOT ADEQUATE."

BUILDING DAMS IS THE KEY TO SOLVING THIS PROBLEM

### PROBLEMS & POSSIBILITIES

DIAGRAM SHOWING PROBLEMS AND POSSIBILITIES IN GERBEY VILLAGE. BASED ON DISCUSSIONS WITH LOCALS DURING TRANSECT WALK.

### Group 4

- ANALYSTS:**
- HUMED MOHAMED AU
  - MOHAMED EDIUS
  - SULEMAN MOHAMED
  - MOHAMED KER
  - MOHAMED ALI
  - ESMAIL EBRATHIM
  - ABDELA MOHAMED
  - AFA EBRATHIM
  - MOHAMED ABDELA



## People's views on project activities

People in Twareba scored and ranked four development activities according to various positive effects (XXIX), including checking floods, providing drinking water for humans and animals, facilitating plowing, levelling the land, percolation of water into the ground, enhancing the growth of grasses, and upgrading the groundwater table. Low energy requirements was also included as a criterion.

The four development activities were terracing, building check dams, afforestation, and dam construction. Building check dams came out as the first priority alternative, with top scores on checking floods and levelling the land by preventing or minimizing gully erosion, and good scores on enhancing drinking water availability, percolation, and grass growth, facilitating plowing, and soil and water conservation. Regarding the latter two criteria, terracing got the top score, and it also got good scores on checking flood and on levelling the land, but moderate scores on enhancing drinking water availability, percolation, and grass growth. Terracing was ranked second overall.

Dam construction was ranked third, with top scores on enhancing drinking water availability and percolation and upgrading the groundwater table, but moderate scores on checking flood, soil and water conservation value, and contributing to levelling the land. – Afforestation got the lowest overall rank. This action got top scores on enhancing grass growth and on low energy use (it is not clear what “energy” means – most likely manpower), but moderate to low scores on checking floods, enhancing drinking water availability, soil and water conservation, and percolation.

Some interesting aspects of this ranking should be pointed out. One is that gully and sheet erosion as well as a lack of vegetation cover is still a serious problem in the area, and Twareba has not been spared. The effects are expressed in the criteria for the ranking – they reflect what are the most important improvements which people would like to see in their environment. Another interesting aspect is what the scoring says about local knowledge on the effects of different conservation actions. Where does this knowledge come from, how accurate is it, and what are the consequences to conservation efforts of the degree of people's understanding of these issues?

People seem to appreciate fairly well how the different actions can contribute to the improvement of their environment, although afforestation seems to get little credit for some of its effects. It is interesting to note that this generally applies to the long-term and not easily observable effects. This reflects the great importance of people's own observations of conservation effects to their opinions: When hailstorms rip open the ground and the water comes thrashing down the erosion gullies, the effects of check dams are demonstrated beyond any reasonable doubt, whereas the gradual restoration which is quietly taking place in the enclosures happens at a slow pace and out of everyone's way, because the enclosures are fenced in – people are barred from taking a close look at what is actually happening in there apart from trees and grasses growing. The checking of water flow and soil erosion, the improvements of soil quality, the microclimatic changes, the potential for improving water quality ... these and other more gradual and long-term effects are not apparent to the general population yet.

The enclosures are still only a few years old, and the vegetation is still mostly grasses, shrubs and small trees struggling to survive on meagre water rations and punished soils. Hopefully, the vegetation will eventually become robust enough to allow opening up for (limited) use. When people regain some access, they can observe the developments more closely and enjoy some of their results... how will they score the afforestation effects then?

There is a private enclosure in Twareba, the only private one in the Molobso area (that we know of). In 1989, one farmer took the ministry of agriculture up on an offer to provide seeds for trees, fenced about half an acre of his land, and with his children stubbornly lugged bucket after bucket of water from the river to water the little seedlings while his neighbors shook their heads. Today, the enclosure is six years old, and the contrast to the surroundings is striking. It is a little lush miracle. The trees are beginning to look like trees, there are beautiful long grasses and shrubs, birds nest there, fruits grow, and the farmer's plump goats

and cows frolic in the juicy grasses and have no idea what a royal life they lead compared to their neighbors. Apparently, the farmer is now very happy that he did this and is able this year to cut down some of the trees, and his neighbors sincerely wish they had followed his example back in '89.

This is a unique case with a special potential for inspiring others since it is done by an individual on his own, but the project might also make an effort to inspire people to act on their own, and to increase their knowledge of possible conservation actions. One way of doing this would be to invite people to visit enclosures; and to arrange demonstrations of conservation, water harvesting and other activities which families can try out on their own land and in their own homes.

## CONCLUSIONS

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### The Project

Redd Barna has, through ERRA and the Ministry of Agriculture, provided substantial support to the Asmat sub-province since 1988. The main object of this support has been ecological rehabilitation. The most significant activity so far has been the construction of terraces to reduce soil erosion. This has been achieved through CFW and FFW programmes. The objectives have been both to feed the population in periods with food scarcity and to rehabilitate land that was degraded due to the combined effects of drought and a long-lasting war. The project has to some extent accomplished what it set out to do. Sedentization is virtually complete and repatriation is in process. The rate of soil erosion has slowed down, and the vegetation cover is improving. There is, however, a long way to go before people in Asmat are self-supporting.

### Findings and baseline data

#### *Agricultural production and farming systems*

People in the area are subsistence producers who have shifted from an adaptation with focus on nomadic pastoralism to one of sedentary crop production and animal husbandry. Land holdings are generally around 0.5 – 1 hectare. Cereal crops dominate (sorghum, pearl millet, maize, some barley) but there are a couple of leguminous crops as well (beans, cowpeas). Intercropping of cereal and leguminous crops are practised, so is rotation sequences of two seasons with cereal crops and one with a legume. – Some who have access to underground water on their land grow vegetables on irrigated plots. These are primarily cash crops.

Livestock herds have dwindled in the past decades, but continue to play a key role, not least as liquid assets, in households' economy. Small ruminants (sheep, goats) dominate, but cattle are also common, as are donkeys. Oxen are used for plowing. Together with vegetables, livestock (notably goats) constitute the main export item of the project area. Land holdings play a crucial role in animal husbandry, as fodder is a limiting factor and animals graze on crop stalks and are fed weeds.

Productivity, both regarding livestock and crops, is low. Most households are only able to feed themselves with food produced on their own land for 3 to 5 months of the year. The rest of their yearly food supplies are purchased with income earned from the sale of livestock and from project activities. Only some 5–10 % of the population in the project area are considered "enduring", i.e. food secure without FFW and/or CFW. There are a number of reasons for this situation, including climatic factors like erratic rainfall and degradation problems like eroded soils and lack of vegetation. However, there are also problems related to agricultural practices and available resources.

Regarding crop production, the following should be mentioned: Manuring of fields is inefficient – largely restricted to animals manuring fallow fields as they graze on them. Field and storage pests affect yields. Another problem has been that seeds distributed have not been adapted to local conditions. The shortage of suitable seeds is a major material constraint to agricultural production. Another problem often raised by the villagers is the shortage of oxen for ploughing (hoes are not in use).

Livestock are extremely important to food security, and livestock holders with a few goats and maybe a cow, an ox or a donkey are generally able to cope with recurrent droughts in a better way than households with fewer or no livestock. However, livestock productivity is low. This fact is closely linked to the livestock health condition. Livestock are subject to fodder shortage and afflicted with numerous diseases.

## Marketing and credit

The major export items from the project area are, as mentioned, livestock (notably small ruminants) and vegetables (notably onions). There are some local markets. Crops, livestock, utensils and other household and consumer goods – both locally made and “imported” – are sold there. These markets are not attractive to larger-scale cash crop producers, they cater mainly for local, small-scale sellers and buyers.

The Eritrean commodities market is unstable. Prices fluctuate, as do supplies. The price fluctuation makes it very difficult for the individual farmer producing for sale to make decisions regarding resource allocation or to plan for the future.

Infrastructure and transport are other limiting factors in the current marketing situation. Roads are bad, and there is a shortage of trucks – especially from Erola and Jani to Molobso.

In addition to the MoA and project credit opportunities for oxen and diesel-powered water pumps, there is a private credit market. Interests can be very high. Credit from the stores are extended to many families.

## Natural resource management

*Maintenance of project-initiated conservation structures:* Maintenance is the weakest point of the work currently done through project CFW activities. This seems to be true especially of structures on common lands and of little immediate use to the local population, such as non-cropland terraces and enclosures.

*Wild vegetation utilization and supplies:* Use of vegetation in the wild is subject to restrictions due to the environmental degradation, but has long and rich traditions. There is extensive knowledge in this field. Fuelwood, house construction, and fodder (grasses and shrubs as well as lopping of leaves from trees) are the major uses, others are as materials for fences, tools, furniture, thatching, medicine, food (edible fruits), ropes, tanning agents, shade and decoration. – In addition to fodder, crop residues also provide thatching materials, fuel, and materials for weaving mats.

*Water supplies and harvesting techniques:* Water is a scarce resource indeed, primarily due to erratic rains but also to inefficient harvesting techniques. The major harvesting techniques at present are diesel-powered pumps and shadoufs. The former entails equity and fuel dependency problems, the latter can only be used in wells of up to 2-3 m depth.

*Need for biomass:* There is a lack of biomass for fodder, fuelwood, and construction work. There are no figures on availability, increment or annual growth of woody biomass, nor on the rate of use, but there are indications that available fuelwood covers only around 60% of the demand. Regarding construction, we were told that in Jani, roofs on houses consist of whole tree trunks laid next to each other. This form of construction demands large amounts of wood. It is not used in Molobso, but for house construction here, too, poles and branches are required.

*Construction:* After the liberation, with a growing sense of security and prosperity, a lot of construction has taken place in the project area. Two aspects of this fact are relevant to the project;

1. While construction in the villages is mostly undertaken by villagers themselves, activities in Molobso and other local centres often require the use of more skilled labour, as house design and building materials differ from what is traditionally found. One example is the construction of the new school in Rehey. For this task, skilled labourers from Asmara are used, and most of the construction materials are also transported from Asmara. – It is likely that Asmara will experience an increase in development in the near future. In the short run, this will result in a fairly steep price increase for building materials and skilled labour which will reverberate to other parts of the country, like Asmat.
2. A current increase in construction in the area means a growing demand for scarce woody biomass resources. This may offset the woody biomass increase which has already been achieved through project activities. As mentioned, traditional house construction both in the

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“Thanks to God and the project”

Report from a PRA workshop and study in Asmat, Eritrea  
January 1996



lowland areas and in the highlands requires large amounts of woody biomass. Using wood excessively when suitable stone materials are plentiful appears to be something of a waste. Some examples of more promising building designs are starting to appear, however. These are inspired by traditional design but use more sturdy materials.

### ***Food security and social stratification***

Social stratification in Molobso exists on a modest scale. However, there are marked differences in food security between different segments and households. Diversity in production and income is a common strategy to maintain food security, with the following key elements: A certain amount of land is needed (although there are no plots above a couple of hectares), and livestock are of vital importance, as mentioned above. Herd size is closely linked to household food security and often to relative wealth. – The project CFW activities, as well as ERRA's FFW activities, play a vital part in most people's household economy.

We have divided the population in Molobso into three food security categories: Around 10-15% are *enduring*. They have continuous food security and do not need to use coping strategies even during lean seasons. Around 20-30% are *resilient*, with long-term food security but transitory (seasonal) food insecurity. During these bouts they have to resort to *coping strategies* such as reducing the amount of food, dishes, and/or food items in their diet. The largest group, between 50% and 70% of the population, are *fragile*. The coping strategies mentioned above have to them become permanent *adaptive strategies*.

This division applies to the current situation and circumstances. A vital aspect of these circumstances is the project and ERRA's CFW and FFW activities. Without it, around 80-85% of the households would be in the fragile category and migration would doubtless begin again.

### **The poor**

The segment of the population belonging in the "fragile" category are in local wealth rankings termed "poor". Female-headed households and landless households almost all belong in this category. Female-headed households suffer from lack of labor in that there is no grown male, as well as often experiencing other problems, e.g. related to land holding rights. Landless households cannot grow their own crops, and the number of livestock which can be fed without access to crop stalks and weeds is severely limited.

Apart from their problematic food security situation, the following is common to this group: Due to lack of time (heavy workloads) or for other reasons (e.g. handicaps or handicapped family members who need constant care) they are often not able to participate in activities which could benefit them, and they are often underrepresented in public life and where decisions are made. Community or project activities designed to better the situation of people in the area but requiring some input from them will thus often not reach those who need it most. A similar problem concerns credit schemes: The poorest will not apply for fear of being unable to meet the terms.

### ***Women and children***

#### **Women**

Subordination to men, restrictions on mobility outside the home and on influence on public life, lack of inheritance or ownership rights to means of production, heavy workloads, illiteracy, and health problems are factors which have affected women's lives.

Changes are occurring, but it is difficult to estimate their significance. Notably, women are now more visible in the public sphere and have some political influence. Literacy seems to be increasing somewhat. Women's role in agriculture has increased, but it is not clear whether this is only in terms of an increased workload or if their influence over the returns

have increased too. The project CFW activities have provided women with a possibility for earning their own income.

Widows and other women who are household heads are subject to particular problems. They are generally in the most vulnerable segment of the population, most fragile regarding household food security, and are likely to have few resources in terms of material assets, means of production (land and livestock) and labor. An example of the latter problem is that plowing is a problem for those who don't have a male family member who is old enough to do this. They have to ask someone else to do it for them or even pay someone, as plowing is not women's work. – These women are thus likely to be forced to spend a lot of time engaging in CFW and FFW activities, in addition to their other chores, and thus have a particularly heavy workload.

Women's health situation is very problematic. In addition to health problems experienced by the whole population, such as waterborne and respiratory diseases, women have additional problems related to reproduction and clitorrectomy. Hygienic conditions during and after delivery pose dangers to both mother and child, and the nature and execution of circumcision suggest that gynaecological problems later in life are frequent. Our data also indicate that the abortion rate is alarmingly high.

## Children

The following problems affect children's lives: Malnutrition is widespread. There are few schools and low school attendance, and no possibilities for secondary school in the project area. Heavy workloads and/or long walks to and from school are common – not necessarily a problem in itself, but more serious when combined with malnutrition – as it often is. There are a whole range of health problems in addition to malnutrition, notably waterborne, respiratory and children's diseases. Child mortality is high.

Girls are subject to severe clitorrectomy, often under unhygienic conditions.

Many children were orphaned during the war. They are mostly cared for by relatives, which may put a strain on the household economy. Thus, orphans may, in addition to having lost their dear ones, experience the stresses of growing up in a family with few resources to go round, and sometimes being blamed for this lack of resources. Similar stresses are experienced by children in some polygamous families, particularly when a widow with children marries her husband's brother and he already has a wife and children.

*Education:* There are two primary schools in Molobso (1<sup>st</sup> through 5<sup>th</sup> grade). They take a total of about 500 students. The only school in the project area offering education above primary level is the boarding school in Jani, which offers up to 7<sup>th</sup> grade.

About 20-25% of school-age children in Molobso go to school. Many have to walk great distances to school, and about half of the children in the district live too far away from any of the schools to be able to attend. From what we understand, the situation in Jani and Erota is not very different. There is a need to expand the primary education capacity in the project area as well as to supply it with a possibility for secondary education. The two major tasks related to this is construction of school buildings and recruiting teachers, which are in short supply in Eritrea...this is often a greater problem than erecting buildings.

Getting as many children as possible into schools is very important. Not only is literacy immensely important in itself, but schools have a capacity to act as a spearhead of information and as a hub in the wheel of communication in a community if all or most children can be reached there. Information on important issues like nutrition and natural resource management can be distributed efficiently through schools. They can also act as meeting places and a means of getting a regular discussion and two-way feedback between the community and any development assistance agents.

## ***Health***

There is a great need to improve the health standard in the area. Even though we do not have good frequency figures for the communities in question, the range of diseases in itself is very serious.

The population in Jani is severely afflicted with malaria. There are no single diseases which pose problems of that scale in Molobso, but malnutrition-related health problems, notably anaemia and eye problems related to vitamin A deficiency, are widespread. Children's diseases are common, and more serious diseases like tuberculosis and poliomyelitis are recorded. Other common health problems are respiratory diseases and diseases related to unclean water, particularly affecting children. Wells in the area are open and tend to be littered and contaminated. Livestock contaminate seasonal rivers and other natural water sources with their waste.

As mentioned above, women and children are particularly exposed to health problems. Girls and women suffer from problems related to clitorrectomy, and reproductive health is poor, affecting both mothers and babies. Child mortality is high, as is the number of abortions. Children are particularly vulnerable to waterborne and respiratory diseases, as well as to children's diseases and malnutrition.

The fieldwork results indicate that people have a fairly good understanding of the causes for diseases, although there are some misunderstandings (e.g. that there is a vaccination against diarrhoea). Information and treatment of symptoms alone will not serve to eliminate or even considerably lessen major health problems of the nature which Molobso is afflicted with, however. It does not help to know that the water can make you sick when you have no alternative water source, or to know about malnutrition when you have nothing but porridge to feed your children. Health-related information should be continued, but it needs to be supplemented with information on what the individual family and person can do to prevent diseases and improve health.

Locals claim that lack of vaccination of children is a problem. Our information on practices does not permit us to judge the merit of this claim. Suffice to say that vaccination is important and that it is important to make it physically available also to those who live far away from the health centers and clinics and who find it difficult to travel there with their children.

