

IN SEARCH OF PROTECTION AND LIVELIHOODS



Socio-economic and
Environmental Impacts
of Dadaab Refugee Camps
on Host Communities

ANNEXES

September 2010



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Annex A: Dadaab host community initiatives

1. RESCUE (UNHCR – GTZ)

UNHCR initiated a Rational Energy Supply, Conservation, Utilization and Education (RESCUE) program in Dadaab, made up of several projects including firewood distribution and creation of green-belts to regenerate land. The program is run through GTZ (German Institute of Technical Cooperation), and was created in 1993 to address the emerging environmental degradation problems connected with the refugee camps in the area. The unsustainable harvest of firewood, building and fencing material and the large number of livestock were then identified as chief contributors to the degradation.

At first RESCUE was mitigating environment problems mostly in and around the refugee camps, while there was limited activity outside. Later (2008-09) the activity has been expanded also to the host-community areas.

Project activities comprise:

- Production and dissemination of energy saving cooking stoves to both refugees and host-community.
- The establishment of greenbelts.
Promotion of natural regeneration through live fencing of affected vegetation and sustainable use of natural resources.
- Environmental education (CARE RAP).
Organized procurement and distribution of firewood to the refugees.
- Control of *Prosopsis (mathenge)*.
- Support to host-community in excavation of water pans for domestic and agricultural/livelihood activities.
- Support to host-community in establishing grass reseeding plots for fodder and seed banks.
- Support to the functioning of environmental management structures such as location and division environmental committees.
- Support to host-community in practicing agro-forestry activities.
- Production and provision of assorted tree seedlings species for reforestation to host-community around the camps and up to 100 km away from the camps.

The RESCUE projects hold clear benefits to the local community and consequently help to abate tensions. Short term benefits include contracts awarded to host community members for the collection and transport of firewood. Using 0.7 kg/person/day as a guide 30% of refugees needs are met through this program and KSh 70 were paid to the contractors for the delivery of 10 kg. The firewood balance is sourced locally from areas around the camps.

According to GTZ there are 100 gatherers and 100 transporters, each contractor employing a team of around 20 people made up of both refugees and members of the host communities. Only dead wood is collected although the distance is extended far from the camp over 50km resulting in increased unit costs due to transport element. The cost of this project is USD 600 000 annually, an amount of money which is inserted mainly into the local economy.

This project component was halted in 2009 because of disagreements between the host-community and UNHCR-GTZ on the purchase price for firewood, but is now expected to resume.

Reforestation through establishment of green belts and household tree planting has been beneficial to both refugees and host communities, addressing measures to restore vegetation around the camps. The area rehabilitated to date amounts to over 830 ha. However, there is still an ongoing environmental degradation around the camps.

2. FAO Support to environment rehabilitation of Dadaab refugee and host community

The broad objective of this project¹ is to scale-up the greenbelt establishment lessons learnt and experienced for over 10 years now by the RESCUE (UNHCR/GTZ) environmental management and rehabilitation program. The new project focuses participatory forest management and marketing of natural resource products. Household income will be increased through improved value chains of wood and non-wood rangeland products.

The project started in July 2009, to go on for 3 years, with a budget of USD 472 000. It targets an area of about 40 km radius (5000 km²) around the Dadaab refugee camps, and includes close collaboration with the Kenya Forest Service, Kenya Forestry research Institute, private sector, CBOs, NGOs, etc.

To ensure sustainability, the project will be implemented within a framework consistent with the Government of Kenya's development programs at the local level. The organ to represent the central government will be the District Environment Programs in close collaboration with the local government councils. Both these government institutions are already involved in the current environmental activities of UNHCR/GTZ in Dadaab. Day to day activities of the project will be carried out by UNHCR/GTZ within a framework similar to the current one.

The objectives comprise:

- Increased economic potential of wood and non-wood products in the market value chain;
- Reduced tension between host-communities and refugees by gainfully involving the former;
- Sustainability ensured by a demand-driven approach involving private sector service providers and the communities themselves;

Owing to the small budget, a decision was made to the effect that the proposed project be implemented only in Dadaab. Although the total budget is USD 472 000, the secured budget from FAO is only USD 172 000. A balance of USD 300 000 will be generated by the project through the collection, processing and sale of gum arabic from about current 50 ha of trees.

3. Forum on host-community concerns

The Dadaab Refugee Complex Stakeholders' Forum on Host Community Concerns was held in Garissa from 31st March to 2nd April 2009.² It was the culmination of various consultative meetings over the years between UNHCR officials (Dadaab, Nairobi and Geneva levels) and the host community and their elected leaders. It was organized by UNHCR and with participation from relevant GoK departments, partner agencies, community representatives and elected officials. The main objective of the Forum was to provide the various stakeholders with a platform to develop a comprehensive strategy for addressing concerns raised by the local community that has been hosting refugees in the Dadaab camp.

¹ Support to livelihoods by managing and rehabilitating degraded land in and around the Dadaab refugee camp. FAO Project Document (Milimo, Nairobi January 2009)

² The UNHCR stakeholder forum on host-community concerns (2009)

A total of 61 people participated in the Forum. They included Host Community representatives from the two districts, CBOs – representatives of the Youth Groups, Women Groups, the Disabled Groups and the Hirola Wildlife Community Conservation Trust; elected Councilors from the two constituencies, the Lagdera and Fafi constituencies' Members of Parliament; representatives of various UN agencies - UNHCR (Dadaab, Nairobi and Geneva), UNEP, UNDP, UNICEF, WFP, FAO, and IOM; representatives of various government departments and national and international NGOs – DRA, NEMA, Local Government (LG), ALRMP II, the Kenya Red Cross, GTZ, CARE and LWF.

The Forum agreed on:

- A draft environmental management plan;
- Host community development plans for Lagdera and Fafi districts;
- An indication by the agencies on the aspects of the proposed environmental and socio-economic development plans that they may be interested in supporting;
- Key actions in going forward.

Specific initiatives were defined and listed for the following sectors:

- Water
- Education
- Security
- Infrastructure
- Health
- Hygiene and sanitation
- Poverty reduction
- Communication
- Capacity building of local organization

In addition questions were raised on the employment policy of the international agencies, with the objective of employing more local host-community persons in the refugee programme. Here it was responded that the represented agencies could not commit themselves to giving preferences to people from the refugee hosting communities, as this would be in violation of their respective mandates and policies.

The plan was supposed to comprise a 5 years perspective, but the agencies represented at the workshop could only indicate areas of possible interest and contribution, and were not prepared to make binding commitments. Cost estimates for the individual project components were lacking, so an overall budget was not presented.

The status one year after the forum was held is that only few of these projects have been adopted for implementation. A new forum was conducted in March 2010, focusing to a larger degree the task of prioritizing within the rather extensive “wishing list” from 2009.

4. The Norwegian Refugee Council (NRC)

NRC has been operating in Dadaab since February 2007 with the refugee population. Donors comprising UNHCR, Norway, SIDA, EC, UNICEF, OCHA, WFP, BPRM, ECHO, Qatar, TIDES and CIDA are financing its refugee program.

The NRC host-population initiative of about USD 0,5 million is small compared to the refugee program, which is the main occupation (now USD 11 million). The engagement for host-community

interests is outside NRC’s normal line of work, and came as a result of incitement from UNHCR. Host-community projects are concentrated in the areas of education, environment and water; it also includes a youth education package.

Host Community initiatives (USD ‘000)

	2007	2008	2009	2010 (budget)
NRC/RRDO (total)	160	76	587	472
• Social infrastructure	160	76	187	264
• Environment			400	208
Direct funding (outside UNHCR)		55	114	202

NRC implements its host-community environment projects through sub-contract with a local CBO called RRDO based in Lagdera.

When contracts for works are won by local host-population companies, NRC has experienced that they are sub-contracted to refugees. Additionally, all contractors used by NRC call in workers from outside as these are cheaper and more willing to work.

5. RRDO

RRDO is a local community based organization (CBO) operating in the Lagdera district. It is currently engaged in host-community projects financed through NRC.

6. Lutheran World Federation (LWF)

LWF is involved with water, hygiene, sanitation, education, solar panel projects for the host-community. In Fafi a host community agro-forestry project is implemented by FAiDA with funds from BPRM.

Host Community Initiatives (USD ‘000)

	2007	2008	2009	2010 (budget)
LWF/FAiDA total		294	423	200
Direct funding (outside UNHCR)		294	400	

7. Fafi Integrated Development Association (FAiDA)

FAiDA is a community based organization (CBO) operating in the Fafi district. It is currently involved with host-community projects there on engagement by the Lutheran World Federation (LWF), which also supports capacity building within FAiDA.

FaiDA is currently carrying out environmental restoration in the Jararjilla division of the Fafi district in six sites (Welmarrer, Yumbis, Fafi, Borehole 5, Alinjegur and Madhamarub). The project works with the local community as the beneficiary. Much of the project activities consequently are carried out by youth and women groups in the respective project sites.

Two tree nurseries have so far been established by the project in Alinjegur and in Borehole 5. A total of 16 hectares of plots (woodlots) have been established where natural vegetation growth is being encouraged. The project also facilitates the community in growing vegetables, and focuses on building the capacity of the community.³

³ Source: FAiDA information leaflet

8. CARE International

CARE has been active with support to the refugees in Dadaab since 1992 when the camps were established. The engagement for the host-community was a result of pressure, the local population wanted to partake in the benefits from the programs designed for the refugee population. Actions from host-community members have at times influenced on the organization's ability to conduct regular logistic operations.

CARE has introduced an Enhanced Livelihood Project among the host-population focusing:

- Enhance livelihoods through increased community participation in the identification of and management of alternative livelihood opportunities.
- Promote access to professional and marketable skills development for the youth.
- Promote good governance in host and refugee communities to foster peaceful coexistence and increased community ownership of social assets.

The budget for these activities was about USD 85 000 in 2009.

9. Danish Refugee Council (DRC)

DRC started working in Kenya in 2005 when a partnership was struck with CARE Kenya International (see above). The Dadaab program focuses on the refugees in Ifo, Dagahaley and Hagadera camps and the surrounding host communities.

Danida support was previously channeled via DRC to CARE Kenya. Although the new program for 2010 and onwards will request some funds to support CARE's program, a more significant proportion is being requested for direct implementation by DRC. This is justified by the growing needs of the refugees in Dadaab as well as the growing animosity and frustration expressed by the host communities, necessitating further services directed at both sides. When working in camp settings DRC will continue to follow the principle of 50% support to the refugees in the camps and 50% to the local population.⁴

Extra efforts will be made to ensure that thorough information is provided to refugees, hosts and authorities around the definition of livelihood and local development activities. This is to reduce scope for tensions or sense of unfair aid allocation. This is especially likely in areas where hosts also suffer from extreme poverty and lack of opportunities.

The following targets are included in the new program:

- Based on public health assessments, 4 host communities and 2 camp blocks will receive tailored public health packages of water, sanitation and environmental health infrastructure and training.
- App. 100 students will complete vocational training courses in accredited institutions leading to award of diploma and certificates (50/50 split between refugee and host)
- App. 200 household/groups will complete training round in GSL and/or dry land farming and receive inputs (grants/in-kind) for start-up or expanded business/farming (50/50 split between refugees and hosts)
- App. 100 Artisans will complete training.
- App. 34 form four secondary school student will receive scholarship to proceed secondary education

⁴ Danish Refugee Council (2009): Project Document 2010-11, page 32

Host Community initiatives (USD '000)

	2007	2008	2009	2010 (budget)
DRC/CARE/RCS	575	380	150	548
Direct funding (outside UNHCR)	575	380	115	548

10. Bureau of Population, Refugees and Migration (BPRM- USA)

LWF receives financing for its projects among others from BPRM – USA.

Objective: To reduce potential for conflict between host communities and refugee populations by providing humanitarian support in Lagdera and Fafi Districts in the areas of water, sanitation and school infrastructure. Activities in the period September 2008 to September 2009 comprise:⁵

- Purchase and install a submersible pump for a borehole in Fafi District.
- Construct a 10,000 liter Ferro cement water tank at Ifo host community section.
- Construct eight school latrines in Alijugur and Dadaab pre- and primary school.
- Conduct 24 cleaning campaigns (two per month) around Dadaab Town.
- Thirty communal latrines constructed for the host communities in Dadaab, Dagahaley and Alijugur.
- Twelve days of sensitization campaigning (four days in each community: Dadaab, Dagahaley and Alijugur) on latrine usage and hygiene.
- Increase available night study hours from zero to two for students at the Alijugur primary school as a result of the use of a solar lighting system in classrooms.

11. Handicap International

Conducting a few host-community initiatives, including the purchase of wheelchairs, volunteers, a women group in Dadaab.

12. Filmaid International

Promoting film as medium of education, and has just started work in host communities (funding BPRM).

13. Save the Children UK

Core areas include child protection and food security. The new program will focus more on host community initiatives.

14. National Council of Churches of Kenya (NCK)

Core areas include education, reproductive health, HIV-AIDS, sanitation, peace education with the host community and especially youths. Funded mainly from UNHCR.

15. Horn Relief (International)

Started activity in Dadaab in 2010, and the engagement comprises host community projects only. Core areas include livelihood, economic activity, handicrafts, and infrastructure. The funding comes from US-AID.

16. African Development and Emergency Organization (ADEO)

ADEO is a Kenyan NGO with core areas including health, malaria, and HIV. A small component for the host community is introduced.

⁵ Source: BPRM information leaflet

Annex B: Study Terms of Reference

Socio-economic and Environmental Study of the Impact of the Refugee Camps in Dadaab, Kenya

1.0 Introduction

The presence of the three refugee camps in Dadaab, which together are currently the biggest refugee settlement in the world, has socio-economic as well as environmental impacts on the surrounding areas. Knowledge of the extent of these impacts – positive as well as negative – remains largely anecdotal.

Following the recommendations of the 2009 Review of the Danish funded Regions of Origin Initiative in Kenya, the Government of Kenya (GoK) and the Embassy of Denmark - together with national and international stakeholders - are in the process of preparing a study of the socio-economic and environmental impact of the presence of the three refugee camps in Dadaab in North Eastern Kenya.

It is anticipated that the study will be a joint GoK-donor study that will:

- Provide a platform for joint evidence-based decision-making and programme implementation in and around the refugee camps in Dadaab.
- Serve as an entry point for a harmonised approach to integrated activities addressing both host and refugee groups.
- Eliminate myths and facilitate an informed dialogue on the Dadaab refugee camps and their impact on the surrounding area.
- Provide inspiration for similar areas around the world hosting large refugee populations over protracted periods.

These Terms of Reference (ToR) outline the purpose, methodological considerations and requirements for undertaking the socio-economic and environmental impact study of the refugee camps in Dadaab on the surrounding area and host community.

2.0 Background

The refugee camps in Dadaab have existed since 1991 and host primarily Somali refugees. By late 2009 the camps, which were designed to hold 90,000 refugees, had a total population of close to 300,000 refugees. This substantive presence of people in a semi-arid region of Kenya with low population density has environmental as well as socio-economic consequences for the surrounding area and the host community. Renewed fighting in South-Central Somalia has caused additional persons to flee and seek protection and refuge in the refugee camps of the neighbouring countries. The influx of refugees from Somalia into Kenya is expected to continue in the near future, increasing the number of refugees in the Dadaab camps and further affecting the host community.

To cater for the anticipated negative effects of the refugee camps, various projects are being implemented by the UN, NGOs and GoK to improve the living conditions for the host community. Interviews⁶ with NGOs operating in the area indicate that there is growing concern among the host community that they are not benefitting significantly from the extensive service provision to

⁶ Danida 2009: Review of the Regions of Origin Initiative in Kenya

the refugees from the international community. Limited information is however available on the overall situation of the host community and the real impact of the camps.

Box 1 - Dadaab geography and population

Dadaab refugee camps are located in Lagdera and Faqfi Districts (before 2007 the camps were administratively under the Garissa District administration) of North-Eastern Province (NEP) in Kenya. NEP has a population of 1.4 million people spread across an expansive 123,000 km² of semi-arid land. The most prominent ethnic group is Somali with a pastoral nomadic background. Locals and the bulk of the refugees share a common ethnic background, of which the majority are of the Ogandan, Aulihan and Abdiwak clans. The Dadaab complex comprises three individual camps: Ifo, Dagahaley and Hagadera. All three are within 18 km of Dadaab town, and between 5 and 10 km apart, covering a total area of 50 km². The camps were originally constructed to hold 90,000 refugees but the increased intensity of conflicts in Somalia has increased the refugee movement to the camps. In February 2009 the three camps held 255,000 refugees, a 48% increase since January 2008 and as of January 2010 the camp complex had a registered population of around 258,000.

The Dadaab camps are overpopulated and there is ongoing negotiation between UNHCR and GoK on the allocation of additional land for the establishment of a fourth camp in the area (see box 1). GoK and UNHCR have also embarked on a relocation exercise of some 12,900 Somali refugees in Dadaab to the Kakuma refugee camp in the Turkana District of Kenya.

GoK is pursuing an encampment policy vis-à-vis the refugees. Refugees are confined to the camps in Dadaab and Kakuma with limited opportunities for seeking employment or travelling.

The operational responsibility, e.g. registration, status determination and management of refugee camps, currently rests with UNHCR. However, following the enactment of the 2006 Refugee Bill, UNHCR is planning to gradually hand over responsibility for refugee administration to GoK. However, the Government's capacity to undertake the function is at the moment limited^{7, 8}.

While no major studies have been undertaken in the past, there are indications of changes in environmental and socio-economic patterns around the camps. The locals, authorities and aid agencies in the area are reporting environmental changes such as reduction in the water level, enhanced firewood collection and grazing impacts due to the increased number of livestock; as well as economic consequences, such as increased market and employment opportunities (see box 2).

⁷ GoK/Danida (2009): Capacity Building of the Kenyan Refugee and Asylum System – Institutional Capacity for Implementation of a new Refugee Act

⁸ The Regulations guiding the implementation of the 2006 Refugees Act were approved in February 2009. The regulations focus on reception, registration, issuing of identification cards, and security. In parallel to this, GoK has completed the establishment and equipment of Department of Refugee Affairs (DRA) management offices in Kakuma and Dadaab refugee camps, and DRA will develop its capacity further in the future.

Box 2 – Major changes to Dadaab and surrounding areas

Possible changes for Dadaab and surrounding areas include:

Socio-economic:

- Increased provision of service delivery including electricity, education, health facilities and water;
- Increased trade;
- Increased access to credit for traders within the Kenyan Somali community;
- Sale and exchange of refugee food rations to host populations;
- Loans from NGOs;
- Employment opportunities.

Environmental:

- The use of wood as cooking fuel and branches for the construction of shelters is resulting in exploitation of local vegetation;
- Water scarcity (either as a consequence of the increased demand for water or extensive droughts) has led to tensions and fighting amongst the refugees in the camps and between refugees and the host community;
- The current network of latrines is poorly maintained and there are no latrines for the new arrivals;
- The refugees are using vegetation as fencing material in the camps;
- The number of livestock owned by refugees is believed to exceed the number maintained by the host community.
- Waste management is an issue in the camps as well as for the surrounding areas

As the impact on the host community becomes more apparent, increased attention from donors, UN, NGOs and GoK is being given to the provision of services for the districts around Dadaab. This includes the new joint UN Country Team approach to development in the area as well as bilateral interventions of organisations such as the Kenya Red Cross Society, CARE International and the Arid Lands Resource Management Project. Interventions are not always coordinated and there is now scope for developing a joint approach for dealing with the host community around Dadaab. This however requires informed decision-making. The proposed study will serve as a first step in that direction by providing the evidence needed to enable the stakeholders to develop a joint approach to development assistance for the host community.

3.0 Purpose of the study

The purpose of the study is to ‘*assess the socio-economic and environmental impact of the refugee camps in Dadaab on the surrounding areas, including the host community in order to furnish knowledge to assess options for mitigation of negative impacts and optimization of beneficial opportunities*’.

The immediate objectives of the study are to:

- 1) Assess the social and economic benefits and challenges that the presence and size of the Dadaab refugee camps have on the host community and Kenya at large;
- 2) Assess the environmental impact of the Dadaab refugee camps on the surrounding area⁹;

⁹ Suggested up to 80 km from the camps. This radius may be adjusted by the team following initial assessments

- 3) Identify and assess options for addressing the negative impact and optimizing the positive elements of the socio-economic impact of the Dadaab refugee camps;
- 4) Based on these options, provide recommendations for improved sustainable presence of the refugees (including camp management and durable solutions for refugees & host community).

4.0 Study Advisory Group

To enhance the degree of usefulness of the study and ensure that it is aligned with the needs of the stakeholders and these Terms of Reference (ToR), the team will report on study progress to a Study Advisory Group (SAG) established for this study.

The objectives of the SAG will be to: (a) review study reports and discuss methodology, progress, and findings with the consultancy team, (b) discuss and provide a set of recommendations based on the study findings to be annexed to the final study report.

The SAG will be co-chaired by the Department of Refugee Affairs of GoK and the Embassy of Denmark, and will include representatives from:

- 1) The Ministry of Environment
- 2) Ministry of North Eastern Kenya
- 3) Ministry of Planning
- 4) The Provincial Commissioner
- 5) UNEP
- 6) UNDP
- 7) UNOCHA
- 8) UNHCR
- 9) World Bank
- 10) NGOs working in Dadaab refugees camps
- 11) NGOs working with host community
- 12) ECHO
- 13) Donor representatives

The SAG will meet to:

- a) Discuss the methodology and planned implementation of the study with the team (end of inception phase, February 2010)
- b) Discuss the preliminary findings with the team following the field study (March 2010)
- c) Discuss and elaborate a set of recommendations based on the findings of the final study (May 2010)

The Department of Refugee Affairs will act as secretariat for SAG with assistance from the Embassy of Denmark.

The members of the committee are expected to provide the consultancy team with any relevant information/data from their respective institution.

5.0 Outputs

Prior to the final report, the team will be expected to deliver a number of outputs to SAG aimed at enhancing discussions and transparency of the study process.

Outputs of the assignment include:

- 1) *Inception report*. The inception report will include two main sections: (i) an outline of the main preliminary findings from the desk study, which will include an overview of areas where additional assessment is needed, and (ii) a detailed methodology and implementation plan for the stakeholder interviews and field study in and around Dadaab. In addition, the report will include a revised process action plan. The report will be presented to SAG one month after the start of the study. The inception report should not exceed 12 pages.
- 2) *Post-field study debriefing note*. Following the completion of the field study but prior to engaging on the final report drafting, the team will produce a post-field debriefing note to be presented to SAG. The note will include sections on: (i) preliminary findings against the purpose and immediate objectives of the study, (ii) challenges and opportunities faced during the implementation of the study as well as uncertainties and risks related to the results, (iii) a revised process action plan. The debriefing note should not exceed 10 pages.
- 3) *Final study report*. The final report will include: (i) study rationale and updated Dadaab background, (ii) methodology, (iii) reflections on limitations to the study, (iv) study findings against the purpose and immediate objectives outlined in these ToR, (v) conclusions and recommendations, and (vi) an overview of possible political and operational risks related to the findings. Finally, the SAG recommendations will be annexed to the report.

