Safe Access to Firewood and alternative Energy in Ethiopia: An Appraisal Report

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List of Acronyms

ARRA	Ethiopian Administration for Refugee and Returnee Affairs
CEINEMP	Cooking Efficiency Improvement and New Marketing Project
CHILD-FFE	Children in Local Development-based Food for Education
CP	Country Programme
CSB	Corn Soya Blend
DRC	Danish Refugee Council
DRMFSS	Disaster Risk Management and Food Security Sector
EFSA	Emergency Food Security Assessment (WFP)
ETB	Ethiopian Birr (national currency)
FES	Fuel-Efficient Stoves
FFT	Food for Training
FFW	Food for Work
FGD	Focus Group Discussion
FGM	Female Genital Mutilation
FSF	Fincha Sugar Factory
GBV	Gender-based Violence
GDP	Gross Domestic Product
GoE	Government of Ethiopia
GTZ	Gesellschaft für Technische Zusammenarbeit (German Society for Technical Cooperation)
IAP	Indoor Air Pollution
IASC	Inter Agency Standing Committee
IDP	Internally Displaced People
IGA	Income-generating Activities
IOM	International Organization for Migration
IRC	International Rescue Committee
JAM	Joint Assessment Mission
JRS	Jesuit Refugee Service
LPG	Liquefied Petroleum Gas
LWF	Lutheran World Federation
M&E	Monitoring and Evaluation

MERET	Managing Environmental Resources to Enable Transition to more Sustainable Livelihoods (WFP)
MoTI	Ministry of Trade and Industry
NFI	Non-Food Item
NGO	Non-Governmental Organization
NRDP	Natural Resources Development Programme (Ethiopia)
PRRO	Protracted Relief and Recovery Operations (WFP)
PSNP	Productive Safety Net Programme (WFP)
RCC	Refugee Central Committee
SAFE	Safe Access to Firewood and alternative Energy
SEA	Sexual Exploitation and Abuse
TGE	Transitional Government of Ethiopia
TSF	Targeted Supplementary Feeding (WFP)
UN	United Nations
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VAM	Vulnerability Analysis and Mapping
WFP	World Food Programme
WHO	World Health Organization

Executive Summary

In 2007 WFP agreed to co-chair the Inter-Agency Standing Committee (IASC) Task Force on Safe Access to Firewood and Alternative Energy in Humanitarian Settings (SAFE) together with UNHCR and the Women's Refugee Commission (which worked under the authority of InterAction). Participation in the SAFE Task Force triggered a global analysis of the protection challenges associated with the collection, provision and use of fuel for cooking – activities closely related to WFP's core mandate. As a result, WFP strengthened its commitment to work in partnership with other relevant actors to promote safe access to cooking fuel in humanitarian settings.

Following the launch of the SAFE guidance material in April 2009, WFP decided to undertake a series of feasibility studies in countries where fuel scarcity is negatively affecting WFP beneficiaries. The purpose of these studies is to better understand how beneficiaries, particularly displaced population, are coping with fuel scarcity and the related consequences, to take stock of existing responses by both WFP and partners, and to propose a comprehensive approach that addresses human and environmental protection, livelihoods, food and nutrition. To date, missions have been conducted in North Darfur (Sudan), Uganda, Haiti, Sri Lanka, Kenya and Ethiopia.

1.1 Main Findings

1.1.1 Implications

Ethiopia is the third largest user in the world of traditional fuels for household energy use, with 96% of the population dependent on traditional fuel (e.g. firewood, charcoal, agricultural residue and animal waste) to meet their energy needs. Despite provision of alternative fuels such as kerosene, reliance on firewood and charcoal for cooking by refugees in both Tigray and Somali is still high.

Access to firewood varies depending on the ethnicity, background and overall household socio-economic conditions. However, distance to the collection sites due to deforestation, fear of being caught by the local population, and/or the police and the protection risks associated with that, are among the challenges to firewood collection highlighted by refugees in Tigray and Somali regions.

Physical assault by the locals is the most commonly reported threat faced by refugees during firewood collection. Though rape and other forms of gender-based violence associated with firewood collection seem to be less frequent, fear of stigma and discrimination as well as lack of trust in the existing response mechanisms possibly lead to high level of underreporting.

In Tigray and Somali regions, reliance on wood for cooking, fencing and construction by both refugees and local population led to rapid forest depletion, further constraining the already arid environment and fuelling tensions with local populations over access to and use of existing meagre resources. The land in Shimelba is semi arid with crusted sandy and clay soils. Observations revealed significant reduction of vegetation cover, which explains the long distance women have to cover to fetch sticks and dead wood for cooking. Similarly, Aw Barre and Sheder are located in stony and arid land, with evident signs of deforestation.

Refugees in Ethiopia are prohibited by law from working, they have limited or no access to farmland, or any other income-generating opportunities, thus they rely entirely on assistance by UNCHR, WFP, ARRA and others. As a result, livelihood is by far the biggest gap observed by the team in the camps, and, according to the majority of the informants, the

most difficult to address. Some (limited) income generating activities observed in the camps include seasonal agricultural labour, petty trade, incentives provided by the humanitarian agencies working in the camps, and small-scale gardening, and so on. In the absence of alternative livelihood options, selling/bartering of food as well as borrowing from neighbours and relatives are common among refugees in both areas. As a result, skipping meals, reduction of the meals' size and prioritizing the food among household members are some of the observed coping strategies to deal with food shortages.

The health problem associated with the use of solid biomass for cooking is another worrisome outcome observed during the mission. Indoor air pollution (IAP) affects primarily women and children and can result in coughing, wheezing, acute respiratory infections, chronic obstructive lung disease, adverse pregnancy outcomes and lung cancer.

1.1.2 Existing responses

Contrary to other countries, in Ethiopia the team observed a wealth of initiatives undertaken by various organizations to address the issue of cooking fuel in refugee areas. Activities include provision of alternative sources of cooking fuel and technologies, environmental protection and regeneration; gender-based violence prevention and response; while investments on livelihood diversification and creation of income generating opportunities are quite limited.

UNHCR is the primary responsible for ensuring access to appropriate cooking fuel and technologies by refugees in camps. Alternatives include electricity (Mai Aini refugees camp), kerosene (Mai Aini, Adi Harush and all three camps in Somali region), while the possibility of resuming the distribution of ethanol in Somali refugee camps by mid 2011 is under consideration. Though commendable, to date these efforts have not prevented refugees from relying on firewood and charcoal as their primary (and preferable) cooking fuels, with adverse consequences on the relationships with host communities, the environment surrounding the camps, and on refugees' health and protection. More specifically, kerosene does not seem to represent a real alternative due to its market value, which prompts refugees to prefer selling it; its use for lighting, which reduces the amount available for cooking; its smell and the risks of fire hazards, especially since kerosene stoves are small and do not suit the size of the pots used by refugees.

Another initiative worth mentioning is WFP's plan to provide fuel-efficient stoves to 1,000 assisted schools in the next five years. The initiative falls within the framework of the recently started MERET's carbon credit project, which includes also the promotion of fuel-efficient injera baking stoves to rural households in the 72 MERET sites.

Environmental interventions include raising of multipurpose tree seedlings for plantation in both homestead and conservation areas, and construction of terraces and check dams to prevent further soil erosion. Activities are primarily funded by UNHCR and implemented by various organizations in the two areas. WFP's MERET programme is also contributing to land rehabilitation and overall natural resources regeneration in refugees-impacted areas, especially in Tigray. To date, however interventions have had a limited impact on both refugee livelihoods and the rehabilitation of natural resources in and around refugee camps, and are minimal compared to the extent of deforestation and land degradation reported in these areas.

Livelihood activities are limited to few small-scale initiatives recently started by DRC and others in Jijiga camps, while in Tigray there is currently no organization specifically focusing on livelihood activities in any of the three camps. In Tigray region, IRC has established a network of social and community outreach workers, who, among others, are tasked with

awareness raising on gender-based violence. Despite these positive efforts, overall activities appear limited and inadequate to meet the needs of such a large number of refugees.

1.2 Proposed approach

Drawing on the above, the focus of WFP SAFE proposed interventions in Ethiopia will be on alternative fuels to reduce the adverse impacts on the environment, and on scaling up interventions aimed at regenerating the natural resource base, thus also contributing to the creation and diversification of livelihood opportunities in camps.

More specifically, activities will include:

- Support to the scale-up of environmental interventions in both regions, with a focus on drought-resistant and multi-purpose tree species such as *moringa* and *jatropha*.
- Pilot testing briquetting with *prosopis* in Afar region for distribution to refugees in camps. If conditions allow, briquetting can be considered as an income generating activity targeted to vulnerable individuals in Tigray camps.
- Pilot testing the small-scale production of *jatropha* and castor bean oil at household level in camps as alternative sources of cooking fuel, and for its potential as a source of additional income.
- Support other activities such as bee keeping and collection and selling of plastic waste.
- Contribute to the establishment of the micro-distillery for both ethanol and other bio-fuels.
- Sensitization of refugees, including cooks in schools, on food preparation practices and cooking techniques.

Further, the team recommends a that the CO conduct thorough review and analysis of livelihoods in refugee camps building on the Livelihood and Food Security Joint Assessment Mission (2008) and work done by DRC (baseline survey and planned mid-term evaluation) to develop of a livelihoods strategy to be integrated into the PRRO. As far as protection of women is concerned, support the scale-up of energy-efficient stoves and capacity building of community outreach workers and the women's refugee association to enhance awareness on GBV are also recommended.