## ***The people and the project***

There are signs of a certain dependence on the project, and expectations have been voiced which the project cannot and was never intended to fulfil. There is also evidence to suggest that the understanding of the ongoing soil and water conservation activities is not always adequate – e.g. that people don't know enough about the good long-term effects of afforestation, and sometimes don't do terracing or other work correctly due to lack of understanding of the rationale behind. The appreciation of obvious or observable results deemed relevant to the local population seems to be greater than that of longer-term effects not at readily observable or not as immediately relevant. This is of course related to human nature, but also suggests that there is a lack of information and understanding and that people's opinions are based primarily on their observations.

## ***Training and competence building***

*General training:* There seems to be insufficient integration between field staff from different disciplines. This may well become a problem if the project is to expand into new fields. Furthermore, there is evidence of a gap between project staff knowledge on high-input agricultural systems and local competence need in a low-input subsistence farming system. Field staff themselves actively express a great interest in and need for "refill" in their respective fields.

There is also a considerable scope for training of locals in various fields related to their production, both to supplement existing knowledge and to provide new inputs in areas not covered by existing local knowledge. Here, too, low-key, practical approaches suitable for local conditions should be taught.

*PRA and participatory project implementation:* Both local people and MoA staff have been introduced to the principles and methods of the approach, and have had a chance to try them out in the field. We think the training course turned out to be a good start on what will hopefully grow into a “participizing process”; a process of learning and increased awareness of the importance of local project participation.

This was only a start, however. Participatory approaches cannot be taught in a one-off training course, and it is important that no one has any illusions that the Asmat soil and water conservation project is now a “PRA project” or that the people trained at the course are now PRA expertise. More work, more experience, more learning and thinking are absolutely necessary. We will return to this in a separate section at the end of “Recommendations”.

## RECOMMENDATIONS

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The following recommendations are based on the findings from the PRA workshop and fieldwork, as well as on discussions with people involved in the project. We have indicated in brackets who we think should be responsible for implementing the various recommendations, and we have, somewhat reluctantly, highlighted certain of the recommendations to show that we think they should have first priority.

However, we feel that it is prudent to once again remind the reader of the shortcomings of our data. They are not strong enough to allow for incontrovertible conclusions or recommendations, since we have no primary data from Jani and Erola and not enough from Molobso. Thus, this report should not be regarded as The Answer, but more as a list of issues for concern and suggestions for improvement and further developments.

### The Project

#### *The project profile and SSE and Redd Barna objectives*

The SSE program requires that the projects it funds to have an ecological profile and to enhance food security. Most of the current activities are related to ecological rehabilitation to improve conditions for long-term food security, and the means by which they are carried out is aimed to alleviate the current grave food security problems through CFW. However, much remains unclear regarding what is the actual impact of the project activities on the ecological rehabilitation and food security in the area. While there are a lot of data on efforts made, measuring effects and impacts have not been part of the monitoring and reporting routines so far.

Whether Redd Barna's general objective – primarily focusing on improving the situation of children and women in project work – is reached is a more complicated matter. It has been argued that this has happened indirectly through the current activities, but there is a feeling that this is not enough, and that activities more directly focusing on children and women should be initiated. However, it has also been stated that the project is an environmental rehabilitation and food security project and should not develop into a fully fledged integrated rural development project, nor should activities entailing risks of dependence extend further than absolutely necessary. One thus has to strike a balance in the planning of any future activities, where all these concerns are taken into consideration.

#### *Continuation of current project activities*

There are two major reasons why current project activities should continue into the foreseeable future.

One reason is the need for additional conservation work. Two thirds of the project area is still not terraced (most of the terracing has been done in Molobso – in Jani, one has focused more on irrigation), and much also remains to be done regarding other conservation activities. Food security and agricultural production in the area are dependent on the continuing efforts to improve soil and water conditions, and one reason for the tremendous goodwill which the project enjoys in the area is that people are beginning to see results of these efforts.

Another reason for this goodwill, and for the necessity of continuing current activities, is that the population depends on project contributions to feed themselves. The current CFW strategy is the most sustainable way of supporting people directly; this strategy requires that there is work which people can do, and the current conservation activities (terracing, dam construction, enclosures, etc.) are the most or only efficient use of all this labor.

There is a valid concern about increasing project dependency, but at present this concern is offset by the need to assist in developing a better foundation for future growth. Redd Barna has assisted ERRA and MoA in making it possible to live in the area. Peace has given people hope for the future. Now it is important to provide them with the means and the tools to become self-supporting.

There is an equity problem regarding the support to dig wells and to buy diesel pumps. These issues need to be carefully evaluated before additional support is given to similar schemes (Redd Barna Norway and Asmara, as well as MoA Keren should do this).

### ***Expanding the range of project activities***

There is room for project expansion, but certain conditions have to be considered.

First, as mentioned above the project at present is a food security and environmental rehabilitation project, and while Redd Barna wishes to give it a profile which has a more direct focus on the needs of women and children, it is to remain a food security and environmental rehabilitation project.

Second, the project should not create dependency through setting up its own institutions or through handouts, but assist the people in building their own institutions and themselves creating the necessary conditions for a good life, long-term food security and a healthy environment. This is in accordance with the Eritrean policy that NGOs operating in the country should not themselves be implementing agents, but work through national institutions – in this project's case, through the province MoA. However, we think this principle should be extended even further, and that MoA staff should in their work strive to encourage the local community to engage in a dialogue as well as in practical participation regarding project implementation and planning.

We would like to add the following guidelines:

Future project work should be rooted in a good dialogue with the local people, and they should participate to the greatest possible extent in all phases and levels of the planning and implementation. Their own views on their needs and situation should be given due weight. This is one form of local competence building; teaching skills and other relevant knowledge should happen parallel to this. – An increased focus on children and women should similarly be rooted in knowledge about their specific situation and needs, as well as in their own views on these matters.

Project activities, both current and new ones, should be carefully monitored and continuously evaluated, primarily according to what impact they have on the ecological and food security situation, and on children's and women's situation.

These guidelines and conditions form part of the basis for the various recommendations regarding the continuation of the project which we offer below. They should therefore be discussed by all those involved in project policy and implementation work, in order to reach an agreement on a profile. Everyone involved in the work, on all levels, should understand this profile, its rationale and its implications.

## **Agricultural production and the farming systems**

### ***The farming systems and extension***

• **Soils: Terracing and other current activities to increase yields and improve soil fertility should continue, but it is necessary to emphasize maintenance more. Other, more small-scale measures of soil fertility and water retaining capacity increase should be tried to complement and ensure the sustainability of the current activities.** Such methods include increased manuring, more systematic use of nitrogen-fixing plants, the possible use of cover crops, mulching, and more efficient crop rotation. **In particular, more efficient utilization of manure / compost should be strongly encouraged.** People should

be encouraged to collect manure more systematically, and be informed on the superiority of fresh manure as opposed to dry manure regarding soil improvement.

**It is necessary to make the individual land holder more directly responsible for the improvement of his or her soils, both regarding maintenance and regarding other improvement measures, through close cooperation with and a high participation level by the individual farmer.** At the time of fieldwork, MoA planned to increase farmers' awareness of the importance of maintenance of terraces by issuing fines to those not maintaining terraces on their land properly. This scheme should be complemented with more thorough training in proper maintenance as well as more information on damages arising from lack of or erroneous maintenance, and the advantages of maintenance and other fertility increase measures should be conveyed.

• *Crops:* **Seeds distribution should continue where necessary, but it is of vital importance to make sure the seeds are locally adaptable. Field diseases and field & storage pests are a considerable problem for which low-input solutions like altered cropping practices (like mixed cropping) or storage practices are needed.**

There is a considerable shortage of oxen for plowing, but this does not appear to be a major constraint to household food production on the whole. Redd Barna should direct their efforts towards more long-term sustainable tasks and not engage in credit programs or other funding activities for distribution of oxen.

• *Livestock:* The two major problems are animal health and low-yielding species (fertility, milk, wool etc.). **Primarily, better access to veterinarian services should be secured through the training of local animal health assistants. Secondly, a local breeding program could be implemented through these assistants, who can inform local people on the basics of breeding (if necessary) and keep stock of good breeding animals.** Owners of such animals could sell the animal's services for a small fee to other farmers; this income source might well constitute an overall incentive to increase people's awareness of breeding.

• *Extension:* **It is important to make sure that the extension services offered are of use to local farmers, addressing needs like improving livestock health and enhancing milking capacity and fertility, integrating animal husbandry and crop production more, increasing soil fertility and soil water retaining capacity, and dealing with crop diseases and pests in the field and during storage.**

A possible problem about the way extension work is currently carried out is that there seems to be a wide gap between the competence which extension workers can offer – with emphasis on high-input agricultural activities – and the needs of the communities for developing the potential of their adaptations as subsistence, small scale, marginal agricultural producers. Promoting practices which are not feasible and/or which may put strains on a fragile environment is counter-productive. It is important that the massive amount of resources and labor which is now invested in soil and water conservation activities is not wasted, but sustained by ensuring that the soils are not exhausted by poor agricultural practices. This requires knowledge not only of agronomy, but also of socio-economic issues.

### *Implementation*

Redd Barna in Asmara and MoA in Keren should cooperate in locating expertise on low-input agriculture and soil fertility improvement in arid areas, if necessary consulting Redd Barna Norway, Noragric, University of Asmara, and/or others for assistance. This/these expert(s) should carry out a more thorough assessment of potentials and constraints in local agriculture and farming systems (listed in the section on areas for further studies) and identify measures which could be implemented in accordance with the conditions outlined above.

Training of extension workers in the project area should follow, if necessary, to enable them to implement the measures identified. It would be best if the expert(s) themselves could carry this out. A more detailed outline can be found in the section on training.

There is a shortage of books and other sources of information available to extension workers. Availability of such sources would further motivate them in their daily work, as there is a general eagerness to learn more. Redd Barna Asmara and MoA Keren should discuss this and identify possible sources; referring to Redd Barna Norway, University of Asmara, Noragric and/or others for assistance if necessary. We have listed a few suggestions at the end of the section on training.

### ***Marketing and credit***

- *Marketing*: Redd Barna should not engage directly in transport or road maintenance activities, but project staff might encourage people to form groups who can buy trucks together, as has been done by a group of people in Jani. – Road maintenance is one of ERRRA's FFW activities, but apparently the work they are able to do is not enough to keep the roads in order. If Redd Barna were to rent or buy a bulldozer for the project to level land, this bulldozer could also be used in road maintenance, but it should probably then be rented out to those who do this work – after all, this is not and should not be Redd Barna's responsibility.

Redd Barna should monitor prices and the marketing situation in the project area as part of their general food security and project monitoring. More on this can be found in the section on food security earlier in the report.

- *Continuing the pump credit scheme*: Pumps are required, particularly in Jani where irrigated horticulture is an important production strategy. The pump credit scheme should primarily be aimed at those who do not benefit from the programs which provide pumps to ex-fighters.

This credit scheme should, not least from an equity viewpoint, be balanced with other activities designed to better conditions for those who do not have any use for pumps or who do not dare to apply for credit, for fear of not being able to pay back. The poorest segments of the population should be focused on in this respect, particularly female-headed households.

- *Poor and especially female-headed households*: **Credit schemes particularly related to the needs of these households should be developed. Focus should be on the development of small cottage industries and loans to buy small ruminants, chickens etc., and/or other areas identified through further studies (see section on areas for further studies).** There is considerable evidence that access to small-scale credit on reasonable terms is a very significant means for poor people to improve and sustain their food security. While there may be a demand for credit to buy oxen, the situation of the poor and particularly the female-headed households will most likely improve faster and more sustainably if credit is available for the purchase of small ruminants (particularly goats).

It is of vital importance that any such activities take into consideration that it is those who need it most who have the least spare time (for training or other additional activities which are not immediately income-generating), and who may have the gravest inhibitions towards loaning money. Any training or other activities have to take this into consideration and be tailored to these households' needs (e.g. day care for children).

### ***Implementation***

Regarding the bulldozer: see the section on levelling of land below.

The section on food security gives a fairly detailed account of how we think the monitoring of the marketing situation should be implemented.

Further credit schemes or similar activities: The particular situation and needs of the poorest households, such as landless and female-headed households, should be assessed more thoroughly (preferably through participatory analysis and discussions), and the results should be used as the agenda for a discussion on possible responses to improve their situation. This



assessment should be carried out by a PRA team, which we have described below, in the section on training in PRA and participatory project implementation.

Redd Barna Asmara, MoA Keren (management and project field staff) and NUEW (representatives from the project area and, if deemed necessary and/or fruitful, more central representatives as well) should all participate in a discussion of how best to reach the poorest, particularly female household heads. Local baito representatives (male and female) would probably also be good partners in the discussion, and of course one should strive to include representatives of the target group as well. Any experience from similar activities conducted by any of the participating agents (Redd Barna, NUEW, others) elsewhere or earlier should be presented and drawn on where possible. Cooperation between MoA Keren, local baitos, and NUEW might be a good way of implementing activities decided upon, while a high level of recipient participation in all phases of the project should be achieved.

## Natural resource management

- *Maintenance and sustainability of project conservation activities:* Current soil and water conservation activities should, as we have stated before, continue, but more weight should be given to the sustainability of the efforts made. In addition to changing the focus from measuring output to measuring impact in reporting and monitoring, more emphasis has to be put on maintenance. This applies to all forms of current activities; enclosures, terraces, erosion control structures and irrigation structures. While maintenance activities are vital for the “success” of the project, these activities should be undertaken by the communities themselves. If this work is done, it is a valuable indicator of project success. If not, one should investigate on why and cooperate with communities to improve conditions for community activities. (MoA Keren)

**Terracing should continue, but with more emphasis on maintenance. The individual landholder should be made more directly responsible for maintaining terraces on his land, through heightened awareness of the potential benefits and damages involved as well as through a system of fines.**

**The development of more private and community enclosures by local individuals and communities themselves should be strongly encouraged. Local nurseries should make seedlings of local species, suitable for both private and community enclosures, available .** (MoA Keren)

We have information that MoA staff are trying to collect information on existing local natural resource management systems. We have endorsed this work in the section on areas requiring further study. **This information should be used; efforts should be made to interest the communities in incorporating maintenance of conservation structures set up through the project into their traditional systems.**

- *Utilization and supplies of wild vegetation:* The major importance of grasses are as fodder; trees and shrubs play a much more significant role in that they are very versatile.

Area closure is probably the only efficient way to promote growth of wild grasses. This takes time, however. Once the enclosures are opened up to fodder harvesting, this should be on a cut-and-carry basis only, and trees and shrubs should not be lopped. At the same time, new areas should be closed. When these are ready to be opened up, some limited lopping of trees and collection of dead firewood could be allowed in the first generation of enclosures. Management of enclosures has to be carefully executed and evaluated, to avoid too hard pressures on them too early. – It is important that the enclosures are maintained in a better way than today, particularly the fencing.

**It is crucial, both for the evaluation of project impact and for the sake of future resource management, to acquire figures on availability, increment, and rate of use of woody biomass.** MoA in Keren has conducted a brief study of firewood consumption in tea shops, restaurants, and bakeries, and they wish to investigate on the amounts used in private

households. This investigation is needed and should be promoted. It is important to look into this issue in order to get an idea of what the total needs are and how that compares with the supply, and also of how great the demand for each major use is, and where discrepancies are great. This has a strong bearing on which activities to focus on in the future, e.g. which tree species to promote.

Eucalyptus is widely appreciated for building, and it is a fast-growing species, but it demands a lot of water. Planting of eucalyptus can thus have detrimental ecological effects, especially in vulnerable dryland areas like Asmat. Are there indigenous species which could be promoted instead? Versatility is important. The ideal tree species is fast-growing without tapping the water table, a good fodder tree and suitable for firewood and building material, while having medicinal value and edible fruits. Such a species may not exist, but his ideal should be kept in mind when planning afforestation and stocking nurseries.

• ***Water harvesting:*** The project should continue its present focus on various water harvesting techniques, but less emphasis should be given to schemes that will only benefit individuals and not give clear community benefits. Dams and lift irrigation should be considered as a possible alternative to the current focus on individual diesel pumps, which entails equity problems and users' dependence on diesel fuel. A group of MoA extension staff (preferably also local representatives) could be sent to India to visit areas where these irrigation techniques are in use. This is particularly relevant in Jani, but should also be considered regarding the request for a dam in Molobso. – Small-scale water harvesting techniques which families can employ in their compounds, like cistern water harvesting, should also be studied.

The major shortcoming of the traditional shadouf lift irrigation system is that it can only lift water from 2-3 meter levels. The potential for improving this system should be investigated on, and a potential new and improved design should be tried in the project area. (RB-Asmara, RB-Oslo)

• ***Improved energy efficiency:*** Awareness of efficient use of wood for all purposes should be promoted, but it is important to give people viable alternatives. Any sustainable and locally adaptable technology is interesting, although the scope for improvements by use of foreign technology may be limited. If demands for firewood for cooking greatly outweighs supplies and there is no imminent improvement of this situation, it might be better to promote injera ovens which use solar power or natural gas instead – but only if they are good and fit in with local ways of cooking.

Investigations should be made on possible new oven types which can reduce the amount of wood required to cook food. It is important that such new technology is simple, low-maintenance, and has all the features which the current cooking method provides – cooking of both injera and pot foods, and providing heat. There may also be other features which are important to local people, such as keeping insects away because of the smoke. Local, participatory trials should therefore precede any general introduction of new technology.

Home economists should keep their eyes open for wasteful ways of cooking in homes and if necessary promote more energy-efficient ways.

• ***Construction:*** In view of the building boom in Asmara, we stress the importance of using local building materials and labor whenever possible. Local competence will also be enhanced by such an approach. Redd Barna should, where appropriate, encourage solutions which entail the development and refinement of use of local building materials and design in a way which reduces the present dependence on large amounts of woody biomass. Redd Barna should also encourage the use of local labourers and the reduced dependency on imported building materials.