6.0 Scope of Work

The study will be divided into three phases:

Phase 1 – inception

The inception phase will focus on four major tasks:

- 1) Desk study of relevant existing documentation related to the ToR objectives. The desk study will serve to: (i) map existing knowledge and identify areas, which merit further assessment, (ii) with the information available identify preliminary findings for the study.
- 2) Interview key stakeholders in Nairobi and Garissa from GoK, Parliament, implementing NGOs, UN, and donors.
- 3) Develop methodology. The team will outline the methodology taking into consideration: (i) scope of assignment, (ii) context of Dadaab, (iii) the need for focusing on the most critical socio-economic and environmental aspects of the assignment, (iv) the need for applying qualitative as well as quantitative methodology, and (v) the methodological considerations outlined further below.
- 4) Prepare for field research. Select and train enumerators for this research in Dadaab.

The findings from the inception phase will be outlined in the inception report, which will be presented to SAG by the end of the inception phase.

Phase 2 – field work

Field work will be undertaken in Dadaab and surrounding areas in accordance with the methodology outlined in the inception report.

The preliminary findings and field work limitations and consideration will be included in the debriefing note, which will be presented and discussed with SAG prior to phase 3.

Phase 3 – finalisation and launching

Phase 3 will be divided into two sections:

- 1) Finalisation of the draft report by the team, which will include quality assurance by the consultant. Following the finalisation, the report will be distributed to SAG for any final comments. Once feedback is received from SAG the consultants will produce the final report and submit this to SAG.
- 2) Launching of the report. SAG, under the leadership of GoK, will hold a launching of the report in which the consultants will present the main findings and conclusions and SAG will present their main recommendations based on the report findings. Invitees for the launch will include GoK line agencies and Members of Parliament, UN agencies, donors, NGOs, and media.

7.0 Methodological considerations

The consultant will be expected to finalise the methodology during the inception phase. To guide this process the consultant will need to take into consideration the following:

Overall methods used

The study is expected to include both qualitative and quantitative analyses. This may include, but not necessarily be limited to: semi-structured interviews with local government and line agency representatives, host community members, refugees, and implementing agencies in Dadaab and surrounding areas; focus group discussions; statistical analysis of economic and environmental/natural resource data from Kenya National Bureau of Statistics, camp management agencies, local government and NGOs (data may include: influx of refugees, migration patterns, economic activity, revenue collection data, water level in and around the refugee camps over time vs. camp size, waste collection data etc.); analysis of situation in and around Dadaab compared to the rest of Kenya (revenue generated, inflation, market prices, drought and rain patterns etc.).

The team will be required to reflect on the definition of impact, taking into consideration, on the one hand, the impact here and now, which is likely to be *an effect of the activities undertaken as a consequence of the presence of the refugee camp*. Reflections will also be needed on the likely future impact, i.e. the consequences of the outcome of the activities related to the Dadaab camps in the long run (5-10 years from now).¹⁰

Finally, the team will draw on best practices from similar studies including environmental impact assessments in similar environments and poverty and social impact analyses.

Focusing

The social, economic and environmental impacts of the Daadab camps on the surroundings are expected to be many and different in nature. The team will use the inception phase to narrow the number of topics to fit the study with the scope of the ToR¹¹. Initial assessments indicate that the following topics will be of importance and should be vetted for possible inclusion in the final study.

¹⁰ Impact will be defined in accordance with OECD/DAC glossary as intended as well as unintended long-term impacts. The team will consider impact not only as a direct consequence of the camp, but also indirectly as the effects of the consequences of the activities around the camps.

¹¹ i.e. inputs and objectives in these ToR.

Socio-economic:

- Key changes in socio-economic situation for host community
- Specific changes in land use patterns and livelihood systems for host community
- Social relations/interaction between host community and refugees
- Increased economic activity due to trade. Items of trade may include firewood, food items, electronics, food rations, livestock and khaat.
- Increased economic activity from camp operations. This may include the procurement of local goods by aid agencies, employment opportunities for host populations and the refugees with aid agencies and sub-contractors.
- Increased economic activity from new business development. A related factor includes the access to credits and remittances.
- Income base and labour market. Previously existing and present income generating opportunities for the host community.
- Changes in the availability of access to (1) public, (2) private, and (3) donor financed services for host community with emphasis on health, water and education.
- Livestock, control of livestock, access to grazing, markets etc.
- Security situation as perceived by host community and changes to this following the establishment of the camps.

Institutional:

- Humanitarian and development assistance in the hosting area and mapping of who does what and on which scale. (The “who” refers to the Government of Kenya, bilaterals, development banks, NGOs and UN agencies).
- Modalities for support and assessment of the realistic options for adjusting support modalities including provision of humanitarian and development support benefitting both host and refugee communities

Environmental:

- Location and nature of the camps with respect to the hosting environment.
- Population increase in the area.
- General assessment of environmental carrying capacity in relation to interaction of livelihood patterns/activities of host population and refugees
- Increase in the chopping down of bushes and trees for firewood, charcoal, construction and fencing inside the camps.
- Waste management and generation. The generation, use, and disposal of waste from the refugee camps that has important impact on host community.
- Access to water and sustainable water usage in and around the refugee camps.
- Access to grazing and water for host community as well as refugee livestock.¹²

Factors of influence

There are a number of different factors, which are likely to impact the results of the study and which the team should consider as part of the study. These include:

- *Livelihood patterns.* To what extent are the livelihood systems and the associated land use patterns for both host population and refugees compatible, complementary or competing.
- *Ethnicity and culture.* Opportunities and challenges related to the ethnicity overlap and differences between refugees and host community.

¹² See also UNHCR – ORSTOM 1999 study.

- *Gender, youth, and HIV/AIDS.* The impact is expected to differ relative to gender, age, and possibly also for HIV/AIDS affected groups. Finally, the length of stay in the refugee camps may be considered vis-à-vis impact. The team will be requested to factor in these cross-cutting issues in the study.
- *Spatial considerations.* Previous assessments have indicated that the environmental effects of the camps may be as far as 50 km away, at the same time the economic impact is felt in places like Garissa and Liboi. The team will need to take into consideration the geographical location of the camps and their impact range. As a consequence, it is foreseen that the team will undertake part of the study in Garissa and communities in the outlying areas around Dadaab, security concerns permitting.
- *Camp size.* The size of the camp varies proportionally with the conflict in Somalia. The team should consider the size of the camp as an indicator of impact.

Limitations

The study will focus on those issues that are assessed to be of greatest importance to the study objectives. As a consequence, there are a number of issues pertaining to the presence of the refugee camps, which go beyond the scope of this study, including:

- The presence of the refugee camps is likely to have consequences for social patterns including marriage and social networks will not be assessed.
- Large scale environmental assessments, such as drilling for water level testing will not be feasible.
- The team will decide on further focusing of the study during the refinement of the methodology at the inception phase.
- Finally, the team will need to work within the security restrictions in place at the time of the field research, which may require modifications to the methodology.

8.0 Team composition

The team will be lead by a group of international and national consultants.

The consultancy team will comprise:

- 1) An international team leader with extensive knowledge of socio-economic studies, and analyses in fragile environments; knowledge of refugee and migration patterns; understanding of qualitative as well as quantitative methodologies; and knowledge and understanding of both Kenyan and Somali context and culture.
- 2) An international environmental and natural resource management expert with previous extensive environmental impact assessment experience; thorough understanding of environmental assessment techniques and qualitative and quantitative methodologies. Previous experience from North-Eastern Kenya will be an advantage.
- 3) An international socio-economist with specific experience in qualitative surveys, gender issues and marginalisation.
- 4) An international economist with speciality in local level trade, small enterprises and the informal economy with previous experience from working in Somalia, Kenya and/or related Horn of Africa countries.
- 5) A national institutional expert with substantive understanding of context and culture in North-Eastern Kenya.
- 6) A national environmental expert with substantive knowledge of rangeland forestry and empirical techniques for the measurement of biomass cover (stocking, condition and species) and appropriate sampling techniques

All members will be fluent in written and spoken English.

The team will be assisted in the field work by a group of Somali-speaking enumerators to be recruited locally via NGOs operating in Dadaab. These may include both local residents and refugees, according to the final survey methodology that is agreed upon.

9.0 Funding

The funding of the assignment will be provided by interested donors and organisations, who may contribute with funding or the provision of a qualified consultant(s) for the assignment¹³.

Final agreement of funding will be made between the interested donors.

10.0 Timing and reporting

The assignment is expected to be implemented in accordance with the Process Action Plan outlined on the following page. However, subject to funding and the identification of qualified consultants, this plan will be revised upon finalisation of agreement with the team.

Draft report will be submitted to the SAG no later than four (4) months after the out-set of the study. Final report will be finalised for launching no later than five (5) months after start of the study.

The team will be required to make all travel and interview arrangements by their own means. The Royal Danish Embassy will provide an e-mail list of relevant stakeholders for the team to contact. Security arrangements will be sought coordinated with the United Nations.

¹³ Danida has committed funds which should cover roughly 50-60% of the costs for the assignment.

Annex C: Study itinerary

First mission, Nairobi			
11th Jan '10	Meetings with Royal Danish Embassy, Royal Norwegian Embassy, Department of Refugee Affairs.		
12th Jan	Meetings with UNHCR, UNDP, UNEP, UN-OCHA.		
13th Jan	Meetings with MP for Lagdera, Ministry of Environment & Mineral Resources, Kenya Red Cross/Danish Red Cross.		
14th Jan	Meetings with GTZ, LWF, NRC, CARE.		
15th Jan	Meetings with UNHCR, WFP. Debriefing with Danish and Norwegian embassies. Team wrap-up discussions.		
Second mission, Dadaab/Garissa/Nairobi			
6th Feb	NRM specialist by road to Dadaab. Preliminary planning meetings.		
7th Feb	NRM specialist in Dadaab. Further planning meetings.		
8th Feb	Other team members fly Nairobi-Dadaab. Meetings in Dadaab with DRA, acting DC, members of CDC, UNHCR, CARE, GTZ.		
9th Feb	Field visit to Hagadera camp and Borehole 5. Meetings in Alinjugur with local government and CDC members. Meetings in Dadaab with NRC, UNHCR, CARE, GTZ. Field visit to Ifo camp and community meeting in Matheghesi village. Field test of forest inventory methodology. Drive Dadaab-Garissa.		
10th Feb	Meetings with ALRMP, District Statistical Officer, Kenya Red Cross, Garissa County Council, Kenya Revenue Authority, District Livestock Production Officer, Provincial Director of Environment, Lower Tana Water Resources Management Authority.		
11th Feb	Drive Garissa-Nairobi. Team discussions. Presentation to 1st meeting of Study Advisory Group, Nairobi.		
12th Feb			
15th Feb			
Third mission, Dadaab/Nairobi			
7th Apr	Team members fly Nairobi-Dadaab. Planning meetings with DRA, Kenya Red Cross, GTZ, CARE, DRC.		
	<i>Social team</i>	<i>Environment team</i>	<i>Economist</i>
8th Apr	Abak Khaile	Abak Khaile	Dadaab town
9th Apr	Matheghesi	Abak Khaile/Ifo camp	Dadaab town
10th Apr	Hagarbul	Ifo camp, Abdisugur	Dadaab town, Hagadera camp
11th Apr	Abak Khaile	Ifo camp, Wajir South	Hagadera camp
12th Apr	Sebule	Sebule	Sebule, Dagahaley camp
13th Apr	Borehole 5	Wajir South	Ifo camp
14th Apr	Welmerer	Welmerer	LWF, HI, Film Aid
15th Apr	Alinjugur	Yumbis	Solidarité, Save the Children
16th Apr	Data analysis, Dadaab	Ifo/Weldoni	WFP, NCCCK, Horn Relief
17th Apr	Dadaab town		
18th Apr	Data analysis, Dadaab	Saredho	ADEO, IRC
		Data analysis, Dadaab	UNHCR & data analysis, Dadaab
19th Apr	Data analysis and report preparation. Fly Dadaab-Nairobi.		
22nd Apr	Presentation to 2nd meeting of Study Advisory Group, Nairobi		

Annex D: List of people met

Organisation	Name	Position
Department of Refugee Affairs	Peter Kusimba	Commissioner
	Badu Katelo	Under Secretary, Protection
	Claus Folden	Senior International Advisor
	Omar Dhabho	Camp Manager, Dadaab
	Mohamed Sheikh	Translator, Dadaab
	Lawrence Korir	Dadaab
Office of the President	Bernard Ole Kipury	Acting District Commissioner, Dadaab
	Peter Mutiso	District Officer, Jarajila
	Ahmed Madolee	Assistant Chief, Welmerer
	Bare Sheikh Aden	Acting Chief, Yumbis
Ministry of Environment & Mineral Resources	Lawrence Lenayapa	Permanent Secretary
	Agnes Yobterik	Director, Programmes, Projects & Strategic Initiatives
National Environment Management Authority	Mohamud Ali	Provincial Director of Environment, Garissa
Ministry of Planning, Natnl. Dev. & Vision 2030	Judy Magu	District Development Officer, Garissa
Arid Lands Resource Management Project	Mohammed Halakhe	Natural Resource Mgmt. Coordinator
	Adan Bika	Drought Management Officer
	Alice Mwangi	National Project Officer
	Yassin Farah	Drought Management Officer, Garissa
Kenya National Assembly	Farah Maalim	MP for Lagdera
	Aden Dekow	PA to MP Lagdera
	Suleiman Hassan	PA to MP Fafi
Royal Danish Embassy	Bo Jensen	Ambassador
	Betina Gollander	Counsellor (Development)
	Hellen Bonuke	Programme Assistant
Royal Norwegian Embassy	Siv Catherine Moe	First Secretary
	Dorcas Gacugia	Programme Officer, Dev. Cooperation
UNHCR	A. Jose Canhandula	Deputy Representative
	John Burton	Head of Technical Unit
	Venanzio Njuki	Associate Environment Officer
	Richard Floyer-Acland	Head of Sub-Office Dadaab
	Bornwell Kantande	Senior Operations Officer, Dadaab
	Fafa Attidzah	Senior Field Coordinator, Dadaab
	Salam Shahin	Registration Officer, Dadaab
	Ceren Yuksel	Verification Officer, Dadaab
	Gloria Kisia	Health & Nutrition Officer, Dadaab

UN OCHA	Lucy Dickinson	Humanitarian Affairs Officer
	Carolin Waldchen	Associate Expert
UNDP	Stephen Cheshewa	Prog. Specialist, Crisis Prev. & Recvry.
	Beatrice Teya	Team Leader, Disaster Risk Reduction & Recovery
WFP	Pippa Bradford	Deputy Country Director
	Josephine Mahiga-Janabi	Head of Refugee Operations, Kenya
	Sam Okara	Project Officer, Nairobi
	Felix Ochieng	National Project Officer, Nairobi
	Peter Otieno	National Officer, Dadaab
UNEP	Henry Ndede	Coordinator, Kenya Country Prog.
Danish Red Cross	Lars Iskjaer	Country Coordinator, Kenya
Kenya Red Cross	Aisha Maulana	Head of Health & Social Services
	Margaret Mungai	Public Health Manager
	Ahmed Ibrahim	Regional Manager, North Eastern
	Mukhtar Bulale	Regional Health Officer, North Eastern
NRC	Qurat-ul-Ain Sadozai	Programme Director, Kenya & Somalia
	Jake Zarins	Shelter Project Manager, Dadaab
	Tracy Wise	WASH Advisor, Dadaab
	Jim Kennedy	Environmental impact consultant
DRC	Anne Sophie Laenholm	Deputy Regional Director
GTZ	Monica Mwangi	Country Programme Manager, Kenya
	Paul Karanja	Community Services Coordinator
	Chege Gitau	Firewood Operations Manager, Dadaab
	David Mulwa	
	Muktar Sheikh	
CARE International	Michael Adams	Senior Sector Manager, Prog. Quality
	Paul Gachie	Programme Development Manager
	Juergen Feldmann	Senior Programme Manager, Dadaab
	David Kang'ethe	Programme Manager, Dadaab
	Timothy Mwangi	WASH Sector Coordinator, Dadaab
LWF	Philip Wijmans	Country Representative, Kenya
	Lokiru Matendo	Programme Manager
	Sofia Malmqvist	Coordinator, Somalia Refugee Prog.
	Joseph Kiai	Training Advisor to FaiDA, Jarajila
Handicap International	Mercy Mutai	
IRC	Damit Mulu	Field Coordinator Hagadera

ADEO	Pauline Choka	Project Officer Dadaab
Horn Relief	Mohammed Aden	Project Manager
NCCK	Daniel Kimutai	
FaiDA	Silas Otieno	Programme Manager, Jarajila
RRDO	Oliver Otsimi	Programme Manager, Dadaab

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Annex F: Quantitative questionnaire

Date

Place

Enumerator

Note: to be filled out based on GPS information

	Distance to Dadaab	Up to 10 km	10-20 km	20-30 km	30-40 km	Above 40 km
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Note to enumerator: Tick only one of the boxes as appropriate

1. General

1a	Sex of respondent	Male	Female	
1b	Age of respondent	20-30	30-50	50 and above
1c	Clan name			
1d	Number of people in household	2	3-5	Above 5
1e	Number of wives in household	1	2	More
1f	House	Thatch roof	Iron sheet roof	

2. Schools

2a	Have you experienced that access to primary school has changed	Worse		Same	Improved
2b	Where do your children go to primary school	In village	Within 1 hour walking distance	In refugee camps	Other

3. Health

3a	Have you experienced that access to health facilities has changed	Worse		Same	Improved
3b	Where do you mainly access health services	In village	Within two hour walking distance	In refugee camps	Other

4. Transport

4a	Have your use of public transport (bus, matatu, pick-ups) changed during the last decade	Less use	No change	More use
4b	When you use public transport, where do you mainly catch this public transport from	In or near village	In or near refugee camps	Both village and refugee camps

5. Water

5a	What is your main water source	Borehole	Hand-dug well	Earth dams and reservoirs	Scoop in river bed
5b	Distance to drinking water during dry season	Less than ½ hour walk	½-2 hour walk	More than 2 hour walk	
5c	Distance to drinking water during wet season	Less than ½ hour walk	½ -2 hour walk	More than 2 hour walk	
5d	Have you experienced that access to drinking water has changed	Worse	Same	Improved	
5e	Distance to livestock water during dry season	Less than 1 hour walk	1-3 hour walk	More than 3 hour walk	

5f	Distance to livestock water during wet season	Less than 1 hour walk	1-3 hour walk	More than 3 hour walk
5g	Have you experienced that access to livestock water has changed	Worse	Same	Improved
5h	Are you accessing water in the refugee camps	Yes	No	

6. Employment

6a	Have you had any employment where you were paid a salary	Yes	No	
6b	Is anybody from your household having employed labour	Within your community	With local contractor	With refugee agency/ local NGOs

7. Selling products

7a	Are you mainly selling your products	Directly to others in community	To middlemen	Do you sell at markets yourselves	Other
7b	What are you selling to the markets	Milk	Livestock	Firewood/ building materials	Other
7c	What is your average household monthly income from this trade	Below 500 shillings	Between 500 and 3000 shillings	Between 3000-6000 shillings	Above 6000 shillings
7d	Main market where you sell your products	In or nearby village	In Dadaab town market	In refugee camps	Other
7e	Are you selling products to NGOs or the UN	No	Yes some of my products	Yes, most of my products	

8. Buying of items

8a	Where are you buying your needed household items from	Locally in village	In other villages	In Dadaab market	In refugee camps market
8b	Where are you buying your needed food	Locally in village	In other villages	In Dadaab market	In refugee camps
8c	The most important items that you are buying from the Dadaab or refugee camp markets	Food	Household items	Animals	Others
8d	What is your household using per month on average to buy items from Dadaab and refugee camps	Below 500 shillings	Between 500 and 3000 shillings	Between 3000-6000 shillings	Above 6000 shillings

9. Use of wood

9a	Which species of wood do you like best for firewood (name3)	Bisiq	Khansa/ Rig	Marer	Abaq	Kordobo	Other
9b	Which species of wood do you like best for constructing your house (name 3)	Marer	Darakaa/ Dirkba	Khansa/ Rig	Abaq	Damaji/ Damajo	Other
9c	Which species of wood do you prefer for constructing fencing around your compound (name 3)	Damaji/ Damaja	Darakaa/ Dirkba	Marer	Khansa/ Rig	Abaq	Other
9d	From how far do you get most of your firewood	Within ½ hour walking distance from village	Within ½ to 1 ½ hour walking distance from village		More than 1 ½ hour walking distance from village		
9e	Do you buy firewood	Yes	No				
9f	Do you sell firewood	Yes	No				

9g	If yes, how often do you sell firewood	1-2 times a month	3-4 times a months	More than 5 times a month
9h	What price do you sell firewood at	Less than 5 shillings a bundle	5-10 shillings a bundle	More than 10 shillings a bundle

10. Livelihood and income

10a	Main livelihood of household	Livestock	Employment	Trade	Other
10b	Secondary livelihood	Livestock	Employment	Trade	Other
10c	Do you receive remittances from family or friends from outside the district	No	Less than 1500 shillings pr month	Between 1500-5000 shillings pr month	Above 5000 shillings pr month
10d	If you have employment, who are the most important employer	Other people in community	Local contractors	Refugee agencies	Government
10e	Do members of your household regularly receive food aid	Yes	No		
10f	What is your estimated average total household cash income per month	Less than 2.000 shillings	Between 2000 and 6000 shillings	Between 6000-12.000 shillings	Above 12.000 shillings
10g	Main source of cash income for household	Sell livestock products	Employment	Sell firewood, animal fodder, building and fencing material	Sell other products

11. Livestock/camels

11a	Number of camels owned by household now	Less than 10	Between 10-40	Above 40	
11b	Number of camels owned by household 5 years ago	Less than 10	Between 10-40	Above 40	
11c	Number of camels owned by household 15 years ago	Less than 10	Between 10-40	Above 40	

12. Livestock/cattle

12a	Number of cattle owned by household now	Less than 10	Between 10-40	Above 40	
12b	Number of cattle owned by household 5 years ago	Less than 10	Between 10-40	Above 40	
12c	Number of cattle owned by household 15 years ago	Less than 10	Between 10-40	Above 40	

13. Livestock/soats

13a	Number of soats owned by household now	Less than 10	Between 10-40	Above 40	
13b	Number of soats owned by household 5 years ago	Less than 10	Between 10-40	Above 40	
13c	Number of soats owned by household 15 years ago	Less than 10	Between 10-40	Above 40	

14. Livestock/donkeys

14a	Number of donkeys owned by household now	Less than 10	Between 10-40	Above 40	
14b	Number of donkeys owned by household 5 years ago	Less than 10	Between 10-40	Above 40	
14c	Number of donkeys owned by household 15 years ago	Less than 10	Between 10-40	Above 40	

15. Grazing and foraging

15a	Distance to grazing/foraging during dry season	Less than 1 hour walk	1-3 hour walk	More than 3 hour walk	
15b	Distance to grazing/foraging during wet season	Less than 1 hour walk	1-3 hour walk	More than 3 hour walk	
15c	Changes in availability of grazing during last 20 years	More available	No change	Less available	Much less available
15d	Do you tend other people's animals	No	Yes for people from the village	Yes for people outside village	Yes for people from the refugee camps
15e	Do you rent out pasture land to other people	No	Yes to people from the village	Yes to people from outside village	Yes to refugees

16. Population

16a	When was village established	Less than 5 years ago	5-15 years ago	More than 15 years ago	
16b	Were you born here	Yes		No	
16c	If no: Number of years in area	Less than 5 years	5-15 years	More than 15 years	
16d	Reasons for settling in area	Livestock production	Employment	Food distribution	Trade Other
16e	Reason for not being settled in centre	Livestock production	Other		
16f	How much do you live in this house/place	All year round	Most of year	Only part of year	Mainly in other places

17. Wealth ranking

17a	How do you consider yourselves relative to others in the village	Rich	Average	Poor	Destitute
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Annex G: Qualitative questionnaire

Date
 Place/village
 Interviewer

General

Sex of respondent	
Age of respondent	
Number of people in household, there respective age and sex	
Number of wives in household	
Household (sedentary/mobile)	

Water

Where do you get your daily water from? – how far? What kind of water?	
Where does your livestock get water from? How far? What kind of water?	
How much do you pay for water or is it free?	
Have you seen changes in access to water? Explain? – and what are the most important changes that you have experienced in terms of access to water?	
Are you experiencing conflicts over access to water? – with whom?	
Who decides on access to water in this settlement/community?	
Apart from people of this settlement/community, who has access to water?	