1 Introduction

1.1 Background

The World Food Programme (WFP), the Women's Refugee Commission (working under the authority of InterAction), and the UN High Commissioner for Refugees (UNHCR) co-chaired the InterAgency Standing Committee Task Force on Safe Access to Firewood and alternative Energy in Humanitarian Settings (IASC Task Force SAFE) from 2007 to 2009. Its purpose was "*to reduce exposure to violence, contribute to the protection of and ease the burden on those populations collecting wood in humanitarian settings worldwide, through solutions which will promote safe access to appropriate energy and reduce environmental impacts while ensuring accountability*."

WFP's interest and involvement in ensuring safe access to appropriate cooking fuel has many facets: protection and safety of beneficiaries; effectiveness of food and nutrition interventions through limiting undercooking to save on fuel and exchange of food for fuel; environmental protection including natural resource management and climate change adaptation and mitigation; and creation of livelihood opportunities.

To address these challenges, WFP decided to undertake a series of feasibility studies in countries where fuel scarcity is negatively affecting WFP beneficiaries. The purpose of these studies is to understand how beneficiaries are coping with fuel scarcity and the multiple implications on their lives and livelihoods; to take stock of existing responses by both WFP and partners; and to propose a comprehensive multi-sectoral strategy to cooking fuel needs that addresses human and environmental protection, livelihoods, food and nutrition as well as the health problems that derive from the use of solid fuel for cooking.

1.2 Methodology

A preliminary desk review was conducted in May 2010 to first assess challenges related to access to cooking fuel for refugees and host communities in Ethiopia and the extent and effectiveness of interventions aimed to address them. This included a thorough revision of WFP project documents, and of assessments, reports and analyses by both WFP and others.

Findings from the review informed the selection of the sites for field visits and of key informants. Prior to the mission additional consultations were held with WFP Ethiopia country office to further decide on the itinerary and discuss activities affecting the refugee population. Though recognizing that access to cooking fuel is an issue of concern throughout the country, this study focuses primarily on refugees and host communities in Tigray and Somali regions.

During the mission, meetings were held with WFP country office and sub-offices' staff as well with a wide range of relevant stakeholders such as UN agencies, NGOs, and representatives of the Ethiopian Government. Among them, emphasis was given to primary service providers operating in the camps. These included the United Nations High Commissioner for Refugee (UNHCR); the Ethiopian Administration for Refugee and Returnee Affairs (ARRA), which oversees security, health and food distribution in the camps; the International Rescue Committee (IRC), which is responsible for GBV prevention and response; NRDP, LWF and Save the Environment for their role on environmental rehabilitation.

The mission also involved extensive consultations with beneficiaries in both the Somali and Tigray regions. More specifically, focus group discussions were held with both male and female members of the Refugee Central Committee and with the Women's Association in

Aw Barre and Shedder camps in Somali region, and in Shimelba in Tigray. In addition, the team conducted random household interviews with refugee women in both areas. Throughout, reference was made to the SAFE framework of analysis and guiding questions developed in the initial stage of the project.

Finally, further studies and reports as well as technical data gathered during the mission complemented the information contained in this study.[1]

1.3 Context Analysis

Ethiopia is a landlocked country bordered by Eritrea, Sudan, Djibouti, Somalia, and Kenya. With a population of 77.5 million people, whose life expectancy at birth is 55.5 years,[2] Ethiopia ranks 157 of 169 in the 2010 Human Development Index.[3]

Ethiopia is an ecologically diverse country, ranging from the deserts along the eastern border to the tropical forests in the south to extensive afromontane in the northern and south-eastern parts.

Small-scale farming and livestock husbandry are the main economic activities. Agriculture provides almost half of the Ethiopian GDP, employs 80% of the population, and accounts for 60% of the country's exports.[4] Ethiopian agriculture is almost all rain-fed and successful cultivation depends on the arrival of seasonal rains. The rainy season generally runs from mid-June to mid-September in Tigray, while in Somali region is divided between April-May (Deyr rains) and August-September (Karan rains).

The great diversity of terrain determines wide variations in climate, soils, natural vegetation, and production patterns. Yet unpredictable rainfalls, that result into recurrent droughts and periodic floods,[5] environmental degradation, soil erosion, limited agricultural inputs and mechanization, small landholdings and high population density pose challenges to the full realization of Ethiopian agricultural potential. Since 2007, Ethiopia experienced two major droughts that affected 6.4 million people.[6] In 2009, poor harvests, prolonged drought and continuing high prices led to an increase in relief needs, which resulted in the Government requesting food assistance for 6.2 million people. This year, an estimated 5.2 million people are at food-insecurity risk.[7]

Ethiopia continues to provide refuge to people fleeing unrest and hardship from neighbouring countries of Somalia, Eritrea, Kenya and Sudan. As of 31st of October 2010, there are 147,775 refugees, most of which from Somalia and Eritrea. However, UNHCR estimates that by the end of 2011 the number of refugees will increase up to 197,000.[8] At the time of the mission, the Tigray region was hosting 26,307 refugees Eritrean refugees who left their homeland fleeing forced conscription, arrest and torture, while the Somali region was giving shelter to 39,881 Somali refugees.[9] More recently, two new camps for Somali refugees were established in Boqolmayo and Melkadida, south-eastern Ethiopia.

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[1] These include data provided by the WFP's Monitoring and Evaluation (M&E), Vulnerability Analysis Mapping (VAM), and School Feeding sections, the gender-based violence (GBV) assessment conducted by the United Nations Population

[2] http://data.worldbank.org/indicator

[3] Available at http://hdr.undp.org/en/reports/global/hdr2010/chapters/

[4] UNHCR (2010)a. "Ethiopia". In *Global Report 2009,* eds. UNHCR. Geneva: UNHCR.

[5] http://www.unep.org/climateneutral/Default.aspx?tabid=804

[6] WFP (2010). *The Mid-Term Evaluation of the Protracted Relief and Recovery Operation 10665*. Rome: WFP.

[7] http://www.wfp.org/countries/Ethiopia/Overview

[8] UNHCR (2010)c. *Global 2011 – Ethiopia*, http://www.unhcr.org/4cd95fcc9.html , retrieved 02.12.2010.

[9] UNHCR (2010)b. *Population of concern*. 31 October 2010, Addis Ababa: UNHCR.

Overall, Ethiopia hosts 77,058 Somali and 42,155 Eritrean refugees, which represents 52.15% and 28.53% of the total refugee population respectively.[10]

Refugees in Ethiopia are prohibited by law from working, they have limited or no access to farmland, or any other income-generating opportunities,[11] thus they rely entirely on assistance by UNCHR, WFP, ARRA and others. Overall, this policy restricts their food security and capacity to have decent livelihoods and prompts many to embark in risky secondary journeys to other countries in search of employment. Movement in and out the camps is also restricted. Gate passes are issued by ARRA to the refugees on request. UNHCR is supporting resettlement for over 8,400 refugees.[12] The US Refugee Programme as well is expecting to resettle 5,500 Eritrean and Somali refugees in 2010.[13] These figures provide just a snapshot of the refugee situation at the time the mission was conducted.

1.4 Overview of WFP's Assistance

WFP's operations in Ethiopia are outlined in the Protracted Relief and Recovery Operation (PRRO) 10127.3; Responding to Humanitarian Crises and Enhancing Resilience to Food Insecurity (PRRO 10665.0); and the Country Programme (CP) 10430.0.

The PRRO 10127.3 runs until 2011 and focus specifically on assistance to refugees hosted in camps or communities in Ethiopia. The PRRO 10665.0 includes four major components: relief (6.4 million people), productive safety net programme (PSNP) (2.46 million), targeted supplementary feeding (TSF) (737,000 people) and urban HIV/AIDS (164,000 people).[14] Finally, the CP is made up of two synergistic components: the Managing Environmental Resources to Enable Transition to more Sustainable Livelihoods (MERET) focuses on sustainable land management, pro-poor asset-generation, livelihoods and empowerment; while the Children in Local Development-based Food for Education (CHILD-FFE) addresses access to quality primary education and school-centred holistic development. HIV and AIDS and gender-related issues are integrated across both components.

Launched in 1980, MERET is a joint programme WFP and the Government of Ethiopia (GoE). Its long-term goals are to build community networks and productive assets to contribute to people's resilience to shocks, improve food security and enhanced livelihoods. Activities include reforestation of barren hillsides, restoration of spring and rainwater ponds, reconstruction of agricultural terraces, and rehabilitation and construction of feeder roads to improve access to markets. Beneficiaries in 2009 were nearly 340,000. The success of the project prompted WFP and the GoE to launch MERET-PLUS in 2007, with an additional stress on sustainability of natural resources.[15] The project was recognized at the Copenhagen Climate Conference at the end of 2009 as a successful way forward to combat climate change.[16]

WFP is working to connect farmers in Ethiopia to markets through the Purchase for Progress initiative.

