

SAFE ACCESS TO FUEL AND ENERGY



Solar street lamp in Ifo 2 camp, Dadaab

A UNHCR STRATEGY AND PLAN OF ACTION FOR REFUGEE OPERATIONS IN KENYA

2015 – 2018

ACRONYMS

AHA	African Humanitarian Action
CDM	Clean Development Mechanism
CIDA	Canadian International Development Agency
ERC	Energy Regulatory Commission
FAIDA	Fafi Integrated Development Association
FAO	Food and Agricultural Organisation
FS	Family size
GACC	Global Alliance for Clean Cookstoves
HH	Household
ICS	Improved Cook Stove
IGA	Income Generating Activity
IP	Implementing Partner
REA	Rural Electrification Authority
LOKADO	Lotikipi, Oropoi and Kakuma Development Organisation
LPG	Liquefied Petroleum Gas
LYAP	Light Years Ahead Project
NEMA	National Environment Management Authority
NRC	Norwegian Refugee Council
PV	Photovoltaic
PIDAD	Pastoralist Initiative for Development Advocacy
RRDO	Relief, Reconstruction and Development Organization
SAFE	Safe Access to Fuel and Energy
SGBV	Sexual and Gender-based Violence
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHCR	United Nations High Commissioner for Refugees
WFP	World Food Programme

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1. EXECUTIVE SUMMARY

The UNHCR Global Strategy for Safe Access to Fuel and Energy (SAFE) was launched in 2014. It envisions a scenario whereby all refugees and other persons of concern are able to satisfy their energy needs for cooking and lighting in a safe and sustainable manner, without fear or risk to their health, well-being and personal security. The Strategy is guided by the following overarching objectives: (1) Integrate energy needs into emergency planning and response; (2) Support the achievements of identified energy goals through the development of comprehensive country programme energy strategy and action plans to meet refugees' energy needs; (3) Enable access to fuel-efficient technologies and renewable energy at the household level; (4) Increase support for institutional energy needs through fuel-efficient technologies and renewable energy; and (5) Promote community-managed, multi-purpose and agro-forestry activities as resource banks, both in and around settlements/camps.

In line with Objective 2 of the Global Strategy, UNHCR Kenya was selected among pilot countries for support in developing comprehensive country programme energy strategy and action plans to meet refugee's energy needs. It is within this contextual framework that the SAFE Strategy and Plan of Action for UNHCR Kenya was formulated. The Strategy provides a road map for improved planning and management of energy interventions for the refugee assistance programme in Kenya camps of Dadaab, Kakuma and Kalobeyei over the period 2015 – 2018.

As of November 2014, Kenya was hosting a total of 593,663 refugees in Dadaab Refugee Camp Complex (356,663); Kakuma Refugee Camp (182,000) and urban centres (55,000). A new camp of Kalobeyei is being developed to host new arrivals and decongest Kakuma. Majority of the refugees originate from Somalia and South Sudan while others came from, among other countries, Ethiopia, Democratic Republic of Congo, Eritrea, Uganda, Rwanda, Burundi, and Tanzania.

Dadaab refugee camp was established in 1991 to accommodate refugees mainly from troubled Somalia and has grown into a complex of five distinct establishments (Dagahaley, Ifo, Ifo 2, Hagadera and Kambioos). The complex covers a total area of 64 square km. Located to the North Western side of Kenya is Kakuma refugee camp which was established in 1992 asylum seekers escaping from the civil war in Sudan and the prevailing instability in Ethiopia. The camp is composed of four distinct sites (Kakuma I, II, III and IV).

In Daadab, UNHCR provides fuel to vulnerable refugee groups and institutions, while the rest either procure from host community or go out to fetch far and wide in organised groups which although risky, is not out rightly opposed by host community who use firewood as an income generating commodity. While fuel wood was once readily available, it is now heavily commoditised as harvesters have to go as far as 50-100 km away from the camp.

Environmental degradation in firewood collection areas is severe, and although it was initially localised around the camps, it has expanded far over time. The recurrent and prolonged droughts (impacting on pastoralism) coupled with a large influx of refugees into the camps

especially in the year 2011, has put pressure on area ecology hence accelerating this phenomena.

In Kakuma, where energy need is also not sufficiently met, refugees are not allowed to collect firewood and they have to rely on UNHCR supply or procure from host community vendors. The vendors also supply charcoal which is produced in an inefficient method resulting in huge wastage. As of December 2014, Kakuma was hosting a population of about 182,000 registered refugees and asylum seekers (Population Statistics by Country of Origin, Sex and Age Group report Dec 2014).

Majority of camp residents use firewood which is the cheapest and relatively available source of fuel for refugees in both Dadaab and Kakuma. Wealthier refugees use available alternatives like charcoal. Solar, ethanol, methylated spirit and briquettes have been used on a limited scale, mainly during pilot projects.

Fuel consumption rate in Dadaab is at 1.0 kg per person per day (p.p.p.d) according to a report commissioned by the Royal Dutch Embassy in Nairobi in 2010. In Kakuma, the consumption rate is 1.3 kg p.p.p.d according to a UNHCR/GIZ report of 2004. Currently the demand curve indicates the total requirement/demand for firewood in Dadaab to be 357 metric tonnes per day while that of Kakuma is 237 Mt.

The demand for firewood has increased over time thus spawning protection issues such as conflict with the host community and sexual and gender based violence (SGBV). The prevailing scarcity of firewood has resulted in refugees selling their food ration so as to access energy for cooking. This strategy seeks to introduce alternative renewable energy options that can be accessed by refugees and institutions to supplement or replace firewood in order to mitigate the environmental impacts, improve food security and protect refugees (especially women and girls) from risks of harm when they go out to collect firewood.

Since its establishment in 1991, the Kenya programme of refugee assistance has not had a coherent and systematic approach of addressing the critical issues associated with providing persons of concern with energy for cooking, lighting, heating and powering income generation activities. Previous interventions have been guided by policy statements articulated in different bulletins that include camp specific Community Environment Action Plans (CEAP); the periodic Country Operations Plans (COP); the inter-sectoral Technical Roadmaps; and the UNHCR Kenya Environment Strategic Plan (2011-2015). A common thread in all the past policy documents is the singular attention on firewood as the main source of energy for all purposes.

The SAFE Strategy (2015-2018) is designed to infuse a progressive but radical change in management of energy issues in the Kenya Programme. In line with the strategic objectives that have been well articulated and in collaboration with the key stakeholders, the Kenya Programme is poised to concretise an efficient mechanism for addressing issues associated with access to sustainable energy and appropriate technologies in emergency situations; at household level; as well as institutional level. The Strategy also highlights the nexus between firewood harvesting and the ensuing environmental degradation and provides a critical window that will enable rehabilitation of the degraded areas in a comprehensive manner.

The Strategy is underpinned on the need to shift from the “business as usual” model of managing energy issues to a model that embraces innovations associated with adoption of improved technology, sustainable eco-friendly sources of energy, strategic partnerships, and new sources of funding for energy projects.

The Country Action Plan aims at contributing to the realisation of the global Strategic objectives through localised strategic approaches. Implementation of this strategy is based on the following assumptions:

1. **Sustainable energy access for all should be a top political priority both at the county and national level:** this Strategy is aligned to the integrated development plans for Garissa and Turkana counties and the Kenya Vision 2030. It is expected that provisions of these two policy pillars will catalyse implementation of the SAFE Strategy. The National Refugee Bill, which is presently under review, is expected to provide legal framework to address energy needs and facilitate access to sources of renewable energy such as ethanol and solar radiation. It is also expected to create an enabling environment for investing in environmental mitigation and rehabilitation through shared responsibilities among various stakeholders.
2. **Evidence based decision making and programming:** the multifaceted nature of energy issues as well as the dynamic nature of technological innovations means that decision makers require scientific evidence to support decisions and resource allocations. This Strategy will seek to use scientific methods to articulate choice of energy sources and related stoves, and the approaches adopted to address environmental mitigation.
3. **Introduction of the Business Model:** the Strategy advocates for adoption of a Public-Private Partnership (PPP) in developing and implementing the requisite project interventions. It is envisaged that this will strengthen the role of private sector in promoting access to various energy options; linking the energy sector to livelihoods; and building the resilience of refugees while at the same time contributing to area economy.