Schools

What changes have you experienced with the schools and education system the last 10 years? – has access changed for you (km to school now as compared to earlier)?	
What is the main reason for sending children to school? (boys and girls)	
How many of your girls are attending school? And how and why has this changed?	
How old is the school and who supported the school construction? – and what were your efforts?	

Health

What changes have you experienced with the health system in the last 10 years? – and how has access in practise changed for you and your household?	
Who supported the health facility construction? – and what were your efforts?	
Where do you access different type of health services?	

Transport

Are you sometimes using transport?	
What means of transport? –and to where?	
What has changed in your personal use of transport during the last decade?	

Employment

Have you had any employment with salary?	
Where and with whom?	
How much where you paid?	

Do somebody in your household have paid work for others? What kind of work? With whom?	
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Firewood

Where do you get your firewood from? – how far?	
What changes have you experienced in getting firewood?	
Are people in this community selling firewood? To whom? At what price?	
Do you sell firewood?	

Trees

Have anyone in the community planted trees?	
Have you?	
What impacts? Why?	
Has the composition of trees changed in the area? How?	
Has the vegetation cover changed? – How?	
Are you being impacted by the presence of Mahenge in your area? –How?	
What impact does fencing material collection have on your area?	
Do you see impacts from the so- called greenbelts?	

Solid waste

Do you experience any problems with solid waste from the refugee camps? What kinds?	
What do you do to your own solid waste?	

Alternative energy

Any experience with solar panels in this community? Explain?	
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Trade and production

Where do you shop?	
What are you buying?	
What products are you selling? And where?	
How often are you or somebody from the household selling livestock? And to what market?	
How often are you or another person from your household selling milk? And to what market?	
What do you see as the main changes in your selling and buying of products during the last decade? – and what do you see as the most important products that you trade	
And to what extent has the role of men and women changed in the production?	

Division of labour in your household (male/female)

Who sells milk?	
Who sells livestock?	
Who is herding livestock?	
Who waters the livestock?	
Who collect firewood?	
Who collect grass, fodder?	
Who fetch water?	

What has changed in terms of division of labour during the last decades?	
To what extent are you employed by others to do some of the work? – who?	
And to what extent are you employing others to do some of the work? –who?	

Livelihood and food

How do you mainly get your food?	
How do you mainly get your money?	
Do you get remittances from outside family or friends? – how much?	
Who decides on use of household income?	
What is the most important activity that you live from?	
When during the year, do you feel that you have enough food?	
Have you changed your consumption of food? How?	
What do you consider your main occupation?	

Livestock

Do you own more or less livestock than the average in the community?	
What is the average?	
How much do your household own?	
What changes have you experienced in livestock ownership? – change in numbers and composition?	
What is the most important factor impacting your livestock production?	
Who is looking after the household livestock?	

Grazing and foraging

Where do you graze your animals during wet season? – how far?	
During dry season? – how far?	
Any significant changes in availability of grazing and forage? - Why?	
Have you seen major changes in composition of grasses?	
When it rains, how is the grassing after that? Has that changed?	
Are there areas in this community that are reserved for grazing during the dry season? and for milking herd? Have there been changes?	
Are anybody in the community or from outside having private areas (fenced) for grazing or grass production?	
Are anybody in the community getting grazing fees from others using grazing here? Who? How much? What impact does this have on you?	
Is there competition for grazing and forage? How has it changed and why?	

Farming

Do you have any experience in farming? Positive or negative?	
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Experience with development projects

What development projects have you experienced in your community, with what agencies? - what results?	
How have you been involved in implementing the development projects?	
Have you been involved in expressing your needs for support? How, to whom? Together with whom?	
What changes in local organisation have you experienced by dealing with development projects and development actors?	

Clan, family, relationships

What is your clan affiliation and relationship with other clans?	
Where in the area (within one days walk) and outside do you have important links in terms of clan, family, friends? - and how are they important?	
What relationship do you have with people outside the settlements/with people settled in the centre? Other places? Outside country?	

Population and history of settlement

Where were you born?	
Where were your father and mother born?	
For how long have you been settled in this area?	
Where were you before?	
Have you experienced changes in the population of this area? Explain?	
How and when was the settlement started? Why? Upsides with settlement? Downsides?	
What has been the most important reason for you settling here?	

For those not in centre:

What are the upsides with not being settled in the centre? What are the downsides?	
What should happen before you would settle?	
Where and how did you move before as compared to now?	

Leadership and government

Who are the most important to listen to when decisions have to be made in the community? – are they also the ones taking decisions in the community? How are you influencing such decisions?	
What decisions are taken by men and by women in the household?	
What government agencies are having activities in your area?	

Development opportunities/challenges

What kind of livelihood do you think will be the most important in the future in this area?	
What will your children grow up to do in the future?	
In what way should the agencies work with you and with what kind of support?	

Insecurity

What kind of insecurity are women facing when moving around away from settlements?	
Have you yourselves experienced any incidences of insecurity? Where? How? What kind?	
Has it changed? Explain?	
Are there differences in insecurity incidences for settled and nomadic populations?	

Wealth ranking

How do you consider yourselves compared to the other people in the community? Rich, Average, Poor, Destitute?	
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Obs only the question listed below mention directly the relationship with refugees – it is important that they are only asked last in every session

Links with refugees

Have you had any interaction with refugees? What kind?	
Are there links in terms of clans, family and friends with the refugee population?	

What similarities do you see between you and the refugees? – what differences? – what does it mean for your daily life?	
Are there major differences among the different refugees and what they do? And what impact do the differences have?	
Do you know of ways to negotiate deals with refugee population? Explain?	
Have you experienced changes in how your own community function as a result of the refugee presence?	
What do you think is important in the future for the relationship between you and the refugees?	

Registration

Are there any people in the village that has come from Somalia? – explain?	
Have any refugee settled in the village or nearby areas outside refugee camps?	
Do you know someone that are or have been registered as a refugee? Who, why?	
What about people from other parts of Northeast Kenya? – have they registered as refugees?	
What has been the impact of this?	

For other relevant notes...

Annex H: SPSS analysis full percentages

	Distance to Dadaab	Up to 10 km 21,9	10-20 km 28,6	20-30 km 27,4	30-40 km 12,1	40 to 50 km 10,1
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1. General

1a	Sex of respondent (N=389)	Male 37	Female 63	
1b	Age of respondent (N=390)	20-30 31,3	30-50 53,3	50 and above 15,1
1c	Clan name			
1d	Number of people in household (N=392)	2 11,5	3-5 32,4	Above 5 56,1
1e	Number of wives in household (N=386)	1 90,9	2 7,5	More 1,6
1f	House (N=394)	Thatch roof 88,1	Iron sheet roof 11,9	

2. Schools

2a	Have you experienced that access to primary school has changed (N=397)	Worse 8,6	Same 7,3	Improved 83,9
2b	Where do your children go to primary school (N=394)	In village 99	Within 1 hour walking distance 0	In refugee camps 1 Other 0

3. Health

3a	Have you experienced that access to health facilities has changed (N=391)	Worse 41,9	Same 10,2	Improved 47,8
3b	Where do you mainly access health services (N=391)	In village 53,2	Within two our walking distance 14,6	In refugee camps 32,0 Other 0,3

4. Transport

4a	Have your use of public transport (bus, matatu, pickups) changed during the last decade (N=393)	Less use 16,0	No change 3,8	More use 80,2
4b	When you use public transport, where do you mainly catch this public transport from (N=392)	In or near village 85,5	In or near refugee camps 7,1	Both village and refugee camps 7,4

5. Water

5a	What is your main water source (N=394)	Borehole 92,6	Hand-dug well 5,6	Earth dams and reservoirs 1,8	Scoop in river bed 0
5b	Distance to drinking water during dry season (N=396)	Less than ½ hour walk 27,3	½-2 hour walk 13,9	More than 2 hour walk 58,8	

5c	Distance to drinking water during wet season (N=393)	Less than ½ hour walk 82,7	½ -2 hour walk 14,2	More than 2 hour walk 3,1
5d	Have you experienced that access to drinking water has changed (N=394)	Worse 3,3	Same 10,9	Improved 85,8
5e	Distance to livestock water during dry season (N=396)	Less than 1 hour walk 4,5	1-3 hour walk 7,3	More than 3 hour walk 87,9
5f	Distance to livestock water during wet season (N=396)	Less than 1 hour walk 59,1	1-3 hour walk 38,4	More than 3 hour walk 2,5
5g	Have you experienced that access to livestock water has changed (N=383)	Worse 4,2	Same 13,1	Improved 82,8
5h	Are you accessing water in the refugee camps (N=391)	Yes 10	No 90	

6. Employment

6a	Have you had any employment where you were paid a salary (N=368)	Yes 12,2	No 87,8	
6b	Is anybody from your household having employed labour (N=136)	Within your community 64,0	With local contractor 2,9	With refugee agency/local NGOs 33,1

7. Selling products

7a	Are you mainly selling your products (N=350)	Directly to others in community 36,9	To middlemen 49,4	Do you sell at markets yourselves 8,9	Other 4,9
7b	What are you selling to the markets (N=361)	Milk 53,7	Livestock 31	Firewood/building materials 2,2	Other 13
7c	What is your average household monthly income from this trade (N=360)	Below 500 shillings 33,6	Between 500 and 3000 shillings 52,2	Between 3000-6000 shillings 12,5	Above 6000 shillings 1,7
7d	Main market where you sell your products (N=368)	In or nearby village 37,8	In Dadaab town market 25,8	In refugee camps 36,4	Other 0
7e	Are you selling products to NGOs or the UN (N=355)	No 91,8	Yes some of my products 5,6	Yes, most of my products 2,3	

8. Buying of items

8a	Where are you buying your needed household items from (N=394)	Locally in village 35,8	In other villages 4,8	In Dadaab market 32	In refugee camps market 27,4
8b	Where are you buying your needed food (N=395)	Locally in village 60,8	In other villages 0,8	In Dadaab market 23,5	In refugee camps 14,9
8c	The most important items that you are buying from the Dadaab or refugee camp markets (N=392)	Food 84,4	Household items 14,5	Animals 1	Others 0
8d	What is your household using per month on average to buy items from Dadaab and refugee camps (N=393)	Below 500 shillings 21,4	Between 500 and 3000 shillings 50,6	Between 3000-6000 shillings 22,6	Above 6000 shillings 5,3

9. Use of wood

9a	Which species of wood do you like best for firewood (name 3) (N=398)	Bisiq 66,8	Khansa/ Rig 47,7	Marer 80,9	Abaq 75,9	Kordobo 24,1	Other 0
9b	Which species of wood do you like best for constructing your house (name 3) (N=398)	Marer 98,5	Darakaa/ Dirkba 9,5	Khansa/ Rig 73,6	Abaq 96,2	Damaji/ Damaja 4	Other 0
9c	Which species of wood do you prefer for constructing fencing around your compound (name 3) (N=398)	Damaji/ Damaja 96,5	Darakaa/ Dirkba 4,5	Marer 46,6	Khansa/ Rig 82,6	Abaq 63,5	Other 0
9d	From how far do you get most of your firewood (N=392)	Within ½ hour walking distance from village 4,3		Within ½ to 1 ½ hour walking distance from village 61,2	More than 1 ½ hour walking distance from village 34,3		
9e	Do you buy firewood (N=395)	Yes 46,3		No 53,2			
9f	Do you sell firewood (N=387)	Yes 10,9		No 88,4			
9g	If yes, how often do you sell firewood (N=193)	1-2 times a month 85,5		3-4 times a months 11,4		More than 5 times a month 3,1	
9h	What price do you sell firewood at (N=188)	Less than 5shillings a bundle 19,1		5-10 shillings a bundle 27,1		More than Y shillings a bundle 53,7	

10. Livelihood and income

10a	Main livelihood of household (N=397)	Livestock 86,9	Employment 5,5	Trade 7,3	Other 0,3
10b	Secondary livelihood (N=390)	Livestock 83,6	Employment 5,1	Trade 9,0	Other 2,3
10c	Do you receive remittances from family or friends from outside the district (N=395)	No 94,2	Less than 1500 shillings pr month 1,5	Between 1500-5000 shillings pr month 1,5	Above 5000 shillings pr month 2,8
10d	If you have employment, who are the most important employer (N=144)	Other people in community 41	Local contractors 1,4	Refugee agencies 20,8	Government 32,6
10e	Do members of your household regularly receive food aid (N=398)	Yes 97,2	No 2,3		
10f	What is your estimated average total household cash income per month (N=397)	Less than 2.000 shillings 24,7	Between 2000 and 6000 shillings 57,7	Between 6000-12.000 shillings 11,8	Above 12.000 shillings 5,8

10g	Main source of cash income for household (N=392)	Sell livestock products 87,8	Employment 6,1	Sell firewood, animal fodder, building and fencing material 2,8	Sell other products 3,3
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11. Livestock/camels

11a	Number of camels owned by household now (N=199)	Less than 10 55,3	Between 10-40 30,7	Above 40 14,1	
11b	Number of camels owned by household 5 years ago (N=197)	Less than 10 37,6	Between 10-40 37,1	Above 40 25,4	
11c	Number of camels owned by household 15 years ago (N=195)	Less than 10 34,9	Between 10-40 11,3	Above 40 53,8	

12. Livestock/cattle

12a	Number of cattle owned by household now (N=334)	Less than 10 37,7	Between 10-40 47,6	Above 40 14,7	
12b	Number of cattle owned by household 5 years ago (N=331)	Less than 10 27,5	Between 10-40 31,4	Above 40 41,1	
12c	Number of cattle owned by household 15 years ago (N=331)	Less than 10 25,7	Between 10-40 9,7	Above 40 64,7	

13. Livestock/shoats

13a	Number of shoats owned by household now (N=328)	Less than 10 37,5	Between 10-40 37,5	Above 40 25	
13b	Number of shoats owned by household 5 years ago (N=327)	Less than 10 22,6	Between 10-40 31,8	Above 40 45,6	
13c	Number of shoats owned by household 15 years ago (N=327)	Less than 10 19,3	Between 10-40 10,4	Above 40 70,3	

14. Livestock/donkeys

14a	Number of donkeys owned by household now (N=160)	Less than 10 90,6	Between 10-40 5,6	Above 40 3,8	
14b	Number of donkeys owned by household 5 years ago (N=136)	Less than 10 81,6	Between 10-40 13,2	Above 40 5,1	
14c	Number of donkeys owned by household 15 years ago (N=136)	Less than 10 86,8	Between 10-40 1,5	Above 40 11,8	

15. Grazing and foraging

15a	Distance to grazing/foraging during dry season (N=396)	Less than 1 hour walk 0,5	1-3 hour walk 5,6	More than 3 hour walk 93,9	
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15b	Distance to grazing/ foraging during wet season (N=396)	Less than 1 hour walk 58,6	1-3 hour walk 39,9	More than 3 hour walk 1,5	
15c	Changes in availability of grazing during last 20 years (N=395)	More available 0,8	No change 1,5	Less available 48,6	Much less available 49,1
15d	Do you tend other people's animals (N=395)	No 100	Yes for people from the village 0	Yes for people outside village 0	Yes for people from the refugee camps 0
15e	Do you rent out pasture land to other people (N=396)	No 100	Yes to people from the village 0	Yes to people from outside village 0	Yes to refugees 0

16. Population

16a	When was village established (N=396)	Less than 5 years ago 0,3	5-15 years ago 35,6	More than 15 years ago 63,4		
16b	Were you born here (N=366)	Yes 32,8		No 66,1		
16c	If no: Number of years in area (N=296)	Less than 5 years 10,5	5-15 years 61,1	More than 15 years 28,4		
16d	Reasons for settling in area (N=391)	Livestock production 73,7	Employment 7,9	Food distribution 12,8	Trade 5,6	Other 0
16e	Reason for not being settled in centre (N=384)	Livestock production 85,4	Other 14,6			
16f	How much do you live in this house/place (N=396)	All year round 58,8	Most of year 41,2	Only part of year 0	Mainly in other places 0	

17. Wealth ranking

17a	How do you consider yourselves relative to others in the village (N=396)	Rich 5,6	Average 74	Poor 20,5	Destitute 0
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Annex I: SPSS analysis of response to quantitative questionnaires

In the following the responses are given in percentages, and the total represents the total number of respondents applicable in the specific analysis question.

Questions 1-19:

1.

		Distance Dadaab				Total
		Up to 10 km	10-20 km	20-40 km	Above 40 km	
Employment 6a	Yes	40	20	26,7	6,7	45

		Distance Dadaab				Total
		Up to 10 km	10-20 km	20-40 km	Above 40 km	
Employment 6b	Within community	3,4	36,8	42,5	2,3	87
	With local contractor	50	0	50	0	4
	With refugee agency/NGO	44,4	8,9	28,9	11,1	45

2.

		Number of camels now			Total
		0-10	10-40	40+	
Employment 6a	Yes	43,5	26,1	30,4	23

		Number of camels now			Total
		0-10	10-40	40+	
Employment 6b	Within community	59,1	34,1	6,8	44
	With local contractor	0	50	50	2
	With refugee agency/NGO	65,5	20,7	13,8	29

3.

		Number of cattle now			
		0-10	10-40	40+	Total
Employment 6a	Yes	25,6	51,3	23,1	39

		Number of cattle now			
		0-10	10-40	40+	Total
Employment 6b	Within community	48,5	43,9	7,6	66
	With local contractor	33,3	33,3	33,3	3
	With refugee agency/NGO	31,6	55,3	13,2	38

4.

		Number of camels now			
		0-10	10-40	40+	Total
Number of years in area	< 5 years	46,7	53,8	0	15

		Number of cattle now			
		0-10	10-40	40+	Total
Number of years in area	< 5 years	34,8	56,5	8,7	23

		Number of shoats now			
		0-10	10-40	40+	Total
Number of years in area	< 5 years	19,2	61,5	19,2	26

5.

		Wealth ranking			
		Rich	Average	Poor	Total
Born in village	Yes	0,8	68,3	30,8	120

6.

		Number of camels now			
		0-10	10-40	40+	Total
Number of years in area	5-15 years	47,3	37,4	15,4	91

		Number of cattle now			Total
		0-10	10-40	40+	
Number of years in area	5-15 years	37	48,1	14,9	154

		Number of shoats now			Total
		0-10	10-40	40+	
Number of years in area	5-15 years	34,3	40,4	25,3	166

7.

		Distance to Dadaab					Total
		Up to 10 km	10-20 km	20-30 km	30-40 km	40-50 km	
Years in area	<5 years	9,7	41,9	19,4	16,1	12,9	31

8.

		Number of camels now			Total
		0-10	10-40	40+	
Income	<2000	67,3	28,8	3,8	52
	2000-6000	58,7	27,5	13,8	109
	6000-12.000	20	43,3	36,7	30
	>12.000	57,1	42,9	0	7

		Number of cattle now			Total
		0-10	10-40	40+	
Income	<2000	61,5	34,6	3,8	78
	2000-6000	33,5	50,8	15,7	197
	6000-12.000	18,4	50	31,6	38
	>12.000	25	60	15	20

		Number of shoats now			Total
		0-10	10-40	40+	
Income	<2000	42,6	37,2	20,2	94
	2000-6000	37,6	36	26,5	489
	6000-12.000	34,6	38,5	26,9	26
	>12.000	16,7	50	33,3	18

9.

		Wealth ranking			Total
		Rich	Average	Poor	
Employment with agency/NGO	Yes	4,4	71,1	24,4	45

10.

		Income				Total
		<2000	2000-6000	6000-12.000	>12.000	
Main market	Refugee camps	14,2	75,4	9	1,5	134

11.

		Wealth ranking			Total
		Rich	Average	Poor	
Selling to UN/NGOs	Yes, some	0	60	40	20
	Yes, most	0	75	25	8

12.

		Wealth ranking			Total
		Rich	Average	Poor	
Buying food	Refugee camps	0	74,6	25,4	59

13.

		Income				Total
		<2000	2000-6000	6000-12.000	>12.000	
Clan	Abduwak	16,3	70,2	7,1	6,4	141
	Asharaf	50	50	0	0	2
	Auliyahan	31,4	43,8	17,8	7	185
	Bahgari	0	100	0	0	2
	Balat	0	100	0	0	2
	Gare	100	0	0	0	1
	Har	0	100	0	0	1
	Magabul	53,3	33,3	13,3	0	15
	MZ	22,2	77,8	0	0	9

14.

		Camels 5 years ago		
Camels now	Between 10-40	Less than 10	10-40	Total
		39,3		61
	Above 40	39,3	46,6	28
		Camels 15 years ago		
Camels now	Between 10-40	Less than 10	10-40	Total
		37,7		61
	Above 40	48,1	29,6	27
		Cattle 5 years ago		
Cattle now	Between 10-40	Less than 10	10-40	Total
		29,6		159
	Above 40	33,3	39,6	48
		Cattle 15 years ago		
Cattle now	Between 10-40	Less than 10	10-40	Total
		27,2		158
	Above 40	37,5	25	48
		Shoats 5 years ago		
Shoats now	Between 10-40	Less than 10	10-40	Total
		24,6		122
	Above 40	8,6	23,5	81
		Shoats 15 years ago		
Shoats now	Between 10-40	Less than 10	10-40	Total
		20,7		121
	Above 40	12,3	13,6	81
		Donkeys 5 years ago		
Donkeys now	Between 10-40	Less than 10	10-40	Total
		50		8
	Above 40	33,3	50	6

		Donkeys 15 years ago		Total
		Less than 10	10-40	
Donkeys now	Between 10-40	50		8
	Above 40	83,3	0	6

15.

		Distance to livestock water during dry season			Total
		< 1 hour walk	1-3 hour walk	> 3 hour walk	
Distance Dadaab	Up to 10 km	2,3	6,9	89,7	87
	10-20 km	4,4	10,5	85,1	114
	20-30 km	10,6	9,3	80,4	107
	30-40 km	0	0	100	48
	40-50 km	0	2,5	97,5	40

		Distance to livestock water during dry season			Total
		< 1 hour walk	1-3 hour walk	> 3 hour walk	
Clan	Abduwak	0,7	2,8	96,5	142
	Asharaf	50	0	50	2
	Auliyahan	7,1	12,6	80,3	183
	Bahgari	0	0	100	2
	Balat	0	0	100	2
	Gare	0	0	100	1
	Har	0	0	100	1
	Magabul	0	0	100	15
	MZ	22,2	11,1	66,7	9

16.

		Distance to livestock water during wet season			Total
		< 1 hour walk	1-3 hour walk	> 3 hour walk	
Distance Dadaab	Up to 10 km	43,7	50,6	5,7	87
	10-20 km	50,9	47,4	1,8	114
	20-30 km	81,5	16,7	1,9	108
	30-40 km	23,4	74,5	2,1	47
	40-50 km	97,5	2,5	0	40

		Distance to livestock water during wet season			
		< 1 hour walk	1-3 hour walk	> 3 hour walk	Total
Clan	Abduwak	22	76,6	1,4	141
	Asharaf	50	0	50	2
	Auliyahan	77,7	19,6	2,7	184
	Bahgari	100	0	0	2
	Balat	0	100	0	2
	Gare	100	0	0	1
	Har	100	0	0	1
	Magabul	100	0	0	15
	MZ	88,9	0	11,1	9

17.