WFP currently assists a total of 1,200 schools in Ethiopia. The CHILD-FFE initiative focuses on supporting formal education and enhancing child-friendly schools by developing

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[10] Of the remaining, 25,112 from Sudan (16.99%), and 2,731 from Kenya (1.85%). Other nationalities include Democratic Republic of Congo, Burundi, Djibouti, Rwanda, and Uganda. Altogether however, these account for only 0.53% of the entire refugee population in the country.
[11] WFP (2008). *Protracted Relief and Recovery Operation Ethiopia 10127.3*. Rome: WFP. WFP/EB.2/2008/8-B/3, p. 7.
[12] UNHCR (2010)c, *op. cit.*
[13] http://www.iom.int/jahia/Jahia/ethiopia.
[14] WFP (2010), o*p. cit.*
[15] WFP (2006). *Country Programme – Ethiopia 10430.0 (2007-2011*). Rome: WFP. WFP/EB.2/2006/8/8, p. 11.
[16] http://www.wfp.org/countries/Ethiopia/Operations

schools into community resource centres, able to promote good nutrition and environmental awareness.

Finally, the PSNP was launched in 2005 to ensure that people do not sell their productive assets to meet their basic food requirements. To accomplish this, WFP provides transfers of food or cash. To date, the programme reached a total of over 7.5 million people.[17]

The total number of beneficiaries assisted by WFP in 2009 was almost 10 million people, 6.4 million of which through relief food. Actual beneficiaries in 2010 are 7.2 million.[18]

2 An Overview of the Current Situation with regard to Fuel in Ethiopia

Ethiopia is the third largest user in the world of traditional fuels for household energy use, with 96% of the population dependent on traditional fuel (e.g. firewood, charcoal, agricultural residue and animal waste) to meet their energy needs.[19]

According to the Ethiopian Central Statistical Authority, in rural areas, nearly 85% of the population depends on firewood as their primary fuel for cooking, with the next largest primary dependency ratio being 12.65% for crop residue. Only 0.21% of the rural population depends on kerosene for their primary cooking fuel, while the numbers for electricity and LPG are 0.05 and 0.07%, respectively. In Addis Ababa on the contrary, 42% of residents depend on kerosene as their primary fuel, compared to just 6.5%, each, for LPG and electricity. Moreover, approximately one quarter of the population in Addis Ababa depends on fuelwood for their primary fuel, with 8% depending on crop residue and 4.5% depending on charcoal.[20]

In March 1994 the Transitional Government of Ethiopia (TGE) released its energy policy, which is still in force as the policy of the GoE.[21] The policy aims to address household energy problems by promoting agro-forestry, increasing the efficiency with which biomass fuels are utilized, and facilitating the shift to greater use of modem fuels.

2.1 Firewood and Charcoal

According to an assessment conducted by UNHCR in Tigray, 60% of the cooking fuel needs are for injera baking.[22] In Shimelba refugee camp for example, Kunama[23] women reported consuming about half of the firewood for baking injera, while using a mix of charcoal and firewood to meet their additional cooking needs.

Similarly, refugees in the Somali region indicated firewood as their primary source of cooking fuel, followed by charcoal and kerosene. Across the two regions, only in Shimelba refugees rely entirely on firewood and charcoal for cooking, while in the other camps UNHCR and partners are also providing alternatives such as kerosene, ethanol, and electricity.

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[17] Ibid., p. 8.
[18] Data provided by WFP Ethiopia country office as of end of September 2010.
[19] http://www.hedon.info/Ethiopia, retrieved 30.11.2010.
[20] Data are from 2004. More information on household energy in Ethiopia can be found at: http://www.hedon.info/Ethiopia, retrieved 22.11.2010.
[21] http://www.most.gov.et/Mines,%20Water%20and%20Energy%20policy.htm.
[22] Meeting with UNHCR, Shimelba 9.11.2010.
[23] Kunama, Tigrinia, Saho are the three major ethnic groups present in Shimelba. Others include Belien, Tigre, Afar, Nara.

Access to firewood varies depending on the ethnicity, background and overall household socio-economic conditions. For example, Tigrinia speaking Eritrean refugees, many of whom are from urban centres, reported primarily purchasing firewood, while the majority of Kunamas indicated collecting it.

The frequency of collection trips varies between three to seven days a week, depending on the family size, availability of alternative sources of fuel, household economic status, and distance to the collection areas. Since Kunama refugees in Shimelba rely almost entirely on firewood for cooking and their size of their families is generally higher than Tigrinia's, , they reported the highest frequency in collection.

While both Kunama men and women reported collecting firewood, for the others the task is delegated to the women, both young and old. In spite of all the reports indicating children as firewood collectors,[24] all refugee informants were very assertive in denying any involvement of children in what they consider a very risky endeavour.

Besides origins, availability of resources is a key determinant in people's access to cooking fuel. The price of firewood varies between Tigray and Somali regions. Variations reflect availability and the extent of environmental degradation in the surrounding of the camps, while a general increase in the price of key commodities have been noted in both regions. In Shimelba for example, one camel load of firewood costs 50-70 ETB (3.01-4.22 USD),[25] while in Sheder women reported that the price of firewood increased from 20-30 ETB (1.20-1.81 USD)/camel load in 2008 to up to 100 ETB (6.03 USD) now.[26] Refugees informants reported that locals were primarily responsible for supplying firewood/charcoal. However, household interviews revealed that refugees also buy firewood from other refugees.

Charcoal is also widely used by both refugees and nationals in Ethiopia. The 2007 Population and Housing Census for Somali Region indicates that while firewood is the most common form of fuel in the region, in Jijiga area households rely heavily on charcoal.[27] Contrary to firewood, charcoal is almost entirely supplied by locals. In Somali region fro example, the team saw refugees selling charcoal in the camps, which was reportedly supplied by the locals. In Shimelba, women reported that part of the charcoal comes from the burnt firewood used for baking injera, while they buy the remaining. A 50 kg size sac of good quality charcoal costs 60-70 ETB (3.62-4.20 USD) and lasts for 15-21 days for a family size five.[28] As in the case of firewood, charcoal appears to be more expensive in Somali region. One 50 kg sac of charcoal costs around 80 ETB (4.82 USD) and lasts for about 7-12 days, depending on the family size. Interestingly, focus group discussion with male refugees in Sheder revealed that not only the price of charcoal increased compared to 2008, but the size of the sac decreased over the years. Moreover, according to them, during the rainy season charcoal is either more expansive or not available at all. The size of households, high reliance on charcoal for cooking as well as the reduced size of the sac may explain the shorter duration of a sac among Somali refugees compared to Eritreans.

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[24] See for example World Bank (2006). *The Ethiopian Women Fuel Wood Carriers Project*, Washington DC: World Bank. http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/ETHIOPIAEXTN/0,,contentMDK:20836362~menuPK:295961~pagePK:1497618~piPK:217854~theSitePK:295930,00.html, retrieved 22.11.2010. Draft report group 4: Environment, Livelihood and WASH, JAM, October 2010. Draft report group 1: Food Security and Coping Mechanisms, JAM, October 2010.

[25] FGD with Women's Association, Shimelba 10.11.2010.

[26] FGD with the Women's Association, Sheder 15.11.2010.

[27] OPCC(2007). *The 2007 Population and Housing Census of Ethiopia: Statistical Report for Somali Region*. Addis Ababa: OPCC, p. 500.

[28] FGD with Women's Association, Shimelba 10.11.2010.

According to respondents, the money used to buy cooking fuel comes from petty and seasonal labour, brewing of *katikala and sawa,*[29] food selling, and other limited income generating activities.

2.2 Kerosene, Ethanol and Electricity

Kerosene, ethanol and electricity are the other sources of cooking fuel discussed during visits to the refugee camps.

UNHCR provides funds for the distribution of **kerosene** to refugees in both Tigray and Somali regions. In the former, however distribution only covers Mai Aini and Adi Harush, while Shimelba is not considered due to the ongoing resettlement process.

Gaia Association,[30] through funds from UNHCR, is responsible for the distribution of kerosene in all three Jijiga camps. Distribution is as follows: family size 1-4 receive 10 lt per month; 5-8, 15 lt; 9-13, 25 lt; and 14-17, 37 lt. Current provision however is reportedly not sufficient to cover for all the refugees' cooking needs. Gaia reported an estimated shortfall of 34,000 lt each month altogether.[31] Kerosene is mainly imported from Sudan.

The team noted several issues in relation to the use of kerosene as household energy. First, it is not a particularly safe source of energy, especially if compared to ethanol. Women in Jijiga camps held not allowing their daughters to cook with the kerosene stove for fear of incidents. Moreover, the kerosene stove is too small for the pot used by most refugees, thus increasing the risk of spillage. As a result, kerosene is only used for sauces, coffee and tea and not for baking injera.