If house construction practices are to be altered, people have to be given an alternative which does not require buying expensive materials and which is not less comfortable than their current houses. Brick or cinderblock houses with corrugated iron roofs are currently a common alternative, but they turn into baking ovens when it is hot and humid – which it is for much of the year in Jani.

**There is a great need for more schools – Redd Barna should engage in the building of school buildings while at the same time promoting improved construction practices by using the schools as model houses.** Also, the Ministry of Agriculture needs to improve the sleeping quarters for staff in Molobso and elsewhere. The present quarters are hardly adequate to retain a body of motivated extension workers and should be modified to accommodate staff with some basic facilities. If and when this is done, both the construction and design can be used consciously to add to local knowledge and skills. This is an excellent opportunity to build houses which require less woody biomass and at the same time utilize local building materials. **MoA should thus be encouraged and assisted in building model houses.**

Regarding building materials, we suggest two possible alternatives: There is an abundance of stone in the area, which would make excellent building materials. The problem is that stone masonry skills are virtually non-existent in the project area. Potentially extensive training would thus be necessary. Another option is to investigate on the possibilities for manufacturing fibre-enforced tiles locally. Constraints here are skills as well as the shortage of fibres. However, we do not have enough information on the requirements of either to make any assessment of the feasibility of this alternative. Apparently, there is a project elsewhere in Eritrea where ex-fighters manufacture fibre-enforced tiles; there are also enterprises in Kenya where a mixture of mud, cement and biofibres is used. Redd Barna Oslo and/or Asmara should investigate on the requirements regarding skills, equipment, materials and any other inputs needed.

Whatever material is used, model houses should have vents under the ceilings to permit circulation of air, and “second ceilings”, i.e. canopies made from cloth, grasses, or other local and cheap materials, underneath the ceilings. This will make them cooler and airier. Another alternative is to use crop residues and other grassy fibres to thatch the roofs. – What about building more in accordance with local architecture, using circular buildings for offices instead of the boxes that are being built now?

### *Implementation*

Current activities and wild vegetation: MoA Keren, through its field staff, should be responsible for implementing the approach outlined, using the information on local management systems for common natural resources which they themselves have collected. If they are unable to collect this information under their current workload, this task should be taken over by the PRA group mentioned above and outlined in the section on participatory project implementation. The same goes for the investigation on woody biomass.

Water harvesting: Redd Barna Asmara and MoA Keren should discuss the potential benefits from a study trip to India. Jan Erik Studsrød (now works in NORAD, Oslo) can be contacted for advice on where to go and what to see. Redd Barna Asmara should make the arrangements.

Redd Barna Asmara and/or Oslo should conduct a search to find out whether any improvement work has been done on the shadouf system anywhere. NLH, universities in countries where a similar system is in use, other NGOs and other possible sources of information should be contacted. Redd Barna Oslo and Asmara might also try to interest students at NLH, NTH, University of Asmara, or other institutions where competence on irrigation and water harvesting can be found, in doing thesis work on improving this system.

Improved energy efficiency: Redd Barna Asmara and/or Oslo should conduct a search for ovens, contacting any institutions and sources in the region or in Norway which they think may have information. If the search is successful and one or more promising ovens are found, local trials should be carried out by the local PRA team, supported by MoA Keren.

Local home economics staff should also be supported by MoA Keren in their work to promote energy-efficient ways of cooking. Support here means any necessary training plus encouragement to allocate resources to this activity.

Construction: Redd Barna Asmara should discuss construction practices with MoA in Keren and Asmara and, in the event that they decide on school construction, with MoE locally and in Asmara, to identify needs and preferences, exchange ideas on the subject, and if necessary to sensitize them to the problems involved in current practices. Redd Barna Asmara should also, if convenient or needed in cooperation with Redd Barna Oslo, conduct a search for know-how on the alternative construction methods and materials suggested above, and collect the necessary information to decide whether local trials would be worthwhile.

Local trials should be carried out by MoA field staff and/or the PRA team.

## **The poor**

**Special consideration should be given to the poor, such as families without land and female-headed families.**

While the problem of the landless can only be solved by a just land reform, there are things Redd Barna can do to support this group as well as other poor families. Here are a few suggestions: Arranging for common pasture enclosures for landless, renting or buying a bulldozer to level the land of those families who cannot currently work their land, initiating and/or supporting through credit very small enterprises, training people in skills needed in the community and which can provide income. Labor-pooling schemes and groupwork might improve efficiency, and women with small children might benefit from a day care system which provides them with some time for work. Some of these ideas can be organized by the target group themselves and cost no money, all that is needed is someone with the resources to initiate them. Others require considerable resources. Redd Barna has to consider which activities fit in with their project profile and their resources.

The particular constraints faced by the poor, such as time shortages, heavy workloads and inhibitions regarding borrowing money, should be duly recognized and considered when planning activities. Planning should always be preceded by participatory analysis and discussions with representatives of the target group in order to identify constraints, needs and potentials, as has been outlined in the section on credit recommendations.

### *Implementation*

Field PRA research should be conducted by the PRA team to identify ideas and needs. Redd Barna Asmara should consider these ideas in relation to their profile regarding assistance and development directed at the poor, promoting food security and environmental conservation / improvement. If there are ideas which fit in with this profile and are feasible, these can be carried out through MoA, if fruitful in cooperation with other local agents as mentioned in the section on credit recommendations.

### *Restoration of war sites*

There is a widespread wish in local communities that something be done to areas where trenches and underground structures from the war period have destroyed farmland. In the current land distribution situation, several families are affected, and erosion problems are increasing due to the holes and mounds created. **We thus recommend that a bulldozer level these lands.**

Locally, people would like to see that a bulldozer be bought, because it could subsequently be used for lots of other tasks, such as road maintenance, dam construction etc. However, buying one requires that a maintenance and use scheme is worked out, someone (or preferably a few people) will have to learn to drive it, etc. Our knowledge of project and MoA budgets and wishlists is not extensive enough to permit us to make any definite

recommendations on this issue; Redd Barna Asmara and MoA Keren will have to decide whether to buy or rent a bulldozer.

## Women and children

### *Women*

- *Gender awareness.* Since children's well-being is Redd Barna's primary concern, and since their policy thus is to support children's primary caretakers – women, Redd Barna has an obligation to be particularly aware of gender issues in their projects. **The gender issue should be more evident in Asmat project activities; e.g. through a more conscious effort to enrol female model farmers and in other ways ensure that women and men have equal access to the various types of information, material and financial inputs, and other forms of support which the project can offer. It would benefit all those involved in the project if a gender analysis of the project area could be carried out during later training in project participation.**

- *Well-being and food security.* Most female-headed households belong to the resilient and fragile food security categories, and seem to be over-represented in the latter. It would benefit the well-being and food security of the children in these households if **income-generating interventions for female household heads** were initiated.

The constraints mentioned in the paragraph on the poor are particularly faced by female household heads: time and labor shortages, heavy workloads and a reluctance towards borrowing money. These constraints should be duly recognized and considered when planning activities. **Planning should always be preceded by participatory analysis and discussions with representatives of the target group in order to identify constraints, needs and potentials, as has been outlined in the section on credit recommendations.**

**We suggest a small-scale, tailor-made credit program enabling them to buy small ruminants or make other low-cost improvements to their situation, as well as initiating networks or structures to alleviate time constraints, such as day care for small and handicapped children.** Female-headed households should of course also be included (and perhaps approached particularly actively) in any general interventions directed towards the poor, see suggestions in the paragraph on the poor, above.

As mentioned above, some of these ideas can be organized by the target group themselves and only require someone with the resources to initiate them, whereas others require considerable financial resources. Redd Barna has to consider which activities fit in with their project profile and their resources.

We would like to mention an example: The need for training people in skills needed in the community and which can provide income has been mentioned. Women in the area decorate their houses with beautiful mats, they build furniture and make ceramic utensils. Some of these products are already available on the market in Molobso and probably also in Jani and other local markets. An idea would be to initiate training and/or support to promote some kind of artisan enterprise based on this knowledge. However, there may be constraints to it, such as poor women not having time for additional activities, and they may also be less proficient in this local handicraft due to a lack of time and resources for many years. Such an intervention might thus end up benefiting those who are well off and not the poor.

- *Women and health:* Considering reproductive morbidity and mortality as well as infant mortality, **TBAs are of vital importance. They can provide better hygiene and help during and after labor, and together with home economists they also play an important role regarding preventive health, teaching women about the importance of hygiene in personal care, cooking, and treating minor health problems.**

Clitorectomy and connected complications appear to be another major health hazard to girls and women. **Information regarding hygiene during and after clitorectomy would be a strategy of curbing problems somewhat, and information on the harmful effects should be extended both to women and men.**

**Redd Barna should have a clear policy regarding clitorrectomy insofar as it is a major health problem. This policy should take into account the national Eritrean policy as well as local views (men's, women's and girls') and more data on the actual nature and extent of the related problems.** Thus, more information on effects from and local views on clitorrectomy would be very useful although it might be difficult to collect it. Another important area of investigation is the apparent imbalance between male and female life expectancy and its relations to reproductive mortality and to clitorrectomy.

### *Implementation*

*Gender analysis:* This is a method of analysis of conditions affecting the lives of the two genders, mapping central aspects of their lives in order to identify who contributes what to production and reproduction, as well as to identify any bars to equal control over and access to important resources (labor, land, cash/credit, other inputs, information etc.) which they need to make a life for themselves and their dependants.

A gender analysis fits in with training and awareness-raising on issues of the value of local resources and on participation, and lends itself to field training. We recommend that such analysis be carried out during the next phase of training in PRA and participation approaches, and that the result be actively used as a basis for planning and implementation of further project activities.

*Well-being/food security:* Field PRA research should be conducted by the PRA team to identify local women's preferences, wishes, needs, and ideas. Redd Barna Asmara should consider these ideas in relation to their profile regarding assistance and development directed towards women and particularly female household heads, as well as regarding promoting food security and environmental conservation / improvement. If there are ideas which fit in with this profile and are feasible, these can be carried out through MoA, if fruitful in cooperation with other local agents as mentioned in other sections earlier.

*Health:* The home economics department is seriously understaffed with field staff in the project area (currently none, from what we understand). Anything Redd Barna Asmara and/or MoA Keren can do to improve the staffing situation should be done. Moreover, under these circumstances training of TBAs becomes even more vital, and their field of training might be extended somewhat into more general hygiene, along the lines suggested above. This training could be undertaken by Redd Barna-Asmara directly, using trainers hired from elsewhere, if MoA lacks the resources and approves. For more on training, see sections on training of locals in other fields above.

The PRA team could and should be involved in any investigations on the issues mentioned, but these are potentially controversial and sensitive issues, and more professional and experienced team leadership is probably wise here. More than proficiency in medicine, we think communication skills and experience and proficiency regarding handling of sensitive issues is required. Redd Barna Asmara should, in cooperation with Redd Barna Oslo, identify a team leader if such investigations are to be conducted.

### *Children*

• *Health problems* is one of the two major problem areas affecting Asmat children. Therefore, **preventive health measures, notably providing clean water, informing on hygiene against contagious diseases, and promoting better nutrition, would be greatly beneficial.**

• *Lack of opportunities for education* is the other major problem. **Any engagement in the building of schools (and manning them!) would thus benefit them greatly.** Since the majority of the children who are not currently in school cite distance as the most important reason for not going, having primary schools within reasonable walking distance to all children would be a great improvement.

Teachers in the area have argued that secondary education is more important than more primary education. While we see their point, we do not agree with this. **Considering the fact**

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“Thanks to God and the project”

Report from a PRA workshop and study in Asmat, Eritrea  
January 1996

**that school attendance is as low as it is, we think that improvement of the primary school situation has to come first.** The location of the schools is important – they should be spread out in such a way that they will reach all children in the area. See the section on construction for further recommendations regarding construction of school buildings.

It is important to be aware of the problem of staffing. Can Redd Barna be of any assistance in this?

- *Orphans* face particular problems, so do those in female-headed households. These are the ones facing the most acute food insecurity as well as being least likely to go to school. **Great care and creativity must be exercised to reach them, both through their mothers or households (improving their condition and giving information on these issues) and directly; through schemes to improve their nutrition etc.** The youth organization might be a good partner in this scheme, as would NUEW. Field discussions and analysis of needs, constraints, resources and ideas should provide the basis for planning of interventions.

### *Implementation*

*Health:* Measures which we have faith are described elsewhere in this chapter – notably construction of covered wells, preferably with hand pumps; improvement of hygienic standards through information, and measures to improve food security. We refer to these other sections for implementation recommendations.

*Education:* Redd Barna Asmara must, in accordance with Redd Barna policies and in an understanding with Redd Barna Oslo, decide which actions it is possible for the project to undertake. Initiation, coordination and information on solutions from elsewhere may be as valuable as actual construction. Redd Barna should encourage local communities to provide the building materials and labor for school buildings.

*Orphans:* The PRA team should conduct the necessary studies and discussions with orphans and their caretakers (NB! It is important to include the children themselves in this). Redd Barna Asmara, MoA Keren, field staff, other groups and institutions (line ministries like MoE, MoH), and representatives of the target group should to the greatest possible extent cooperate on the planning of interventions, the nature of which will have strong bearings on who should be responsible for the actual implementation.

## **Health, nutrition, and food security**

- *A few words on food security policy.* The current MoA policy is to enhance food security through increasing purchasing power, emphasizing irrigated agriculture and cash crops production. A further ambition is the introduction of high-value crops and animal species. However, most of the project area is marginal when it comes to agricultural production, due to erratic rains and few irrigation possibilities especially in Ereta and Molobso. People's current financial capacity allows for only low-input production. These factors combine in a production system with a high risk of crop losses. Moreover, the marketing situation is unstable. Prices fluctuate, infrastructure and transport is a problem, and the predictability of one's income level is thus low. This situation is likely to prevail for some time. – Cash-crop production under these circumstances is at best an optimistic, in our view more likely a questionable strategy for promoting food security. The scope for market gardens is very small, especially in the highland areas where water is a limiting factor to an even greater extent than in the lowlands. **To the vast majority of the population, the only viable option is to continue growing their cereals on their terraces – perhaps with some root crops added (cassava or sweet potato?). Marketing and the development of storage facilities are good secondary strategies, but it is of vital importance, when prices drop, that people can resort to eating what's in the field themselves, and not be forced to sell their crops with a loss in order to buy staple food items.**

## General recommendations on health measures

• *Preventive health measures.* Redd Barna should concentrate on preventive health measures rather than engaging in active efforts to promote health centres etc. **Given the nature of some of the health problems (maternal mortality, malnutrition, and diseases related to unclean water and poor hygiene), preventive measures are important – providing clean water, improving nutrition and hygiene through information and practical measures (promoting vegetable gardens and poultry), and training those who assist during deliveries (TBAs).**

Particular focus should be on the provision of clean water. **Closed systems with hand pumps are needed to ensure clean water.** Hand pumps should be used instead of diesel pumps, for reasons of environmental sustainability, costs, maintenance, and easy access/operation (children need to be able to use the pump). Efficient and durable hand pumps are in use in many dryland areas elsewhere in Africa, a similar system ought to be possible in Asmat.

**The most important contributions to improved food security are to increase food production, diversify and strengthen farming systems, and encourage the development of household vegetable gardens. It is important to improve the nutritional status of children in the area.** These measures have been covered in greater detail elsewhere in this chapter.

The improvement of local people's knowledge of hygiene and basic health care has been the responsibility of the home economists working in the field. Apparently there is no home economics field staff left in the project area at present. This is serious. **Efforts should be made to improve the staffing situation, preferably there should be at least one home economist in each district. It would also be valuable to focus on enhancing close cooperation with NUEW and local TBAs.** One objective would be to offset problems related to staff shortage, another would be to establish two-way feedback between project implementers and recipients, ensuring that information meets local needs and that it is communicated efficiently through local networks as well as in the more traditional manner through visiting homes. **Short training courses for local key people who can supplement both health and extension personnel would be a good investment. The following issues are already on the training agenda and should be promoted further: Nutrition, hygiene, and basic health care.** The latter should include prevention and basic treatment of common diseases (especially children's diseases), first aid related to burns, cuts, etc., health during pregnancy, maternal/infant health, and breastfeeding. Hygiene during and after female circumcision should also be promoted this way, along with discussions on the merits of this practice to raise consciousness on its harmful effects.

**The system of local TBAs should thus be strengthened, not only to cover the need in a better way but also to enable them (through further training) to inform on issues concerning general hygiene and basic health care in a better way. NUEW could be invited to a similar type of cooperation, members receiving training in hygiene and basic health care.** This would improve the current situation somewhat, but would in no way be a satisfactory substitute for professional home economics field staff.

The issues of staffing and competence building are covered in greater detail in the section on competence building below.

• *Malaria:* More investigation on means of fighting malaria is needed. There are the following possibilities: Giving drugs, handing out nets, moving the village, or preventing mosquitoes from reproducing in waters near people. Handing out nets or drugs seem like a problematic solution for several reasons, including dependency problems and problems of drug resistance. **In line with the suggested policy of preventive health measures, we recommend looking into possibilities for reproduction prevention before resorting to the rather drastic measure of moving communities away from the river where a major part of irrigated agricultural land is situated. (The school, on the other hand, could be moved more easily, and this should be seriously considered if investigations take time.)** There should be investigations on local management of this problem, on national policies,



measures implemented, and plans, as well as on experiences from other parts of the region. For instance, trials of microdams are going on in Tigray; USAID has done a study on these in relation to malaria which might provide ideas.