		How many used this species
		Percentage
Firewood	Bisiq	66,8
	Khansa/Rig	47,7
	Marer	80,9
	Abaq	75,9
	Kordobo	24,1

18.

		How many used this species
		Percentage
Construction wood	Marer	98,5
	Darakaa/Dirkba	9,5
	Khansa/Rig	73,6
	Abaq	96,2
	Damaji/Damaja	4

19.

		How many used this species
		Percentage
Fence wood	Damaji/Damaja	96,5
	Darakaa/Dirkba	4,5
	Marer	46,6
	Khansa/Rig	82,6
	Abaq	63,5

Questions 20-42 according to distance to camp:

20.

		Firewood distance			Total
		< 1/2 hour	1/2-1&1/2	More than 1&1/2	
Distance Dadaab	Up to 10 km	0	51,7	48,3	87
	10-20 km	0,9	63,1	35,1	111
	20-30 km	13,2	56,6	30,2	106
	30-40 km	4,2	56,3	39,6	48
	40-50 km	0	95	5	40

21.

		Buy firewood		Total
		Yes		
Distance Dadaab	Up to 10 km	65,1		86
	10-20 km	21,2		113
	20-30 km	46,8		109
	30-40 km	56,3		48
	40-50 km	64,1		39

22.

		Sell firewood		Total
		Yes		
Distance Dadaab	Up to 10 km	3,4		87
	10-20 km	19,6		112
	20-30 km	10,7		103
	30-40 km	0		48
	40-50 km	16,2		37

23.

		How often do you sell firewood			Total
		1-2 times a month	3-4 times a month	More than 5 times a month	
Distance Dadaab	Up to 10 km	73,6	17	9,4	53
	10-20 km	92,3	7,7	0	39
	20-30 km	81,6	16,3	2	49
	30-40 km	96	4	0	25
	40-50 km	96,3	3,7	0	27

24.

		At what price do you sell firewood			Total
		Less than 5 shillings	5-10 shillings	More than 10 shillings	
Distance Dadaab	Up to 10 km	0	7,5	92,5	53
	10-20 km	48,7	20,5	30,8	39
	20-30 km	27,9	41,9	30,2	43

30-40 km	0	0	100	26
40-50 km	18,5	77,8	3,7	27

25.

Main Livelihood

		Livestock	Employment	Trade	Other	Total
Distance Dadaab	Up to 10 km	70,1	11,5	17,2	1,1	87
	10-20 km	96,5	0,9	2,7	0	113
	20-30 km	90,8	5,5	3,7	0	109
	30-40 km	85,4	6,3	8,3	0	48
	40-50 km	87,5	5	7,5	0	40

26.

Number of camels now

		0-10	10-40	40+	Total
Distance Dadaab	Up to 10 km	77,8	11,1	11,1	27
	10-20 km	50	30,8	19,2	52
	20-30 km	60	28,6	11,4	70
	30-40 km	41,2	41,2	17,6	34
	40-50 km	43,8	50	6,3	16

27.

Number of camels 5 years ago

		0-10	10-40	40+	Total
Distance Dadaab	Up to 10 km	4	48	48	25
	10-20 km	35,3	43,1	21,6	51
	20-40 km	54,9	26,8	18,3	71
	Above 40 km	41,2	32,4	26,5	34

28.

Number of camels 15 years ago

		0-10	10-40	40+	Total
Distance Dadaab	Up to 10 km	4,3	8,7	87	23
	10-20 km	29,4	9,8	60,8	51
	20-40 km	56,3	11,3	32,4	71
	Above 40 km	29,4	17,6	52,9	34

29.

Number of cattle now

		0-10	10-40	40+	Total
Distance Dadaab	Up to 10 km	45,7	41,4	12,9	70
	10-20 km	30,9	46,4	22,7	97
	20-30 km	39,2	52	8,8	102
	30-40 km	42,9	45,7	11,4	35

30.

		Number of cattle 5 years ago			
		0-10	10-40	40+	Total
Distance Dadaab	Up to 10 km	26,5	33,8	39,7	68
	10-20 km	37,9	29,5	32,6	95
	20-40 km	21,6	30,4	48	102
	Above 40 km	20	34,3	45,7	35

31.

		Number of cattle 15 years ago			
		0-10	10-40	40+	Total
Distance Dadaab	Up to 10 km	23,5	2,9	73,5	68
	10-20 km	30,2	16,7	53,1	96
	20-40 km	23,5	7,8	68,6	102
	Above 40 km	23,5	8,8	67,6	34

32.

		Number of shoats now			
		0-10	10-40	40+	Total
Distance Dadaab	Up to 10 km	60	22,7	17,3	75
	10-20 km	29,9	46,4	23,7	97
	20-30 km	34,1	39	26,8	82
	30-40 km	34,1	29,3	36,6	41
	40-50 km	21,2	51,5	27,3	33

33.

		Number of shoats 5 years ago			
		0-10	10-40	40+	Total
Distance Dadaab	Up to 10 km	23,3	43,8	32,9	73
	10-20 km	30,9	29,9	39,2	97
	20-40 km	12,2	22	65,9	82
	Above 40 km	28,6	33,3	38,1	42

34.

		Number of shoats 15 years ago			
		0-10	10-40	40+	Total
Distance Dadaab	Up to 10 km	19,2	12,3	68,5	73
	10-20 km	22,9	12,5	64,6	96
	20-40 km	14,6	4,9	80,5	82
	Above 40 km	23,3	16,3	60,5	43

35.

		Number of donkeys now			
		0-10	10-40	40+	Total
Distance Dadaab	Up to 10 km	88,5	7,7	3,8	26
	10-20 km	93,3	3,3	3,3	30

20-30 km	90,7	5,3	4	75
30-40 km	100	0	0	18
40-50 km	72,7	18,2	9,1	11

36.

		Number of donkeys 5 years ago			
		0-10	10-40	40+	Total
Distance Dadaab	Up to 10 km	68,4	15,8	15,8	19
	10-20 km	90	10	0	30
	20-40 km	81,7	13,3	5	60
	Above 40 km	82,4	17,6	0	17

37.

		Number of donkeys 15 years ago			
		0-10	10-40	40+	Total
Distance Dadaab	Up to 10 km	73,7	0	26,3	19
	10-20 km	90	6,7	3,3	30
	20-40 km	85	0	15	60
	Above 40 km	100	0	0	17

38.

		Distance to grazing during wet season			
		< 1 hour walk	1-3 hour walk	> 3 hour walk	Total
Distance Dadaab	Up to 10 km	44,8	52,9	2,3	87
	10-20 km	48,7	49,6	1,8	113
	20-30 km	82,4	17,6	0	108
	30-40 km	20,8	77,1	2,1	48
	40-50 km	97,5	0	2,5	40

39.

		Distance to grazing during dry season			
		< 1 hour walk	1-3 hour walk	> 3 hour walk	Total
Distance Dadaab	Up to 10 km	0	2,3	97,7	87
	10-20 km	0,9	9,7	89,4	113
	20-30 km	0,9	8,3	90,7	108
	30-40 km	0	0	100	48
	40-50 km	0	0	100	40

40.

		Changes in availability to grazing				Total
		More available	No change	Less available	Much less available	
Distance Dadaab	Up to 10 km	0	0	58,6	41,4	87
	10-20 km	0	0	52,7	47,3	112
	20-30 km	1,9	5,6	34,3	58,3	108
	30-40 km	0	0	72,9	27,1	48
	40-50 km	2,5	0	25	72,5	40

Questions 20-42 according to respondent's clan:

20.

		Firewood distance			Total
		< 1/2 hour	1/2-1&1/2	More than 1&1/2	
Clan	Abduwak	2,8	57	40,1	142
	Asharaf	0	50	50	2
	Auliyahan	6,1	64,4	28,9	180
	Bahgari	0	0	100	2
	Balat	0	100	0	2
	Gare	0	100	0	1
	Har	0	0	100	1
	Magabul	0	20	80	15
	MZ	12,5	37,5	50	8

21.

		Buy firewood		Total
		Yes		
Clan	Abduwak	44		141
	Asharaf	100		2
	Auliyahan	41,5		183
	Bahgari	50		2
	Balat	0		2
	Gare	0		1
	Har	100		1
	Magabul	60		15
	MZ	100		9

22

		Sell firewood		Total
		Yes		
Clan	Abduwak	0		140
	Asharaf	0		2
	Auliyahan	20,6		180
	Bahgari	50		2
	Balat	0		2

Gare	0	1
Har	0	1
Magabul	16,7	12
MZ	12,5	8

23

		How often do you sell firewood			
		1-2 times a month	3-4 times a month	More than 5 times a month	Total
Clan	Abduwak	98,2	1,8	0	55
	Asharaf	100	0	0	1
	Auliyahan	78	18	4	100
	Bahgari	0	100	0	1
	Balat	0	0	0	0
	Gare	100	0	0	1
	Har	0	0	0	0
	Magabul	100	0	0	6
	MZ	83,3	16,7	0	6

24

		At what price do you sell firewood			
		Less than 5 shillings	5-10 shillings	More than 10 shillings	Total
Clan	Abduwak	0	14,5	85,5	55
	Asharaf	0	0	100	1
	Auliyahan	30,9	38,3	30,9	94
	Bahgari	0	0	100	1
	Balat	0	0	0	0
	Gare	100	0	0	1
	Har	0	0	100	1
	Magabul	33,3	0	66,7	6
	MZ	0	28,6	71,4	7

25

		Main Livelihood				
		Livestock	Employment	Trade	Other	Total
Clan	Abduwak	90,1	5	4,3	0,7	141
	Asharaf	100	0	0	0	2
	Auliyahan	84,9	6,5	8,6	0	185
	Bahgari	0	0	100	0	2
	Balat	50	0	50	0	2
	Gare	0	100	0	0	1
	Har	100	0	0	0	1
	Magabul	73,3	6,7	20	0	15
	MZ	100	0	0	0	9

26

		Number of camels now			
		0-10	10-40	40+	Total
Clan	Abduwak	59,4	25	15,6	64
	Asharaf	0	0	0	0

Auliyahan	50,9	34,2	14,9	114
Bahgari	0	0	0	0
Balat	50	50	0	2
Gare	100	0	0	0
Har	0	0	0	0
Magabul	66,7	33,3	0	3
MZ	100	0	0	1

27

Number of camels 5 years ago

Clan	Number of camels 5 years ago			Total
	0-10	10-40	40+	
Abduwak	28,1	53,1	18,8	64
Asharaf	0	0	0	0
Auliyahan	43,2	32,4	24,3	111
Bahgari	0	0	0	0
Balat	100	0	0	2
Gare	100	0	0	1
Har	0	0	0	0
Magabul	0	66,7	33,3	3
MZ	0	100	0	1

28

Number of camels 15 years ago

Clan	Number of camels 15 years ago			Total
	0-10	10-40	40+	
Abduwak	20,3	15,6	64,1	64
Asharaf	0	0	0	0
Auliyahan	43,6	10	46,4	110
Bahgari	0	0	0	0
Balat	100	0	0	2
Gare	100	0	0	1
Har	0	0	0	0
Magabul	0	0	100	3
MZ	0	0	100	1

29

Number of cattle now

Clan	Number of cattle now			Total
	0-10	10-40	40+	
Abduwak	42,1	41,3	16,7	126
Asharaf	50	50	0	2
Auliyahan	33,8	50,3	15,9	151
Bahgari	100	0	0	1
Balat	0	0	0	0
Gare	100	0	0	1
Har	0	0	0	0
Magabul	46,2	53,8	0	13
MZ	25	75	0	8

30

		Number of cattle 5 years ago			Total
		0-10	10-40	40+	
Clan	Abduwak	33,6	40,8	25,6	125
	Asharaf	0	50	50	2
	Auliyahan	28,2	28,2	43,6	149
	Bahgari	100	0	0	1
	Balat	0	0	0	0
	Gare	100	0	0	1
	Har	0	0	0	0
	Magabul	0	46,2	53,8	13
	MZ	0	12,5	87,5	8

31

		Number of cattle 15 years ago			Total
		0-10	10-40	40+	
Clan	Abduwak	26,6	10,5	62,9	124
	Asharaf	0	0	100	2
	Auliyahan	30	9,3	60,7	150
	Bahgari	100	0	0	1
	Balat	0	0	0	0
	Gare	100	0	0	1
	Har	0	0	0	0
	Magabul	0	15,4	84,6	13
	MZ	0	0	100	8

32

		Number of shoats now			Total
		0-10	10-40	40+	
Clan	Abduwak	48,4	30,6	21	124
	Asharaf	50	50	0	2
	Auliyahan	27	40,4	32,6	141
	Bahgari	50	50	0	2
	Balat	50	50	0	2
	Gare	100	0	0	1
	Har	0	0	0	0
	Magabul	33,3	53,3	13,3	15
	MZ	66,7	33,3	0	9

33

		Number of shoats 5 years ago			Total
		0-10	10-40	40+	
Clan	Abduwak	35,2	45,6	19,2	124
	Asharaf	0	0	100	2

Auliyahan	16,5	25,9	57,6	139
Bahgari	50	50	0	2
Balat	100	0	0	2
Gare	100	0	0	1
Har	0	0	0	0
Magabul	0	33,3	66,7	15
MZ	0	0	100	9

34

		Number of shoats 15 years ago			
		0-10	10-40	40+	Total
Clan	Abduwak	27,2	12,8	60	125
	Asharaf	0	0	100	2
	Auliyahan	16,5	7,9	75,5	139
	Bahgari	0	100	0	2
	Balat	100	0	0	2
	Gare	100	0	0	1
	Har	0	0	0	0
	Magabul	0	6,7	93,3	15
	MZ	0	0	100	9

35

		Number of donkeys now			
		0-10	10-40	40+	Total
Clan	Abduwak	97,5	2,5	0	40
	Asharaf	100	0	0	1
	Auliyahan	87,8	6,7	5,6	90
	Bahgari	100	0	0	1
	Balat	100	0	0	2
	Gare	100	0	0	1
	Har	0	0	0	0
	Magabul	100	0	0	6
	MZ	100	0	0	5

36

		Number of donkeys 5 years ago			
		0-10	10-40	40+	Total
Clan	Abduwak	78,9	21,1	0	38
	Asharaf	0	0	0	0
	Auliyahan	83,1	11,7	5,2	77
	Bahgari	100	0	0	1
	Balat	100	0	0	2
	Gare	100	0	0	1
	Har	0	0	0	0
	Magabul	100	0	0	5
	MZ	0	0	0	0

37

		Number of donkeys 15 years ago			
		0-10	10-40	40+	Total
Clan	Abduwak	89,5	2,6	7,9	38
	Asharaf	0	0	0	0
	Auliyahan	87	1,3	11,7	77
	Bahgari	100	0	0	1
	Balat	100	0	0	2
	Gare	100	0	0	1
	Har	0	0	0	0
	Magabul	100	0	0	5
	MZ	0	0	0	0

38

		Distance to grazing during wet season			
		< 1 hour walk	1-3 hour walk	> 3 hour walk	Total
Clan	Abduwak	19,9	80,1	0	141
	Asharaf	100	0	0	2
	Auliyahan	77,2	20,7	2,2	184
	Bahgari	100	0	0	2
	Balat	0	100	0	2
	Gare	100	0	0	1
	Har	100	0	0	1
	Magabul	100	0	0	15
	MZ	100	0	0	9

39

		Distance to grazing during dry season			
		< 1 hour walk	1-3 hour walk	> 3 hour walk	Total
Clan	Abduwak	0,7	0,7	98,6	141
	Asharaf	0	0	100	2
	Auliyahan	0,5	10,9	88,6	184
	Bahgari	0	0	100	2
	Balat	0	0	100	2
	Gare	0	0	100	1
	Har	0	0	100	1
	Magabul	0	0	100	15
	MZ	0	0	100	9

40

		Changes in availability to grazing				
		More available	No change	Less available	Much less available	Total
Clan	Abduwak	0	0	80,9	19,1	141
	Asharaf	0	0	50	50	2
	Auliyahan	1,6	3,3	29	66,1	183
	Bahgari	0	0	100	0	2

Balat	0	0	100	0	2
Gare	0	0	100	0	1
Har	0	0	0	100	1
Magabul	0	0	73,3	26,7	15
MZ	0	0	22,2	77,8	9

Questions 43-55:

43 + 44

		Reasons for settling in area				
		Livestock	Employment	Food distribution	Trade	Total
Sex	Male	73,6	8,6	12,1	5,7	140
	female	73,6	7,9	13,2	5,4	242

45+46

		Born Here	Total
		Yes	
Sex	Male	23,7	131
	Female	38,1	226

47-49

		Have you had employment with salary		Total
		Yes		
Age	20-30	11,5		113
	30-50	13,8		188
	50 and above	86		58

50-55

		Livelihood				Total
		Livestock	Employment	Trade	Other	
Sex	Male	86,7	7	5,6	0,7	143
	Female	86,5	4,9	8,6	0	245

Annex J: Environmental assessment methodologies

1. Fuelwood consumption survey

There are several ways to measure the energy consumption of households in refugee camps:

- 1. Questionnaire survey:** It is possible simply to ask wood users how much fuel they consume, but this tends to be inaccurate because respondents may estimate weights poorly or may deliberately give false information. Asking how much money they spend on fuel as a surrogate for weight may reduce the error margin, but this is still a subjective approach and was therefore avoided.
- 2. Intake survey:** All incoming pathways to a camp can be monitored during daylight hours and each load of inbound wood recorded according to type of transporter (man, woman, child, donkey cart, etc). Conducting the survey over several days and knowing the average load weight for each type of transporter, it is possible to calculate the total weight of wood being brought into the camp. This method was used previously in Dadaab (e.g. Owen, 1998), but with the growth of the camps and the number of pathways, at least 100 enumerators would have been required with close supervision, and resources precluded this approach.
- 3. Wood weighing survey:** The chosen method for deriving fuel consumption was the relatively objective and cost-effective approach of weighing wood in 50 sampled households over an 8-day period. Five enumerators were recruited in Ifo through GTZ's camp supervisor and were each assigned to a different block where they selected ten households to monitor (thus 50 households in all). They were asked to include a cross-section of household sizes from two to 11 persons (one of each). This was not the family size as per UNHCR ration cards, but the number of people cooking together each day.

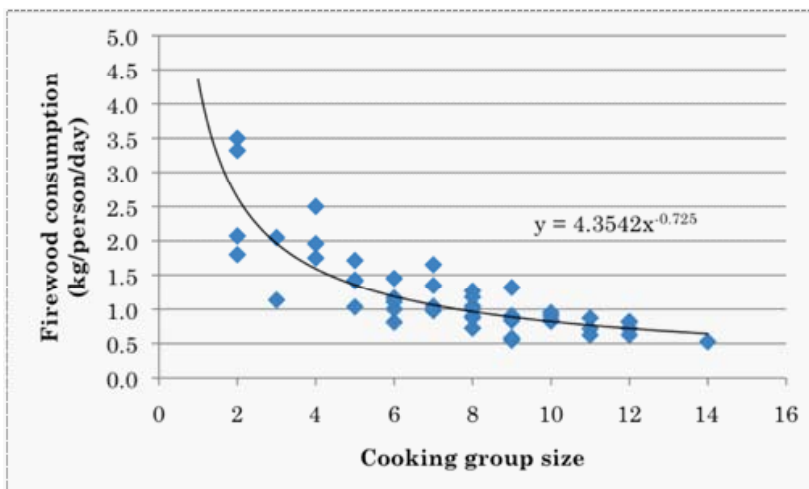
The enumerators were then asked to:

- a) Record the amount of firewood present in each household in the morning.
- b) Record any firewood brought into the household during the previous 24 hours. This required the cooperation of respondents to ensure that all incoming wood was set aside for weighing before going to the fireplace for cooking.

The enumerators were given instructions on the methodology and each issued with ten survey forms and a set of weighing scales. They were supervised each day to confirm their understanding of the approach and correct any errors. An eight day survey period ensured that minor weighing errors were smoothed out and the effects of unusual variations (perhaps related to religious days or food distributions) were minimised. The results were entered in a spreadsheet and processed using simple arithmetic to work out daily fuelwood consumption in each household (being the amount of wood present in the household the previous day, plus any wood delivered in the last 24 hours, minus the amount of wood now in the home).

Results of wood weighing survey, Ifo camp

HH size	Fuelwood consumption (kg p.p.p.d.)
1	4.35
2	2.63
3	1.96
4	1.59
5	1.36
6	1.19
7	1.06
8	0.96
9	0.89
10	0.82
11	0.77
12	0.72
13	0.68
14	0.64
15	0.61
16	0.58



The survey findings show that *per capita* fuel consumption reduces significantly with larger cooking group sizes. To calculate overall fuel consumption in the camps it is therefore important to have a good estimate of average cooking group size.

The average family size according to UNHCR data is 3.3, but the actual number of people cooking together is much higher than this. The average in the 50 sampled households was 7.3, while separate surveys commissioned in two other blocks in Ifo covering 128 and 219 households found averages of 7.1 and 8.3 respectively. Taking an average of these figures gives a **mean cooking group size of 7.6**, and using this figure in the formula for the best-fit line in the above chart gives average fuelwood consumption across the whole camp of **1.0 kg p.p.p.d.** This figure was assumed to apply across all three camps, as there are no major differences in foods, cooking habits or fuelwood prices.

The discussion of average household size according to ration cards, cooking groups or co-habiting individuals is an issue of wider importance in the camp context, where most planning and assessment against service delivery standards by the humanitarian agencies assumes that the ration card defines “family size”. Even this short sampling study suggests that more than twice as many people are typically cooking together than the ration cards might suggest, due presumably to their preference for sub-dividing family units to receive more non-food items and to provide more diversified survival options in the event that some family members move out of the camps. It is probable that cooking group size is similar to number of people actually living together and that both figures are significantly higher than average ration card size. Unrelated to this discussion on energy consumption, there is therefore a clear need to gather better data on co-habitation in order to revise perceptions of the way the refugees live and the way in which services should be delivered.

2. Livestock census

Livestock kept in the camps are taken out each morning for grazing. They are herded to agreed gathering points around the camp perimeter, where they are handed over to hired graziers who take them out for the day. The period when they are being gathered together presents an excellent opportunity to count them. Such a count was commissioned through enumerators at the 12 known assembly areas around Ifo over a one week period, through straightforward recording of all goats, sheep and cattle. The actual number of livestock will be higher than the observed total because very young animals do not leave the camp. For survey purposes it was assumed that 8% of shoats and 3% of cattle remain confined to the camp¹⁴ and a multiplier was then applied to scale up the Ifo figure to an overall estimate for all three camps.