2. BACKGROUND

2.1. Country Overview

Natural resources have long formed the main – and often sole – source of domestic energy for households in Africa, this despite the continent’s recognised opportunities for renewable energy

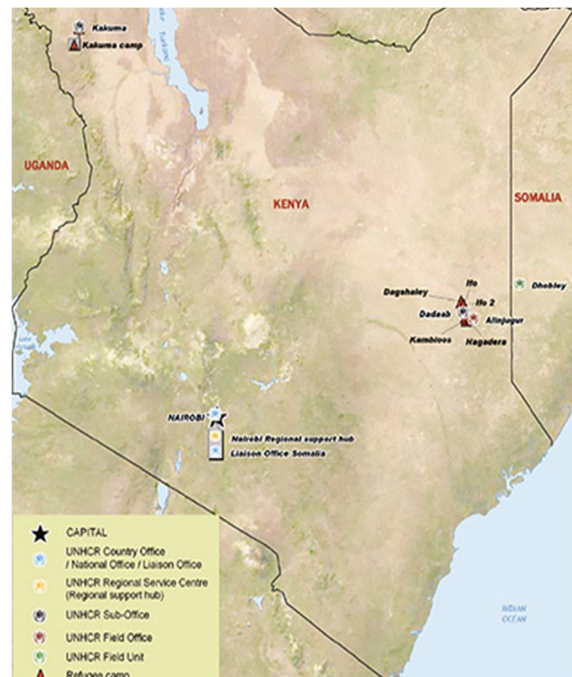
In Kenya, most refugees and their immediate host communities lack reliable access to affordable energy, mainly for cooking and lighting. People rely primarily on biomass energy for cooking and lighting, which is becoming increasingly scarce due to increased demand, environmental degradation, population growth and the impacts of climate change.

Today, Kenya hosts approximately 540,000 refugees in two camp complexes, Dadaab and Kakuma (Figure 1, Table 1), with the initial camps being established in 1991.

Lack of safe access to firewood for cooking is, and has now been for many years, one of the major causes of sexual and gender-based violence (SGBV) in Dadaab camp, one of two refugee-hosting complexes in the country. In 2013, of the 1,000 reported cases of SGBV up to 10 cases per month have been related to firewood collection. According to a 2012 report by the World Food Programme, 78 per cent of respondents do not feel safe while collecting firewood, as people are particularly targeted for this reason.

Figure 1. Location of Refugee Camps in Kenya

Today, UNHCR provides 10 per cent of refugees' fuel and energy needs in Dadaab and 20 per cent in Kakuma, with the remainder being either purchased or collected by the refugees themselves. While a range of energy interventions have taken place over the years to address the lack of safe access to fuel and energy for refugees, it has been on an ad-hoc basis and has not been well co-ordinated or funded. As a result, the increasing demand for firewood has contributed to the degradation of sizeable tracts of land on which host communities and pastoralists also depend. This has created several fronts of conflict between refugees and local people.



This Strategy is intended to act as the foundation for a new approach to energy planning and management, based on sound technical inputs, evidence from past experiences and co-ordinated implementation of energy interventions. The goal of this Strategy is that, by 2018, at least 60 per cent of refugee energy needs in Kenya are met in a sustainable manner. At the same time, this Strategy also aims at rehabilitating degraded landscapes around camps as well as those areas impacted by firewood harvesting.

The following steps were taken in the elaboration of this Strategy:

- background desk review of previous mission reports, monitoring and evaluation documents;
- rapid assessment survey of some of the key challenges facing energy access in camps;
- meetings and interviews with UNHCR Sub-office managers, programme officers, administration and field officers;
- meetings with government representatives and implementing partners;
- interviews (group and individual) with refugee and host community leaders;
- preliminary baseline assessment and situational analysis on the environmental and energy situation in camps;
- site visits to degraded areas and sources of firewood collection; and
- house-hold visits to inspect the use of energy saving cook stoves.

Box 1: Lessons Learned

Elaboration of this Strategy was informed by the following experiences in management of energy and environment issues:

- a lack of energy planning prior to the establishment of the camps has resulted in reactive decisions that are not appropriate to end-users, are not sustainable and are not cost-effective;
- adequate monitoring has not been conducted on the use and efficiency of cook stoves;
- pilot projects on wind energy, solar lighting and certain stoves and fuels have not been conducted with due planning and management, resulting in a lack of informed guidance for decision-making;
- the separation of food distribution and energy availability for cooking has not worked: closer co-ordination is necessary between institutions responsible for delivering these services; and
- lack of an energy policy for UNHCR has which tends to alienate energy considerations with other sectors, such as Protection, Health, Education and Shelter: staff are generally not aware of the cross-sectoral ramifications of energy and environment.

2.2. Expected Broad Outputs from this Strategy

1. Energy and fuel access gaps addressed in humanitarian operations.
2. Energy considerations integrated in the refugee protection with special consideration to age, gender, diversity, economic and the local environment considerations.
3. Equity and responsibility promoted in energy access and use for all refugees.
4. Energy sustainability instituted through best practice and appropriate technologies.
5. Host communities empowered to generate their own energy and to innovate approaches according to their social and environmental circumstances.
6. Environmental rehabilitation and restoration of degraded areas undertaken.
7. Research on renewable energy conducted, best practices documented and awareness created among stakeholders.
8. Advocacy undertaken for policies and legislation to promote access and funding stability for energy interventions.

2.3. Refugee Situation

Located in Garissa County of north-eastern Kenya, approximately 80km from the Somali border, Dadaab refugee camp complex has a population of 356,663 people. The camp was established in 1991 in response to the large numbers of Somalis fleeing civil war in their home country. Currently, it comprises five separate camps: Dagahaley, Hagadera, Ifo, Ifo-2 and Kambioos (Figure 1).

Somalis still constitute the largest proportion of Dadaab's refugee population (96 per cent). Other nationalities represented include Burundians, Congolese, Eritreans, Ethiopians, Rwandese, South Sudanese, Sudanese, Tanzanians and Ugandans. The highest proportion of the camp population (28 per cent) lives in Hagadera, followed by Dagahaley (26 per cent) and Ifo-2 (25 per cent). The mean household size is 3.8 persons and ranges from 3.6 in Hagadera and Ifo to 4.7 in Kambioos (LYA 2014), Table 1)

Kakuma camp was established in 1992, and hosts approximately 182,000 refugees from more than 15 countries. Recent influxes of refugees have originated mainly from South Sudan (LYA, 2013), Table 1) causing the camp population to increase significantly.