Secondly, kerosene has a market and most refugees reported selling it and use the money to cover for other needs, including buying firewood and charcoal for cooking. Refugees in Sheder indicated selling Kerosene at 9 ETB/lt (0.54 USD/lt) to the locals, who then sell it back in town at around 10-12 ETB/lt (0.60-0.72 USD/lt). Others reported bartering kerosene for charcoal (10 lt worth 2 sacs) though the amount decreases as the price of charcoal increases, for example during the rainy season.[32]

Thirdly, contrary to other sources of cooking fuel, kerosene is also used for lighting. This further reduces the already limited cooking that is possible with the amount provided. Just to give some examples, according to refugees in Aw Barre 15 lt of kerosene lasts for about 10 days of cooking for a family of eight, while 25 lt lasts for 12-15 days for a family of ten. Out of the 15 lt ration, however, many reported using 5 lt for lighting, thus reducing to 10 lt the amount available for cooking. Despite familiarity with the use of kerosene for cooking,[33] the majority of refugees indicated a preference for firewood and charcoal, and, when available ethanol. Hence, what remains from lighting is often sold to buy firewood or charcoal for cooking, which is normally enough for about 20 days. The remaining 10 days of cooking are normally covered through firewood collection.[34] This is in line with the findings of the 2010 Joint Assessment Mission (JAM) exercise.[35]

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[29] Household interviews, Shimelba 11.11.2010. *Katikala* is made of wheat and sorghum, while *sawa* is done through the fermentation of sorghum.
[30] Gaia Association is an Ethiopian registered NGO that since 2004 has been working to provide access to locally produced ethanol and ethanol fuelled cooking stoves for Ethiopian households. Following interest by UNHCR, Gaia started working in Somali refugee camps in southeastern Ethiopia.
[31] Meeting with NGO, Jijjiga 14.11.2010.
[32] FGD with male representatives of the Refugee Central Committee, Sheder 15.11.2010.
[33] For example, refugees in Aw Barre reported receiving kerosene fuel and stove at their arrival in the camp in 2007, Aw Barre 14.11.2010.
[34] FGD, RCC and Women's Association, Aw Barre 14.11.2010.
[35] Draft report group 1: Food Security and Coping Mechanisms, JAM, October 2010.

Prior to kerosene, Gaia Association was responsible for the distribution of **ethanol** fuel and stoves in the Jijiga camps. Small-scale distribution of ethanol started in Kebri Beyah in 2005, and was progressively scaled up to cover Aw Barre in June 2008. Unlike kerosene and other traditional solid biomass fuels such as firewood and charcoal, ethanol burns cleanly, without producing smoke or soot. Moreover, findings of a preliminary survey in Kebri Beyah revealed that users did not sense any smell while cooking with ethanol.[36]

At the time Gaia started looking into alternatives to traditional cooking fuels, there was no market for ethanol in Ethiopia. Fincha Sugar Factory (FSF), a state-owned factory located in East Wellega zone, 350 km away from the capital, was looking for ways to dispose molasses,[37] and to trigger the market for ethanol. This prompted an agreement between the Government, UNHCR and Gaia over the provision of ethanol to refugees. Over the years however, ethanol became increasingly known for its potentials in the automotive market in Ethiopia, which resulted in a progressive reduction in the amount of ethanol available for cooking. This compounded with the limited sugar production in the country, led to a shortage of supply in mid 2009 that caused Gaia to switch back to kerosene.

Throughout the mission, both Gaia and UNCHR indicated prospects of a resumption of ethanol distribution in the camps in mid 2011. Brazil, the world's second largest producer of ethanol fuel and the world's largest exporter,[38] recently donated 200,000 lt to UNHCR Ethiopia. Meanwhile, a new sugar factory has been established in Ethiopia with a production capacity of 10 million lt per year, which, added to the existing 8 million lt of the Fincha, would result in an overall national capacity of 18 million lt per year.

At the time of the mission, negotiations were underway between UNHCR and the GoE for the provision of 2 million lt of ethanol for cooking at the same price of the blended one used for transport.[39] If resumed, ethanol will be first distributed in Kebri Beyah and Aw Barre, where there is already a history in the usage of the fuel and related cooking device, with potential for expansion to Sheder camp once provision of sufficient fuel is secured.

Finally, another interesting initiative regards the **electrification** of Mai Aini camp by UNHCR. Based on existing plans, electricity will be used for communal cooking of injera, but also for lighting of schools, latrines, and other key locations in the camp. To date, UNHCR invested 750,000 ETB (45253,78 USD) in the project and electricity is expected by mid 2011. If successful, the initiative will be then expanded to Adi Harush, while there is no prospect of further investment in Shimelba camp due to resettlement.

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[36] Ministry of Mines and Energy, Ethiopian Rural Energy Development and Promotion Center (2006). *Impact Evaluation on the Use of Ethanol with Clean Cook Stove in the Kebri Beyah Refugee Camp*, p. 11.

[37] Molasses is a by-product of the processing of sugar-cane, whose fermentation produces ethanol.

[38] Together, Brazil and the United States lead the industrial production of ethanol fuel, accounting together for 89% of the world's production in 2009.

[39] According to data reported during the 2010 JAM exercise, 2 millions lt would be sufficient to cover existing households in all the three Jijiga refugee camps for one year. Draft report group 1: Food Security and Coping Mechanisms, JAM, October 2010.

2.3 Liquefied Petroleum Gas (LPG)[40]

Use of LPG is very limited in Ethiopia. As commonly found, the use of more modern energy sources such as electricity and LPG is only limited to high income urban households, while poor and middle income households continue to depend on traditional energy sources such as firewood and charcoal.

LPG is mainly imported from Sudan and Yemen and is distributed in Ethiopia by Ghion Gas Plc, Total Ethiopia, Nile Petroleum and National Oil Company. Initially, the market of LPG was controlled by the Ministry of Trade and Industry (MoTI), however it has now withdrawn its hand from doing so, and companies are free to set their own price.[41]

As far as prices are concerned, previously, LPG in 10 kg, 12.5 kg, 15 kg, and 22.5 kg cylinders was sold at 168 ETB (10.13 USD), 198 ETB (11.94 USD), 245 ETB (14.78 USD) and 360 ETB (21.72 USD), respectively, while an increase of about 30 % was registered since February 2010.[42] Of relevance to this report is that only refugees from Asmara reported using LPG for cooking prior to their displacement.[43]

3 Implications of the Collection, Supply and Use of Cooking Fuel in Ethiopia

This section explores the concerns associated with the collection, supply and use of cooking fuel in Ethiopia. More specifically, emphasis has been placed on the following facets: protection and safety of beneficiaries while searching for and using firewood for cooking; environmental degradation and related implications on people's lives and livelihoods; health problems associated to indoor air pollution; and livelihoods. These aspects have been selected for their linkages to WFP's programming and their relevance in the areas under consideration.

3.1 Protection Risks during Firewood Collection

Findings from a 2006 UNFPA gender-based violence (GBV) assessment in Shimelba and Kebri Beyah refugee camps revealed that sexual and domestic violence, as well as sexual exploitation and abuse are common in both. In addition, in Kebri Beyah there was evidence of early marriage and harmful traditional practices such as female genital mutilation (FGM), while accounts of forced marriage were found in Shimelba. Findings from the 2010 JAM in Jijiga indicate urinary track infection due to FGM among the leading causes of morbidity in the camps.[44]

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[40] LPG is a hydrocarbon gas popularly used as cooking fuel in many rural areas and developing countries. It comes in portable canisters of varying size, which can be re-filled from a main tank or at a refill station. LPG is typically well liked by its users, as it burns very cleanly (much more so than kerosene) and the temperature can be easily adjusted. In many areas, LPG is considered a high-status fuel. However, it is a pressurized gas and as such can be dangerous if improperly stored or used. Significantly safety and usage trainings and awareness-raising on risks associated with the use of gas-based fuels are required if LPG is to be introduced to populations that are not familiar with them. In areas where LPG is not locally produced, it is quite expensive. Transportation, storage and distribution costs can add to the total price. Source: SAFE TOT Trainers' Guide. For additional information on LPG's origin, production and uses refer to: http://en.wikipedia.org/wiki/Liquefied_petroleum_gas.

[41] Yihunbelay, B. (2010). "Ethiopia: LPG Fuel Price Rockets as Supply Plummets". *AllAfrica.com*, 15 February. http://allafrica.com/stories/201002170094.html, retrieved 22.11.2010.

[42] Ibid.

[43] Meeting with Refugee Central Committee and Women's Association, Shimelba 10.11.2010.

[44] Draft report group 3: Health, Nutrition, and Education, JAM, October 2010.

Lack of income and economic opportunities were indicated as the major vulnerability factors in both settings. Of relevance for this study, however is the fact that firewood collection was also identified as a major contributing factor towards GBV.

While a comprehensive account of the situation with regard to GBV in camps is beyond the scope of this study, few things still need to be mentioned. First, limited/lack of economic opportunities has been having an increasingly adverse impact on the protection of refugees. According to UNFPA, in Kebri Beyah young men with no prospects, and nothing to do were to blame for most of the insecurity in the camps, including incidents of rape and sexual assault. Meanwhile, domestic violence and tensions with host communities on access to and use of natural resources were among the risks faced by women in the camps. While vulnerable women were targeted with energy-saving stoves and fuel,[45] this did not prevent them from venturing outside to fetch firewood to sell, thus running the risk of being attacked by members of the host communities competing for the same resources.

Few years down the line, another report from the Women's Refugee Commission confirmed that without access to market and real economic opportunities, heavy reliance on natural resources can put refugee women at greater risk for GBV.[46]

Findings from the mission confirmed the existence of various forms of GBV affecting refugees in camps. According to IRC, domestic violence and survival sex are the most common forms of GBV among Tigrinias in Shimelba.[47] As for Kunamas, harmful traditional practices such as early marriage and FGM are the most prevalent, while there is reportedly a higher degree of respect between husband and wife.

Distance to the collection sites and fear of being caught by the local population, and/or the police are the main challenges highlighted by refugees in Tigray and Somali regions in relation to firewood collection.[48] Yet, most Kunamas, females and males alike, in Shimelba have no alternative but to venture outside to fetch firewood, exposing themselves to the risk of being caught, beaten and brought to the police by the locals. Women in Aw Barre indicated that it can take as much as 9-10 hours/day to fetch firewood, which may end up in an exercise in futility in the event they are caught by the locals. Contrary to some Eritreans, Somali men are largely disengaged from this activity.