### *Implementation*

*General:* To the extent that Redd Barna wishes to get involved in health-related work in the project area, they need to establish communication/information links with the local MoH authorities and staff. Whether MoH should become an implementing agent regarding such measures in the same way as MoA is today, depends on the nature of the interventions and the stand the various authorities and agents involved take on this issue. However, any activity involving training should be carried out in as close cooperation with MoH as possible.

*Pumps:* Redd Barna Asmara (and Oslo?) need to make the policy decision on whether this is an intervention they want to pursue, and on what level (build new wells? cover existing wells?). If the answer is yes, MoA Keren and Redd Barna Asmara should discuss implementation practicalities, and the PRA team and/or the Baitos should discuss the matter with locals at general meetings or other fora. Communities should be partly responsible for the purchase, instalment, and maintenance of hand pumps. If new wells are to be constructed, local women – who are the ones who will use them most – should be involved in making decisions regarding their locations in order to ensure equitable water provisions.

*Hygiene information:* Redd Barna has to make a decision in accordance with their policies on what interventions they can pursue. Discussions with both MoA and MoH are necessary to identify possible ways of improving the staffing situation or otherwise ensuring a reasonably stable improvement of information capacity in the project area.

MoH appears to be the agent responsible for training of TBAs, and could thus take on the implementing responsibilities for training activities.

*Malaria:* MoA Keren, MoH locally/nationally, Redd Barna Asmara, and Redd Barna Norway should cooperate on collecting information, then discuss measures in relation to what knowledge this brings up. Local people and institutions (baitos, organisations) should participate in planning and may also contribute information.

### *Introduction of model gardens*

Awareness of natural resource management in general should be promoted. We recommend looking into the possibilities of initiating model vegetable gardens. This is a wonderful way of combining the improvement of awareness on nutrition and resource management with actual nutrition, by providing some food to children. The model garden scheme should be designed in such a way that as many local people as possible are able to experience the benefits for themselves, and should encourage people to make their own small vegetable gardens fed by simple water harvesting devices in their compounds, which could greatly enhance food security and nutritional status.

Regarding who should implement the scheme, the following criteria are important: The largest possible number of local people should be able to not only see it, but also be involved in the implementation and experience the returns. Therefore, the location of a garden is a pivotal consideration. Gardens should be where people are – scattered around in the communities. Another crucial concern is the management and implementation of the scheme. There are problems related to who gets the produce, touching on both institutional capacity and resource management systems. Ideally, the produce should benefit children – and primarily those children who need it most (poor households, below 5 of age). No one must be allowed to take the produce and sell it to keep the earnings, as has been the experience in attempts to initiate school gardens.

Who could be involved in model gardens? Maybe new institutions have to be created, or NUEW and/or youth organizations could be encouraged to establish themselves in Molobso and to cooperate on this. Ideally, local women's networks should be responsible, and that the

Food  
Diversity  
NB

implementation should be very participatory, keeping implementation work to a minimum (initiation, "selling" the idea and supporting with knowledge, materials, and support through monitoring and discussions on possible constraints and problems faced along the way). We also suggest that when deciding which crops to grow, emphasis should be put on high nutritional value and low financial value, if such crops exist. The more valuable crops, the more consideration should be put into the set-up of a common property management scheme. This is important also regarding the gardens people set up for themselves. People must afford to eat the crops and not sell them.

Water is another concern. For the model gardens, it is important that they are not irrigated by means which people in general cannot employ, such as pumps or even shadoufs. They should be irrigated with water harvested on the compound, such as cisterns and simple funnelling systems to collect water from the roof. Hardiness, fast growth, and low water requirements should be other criteria for deciding on which crops to grow.

Realising the potential difficulties, we think a model garden scheme should be tried, but that the considerations mentioned should be given much thought. We also urge planners and implementers at all stages to use their previous experience regarding similar schemes.

### *Implementation:*

Redd Barna Asmara and Norway should consider the scheme and discuss whether it is interesting and at what level they wish to get involved (should MoA staff make one garden? locals through CFW? local institutions take full implementing responsibility? Should Redd Barna provide funds directly? support through competence building of staff? etc.). Field analyses and discussions conducted by the PRA team might form part of the basis for this discussion – are locals interested in trying this themselves? ... Should this idea be put aside for later, after staff competence e.g. on small-scale water harvesting techniques has been strengthened?

If one decides to go ahead, the responsibility for implementation depends on the model decided on. We think local participation should be as strong as possible on this, but that professional competence (MoA staff or people hired by Redd Barna Asmara) is needed at least in the initial phase.

## **The people and the project**

In view of the signs of local project dependence, of local lack of understanding of project objectives and rationales, and of insufficient local understanding of correct ways of carrying out activities, we think it crucial to increase local participation at all stages of the project cycle. Local people should participate and have responsibilities in identification of needs and of solutions, in planning, in implementation and in monitoring and evaluation of activities. This is not to say they should take over the shop, but they should be promoted from recipients to partners within the framework of Redd Barna's and MoA's general policies and guidelines. We go into detail on this issue at the end of the chapter, in the section on continuing the participatory process.

## **Training and competence building**

We define competence building as both knowledge increase, increase of infrastructure, and technical innovations within the project. Here, we are mainly concerned with knowledge increase and particularly with training. The following principles should govern all training of staff and locals:

- *Integrated efforts* – one hand needs to know what the other is doing. This does not merely mean that the different extension people should be informed about the others' activities and schedules, **but that there should be real integration and continuous discussion on what is the common goal, and on how different fields could work together to enhance each other's efforts and make the work towards this common goal more efficient.** We mean

all implementing staff involved, whether their particular field be forestry, horticulture, animal husbandry, crop production, soil science, irrigation and water harvesting, home economics, health, education, or something entirely different. If more elements, e.g. agronomy and nutrition, are to be included in project activities, it becomes even more important that efforts are coordinated and integrated, and that there is a common focus and integrating principle (improved food security for each family).

This sounds easy. It is not. Interdisciplinary work is challenging and at times frustrating. However, we feel that **the lack of integration in efforts is a major area for improvement in project implementation.** Improved integration should definitely be encouraged. This issue is closely linked to the issues of communication lines and participatory approaches, because for real integration to emerge, open and multidirectional communication is an absolute requirement.

• *Low-key solutions.* **Local creativity needs to be stimulated regarding the use of local resources, and both local and external technology.** Both people in the area and, perhaps initially even more importantly, MoA staff and partners need to be stimulated to think creatively around this and to keep in mind what is the problem and what will work here as a solution, not what the book says. The proof of the pudding is in the eating.

Most or all implementing staff are MoA staff. Competence building is a somewhat problematic issue with MoA, because they are seriously understaffed and overworked. We witnessed this dilemma during the PRA workshop: While realizing that competence building is important, one feels that it has to have second priority to all the urgent tasks at hand, and that staff competence is good enough to deal with most of them, which is MoA's primary concern the way things are. Moreover, staff cutbacks after our stay have decimated the staff working with project implementation, and apparently very few of the staff who participated in the PRA course are now with MoA.

We understand that there is some discussion within Redd Barna on ways to improve the project staff situation, e.g. by hiring additional staff themselves.

**Our view is that if Redd Barna are to expand into new areas, at least along the lines we have outlined here, good and well-trained staff is essential. All the more so if Redd Barna has real ambitions to make the project more participatory in nature. More information and a continued dialogue with the local communities are also needed before activities can be implemented in several fields (see chapter on areas for further study), another reason why good staff is crucial.**

In our opinion, if project expansions are to take place along the lines we identify in this report, the current staff with their current competence cannot implement these expansions in a responsible manner. **There is a competence need in the project. Therefore, MoA competence building should have priority when opportunities for training, new employment, or other forms of institution competence improvement arise. Extension workers should have access to important literature and be updated in their particular fields. There are quite a few information networks, often free, that they should be a part of.**

**In addition to this, competence building (i.e. knowledge increase) of key people in the local communities becomes even more crucial under these circumstances.** Some training of local people has already been carried out. These efforts should continue. Training should be kept very practical and concentrate on applicable and locally needed skills.

**A possibility mentioned above and discussed in more detail below is that Redd Barna identify interested local people and hire non-MoA people to train them more extensively, in order to avoid increasing the workload of regular MoA staff, if this is feasible.** However, unless these locals are employed and receive pay for their services, they will have limited working capacity, and proper attention will need to be given to quality control. One way might be that Redd Barna employ and pay a (group of) trainer(s) who could work specifically on training for a shorter period, but be based at MoA and integrated with the regular implementing staff, for communication and efficiency reasons. If this solution is chosen, trainers must have extensive knowledge in the fields needed and be able

to work with the locals over a period of time, to act as professional backstops and advisors and to monitor the unfolding of the work. **This training is to supplement field staff, it is not an alternative to regular strengthening of staff.**

### *Implementation*

Redd Barna should try to provide literature and look into hooking field staff up to information networks and putting them on mailing lists of free publications – preferably, the materials should go directly into the field to be at hand for those who need them. Noragric and the University of Asmara are among the institutions which can be consulted for suggestions on good publications.

We cannot make more concrete recommendations on this issue, because it involves national policy issues and other aspects with which we are not familiar. But we think it is a crucial issue which should be given due attention. And we think that considering the workload and staffing situation faced by MoA Keren, it is up to Redd Barna to address this issue. Redd Barna needs to make some policy statements on what quality they want project implementation to have, and then to investigate on how this can be achieved – through MoA Keren and/or through other solutions. Redd Barna Asmara and MoA Keren should then consider the possibilities and discuss what is fruitful and desirable in the long run.

### *Subjects and skills for training*

We have included a separate section at the end of this chapter on how to continue the participatory process, and we refer to it for detail, but please note that **further training in participatory methods for project implementing staff is absolutely necessary**, particularly considering the fact that few or none of the project staff who attended the April/May '95 workshop remain with the MoA. Regarding competence building and participatory project implementation, the project is thus virtually back where it started.

Ten-day to two-week training courses for local people have already been arranged, in subjects like forestry and soil and water conservation, home economics, and agricultural extension. **Such courses should continue, other subjects might be pest management, livestock health, and integration of crop production and animal husbandry.**

**As discussed above, more extensive training of representatives from local communities should also be undertaken. One field which lends itself to this kind of training is livestock health.** The use of community members as supplements to institutional health care, as traditional birth attendants and primary health workers, is well known. In many countries, for instance Nepal, a similar system is used for livestock. Community members are trained in basics related to treatment of animal diseases and health problems, and function as a supplement to the extension workers. When basic veterinarian assistance is needed locally, one of these community veterinary assistants is summoned.

**Another promising field is primary health care / birth assistance**, see section on health above for further details.

Earlier in this chapter we recommended sending a delegation to dryland areas in India for input on water harvesting techniques. This delegation should consist of both staff and locals (model farmers, local leaders).

Another suggestion: There is a growing market for day labourers in Molobso and elsewhere. A growing number of day labourers engage in activities related to construction. When possible, local labourers should receive some training to become more skilled.

### *Implementation*

Livestock health: As for previous training courses. Primary health care / TBAs: Ministry of Health, locally. Redd Barna Asmara gives the same support as they usually do. Water harvesting: Redd Barna should assist MoA in establishing contact with institutions in India

which can be visited (consulting with academic institutions and NGOs in their network ). MoA and district baitos should identify participants. Construction: Redd Barna Asmara should look into possibilities of identifying trainers in construction and/or fabrication of building materials, in accordance with decisions made on what activities Redd Barna wishes to pursue regarding construction (see section on construction above).

## POTENTIAL TOPICS FOR FURTHER STUDIES

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In reference to the objectives of this work we have included a short section where we list potential topics for more in-depth studies and research topics. For the purpose of initial planning it is our hope that this report and other available reports is sufficient. However there is still a need for more knowledge about the Asmat area, particularly as the main thrust of this report covers only a few selected villages next to Molobso. In a situation where there is a great paucity of data, like in the project area, more data could of course improve the quality of the future project, but considering the time factor it is our clear advice that more in-depth studies should only serve to adjust the project if necessary.

We have separated the areas of study which we recommend into two lists, and highlighted the ones we think most important to carry out as a basis for further planning of activities, or representing the most important areas to engage in. Our suggestions for who should carry out the studies are listed in brackets. MoA Keren and Redd Barna Asmara should prioritize between the various topics listed, based on available manpower and other resources, deciding which studies should be done quickly, which can wait a while, and which they will leave for the time being. It should be kept in mind that several of these topics (e.g. the ones where external researchers are suggested) could make good M.Sc. thesis topics for students at Noragric's MNRSA course, in which case the studies can be carried out (virtually) for free.

Baseline information and information on specific topics:

- **Baseline information about soils, including potential production capacity, current yields and expected yields. All MoA's dispositions, which also provide the basis of ERRA's estimates of food aid, are based on data from five farmers in each village, from which they calculate the average. This system needs improvement as there seem to be rather significant variations in yield between different areas (e.g. terraced vs. non-terraced land) (project staff and external researchers /PRA group)**
- **Baseline information on field and storage diseases and pests – types and extent/impact (PRA group/project staff/external researchers)**
- **Baseline information on ecological regeneration. in the project area. Biodiversity and abundance of vegetation in and outside enclosures, of wildlife? – what, how much, where... Baseline information is needed for monitoring purposes. (project staff/PRA group. Ask children!!)**
- More information on current and potential use of total land resources for different purposes (according to suitability for crops, forests, grazing areas, etc.) – on village level. Land use information would be an important tool for planning and monitoring, both to project planners and implementers and to local population and government. (PRA group/project staff)
- **More information on irrigation potential (project staff/PRA group?/external researchers)**
- **Availability, increment, rate of use, demand/need for woody biomass for different purposes; notably fuelwood, building materials, fodder etc. (project staff/PRA group)**
- A study of the potential for improvement of the shadouf system (external researchers (engineers?) identified by MoA Keren and/or Redd Barna Asmara)

- **Local trials of any new cooking ovens which Redd Barna Asmara identify, including information on local ways of cooking, additional uses for cooking fires, requirements for a good solution regarding such ovens (PRA group)**
- Feasibility of production of fibre-reinforced tiles in Asmat, e.g. manpower, natural resource base, other forms of input, will returns cover costs and other inputs (PRA group, project staff, external representatives familiar with production process, requirements, outputs etc.?)
- Local systems for control over, management of, and access to natural resources, especially commons, and how to fit in better management of project developments on common lands (like enclosures) with these (PRA group/project staff)

Further studies of a more general nature:

- **General baseline information about Jani and Enota., like the information collected on Molobso during the workshop fieldwork (PRA group)**
- **Gender analysis of the project area.**
- **Children's issues – the number of orphans should be calculated and their situation and well-being looked into, as should that of girls. Early marriage and clitorrectomy are widespread – more information on the customs and realities of this should be collected. (Existing records (MoH etc.)/PRA group/project staff/external researchers)**
- **Health issues. Child malnutrition rates and the range and frequency of diseases and of symptoms related to malnutrition, mortality causes, child mortality rate (different girls/boys?) as related to clitorrectomy and reproductive mortality, the situation related to malaria in Jani. (Existing records (MoH etc.)/PRA group/project staff/external researchers)**
- The marketing situation – prices, infrastructure, major influences on price fluctuations etc. (Existing records and studies from govt. etc./PRA group/project staff/external researchers)
- **Food security indicators – see separate chapter for details on this.**
- **Poor, female household heads, orphans: Needs and situation, constraints and possibilities, ideas for improvements. NB! Include constraints to joining activities. (PRA group, as part of planning process for new activities for these groups)**

## CONTINUING THE PARTICIPATORY PROCESS - SOME FINAL CONCLUSIONS AND RECOMMENDATIONS

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When the project enters into new fields, it becomes even more important to address the issues of dependency and possible local passivity in order to avoid a situation where the project is seen as the omnipotent benefactor who will take care of everything for everybody. The more areas of people's lives the project will touch, the more important it is to ensure that the lines of communication are many, open, lateral, and multidirectional, in order for people to have a say in where efforts and resources should be allocated, to feel responsible for the dispositions of the project, as well as for them to understand the rationale behind the dispositions of the projects and the limits to what can be done. A complementarity has to be developed between Redd Barna, MoA and local people.

The PRA workshop should be seen as a point of departure. It is important to continue the work, this should not be a one-off but the start of a comprehensive process. Redd Barna has initiated such processes in other locations (Uganda, Redd Barna /IIED 1994) and has expressed and acted on their ambitions to develop a system of communication and empowering of local communities to restructure the lines of communication and the relationships between themselves and the beneficiaries of projects.

In a participatory approach, Asmat extension workers would conduct discussions with locals on issues like marketing strategies, credit, training, or any other issues which local people feel are problematic and need solutions. The idea is to identify problems, then brainstorm for ideas on how locals can utilize their individual or pooled resources (including knowledge and other less tangible resources) to make improvements. The next stage is to identify constraints to the people's own implementation of these ideas, discussing first how they can help each other and only lastly how the project can assist them – financially, but equally important with knowledge, as coordinators of efforts involving a lot of people, to establish contacts with external institutions or persons, or in other non-financial ways. The implementation is thus people's own responsibility and initiative. The idea is to tap or build community spirit and self-reliance, inspire local creativity, and act as partners. – To some extent this already goes on in Asmat, but not in a systematic way, and mostly hearing the voices of those with the most resources. If one wants to be sure that those most in need of a partner are heard as well, one needs to systematize this approach.

There are several levels of recipient project participation, from none at all to local participation in all stages of the project cycle and the decision process. Responsibility is the flip side of the coin – the more recipient participation there is in a project, the more they assume responsibility for the results. This is good, from a sustainability point of view. What is more problematic to many project policy makers and implementers is that increasing participation also means decreasing control. Sceptics envision a complete recipient takeover, locals dictating terms to those who are graciously allowed to dish out goodies. This situation will not arise as long as policy makers and implementers themselves participate in the process and are clear about where their mandates begin and end, and what policies and overall goals govern their activities. However, they will no longer be able to control in detail or plan neatly in advance. A participatory process calls for a flexible project organization, planning, and budgeting. It is also important to achieve a certain streamlining of local participation to prevent that time is endlessly spent in general meetings.