Table 1: Refugee Camp Statistics (November 2014)

Camp	Date Established	Population	Country of Origin
Dadaab	1991	356,663	Somali, Ethiopian
Hagadera		107,956	Cameroon, Democratic Republic of Congo, Ethiopia, South Sudan and Uganda
Dagahaley		90,247	Burundi, DRC, Eritrea, Ethiopia, Somalia, South Sudan, Sudan and Uganda
Ifo		85,540	Burundi, DRC, Eritrea, Ethiopia, Pakistan, Rwanda, Somalia, South Sudan, Sudan, Tanzania and Uganda
Ifo 2		52,880	Ethiopia, Somalia, South Sudan and Sudan
Kambioos		21,037	Burundi, Ethiopia and Somalia
Kakuma	1992	182,000	Somalia, South Sudan and Sudan Note: The refugee population in Kakuma is increasing due to influxes from South Sudan
	Total	538,663	

2.4. Environmental Situation

UNHCR, through a range of partners, has invested in a series of reforestation and environmental rehabilitation to combat the impact of the humanitarian operations and help prevent degradation spreading outside of camp areas. Much has also been achieved within the camp confines, with refugees planting trees (different species) within their compounds.

All the camps are located in ecologically fragile areas characterised by low rainfall, prolonged drought and, when it does rain, seasonal flooding. Increasing demand for wood to meet household energy needs and shelter construction materials are two of the main environmental challenges, in both Dadaab and Kakuma.

The host communities are pastoralists and thus require large areas for livestock grazing. The combined demand for forage and firewood from both the refugee and host communities currently are believed to exceed the carrying capacity of these lands which has resulted in conflict over access and use of natural resources as well as environmental degradation. The unprecedented demand on firewood, in particular, has created an unsustainable demand for wood in both of Kenya's refugee operations.

While some environmental concerns are occur in both camp complexes, this Strategy also highlights site-specific issues where this is relevant.

The five Dadaab camps cover an area of 62km², of which 43km² is occupied by refugee compounds. The camps are located within the greater Merti aquifer which,

according to a 2004 UNICEF study, is recharged at an annual rate of 33.3 million m³ from three main contributory sources – the Ewaso-Ngiro River, the Yamicha triangle and the Lagdera watershed. The report notes that at this time current abstraction rate was three million m³ per year which was well below the annual recharge rate at this time.

Land surrounding the camps is used by the host community who are mainly pastoralists. Firewood harvesting zones are located in areas adjacent to the camp complex, within a radius of 80 km. Refugees are provided with tree seedlings to plant in their residential and institutional compounds. Today some 22ha of tree nursery compounds exist while Dadaab Township is also provided with tree seedlings by the UNHCR environmental programmes. Green belt zones – covering more than 10,000 ha to date (Table 2) – are degraded areas which have been deliberately targeted for rehabilitation. These are mostly situated on the outskirts of the camps. In Dadaab, a total of 1,168 ha has been established as green belts, while an additional 22 ha exist as arboretums, each with a tree nursery.

Box 2: Environmental Concerns

- Diminishing fuel wood/biomass resources
- Soil erosion
- Solid waste management
- Range degradation
- Proliferation of invasive tree species (Prosopis)
- Adaptation of coping mechanisms to address impacts of climate change

Table 2: Green Belts and Degraded Areas in Dadaab (2013)

Camp/Area	Green belt area (ha)	Degraded area (ha)	Location with reference to the camp
Dagahaley	317	1,200	outskirts
Ifo	363	100	outskirts
Ifo2	2,000	1,628	outskirts
Hagadera camp	375	-	outskirts
Kambioos	300	-	outskirts
Residential compounds	7,100		inside camps
Dadaab	153		Commercial centre
Alijugur	15		Commercial centre
Total	10,623	2,928	

Kakuma, like Dadaab, is located on a fragile environment that lacks basic natural resources such as reliable surface water and arable land. Rainfall is unreliable for agriculture – 25-30mm on average (Meteovista, 2014) and causes flooding over most of the camp when it rains. The area is also prone to prolonged droughts that destabilises the pastoral livelihood systems of host communities.

Kakuma Camp is also located on a major aquifer, this being recharged through the seasonal Tarach and Lodoket rivers. Records indicate that under the present management of eight camp boreholes the aquifer is stable.

Refugees in Kakuma camp have minimal cultural links with the Turkana host community. Relations, however, are good due to the camp’s position as a primary source of trade, income, education, and health access for the Turkana host community.

In Kakuma, collection of firewood by refugees is limited due to restrictions by the host community. It is, however, also strongly discouraged by the host community as trade in firewood is an important source of income for the Turkana people, which does influence relations between the two groups. Incidences of conflict, including SGBV, have been reported when refugees have left camps to collect firewood. According to the 2013 LYA assessment, more than 70 per cent of households in Kakuma fear going to collect firewood due to a potentially high risk of assault and SGBV. There are, on average, 3-10 reported cases of SGBV related to fuel collection per month (estimated to be 50 per cent of actual incidents).

In Kakuma, degradation is most prominent in the 20 km zone around the camp, beyond which the environment has not been so badly affected due to the proliferation of *Prosopis juliflora*, an invasive, exotic shrub. While detrimental to the livelihoods of pastoralists – as it quickly invades rangelands rendering them unfit for grazing, approximately 60 per cent of all UNHCR-sourced firewood comes from *Prosopis*, which could thus be considered a sustainable source of fuelwood if a management plan was put in place for this species. Local people also collect or buy firewood from this particular species.

In Kakuma, there are no woodlots dedicated for fuelwood collection, although green belts have been established for environmental protection purposes (Table 3). Approximately 240 ha have already been rehabilitated or are currently undergoing rehabilitation.

Table 3: Green Belts and Degraded Areas in Kakuma (2013)

Range Condition	Hectares
Degraded areas	750
Planted woodlots	240
Area invaded by <i>Prosopis</i>	65

2.5. Energy Situation

A number of assessments have been conducted to determine the past status and current energy needs of refugees in Kakuma and Dadaab, most recent of which was a UNHCR Light Years Ahead (LYA) study in Kakuma and Dadaab in November 2013 and July 2014, respectively.

The Kenya Refugee Operation has an Environment Strategic Plan (2011-2015) which has, until now, guided interventions in the areas of energy and environment. The thrust of the plan is to support sustainable environmental interventions in camps and hosting areas in Dadaab and Kakuma. Among the aims is to promote harmony between refugees and local communities, promote efficient cooking energy technologies such as the distribution of energy-saving stoves (Maendeleo portable), reduce over dependency on fuelwood which is inadequate and unsustainable, and test other sources of cooking energy such as Macadamia nut shells and ethanol gel and solar cookers.

2.6. Household Lighting Needs

Refugees in Daadab use multiple lighting sources. Dry cell-powered hand torches are the most widely used (81 per cent of households). The average household uses 1.8 hand torches for five hours each day, consuming 11 sets of dry cell batteries per month, which equates to a cost of Ksh 230 (US\$2.30). Additional sources are firewood (17 per cent), solar lamps (16 per cent) and privately supplied – diesel-based – electricity (11 per cent).

Almost 90 per cent of households use electricity to recharge their cell phones, 14 per cent to run television sets and 13 per cent for radio/cassette players. The mean household expenditure on electricity is approximately Ksh.885 (US\$8.9) per month.

In Kakuma, in contrast, the use of household lighting at night is very limited. Battery and kerosene lamps are the primary lighting technology used by 29 per cent and 18 per cent of the population, respectively. The most common supplementary lighting is candles (LYA 2013).

Table 7: Gaps in meeting household energy needs

Camp	Current Population	# of HHs (using 4 ppl /HH)	Stoves Needed		Domestic Lights Needed (Lanterns)		Street Lighting Needed	
			Supplied	Gap	Supplied	Gap	Installed	Gap
Dadaab	356,663	88,500	50,800	37,700	20,175	69,269	161	481
Hagadera	107,956	27,000			4,492	22,508	43	70
Dagahaley	90,247	22,562			3,400	19,162	23	130
Ifo	85,540	21,486			6,092	15,394	45	115
Ifo 2	52,880	13,260			6,000	7,260	20	96

Kambioos	21,037	5,136			191	4,945	32	70
Kakuma	182,000	45,500	21,519	23,981	4500	41,000	37	330

Source: UNHCR Field Staff and Partners

Each camp has institutional facilities that help in the daily running of the camps as well as for social services such as schools, hospitals and churches. All these institutions need a sustainable source of energy for cooking and lighting to operate. Some of the cooking stoves supplied are too small for the institutional populations. Institutional cooking as in case of school feeding programs should use a combination of Gas and Solar to reduce the demand for firewood and environmental degradation.