Tension with the local population on access to and use of natural resources is high in both regions. Physical assault by local land owners is the most commonly reported threat faced by refugees during firewood collection. In Aw Barre, the team registered accounts of women being threatened, harassed, beaten, tighten up, and even stripped naked. Rape was also mentioned as a possible risk both in Tigray and Somali regions. Interestingly however, women in Shimelba indicated that the risk of rape during firewood distribution is generally low as they go in groups.[49] Other mechanisms adopted by women to avoid being beaten were apologizing, promising not to do it anymore.

When asked whom they talk to about these issues, women in Aw Barre mentioned ARRA, as well as the GBV or social workers operating within the camp. There are a total of 15 between social and community outreach workers appointed by IRC among refugees in

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[45] At the time of the assessment Gaia Association was in the process of distributing ethanol stoves and fuels to vulnerable women and families.

[46] Women's Refugee Commission (2008). *Working Women at Risk: The Links Between Making a Living and Sexual Violence for Refugees in Ethiopia*. New York: Women's Refugee Commission.

[47] Representatives from the International Rescue Committee (IRC) indicated women engaging in sexual relationship with men in exchange for protection, goods and overall support. Shimelba 11.11.2010.

[48] Refugees reported travelling for 6-12 km to reach the source sites, leaving as early as 6.30 am and spending 3 hours in total. FGD with RCC and Women's Association, Shimelba 10.11.2010.

[49] FGD with RCC and Women's Association, Shimelba 10.11.2010.

Tigray camps, while similar mechanisms exist for the other refugee settings where IRC operates.

Overall, the team found a high level of awareness of GBV issues among refugees in camps. Since the 2006 GBV assessment, significant efforts have been made by IRC, ARRA, and UNHCR to sensitize the refugee population on GBV risks and consequences, and to provide services to the at risk population. While time was not enough to ascertain the extent of their effectiveness, little trust by refugees in the existing mechanisms and high level of underreporting represent just a few of the challenges observed during the mission.[50] This is in line with the findings of the recent JAM exercise in Jijiga, where informants lamented the lack of appreciation of the gravity of sexual violence and related crimes among local authorities.[51]

Some differences between the two refugee areas need to be mentioned. While refugees in Tigray frequently mentioned the police in relation to firewood collection and the conflict that this creates with host communities, Somali refugees never mentioned the police. According to UNHCR, this is due to the fact that in the Somali region refugees primarily rely on traditional systems for settling disputes, thus reporting to the police is a rare occurrence.[52] In addition, the police in Tigray region is reportedly more receptive to following up on serious offences than in the Somali region. Household interviews revealed that the police had detained local for beating up a refugee woman – the case was later resolved between the two families. UNHCR had conducted training for police in both regions to increase their capacity to handle cases involving refugees

Finally, while among the Kunamas both men and women share the responsibility of firewood collection thus facing the same protection risks, in the Somali region women are disproportionally at risk as they are the sole that venture outside the camp to fetch firewood.

3.2 Environmental Impact

Deforestation is a major concern in Ethiopia. Overall, estimates indicate that Ethiopia loses about 1, 410 km² of natural forests each year. Between 1990 and 2005 the country lost approximately 21,000 km².[53]

Loss of forest contributes to soil erosion, loss of nutrients in the soil, and loss of animal habitats, thus constraining people's livelihoods. Moreover, periodic crop failures and losses of livestock often occur when seasonal rains fail or when unusually heavy storms cause widespread flooding. Evidence shows that due to deforestation and loss in surface vegetation, flooding now annually occurs in some parts of the country,[54] while the frequency of droughts have increased over the last few decades.

In Tigray and Somali regions, reliance on wood for cooking, fencing and construction by both refugees and local population led to rapid forest depletion, further constraining the already arid environment and fuelling tensions with local populations over access to and use of existing meagre resources. Mountainous areas are most severely affected, with over-exploitation often leading to soil erosion on steep slopes.

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[50] Women clearly indicated that even when report is made, very little has been done, FGD with Women's Association, Aw Barre 14.11.2010.
[51] Draft report group 5: Registration, Numbers, New Arrival, Durable Solutions, and Protection, JAM, October 2010.
[52] Meeting with NGO, Jijiga 15.11.2010.
[53] Source: www.wikipedia.com/ethiopia.
[54] See for example http://www.mg.co.za/article/2010-09-07-floods-displace-thousands-in-ethiopia, retrieved 24.11.2010.

The land in Shimelba is semi arid with crusted sandy and clay soils. Vegetation is limited to few trees, mainly in the area inhabited by the Kunama population, while the remaining part of the camp is more "urbanized" with greater occupancy by residences, shops, and restaurants and less vegetation. The surroundings of the camp reflect the typical dry savannah pattern with trees, shrubs and grassland. Observations revealed significant reduction of vegetation cover, which explains the long distance women have to cover to fetch sticks and dead wood for cooking.

Similarly, Aw Barre and Sheder are located in stony and arid land, with evident signs of deforestation. The 2010 JAM team also observed serious land degradation in and around the Jijiga camps.[55]

In addition to deforestation, the team noted the persistence of a high concentration of plastic bags, bottles, and other rubbish in the surrounding of camps, particularly in the Somali region. As previous missions already noted, besides further contaminating the environment this causes problems such as clogging of drainage lines, choking of animals, breeding of diseases and mosquitoes, among others.

3.3 Livelihoods

Answering the demand for firewood and charcoal gives poor people an important slice if their income in Ethiopia. According to the Ethiopian Disaster Risk Management and Food Security Sector (DRMFSS) baseline survey, firewood and charcoal selling represents 15% of the income for poor families in south Afar; 22% for the poor in southern foothills of Harerge (East Oromia); and 25% for the very poor in south Amara. Women are not only energy users, but also major suppliers of traditional fuels in Ethiopia.

While various reports cited collection and sale of firewood among the primary means of support for refugee households,[56] the team did not find evidence of significant firewood selling by refugees in the camps visited. In Shimelba for example, it is predominantly Kunamas, both males and females, who venture outside the camp to collect firewood, though only few reported having enough to sell to other refugees to cover for other needs, for example milling.[57] In Shedder and Aw Barre, when asked about selling of firewood, female refugees basically laughed at the question and replied: "*we steal from fences and yet we hardly have enough to cook with, how could we possibly even think of selling.*"

Rather than being a source of income, firewood and charcoal were more often cited as adding to the overall household expenditures. Distance from the collection sites, the heavy burden of carrying firewood, and the risks faced during collection are among the reasons that force many households to resort buying cooking fuel from local dwellers. According to informants, money to buy cooking fuel comes primarily from sale of food.

Livelihood options for refugees are extremely limited in Ethiopia. Besides the incentives provided by the organizations working in the camps, other income generating activities include seasonal agricultural labour,[58] and sharecrop with host communities, mostly by Kunamas who led an agro-pastoral livelihood prior to entering the camps and have oxen for ploughing. Remittances and small-scale trade and commercial activities also represent an

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[55] Draft report group 4: Environment, Livelihoods and WASH, JAM, October 2010.

[56] See for example UNFPA (2006). *GBV Assessment Report. Kebri Beyah Refugee Camp Somali Region Ethiopia and Shimelba Refugee Camp Tigray Region Ethiopia. New York: UNFPA*; Women's Refugee Commission (2008). *op. cit.*; WFP/UNHCR/ARRA (2008). *Joint Assessment Mission (JAM)*. Addis Ababa: WFP/UNHCR/ARRA. Draft report group 4: Environment, Livelihoods and WASH, JAM, October 2010.

[57] FDG , Shimelba 10.11.2010.

[58] Opportunities normally arise in August during the weeding time, and end in December, after the harvests.

important source of livelihood, particularly for Somali refugees and Trigrinias of urban origin. Finally, the team observed few examples of vegetable gardening at household level, though their potential to generate income appeared limited.

In the absence of alternative livelihood options, food aid represents an important source of income for refugees in both areas. Though it was not possible to ascertain the exact extent of food selling in the camps, the team recorded accounts of refugees selling up to 50% of their ration to meet other food and non-food needs.[59] Findings of the 2010 JAM exercise in Jijiga camps revealed that the amount of food selling ranges at around 33%.[60] From preliminary observations, food selling is likely to be among the greatest sources of income for Kunamas in Tigray, supplemented with daily/seasonal wage labour, and for particularly large households in the Somali region. Finally, borrowing food, money or other items from friends and neighbours were other reported coping strategies.

3.4 Implications for Food, Nutrition and Health

Domestic cooking appliances in use in rural Ethiopia are not only energy-inefficient, they also produce incredible quantities of smoke due to incomplete combustion. Such smoke combined with poorly ventilated cooking spaces, are main causes of indoor air pollution (IAP), which is a serious health problem affecting primarily women and children.

The health impacts of the use of solid biomass fuel such as firewood, especially when combined with the use of "intermediate" fuels such as kerosene, also include, but are not limited to, coughing, wheezing, acute respiratory infection, chronic obstructive lung disease, adverse pregnancy outcomes and lung cancer in women.[61]

As commonly found, health risks are not equally distributed within the household. WHO indicates that slightly over a half of worldwide deaths in children under five are caused by IAP.[62] Furthermore, as the majority of household energy demand in Ethiopia is due to cooking, with approximately 50% of Ethiopia's primary energy consumption used to bake injera, the country's staple food, women also share an unequal burden of death and disease from IAP as they are the primary cooks. Findings from the 2010 JAM exercise indicate respiratory infections as the leading cause of mortality and morbidity in the Jijiga camps.[63]

Length of cooking time of certain commodities such as for example beans, and lack of sensitization on food preparation and cooking practices (for e.g. soaking) also further exacerbate the situation.