We would like to suggest a model of rather heavy local involvement and participation. We think the project would benefit from a systematically participatory orientation, using PRA and working in the participatory mode in identification of constraints and potentials in the local communities, in planning and identification of new activities, in implementation, and in monitoring and evaluation of project activities and overall achievements.

This requires well-trained and highly motivated field staff, but not only that. It is of vital importance that MoA staff at higher levels, those in administrative and planning/policy-making positions, understand and agree with such an approach. They have to understand that

it entails changes in their thinking and approach as well as in what happens in the fields. This also applies to Redd Barna's representatives who have regular dealings with the project and its implementation.

A restructuring towards a participatory mode of project work cannot be superimposed on the implementing staff. They have to see the benefits. Furthermore, a real understanding of the implications and demands involved in restructuring relations to a truly participatory mode requires far more training and experience than we have been able to give. It requires that even the higher-ranking people in the ministry (especially those involved in planning and making policy decisions directly affecting the project) are introduced to the concepts involved and agree that they should be implemented. It requires that all staff working among local people are well trained and continuously concerned about issues of participation, communication, and empowerment.

It also requires a continuing process of learning and inspiration through discussions, by having access to international literature and following the development in the field, and generally keeping the issues of participation and empowerment on the agenda. In particular, it would be beneficial to be able to exchange experiences with and learn from other Redd Barna (or other agencies') projects in the region where this approach is being developed.

The PRA workshop and the following PRA fieldwork conducted in 1995 should thus only be seen as the first step on a long road towards more active community participation in the project.

How to continue the process? Originally, we recommended that a PRA group made up of core participants from the workshop should be established, and that further focus on participation should happen through their continued training, exposure to networks and literature, and field experience in data collection and monitoring of food security indicators, initially in close cooperation with (an) external professional team leader(s) with a strong PRA background and a good understanding of the topics to be studied. – We understand that few or none of the MoA staff who participated in the workshop remain with MoA, which makes this approach difficult. We think it is vital for MoA staff, both among those involved in everyday implementation work in the field (extension staff) and those regularly involved with the project but based in Keren, to receive training in PRA. Higher-level staff, planners and administrators, need a good introduction to the principles involved and preferably a short field visit (two-three days) to see the ideas being practised. Field staff, especially those responsible for monitoring, need more than that. A similar workshop to the one held is the minimum. Then, a group can be established and the further process can continue. Our recommendations are thus the following:

Redd Barna Asmara and Oslo have to decide what their policy on the issue of project participation level should be. They then have to discuss the matter with MoA Keren in order to find out what is feasible at the moment, identify any constraints to their ambitions.

The next phase is a learning phase, where those involved familiarize themselves with PRA and participatory approaches along the lines outlined above. Redd Barna should identify trainers.

The third phase is a phase of integrating new participation guidelines with project planning and reporting routines (LFA) – Redd Barna, MoA planners and administrators, and PRA field staff should get together and develop planning and reporting routines for continuing project monitoring as well as planning of activities. It is very important that the PRA team are involved in this, as they are the ones who will do the actual work. The PRA team should thereafter go into the field and develop these routines further by establishing the set of food security indicators which are to be monitored.



# Appendix



## Appendix 1. The essentials of PRA – a short introduction

The term Participatory Rural Appraisal describes “a growing family of approaches and methods to enable local people to share, enhance and analyze their knowledge of life and conditions, to plan and to act.” (Robert Chambers, “The Origin and Practice of Participatory Rural Appraisal”, *World Development* Vol. 22 No. 7, pp. 953-969, 1994) These approaches and methods have their sources in activist participatory research, agroecosystems analysis, farming systems research, applied anthropology, and RRA (Rapid Rural Appraisal). PRA has been used for appraisal, analysis and research in many subject areas and countries. The approach has shown to be a remarkable tool for analysis of local conditions. Data which might take months to collect using more conventional methods can be compiled in an afternoon, avoiding many sources of error and bias inherent in most questionnaires and the drudgery of tabulation and analysis. The quality of the data is checked by the systematic triple cross-checking or triple collection of data, “triangulation”.

PRA is based on shared or group visual representations and analyses done by local people. The mapping and diagramming often takes place on the ground, using local materials like seeds, sticks, and stones for scoring, ranking, estimating, diagramming linkages, making Venn diagrams, free lists, grouping units, etc. Individuals or groups of people can do this. A key to the success of the method is the unimposing behavior of the facilitators, enabling analysts to present their information freely, with confidence, and according to their own criteria, instead of being intimidated by outsiders and having to adapt to an alien worldview represented in the premises of specific questions, as is often the case when using precoded questionnaires. Other keys include the fun and creativity of making the visual representations; the fact that disaggregated information in several individuals’ minds can be compiled systematically in a tangible illustration permitting sharing (with each other and with outsiders), analysis, quantification, discussion, and conclusions; and the fact that these approaches do not require literacy, thereby allowing the tapping into the vast knowledge and memory banks of illiterate people.

A PRA session normally takes place in the following manner: A team of facilitators (not researchers, since it is the locals themselves who carry out most of the actual research work!) have a semi-structured conversation with local potential analysts about the issues they wish to explore, facilitating the locals’ mapping and diagramming for illustration and analysis of these issues. The facilitators express their eagerness to learn from the locals, and all information is presented and analysed by locals. The facilitators merely suggest a theme, explain diagramming methods and help locals to get started, then withdraw from the situation until the diagram or map is developed. Then comes the second part of the session – “interviewing the map/diagram”. The analysts present their work and explain it to the facilitators, who can then ask questions and perhaps initiate the inclusion of more information. Analysts ask open-ended, non-leading questions to create a wide scope for the volunteering of information, in the realization that often one does not know what to ask for, so it is better to create an atmosphere where people can freely share the information which they think is important. For the same reason, choices made by the analysts regarding what is left out and what is included in maps and diagrams should be discussed. This way, facilitators may learn about local conditions and realities, understand worldviews and rationalities underlying these criteria, as well as adding to the information compiled in the map or diagram.

Continuous analysis of data is an integral part of a PRA fieldwork. On-the-spot analysis of data compiled and their relevance to the purpose of the fieldwork always follow a session like the one described above. This approach allows for a continuous refining and adjusting of issues and themes for discussion, and the team is allowed to pursue fields of interest (including unexpected ones) and cut short data collection in fields that prove to be of little or no interest. The flexibility of this approach, unlike that of pre-made questionnaires, permits the bulk of the analysis to be carried out in the field and then fed back to the local community for corrections, comments, and not least empowerment:

The word “participatory” does not imply that locals should merely be allowed to participate in the extraction of data from their communities. Empowerment of local people, giving them a voice and enhancing their ability to understand and act upon their own situation, lies at the core of the approach. Openness and sharing, respectful behavior with confidence in locals’ abilities, and the realization that it is their data are requirements for all good PRA, and it should enhance a shift from hierarchical to laterally oriented structures, not only during sessions but also in the relationships between locals and the projects or other external bodies which make decisions affecting them. The political implications are thus stated more explicitly than in many other methods of research and related activities.

### ***Some PRA terms used in this report***

#### **SSI/Semi-structured interview**

Semi-structured interviews are relaxed, conversational discussion sessions between the team of facilitators and analysts. The discussions are structured only by a checklist, or *interview guide*, listing the major issues which the team would like to explore. The session often involves the use of visual techniques. It can involve one analyst, maybe someone with special knowledge in the field (*key informant*), or it can involve a group of analysts with or without specific knowledge or interest in the issues (*general meeting, focus group interview/d iscussion, etc.*). The degree of structuring and the number of participants vary according to the stage of research, the issues to be discussed, etc. – The behavior and attitudes of the team are vital to the result of an SSI session, both regarding appearance, conduct prior to and after the session, manner of introducing and exploring issues, and generally creating a relaxed and comfortable atmosphere where locals feel at ease, respected and free to express their views.

#### **Maps**

Maps are drawn by local people, most often on the ground and using local materials to signify the various elements which they want to include. The representations can also be developed three-dimensionally as models. Maps can be used for various purposes and are a good way of getting initial information about the community. They can include a wealth of data, like the physical surroundings and resources (*resource maps*), socioeconomic and census data like household sizes, which households are female-headed, etc. (*census and social maps*), or data on distribution of disease, malnutrition etc. (*health maps*). Census maps can be used for wealth rankings (explained below).

*Mobility maps* are slightly different. They often do not include geographical features, although they may well be drawn in on geographical maps. They depict the frequency and the range of movements of individuals or groups of people, livestock or other units. They can be drawn on maps to illustrate distance, or like examples in this report, with arrows pointing outward from a base to a symbol or written explanation of each destination or purpose. The number of arrows to each symbol signifies the number of times in a given period of time the trip is made. Mobility maps can give information e.g. on what are central movements to people in a community, access to resources and services, or differences in range and frequency of movements between different groups of people (gender, age, wealth, etc.).

#### **Daily activity profiles**

These diagrams provide information on time use. It is possible to make more than one for the same person, to show differences between weekdays or periods of the year, or to make one for each of a group of people, which can illustrate differences between people of different genders or ages, between school children and those who are not in school, etc. Daily activity profiles also make good reference points for a discussion on mobility, workloads, diet and nutrition, access to resources like firewood or water, or to markets or services like school or health station, and many other issues. Daily activity profiles can be followed up by several

other diagramming techniques, forming a sequence where issues can be explored in depth – for example, seasonality diagrams, mobility maps, causal or systems diagrams.

### **Historical maps and profiles**

Historical maps are representations of developments regarding various aspects of a community's conditions, on the same principle as in mobility maps. When put together, they can provide an impression of the overall development as well as revealing relationships and suggesting underlying forces. Historical profiles or matrixes are the same type of information, but developments are presented along an axis with time intervals (often major historical events or eras). Symbols are often used to show general developments and trends.

### **Historical matrixes**

These provide another means of representing trends and developments of various aspects of a community, this time in a matrix. The examples of historical development diagrams in this report may have been revised by the teams, it is likely that the temporal reference points given by the analysts were not in terms of years, but in terms of major events and occurrences. Numbers in the diagrams may also be a result of the teams' efforts to make the map look more "scientific" by quantifying information, and should probably be read more as relational figures than as nominal ones. It would have been more informative and more correct to record the analysts' own terms. Accurate figures are not necessary in this type of presentation, the objective is to get an impression of trends.

### **Time lines**

Time lines are other means of presenting information on developments along an axis of time intervals. This report includes a time line representing an individual case, it tells the story of one man's cattle herd. Other uses of time lines blend into historical profiles, with information on many issues alongside each other.

### **Seasonality diagrams**

Seasonality diagrams show seasonal variations – of climatic conditions, resources, problems, possibilities, work, celebrations, diseases, or any other aspect of community or individual conditions. Relative amounts can be shown by putting different numbers of objects or different lengths of sticks on the different seasons. Seasonality diagrams in this report are divided according to the Western calendar into months. It is important that local divisions (e.g. according to major festivals) are used as reference points, and that any transfer to the Western calendar is done according to these after the session.

### **Wealth classifications**

These are the criteria given by local analysts when they do a wealth ranking (the term "wealth" referring to material security relative to other groups in the ranking, and not to nominal riches). All of the households in a community are sorted into wealth groups according to analysts' own criteria of relative wealth, and this ranking can be used for other purposes – in Asmat, it provided the basis for a stratified sample for some investigations on differences between categories and on the conditions of the poorest. The nature of the criteria and the number of households (defined as people who eat food cooked on the same fire) belonging to each wealth group in themselves provide a general idea on the material conditions which people live under, and what makes the difference between being in a more or less favorable situation.

## **Matrix ranking and scoring**

Matrix ranking and scoring can be used to rank any group of items to show which one is preferred, or to show which problem is the gravest, or along any other dimension. After deciding on a theme for the ranking, one asks the analysts to come up with items, and then with criteria for the ranking (“what is important to you about these items?”). When all items and criteria are in place, one draws the matrix on the ground or on paper with the items along the horizontal axis and the criteria along the vertical axis. It is important to make sure that all criteria are stated in a positive (for preferences) or negative (for problems) mode, or, to exemplify, a top score for “attracts pests” plus a top score for taste will look like a double top score instead of outweighing each other. – The analysts can then use any small objects that are found in abundance around the site (pebbles, goat droppings, seeds, etc.) to *rank* the items according to one criteria after another, going from the extremes (best and poorest) towards the mid-range ones and putting one in the square of the poorest and the highest number in the square of the best. It is also possible to *score* the items on a scale e.g. from one to ten, which provides more information on the relations between the items than merely ranking them does (if one receives score ten and the next score three, this says more than merely ranking the one as better than the other). Each square in the ranking/scoring matrix contains information, not only the sums. It is interesting to ask people to weigh (or score!) the criteria as well after the matrix is completed, and to ask them about the reasons for the different rankings/scores. As with all diagrams, try to get information on what is not included (and why) as well.

## **Injera and bar diagrams**

Injera diagrams are what is normally called pie or section diagrams. (We renamed them after a local staple dish.) The total sum of something is represented by the whole injera, and fractions can be shown by “tearing the injera into pieces”. Bar diagrams are another way of representing fractions as parts of one bar, or relative size or importance of units as several bars of relative lengths. The two can also be combined.

## **Livelihood analyses**

Livelihood analyses give a general idea of the inputs and outputs of a family’s economy per month. They show personnel, major assets, major sources of input and cash income (if any), and monthly cash flow. Injera and bar diagrams are often used to diagram this information. The general household requirement of food should also be known. Other information which can be added includes what items cash is spent on, and more information on the sources of income. Livelihood analyses can be used to elicit more specific information; for example, livelihood analyses of a stratified sample according to wealth groups can provide interesting additional information on differences between groups.

## **Causal and systems diagrams**

These diagrams can be used to explore interrelations of units in a system, or causes and influences on a phenomenon or situation which affects the lives of community members. They are often used for problem analysis, and can be used to explore even controversial or sensitive issues. These diagrams can be very elaborate and have long chains and webs of interrelations, causes and effects. The ones shown in this report are relatively simple.

## Appendix 2. List of workshop participants

|                             |    |   |    |
|-----------------------------|----|---|----|
| Ministry of Agriculture     | 15 | 2 | 17 |
| Baito leaders Asmat         | 4  | 2 | 6  |
| Youth ass. Asmat            | 1  | 1 | 2  |
| Women ass. Asmat            | -  | 2 | 2  |
| Ministry of Health Asmat    | 1  | 1 | 2  |
| Ministry of Education Asmat | 2  | - | 2  |
| Sum                         | 23 | 8 | 31 |

### DETAILS ABOUT THE WORKSHOP PARTICIPANTS

| Name                   | Education<br>(years in<br>school) | Profession / role                            |
|------------------------|-----------------------------------|----------------------------------------------|
| Salih Ali Egel         | 4                                 | Baito leader- Molobso                        |
| Saedia Mohamed         | 4                                 | MoH - extension                              |
| Salih Abdela           | 3                                 | Baito - Molobso                              |
| Jimie Mohamed          |                                   | Baito - Jani                                 |
| Salih Adem             |                                   |                                              |
| Berhane Hailo          |                                   |                                              |
| Michael Araya          |                                   |                                              |
| Araya Zeru             | 12 + 1/2                          | MoA / Asmat / Forestry                       |
| Yohannes K/ Mariam     | 12 + 2                            | MoA / Asmat / Rural dev.                     |
| Biniam Mesghina Negash | 12 + 2                            | MoA / Keren / Forestry                       |
| Asha Mohamed           |                                   |                                              |
| Samson Zeray           | 12 + 4                            | MoA /Keren / Rural development               |
| Tesfatsion Abraha      | 12 + 1/2                          | MoA / Asmat / Forestry                       |
| Mussie Tekle           |                                   |                                              |
| Amna Edris             |                                   | Youth assoc. Molobso                         |
| Mohamed Osman          | 3                                 | Youth association /Molobso                   |
| Aebet Humed            |                                   |                                              |
| Musie Woldu            | 12 + 1/2                          | MoA / Asmat / Rural Dev.                     |
| Merid Haile            |                                   |                                              |
| Abraham Hagos          | 7                                 | MoA / Asmat                                  |
| Tesfaslassie Kahsay    |                                   |                                              |
| Abebe Hagos            |                                   |                                              |
| Micheal Andemariam     | 12 + 1/2                          | MoA /Asmat / Soiland water cons.             |
| Ghirmasion Tekeste     | 4                                 | MoA /Asmat                                   |
| Fatna Emer Humed       |                                   |                                              |
| Samson Berihun         | 12 + 1/2                          | MoA / Sub prov. Bogo / Animal resource       |
| Biniam Habtemariam     |                                   |                                              |
| Tsige Tekeste          | 12 + 1/4                          | MoA / Sub prov. Bogo / Home economics        |
| Saba Mesfin            | 12 + 1/4                          | MoA / Sub prov. Bogo / Home economics        |
| Berhane Estifanos      | 12 + 1                            | MoA - Technic.                               |
| Mohamed Adem Hussein   |                                   |                                              |
| Woldegabriel Tareke    | M.Sc.                             | Redd Barna Asmara                            |
| Elisabeth Molteberg    | M.Sc                              | Noragric - Agricultural University of Norway |
| Jan Erik Studsrød      | M.Sc                              | Noragric - Agricultural University of Norway |