Most UN and partner institutions use diesel generated energy which is not sustainable and should lead in adoption of green energy before advocating for others. Institutions are also experiencing scarcity of fuel wood due to competition with refugee households and also because of the increasing distance where the fuel wood is sourced.

Table 8: Recurrent costs of meeting Energy Needs

Camp	Total Budget Demand (US\$)	Actual Energy Budget (US\$) 2013-2014	Budget Provided as a % of the Demand	% Energy Budget Deficit
Dadaab	157,000mt p/yr. for household 400,000mt p/yr. for institutions; @ Ksh 9,600 per Mt =Ksh 1,511,040,000 (US\$ 16,977,978)	2,726 Mt for Ksh 26,169,600 (US\$294,040)	1.7	98
Kakuma	98,550mt p/yr for HH and 800mt p/yr. for institutions @Ksh 7,500 per tonne =US\$ 8,212,500	For 2013 (US\$ 404,129)	4.9	95
		For 2014 (US\$ 443,653)	5.4	95

Based on the above and additional evidence gathered from consultations and field observations, the energy options described in Table 9 might be considered as potentially viable for the Kenyan operation.

Table 9: Energy Options

Energy Options	Description	Advantages	Limitations
Firewood	Collection of dead wood and harvesting of live <i>Acacia</i> trees	<ul style="list-style-type: none"> • If harvested and sold by host communities has economic benefits • Can be used in different stoves • Easy to use and cheaper than other options 	<ul style="list-style-type: none"> • A challenge to meet the demands of a large refugee population • Environmental degradation • Health risks from indoor air pollution • Some wood has a low calorific value (<15MJ/kg) • Increasing distance between collection sites and camps • Increasing cases of conflicts and SGBV related to firewood collection • Insufficient supply to camps due to budget limitations • Time needed for growth/ regrowth
Solar	Insolation is an average of 5.5KWh per day and can be tapped using solar PV systems and solar cookers	<ul style="list-style-type: none"> • Plentiful supply in Dadaab • Free • Green and renewable • The most accessible source of renewable energy • Has the shortest value chain 	<ul style="list-style-type: none"> • Technology is expensive and requires constant maintenance • Policy is poorly developed • No simple solar stoves are adapted to refugee use • May sometimes depend on the weather; may need to be boosted by other sources
Ethanol	<p>Current taxation is a challenge to ethanol accessibility as a fuel as it is not affordable by the bottom of the pyramid groups such as refugees and host communities</p> <p>Some ethanol is exported to Tanzania where it is processed into a gel and re-imported to Kenya as a fuel</p>	<ul style="list-style-type: none"> • Ethanol biofuel crops (e.g. sweet sorghum) can be grown in Garissa and Turkana • Ethanol stoves can be made locally • Gel is not highly flammable, hence a low risk to users • Ethanol is available in quantity from sugar factories 	<ul style="list-style-type: none"> • Expensive due to high tax (payment of Excise duty) • Ethanol gel is convenient but supply infrastructure is not well developed • The methylated type is highly flammable and toxic • Some religions and cultures avoid all forms of alcohol

Biogas	Well developed in high potential areas where livestock farming is prevalent but there is smaller scale potential among pastoralist communities in Garissa and Turkana Considerable potential in refugee support institutions using human waste from latrines	<ul style="list-style-type: none"> • Can be produced from both livestock and human waste. • Institutional facilities are most suitable for biogas digesters • Mobile kits are now available (pastoralists) 	<ul style="list-style-type: none"> • Difficult to scale-up as it depends on constant waste generation • May be difficult to sustain in arid and semi-arid areas as water is essential
Wind	There is potential, especially for water pumping from boreholes but the wind in Dadaab and Kakuma is not reliable all year around	(The efficiency of the turbine in Kakuma has not been monitored.)	<ul style="list-style-type: none"> • Turbines need to be boosted with small gensets during bad weather and at night, depending on the energy demand load
Electricity	Neither Dadaab nor Kakuma are connected to the electricity grid due to their remoteness	<ul style="list-style-type: none"> • Off grid generation is the most viable option • Easy to connect to consumers • Readily creates income-generating activities. 	<ul style="list-style-type: none"> • Reliability is dependent on weather • Costly to transmit and access

2.7. Constraints / Challenges

The energy situation obtaining in refugee camps in Kenya can be summarised by the broad scenarios described in Table 4.

Table 4: Fuel scenarios in Dadaab and Kakuma camps

Scenario	Yes/No	Comments
Firewood is relatively abundant in or around the camp(s), and is the main source of energy.	No	This was the case during camp inception (1991-1992) but the scenario has changed.

Firewood is scarce in or around the camp and is insufficient to meet camp needs.	Yes	<p>Certain types of firewood are abundant, such as <i>Prosopis juliflora</i> in Kakuma. Sustainable exploitation of <i>Prosopis</i> can sustain about 40 per cent of refugee cooking energy needs.</p> <p>In Dadaab, firewood harvesting zones are located in areas adjacent to the camp complex. Other harvesting zones lie within a radius of 80km of the camp. About 80 per cent of firewood is <i>Terminalia spinosa</i> (Kordobo), an indigenous species, but this is not a sustainable source of firewood.</p>
Firewood is no longer an option around the camp and must be sourced elsewhere or other fuels used.	Yes	Measures must now be taken to shift from reliance and dependence on firewood to cleaner fuels, improved cooking technologies and renewable energy sources.

Management of existing natural resources would appear to be a primary concern in finding a more balanced response to energy solutions, matched with far more strategic and well informed technological approaches in relation to both cooking and lighting systems with their corresponding fuel sources. These particular issues are examined in more detail below.

Firewood procurement for refugees started in 1998 for the then Dadaab refugee camps – Ifo, Dagahaley and Hagadera. The main objectives of this intervention were to mitigate firewood-related sexual assaults, reduce exposure to banditry, reduce conflict over natural resource use and help contain and reduce environmental degradation in and around the camps.

The price of firewood in Daadab is now determined by a firewood monitoring committee and community leaders, since this is a community resource. The current price of firewood is Ksh. 9,400 per tonne (costs are shared equally between collection and transportation), this being determined following consultations with communities, based on factors which include distance to harvesting zones, current market prices, insecurity, and fuel and vehicle maintenance costs.

A lack of sustainable funding, however, has meant that not all households are today able to receive firewood through this system: UNHCR now supplies firewood only to vulnerable groups and institutions, but even this arrangement is not sustainable or comprehensive.

In Dadaab, firewood is used by 98 per cent of households, while both charcoal and kerosene are used by just 4 per cent. The mean household firewood consumption is 6.5 kg per day and the per capita consumption is 1.3 kg/day. Per capita consumption varies with the availability of firewood: in Dadaab, for example, about 57 per cent of households purchase firewood, spending Ksh. 1,620 (US\$16.2) per month. Charcoal is used by almost 4 per cent of households, with a mean monthly expenditure of Ksh. 1,615 (US\$16.1). The total household expenditure for both firewood and charcoal is Ksh.1,615 (US\$16.1).