Besides smoke, of relevance to this mission was ARRA's concern on the risk of severe abdominal and back pains due to the heavy loads of firewood carried by women over long distances, particularly in the Somali region.

Finally, additional concerns were raised in relation to changes in the food consumption patterns as a way to cope with lack of sufficient income. Being food the most traded commodity, most of the household needs are met through food selling. This often results in food shortages, which compounded with lack of alternative income sources, force

[59] While selling of food rations was commonly reported by all refugees in camps, only a few indicated selling significant quantity of food to meet other needs.
[60] Draft report group 1: Food Security and Coping Mechanisms, JAM, October 2010.
[61] http://www.hedon.info/Ethiopia, retrieved 22.11.2010.
[62] WHO (2004). "Indoor Air Pollution, Health and the Burden of Disease: Indoor Air Thematic Briefing 2", http://www.who.int/indoorair/info/briefing2.pdf.
[63] Draft report group 3: Health, Nutrition, and Education, JAM, October 2010.

households to resort to negative coping strategies such as skipping meals, reducing the meal size, and prioritizing the food among household members.[64]

4 Existing Fuel-related Responses

4.1 FES and Alternative Energy

Contrary to other countries, in Ethiopia the team observed a wealth of initiatives undertaken by various organizations to address the issue of cooking fuel in refugee areas. Activities however vary greatly in scope, objectives, outreach capacity and focus.

One first initiative concerns the electrification of refugee camps in Tigray region by UNHCR. While decided in 2008, at the time mission took place, the establishment of poles in Mai Aini camp[65] was yet to be started and an additional six months were deemed necessary for electricity to actually become available to refugees. According to UNHCR, electricity will be primarily used for baking injera, thus tackling the main cause of firewood consumption in the camp, while light will be provided to schools, latrines and other potentially risky locations. Besides the set up of the infrastructure, the investment so far included the provision and instalment of electric injera baking stoves in selected sites, and lighting.[66] Drawing on the existing cooking practices in Mai Aini, stoves will be located in selected areas within the camp to allow communal use.

When asked about the acceptability of communal injera baking by refugees, UNHCR responded that communal cooking was already there when the camp was originally established and it should not act as a barrier to refugees using the stoves. Even now, evidence shows that it is usually one person baking injera for 4-5 people using the open fire, and this practice is likely to continue with the electric stoves, especially given the high prevalence of single males.[67]

Besides electricity, both Mai Aini and Adi Harush refugee camps have been targeted with kerosene fuel and stoves.

In Shimelba, where resettlement thwarted investments in alternative fuels, UNHCR has started the distribution of 1,200 fuel-efficient stoves to the most vulnerable households.[68] Targeting criteria have been agreed upon with the Refugee Central Committee and the Women's Refugee Association and include family size, female heading and other potential vulnerability factors. Moreover, as the camp may remain operational for a prolonged period of time, environmental efforts are in place to avoid the handover of a completely degraded and unproductive area to the local communities. In addition to UNHCR distributed stoves, refugees have adapted the use of an improved clay injera stove lined with brick. Fairly energy efficient, this stove is built and maintained by refugees themselves, thus according to the team there is currently no need to consider alternative stove.

As previously mentioned, Gaia Association started distributing ethanol stoves[69] and fuel in the Somali refugee camps in 2005. According to Gaia, by April 2009, almost all households

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[64] Household interviews, Sheder 15.11.2010.
[65] To date, electrification has been considered only for Mai Aini, while Adi Harush will be considered in a second stage.
[66] The idea is to have the *injera* stoves running for few hours during the day to meet the cooking needs of the refugee population, and then use the electricity for night-lights. An initial investment of 750,000 ETB (about USD 46,000) was reported by UNHCR, Shire 09.11.2010.
[67] Reportedly, 95% of the population in Mai Aini is made of single, the majority of whom are males.
[68] The model of stove selected is Stovetec, more information at: http://www.stovetec.net/us/index.php.
[69] The stove is patented in the EU and produced in Slovakia. The cylindrical, stainless steel canister is packed with a special refractory mineral fibre, which adsorbs ethanol and prevents leakages even if the canister is knocked over. The canister

in Kerbi Beyah and Aw Barre had received a stove,[70] while Sheder was yet to be covered. The biggest challenge reported by Gaia was the cost of the stove, i.e. 76 Euros (100.31 USD) for the two burners and 48 for the one burner. Gaia Association was exploring the possibility of manufacturing the stoves at a lower price through a locally identified company called Makobu Enterprises.[71] The halt in the provision of ethanol in April 2009, forced Gaia to fall back to kerosene fuel and stoves.

As part of the MERET project a carbon credit initiative[72] has been initiated by WFP in partnership with the Ethiopian Ministry of Agriculture and the Ministry of Education. The project aims at distributing 200,000 fuel-efficient stoves in 72 MERET sites (*woredas*, i.e. district) in Amhara, Tigray, Oromia, SNNPR, and Somali regions. The plan is to have a yearly distribution of 550 Mirt injera baking[73] and 400 school stoves over a period of five years.

Potential for alternative sources of cooking fuel are also under consideration by UNHCR and partners. In addition to the reactivation in the production of ethanol expected for 2011, Gaia and UNHCR, through funds from the World Bank, are exploring the possibility of establishing a micro-distillery. Of interest, the distillery can be used not only for additional processing of molasses into ethanol, but also for the production of other sources of biofuel such as for example biodiesel from jatropha seeds.[74] In addition, being *prosopis* abundant in Afar region, the team suggested UNHCR to explore the possibility of producing briquettes.[75]

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does not need to be pressurised, which minimises risk of explosion. In Ethiopia, the pot-stand was redesigned to enable the use of larger and round-bottomed pots, and raised to allow more oxygen to reach the flame. Handles were added to make the stove easier to carry and to turn over to refill. Additional information on distribution and use in Ethiopia can be found at: http://www.appropedia.org/CleanCook_ethanol_stove.

[70] A total of 2,400 stoves were reportedly distributed in Kerbi Beyah and Aw Barre (only half of the camp population covered), while 1,233 were stored by LWF and 200 set aside by Gaia. According to estimates, a total of 4,900 stoves would be needed to cover all three Jijiga camps. Meeting with Gaia Association, Addis Ababa 4.11.2010.

[71] According to Gaia, local production will considerably reduce the cost of the stove, thus abolishing one of the biggest barriers to an expanded ethanol market in Ethiopia. Drawing on preliminary assessment, while the company has the capacity and the skills to produce large quantity of the stove locally, an initial significant investment in machinery and raw material is required, and would only be possible when enough quantity of ethanol is secured.

[72] The project has been developed in partnership with KfW Bankengruppe, the German development back, also leader in the promotion of climate protection projects.

[73] The project Cooking Efficiency Improvement and New Fuels Marketing Project (CEINFMP) commenced in 1989 by Ethiopian Ministry of Energy and Mines. The project aims at promoting improved, energy-efficient cooking technologies in Ethiopia. In partnership with the Ministry of Agriculture, GTZ promoted the development and dissemination of the Mirt stove for injera baking. To date 500 small-scale stove-producers have been established across 286 districts and five regions in the country. The commercialization of the Mirt injera baking stove started in 2000. Since then, more than 380,000 Mirt stoves have been sold across Ethiopia. This is the stove that is going to be distributed at the household level under the newly started carbon finance project. Meeting with GTZ, Addis Ababa 8.11.2010. More information is available at: http://www.gtz.de/en/weltweit/afrika/aethiopien/30559.htm, retrieved 30.11.2010.

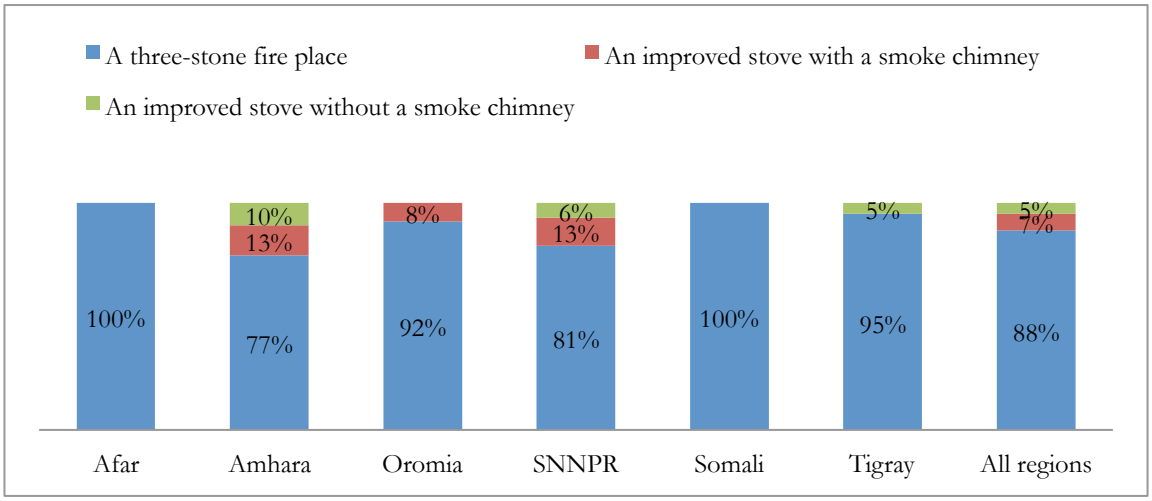
[74] Evidence shows that jatropha seeds have a high oil extraction rate of 37%. Replacing traditional biomass cooking fuels with cooking stoves that run on jatropha oil is also healthier, as cooking is done in a smoke-free environment, and women do not have to spend time gathering fuel wood. For the benefits of jatropha as biofuel refer to: http://www.fao.org/news/story/pt/item/44142/icode/en/.