### Appendix 3. Semi-structured interview (SSI) guide

1. Household name and gender
2. How much land does the household have ?
3. Do they have any oxen for ploughing ?
4. Livestock           A. Types, number of each type  
                          B. At what times of the year do they sell livestock,  
                              which types and how many ?
5. How much food does a family need for a year ? (staple)
6. Crops:    A:       Which  
              B:       Quantity of each crop grown  
              C:       Uses of crops grown; proportions: sale, seed, lost in  
                              storage, other, eat  
              D:       Other means of getting cash or food
7. Adjustment to meals  
   (estimate) A:       Diet on a good day (season) of all HH members  
   (estimate) B:       Diet on a bad day (season) of all HH members  
   (detail)  C:       Diet yesterday (24 hr recall) for all HH members  
              D:       Is this normal for this season
8. Changes in diet over the last 10 years
9. Sources of food : proportions  
   A:       From own field  
   B:       Sales of livestock  
   C:       Sales of other assets  
   D:       Income from project  
   E:       Remittance from family members outside area  
   F:       Other (food aid)
- 10:         Food storage  
              A: What is in the storage now - types of food, quantity, how long  
                              will it last them  
              B: Losses. To what ? Proportions if more than one reason.  
                              Problems of storage
- 11:         Wild foods  
              A:       Good season - proportion of diet  
              B:       Bad season - proportion of diet
- 12         Credit  
              A:       Access  
              B:       Terms of repayment



## Appendix 4. Key population data

Table 12 Population size various villages in Sub province Asmat 1994

| Molobso district            | 1994        | 1994         |
|-----------------------------|-------------|--------------|
| Tewareba                    | 169         | 842          |
| Dbir                        | 54          | 236          |
| Mehr                        | 228         | 1006         |
| Megeda                      | 68          | 348          |
| Darkel                      | 137         | 637          |
| Enrekebt                    | 170         | 790          |
| Ketin                       | 191         | 926          |
| Mesafir                     | 92          | 413          |
| Hibber                      | 284         | 1348         |
| Galeba                      | 190         | 1004         |
| Chilima                     | 160         | 759          |
| Kertset                     | 368         | 1625         |
| Rehey                       | 316         | 1547         |
| Gerbet                      | 186         | 957          |
| Abdet                       | 275         | 1192         |
| <b>Sum Molobso district</b> | <b>2888</b> | <b>13630</b> |

| Erota district            | Year        | 1994 | 1987 | 1994        | 1987 |
|---------------------------|-------------|------|------|-------------|------|
| Erota                     |             | 154  | 128  | 661         | 354  |
| Ketanit                   |             | 203  | 189  | 936         | 675  |
| Era                       |             | 149  | 137  | 785         | 465  |
| Hirum                     |             | 275  | 542  | 1180        | 1359 |
| Maka                      |             | 145  |      | 689         |      |
| Rora                      |             | 450  | 330  | 1900        | 881  |
| Yekari                    |             | 460  |      | 1887        |      |
| Baat                      |             | 143  | 89   | 550         | 373  |
| <b>Sum Erota district</b> | <b>1979</b> |      |      | <b>8588</b> |      |

|                          |             |     |     |              |      |
|--------------------------|-------------|-----|-----|--------------|------|
| Jani district            |             |     |     |              |      |
| Shegalit                 |             | 263 |     | 1254         |      |
| Hawazi                   |             | 161 |     | 731          |      |
| Akwar                    |             | 252 |     | 1122         |      |
| Hawash                   |             | 486 |     | 2098         |      |
| Asmat                    |             | 232 | 107 | 1045         | 466  |
|                          |             | 229 |     | 1030         |      |
| Kush                     |             | 123 |     | 495          |      |
| Jani                     |             | 414 | 298 | 1775         | 1244 |
| Medakih                  |             | 403 |     | 1596         |      |
| Sheka                    |             | 415 | 283 | 1814         | 1148 |
| Wogret                   |             | 255 | 172 | 1001         | 693  |
| Hannab                   |             | 144 | 82  | 498          | 343  |
| <b>Sum Jani District</b> | <b>3377</b> |     |     | <b>14459</b> |      |

|                          |      |        |
|--------------------------|------|--------|
| Total Asmat Sub province | 8244 | 36 677 |
|--------------------------|------|--------|

Data from local administration in Asmat Sub province 23.07.1994 (Girmay Ass. Adm). The data from 1987 are not summed for Jani and Erota as they did not cover all villages in the respective districts.

Table 13 Key demographic data for Maria Keyah District (Molobso) Asmat Sub-Province 1995

|          | M    | F   | M    | F    |       | M    | F    | M    | F    | M   | F   | ha   | ha   |      |
|----------|------|-----|------|------|-------|------|------|------|------|-----|-----|------|------|------|
| Abdet    | 205  | 43  | 350  | 624  | 1222  | 279  | 351  | 234  | 294  | 42  | 22  | 248  | 146  | .59  |
| Tewareba | 169  | 26  | 368  | 402  | 965   | 243  | 208  | 269  | 211  | 25  | 9   | 195  | 120  | .61  |
| Mesafar  | 104  | 10  | 124  | 197  | 435   | 128  | 109  | 84   | 93   | 16  | 5   | 114  | 57   | 0.5  |
| Chilima  | 139  | 14  | 220  | 312  | 685   | 188  | 170  | 153  | 145  | 18  | 11  | 153  | 92   | 0.6  |
| Ketin    | 157  | 24  | 365  | 377  | 923   | 266  | 202  | 240  | 191  | 16  | 8   | 181  | 185  | 1.02 |
| Gerbet   | 165  | 25  | 255  | 463  | 908   | 208  | 266  | 192  | 214  | 20  | 8   | 190  | 175  | 0.92 |
| Megeda   | 62   | 6   | 116  | 151  | 335   | 89   | 65   | 77   | 84   | 12  | 8   | 68   | 75   | 1.1  |
| Darikal  | 108  | 20  | 255  | 259  | 642   | 185  | 123  | 158  | 148  | 20  | 8   | 128  | 58   | 0.45 |
| Galaba   | 177  | 18  | 366  | 436  | 997   | 306  | 220  | 207  | 222  | 30  | 12  | 197  | 138  | 0.7  |
| Rehey    | 246  | 61  | 613  | 651  | 1571  | 448  | 386  | 370  | 304  | 41  | 22  | 307  | 210  | 0.68 |
| Meher    | 150  | 53  | 387  | 431  | 1021  | 301  | 251  | 215  | 223  | 21  | 10  | 203  | 205  | 1.00 |
| Enrkubet | 132  | 27  | 282  | 289  | 730   | 221  | 187  | 147  | 115  | 46  | 14  | 159  | 124  | 0.78 |
| Deberi   | 40   | 14  | 86   | 116  | 256   | 76   | 71   | 43   | 55   | 7   | 4   | 54   | 58   | 1.07 |
| Kertset  | 310  | 60  | 643  | 592  | 1605  | 514  | 376  | 373  | 218  | 66  | 58  | 370  | 190  | 0.51 |
| Himber   | 207  | 55  | 493  | 605  | 1360  | 379  | 326  | 282  | 311  | 39  | 23  | 262  | 150  | 0.57 |
| Sum      | 2371 | 456 | 4923 | 5905 | 13655 | 3831 | 3311 | 3044 | 2828 | 419 | 222 | 2829 | 1983 | 0.70 |

Assembled by MoA Staff in Molobso Jan to April 1995.

## Appendix 5. Data from PRA fieldwork

### *Information on the census maps compiled in the four study villages*

The census map of Rehey (VIII) divides the village into 6 different sections of varying size. A total of 357 families were identified, constituting a sum of 1560 people. Number of people in the individual households were not discussed, but the average household number is 4.4.

In Ketin, a combined social and census map (X) was compiled during consecutive meetings with different groups of villagers, and the map was also used for a wealth ranking after criteria defining three different wealth groups had been agreed upon.

Tewareba is divided into three large sections; Segdo, Tewareba and Enshele. A census map of the entire adi (VII) was drawn on the ground, showing that the total number of households is 196 and the total population in the village is 1014. The average household size is thus 5.2. The population was further broken down into age and sex categories.

The Tewareba group then consulted different groups of villagers that assisted them in making another census map of the village (XI). The location of each individual household was marked on the ground and the number of family members living in each household was indicated. In addition, data was collected on the total number of livestock in the village. The majority of the households consist of 2 - 5 household members. The maximum number of members in one household was 12, another household had 11 members, but these were exceptions. – The map was used to identify, in cooperation with local people, a kushet which should be studied in more detail. Twenty households in a sub-section of Segdo were chosen, and detailed socio-economic information was gathered from these households.

The Gerbet census map (IX) was transferred to a large sheet of cardboard and used for detailed discussions with the villagers during the remaining part of the fieldwork. The final map contains detailed information on natural resources, health and social issues (including a wealth ranking) in Gerbet, through the use of symbol and color codes. The photograph in this report in no way does justice to this map.

## Compilation of data from the maps

Table 14 Compilation of data from Rehey census map

|                         |                |                |                        |                |                        |                |     |      |
|-------------------------|----------------|----------------|------------------------|----------------|------------------------|----------------|-----|------|
| No of HH                | 60             | 90             | 100                    | 67             | 20                     | 20             | 357 |      |
| No goats                | 200            | 300            | 300                    | 100            | 50                     | 30             | 980 | 2.75 |
| Sheep                   | 20             | 30             | 50                     | 30             | 20                     | 20             | 170 | 0.48 |
| Cattle                  | 150            | 100            | 150                    | 80             | 30                     | 20             | 530 | 1.48 |
| Donkeys                 | 10             | 10             | 20                     | 10             | 5                      | 4              | 59  | 0.16 |
| Camels                  | 10             | 4              | 2                      | -              | -                      | -              | 16  | 0.04 |
| Chicken                 | 7              | 20             | 100                    | 20             | 20                     | -              | 167 | 0.47 |
| No handicapped above 15 | 11             | 16             | 18                     | 7              | 4                      | 4              | 60  |      |
| No handicapped below 15 | 1              | 0              | 7                      | 3              | 2                      | 1              | 14  |      |
| Wildlife                | foxes, rabbits | foxes, rabbits | hyenas, foxes, rabbits | foxes, rabbits | monkeys foxes, rabbits | foxes, rabbits |     |      |

Table 15 Compilation of data from Ketin census and social map

| Categories                                   | Number |            |
|----------------------------------------------|--------|------------|
| Total population size                        | 965    |            |
| Total number of houses                       | 250    |            |
| Total number of households (farmers)         | 200    |            |
| Wealth Medium                                | 40     |            |
| Poor                                         | 145    |            |
| Rich                                         | 15     |            |
| Female headed households                     | 33     |            |
| Not wealth classified                        | 5      |            |
| Poor                                         | 28     |            |
| Medium                                       | 0      |            |
| Rich                                         | 0      |            |
| Children born last 12 months                 | 130    |            |
| People died last 12 months                   | 5      |            |
| Avg no of person per HH                      | 4.83   |            |
| No of orphans                                | 10     |            |
| No of handicapped                            | 8      |            |
| No of children in school                     | 40     |            |
| No of literate in village (arabic)           | 60     |            |
| Village literacy in %                        | 6.2%   |            |
| No of children not in school (5 - 9 yrs old) | 400    |            |
| No of children in school 9 yrs ago           | 5      |            |
| Total cultivated land in the village         |        |            |
|                                              |        | Average    |
|                                              |        | Avg per HH |
| Cattle                                       | 260    | 1.3        |
| Goats                                        | 305    | 1.5        |
| Sheep                                        | 80     | .4         |
| Donkeys                                      | 39     | .02        |
| Camels                                       | 3      | .000       |

Table 16 Key demographic data from Tewareba village

|          | ~1 - 4 |    | ~5 - 9 |    | ~10 - 14 |    | ~15 - 19 |    | ~20 - 39 |    | ~40 - 60 |     |    |    |
|----------|--------|----|--------|----|----------|----|----------|----|----------|----|----------|-----|----|----|
|          | M      | F  | M      | F  | M        | F  | M        | F  | M        | F  | M        | F   |    |    |
| Enshle   | 15     | 10 | 20     | 25 | 40       | 30 | 20       | 25 | 40       | 30 | 35       | 30  | 15 | 15 |
| Tewareba | 8      | 10 | 25     | 30 | 20       | 15 | 35       | 25 | 25       | 20 | 40       | 35  | 45 | 30 |
| Segdo    | 15     | 6  | 25     | 25 | 20       | 24 | 20       | 18 | 15       | 22 | 25       | 50  | 35 | 35 |
| Total    | 38     | 26 | 70     | 80 | 80       | 69 | 75       | 68 | 80       | 72 | 100      | 115 | 95 | 80 |

|                |         |     |         |            |
|----------------|---------|-----|---------|------------|
| Total no.      | 343     | 315 | 195     | 195        |
| M/F ratio      | 52%/48% |     | 50%/50% | 51.3/48.6% |
| 0-19/20- ratio |         |     |         | 59/41%     |

Information from Osman Ibrahim and Edris Mehamed Adem

Table 17 Completion of data from census map Twareba

| Key                         | No   | Avg / hh |
|-----------------------------|------|----------|
| No of families / households | 188  |          |
| Total population            | 1014 |          |
| Men                         | 214  |          |
| Women                       | 300  |          |
| Children                    | 500  |          |
| Widows                      | 86   |          |
| Cattle                      | 310  | 1.65     |
| Donkey                      | 42   | 0.22     |
| Sheep                       | 50   | 0.27     |
| Goat                        | 100  | 0.53     |

Table 18 Compilation of data from Gerbet census - social and health map

| Categorie                          | Total |
|------------------------------------|-------|
| No of households                   | 190   |
| No of people                       | 908   |
| Avg no of people in each household | 4.8   |
| Men                                | 212   |
| Women                              | 222   |
| Children                           | 474   |
| Poor HH                            | 98    |
| Medium HH                          | 52    |
| Rich HH                            | 40    |
| Widows                             |       |
| Death last 12 months               | 10    |
| Birth last 12 months               | 45    |
| Migration last 12 months           | 0     |
| No of handicapped                  | 5     |
| No of children attending school    | 28    |
| No of literate in the village      | 60    |
| Village literacy in %              | 6.6   |

[JSYV0]102 I et separat wealth classification er det nøyaktig samme antall rich and medium, mens gruppen av fattige er delt I to.

## Appendix 6. Workshop minutes

### Day 1 – Monday April 24. Keren.

9:00 Formal opening of the workshop by Eyasu Yohannes, head of the Ministry of Agriculture in Senhit Province.

9:10 “PRA and Redd Barna - why this workshop.” Terje Thodesen, res.rep. of Redd Barna in Eritrea. Terje Thodesen introduced Jan Erik Studsrød and Elisabeth Molteberg, the course trainers, and Woldegabriel Tareke, the Eritrean counterpart and training assistant.

9:20 Jan Erik shortly introduced the intention of the workshop: to train local project staff and selected baito leaders to PRA methodology as well as to collect data for future planning and monitoring of the Asmat project in relation to expanding the scope of the project into more child-oriented activities.

9:30 Introductions. Elisabeth led the network game, having all participants stand in a circle and say their names as a ball of string was tossed to them, then holding onto the string and tossing the ball to another participant, thus creating a web between us. Jan Erik did a raise-your-hands survey of language and writing abilities. Three languages (English, Tigrinya, and Tigre) would have to be used, and educational backgrounds spanned from illiterates to people with a Bachelor’s degree, and covered many different professions. Both genders were also represented as were many age groups, so we were truly a heterogeneous crowd in every respect.

9:50 Hopes, fears, and expectations session - group discussions and plenum feedback on key points, which were written up on flipcharts in all three languages to be referred to during evaluations at the end of the workshop.

10:10 We worked out the workshop rules which were written up on flipcharts. Most of them had to do with creating a friendly and positive atmosphere within the group and with dedicating oneself to the work at hand.

10:30 Energizer - jump.

10:30 Agenda. Introduction in greater detail to the day-by-day programme including the fieldwork period. A daily timetable was agreed upon. Introduction to premade reading materials (articles by Chambers and by Myrada/Mascarenhas, key concepts review). A somewhat heated discussion arose - some participants were unhappy with our failure to provide this material in tigre or arabic (and rightly so). Woldegabriel and Jan Erik apologized and explained that a translator could not be found in Asmara, but promised to provide this material as soon as possible, hopefully by the end of the workshop.<sup>9</sup>

10:45 Participants split into groups for study of reading materials. Those participants who were unable to read the materials themselves were read to by others in the group. Meanwhile, trainers prepared materials for the following sessions.

11:45 Jan Erik answered questions about the reading materials, and some key points in the articles were highlighted. A more detailed introduction to PRA followed, including definitions, historical background and affinities, and the core thinking.

12:00 Lunch break. Participants were asked to continue studying the articles handed out.

15:00 Jan Erik continued his introduction to PRA.

15:30 Jump!

15:30 Elisabeth demonstrated key features of PRA, emphasising triangulation, progressive learning and analysis, and the pillars of PRA: sharing, behavior and attitudes, and methods.

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<sup>9</sup> Unfortunately this did not materialize, but PRA materials in Arabic will be made available to Redd Barna Eritrea end of June 1995.

16:05 Clap!

16:05 Mapping exercise. Jan Erik introduced the method briefly, showed some examples and asked participants to form groups based on local geographical knowledge. They proceeded to draw maps of their local areas – MoA staff from the project area joined the groups from the areas they were most familiar with. MoA staff based in Keren formed their own group. There were two maps from Jani, one from Erola, and three from Molobso, one of which was made by an all-female group and one by the high-ranking project staff.

17:30 End of session - half an hour early because participants needed to collect their perdiems. The trainers asked them to finish reading the handouts by the following morning.