Firewood distribution accounts for less than 10 per cent of household monthly consumption (see Table 5). Budget constraints in 2014 led to a serious reduction in the frequency of distribution (only four times in the year), with priority being given to vulnerable groups. Some non-targeted households were, however, provided with more efficient Maendeleo portable stoves.

Table 5: Firewood Distribution per Camp

Camp	Population	Quantity of Firewood Distributed to Households/Month	Estimated Monthly Quantity – HH Total	Estimated Quantity per Individual
Kakuma	182,000	Total 9,911 tonnes, of which 40 per cent is from indigenous tree species and the remainder from Prosopis	15.3 kg/hh	0.149 kg/day
Dadaab	356,663	13,117 tonnes	15.25 kg/hh	0.101 kg/day

Firewood being provided to households is currently sourced through a tendering process, with supplies coming from up to 120 km away. Other households, however, acquire firewood from multiple sources. In 2014, about 46 per cent received firewood from UNHCR, while 49 per cent collected it themselves: 57 per cent of households reported purchasing wood. This shows that households use a combination of sources to satisfy their energy needs, with women being responsible for a much larger share of the collection process than men: 97 per cent of women engage in firewood collection (LYA, 2014). Women may need to undertake up to six collection trips per month, travelling up to 10km per outing.

Table 6: Per capita cooking energy consumption

Camp	Population	Quantity of firewood distributed (per Month)	Estimated annual quantity (kg)	Estimated daily quantity required per individual (kg)
Dadaab	353,663	A total of 1,723,000 kg was distributed to vulnerable groups (some 20,000 households) in 2014	86 kg/hh/year	0.0472 kg/day (has reduced with scarcity of firewood)
Kakuma	182,000	10 kg of firewood per person every two months	60 kg/person to 12.5 per cent of the population	0.164 kg/ day (has reduced with population increase)

Despite the amount of wood being provided, however, there are still very significant shortfalls – 90 per cent in the case of Daadab and 80 per cent in Kakuma. Refugees thus have no alternative but to collect, purchase or barter for additional fuel to fill these gaps.

In Kakuma, according to the 2013 LYA assessment, firewood is the main source of fuel for cooking for more than 90 per cent of households in Kakuma. Charcoal is used by 58 per cent of households, kerosene by 2 per cent and electricity by 2 per cent. About 20 per cent of a

household's need for firewood is met through fuelwood distribution by UNHCR, while the remainder is sourced through collection, purchase and/or trade. Uptake of fuel-efficient stoves has been very high in Kakuma but there remains a low availability of alternative or renewable fuels.

Coping strategies to secure fuel for cooking include exchange of food rations (56 per cent of households) and undercooking food (61 per cent of households).

With regard to current technologies being promoted in camps, according to the 2014 LYA assessment, the Maendeleo fuel-saving stove is used by 58 per cent of households in Daadab and the Rocket stove by 11 per cent. Slightly more than one-third of households (37 per cent) use a three-stone fireplace. The per capita consumption for households which use the latter is 1.6 kg/day in contrast with 1.1 kg/day for Maendeleo stove users and 1.2 kg/day for Rocket stove users.

Many households, however, use more than one stove. More than 80 per cent of households use a wood burning fuel-efficient stove, with 39 per cent use a regular charcoal stove and a further 10 per cent a charcoal fuel-efficient stove. Just over 1 per cent use kerosene and less than 1 per cent use both biogas and electricity, the latter being supplied by local business people from small generators.

3. COUNTRY PROGRAMME STRATEGY

3.1. Vision

The vision of this Strategy is: ***“Persons of concern to UNHCR and their Host Communities are able to access their energy needs for cooking, lighting, heating and earning a decent livelihood in a safe, dignified and environment friendly manner”***.

Refugee camps have existed in Kenya for more than 20 years, with no chance of closure in the near future. Considering the environmental impacts mentioned above, and the energy challenges currently being experienced, it is clear that a new approach to energy planning and management is needed.

This Strategy calls for an immediate and resourced shift in policy (e.g. respect of policies when planning and establishing camps), planning (multi-year approaches as opposed to annual), programming (in relation to financial considerations) and considered approaches to key social and environmental issues.

UNHCR and the government seek to phase out firewood systematically, maintaining distribution to only the most vulnerable groups of people. In order to achieve this, alternatives need to be evaluated and put in place with the required support such as awareness raising and training on new technologies and approaches. Some such changes will likely require a behavioural change on the part of end-users, which must not be overlooked in any technological approaches to finding appropriate energy solutions for cooking, lighting and powering.

To achieve these goals, this Strategy will enter into agreements with local and global actors in order to mobilise new skills, funds, goodwill and partnerships in what is seen as an essential shift away from the “business as usual” approach. Collaboration will be sought, for example,

with development partners to promote, facilitate and support the use of renewable energy, in keeping with the country's overall energy policy regulations.

3.2. Guiding Principles

The guiding principles of the Kenya Programme SAFE Strategy are aligned with UNHCR's Global SAFE Strategy as outlined below:

Protection: Children and women are most often those responsible for firewood collection. The task of collecting firewood increases their exposure to SGBV and other forms of violence, particularly from the host community and pastoralists. By providing each household with safe and sustainable energy systems for cooking and lighting, the need for people to leave camps in search of firewood should be reduced which, in turn, would lessen the risk of exposure to danger. In addition, the provision of street lighting – or at least lighting in strategic parts of camps – should provide greater security to people while moving around at night.

Equity: All refugees/households should benefit from the provision of improved and more efficient cook stoves and lighting systems. When funds are limited, priority will be given to the most vulnerable members of the community.

Access: This Strategy addresses issues that should reduce exposure of refugees to violence while looking for firewood in host communities and/or government-owned forests. The use of fuel-efficient cook stoves and secured supplies of fuel within camps should reduce the need for refugees to leave the camp to collect wood, thereby reducing the amount of violence experienced.

Sustainability: Raising refugees' awareness around the use of fuel-efficient stoves as well as on efficient cooking techniques will be used to ensure the sustainability of energy programmes. Capacity building for UNHCR and partner staff will help improve implementation of energy projects.

Community empowerment: All stakeholders, including refugees, UNHCR partners and government counterparts have been consulted in the development of this Strategy. This will be a continuous approach, and it is hoped that refugees will be continuously involved through consultations to ensure that any new energy technologies or fuels introduced are appropriate and that people are familiar and comfortable with their use.

Appropriateness and relevance: This Strategy will ensure that future approaches or technologies proposed and supported are, as far as possible, relevant and acceptable to the cultural background of the intended end-user. This will take into account the socio-economic, cultural and environmental factors of Kenya and a particular camp's context and location.

3.3. Strategic Objectives

This Strategy is defined by the following four strategic objectives:

- 1) integrate energy issues into UNHCR's country level emergency and response planning;
- 2) improve access to household fuel and lighting using appropriate technologies and renewable energy such as solar and biomass innovations;

- 3) improve and increase sustainable and improved energy access to schools, health centres and other institutions; and
- 4) Establish and manage woodlots and other potential bio-fuels for fuel provision and environmental protection for refugee operations in Kenya.

3.3.1 Integrate Energy into Emergency Planning and Response

As part of its Global Safe Access to Energy Strategy, UNHCR has brought to the fore the immediate need to include a limited, prioritised set of energy considerations into its contingency planning and emergence response at the country programme level. This is in direct response to try and meet peoples' basic needs for cooking, lighting and heating, in particular during an emergency. It is also an attempt to limit environmental damage during this phase of an operation, in recognition of the fact that much degradation can take place during camp establishment. Many refugees may also not have the opportunity to find alternative ways to cook their food aside from locally available natural resources, making it a priority to assist them and help prevent environmental damage and raised tensions with hosting communities.