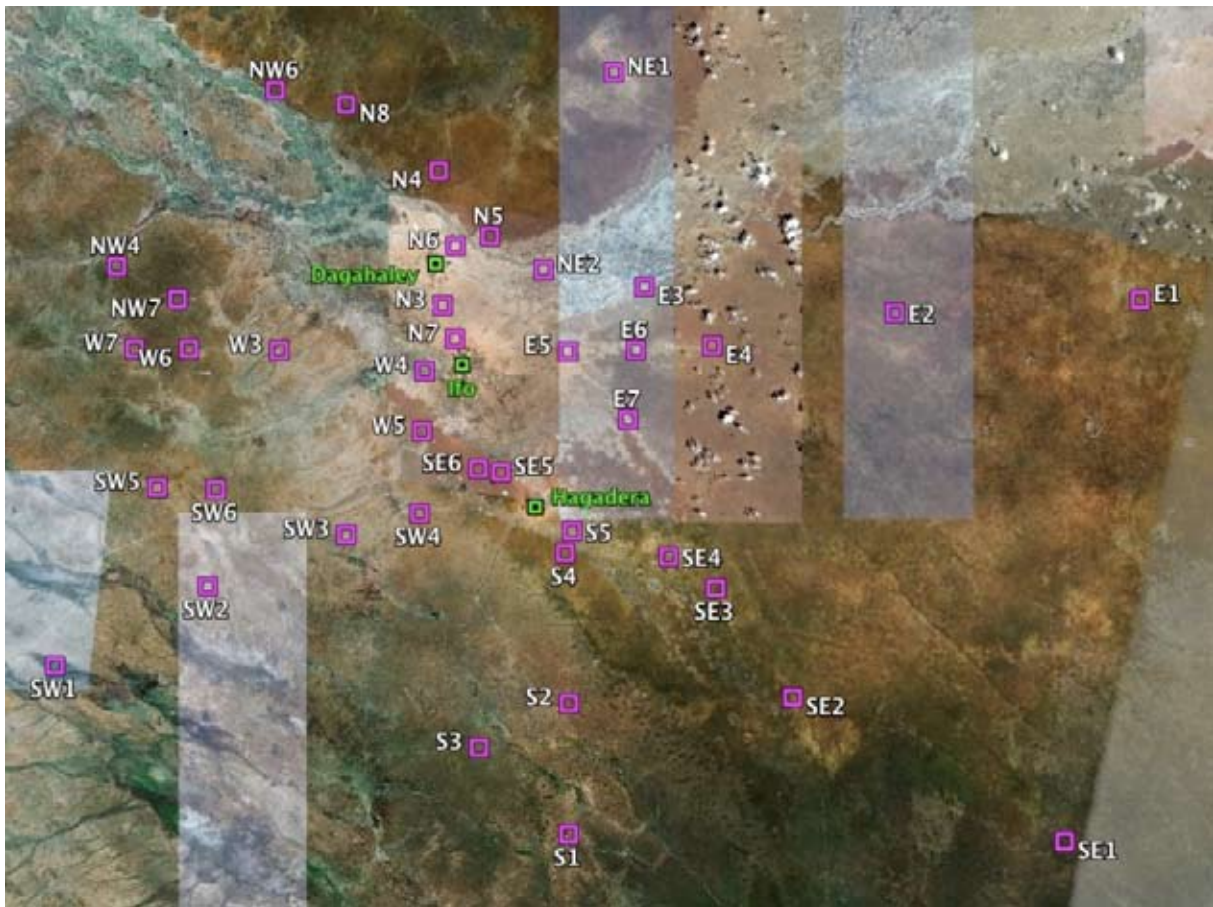
Results of livestock census, Ifo camp

Block	Sheep	Goats	Cattle
A3	291	828	471
B9	358	735	441
C9	225	923	453
A1	113	523	213
B17	301	1,827	401
B23	126	615	177
E1	425	1,627	-
A11	455	1,649	70
C3	390	1,664	118
N8	114	886	43
N15	129	828	83
	103	244	91
Sub-total:	3,030	12,349	2,561
% in camp (young animals)	8%	8%	3%
Total no.	3,305	13,472	2,649
Popn. of Ifo:	85,693		
Total registered popn:	272,029		
Multiplier for all camps:	3.17		
Total livestock:	10,493	42,765	8,410

¹⁴ Based in turn on the assumption lambs and kids are fed in the camp for 3 months and on average live for 3 yrs, while calves stay in the camp for 2 months and live on average for 5 yrs.

3. Rangeland biomass assessment

The study sought to determine the condition of the rangeland around Dadaab and this was accomplished through empirical measurement at the following 40 sample plots:



The plot coordinates (in decimal degrees) were as follows:

Code	Latitude	Longitude	Code	Latitude	Longitude	Code	Latitude	Longitude
E1	0.16405	40.84286	NE2	0.18749	40.37343	SE6	0.03136	40.32219
E2	0.15393	40.64961	NW4	0.19066	40.03764	SW1	-0.1233	39.98888
E3	0.17434	40.45276	NW6	0.32905	40.16236	SW2	-0.06088	40.10937
E4	0.12788	40.50587	NW7	0.1647	40.08556	SW3	-0.0203	40.21841
E5	0.1236	40.39255	S1	-0.25563	40.39313	SW4	-0.00367	40.27599
E6	0.1246	40.4459	S2	-0.15255	40.39337	SW5	0.01662	40.06962
E7	0.0702	40.43989	S3	-0.18747	40.32269	SW6	0.01514	40.1158
N3	0.15952	40.29411	S4	-0.03484	40.39044	W3	0.12439	40.16559
N4	0.26556	40.29106	S5	-0.01749	40.39597	W4	0.1081	40.28004
N5	0.2141	40.3314	SE1	-0.26147	40.78338	W5	0.06087	40.27799
N6	0.20635	40.30424	SE2	-0.14821	40.56918	W6	0.12547	40.09455
N7	0.13328	40.30382	SE3	-0.06245	40.50866	W7	0.12561	40.05173
N8	0.31755	40.21809	SE4	-0.03772	40.47165			
NE1	0.34269	40.42865	SE5	0.02861	40.33993			

The plots were selected to represent all directions from the camps and straight-line distances from 1 to 55 km. Their coordinates were entered in a GPS and four were surveyed each day over a ten day period by a team comprising a forester and two assistants, accompanied by an escort vehicle and two Administration Police officers.



Survey kit: Clipboard, data sheets, measuring tape, diameter tape, clinometer, GPS, marking stick

It had been hoped to visit plots further away but the team relied on old cut-lines for access and these were often over-grown or impassable due to rain. Refugee impacts were in any case either not found at more than 50 km or were indistinguishable from host community impacts at that distance.

At each sample plot a circle of 20 m radius was measured and marked on the ground.



Measuring 20 m plot radius



Plot marked out on ground

Within this circle the team recorded:

- a) The number of trees of basal diameter 2 cm or above;
- b) For each of those trees:
 - species type (with the aid of Somali-speaking assistants and with reference to Beentje, 1994 and Blondel, 2000a);
 - basal diameter (using a forester's diameter tape);
 - crown height (using a clinometer and tangent calculations based on observer eye height);
 - number of stems branching from the same stump (by observation); and
 - number of stems removed by human activity (by observation).
- c) Weight of usable¹⁵ dead wood ≥ 2 cm diameter (using a 0-50 kg dial-type balance).

¹⁵ "usable" was taken to mean dead, dry and potentially marketable, so did not include, for example, lightweight logs of *Commiphora* spp.



Measuring basal diameter



Weighing dead wood

The data from each plot were entered into a spreadsheet for analysis. The number of individual tree specimens, number of stems cut and quantity of dead wood on each plot were scaled up from the sampled areas to a figure per hectare by straightforward multiplication (by 7.96).

Calculating the volume of usable woody biomass per plot (and hence per ha) was more complex as limited mensuration work has been carried out in Kenya's drylands on which to base volumetric calculations.¹⁶ Reliable formulae exist for tree species in wetter areas but these are not always transferable because dryland trees tend to have lower and wider-spreading forms, because stems often divide immediately above the ground (making diameter measurement difficult), because trees exhibiting such multi-stem forms cannot be assumed to have the same combined volume as individual trees of the same trunk diameter and because there are practical limitations to measuring dense, thorny, low-spreading vegetation.

The following hybrid approach was therefore adopted:

- a) For trees of basal diameter of 5 cm and above, the following formula derived for free-standing trees of single stems in non-closed forests was applied (Pukkala, 1991):

$$\ln(v) = -1.64932 + 2.235673 \cdot \ln(d)$$

where \ln = natural log

v = stem volume in dm^3 (cubic deci-metres)

d = diameter at breast height in cm (assumed to be 85% of basal diameter)

- b) Given that most of the smaller trees exhibited multi-stem forms with each stem essentially a long, tapering cylinder, the following formula was applied for stems of basal diameter 2-4 cm:

$$Pi * r^2 * ht * \text{form factor}$$

where $Pi = 3.1415926$

r = radius in m

ht = height in m

form factor (taper) = 0.85

¹⁶ The authors are indebted to forester Keith Openshaw, Deputy Project Manager of the Kenya Fuelwood Cycle Study in the early 1980s, for his technical input on methodology development.

Having obtained preliminary volumes for each stem, a multiplier was applied to cater for multi-stemmed trees. After observing the growth characteristics of different specimens, it was decided to adopt the following procedure to allow for the interference of trees in close proximity with each other's growth:

- a) for single-stemmed trees, volume remained as calculated above;
- b) for double-stemmed trees, the volume of one stem was multiplied by 1.5; and
- c) for trees with three stems or more, the volume of one stem was multiplied by (n-1), where n was total number of stems.

Trial calculations using this approach yielded standing volumes in the more distant and undisturbed sampling locations of 40-45 m³/ha of above-ground usable woody biomass. This was consistent with Western and Ssemakula (1981) who found average dry standing weight of 22-31 t/ha for areas with 250-350 mm of rainfall per annum, equivalent standing volume of 35-50 m³/ha.¹⁷ Assuming average rainfall in the Dadaab area of 325 mm/yr, standing volume on undisturbed plots would be expected to average 46 m³/ha. The methodology was thus considered sufficiently reliable to apply across all the sample plots. Western and Ssemakula further estimated an annual yield of 1.2 to 1.7 t/ha (15% moisture content), depending on rainfall, being 4.8% of standing stock. A similar annual yield was assumed for the sampled sites.

4. Satellite imagery time series comparison

Dadaab falls in the centre of a Landsat thematic mapper (TM) satellite scene: path 166, row 060. Each image is 185 km square so conveniently covers the proposed area of interest for the impact study. Landsat imagery is also available for free download from the US government: <http://glovis.usgs.gov/> However, the Landsat TM sensors began to deteriorate in 2003 and imagery produced since that date is marred by bands of missing data. Post-2003 scenes must therefore be "gap-filled" using imagery from an earlier date, which introduces a risk of error. The latest cloud-free image pre-dating the refugee camps was obtained on 26th January 1987. This was compared with the most recent cloud-free image from 2nd February 2010, which was gap-filled using an image from 1st January 2010. By taking scenes from approximately the same time of year, it was hoped that seasonality effects could be minimised.

Rectification and image alignment was carried out in Nairobi by the Regional Centre for Services in Surveying, Mapping and Remote Sensing and staff of the Department of Resources Surveys and Remote Sensing assisted with cropping and classification.¹⁸

It was expected that the satellite image from 2010 would reveal land cover changes within 20 km of the camps, but that degradation further away would be more species-specific and hence less visible from above. Both images were therefore cropped to an oval smaller than the general study area: 40 x 60 km (1.920 km²), centred on Dadaab town and tilted 22° from north (for NNW-SSE alignment with the three refugee camps).

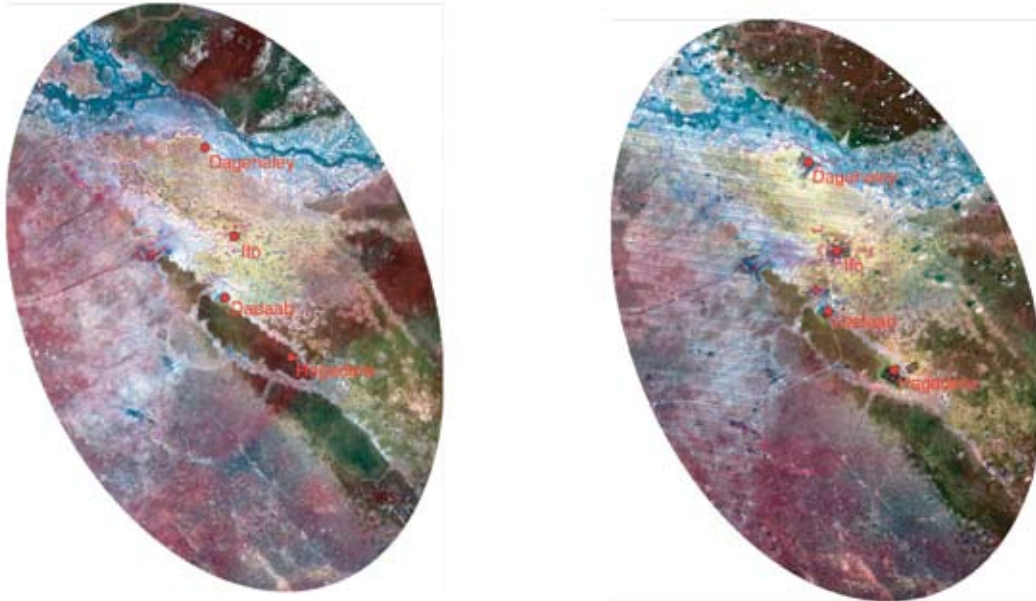
¹⁷ Assuming 15% moisture content (air dry) and 1.4 m³ per air-dry t.

¹⁸ The input of Anthony Ndubi at the Regional Centre and Jacob Kimani and Merceline Ojwala at DRSRS is gratefully acknowledged.

*Landsat images of area within 20 km of refugee camps
(TM bands 2, 3 and 4 in blue, green and red respectively)*

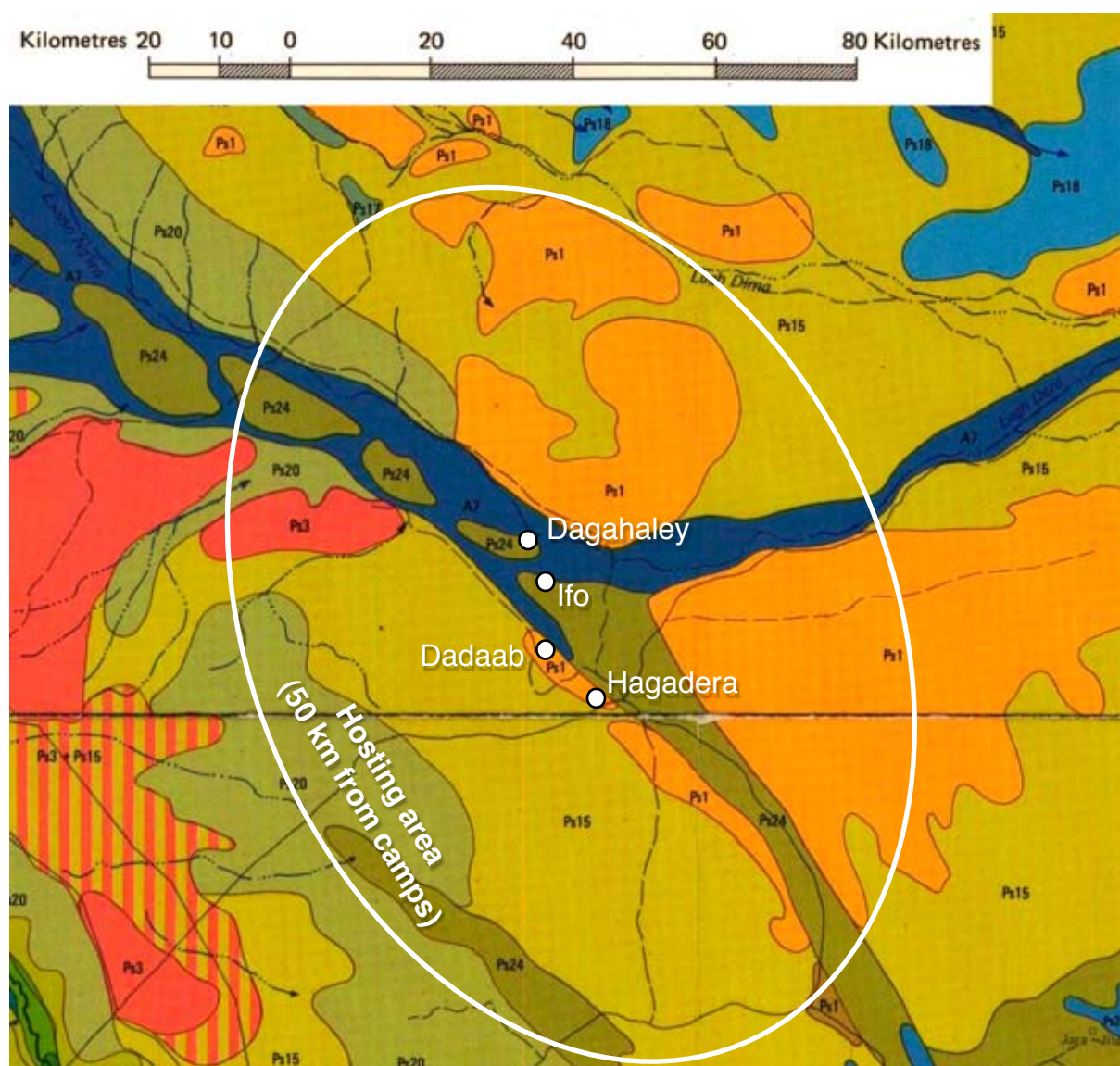
26th Jan 1987

2nd Feb 2010



The preferred approach to classifying scenes of this nature is to carry out manual, on-screen digitisation of different land-cover classes. This is a time-consuming and expensive process, however, and remote sensing was only a minor component of the study. So it was decided instead to conduct unsupervised classification of the two images using ERDAS Imagine software on a PC, based on TM Bands 1, 2, 3, 4, 5 and 7. After some experimentation with different numbers of classes, a 6-way classification was found to achieve the best compromise between accuracy and simplicity. The classified scenes were then smoothed using a majority filter with cells of 3x3, 5x5 and 7x7 pixels, applied sequentially. ERDAS was then used to generate viewer-friendly final images and to produce attribute tables listing the area of land falling within each class for 1987 and 2010. Ground truthing was carried out in the field by pre-selecting 12 points from the 2010 image, locating those points using GPS and using them to categorise the land cover classes defined by ERDAS.

Annex K: Soils of the Dadaab area



Code	Soil type	Description	Drainage	Local name
A7	Flood plain	Very deep, dark grey, very firm	Imperfectly drained	<i>Adable</i>
Ps24	Lower level sedimentary plain	Grey clay plain. Very deep, dark greyish brown, very firm clay	Imperfectly to poorly drained	<i>Kunia</i>
Ps15	Sealing loam plain	Moderately deep, brown, extremely firm, clay loam, with a topsoil of sealing sandy loam	Imperfectly drained	<i>Ber guduud</i>
Ps20	Sealing loam plain	As above, but differentiation of underlying clay loam more abrupt		
Ps1	Sedimentary plain	Red sand plain. Very deep, dark red to dusky red, friable, sandy loam to sandy clay loam	Well drained	<i>Raama</i> when dark red pure sand, <i>Raama ad</i> if more loamy and yellow/beige
Ps3	Sedimentary plain	As above, but less deep		

Source: *Exploratory Soil Map of Kenya (Kenya Soil Survey, 1980); IRD (1999); Blondel (2000a).*

Annex L: Firewood, building material collection and energy supply

The collection of firewood and building materials has for a long time been addressed by the various organisations and agencies working in the area due the environmental impacts of these activities. UNHRC set up the Rational Energy Supply, Conservation, Utilization and Education (RESCUE) program, which has been implemented through GTZ. Other programmes have also been set up under other organisations but RESCUE has been the main programme to address the degradation caused by firewood and building materials collection.

From the findings in the study this issue is still far from being solved. Firewood and building materials collection is conducted by members of host communities, refugees and others. The need for these materials is huge and will expand as a growing number of peoples settled in host communities and in refugee camps.

The collection is organised in different ways. People collect on individual household basis for own consumption as well as it is as an activity for commercial use. It is organised both by locals from host communities but increasingly also by some residents in camps who in agreement with local leaders collect. Firewood and building materials is collected through the GTZ contractors. Some host communities were included in these GTZ contracts but other host communities were not. People interviewed in the communities were generally very negative to the firewood contracts as they did not see any benefits but only felt the problems in terms of resource depletion. In those areas not affected by firewood contracts, people were quite satisfied that no contracts affected their area.

From the findings of the qualitative questionnaires it turn out that local people in host communities divide the quality of firewood into two main categories. A low quality of firewood, which consists of small branches and scrubs. Then there is a good quality, which is firewood consisting of thick branches. This firewood is the preferred one by people but not all households have access to this quality. Firewood is collected for own consumption as well as for selling.

Firewood for own consumption

The findings from the study shows that in households where firewood is collected for own consumption women and girls spend 2-5 hours every second day to collect. There seems to be no big difference between centres/communities close to camps and communities at a greater distance to the camps in time spend on collecting. However the closer the centre is to the camps, the lower is the quality of the firewood, which women and girls can collect. There seems to be an acceptance of lowering quality of firewood (branches and scrub). In many households branches and scrub are the main source of firewood as there are limits to how far out in the bush women and girls go to collect firewood.

The so-called good quality firewood and building materials (live trees) are collected on an individual household basis as well. The good quality of firewood consists of big branches and parts of trees. This is the preferred firewood by every one but many have to rely on firewood of small branches and scrub due to labour or money available. Many households in the centres do not have regular access to the good quality and they will have to buy it.

Commercialisation of firewood and building materials

As the distances to “good quality” of firewood are becoming greater and greater this collection of firewood is taken over by the men using donkey carts. Firewood collected in this way is for selling and normally not for own use.

The price for selling a full load of firewood depends on if it is sold locally in communities or brought to the refugee camps. The local price will be around 400-600 shillings while in camps the price will be from 1200 shillings. Men will on an individually basis go to collect and sell it locally or in camps. Men from the communities are involved in this activity. From the quantitative questionnaires it came out that collection of firewood is often cooperation between an owner of a donkey cart/donkey and a person who have the time to collect. Then they share the income from selling the firewood/building materials.

The communities placed between 10-40 km from the camps are the ones where people mostly will be involved in the collecting and selling firewood in this way. In the communities the buyers of firewood will normally be teashops and households with cash incomes, but the market for selling firewood is limited in the communities.

However, the results from the quantitative questionnaires indicate that in communities close to camps (Dadaab and Borehole 5) and in Hagarbul, which is a centre on the main road to Garissa (over 40 km to Dadaab with many shops and teashops) buying of firewood is more common than in the other host communities included in the study.

The more organised collection of firewood and building materials is conducted by several men with donkey carts – it was reported by interviewed that it was not unusual to see 15 to over 40 donkey carts going to the bush in a convoy. The men will stay out a night or two to collect the firewood and chop live trees for building materials and then return to refugee camps in convoys. These convoys are organised and conducted by men from the camps according to people interviewed. It seems like the organisation of convoys will mainly take place when distances to good quality of firewood and building materials is increasing. It was also said this collection is taken place in agreement with local leaders in the communities.

These convoys sell their firewood and building materials in the refugee camps. Many refugees in the camps can pay for the good quality.

Charcoal

Charcoal is imported to the area. Bags with charcoal come regularly to Dadaab town and refugee camps. In Dadaab town charcoal can be bought for 500 shillings for a 50 kg bag. A development where charcoal burning will take place in the host community area up to 100 km radius from the camps burning easily be foreseen. If people working in the convoys have to travel longer and longer distances to the resources (firewood and live trees) they are searching and have to stay out in the bush for several nights to collect the firewood, charcoal burning might be an option for them to secure an income that can pay for the time and efforts spend. A load of good firewood (250-300 kg) on donkey carts can now be sold in refugee camps for 1200 shillings. A load can last for around two month in an average size of household. Now charcoal can be bought in example Dadaab town for 500 shillings pr 50 kg bags and this bag will last for around 15 - 20 days. For the moment the price difference is not that big but people are fully aware of the advantages of using charcoals. For firewood collectors using donkey carts the jump to charcoal burning might not be that big, even it is prohibited. Firewood collectors are anyway already now being accused for illegal activities. A full load of charcoal could give a much higher income for a trip around 2500-3000 shillings pr donkey carts (5-6 bags of 50 kg at a price at 500 shillings pr bag).