## **Day 2 – Tuesday April 25. Keren.**

8:00 Most participants showed up early, and when the trainers arrived, they were already busy working on the resource maps they started the day before. The trainers saw no reason to stop the process when it was so well underway, so they skipped the warm-up. The map exercise continued until completed.

9:10 We put all the maps out on the veranda and took pictures of them. Group representatives presented them briefly, the presentation was videotaped. We talked about the possibilities of interviewing the map and eliciting more information. Then we went inside, and Jan Erik introduced social maps and asked people to form the same groups and make some.

9:40 People got busy with the maps. Meanwhile, Jan Erik and Elisabeth took care of some issues related to logistics and revised plans for the fieldwork data collection.

10:50 The social maps were completed, and were presented, photographed and videotaped on the veranda.

11:00 Elisabeth presented the PRA basket of tools, talking about how maps could be used in relation to other techniques. She then went on to presenting ranking and scoring methods (matrix, preference).

11:30 Elisabeth did a trial matrix ranking on two flipchart stands, handing markers to participants and asking them to draw dots in the matrixes. She asked the participants to form groups and to do a matrix ranking themselves. This exercise spilled over into lunch at 12:00.

15:00 We convened, and people immediately continued on the ranking exercise. They struggled a bit, and the mood got quite drowsy and uninspired, but tea and coffee and energizers got them going and they completed some quite interesting matrixes on a range of subjects (see matrixes). While they were working, Jan Erik and Elisabeth had a chance in between facilitating efforts to discuss logistic arrangements for the fieldwork with local officials, including what area to work in and the number of teams. – The rankings were presented, photographed, and videotaped on the veranda.

16:00 Jump - three times!!! And clapping for ourselves.

16:00 Elisabeth had a few more remarks about ranking exercises - possible uses, how to interview them, and examples of uses we will probably make of them in the field.

16:15 Jan Erik introduced seasonality diagrams, and had people say which time of year they were most happy and why, eliciting many different answers and general mirth. He then invited everybody to go outside, and did a role play of a field situation. Oda Egel and Fatna made a seasonality diagram on the ground with Jan Erik as facilitator, while the others watched. The diagram included happiness and labor fluctuations for them both, and there was a marked difference in the fluctuations for the woman and the man.

17:15 After a short break, we convened inside, and Elisabeth had a session about semi-structured interviews.

17:30 Behavior in the field. Elisabeth dramatized the ultimate nightmare fieldworker with a volunteer “villager”. Jan Erik then dramatized a better approach.

17:50 The trainers reminded the group to identify a committee for a feedback meeting around lunch time tomorrow, and said that we would watch a video first thing in the morning.

18:00 End of session

### **Day 3 - Wednesday April 26. Keren.**

8:00 Video. (ICRISAT's "We could do what we never thought we could do"). The video was frequently stopped for translations, discussions, and comments regarding techniques we have covered, and for explanations on techniques we had not yet covered (pie charts, transects), as well as for comments on behavioral aspects.

8:50 Jump!

8:50 Video continued.

9:45 Discussion and questions on the quality of PRA data compared to "scientific measurements", uses and applications of PRA, possibilities and constraints, and on how accepted and valid PRA is considered to be in academic communities, GOs and NGOs, etc.

10:00 Tea break, during which the group chose representatives for the feedback meeting and discussed feedback.

10:30 Elisabeth introduced daily activity profiles in plenum, doing her own and Jan Erik's and handing over pens for people to come up and do their own on the two flipchart stands.

11:05 Jump! This time, Jan Erik was allowed to count to three.

11:05 Jan Erik introduced mobility maps, presenting examples and showing how they could be used in relation to activity profiles. There was a discussion afterwards, also dealing more with general questions about the uses and nature of PRA.

11:35 Jump!

11:35 Elisabeth introduced historical profiles and time trends, showing the historical matrix of trends regarding rainfall, livestock, and grazing lands in Jani made by one of the groups the previous day. She explained how a lot of different data (transects, migration patterns, settlement patterns, household numbers, housing, crops, education, climatic conditions, water levels in streams and wells, livestock numbers, prices, diseases, etc.) could be presented year by year to see the developments and trends, and did a historical profile with people in plenum on the flipcharts, including some major events in the Asmat region during the last 25 years.

12:00 Lunch.

15:00 A brainstorming session on issues to explore during fieldwork. Jan Erik and Woldegabriel had people split into groups according to the themes they wanted to discuss (agriculture, health, education and other social affairs), explained that we need data which can demonstrate the changes which have been and are taking place in the area, and asked people to write down all the suggestions they could think of. The groups went to work. Meanwhile, the elected representatives went outside with Elisabeth, Jan Erik, and Woldegabriel to have the feedback meeting. (See separate minutes below)

15:20 Representatives joined the brainstorming groups.

16:00 The trainers started urging the groups to hand in their results. Some groups had not recorded their suggestions, and it took some time for them to do this.

16:15 Jump three times!

16:15 Wealth ranking. Jan Erik introduced the concept of wealth differences, eliciting local criteria from the group. He then explained and demonstrated the procedure of wealth ranking with cards and using maps.

16:50 Logistic information. Tomorrow is the big day, we start the fieldwork, and there were many instructions on where and when to meet, and other arrangements. Some people were not at all happy with the idea of travelling from Keren already at 6:30 tomorrow morning. Woldegabriel was very firm and maintained that this was necessary, and a somewhat heated debate followed. Finally consensus was to meet outside the classroom at 6:30.

17:15 We continued with the general information on tomorrow's agenda. There was fatigue and lack of concentration in the air. People would have to leave early to collect their perdiem, and the trainers decided to show the other video during the remainder of the class instead of embarking on new issues, even if there were still a couple of methods left to introduce. They will be dealt with tomorrow in Molobso instead.

17:50 People left to collect their perdiem. The trainers cleaned out the classroom and packed all the equipment in the car.

### **Minutes, feedback meeting:**

The representatives said they were pleased with all the exercises and that they had liked the lessons. Those who did not speak English and were illiterate sometimes had a hard time following what was being written down during lectures and otherwise presented in written form, although they were helped by fellow participants. Overall, however, people seemed to have grasped the concepts, which is also the general impression of the trainers to judge from the results of the mapping and diagramming exercises. Time constraints was the other major frustration, which was no surprise and is utterly shared by the trainers. The translation into two languages of everything is VERY time-consuming.

People said they liked the informal approach, especially the energizers and role plays. "We liked when you screamed and jumped." The representatives said that people were pretty confident that they would be able to facilitate these exercises themselves. They had no suggestions for changes.

In the evening, the trainers had a meeting with Eyasu Yohannes (Regional director, MoA / Keren) who put the final nail in the coffin as far as ambitions to do fieldwork in Jani or Erola were concerned. He told the trainers flatly that the security situation was such that he would not be responsible for them working outside the Molobso area, and he also urged them to stay in Molobso at night and to choose villages which were relatively close. The trainers agreed to follow his directions.

### **Day 4 - Thursday April 27. Molobso.**

6:30 - 7:20 Participants departed from Keren

10:10 The trainers arrived in Molobso, having made a few stops to look at project activities and get a view of Molobso and Twareba along the way. They set up shop in the MoA building.

10:30 There was a short briefing meeting, and we agreed to meet again at 15:00 since some of the Ministry of Agriculture participants who would also be team leaders had been held up by urgent matters in Keren. In the meantime, trainers and various participants worked on the compilation and translation of statistics on various local conditions, including the range of human and livestock diseases, crops grown and diseases & pests to them, and tree species found in the area, in order to complete the overview of what data we should try to collect during our fieldwork.

15:00 There was a plenum matrix ranking of villages in the area according to problems and various conditions (deforestation and vegetation, land use, livestock and other assets of population, historical features, communications, health, education, water resources). This ranking was used as a basis for the decision on which villages to choose for the fieldwork. We discussed the general situation in the area in the past and at present, in order to get an idea on differences and similarities, and on to what extent it would be prudent to choose four



villages close to Molobso and let them represent the entire Molobso area. We finally agreed to do our study in Twareba, Ketin, Rehey and Gerbet. The trainers apologized to the representatives from Jani and Erola as well as from other areas in Molobso that our capacity and the security situation prevented us from working in their communities this time. However, they hoped that the experiences the participants would glean from their training in the workshop would enable them to participate in the collection of information in their own communities at a later stage.

15:30 The last participants arrived, were briefed, and the team committee sat down to finalize the composition of the teams. Meanwhile, we took a plenum break during which Jan Erik and Elisabeth were interviewed by the collective group for their life stories.

16:00 The team committee presented the team set-up. The teams were designed so as to include both men and women, local people (baito representatives and representatives from women's and youth associations) and MoA staff, and people with different professional backgrounds, as well as including people who could speak (and write) both Tigre, Tigrinya, and English. After some minor rearrangements, teams gathered together, and the team leaders drew a lot to decide which team should work in which village.

16:30 We agreed on a general daily schedule for the fieldwork period:

- Leave early morning and work in the villages until mid-afternoon
- Return to Molobso; prepare findings; team leaders to do briefing with trainers
- Continue preparation of findings and planning for next day during the rest of the day

Jan Erik, Elisabeth, and Woldegabriel will partly work on their own data compilations, partly accompany teams in the field to observe and assist.

Trainers will present a general outline of the issues which need to be explored, as well as of techniques which can be used, to teams tomorrow morning.

17:00 Elisabeth asked people if they felt confident about going into the field, and whether they had any thoughts on potential difficulties which might arise. She gave examples of possible problems (lack of trust from villagers, team members criticizing collaborators, women not being present or vocal, interruptors and saboteurs). She underlined the importance of being prepared for difficulties in order to handle them calmly and not get frustrated. She then asked each group to discuss these problems as well as think of others which might arise, and to decide among themselves how these problems should be handled. This, she explained, was to be a contract between team members.

17:10 Jan Erik showed a transect walk chart and explained the technique of transect walks, the recording method, and the range of data which could be elicited. He explained that transects are often a good technique to use early on in a fieldwork, either as a rapport-enhancing initial approach or based on a map of the area, because they can give a good general acquaintance with and understanding of the area and elicit ideas, issues to explore further, and diversified initial information. Also, he explained how the transect could be used to elicit information on changes in the past and scenarios for the future.

17:30 A few final comments from participants, stating their eagerness to start the work and the importance of using time well and keeping up the good work for the remainder of the workshop. We agreed to meet again for the final briefing at 7:00 tomorrow, and the teams were photographed before we split up for the day.

## **Day 5 - Friday April 28. Molobso.**

7:00 Briefing on the topics. Jan Erik and Elisabeth introduced a chart displaying all the key issues which we need to explore, along with suggestions for techniques to use for exploring the various issues. They suggested that the first day be spent on compiling census maps to use as a basis for a wealth ranking, and that a stratified sample be drawn from the map for the rest of the study.

7:15 Elisabeth put up four flipcharts with a review of the major points to remember - a short "when-in-the-field user's guide to PRA". It included the process points which should be recorded during each exercise and which should accompany the hand-ins, as well as the procedures for planning fieldwork, executing it, and processing the results afterwards. She talked about dividing roles between team members during exercises, and what responsibilities lay with each role, and about team cooperation. She also emphasised a few finer points regarding recording and interviewing.

7:30 Team leaders received their tool kits (flipchart paper, plywood boards, clothespins, string, tape, markers, pencils, pens, crayons, etc.) and a copy of the PRA cookbook.

8:00 Teams left for the field. Trainers waited one hour to let them get started, then left for Rehey.

17:20 Plenum review meeting. Sign-in: Elisabeth had everybody put a pebble on a happiness ranking matrix she had laid out on the ground in the "das". Most people felt pretty happy about the day's work, some a bit less so. We went quickly through the day's experience group by group. All the groups had succeeded in getting underway with maps and other exercises. However, they had all encountered some difficulties regarding eliciting people's cooperation. Unexpected rains have resulted in people getting busy plowing their fields. The groups had used different approaches to get around this problem, including cooperating with local leaders, helping people with their work (DIY), and coming back later in the day.

17:55 Meeting with team leaders, discussing teams' problems and taking another look at the fieldwork display to identify further tasks for the remaining days.

#### **Day 6 – Saturday April 29. Molobso.**

7:30 Plenum meeting – another look at the fieldwork display. Jan Erik reminded people to triangulate findings, and asked them to work on identifying indicators for change and progress. There was a discussion on good indicators, and people suggested sedentization, number of people who have oxen for plowing, number of new and solid houses, number of malnourished children, average number of months people can eat food from their own land.

8:15 Trainers considered wishes from the teams that the time spent on meetings be cut down considerably, to allow more time and flexibility for fieldwork. It was decided that there would not be morning meetings or general presentations of findings until the last day. However, team leaders and anyone else who might be interested would meet with trainers every evening for briefing and discussions. The trainers would also follow up teams working in the field.

Today is market day. Everybody in the surrounding villages goes to Molobso for the market. All teams have decided to work in Molobso, and they have elicited the cooperation of baito leaders as well as of the locals represented in the workshop to identify people from their research communities at the market. This proved to be a productive strategy; people come to the market for socializing as much as for selling and buying, and they were cooperative and interested in discussing, mapping, and diagramming.

Late afternoon

The trainers had informal meetings with team leaders and some other participants, discussing the day's work and findings and advising them on further actions.

#### **Day 7 – Sunday April 30. Molobso.**

8:00 Very brief morning meeting. The trainers asked the teams whether they had any questions or anything they wished to discuss with us before continuing their fieldwork, and they all expressed the wish to get going and cut short the meeting, so we did.

All the teams worked in the field for the entire day, Woldegabriel went with group 4 to Gerbet, and Elisabeth and Jan Erik went back to Rehey partly to work with the team, partly to do their own investigations at the school and work with the children.

Evening

Trainers met with the team leaders, discussing their progress and making arrangements for accompanying teams to observe next day.

### **Day 8 – Monday May 1. Molobso.**

8:00 Brief morning meeting, nobody had any issues to bring up. Jan Erik and Woldegabriel went to Ketin with group 2, Elisabeth went to Twareba with group 1.

Late afternoon

Trainers met with team leaders. All groups are to present their findings to each other in a morning meeting tomorrow. Teams went back to work to prepare for this.

Evening

We had a party with injera and goat zigni, because this was our final evening together.

### **Day 9 – Tuesday May 2**

*Molobso*

8:00 The trainers' equipment was packed and loaded in the cars.

8:15 Presentation of findings in plenum meeting. Jan Erik thanked the Ministry of Agriculture for the logistics and practical arrangements, which were perfect. He also thanked Tesfasion and Woldegabriel for their translation, Saba and Zigny for the cooking, and everyone else for their participation and inputs.

8:30 Group 1, led by Samson Zerai, presented their findings from Twareba.

8:55 Group 2, led by Birhane Estifanos, presented their results from Ketin.

9:05 Group 3, led by Birhane Haile, presented their findings from Rehey

9:20 Group 4, led by Binyam Misgina, showed their results from Gerbet.

9:40 Field and process notes and diagrams from all the groups were presented to the trainers. Evaluation sheets were handed in.

9:50 A small end-of-course ceremony. Jan Erik and Elisabeth handed out course diplomas to each participant.

10:00 Jump! for the last time, and goodbye's.