Key issues which will be addressed in fulfilling this objective include the following:

- A comprehensive review and development of guidelines on how energy issues can be integrated into existing and all future contingency plans for Kenya. This needs to take into account possible future scenarios of refugee influxes, customary preferences (particularly for cooking) of the potential main ethnic groups, stockpiling and training of partner staff in the dissemination and use of any new technologies or fuels which might be considered for inclusion as part of the Emergency Response Kit;
- Assist government counterpart services with integrating immediate energy and environmental issues into their own response planning and actions;
- Acknowledge that refugees have the capacity to address some of their own energy needs and seek to involving them in such decision-making as early in the emergency response as possible;
- Ensure that criteria for site selection reflect environmental considerations and energy options and possible needs, in particular;
- Stockpile a minimum amount of household cooking stoves and solar lanterns for immediate distribution once people arrive at a new site;
- Stockpile a minimum amount of institutional cooking stoves for immediate distribution to reception and transit centres and, following camp establishment, to school feeding centres and other institutions;
- Commit to conducting a rapid environmental assessment following a decision on where a new camp might be established;
- Ensure that the continued needs of host communities (including pastoralist groups) are not going to be jeopardised by increased demands on locally available natural resources during an influx or following camp establishment;
- Integrate a longer term vision for energy, based on scientific information, lessons learned and local knowledge in designing responses to potential emergencies; and
- Commit secured resources to meeting critical energy and Environmental interventions in the refugee operations

3.3.2 Improved Access to Renewable Energy and Fuel-efficient Technologies

Since the establishment of the first camps in Dadaab and Kakuma, UNHCR and its partners have trialled a wide range of different approaches and technologies with regards domestic energy, in particular. While some individual and largely ad hoc achievements have been made in both locations, the level of input – in terms of financial and human resources – has clearly far exceed that of success which might be claimed. This Strategy seeks to rectify this situation, with immediate effect.

As an initial step in developing this Programme Strategy, a stocktaking exercise was undertaken of current technologies being used for energy provisioning, any experience their use and direct consultations with end-users to obtain their opinions on the current situation and needs. As a result, the following have been noted and now form a central part of the Action Plan for 2015-2018.

- There is a clear and urgent need for an integrated approach to energy provision across UNHCR's programme in Kenya. Energy must be routinely and consistently factored into all stages of the operation (from emergency – see above – to eventual closure and rehabilitation).
- Other programme sectors – Protection, Health, Nutrition, Shelter, Supply and so forth – also need to take the needs and implications of an energy programme into consideration in budgets, awareness raising, workplans and monitoring.
- The introduction of any new technology – stove, fuel or lighting related – needs to have been carefully tested prior to introduction, with care taken to ensure that the technology has been adapted to and will be culturally acceptable to the intended end-users.
- Refugees and members of the host communities should receive training on renewable energy technologies and the production of energy efficient stoves, the latter representing an opportunity for income generating services.
- Lessons and experiences of other technologies such as solar energy, hybrid systems or ethanol from other field operations need to be examined with regards their potential adaptation and use in Kenya.

This Strategy acknowledges that many refugee households may have, by preference and for convenience, more than one type of stove. While respecting this, UNHCR should at the same time strive to eliminate energy inefficient and health damaging cooking systems, particularly the use of three stone fires. Acceptance of improved mud stoves has been good in the camps to date, which justifies investment in training for the manufacture and maintenance of such stoves.

Two energy systems which hold particular promise for the Kenyan camps are ethanol and solar energy. A detailed feasibility study is, however, required prior to the scale up of the initial – and very limited – trials using ethanol, particularly in terms of ensuring a continuous, low-cost supply of this fuel. Likewise, caution needs to be exercised before any future development of biofuel crop production takes place in Kenya in support of this operation.

Solar energy also has considerable potential for household use, but needs to be approached and introduced to communities in a well-planned and concerted way. Previous ad hoc introductions have failed to convince users of the potential of this technology, which requires a slow and

patient approach if people are to become convinced of its merits. In the meantime, expanded use of solar panels should be made with regards water pumping and circulation from the camps' boreholes, in conjunction with other hybrid components to guarantee continuous service of these facilities.

3.3.3 Increased Access to Institutional Energy

Institutional energy needs, for cooking meals, lighting, heating and general power provisioning for appliances have been long overlooked in refugee operations. This Strategy, however, brings these essential needs clearly to the fore, both to help ensure improvements in peoples' health, their well-being and general working conditions as well as to help reduce the environmental impact which, to date, has mainly been in the supply of firewood for cooking meals.

As part of this Strategic Objective, the following will be carried out:

- conduct feasibility assessments on the use of 60- 100 litre institutional stoves, to determine their efficiency in the camp setting as well as their acceptability by users;
- on the basis of assessments, provide institutional stoves to schools, hospitals/clinics and other centres where they might have an impact;
- establish, on at least a partial cost-recovery basis, communal solar or similarly powered centres to provide people with access to electricity for charging and lighting, this being intended as an income-generating activity for specific members of the community;
- conduct energy audits of all UNHCR compounds in order to establish best possible options for more efficient and sustainable lighting, cooling and powering systems for its premises

3.3.4 Reforestation for Energy and Environmental Sustainability

This Strategy – through its Vision – seeks to promote and enable new approaches to energy and environmental planning, management, monitoring and reporting. In the context of this specific Strategic Objective, the Strategy advocates for a completely new level of thinking to be adopted, this being at the overall ecosystem or watershed level of a particular camp, or series of camps. The benefits of this approach are clear: rather than examining the specific interactions between a single camp – or even within physical parts of a camp – with the immediate surroundings, this new approach will take into consideration issues which might be over 100 km removed from a camp itself but which have an impact on the ecological performance and conditions closer to a camp site.

Knowledge of what is happening in the hinterland of a camp is essential for sound planning and management as it is here, for example, where knowledge of the level of rainfall is important, where information on biomass availability information can make the difference in decisions being taken with regards fuel supplies, and where planning on sustainable rangeland management can happen. This approach will also in future help make camps and communities more resilient to disasters such as flooding, which affect both Dadaab and Kakuma most years, each time with significant upheaval and repeated loss of resources.

Key to this approach in UNHCR's Kenyan Operation will be the development of community environmental action plans (CEAPs), a participatory approach which gives equal attention to

host communities (including pastoralist groups in this instance) and refugees. While “environment” is a key term in this approach, the actual lines of enquiry in developing a CEAP will take into consideration most of UNHCR’s traditional sectors, such as Protection, Health, Nutrition, Livestock, WASH and Shelter. Equally important is that this is an empowering process which can help resolve and prevent future conflicts over access to and use of scarce natural resources, such as water, pasture and firewood.

Productive and well-managed ecosystems provide an array of services for people and the environment, resources and options that they can use as insurance in the face of a disaster, as a result of social upheaval, as in the case of refugees. While well-managed ecosystems help reduce the risks and vulnerability, poorly managed they can exacerbate the situation by increasing risks of floods, disease, drought or even conflict.

While the components of a CEAP are designed purely on issues agreed by and within communities, following extensive consultations, on the basis of knowledge already known of the Dadaab and Kakuma operations, the following activities are potentially relevant to current needs:

- the promotion of locally made fuel-efficient stoves, for both communities, part of which could become an income-generating activity;
- development of management plans for available biomass, including *Prosopis*;
- rehabilitation of degraded areas around the camps in firewood collection zones
- improved rangeland management for grazing;
- improved water harvesting and management practices;
- greater awareness on environmental degradation and steps to take to help prevent/reduce this from happening;
- disaster risk planning and strengthening of resilience for environmental security and personal livelihood improvements;
- better solid waste management in the camps; and
- Environmental surveillance by law enforcement institutions including the National Environment Management Authority (NEMA), the Kenya Forest Service (KFS) and the Kenya Wildlife Service (KWS).