[75] There is now consensus that *prosopis* wood is hard, durable and has good fuelwood value. While concerns have been raised on the carbonization of *proposopis* into charcoal for its devastating impact on the environment (see for example: http://www.apdaethiopia.org/index.php?option=com_content&view=article&id=3&Itemid=3); most recently, a more sustainable and environmentally-friendly processing of *prosopis* into briquettes has been explored by the Women's Refugee Commission and USAID in Sudan. More information can be found at: http://www.fuelnetwork.org/index.php?option=com_docman&task=cat_view&gid=29&Itemid=57, retrieved 30.11.2010.

4.2 Institutional FES

According to the 2007 Standard School Survey, the majority of the schools (88%) use the traditional open fire for cooking, while only 7% of the schools had an improved stove with chimney, and 5% without a chimney.[76]

Below a graph that shows the situation in schools with regard to the cooking devices.



According to informants, the average expenditure on firewood per school ranges between 200-400 ETB (12.06-24.13 USD) per month, depending on the size of the school. Families are responsible for providing firewood to the schools, as well as for the salaries of the cooks. The school director, in consultation with the teachers, defines the total amount needed from parents.

Lack of fuel is listed in the WFP monthly school report as one of the reasons for not feeding,[77] though according to WFP colleagues no such cases were ever reported in any of the assisted schools. Water, on the contrary is a major issue.

Concerned about the high level of smoke in the poorly ventilated school kitchens, WFP started assisting schools with fuel-efficient stoves in 2008. However, after an initial distribution of 45 stoves in Oromia region, the project stopped. Distribution of 2,000 institutional fuel-efficient stoves in 1,000 schools is now included under the framework of the above-mentioned MERET carbon credit project.[78]

Schools in refugee camps are in a particularly dire situation. On one side in Shimelba, the 5 wood-based metal stoves bought in 2005 by IRC (through funds from UNHCR) are in evident need for replacement; on the other, in Sheder 9 small and one slightly bigger kerosene stoves are used to cook for about 2,000 children. According to informants, altogether the stoves consume about 13 lt of kerosene a day, and cooking time is 2-3 hours for the bigger one, and 1-2 hours for three small combined. While the inefficiency of such a system is evident, the biggest concern relates to the lack of safety associated with using three small kerosene stoves close to each other to cover for the pot diameter. Although the informants were aware of the risks associated with such cooking practice, they have not yet been able to find a suitable alternative.[79]

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[76] Data provided by the School Feeding section, WFP country office 5.11.2010.
[77] The others are: lack of food, lack of water, cooks absent, and holiday. Lack of water is by far the most frequent reported reasons for not feeding. Meeting with the School Feeding section, WFP country office, 5.11.2010.
[78] In addition, about 20,000 USD have been aside by the country office for stoves in schools.
[79] Gaia Association is responsible for looking into alternatives to the current system.

One last issue that was observed by the team during visits to the camps is the lack of sensitization on food preparation and cooking practices at both household and school levels. According to WFP in fact, while awareness raising on preparation of pre-roasted corn soya blend (CSB) have been provided to school directors, such practice have not trickled down to the cooks' level. Hence, instead of the 20 minutes that would be needed, CSB is cooked for hours. Overall, this not only defeats the purpose of distributing commodities that are easier to cook, but also negatively affects the nutritional value of the CSB. Moreover, consuming more cooking fuel, the amount of harmful emissions is likely to be higher.

4.3 Environmental Protection and Regeneration

Both the Tigray and Somali regions have been characterized by unsustainable exploitation of vegetation for fuel, fodder and building materials. Recognizing the damage that camps and settlements can and have had on the environment in Ethiopia, as well as on the local economy and on the relationships with host communities, UNHCR has long been working to ease the environmental impact of decades of refugee presence in both Tigray and Somali regions, prevent further degradation and regenerate exhausted natural resources.

Key UNHCR partners include ARRA, the Ethiopian Natural Resources Development Programme (NRDP) in Tigray, while the Lutheran World Federation (LWF) and the Ethiopian NGO Save the Environment are active in the Somali region. Activities include raising of multipurpose tree seedlings for plantation in both homestead and conservation areas, and construction of terraces and check dams to prevent further soil erosion.

NRDP is only working in Shimelba and it is entirely funded by UNHCR.[80] To date, of the 600 hectares of deforested land, 160 have been replanted, 20 km of dam built, and 161,000 seedlings raised.[81]

In the Somali region, an environmental task force was established in May 2010 to ensure coordination and an integrated approach to environmental issues. Members include the LWF, Save the Environment, Gaia, UNHCR, and ARRA.

Save the Environment focuses solely on the environment and is entirely funded by UNHCR. It is responsible of environmental protection, education and rehabilitation in all three camps in Somali region. A total of three nurseries were established with 482,695 indigenous and exotic seedlings, including fruit and vegetable, raised since 2009.[82] Multipurpose tree species such as *jatropha*, *gum Arabic acacia*, *parkinsoia* (for fodder, and shed), *asrandica*, *moringa* (for eating, and forage) are particularly prioritized. The plan for 2011 includes the introduction of *moringa olifera* as supplementary food, continue the distribution of *euphoribia tricoli* for fencing to reduce deforestation of *acacia*, the introduction of *jatropha*, and the building of mud-brick houses to reduce reliance on timber for construction.[83]

LWF also works on tree nurseries, watershed and land rehabilitation, though on a smaller scale than Save the Environment as it also works in other areas.[84]

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[80] In 2009, 53,000 USD were provided for the nursery in Shimelba.
[81] Meeting with NRDP, Sheraro 11.11.2010.
[82] According to informants, survival rate is around 80%. Meeting with Save the Environment, Jijiga 14.11.2010.
[83] This is meant to give a snapshot of the environmentally-related interventions planned for 2011. Additional livelihood-related interventions are outlined in the related section below. Save the Environment (2010)a. *Achievements, Challenges and Lessons Learnt from 2009 and 2010. Focus areas of Intervention for 2011.* Jijiga: Save the Environment.
[84] The tree species in LWF nursery in Sheder include: *jacaranda*, *shinos mollus* (shade, firewood and building), *baianites*, *moringa olifera*, *acacia absinika* and *saigna*, *cordiaafy ica*, *espatoliya*, *gravilla robesta*, *azadirchta indica*, *papaya*, and *guava*.

WFP's MERET programme is also contributing to land rehabilitation and overall natural resources regeneration, especially in Tigray. The team gathered information on MERET's established in proximity to all three camps,[85] which also benefited from some refugee labour.[86] Refugees explained their desire to participate as a way to ease the tensions with host communities caused by the depletion of the natural resource base. However some limitations for both regions need to be mentioned. First of all, being primarily targeted to host communities, participation of refugees is rather limited. Secondly, while the team noted an overall interest in expanding the MERET approach to refugees areas, to date resources have been limited, thus the traditional approach prevailed. Thirdly, an alternative to food-for work modalities needs to be sought should MERET rehabilitation and conservation activities actively engage refugees.[87] Finally, MERET interventions in the area have been admittedly insufficient and their impact in the refugee-impacted areas has been limited.

Altogether, the above-listed interventions have had a limited impact on both refugee livelihoods and the rehabilitation of natural resources in and around refugee camps, and are minimal compared to the extent of deforestation and land degradation reported in these areas. Moreover, there is a need to link natural resources rehabilitation to livelihood improvement, which may be achieved through the identification and promotion of economically valuable tree species, while at the same time considering the ecological suitability of such species.[88]

4.4 Livelihood Interventions

Livelihood is by far the biggest gap observed by the team in the camps, and, according to the majority of the informants, the most difficult to address, especially given the existing restrictions for refugees in camps.

Operational since January 2010 in Jijiga area, the Danish Refugee Council (DRC) conducted a thorough assessment of the current livelihoods, skills and assets available to refugees in three Somali camps; and vocational trainings that are being or have been carried out by various actors. The objective was to identify gaps and define possible interventions.