Future perspectives on energy and building materials needs

The need for going further and further away from camps to collect firewood and building materials gives reasons to raise some questions. Refugees and peoples need for these materials will not go down as it is their only source of energy and an increasing number of peoples in camps and host communities will increase the demand for these resources. It cannot be solved with the approach of the RESCUE program run by GTZ as it does not cover the actual need and anyway this program compete for the resources with other local users.

As long as the energy supply for refugee camps and communities is built on traditional energy (firewood) collected in the host community area, the pressure on the environment will increase. The organisation of the collection by using donkey carts in convoys only show that local solutions will be found to satisfy the demand for these resources. These convoys of donkey carts were reported to be active in areas of several of the communities included in the study. As the distances to the good quality of firewood and live trees for building materials grow local solutions will be found to comply with the actual demand for firewood.

It seems like the concentration of the nomadic pastoralists in communities is an ongoing process, which will continue in an increasing speed due to the easy access to social services and infrastructures and food relief. This is a process not only attracting nomads normally using the pastures in and around camps but also nomads from Tana River, Liboi District, Wagir and others. The pressure on natural resources increase as more and more people will use the same areas for grazing and firewood and building materials collection. Together with the population in the refugee camps who have the same needs for utilizing the natural resources it is difficult to see how this development in dependency on local resources will not result in severe degradation of the environment - if not a sustainable solution is found that is not built entirely on local utilisation of natural resources.

Annex M: Social infrastructure/social services

Social infrastructure is well developed in the host communities. In the tables below the availability of social infrastructures for water, health and education in the eight study communities can be seen:

	Borehole	Water tank	Primary school	Boarding school	Mobile clinic	Dispensary
Abak Khaile	X		X	X	X	
Alinjugur	X	X	X			X
Borehole 5	X	X	X			X
Hagarbul	X	X	X			X
Matheghesi	X		X	X	X	
Sebule	X		X			X
Welmerer	X	X	X		X	
Dadaab town	X	X	X			X

Besides these, the transport sector is well developed and solar energy is introduced into mosques, schools and dispensaries. Communication has also been developed as mobile telephone connection is wide spread in the host community areas.

Access to water for people and livestock

The access to water has become easier and more secure for people and for livestock as well as the quality of drinking water is high. Besides boreholes and water points for drinking water several troughs for the livestock has been constructed in all communities. These areas with troughs are very busy in the dry season as it attracts the nomads from distances far away.

The boreholes supply around 92% of host community members with drinking water and water for livestock. Besides dams, private wells and reservoirs are used.

The good and stable supply of water from these boreholes influence people living more mobile pastoral lifestyles with a clear tendency to increase settlement. Furthermore the reliable water supply attracts pastoralists from other districts, which results in higher concentration of livestock and changed use of pastures.

The boreholes are maintained and access controlled by local water associations who also collect the money from local users as well as from users coming in for drinking water and watering the livestock. The access for livestock are regulated in the way that a list of users inform of the order in which the users can approach the water troughs. The water association members can be very busy in the dry season as many nomads might come for water for humans and for livestock.

It is the women and the girls who bring the water to the household. The distances for people to the water points depend on the size of the community but the water points will normally not be more than half to an hour walking distance from the compound. However, it was pointed out by the respondents that it might take time to get the water as there often will be long lines at the water points for drinking water. Therefore fetching water and bring it to the compound can easily take two to three hours per day.

It is still mainly the women and the girls who bring the water to the household. The distances for people to the water points depend on the size of the community but the water points will normally not be more than half to an hour walking distance from the compound. However, it was pointed out by the respondents that it might take time to get the water as there often will be long lines at the water points for drinking water. Therefore fetching water and bring it to the compound can easily take two to three hours per day.

In Dadaab town there are several water points (10 water points). Due to the high population in Dadaab town, the queue will normally be very long at the water points. Several households have access to "tapped" water coming from pipes. Neighbours of these households can also under certain local agreements between "owners" and other users get access to this water, which save people for spending hours at the water points.

Water has been addressed by nearly all the major organisation working with host communities. UN organisations like UNICEF and Arid Land Resource Management Program (ALRMP) as well as example Care, Danish Refugee Council and Norwegian Refugee Council. They have supplied materials needed and training in maintenance.

Access to and use of education in the area

Most of the interviewed people gave education as a main reason for settle down in the communities. All host communities (communities) have been provided with a primary school. Several of the schools are 3-5 years old but towns/communities like Dadaab and Sebule have had schools for over 15 years. In all host communities education was said to have improved.

It was informed in the qualitative questionnaires that both boys and girls attend the schools. However there is no exact data on the number of girls and boys enrolled in the host community schools available but all interviewed people mentioned that the children of their households would attend school and they all mentioned that they were paying school fee.

The schools initiated under host community programs have partly been constructed by voluntary work by local people. Materials for construction and school desks etc. have been provided by organisations working with host communities. Especially Care has been active in addressing education. Teachers are often employed on initiatives from the community itself and school fee is paid to pay salary of teachers and other persons working at the school (school cook etc.). School fee various from 100 to 300 shilling pr month pr child. It seems like the amount of school fee paid by each household various depending on the socio-economic situation of the household.

Few of the adult population in host communities (except Dadaab town, Sebule and Borehole 5) have received any education. The result is that the illiteracy rate is high among the adult population, as adult literacy education is not taken place. Several young women who grew up in Sebule or Dadaab town have received primary education. Host community members find education is very important and would like their children to attend education. The extended family structure among the people in the host community areas makes it possible for children from mobile families to attend schools as they will stay with relatives in the villages. Only in one case it was also recorded that an extended nomadic family were benefitting from a nomadic school programme.

Scholarship for secondary school education in Garissa and Nairobi are provided by organisations like Danish Refugee Council (DRC) working with host communities. Boarding schools are now being built in Mathegesi and in Welmerer.

Besides the formal schooling, all communities settled and mobile have one or more *dukas* (Koran schools). All children attend these schools and as with the primary schools there is a fee (200-300 KSh a month) for every child. The fee will pay the salary of “teachers”.

Access to and use of health services and sanitation

Health has been addressed by many of the agencies and organisations working with host communities in cooperation with the Kenyan Ministry of Health. Host community members had a diversified opinion on the access to health facilities. Around 42% found it had declined while around 48% found access had improved. This difference in opinions can easily be explained. Outreach clinics and dispensaries serve the host communities but there is a lack of nurses and drugs/medicine in some of them, and furthermore in some communities it was recorded that the outreach clinics would come on irregularly basis once every two or three month. This makes access to health services in the local communities unreliable and people more dependent on health services provided by private clinics and hospital in the camps.

Hospitals in Dadaab and refugee camps are also used by host community members as well as some access the hospitals in Garissa if they are living closer to Garissa. The hospital in Dadaab has a shared cost practice, which mean that people have to pay for being treated, while hospitals in the refugee camps are free. Generally hospitals in the camps are accessed free of charge.

Malaria is considered the most common and serious illness experienced in the area and diabetes was mentioned also to be a problem. Child delivery were said to take place in communities as well as at the hospitals in Dadaab and the camps if complications came up. In some of the communities local women had been trained as “midwives”.

Latrines are seen in all communities, they are few but widely used. They have been constructed with assistance of donors, agencies and organisation working with host communities.

Access to transport

The communities included in the study all have improved transport in form of regularly access to busses, matatus, pickups and "taxis". Busses might come from Nairobi and Garissa to the refugee camps and communities on the other side of refugee camps and then come back next day to go the opposite way back to Garissa and Nairobi.

Members of communities use this transport to go to refugee camps and to Dadaab to trade, visit friends and relatives, access health facilities and to buy food (vegetables and rice, maize and wheat flour etc. in 50 kg bags) and sell livestock. Up to 80% of the respondents answered that they used public transport more and around 85% said they could catch public transport in or near the village centre.

In some communities, which are not served by busses, smaller pick-ups and matatus come to serve people. They can also carry goats and sheep in site and are in many cases preferred due to lower price.

However people walking on foot is still very common especially in households with very low cash incomes.

Donkey carts is widely used both for firewood and building materials transport and going to markets to sell and buy food and other products. They are also use to bring water to the compounds.

Access to electricity and communication

Solar energy is installed in many mosques, schools and dispensaries in the communities. Solar energy is also used to recharge mobile phones and is often run as a small scale business by the owner of the rechargers run on small solar energy.

Electricity is only available through use of private electric generators. Even in Dadaab town electricity is supplied by private electric generators, which serve the shops, cantinas and hotels. In refugee camps private electric generators are the only source for electricity. The compounds of the different organisations and government agencies are also supplied with electricity from their own electric generators.

Mobile telephone connection is available in all the visited host community communities and is used by many peoples in the communities. They are recharges by solar energy. Mobile telephone cart can be bought in Dadaab town as well as in refugee camps.

Future perspectives

The establishment of social infrastructures in the communities has resulted in concentration of the population in communities and thereby leaving the pastoral life style in return for a settled life style. The access to social infrastructures attracts also people from other districts further away.

Annex N: Impacts related to gender and age

The division of labour in host community areas are gender based. Men and boys are herding and watering the livestock. Women and girls collect firewood, fetch water for household use, take care of children, handling the milk, prepare the food and are responsible for other domestic household related activities.

When people shift from a nomadic pastoral lifestyle to settle down in communities the workload and responsibilities seems to change. However the division of labour will still be very gender based. Men and boys duties will often change dramatically and in many case it look like the general workload of men will decrease. As people are no longer mobile, the livestock close to the communities will be in smaller numbers - eventually going out in search of grazing in the morning and return in the afternoon and there might not be any herding. Often owner of livestock in communities will pool their animals into a group and then boys can herd them. If people in communities still have cattle, camels and goats and sheep in larger numbers, these animals will often be with relatives living a nomadic pastoral lifestyle. The duties and workload of men in communities are in this way reduced and their daily labour input to the household economy can be very low if they are not engaged in “commercial” firewood collection or have casual employment. This under-employment of males is a problematic trend and contributes to a number of social problems (e.g. miraa chewing, smoking and domestic debt).

Women and girls duties will be the same in terms of collecting firewood, fetching the water for household use, as well as responsible for other domestic activities. However there will be some additional activities of women, which often are needed when settling down in communities. Several women will be engaged in milk trade (buying from nomads and reselling the milk processed (boiled)). Several will be involved in other income generating activities like having a teashop, a small shop or trade different commodities like clothes and miraa - all activities, which on a daily basis contribute to the households cash incomes. From the quantitative questionnaire men and women find themselves equally involved in livestock activities. More men have experience with employment than women and women are more involved in trade than men.

Some of the communities in the study area have some trends similar to more urban areas. Dadaab town, Borehole 5 and to certain degree Hagarbuul, have trends of township. In these communities female-headed households are seen more often as well as household with weak family structures. Women's engagement in trade and other income generating activities are much more common and their contribution to household economy might exceed incomes from their livestock.

Women's groups were found in several communities. These groups were organised by local initiatives. They were mainly income generating cooperating entities. Their activities could be butchering, milk processing, some handicraft activities etc. It was said that the women would share the profit of their activities in accordance to needs and investments. However many women were not aware of these groups, how they worked and how to join them.

Results from the quantitative questionnaire indicate that around 38% of the female respondents were born in the area while around 24% of the male respondents were from the area. Inter-marriage takes place. Some males have more than one wife and the age difference between husband and wife can be quite big – over fifty years. In all communities visited in the study area large numbers of children under 7 years were observed. Girls are seen to be married between the age of 15 to 20 years. Some young students get scholarship or the family invest in their children to attend secondary school or higher education in Garissa.

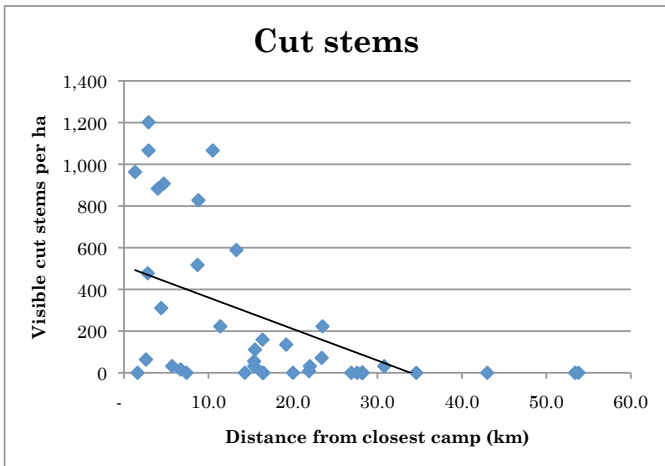
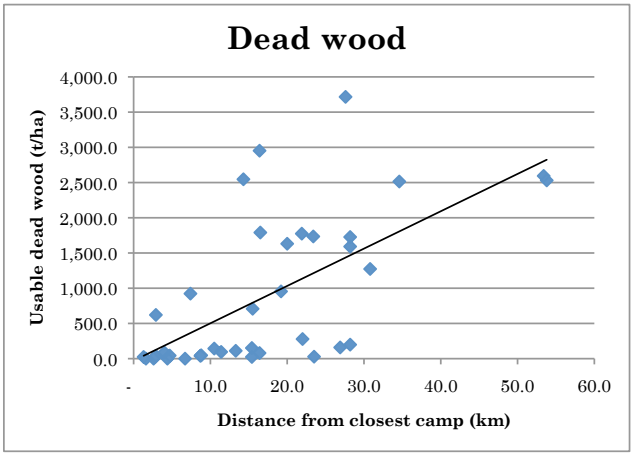
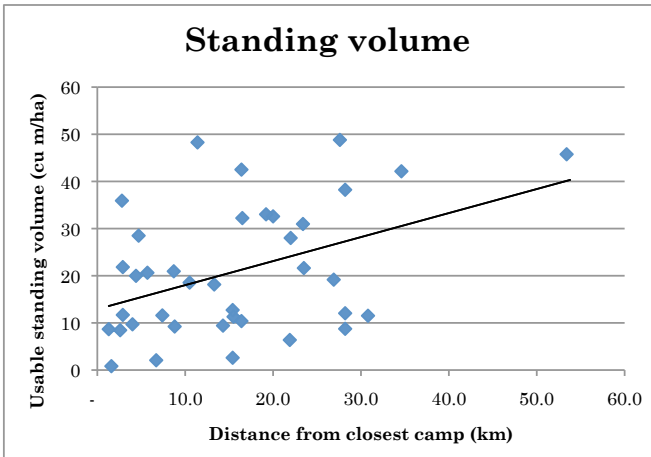
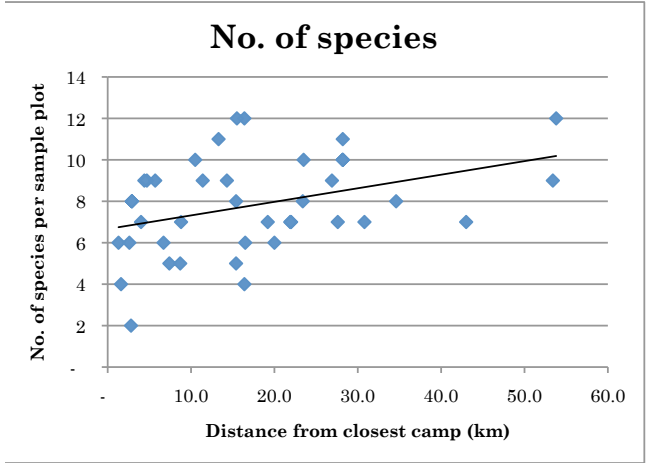
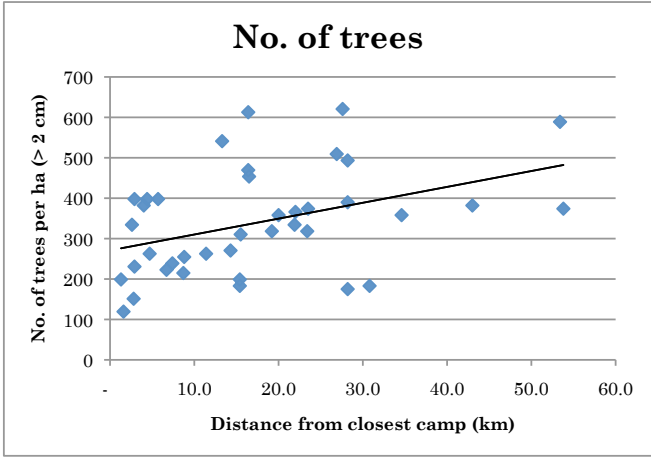
Annex O: Somali and botanical tree species names

Botanical name	Somali name
<i>Abutilon hirtum</i>	<i>Sulube</i>
<i>Acacia elatior</i>	<i>Burra</i>
<i>Acacia horrida</i>	<i>Abak/Serman</i>
<i>Acacia mellifera</i>	<i>Bil-el, Lanen</i>
<i>Acacia nilotica</i>	<i>Tugerr</i>
<i>Acacia reficiens</i>	<i>Khansa</i>
<i>Acacia senegal</i>	<i>Adadgeti, Ethad-geri</i>
<i>Acacia tortilis</i>	<i>Abak, Kura</i>
<i>Acacia zanzibarica</i>	<i>Fulai, Jikh</i>
<i>Balanites rotundifolia</i>	<i>Kulan</i>
<i>Boscia coriacea</i>	<i>Darkiyah/Dakayare</i>
<i>Boswellia neglecta</i>	<i>Bebeh</i>
<i>Commiphora africana</i>	<i>Hammes sagara</i>
<i>Commiphora edulis</i>	<i>Dibirrh, Dabarrik</i>
<i>Commiphora incisa</i>	<i>Warabreb</i>
<i>Cordia sinensis</i>	<i>Meded, Marer</i>
<i>Dalbergia spp</i>	<i>Dusiya</i>
<i>Diospyros wajirensis</i>	<i>Gomo gomo</i>
<i>Dobera glabra</i>	<i>Garas</i>
<i>Gardenia fiorii</i>	<i>Karro</i>
<i>Govotia gosai</i>	<i>Kosai</i>
<i>Grewia bicolor</i>	<i>Tebi, Debhi</i>
<i>Grewia densa</i>	<i>Bebhi</i>
<i>Grewia forbesii</i>	<i>Da'bi</i>
<i>Grewia mollis</i>	<i>Debi-ad, Ged-Mured</i>
<i>Grewia tenax</i>	<i>Damak, Dekha</i>
<i>Harrisonia abyssinica</i>	<i>Eddih-chabel</i>
<i>Maerua decumbens</i>	<i>Ohia sagara</i>
<i>Ochna mossambicensis</i>	<i>Majaba</i>
<i>Pentas bussei</i>	<i>Gora</i>
<i>Pentas parvifolia</i>	<i>Gora</i>
<i>Premna resinosa</i>	<i>Gradha-gradha</i>
<i>Prosopis juliflora</i>	<i>"Mathenge"</i>
<i>Salvadora persica</i>	<i>Ade, Adhei</i>
<i>Terminalia orbicularis</i>	<i>Bisakh</i>
<i>Terminalia prunioides</i>	<i>Hareri</i>
<i>Wrightia demartniana</i>	<i>Hanya, Haya-haya, Maiyo</i>
<i>Ximenia americana</i>	<i>Madarau, Madarud</i>

Annex P: Forest plot summary data

Plot no.	Distance from camp (km)	Trees per ha	Total species on plot	Standing vol (m ³ /ha)	Dead wood (kg/ha)	Cut stems per ha
N7	1.3	199	6	8.7	24	963
N6	1.6	119	4	0.8	-	-
N3	2.6	334	6	8.5	-	64
W4	2.8	151	2	35.9	24	477
S5	2.9	398	8	21.8	621	1,202
SE5	2.9	231	8	11.7	40	1,066
S4	4	382	7	9.7	88	883
N5	4.4	398	9	20.0	-	310
SE6	4.7	263	9	28.5	44	907
W5	5.7	398	9	20.6		32
N4	6.7	223	6	2.1	-	16
E5	7.4	239	5	11.6	923	-
NE2	8.7	215	5	20.9	40	517
SW4	8.8	255	7	9.2	48	828
E7	10.5		10	18.5	143	1,066
SE4	11.4	263	9	48.3	95	223
E6	13.3	541	11	18.1	111	589
N8	14.3	271	9	9.4	2,546	-
E3	15.4	183	5	12.7	151	56
SW3	15.4	199	8	2.6	24	32
W3	15.5	310	12	11.3	708	111
S3	16.4	470	4	10.4	2,952	-
SE3	16.4	613	12	42.5	80	159
S2	16.5	454	6	32.2	1,790	-
NW6	19.2	318	7	33.0	955	135
E4	20	358	6	32.6	1,631	-
NW7	21.9	334	7	6.4	1,775	8
NE1	22	366	7	28.0	279	32
W6	23.4	318	8	31.0	1,735	72
SW6	23.5	374	10	21.6	28	223
SE2	26.9	509	9	19.2	159	-
S1	27.6	621	7	48.8	3,716	-
SW2	28.2	175	11	12.0	1,727	-
SW5	28.2	390	10	8.7	199	-
W7	28.2	493	10	38.2	1,592	-
NW4	30.8	183	7	11.5	1,273	32
E2	34.6	358	8	42.2	2,515	-
SW1	43	382	7			-
E1	53.4	589	9	45.8	2,594	-
SE1	53.8	374	12		2,531	-