As a core component of the CEAP process, comprehensive training and capacity building are also undertaken, in line with the identified needs of specific stakeholder groups or institutions. Those expecting to benefit from this support might include, but are not limited to:

- national and county government services;
- community-based environmental governance structures;
- the Kenya Forest Service extension programmes on dryland forestry;
- the Turkana West Sub-County Environmental Committee, through training in environmental conservation and policy framework;
- UNHCR implementing partners.

Any future initiatives that involve reforestation or planting in relation to agroforestry and biofuel plantations would be based on a clear premise of acknowledged access to these goods. As part of its Global SAFE Strategy, UNHCR is seeking to ensure that all new – and to the extent possible, existing – plantations and woodlots are established with firm ownership of resources, whether timber or non-timber based

4. PLAN OF ACTION 2015-2018

The following Plan of Action captures the priority needs identified in terms of energy management for the period 2015-2018.

Activities	Outputs	Follow-up Indicators	2015		2016		2017		2018		Location	Responsible	Budget (US\$)
			S 1	S2	S3	S4	S5	S6	S7	S8			
STRATEGIC OBJECTIVE I	INTEGRATE ENERGY INTO EMERGENCY PREPAREDNESS AND RESPONSE												
Mid-term results	Energy needs integrated into contingency planning and response												
Results Indicators	Percentage of refugees using energy efficient cooking and lighting technologies within a predetermined time after an emergency influx												
Planning Phase	Percentage of refugees using cooking and lighting technologies within a predetermined time after an emergency influx												
Integrate potential energy needs of refugees in preparation and emergency response plans	Emergency response plans with key actions to meet energy needs	Incorporation of recommended energy elements in new emergency response plans									BO Nairobi	Programme Section	5,000
Advocate for inclusion of cooking devices and energy and lighting lanterns as part of Core Relief Items in emergency response	Sensitization and discussions with programme and managers conducted.	Cooking and lighting energy included as part of CRI kit for emergency response.									BO Nairobi	Technical Unit Programme	5,000
Compile a roster of potential suppliers of Emergency Energy Kit	Market analysis for potential suppliers of Emergency Energy Kit conducted	Emergency Energy Kit suppliers identified (yes/no)									BO Nairobi	Supply Chain Unit	3,000

Activities	Outputs	Follow-up Indicators	2015		2016		2017		2018		Location	Responsible	Budget (US\$)
			S 1	S2	S3	S4	S5	S6	S7	S8			
Rapid assessment of energy needs and potential impact	Energy need and potential impact established	Reports on energy need and impacts									Sub-office Dadaab Sub-office Kakuma	Technical Unit Programme Unit Partners	10,000
Design and conduct a training programme on Energy and environmental issues	Training and awareness raising programme in place	Number of training and awareness raising programmes									BO Nairobi Sub-Office Kakuma Dadaab Operation	Technical Units Programme Units Protection Sections Partners	30,000
Procure and distribute Emergency Energy kits in line with the Country Operation Contingency Plan (20,000 kits)	Each family supplied with an Energy Kit comprising a cook-stove, fuel and lantern	Number of families issued with an Energy Kit									BO Nairobi Sub-Office Kakuma Dadaab Operation	Supply Chain Programme Technical Unit Partners	3,000,000
Design and implement Monitoring & Evaluation (M&E) tools and schedule	M & E tools and schedule in place	Number of M & E assessments conducted									Dadaab Operation Kakuma Operation	Technical Unit Partners	10,000
STRATEGIC OBJECTIVE II	IMPROVE ACCESS TO HOUSEHOLD FUEL AND LIGHTING USING APPROPRIATE TECHNOLOGIES AND RENEWABLE ENERGY INNOVATIONS												
Mid-term results	Increased number of households using improved technologies												
Results Indicators	Percentage of households using more efficient technologies and renewable energy												

Activities	Outputs	Follow-up Indicators	2015		2016		2017		2018		Location	Responsible	Budget (US\$)
			S 1	S2	S3	S4	S5	S6	S7	S8			
Capacity building of artisans from refugee and host community on fabrication & maintenance of energy efficient stoves	Well trained cluster of artisans on energy efficient stoves	Number of artisans trained									Dadaab Kakuma	Energy Implementing Partners	100,000
Capacity building of artisans from refugees and host community on fabrication and maintenance of energy efficient stoves	Trained cluster of artisans on energy efficient stoves	Number of artisans trained									Dadaab Kakuma	Energy Implementing Partners	100,000
Training and sensitization of refugees on use and maintenance of improved fuelwood saving stoves	Refugees are well trained on use & maintenance of improved fuelwood stoves	Number of refugees trained in the use of improved fuelwood stoves									Dadaab Kakuma	Partners Technical Unit	50,000
Fabrication/procurement and distribution of improved fuelwood saving stoves to targeted households	Targeted refugee households supported with fuelwood efficient stoves	Number of households with a fuelwood efficient stove									Dadaab Kakuma	Partners Technical Unit Supply Chain Unit	1,000,000
Training and sensitization of refugees on use and maintenance of ethanol stoves	Refugees are well trained on use & maintenance of ethanol stoves	Number of refugees trained									Dadaab Kakuma	Partners Technical Unit	50,000

Activities	Outputs	Follow-up Indicators	2015		2016		2017		2018		Location	Responsible	Budget (US\$)
			S 1	S2	S3	S4	S5	S6	S7	S8			
Upscale utilisation of bio ethanol as a clean & renewable source of cooking energy	Targeted refugee households supported with ethanol stoves and fuel	Number of refugee households cooking with bio ethanol									Dadaab Kakuma	Programme Unit Technical Unit Partner	2,000,000
Procurement and distribution of firewood to selected vulnerable households	Vulnerable households receive firewood rations	Number of households receiving firewood									Dadaab Kakuma	Partners Technical Unit	2,000,000
Engage private sector to improve access to cooking and lighting energy	Engagement with private sector conducted	Extent to which energy is provided as livelihood / business model									Dadaab Operation Kakuma	Technical Programme Livelihood	7,000
Procure and distribute solar lanterns to selected refugee households	Refugees supported with night lighting	Number of refugees supported with solar lanterns									Dadaab Kakuma	Programme Unit Technical Unit Supply Chain	900,000
STRATEGIC OBJECTIVE III	IMPROVE AND INCREASE SUSTAINABLE AND IMPROVED ENERGY ACCESS TO SCHOOLS, HEALTH CENTRES AND OTHER INSTITUTIONS												
Mid-term results	Increased number of Institutions using improved technologies												
Results Indicators	Percentage of Institutions using more efficient technologies and renewable energy												
Using business model, establish communal Photovoltaic (PV) centres for improved access to solar	Number of Community Solar	Number of PoC benefiting from PV as									Dadaab Kakuma	Field Offices	400,000