Findings from the assessment confirmed the scarcity of livelihoods activities for refugee in all three camps, particularly those on asset and income creation, and prompted the creation of a livelihood task force at camp level, which is active since Sept 2010. The below interventions have been selected for 2010, while others are under consideration for 2011:

- Soap making: ……..…120 refugee beneficiaries in 3 refugee camps
- Pasta making machines: ……..…45 refugee beneficiaries in 3 refugee camps
- Distribution of sewing machines……30 refugee beneficiaries in 3 refugee camps and 15 locals
- Distribution of push carts..... 30 refugee beneficiaries in 3 refugee camps and 15 locals[89]

In addition, a micro-loan revolving fund will be targeted to a total 300 beneficiaries between refugees and communities' members to scale up already existing businesses such as

[85] MERET's interventions in Tigray refugee areas include Mai Quhili site situated less than 1 km away from Shimelba, Wuhdet 3-4 km from Adi Harush and one site few hundreds meters away from Mai Aini.
[86] According to NRDP, 35% of the rural population in Tigray is requested to contribute 40 days annual free labour to the restoration and management of natural resources, while refugees are expected to work for three days in a row. To date, 1,100 refugees worked alongside communities members on natural resources projects. Meeting with NRDP, Sheraro 11.11.2010.
[87] A cash-based approach may be considered, similar to the incentives already provided to some refugees in the camps.
[88] Draft report group 4: Environment, Livelihood and WASH, JAM, October 2010.
[89] Source draft report group 1: Food Security and Coping Mechanisms, JAM, October 2010.

butchering, embroidery, tailoring, and others. More specifically, DRC facilitated the purchase of additional material for up to the total amount of the loan. To date, a business increase of 30-40% per day has been reported by those targeted by the loan.[90] Overall, however, activities are very recent and results are yet to be seen and to be seriously evaluated.

LWF as well became involved in small-scale livelihood interventions through mainly backyard and multi store gardening activities along with poultry production. The plan is to target a total of 300 beneficiaries by June 2011, with a special emphasis on female-headed and other vulnerable households, and those living close to water points.[91]

Finally, Save the Environment's plan for 2011 the establishment of mixed refugees-locals cooperatives for plastic waste collection and selling, piloting of bee keeping, and small-scale production of jatropha and castor bean oil.[92]

Despite these positive efforts, overall activities appear limited and inadequate to meet the needs of such a large number of refugees.

A more dreadful situation was observed in Tigray region. Income generating options are limited to those mentioned in section 3.3 above, with some possibility for scaling-up, but no concrete plan for additional investment in diversification or exploration of additional options. Importantly, at present, contrary to the Somali region, there is no organization that is focusing specifically on livelihood activities in any of the three Tigray camps.[93]

5 Conclusions and Ways Forward: Options for an Integrated Approach to Safe Access to Firewood and Alternative Energy in Ethiopia

5.1 Why WFP?

WFP's comparative advantages in promoting a coordinated, multi-sectoral fuel strategy in Ethiopia include its mandate, the scale and reach of its operations, and a well-established outreach capacity through a long-standing partnership with the Government. WFP's commitment to the work of the SAFE Task Force stemmed from the recognition of the complexity and multi-faceted implications of access to fuel in emergency contexts. This is in the Strategic Plan, which calls for WFP operations to be carried out in ways that contribute to the safety and dignity of beneficiaries, including protection from gender-based and other forms of violence.

Moreover, WFP's Gender Policy sets forth a framework for the organization's work on addressing gender-related protection challenges, including those arising from firewood collection. More specifically, it commits WFP to mobilize resources to ensure safe access to

[90] Meeting with DRC, Addis Ababa 8.11.2010.
[91] Draft report group 1: Food Security and Coping Mechanisms, JAM, October 2010.
[92] On the former, the objective is to establish six mixed refugees-locals cooperatives (60 households in total) for planting, processing, and marketing the fuels. The estimate budget is USD 90,000. Save the Environment (2010)b. *Small Scale Production of Jatropha and Castor Bean Oil as a Household Energy Supply*. Jijiga: Save the Environment. On the use of jatropha as cooking fuel refer to footnote 70 above.
[93] UNHCR indicated the Jesuit Refugee Service (JRS), which recently started working in Mai Aini and Adi Harush, as a potential partner on IGA.

cooking fuel, including the provision of fuel-efficient stoves, to the most vulnerable women.[94]

WFP's nature as a food assistance agency provides a good opportunity for increased investment in a wide array of activities including climate change adaptation and mitigation, and livelihoods restoration through, among others, forest resources conservation and regeneration activities, and water harvesting and conservation systems.

To date, WFP's efforts to address the cooking fuel needs of the assisted population have been limited to the above-mentioned MERET carbon credit initiative. The responsibility to address fuel-related challenges in refugee-impacted areas lies primarily onto UNHCR. The SAFE mission was meant to explore possibilities for WFP to be more actively engaged in those areas, building on and contributing to existing practices, and, to the extent possible, filling identified gaps.

5.2 Proposed approach

Contrary to other settings, and given the wealth of initiatives observed during the mission, WFP Ethiopia decided to focus on existing gaps and activities where its added value can be utmost. More specifically, the focus of WFP SAFE interventions in Ethiopia will be on alternative fuels to reduce the adverse impacts on the environment, and on scaling up interventions aimed at regenerate the natural resource base, thus also contributing to the creation and diversification of livelihood opportunities in camps. These may be supplemented by other (smaller-scale) activities such as stove distribution, particularly in Shemelba; building the capacity of female refugee to act as social and community outreach workers; and livelihoods' enhancement.

WFP support is meant to be in combination with and to complement existing efforts by other stakeholders such as UNHCR, ARRA, Gaia Association and others on alternative sources of cooking fuel and related technologies; NRDP, LWF and Save the Environment on environmental protection and regeneration; and IRC on capacity building of women's refugees.

More specifically, intended activities include:

Environment: Support to the scale-up of environmental interventions in both regions. In Tigray this would entail either a revised version of the MERET with a strengthened focus on refugees-impacted areas and a more equal participation of refugees and members of local communities; and/or the provision of additional funding to NRDP to ensure scale-up and expansion of activities to all three camps in the region. In Somali, additional funds to Save the Environment will be considered to expand existing projects with a focus on drought-resistant and multi-purpose tree species such as *moringa* and *jatropha*.

Alternative energy sources: Explore in partnership with UNHCR the possibility of pilot testing briquetting using *prosopis* in Afar region for distribution to refugees in camps. If conditions allow, briquetting can be considered as an income generating activity targeted to vulnerable individuals in Tigray camps.

In Somali region, further explore with Save the Environment the possibility of small-scale production of jatropha and castor bean oil at household level in camps as alternative sources of cooking fuel, and for its potential as a source of additional income. Other

[94] WFP (2009), *Promoting Gender Equality and the Empowerment of Women in Addressing Food and Nutrition Challenges*, Rome: WFP, p. 10. WFP/EB.1/2009/5-A

activities such as bee keeping and collection and selling of plastic waste can also benefit from additional WFP's support.

Finally, explore the possibility of partnering with Gaia Association and UNHCR on the establishment of the micro-distillery for both ethanol and other bio-fuels.

The primary focus on environmental activities and technology innovations may be complemented by a limited number of supplementary activities to create livelihoods and enhance protection to women. This approach will ensure a more integrated and complete package of activities to address risks associated with firewood collection.

Livelihood opportunities: While acknowledging the existence of serious constraints on the creation of livelihood options for refugees in Ethiopia, it is important to highlight that many of the activities suggested above will translate into higher number of refugees employed as incentive workers as well as potentials for income generation through briquetting and jatropha and castor oil production and marketing. WFP may support a limited number of additional livelihood activities (i.e. bee keeping, collection and sale of plastic containers). Further, the team recommends a that the CO conduct thorough review and analysis of livelihoods in refugee camps building on the Livelihood and Food Security Joint Assessment Mission (2008) and work done by DRC (baseline survey and planned mid-term evaluation) to develop of a livelihoods strategy to be integrated into the PRRO.

Protection of Women: Support the scale-up of energy-efficient stoves and capacity building of community outreach workers and the women's refugee association to enhance awareness on GBV.

Finally, sensitization of refugees on food preparation practices and cooking techniques is strongly recommended to reduce the amount of fuel for cooking, thus lessening the burden on refugees on acquiring it, and to ensure the highest nutritional intake from WFP's food.

Annex 1: Mission Itinerary and Key Informants

4	Meeting with WFP's Refugee and Relief Section on Refugee operations; UNFPA on Sexual Gender-based Violence; ARRA and UNHCR; Gaia Association on kerosene provision project and stove project	Addis Ababa
5	Meeting with the World Bank's Donor Coordination Team on Climate Change-Productive Safety Net Programme and Household Assets Building Programme; WFP's Food for Education Section on institutional Stoves; WFP's Vulnerability Analysis and Mapping section on gender and household income and on exploitation of natural resources; WFP's Monitoring and Evaluation Team; WFP's MERET Section on household stoves, carbon credit and sustainable land management	Addis Ababa
8	Security brief; meeting with WFP's Senior Management; DRC on IGAs in Jijiga camps; GTZ on energy saving stove project	Addis Ababa
9	Meeting with UNHCR Sub-office in Shire; IRC Sub-office in Shire;	Shire
10	Meeting in IRC Shimelba Field Office; ARRA Shimelba refugee camp. FGD with Refugee Central Committee, Women Refugee Association and randomly selected women	Shimelba Refugee Camp
11	Meeting with NRDP in Sheraro town	Sheraro
	Meeting with IRC Shimelba Field office; sample household interviews; visit to refugee school; visit to warehouses; visit to MERET project site; visit to NRDP tree nursery site	Shimelba Refugee Camp
12	Meeting with UNHCR Suboffice in Shire; visit to MERET project site	Shire
14	Meeting with Partners in Jijiga	Jijiga
	Visit to Awbarre refugee camp	Awbarre Refugee Camp
15	Visit to Sheder refugee camp; visit to LWF Tree Nursery Site; visit to Save the Environment Tree Planting	Sheder Refugee Camp
17	Debriefing with WFP's Refugee Team and with WFP's Country Officer	Addis Ababa
18	Meeting with WFP's MERET	Addis Ababa

Annex 2: References

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