Annex Q: Charts showing rangeland sampling survey results



Annex R: Borehole data

SWL = Surface Water Level, in metres below ground surface

Source: 1992-2003: Gibb Eastern Africa, 2004

2008-2009: CARE International, Dadaab

Dag BH1		Dag BH3		Hag BH3		Hag BH4		Ifo BH1		Ifo BH6	
Date	SWL	Date	SWL	Date	SWL	Date	SWL	Date	SWL	Date	SWL
19-Apr-92	110.40	17-Aug-92	109.61	30-Aug-92	114.70	01-Sep-92	115.20	31-Aug-91	108.44	03-Feb-92	108.35
25-Aug-92	111.08	11-Sep-94	109.50	06-Oct-92	115.10	04-Oct-92	115.20	15-Oct-91	108.33	15-Jul-92	107.85
03-Sep-94	111.38	25-Sep-94	109.50	27-Jul-93	115.10	15-Jun-93	115.40	03-Oct-92	108.40	03-Oct-92	107.97
17-Sep-94	111.40	10-Oct-94	109.38	25-Aug-93	115.00	25-Nov-93	115.33	24-Jan-93	108.32	24-Jan-93	108.39
10-Oct-94	111.25	24-Oct-94	109.40	16-Dec-93	114.81	15-Dec-93	115.33	22-Feb-93	108.32	16-Feb-93	108.36
24-Oct-94	111.28	11-Nov-94	109.58	28-Jan-94	114.80	25-Feb-94	115.25	11-Mar-93	108.33	22-Feb-93	108.25
05-Nov-94	111.29	25-Nov-94	109.38	22-Feb-94	114.80	31-May-94	115.20	17-Mar-93	108.34	11-Mar-93	108.31
19-Nov-94	111.26	09-Dec-94	109.42	31-Mar-94	114.80	25-Jun-94	115.35	28-Mar-93	108.37	16-Mar-93	108.37
05-Dec-94	111.35	23-Dec-94	109.40	30-May-94	114.79	25-Jul-94	115.27	30-Mar-93	108.36	28-Mar-93	108.32
19-Dec-94	111.38	09-Jan-95	109.42	30-Jun-94	114.99	15-Aug-94	115.25	11-Apr-93	108.33	15-May-93	108.66
05-Jan-95	111.25	23-Jan-95	109.41	24-Jul-94	114.98	13-Sep-94	115.27	17-Apr-93	108.34	24-Oct-94	108.99
19-Jan-95	111.30	06-Feb-95	109.38	15-Aug-94	114.98	27-Sep-94	115.30	20-Apr-93	108.36	25-Nov-94	108.90
02-Feb-95	111.37	20-Feb-95	109.38	13-Sep-94	114.99	11-Oct-94	115.30	23-Apr-93	108.36	09-Dec-94	108.93
16-Feb-95	111.36	06-Mar-95	109.34	27-Sep-94	115.01	25-Oct-94	115.30	15-May-93	108.40	16-Dec-94	108.98
02-Mar-95	111.31	20-Mar-95	109.34	11-Oct-94	114.85	01-Nov-94	115.40	07-Aug-93	108.22	06-Jan-95	108.96
16-Mar-95	111.34	04-Apr-95	109.45	25-Oct-94	114.95	15-Nov-94	115.30	29-Aug-93	108.26	20-Jan-95	109.09
01-Apr-95	111.34	18-Apr-95	109.50	01-Nov-94	114.90	15-Dec-94	115.38	01-Nov-93	108.42	03-Feb-95	109.00
15-Apr-95	111.40	02-May-95	109.49	15-Nov-94	114.92	05-Feb-95	115.40	29-Nov-93	108.42	17-Feb-95	109.00
11-May-95	111.37	16-May-95	109.47	15-Dec-94	115.03	23-Feb-95	115.40	03-Jan-94	107.11	03-Mar-95	109.02
25-May-95	111.40	01-Jun-95	109.50	05-Feb-95	115.30	06-Mar-95	115.45	07-Jan-94	107.63	17-Mar-95	109.06
08-Jun-95	111.41	18-Jun-95	109.48	23-Feb-95	115.00	22-Mar-95	115.40	10-Jan-94	107.44	07-Apr-95	109.05
22-Jun-95	111.39	28-Aug-95	109.76	06-Mar-95	115.20	10-Apr-95	115.40	14-Jan-94	107.22	28-Apr-95	109.00
26-Aug-95	111.50	11-Sep-95	109.51	22-Mar-95	115.07	25-Apr-95	115.20	17-Jan-94	107.53	04-Nov-95	108.70
09-Sep-95	111.60	25-Sep-95	109.60	10-Apr-95	115.10	26-Jun-95	115.28	21-Jan-94	107.61	06-Mar-96	108.80
23-Sep-95	111.70	11-Oct-95	109.65	25-Apr-95	115.00	28-Jun-95	115.36	24-Jan-94	107.56	13-Mar-96	108.90
09-Oct-95	111.70	08-Nov-95	109.69	27-Jun-95	114.93	02-Jul-95	115.31	28-Jan-94	107.44	23-Mar-96	108.85
06-Nov-95	111.56	06-Dec-95	109.70	28-Jun-95	115.05	16-Feb-98	115.33	31-Jan-94	107.37	06-Apr-96	108.83
04-Dec-95	111.65	20-Dec-95	109.70	28-Feb-96	115.17	28-Feb-96	115.37	01-Feb-94	108.63	10-May-96	108.48
18-Dec-95	111.58	13-Feb-96	109.56	16-Mar-96	115.20	16-Mar-96	115.49	22-Jul-94	108.21	16-May-96	108.53
13-Feb-96	111.53	27-Feb-96	109.28	28-Mar-96	115.26	28-Mar-96	115.44	11-Aug-94	108.20	04-Jul-96	108.48
26-Feb-96	111.29	13-Mar-96	109.26	16-Apr-96	115.23	16-Apr-96	115.49	24-Sep-94	108.71	19-Jul-96	108.48
11-Mar-96	111.31	27-Mar-96	109.90	28-Apr-96	115.46	28-Apr-96	115.41	25-Sep-94	108.73	16-Aug-96	108.48
25-Mar-96	111.35	09-Apr-96	109.93	16-May-96	115.34	16-May-96	115.40	24-Oct-94	108.68	05-Sep-96	108.48
07-Apr-96	111.30	23-Apr-96	109.55	28-May-96	115.39	28-May-96	115.63	25-Nov-94	108.62	12-Sep-96	108.48
21-Apr-96	111.17	07-May-96	109.86	28-Jul-96	115.22	28-Jun-96	115.50	09-Dec-94	108.61	01-Oct-96	108.58
05-May-96	111.16	21-May-96	109.56	16-Aug-96	115.22	16-Jul-96	115.47	16-Dec-94	108.60	08-Oct-96	108.68
19-May-96	111.51	04-Jun-96	109.71	28-Aug-96	115.22	28-Jul-96	115.52	06-Jan-95	108.68	20-Nov-96	108.52
02-Jun-96	111.51	02-Jul-96	109.76	16-Sep-96	115.23	16-Aug-96	115.50	20-Jan-95	108.65	04-Jan-97	108.58
30-Jun-96	111.41	16-Jul-96	109.81	28-Sep-96	115.20	28-Aug-96	115.47	03-Feb-95	108.70	19-Jan-97	108.56
14-Jul-96	111.71	30-Jul-96	109.81	16-Oct-96	115.22	16-Sep-96	115.50	17-Feb-95	108.72	01-Feb-97	108.58
28-Jul-96	111.06	13-Aug-96	109.82	29-Oct-96	115.22	28-Sep-96	115.49	03-Mar-95	108.72	19-Feb-97	108.68
11-Aug-96	111.80	27-Aug-96	109.84	16-Nov-96	115.22	16-Oct-96	115.48	17-Mar-95	108.72	05-Mar-97	108.68
25-Aug-96	111.81	10-Sep-96	109.91	21-Nov-96	115.23	19-Oct-96	115.45	07-Apr-95	108.72	19-Mar-97	108.66
08-Sep-96	111.76	24-Sep-96	109.92	28-Nov-96	115.20	16-Nov-96	115.49	28-Apr-95	108.28	08-Apr-97	108.60
22-Sep-96	111.77	07-Oct-96	109.94	16-Dec-96	115.21	21-Nov-96	115.48	04-Nov-95	108.40	19-Apr-97	108.53
05-Oct-96	111.81	16-Nov-96	109.94	30-Dec-96	115.20	28-Nov-96	115.45	06-Mar-96	108.40	07-May-97	108.55
16-Nov-96	111.81	22-Nov-96	109.83	16-Jan-97	115.22	16-Dec-96	115.46	13-Mar-96	108.50	22-May-97	108.57

Dag BH1		Dag BH3		Hag BH3		Hag BH4		Ifo BH1		Ifo BH6	
Date	SWL	Date	SWL	Date	SWL	Date	SWL	Date	SWL	Date	SWL
21-Nov-96	111.82	02-Dec-96	109.36	28-Jan-97	115.42	30-Dec-96	115.45	23-Mar-96	108.40	17-Jun-97	108.66
02-Dec-96	111.37	16-Dec-96	109.83	16-Feb-97	115.29	16-Jan-97	115.52	06-Apr-96	108.36	03-Jul-97	108.66
16-Dec-96	111.83	02-Jan-97	109.85	01-Mar-97	115.29	28-Jan-97	115.51	10-May-96	108.10	19-Aug-97	108.72
02-Jan-97	111.83	16-Jan-97	109.85	16-Mar-97	115.31	16-Feb-97	115.56	16-May-96	108.16	05-Oct-97	108.46
16-Jan-97	111.86	02-Feb-97	109.85	28-Mar-97	115.33	01-Mar-97	115.53	04-Jul-96	108.18	19-Oct-97	108.42
02-Feb-97	111.86	16-Feb-97	109.86	16-Apr-97	115.50	16-Mar-97	115.63	19-Jul-96	108.18	05-Nov-97	108.42
16-Feb-97	111.87	02-Mar-97	109.86	29-Apr-97	115.31	28-Mar-97	115.61	16-Aug-96	108.18	19-Nov-97	108.60
02-Mar-97	111.91	16-Mar-97	109.86	17-May-97	115.32	16-Apr-97	115.69	05-Sep-96	108.18	06-Dec-97	108.30
16-Mar-97	111.91	02-Apr-97	109.88	28-May-97	115.27	29-Apr-97	115.69	12-Sep-96	108.18	19-Dec-97	108.45
02-Apr-97	111.88	16-Apr-97	109.86	29-Jun-97	115.46	17-May-97	115.62	01-Oct-96	108.18	08-Jan-98	108.20
16-Apr-97	111.86	08-May-97	109.61	19-Jul-97	115.32	28-May-97	115.60	08-Oct-96	108.28	19-Jan-98	108.38
08-May-97	111.58	18-May-97	109.61	02-Aug-97	115.48	29-Jun-97	115.63	22-Oct-96	108.28	05-Feb-98	108.53
18-May-97	111.57	02-Jun-97	109.61	20-Aug-97	115.32	19-Jul-97	115.52	29-Oct-96	108.28	19-Feb-98	108.50
02-Jun-97	111.64	18-Jun-97	109.63	28-Aug-97	115.12	02-Aug-97	115.67	20-Nov-96	108.19	05-Mar-98	108.58
18-Jun-97	111.62	02-Jul-97	109.63	28-Sep-97	115.30	20-Aug-97	115.52	04-Dec-96	108.14	19-Mar-98	108.64
02-Jul-97	111.63	16-Jul-97	109.63	28-Oct-97	115.25	28-Aug-97	115.43	18-Dec-96	108.38	05-Apr-98	108.65
16-Jul-97	111.64	07-Aug-97	109.63	16-Nov-97	115.24	19-Sep-97	115.53	04-Jan-97	108.24	19-Apr-98	108.53
07-Aug-97	111.62	17-Aug-97	109.63	28-Oct-97	115.17	28-Sep-97	115.52	18-Jan-97	108.27	08-May-98	108.60
17-Aug-97	111.65	03-Sep-97	109.47	16-Dec-97	115.15	28-Oct-97	115.24	01-Feb-97	108.26	20-May-98	108.50
03-Sep-97	111.50	18-Sep-97	109.57	28-Dec-97	115.16	16-Nov-97	115.46	17-Feb-97	108.95	06-Jun-98	108.30
18-Sep-97	111.58	02-Oct-97	109.55	16-Jan-98	115.15	28-Oct-97	115.35	05-Mar-97	108.38	19-Jun-98	108.27
02-Oct-97	111.60	16-Oct-97	109.55	28-Jan-98	115.15	16-Dec-97	115.50	19-Mar-97	108.40	05-Jul-98	108.68
16-Oct-97	111.58	02-Nov-97	109.50	16-Feb-98	115.24	28-Dec-97	115.45	08-Apr-97	108.28	19-Jul-98	108.60
02-Nov-97	111.58	16-Nov-97	109.52	28-Feb-98	115.22	16-Jan-98	115.43	19-Apr-97	108.20	05-Aug-98	108.65
16-Nov-97	111.59	03-Dec-97	109.54	16-Mar-98	115.30	28-Jan-98	115.45	07-May-97	108.22	19-Aug-98	108.68
03-Dec-97	111.59	02-Feb-98	109.52	28-Mar-98	115.25	16-Feb-98	115.45	22-May-97	108.25	05-Sep-98	108.75
16-Dec-97	111.58	16-Feb-98	109.39	16-Apr-98	115.30	28-Feb-98	115.22	05-Sep-97	108.20	19-Sep-98	108.60
04-Jan-98	111.62	07-Mar-98	109.59	28-Apr-98	115.30	16-Mar-98	115.46	19-Sep-97	108.20	05-Dec-98	108.70
16-Jan-98	111.62	18-Mar-98	109.55	28-May-98	115.40	28-Mar-98	115.25	05-Oct-97	108.26	19-Dec-98	108.72
02-Feb-98	111.61	02-Apr-98	109.64	16-Jun-98	115.30	16-Apr-98	115.30	19-Oct-97	108.21	05-Jan-99	108.75
16-Feb-98	111.70	16-Apr-98	109.62	29-Jun-98	115.30	28-Apr-98	115.50	05-Nov-97	108.30	19-Jan-99	108.59
07-Mar-98	111.69	04-May-98	109.65	16-Jul-98	115.30	28-May-98	115.45	19-Nov-97	108.10	05-Feb-99	108.85
17-Mar-98	111.64	19-May-98	109.70	28-Jul-98	115.30	16-Jun-98	115.60	06-Dec-97	108.60	19-Feb-99	108.85
02-Apr-98	111.72	12-Jun-98	109.63	16-Aug-98	115.50	29-Jun-98	115.60	19-Dec-97	107.94	05-Mar-99	108.85
16-Apr-98	111.64	19-Jun-98	109.64	28-Aug-98	115.35	16-Jul-98	115.50	08-Jan-98	108.01	19-Mar-99	108.59
04-May-98	111.65	02-Jul-98	109.66	16-Sep-98	115.32	28-Jul-98	115.60	19-Jan-98	108.09	05-Apr-99	108.32
19-May-98	111.64	19-Jul-98	109.68	28-Sep-98	115.30	16-Aug-98	115.60	05-Feb-98	108.21	19-Apr-99	108.70
12-Jun-98	111.61	02-Aug-98	109.70	16-Dec-98	115.35	28-Aug-98	115.60	19-Feb-98	108.19	05-May-99	108.68
19-Jun-98	111.64	19-Aug-98	109.70	29-Dec-98	115.35	16-Sep-98	115.53	05-Mar-98	108.23	19-May-99	108.72
02-Jul-98	111.65	02-Sep-98	109.68	16-Feb-99	115.43	28-Sep-98	115.56	19-Mar-98	108.28	05-Jun-99	108.72
19-Jul-98	111.68	18-Sep-98	109.70	27-Feb-99	115.44	16-Dec-98	115.60	05-Apr-98	108.24	19-Jun-99	108.75
02-Aug-98	111.55	02-Dec-98	109.70	16-Mar-99	115.44	28-Dec-98	115.60	19-Apr-98	108.21	05-Jul-99	108.78
19-Aug-98	111.64	16-Dec-98	109.74	31-Mar-99	115.48	16-Feb-99	115.74	08-May-98	108.29	19-Jul-99	108.77
02-Sep-98	111.69	03-Jan-99	109.70	16-Apr-99	115.46	28-Feb-99	115.75	20-May-98	108.20	05-Aug-99	108.75
18-Sep-98	111.70	19-Jan-99	109.72	28-Apr-99	115.50	16-Mar-99	115.79	06-Jun-98	108.30	19-Aug-99	108.75
02-Dec-98	111.70	03-Feb-99	109.73	04-May-99	115.50	31-Mar-99	115.76	19-Jun-98	108.27	05-Sep-99	108.85
03-Jan-99	111.72	17-Feb-99	109.72	18-May-99	115.42	16-Apr-99	115.73	05-Jul-98	108.28	19-Sep-99	108.87
19-Jan-99	111.71	04-Mar-99	109.72	01-Jun-99	115.49	28-Apr-99	115.80	19-Jul-98	108.36	05-Oct-99	108.90
03-Feb-99	111.80	19-Mar-99	109.92	16-Jun-99	115.46	04-May-99	115.80	05-Aug-98	108.35	19-Oct-99	108.87
17-Feb-99	111.80	03-Apr-99	109.78	01-Jul-99	115.43	18-May-99	115.70	19-Aug-98	108.35	05-Dec-99	108.76
19-Mar-99	111.80	18-Apr-99	109.72	14-Jul-99	115.45	01-Jun-99	115.76	05-Sep-98	108.35	19-Dec-99	108.83
03-Apr-99	111.78	16-May-99	109.76	01-Aug-99	115.46	16-Jun-99	115.74	19-Sep-98	108.23	05-Jan-00	108.80
18-Apr-99	111.76	31-May-99	109.76	15-Aug-99	115.45	01-Jul-99	115.74	05-Dec-98	108.40	19-Jan-00	108.87
16-May-99	111.78	16-Jun-99	109.80	31-Aug-99	115.44	14-Jul-99	115.74	19-Dec-98	108.35	05-Feb-00	108.94