## TEAM COMPOSITION

| Group 1. Twareba.     | Group 2. Ketin.            |
|-----------------------|----------------------------|
| Samson Zeraï (leader) | Birhane Estifanos (leader) |
| Musie Woldu           | Tesigia Tekeste            |
| Abebe Hagos           | Micheal Andmariam          |
| Abraham Hagos         | Samson Berihun             |
| Mahamed Adem Husen    | Asma Mehamed               |
| Abeit Humed           | Gemie Mehamed              |
| Tesfasion Abraha      | Mehamed Osman              |
| Merid Haile           | Fatna Omer Humed           |
| Saleh Abdela          | Biniam Heklemariam         |

| Group 3. Rehey.        | Group 4. Gerbet.        |
|------------------------|-------------------------|
| Birhane Haile (leader) | Binyam Misgina (leader) |
| Michael Araya          | Araya Zeru              |
| Mussie Tecele          | Yohannes Keflemariam    |
| Chirmathan Tekeste     | Amna Edris              |
| Saba Mesfin            | Saleh Ali Egel          |
| Saedia Mohamad         | Tesfaslassie Kahsay     |
| Saleh Adem             |                         |

## Appendix 7. Results from the teams' fieldwork

### *Group 1, Twareba:*

- Demographic data on social map; collected from local leaders
- Health map: Occurrence of diseases
- Seasonal calendar: Rainfall, workload, climatic data
- Crops ranking
- Historical map of the village. Trends on housing type, population, erosion, livestock, terracing, forestation, education, rainfall.
- Historical profile on the village, 1978 - 1994. Forestation, terracing schooling, vegetation, orphans, housing.
- Census map and table with 296 households, 1040 people, from which a stratified sample was collected after a wealth ranking. Sample information: Household head's name, age, assets, number of children, livestock, handicapped household members, disease, education/literacy, farm size, yields, number of months own food lasts, project work income, other income sources.
- Preference ranking of trees
- Preference ranking of soil and water conservation actions
- Daily activity profiles, men/women/children
- Seasonal calendars, showing seasonal variations in happiness, livestock disease, human diseases, diets, crops, problems
- Pie chart showing land use (agricultural land, potential irrigated land, forest)
- Livelihood analysis: Household census, assets, output and input per month
- Seasonal diagrams: Cropping cycle, fodder sources

- Causal diagram: Child mortality, diseases, migration, education
- Resource map of Twareba

### ***Group 2, Ketin:***

- Social census map, including wealth groups.
- Seasonal calendar of labor
- Transect of Ketin village, showing soils, vegetation, livestock, plot sizes, crops grown, rainfall
- Seasonal calendar, showing variations in livestock diseases, fodder sources
- Causal diagram, showing child mortality, diseases
- Preference ranking of crops
- Mobility map, men and women
- Seasonal calendar showing variations in problems, cropping cycle, livestock diseases, rainfall
- Historical map showing developments in population, number and species of livestock, rainfall, crop yields, availability of firewood
- Livelihood analysis showing household census, assets, input and output per month for three households

### ***Group 3, Rehey:***

- Census map including wealth ranking
- Ranking of animal diseases, soil types
- Seasonality diagram of well-being of men plus workload calendar on the farm
- Land use pie charts: Land distribution farmlands/mountains, cultivated land/ grazing land.
- Historical timeline showing trends in population, education, crops, livestock species and numbers, number of houses, crops grown, wildlife
- Education: Proportion literate/illiterate
- Preference ranking of trees
- Daily activity profile, women
- Mobility map of the people of Rehey: Range, purposes
- Data table showing a livelihood analysis of five households
- Seasonal calendar showing variations in fodder sources and grazing land, farm work, and livestock diseases
- Preference ranking of vegetables
- Preference ranking of crops
- Historical profile (case): One farmer's cattle herd
- Resource map of Rehey

### ***Group 4, Gerbet:***

- Combination map: Census, wealth ranking, social, resource, health, and agricultural activities
- Seasonality diagram showing planting of various crops

- Mobility map of men, women, children, animals
- Rainfall distribution 1994
- Farming and labor activities per month: Men, women, boys, girls
- Wealth classification criteria
- Daily activity profiles
- Historical map: Developments in forestation, wildlife, livestock, crops, main events, grazing lands, farmland
- Transect - problems and possibilities show in a flow diagram
- Preference ranking of crops
- Causal diagram - diseases, child mortality

## **Appendix 8. Fieldwork notes by three of the groups**

### ***Group 1. Twareba.***

#### **Day 1 – 28 April**

In the morning, Group One had guidances from coordinators and then, at 8:45 AM, moved up to Twareba to begin our work. When we reached there, we found an old man and some other farmers ploughing their farmland. We greeted all of them and introduced ourselves by saying “We are from the ministry of agriculture, we came here to learn from you regarding your environment.” The farmers responded “We welcome you”. We assisted them in their plowing, and afterwards we went to the hillside and selected a place where we could discuss freely. We asked the farmers if they could show us a picture of the village on the ground. At first he refused us, saying it was a misunderstanding and suggesting “It is better if we get the baito leader and together with him we can give you all the information you want”. After a while the local leader came, we explained our request to him and immediately he drew the village resource map on the ground. We discussed the map with the local farmers, assuring that it is accurate. We copied the map from the ground. Then we came back to Molobso for lunch.

In the afternoon, some of us transferred the map to a big flipchart paper, while others went back to the village and we got a census map and collected information regarding historical background, census information, and some other things.

At 5:30 PM we presented the day’s work in the meeting with the other groups.

#### **Day 2 – 29 April**

At 8:00 AM there was a short guidance meeting with Jan Erik and Elisabeth. Since today is market day, some of us went to the market to gather prices of different items. Some other people transferred mobility maps and historical maps and profiles to flipchart paper. Some also found Twareba villagers at the market and collected more information from them, they made rankings of crops and trees, and of soil and water conservation activities.

In the afternoon, we went out to Twareba, discussing daily activities, seasonal calendars and more historical information. We transferred the diagrams to flipchart paper in the evening.

#### **Day 3 – 30 April**

After the morning meeting, we began our work in Twareba. We did semi-structured interviews and livelihood analyses with some households we had taken from the census map.

We discussed health with them and they made a health map and a causal diagrams about diseases and child mortality, and migration and education.

Day 4 – 1 May

We went out to Twareba with Elisabeth and did a transect walk. We also visited some more houses and did semi-structured interviews and collected information to triangulate on the census information. After we came back, we prepared all our information for the presentation meeting.

### ***Group 2. Ketin.***

Abriviated resume from Group 2 Ketin

Day 1 – 28 April

Ketin is located some 40 - 60 minutes walk from Molobso. The Ketinn group upon arrival in the village made contact with three local farmers and briefed them about the mission. They agreed to assist in calling a village meeting and eventually 19 villagers showed up for the meeting. Most of the participants were men but also a few women participated in the meeting. The group first introduced themselves and their reasons for being there. A more detailed presentations of key objectives followed. The villagers agreed to participate in assisting the group and more detailed discussions eventually took place. Some of the issues that were raised during the initial discussions were related to following issues;

- land area
- population size
- number of houses
- number of livestock
- agricultura land area
- grazing land area
- mosque
- schools
- health centres
- source of water
- terracing
- soil erosion
- living standard (style)

In addition to the discussions held the participants were also asked to draw a map of their village. One of the villagers took a leading role in this and draw a village map on the ground. The map was later copied on to paper by group members.

Some issues that were raised during the discussions:

History The villagers told that their village were at least 1000 years old

Economic activity Main source of livelihood is agro-pastoralism

Forest resources Some 30 years ago the village was covered by forests. However, during the "Dergue" the Ethiopian soldiers cut down the forests in the area. As a consequence people were forced to migrate.

Crops Sorghum, barley and linseed. Productivity is low and on the average they get about 200 kg per hectare. The farmers are also dependent upon their livestock as an important source of food and in addition to this they depend on the food for work program and also on direct aid.

29.4. 95

The fieldwork continued .

1 Crop production and their main preferences were ranked.

2 Social categories or wealth were discussed

30.4. 95

The group made transect of the area and during the same day also had a meeting with the villagers where a number of issues were discussed. Among these were the type of soil found in the village. The major soil types were divided into red and white soils. Most of the landscape is mountainous and heavily prone to erosion. Terracing has recently started in this village and a erosion is seen a serious issue in the village.

When asked about land tenure and landholdings the average landholding per person was somewhat less than 1/2 ha

Concerning history of the village three villagers were particularly helpful;

Ato Mahmud Mohammed

Ato Mohammed Mesat

At Mohammed Ali Behit

These three villagers extensively briefed the groups about the history of the village and also about resources found including forests, livestock, wildlife, rainfall, agricultural production and fuelwood (The location of these resources were depicted on a map laid out on the ground and transferred to paper by group members) . In addition Ato Adam Omer Teklise briefed the group extensively on the use of traditional proverbs of the community (these were said in Tigre and due to difficulties in translation they are unfortunately not included in this report)

1.5. 95

Jan Erik S and Woldegabirel Tareke (Redd Barna program officer) joined the group and walked to Ketin. During this day more meetings were held with villagers and a short semi structured interview guide were used to assist in raising specific issues. A group of village elders (mostly men but also a few women) assisted in discussing livelihood strategies (both present and a historical perspective). A diagram was laid out on the ground and the starting point was year 1000

#### ***Group 4. Gerbet.***

Abbreviated resume from group 4

Day 1 – 28 April

The farmers drew a resource map, and we discussed it. The farmers showed us the wealth ranking on the map and gave census information. We copied it and transferred it to a big flipchart paper when we came back.

Day 2 – 29 April

People gave us a historical map, and they made ranking and scoring matrixes about crops.

[Oral comm., Binyam] Participants: 7 baito members. Also present: Several other farmers. There were no women or children present.



Facilitators explained the object of the task, and analysts themselves drew the matrix on the ground and put in the different crops and the criteria for scoring. Facilitators then led the ranking by asking analysts about the score for each square, going horizontally (giving scores of all crops for one criteria before moving to the next). There was a general discussion among all present on how to score, and the baito people put stones in the squares based on the general decisions.

Day 3 – 30 April

Seasonality diagrams, mobility maps, rainfall distribution, .

Day 4 – 1 May

Daily activity profiles, causal diagrams about child mortality, semi-structured interviews, transect.

The daily activity profiles: Facilitators drew a line in the sand and analysts divided it into time units. They then placed pebbles and other objects at the beginning and end of all the time periods occupied by their different activities. Facilitators converted time units into hours when drawing the profiles onto paper.

Child mortality causal diagram: The team drew this diagram based on information from analysts regarding the situation in 1994. The numbers identify how many children have fallen sick, not how many died. The group thinks that there are some deaths due to malaria and cough scold, but there was no information from the women supporting this.

## **Appendix 9. Fieldwork notes by the trainers**

### **Day 5 – Friday**

9:00 Rehey. We stopped first to talk to a group of 5-6 boys we met at the roadside, carrying shovels and spades. They were about twelve to fourteen years old, and were on their way to do terracing for cash from the project.

9:30 We came to the school in Rehey, and met a young teacher there, Fatna Abderhama. We looked at the school and got information on its facilities and resources, and on numbers of students etc.

10:30 We met up with Saba and Saedia from the team as they were entering one house in the compound of a wealthy family, the house of a bride. We were all invited in (even the two men), and placed on mats in front of the bride's impressive bed, where we were served chai. We collected info on housing and house construction, on marriage practices and kinship, on clitorectomy,

11:25 We met a young ex-fighter turned farmer in his diesel pump-irrigated vegetable garden at the bottom of the slope where the bride's compound was. He demonstrated it to us, and we admired his onions, maize, tomatoes and other vegetables. He told us about the terms of credit for the pump, about arrangements for letting others use it, and about marketing of his crops.

### **Day 6 – Saturday**

Today is market day in Molobso. Everyone comes to the market, and the groups have decided to work in Molobso because the villages will be left empty.

We walked around the market and checked some prices. In the afternoon, we went to the Kertset dam and looked at an enclosure on the way.

### **Day 7 – Sunday**

Woldegabriel went to Gerbet with group 4; Jan Erik and Elisabeth went back to the school in Rehey to talk to the children there and do a small census.

8:40 Elisabeth talked to four children from Kertset and they did a seasonal diagram on happiness, food.

9:15 The headmaster of the Rehey school and Fatna the teacher gave more information on the possibilities for education in the area, the organization of the school system, reasons for not starting school and for dropping out, schooling possibilities in the area, malnutrition and health problems among school children.

9:45 Elisabeth videotaped the different classrooms and the teaching of English, Tigrinya, Arabic, maths, geography, and science. Jan Erik initiated the census, and had Fatna help him. They went from classroom to classroom, first noting the grade number, number of students and number of female students. Fatna then recorded the number of sisters and brothers of each child, and finally we had a session on how many have lost their fathers, how many have lost their mothers, how many have lost both parents, how many have lost sisters, and how many have lost brothers. The children who had lost the family member in question would stand up, and we counted them. This was just to get a quick impression of the situation regarding orphans, and of the mortality in families in general. It was eerie to watch the great movements of children standing up as we asked them about family deaths, and particularly to note the ones who kept getting up, or more or less remained standing throughout the session. Some children have suffered such heavy losses...

11:00 Jan Erik talked to some of the same children that Elisabeth talked to earlier, plus a few others from Kertset, during the break. There are altogether about 30 students from Kertset in the school. Jan Erik talked to 11 of them. They discussed the same issues as Elisabeth did, and his notes were in accordance with hers.

On Sunday afternoon there was a terrific hailstorm. It lasted for 50 minutes and yielded 22 mm rainfall. The floor of the valley where Molobso is situated was converted into a silt river, complete with knee-high waterfalls, which flooded and washed out vegetable gardens including Oda Egel's (a participant in our workshop and Molobso Baito leader). Half his maize crops and most of the onions were washed out and ruined. It was a crash course in the eroding forces of the water to us, but the efficiency of check dams and terraces was also demonstrated.

## Day 8 – Monday

The last day of fieldwork. Woldegabriel and Jan Erik went to Ketin with group 2, Elisabeth set out with group 1 for Twareba to do a problems and solutions transect walk with some locals. Elisabeth was there mainly to observe and to be available for advice, and kept a low profile during interviews.

8:30 We left the MoA offices and went to the Molobso clinic to look at the work the group has done so far. What remains is to do this transect and do some semi-structured interviews according to the guide we made yesterday, they told me.

We walked along the Roma river to the seedling station. Afterwards, we climbed a hill and looked at an enclosure with long thick grasses and lots of green shrubs. As we got higher, we could see the big erosion gullies which carve the Twareba slopes, and trenches and mounds used for fortresses during the war were pointed out to me – they occupy land which should have been farmland. We also saw all the terraces on the slopes, and a private enclosure.

10:00 We came to the first house. The family who lived there consisted of a woman and her children plus her brother. We sat down with them all on the ground in a circle, and a friendly, low-key conversation started. Tesfion led the interview, asking good and open-ended questions, the family members talked most of the time, and Samson took very careful and meticulous notes in English. We stayed for about thirty minutes.

10:55 The second household was not far from the first. We were invited into the compound which had a solid fence around it, and sat down on prayer mats in a big circle outside the house. Another friendly and low-key interview, these people are good, from what I can tell without understanding the words. The weak point in their work is that they have not succeeded in incorporating the female organization woman in the group. She does not

speak, does not take notes, just sits there. But she follows the conversation intently. We stayed in this house for about forty-five minutes.

11:40 We arrived at the third house. We stayed in this house for about 20 minutes, then went over to the neighbor.

12:10 This house is on top of a rather steep slope and right next to the Keren road. The interview took place under the fodder-storing platform in the gaba tree here, too.

12:30 We continued the transect, walking down the slopes towards the village again. We came by the school and looked at a well where the hand pump was broken. Closer to the village there was an open well which was a water source to people in Molobso.

### **Day 9 – Tuesday**

10:30 After having left Molobso, we stopped at the Twareba school and asked permission to do a small census, like the one we did at the Rehey school. There was a break when we came, and all the children lined up class by class. Woldegabriel and three teachers did the recording, and it was all over in about 20 minutes. When we were done, we received some statistics from the headmaster and were invited to have tea in the teachers' quarters. We left for Keren at about 11:30.

## Appendix 10. Information handout to workshop participants<sup>10</sup>

### *Introduction*

Asmat is located in the north-west of Senhit province and its neighbors are: To the north, Halhal sub-province, to the south and east, Sahele province and in the western part Barka province.

The Asmat project includes three districts, namely Molobso with a population of about 15, 000; Erota with a population of about 10, 600, and Jani with 23, 000 inhabitants. The total sum of the population is 48, 000. The project area covers roughly 1, 500 sq. km.

### *Project objectives*

The overall objectives are to assist in achieving self-reliance through increased food production and ecological improvement to develop flood irrigation. Also to provide farmers with agricultural tools and seeds.

### *Agricultural condition*

The rainy period in the area is from June to September. The account of rainfall in Asmat in 1993 and 1994 were 386.2 mm and 2, 327.8 mm respectively.

### *Activities*

These have included terracing of crop and non-crop land, afforestation and the development of flood irrigation schemes.

### **Terracing**

|             |                        |            |
|-------------|------------------------|------------|
| In 1989-90: | Cropland terracing     | 299 ha     |
|             | Non-cropland terracing | 110 ha     |
| In 1991:    | Cropland terracing     | 31 ha      |
|             | Maintenance            | 18 ha      |
| In 1992:    | Cropland terracing     | 210 ha     |
|             | Maintenance            | 100 ha     |
| In 1993:    | Cropland terracing     | 761.6 ha   |
|             | Cropland maintenance   | 274.25 ha  |
|             | Non-cropland terracing | 532.19 ha  |
| In 1994:    | Cropland terracing     | 2791.74 ha |
|             | Non-cropland terracing | 84.6 ha    |

### **Irrigation activities**

In the project area water diversion canals, eleven water wells of which two failed to yield water, and an earth dam were constructed during the past three years. Recently, we have installed a solar water pump by the Ministry of Agriculture with funds provided by Redd

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<sup>10</sup> Due to the state of the original document, the text has been written into the report documents. In this process, a few spelling errors have been corrected. No other changes have been made. It thus continues to be MoA who account for the contents of Appendix 10.

Barna. Individual farmers are also constructing temporary water diversion canals, water wells, and shadoufs for water lifting on their own initiative for irrigation purposes. A flood irrigation project has been developed along the Zara river. Zara is at an altitude of 600 m a.s.l. Farmers are practising flood irrigation on a limited scale.

### **Crop assessment**

Under rainfed conditions, if the land is well prepared and if the amount and distribution of rains is fair, a farmer can get up to 16 qts/ha of sorghum and up to 12 qts/ha of pearl millet on the average in the province of Senhit and thus Asmat. The results for Asmat sub-province by crop type were as follows:

| Crop         | 1993      |            | 1994      |            |
|--------------|-----------|------------|-----------|------------|
|              | Area (ha) | Yield (qt) | Area (ha) | Yield (qt) |
| Sorghum      | 3,501     | 3,326      | 2,224     | 7,344      |
| Pearl millet | 5,184     | 4,355      | 1,667     | 16,670     |
| Barley       | 2,340     | 2,167      | 276       | 3,312      |
| Wheat        | 1,750     | 1,573      |           |            |
| Total        | 12,775    | 11,421     | 4,167     | 27,326     |

### **Population and social facilities**

The total population is estimated to be 48,000 and it is growing fast. The average family size in Asmat is estimated to be 4.5. It is also estimated that over 50% of the population are children below 16 years of age.

The economic survival of the people of Asmat is based on pastoralism and semi-pastoralism.

### **Agricultural services**

The ministry of Agriculture has 20 employees in Asmat sub-province. They work as extension workers, soil and water conservation and afforestation program conservationists, and home economists.

### **Constraints**

- Low and unreliable rainfall has limited the food production
- Inadequate social and physical infrastructures
- Shortage of skilled manpower
- Office and accommodation problem
- Shortage of transportation
- Shortage of surveying and meteorological equipment
- Malaria

## ***Conclusion***

The project started in an environment where the people know little about improved methods of agriculture and other better means of living. But due to the introduction of this project the dynamics of social and economic changes are accelerating.

## ***References***

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