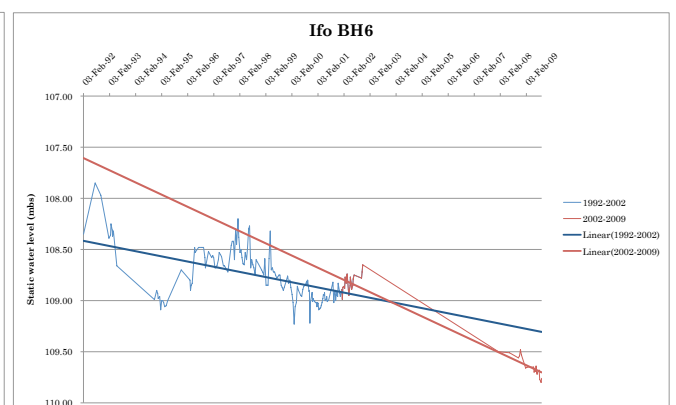
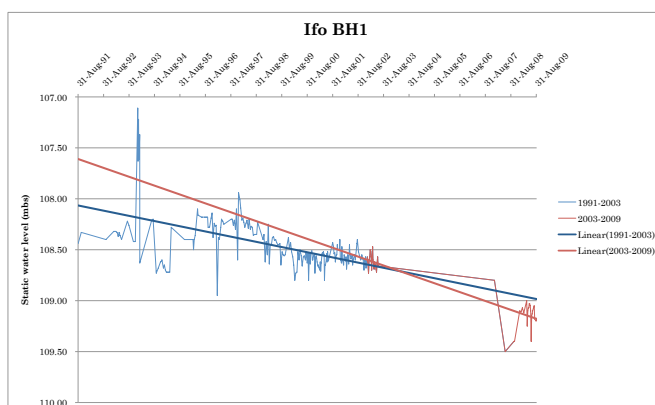
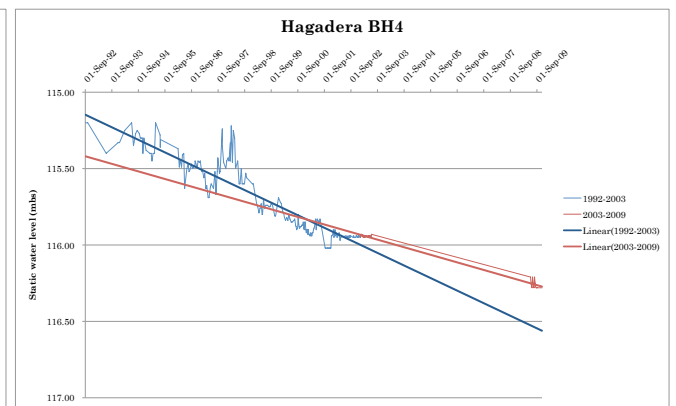
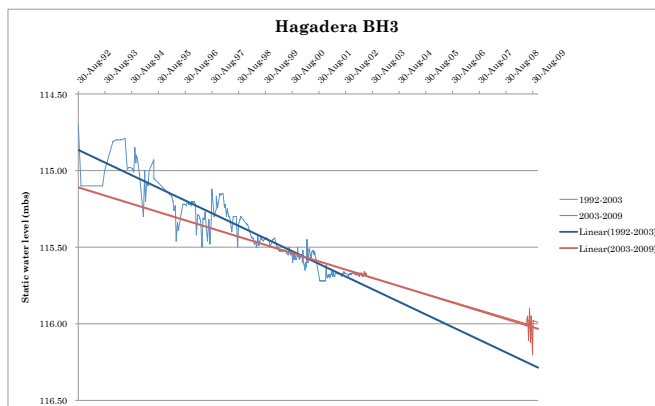
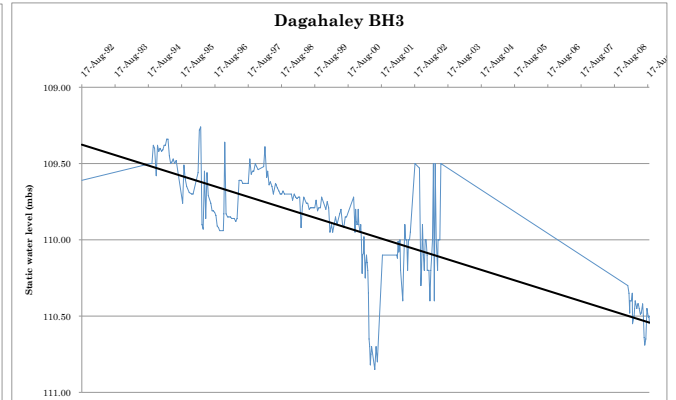
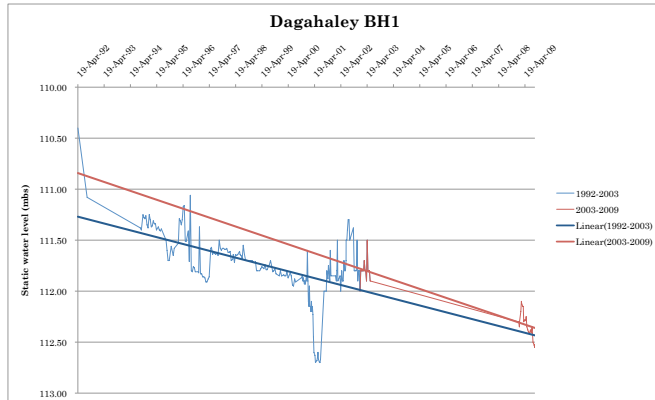
Dag BH1		Dag BH3		Hag BH3		Hag BH4		Ifo BH1		Ifo BH6	
Date	SWL	Date	SWL	Date	SWL	Date	SWL	Date	SWL	Date	SWL
31-May-99	111.74	30-Jun-99	109.79	18-Sep-99	115.44	01-Aug-99	115.75	05-Jan-99	108.62	19-Feb-00	109.02
16-Jun-99	111.79	16-Jul-99	109.79	20-Oct-99	115.46	15-Aug-99	115.75	19-Jan-99	108.42	05-Mar-00	109.23
30-Jun-99	111.79	31-Jul-99	109.79	31-Oct-99	115.50	31-Aug-99	115.73	05-Feb-99	108.55	19-Mar-00	109.06
16-Jul-99	111.76	16-Aug-99	109.79	10-Dec-99	115.45	18-Sep-99	115.74	19-Feb-99	108.25	05-Apr-00	109.02
31-Jul-99	111.74	31-Aug-99	109.74	04-Jan-00	115.44	20-Oct-99	115.81	05-Mar-99	108.64	19-Apr-00	108.86
16-Aug-99	111.70	16-Sep-99	109.81	18-Jan-00	115.47	31-Oct-99	115.81	19-Mar-99	108.45	05-May-00	108.90
31-Aug-99	111.75	30-Sep-99	109.79	05-Feb-00	115.50	10-Dec-99	115.69	05-Apr-99	108.45	05-Jun-00	108.95
16-Sep-99	111.81	17-Oct-99	109.79	18-Feb-00	115.50	04-Jan-00	115.72	19-Apr-99	108.38	19-Jun-00	108.96
30-Sep-99	111.80	31-Oct-99	109.72	01-Mar-00	115.52	18-Jan-00	115.73	05-May-99	108.37	05-Jul-00	108.89
16-Oct-99	111.78	16-Dec-99	109.80	16-Mar-00	115.53	05-Feb-00	115.78	19-May-99	108.41	19-Jul-00	108.86
31-Oct-99	111.83	31-Dec-99	109.75	01-Apr-00	115.52	18-Feb-00	115.79	05-Jun-99	108.40	29-Jul-00	108.85
16-Dec-99	111.85	16-Jan-00	109.79	16-Apr-00	115.53	01-Mar-00	115.82	19-Jun-99	108.43	05-Aug-00	108.85
31-Dec-99	111.80	30-Jan-00	109.95	01-May-00	115.52	15-Mar-00	115.84	05-Jul-99	108.45	12-Aug-00	108.85
16-Jan-00	111.85	16-Feb-00	109.90	31-May-00	115.52	01-Apr-00	115.82	19-Jul-99	108.45	19-Aug-00	108.83
20-Jan-00	111.85	29-Feb-00	109.95	14-Jun-00	115.54	16-Apr-00	115.84	05-Aug-99	108.44	29-Aug-00	108.81
16-Feb-00	111.84	16-Mar-00	109.90	07-Jul-00	115.55	01-May-00	115.80	19-Aug-99	108.65	05-Sep-00	108.85
29-Feb-00	111.85	31-Mar-00	109.85	20-Jul-00	115.50	15-May-00	115.83	05-Sep-99	108.52	11-Sep-00	108.80
16-Mar-00	111.85	16-Apr-00	109.90	01-Aug-00	115.53	01-Jun-00	115.85	19-Sep-99	108.55	29-Sep-00	108.91
31-Mar-00	111.81	16-May-00	109.83	08-Aug-00	115.55	15-Jun-00	115.85	05-Oct-99	108.56	05-Oct-00	108.90
16-Apr-00	111.87	30-May-00	109.80	15-Aug-00	115.55	07-Jul-00	115.84	19-Oct-99	108.55	12-Oct-00	109.22
16-May-00	111.82	16-Jun-00	109.90	29-Aug-00	115.54	20-Jul-00	115.83	05-Dec-99	108.38	19-Oct-00	109.02
30-May-00	111.85	30-Jun-00	109.92	05-Sep-00	115.60	01-Aug-00	115.87	19-Dec-99	108.49	12-Nov-00	108.92
16-Jun-00	111.94	16-Jul-00	109.85	12-Sep-00	115.55	08-Aug-00	115.88	05-Jan-00	108.43	19-Nov-00	109.01
30-Jun-00	111.95	30-Jul-00	109.85	19-Sep-00	115.57	15-Aug-00	115.90	19-Jan-00	108.52	29-Nov-00	108.98
16-Jul-00	111.88	16-Oct-00	109.72	26-Sep-00	115.58	29-Aug-00	115.89	05-Feb-00	108.57	05-Dec-00	109.00
30-Jul-00	111.91	31-Oct-00	109.95	03-Oct-00	115.55	05-Sep-00	115.80	19-Feb-00	108.65	12-Dec-00	109.00
16-Oct-00	111.87	07-Nov-00	109.80	10-Oct-00	115.56	12-Sep-00	115.86	05-Mar-00	108.80	19-Dec-00	109.01
31-Oct-00	111.85	14-Nov-00	109.88	17-Oct-00	115.58	19-Sep-00	115.88	19-Mar-00	108.73	29-Dec-00	109.02
07-Nov-00	111.90	21-Nov-00	109.90	24-Oct-00	115.58	26-Sep-00	115.89	05-Apr-00	108.72	05-Jan-01	109.02
14-Nov-00	111.87	28-Nov-00	109.90	07-Nov-00	115.56	03-Oct-00	115.88	19-Apr-00	108.52	12-Jan-01	109.02
21-Nov-00	111.90	05-Dec-00	109.80	12-Nov-00	115.50	10-Oct-00	115.88	05-May-00	108.60	19-Jan-01	109.06
28-Nov-00	111.93	12-Dec-00	109.90	21-Nov-00	115.56	17-Oct-00	115.88	19-May-00	108.50	29-Jan-01	109.02
05-Dec-00	111.90	26-Dec-00	109.95	28-Nov-00	115.56	24-Oct-00	115.87	05-Jun-00	108.56	05-Feb-01	109.03
12-Dec-00	111.93	02-Jan-01	109.90	05-Dec-00	115.58	07-Nov-00	115.87	19-Jun-00	108.66	12-Feb-01	109.09
26-Dec-00	111.85	09-Jan-01	110.00	12-Dec-00	115.56	14-Nov-00	115.85	05-Jul-00	108.57	28-Feb-01	109.08
02-Jan-01	111.90	17-Jan-01	110.22	19-Dec-00	115.57	21-Nov-00	115.89	19-Jul-00	108.56	05-Mar-01	109.07
09-Jan-01	111.60	23-Jan-01	110.10	26-Dec-00	115.56	28-Nov-00	115.90	05-Aug-00	108.60	12-Mar-01	109.07
17-Jan-01	111.90	31-Jan-01	110.09	02-Jan-01	115.55	05-Dec-00	115.85	12-Aug-00	108.52	19-Mar-01	109.05
23-Jan-01	112.10	06-Feb-01	109.98	09-Jan-01	115.55	12-Dec-00	115.85	19-Aug-00	108.55	31-Mar-01	109.02
31-Jan-01	112.15	20-Feb-01	110.25	17-Jan-01	115.60	19-Dec-00	115.90	29-Aug-00	108.63	05-Apr-01	109.00
06-Feb-01	111.95	27-Feb-01	110.15	23-Jan-01	115.52	26-Dec-00	115.92	05-Sep-00	108.62	12-Apr-01	108.98
13-Feb-01	112.15	06-Mar-01	110.10	30-Jan-01	115.60	02-Jan-01	115.90	11-Sep-00	108.53	19-Apr-01	108.94
20-Feb-01	112.15	13-Mar-01	110.15	06-Feb-01	115.61	09-Jan-01	115.90	19-Sep-00	108.80	30-Apr-01	108.95
27-Feb-01	112.20	20-Mar-01	110.20	13-Feb-01	115.63	16-Jan-01	115.93	29-Sep-00	108.58	05-May-01	108.92
06-Mar-01	112.10	27-Mar-01	110.35	20-Feb-01	115.65	23-Jan-01	115.90	05-Oct-00	108.53	12-May-01	109.00
13-Mar-01	112.20	03-Apr-01	110.65	27-Feb-01	115.60	30-Jan-01	115.93	12-Oct-00	108.64	19-May-01	109.00
19-Mar-01	112.15	10-Apr-01	110.70	06-Mar-01	115.62	06-Feb-01	115.93	19-Oct-00	108.54	31-May-01	108.98
27-Mar-01	112.23	17-Apr-01	110.82	13-Mar-01	115.63	13-Feb-01	115.94	05-Nov-00	108.51	05-Jun-01	108.96
03-Apr-01	112.45	24-Apr-01	110.75	20-Mar-01	115.45	20-Feb-01	115.94	12-Nov-00	108.60	12-Jun-01	109.01
10-Apr-01	112.60	01-May-01	110.70	27-Mar-01	115.60	27-Feb-01	115.92	19-Nov-00	108.60	19-Jun-01	109.00
24-Apr-01	112.63	05-Jun-01	110.85	04-Apr-01	115.60	06-Mar-01	115.94	29-Nov-00	108.56	30-Jun-01	109.00
01-May-01	112.70	19-Jun-01	110.70	15-Apr-01	115.52	13-Mar-01	115.94	05-Dec-00	108.55	31-Aug-01	108.82
22-May-01	112.68	03-Jul-01	110.80	17-Apr-01	115.51	20-Mar-01	115.92	12-Dec-00	108.55	12-Sep-01	109.02
29-May-01	112.65	28-Aug-01	110.10	25-Apr-01	115.52	27-Mar-01	115.92	19-Dec-00	108.73	19-Sep-01	108.94

Dag BH1		Dag BH3		Hag BH3		Hag BH4		Ifo BH1		Ifo BH6	
Date	SWL	Date	SWL	Date	SWL	Date	SWL	Date	SWL	Date	SWL
05-Jun-01	112.60	01-Feb-02	110.10	04-May-01	115.55	04-Apr-01	115.90	29-Dec-00	108.58	30-Sep-01	108.90
12-Jun-01	112.67	08-Feb-02	110.12	11-May-01	115.58	11-Apr-01	115.89	05-Jan-01	108.56	08-Oct-01	109.00
26-Jun-01	112.70	16-Feb-02	110.01	18-May-01	115.57	18-Apr-01	115.88	12-Jan-01	108.58	15-Oct-01	108.95
03-Jul-01	112.70	23-Feb-02	110.08	25-May-01	115.53	25-Apr-01	115.85	19-Jan-01	108.62	22-Oct-01	108.92
10-Jul-01	112.67	01-Mar-02	110.05	05-Jun-01	115.53	04-May-01	115.83	29-Jan-01	108.66	29-Oct-01	108.93
28-Aug-01	112.00	08-Mar-02	110.00	12-Jun-01	115.52	11-May-01	115.90	05-Feb-01	108.65	05-Nov-01	108.96
28-Sep-01	112.00	15-Mar-02	110.20	19-Jun-01	115.54	18-May-01	115.85	12-Feb-01	108.67	12-Nov-01	108.83
06-Oct-01	111.80	08-Apr-02	110.40	26-Jun-01	115.55	25-May-01	115.83	28-Feb-01	108.70	28-Nov-01	108.90
21-Oct-01	111.88	16-Apr-02	110.20	03-Jul-01	115.53	05-Jun-01	115.84	05-Mar-01	108.62	05-Dec-01	108.93
28-Oct-01	111.75	01-May-02	109.90	11-Sep-01	115.72	12-Jun-01	115.85	12-Mar-01	108.71	12-Dec-01	108.96
10-Nov-01	111.85	10-May-02	110.00	18-Sep-01	115.72	19-Jun-01	115.86	19-Mar-01	108.63	03-Jan-02	108.89
16-Nov-01	111.90	22-May-02	110.00	25-Sep-01	115.72	26-Jun-01	115.85	31-Mar-01	108.54	10-Jan-02	108.99
23-Nov-01	111.60	31-May-02	110.20	11-Oct-01	115.72	03-Jul-01	115.83	05-Apr-01	108.53	17-Jan-02	108.87
02-Dec-01	111.85	10-Jun-02	110.00	18-Oct-01	115.72	11-Sep-01	116.02	12-Apr-01	108.55	04-Feb-02	108.86
02-Feb-02	111.85	21-Jun-02	110.00	25-Oct-01	115.72	18-Sep-01	116.02	19-Apr-01	108.52	11-Feb-02	108.88
15-Feb-02	111.90	30-Jun-02	109.95	08-Nov-01	115.72	25-Sep-01	116.02	30-Apr-01	108.55	18-Feb-02	108.77
22-Feb-02	111.80	20-Aug-02	109.50	15-Nov-01	115.72	11-Oct-01	116.02	05-May-01	108.80	04-Mar-02	108.83
02-Mar-02	111.50	08-Oct-02	109.53	29-Nov-01	115.72	18-Oct-01	116.02	12-May-01	108.65	11-Mar-02	108.76
08-Mar-02	111.90	24-Oct-02	110.30	06-Dec-01	115.62	25-Oct-01	116.02	19-May-01	108.65	18-Mar-02	108.74
08-Apr-02	111.85	31-Oct-02	110.20	13-Dec-01	115.69	08-Nov-01	116.02	31-May-01	108.60	04-Apr-02	108.89
16-Apr-02	112.00	10-Nov-02	109.90	24-Dec-01	115.70	15-Nov-01	116.02	05-Jun-01	108.54	11-Apr-02	108.95
01-May-02	111.80	20-Nov-02	110.10	03-Jan-02	115.68	22-Nov-01	116.02	12-Jun-01	108.62	18-Apr-02	108.90
10-May-02	111.90	30-Nov-02	110.20	10-Jan-02	115.69	29-Nov-01	116.02	19-Jun-01	108.52	29-Apr-02	108.85
21-May-02	111.90	10-Dec-02	110.00	17-Jan-02	115.68	06-Dec-01	115.94	30-Jun-01	108.61	02-May-02	108.77
01-Jun-02	111.70	20-Dec-02	110.00	24-Jan-02	115.70	13-Dec-01	115.94	31-Aug-01	108.43	09-May-02	108.81
10-Jun-02	111.80	31-Dec-02	110.10	01-Feb-02	115.69	24-Dec-01	115.93	12-Sep-01	108.47	20-May-02	108.89
21-Jun-02	111.80	01-Jan-03	110.20	08-Feb-02	115.68	03-Jan-02	115.90	19-Sep-01	108.54	06-Jun-02	108.85
30-Jun-02	111.70	20-Jan-03	110.20	15-Feb-02	115.67	10-Jan-02	115.95	30-Sep-01	108.53	11-Jun-02	108.79
01-Jul-02	111.50	31-Jan-03	110.40	22-Feb-02	115.65	17-Jan-02	115.94	08-Oct-01	108.62	13-Jun-02	108.78
11-Jul-02	111.50	10-Feb-03	110.20	01-Mar-02	115.69	24-Jan-02	115.90	15-Oct-01	108.58	24-Jun-02	108.75
19-Jul-02	111.40	20-Feb-03	110.10	08-Mar-02	115.68	01-Feb-02	115.94	22-Oct-01	108.55	06-Oct-02	108.78
29-Jul-02	111.30	28-Feb-03	110.00	15-Mar-02	115.66	08-Feb-02	115.92	29-Oct-01	108.55	14-Oct-02	108.72
10-Aug-02	111.30	10-Mar-03	109.50	22-Mar-02	115.69	15-Feb-02	115.93	05-Nov-01	108.45	23-Oct-02	108.65
20-Aug-02	111.50	20-Mar-03	110.40	04-Apr-02	115.69	22-Feb-02	115.95	12-Nov-01	108.50	08-Jan-08	109.50
10-Oct-02	111.38	30-Mar-03	109.50	11-Apr-02	115.67	01-Mar-02	115.94	26-Nov-01	108.50	10-Jun-08	109.51
21-Oct-02	111.80	10-Apr-03	110.00	25-Jun-02	115.68	08-Mar-02	115.93	05-Dec-01	108.50	13-Oct-08	109.56
31-Oct-02	111.80	25-Apr-03	110.20	09-Jul-02	115.69	15-Mar-02	115.94	12-Dec-01	108.40	29-Oct-08	109.54
10-Nov-02	111.80	30-Apr-03	110.00	16-Jul-02	115.68	22-Mar-02	115.92	19-Dec-01	108.60	11-Nov-08	109.48
20-Nov-02	111.80	10-May-03	110.00	23-Jul-02	115.67	04-Apr-02	115.97	26-Dec-01	108.60	24-Nov-08	109.53
30-Nov-02	111.50	20-May-03	110.00	30-Jul-02	115.67	11-Apr-02	115.95	03-Jan-02	108.63	23-Jan-09	109.66
10-Dec-02	111.90	31-May-03	109.50	06-Aug-02	115.66	25-Jun-02	115.94	10-Jan-02	108.47	12-Feb-09	109.65
20-Dec-02	111.80	10-Jan-09	110.30	13-Aug-02	115.67	09-Jul-02	115.95	17-Jan-02	108.60	15-May-09	109.65
31-Dec-02	111.80	23-Jan-09	110.35	20-Aug-02	115.67	16-Jul-02	115.95	04-Feb-02	108.65	21-May-09	109.70
10-Jan-03	112.00	31-Jan-09	110.48	27-Aug-02	115.67	23-Jul-02	115.94	11-Feb-02	108.55	28-May-09	109.69
20-Jan-03	111.80	02-Feb-09	110.40	01-Oct-02	115.68	30-Jul-02	115.95	18-Feb-02	108.57	04-Jun-09	109.68
31-Jan-03	111.80	20-Feb-09	110.40	08-Oct-02	115.69	06-Aug-02	115.95	04-Mar-02	108.61	11-Jun-09	109.69
10-Feb-03	111.80	28-Feb-09	110.35	15-Oct-02	115.68	13-Aug-02	115.94	11-Mar-02	108.57	18-Jun-09	109.64
20-Feb-03	111.80	03-Mar-09	110.55	22-Oct-02	115.67	20-Aug-02	115.95	18-Mar-02	108.69	25-Jun-09	109.70
28-Feb-03	111.80	20-Mar-09	110.50	05-Nov-02	115.68	27-Aug-02	115.94	04-Apr-02	108.55	02-Jul-09	109.72
10-Mar-03	111.70	26-Mar-09	110.45	12-Nov-02	115.67	01-Oct-02	115.95	11-Apr-02	108.57	09-Jul-09	109.70
20-Mar-03	111.80	01-Apr-09	110.40	19-Nov-02	115.68	08-Oct-02	115.94	18-Apr-02	108.64	31-Jul-09	109.68
30-Mar-03	111.80	19-Apr-09	110.45	26-Nov-02	115.67	15-Oct-02	115.95	29-Apr-02	108.45	08-Aug-09	109.77
10-Apr-03	111.90	30-Apr-09	110.42	03-Dec-02	115.67	22-Oct-02	115.95	02-May-02	108.51	27-Aug-09	109.80
20-Apr-03	111.50	05-May-09	110.42	10-Dec-02	115.67	05-Nov-02	115.95	09-May-02	108.55	04-Sep-09	109.76

Dag BH1		Dag BH3		Hag BH3		Hag BH4		Ifo BH1		Ifo BH6	
Date	SWL	Date	SWL	Date	SWL	Date	SWL	Date	SWL	Date	SWL
30-Apr-03	111.80	15-May-09	110.45	17-Dec-02	115.67	12-Nov-02	115.94	20-May-02	108.59		
10-May-03	111.80	28-May-09	110.49	24-Dec-02	115.66	19-Nov-02	115.94	01-Jun-02	108.57		
20-May-03	111.80	06-Jun-09	110.48	07-Jan-03	115.68	26-Nov-02	115.95	06-Jun-02	108.55		
31-May-03	111.90	22-Jun-09	110.42	14-Jan-03	115.67	03-Dec-02	115.95	13-Jun-02	108.65		
10-Jan-09	112.30	30-Jun-09	110.50	21-Jan-03	115.68	10-Dec-02	115.94	24-Jun-02	108.59		
23-Jan-09	112.30	08-Jul-09	110.64	28-Jan-03	115.68	17-Dec-02	115.95	05-Sep-02	108.52		
31-Jan-09	112.35	15-Jul-09	110.69	11-Feb-03	115.67	24-Dec-02	115.94	12-Jul-02	108.55		
02-Feb-09	112.30	27-Jul-09	110.65	18-Feb-03	115.68	07-Jan-03	115.95	21-Jul-02	108.60		
20-Feb-09	112.20	08-Aug-09	110.45	25-Feb-03	115.67	14-Jan-03	115.94	05-Aug-02	108.50		
28-Feb-09	112.10	24-Aug-09	110.51	04-Mar-03	115.69	21-Jan-03	115.94	13-Aug-02	108.44		
03-Mar-09	112.12	31-Aug-09	110.50	11-Mar-03	115.67	28-Jan-03	115.93	20-Aug-02	108.40		
20-Mar-09	112.15	03-Sep-09	110.55	18-Mar-03	115.68	04-Feb-03	115.94	06-Oct-02	108.60		
26-Mar-09	112.15			25-Mar-03	115.67	11-Feb-03	115.94	14-Oct-02	108.59		
01-Apr-09	112.30			08-Apr-03	115.67	18-Feb-03	115.95	23-Oct-02	108.55		
19-Apr-09	112.28			15-Apr-03	115.69	25-Feb-03	115.95	06-Nov-02	108.59		
30-Apr-09	112.29			22-Apr-03	115.69	04-Mar-03	115.94	12-Nov-02	108.60		
05-May-09	112.25			29-Apr-03	115.68	11-Mar-03	115.95	23-Nov-02	108.70		
15-May-09	112.35			06-May-03	115.68	18-Mar-03	115.94	02-Dec-02	108.60		
28-May-09	112.38			13-May-03	115.66	25-Mar-03	115.94	09-Dec-02	108.65		
06-Jun-09	112.40			20-May-03	115.67	08-Apr-03	115.94	16-Dec-02	108.57		
22-Jun-09	112.41			27-May-03	115.68	15-Apr-03	115.95	22-Dec-02	108.68		
30-Jun-09	112.39			03-Jun-03	115.67	22-Apr-03	115.95	10-Jan-03	108.57		
08-Jul-09	112.38			10-Jun-03	115.69	29-Apr-03	115.94	17-Jan-03	108.62		
15-Jul-09	112.41			05-Jun-09	116.00	06-May-03	115.95	27-Jan-03	108.73		
27-Jul-09	112.35			12-Jun-09	115.97	13-May-03	115.94	05-Feb-03	108.60		
08-Aug-09	112.50			18-Jun-09	115.95	20-May-03	115.94	13-Feb-03	108.57		
24-Aug-09	112.53			25-Jun-09	116.00	27-May-03	115.95	20-Feb-03	108.50		
31-Aug-09	112.55			03-Jul-09	116.11	03-Jun-03	115.95	28-Feb-03	108.52		
03-Sep-09	112.52			10-Jul-09	115.98	10-Jun-03	115.93	05-Mar-03	108.57		
				16-Jul-09	115.90	05-Jun-09	116.21	13-Mar-03	108.70		
				23-Jul-09	116.01	12-Jun-09	116.25	18-Mar-03	108.58		
				30-Jul-09	116.12	18-Jun-09	116.27	27-Mar-03	108.47		
				07-Aug-09	115.95	25-Jun-09	116.28	01-Apr-03	108.60		
				13-Aug-09	115.97	03-Jul-09	116.21	17-Apr-03	108.69		
				20-Aug-09	116.13	10-Jul-09	116.25	21-Apr-03	108.62		
				27-Aug-09	116.20	16-Jul-09	116.27	28-Apr-03	108.64		
				04-Sep-09	115.98	23-Jul-09	116.28	07-May-03	108.65		
				09-Nov-09	115.99	30-Jul-09	116.21	15-May-03	108.69		
						07-Aug-09	116.25	22-May-03	108.72		
						13-Aug-09	116.27	29-May-03	108.64		
						20-Aug-09	116.28	07-Jun-03	108.57		
						27-Aug-09	116.28	14-Jun-03	108.66		
						04-Sep-09	116.28	08-Jan-08	108.80		
						09-Nov-09	116.28	10-Jun-08	109.50		
								13-Oct-08	109.40		
								22-Oct-08	109.40		
								05-Jan-09	109.10		
								23-Jan-09	109.11		
								12-Feb-09	109.07		
								04-Mar-09	109.12		
								15-Apr-09	109.00		
								22-Apr-09	109.25		
								01-May-09	109.10		
								08-May-09	109.07		

Dag BH1		Dag BH3		Hag BH3		Hag BH4		Ifo BH1		Ifo BH6	
Date	SWL	Date	SWL	Date	SWL	Date	SWL	Date	SWL	Date	SWL
								15-May-09	109.07		
								21-May-09	109.03		
								28-May-09	109.03		
								04-Jun-09	109.05		
								11-Jun-09	109.10		
								18-Jun-09	109.40		
								25-Jun-09	109.15		
								02-Jul-09	109.13		
								09-Jul-09	109.10		
								31-Jul-09	109.05		
								08-Aug-09	109.18		
								27-Aug-09	109.20		
								04-Sep-09	109.18		

Annex S: Static water levels, selected camp boreholes (1992-2009)



Source: 1992-2003: Gibb Eastern Africa (2004); 2008-2009: CARE International Dadaab.
Note: mbs = metres below surface.