Activities	Outputs	Follow-up Indicators	2015		2016		2017		2018		Location	Responsible	Budget (US\$)
			S 1	S2	S3	S4	S5	S6	S7	S8			
energy for charging and lighting as an IGA	Photovoltaic (PV) centres	income generating projects.											
Upscale use of LPG to cover more institutions	Availability of reliable cooking energy for institutions	Number of institutions using LPG									Dadaab Kakuma	Field Offices Technical Unit	700,000
Install biogas systems for cooking and lighting in boarding schools	Cooking energy from biogas	Number of schools installed with bio gas generators									Dadaab Kakuma	Field Offices Technical Unit	600,000
Install Solar Street Lights in public institutions and spaces	Public Institutions lighted	Number of institutions lighted with solar energy									Dadaab Kakuma	Supply Chain Programme Unit Technical Unit	3,000,000
Support Host Community in establishing power generation plants	Power generated from a central point	Access to power for all potential subscribers									Dadaab Kakuma	Supply Chain Programme Unit Technical Unit	4,000,000
Procure firewood and fuelwood efficient stoves for selected institutions	Cooking energy from firewood	Number of institutions supplied with firewood and fuelwood efficient stoves									Dadaab Kakuma	Programme Unit Technical Unit Partners	1,600,000
Training for artisans from the refugee and host community on renewable	Capacity of artisans enhanced	Number of artisans trained									BO Nairobi Dadaab Kakuma	Programme Unit Technical Unit Partners	100,000

Activities	Outputs	Follow-up Indicators	2015		2016		2017		2018		Location	Responsible	Budget (US\$)
			S 1	S2	S3	S4	S5	S6	S7	S8			
energy and energy efficient technologies													
Organise Renewable Energy Exhibitions for leaders, host community and refugees	Awareness on Renewable Energy created	County Government support enlisted									BO Nairobi Dadaab Kakuma	Programme Unit Technical Unit	100,000
Establish Energy Centres for training, capacity building and income generation											Dadaab Kakuma	Programme Unit Technical Unit	200,000
Forge partnership with key players from the private sector on renewable energy and improved technology	Business model introduced in accessing renewable energy and technology	Enhanced involvement of the private sector									BO Nairobi Dadaab Kakuma	Programme Unit Technical Unit	50,000
Install Solar system to run boreholes.	Solar-Genset hybrid system pumping water in all boreholes	Number of BH's using solar energy. Amount of fuel saved in each BH									Dadaab Kakuma	Technical Unit	3,200,000
STRATEGIC OBJECTIVE IV	ESTABLISH AND MANAGE WOODLOTS AND OTHER POTENTIAL BIOFUELS FOR FUEL PROVISION AND ENVIRONMENTAL PROTECTION												
Mid-term results	Woodlots are established within and/or around each camp												
Results Indicators	Number of hectares reforested within/or around camps												
Establishment of tree nurseries for production and	Seedlings for compound afforestation and	Number of tree nurseries established									Dadaab Kakuma	Technical Unit Programme Unit	120,000

Activities	Outputs	Follow-up Indicators	2015		2016		2017		2018		Location	Responsible	Budget (US\$)
			S 1	S2	S3	S4	S5	S6	S7	S8			
distribution of tree seedlings	range rehabilitation available												
Rehabilitation of degraded rangeland around the refugee camps	Degraded land is restored	Number of hectares of land rehabilitated									Dadaab Kakuma	Technical Unit Programme Unit	3,000,000
Protection of restored / rehabilitated areas	Integrity of rehabilitated land is maintained	Rehabilitated area remains intact									Dadaab Kakuma	Technical Unit Programme Unit	200,000
Conduct biomass surveys around the refugee camps to establish current status of the eco-systems	Status of eco-systems established	Biomass Assessments around Kakuma and Dadaab camps									Dadaab Kakuma	Technical Unit Programme Unit Supply Chain	100,000
Develop a <i>Prosopis</i> management plan for Kakuma and the entire Turkana West Sub-county	Plan on management of <i>Prosopis</i> available	<i>Prosopis</i> Management Plan									Kakuma	Technical Unit	50,000
Support to Environmental Governance and Coordination Mechanisms	Effective coordination mechanism	Effective coordination among stakeholders									Dadaab Kakuma	Technical Unit Programme Unit	50,000
Monitoring and Evaluation of project interventions undertaken on a regular basis	Impact of project interventions established	Reports on Environmental Impact Assessments (EIA) and Audits (EA)									Dadaab Kakuma	Technical Unit Programme Unit Supply Chain Partners	50,000

Activities	Outputs	Follow-up Indicators	2015		2016		2017		2018		Location	Responsible	Budget (US\$)
			S 1	S2	S3	S4	S5	S6	S7	S8			
COORDINATION, OVERSIGHT AND MONITORING AND EVALUATION													
Hiring of an Environmental Officer to coordinate Strategy implementation	A full-time Environmental Officer is hired	Availability of Environment Officer (yes/no)									BO Nairobi	Representative	348,000
Hiring of Energy/Environment focal persons for Kakuma and Dadaab	Two Energy focal persons hired for Kakuma and Dadaab	Availability of Energy Focal Persons (yes/no)									Sub-office Kakuma Sub-office Dadaab	Heads of Operations	250,000
Advocate for government to play a greater role in addressing energy needs in refugee camps	Government commitments	<ul style="list-style-type: none"> County Governments involvement in environmental rehabilitation Waiver on the Excise tax on ethanol 									BO Nairobi Sub-office Dadaab Sub-office Kakuma	Department of Refugees affairs with support from UNHCR Programme Section	150,000
Establish a joint energy technical and oversight committee to address energy challenges and guide innovations	Recommendations on a new strategic direction on energy sourcing	Existence of Guidelines on access to energy									BO Nairobi	Technical Unit	240,000
Establish an awareness raising campaign on energy and environment for refugees and host communities	Existence of awareness raising materials and tools	Enhanced energy & environmental management consciousness									BO Nairobi Sub-office Dadaab Sub-office Kakuma	Technical Units Programme Units	100,000

Activities	Outputs	Follow-up Indicators	2015		2016		2017		2018		Location	Responsible	Budget (US\$)
			S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8			
Support existing and traditional natural resource management and co-ordination mechanisms	Functional structures for management of energy and natural resources	Enhanced management and coordination among stakeholders									Sub-office Dadaab Sub-office Kakuma	Technical Units Programme Unit	60,000

5. FROM STRATEGY TO ACTION

5.1. Introduction

Since its establishment in 1991, the Kenya programme of refugee assistance has not had a coherent and systematic approach of addressing the critical issues associated with providing persons of concern with energy for cooking, lighting, heating and powering income generation activities. Previous interventions have been guided by policy statements articulated in different bulletins that include camp specific Community Environment Action Plans (CEAP); the periodic Country Operations Plans (COP); the inter-sectoral Technical Roadmaps; and the UNHCR Kenya Environment Strategic Plan (2011-2015). A common thread in all the past policy documents is the singular attention on firewood as the main source of energy for all purposes.

The SAFE Strategy (2015-2018) is designed to infuse a progressive but radical change in management of energy issues in the Kenya Programme. In line with the strategic objectives that have been well articulated and in collaboration with the key stakeholders, the Kenya Programme is poised to concretise an efficient mechanism for addressing issues associated with access to sustainable energy and appropriate technologies in emergency situations; at household level; as well as institutional level. The Strategy also highlights the nexus between firewood harvesting and the ensuing environmental degradation and provides a critical window that will enable rehabilitation of the degraded areas in a comprehensive manner.

The Strategy is underpinned on the need to shift from the “business as usual” model of managing energy issues to a model that embraces innovations associated with adoption of improved technology, sustainable eco-friendly sources of energy, strategic partnerships, and new sources of funding for energy projects.

For the four year duration, the Strategy proposes a transition process typified by an “Energy Mix” that is specific to each of the set objectives as follows:

- For the Emergency Phase, it is envisaged that an energy pack (Ethanol, Stove & Solar Lantern) will be part of the emergency core relief items distributed to persons of concern.
- In a bid to improve energy access at household level, the Strategy supports the current approach of targeting the most vulnerable households (30% of total number of households) with energy efficient stoves and fuel. It also advocates for support to non-targeted households (70% of total households) with fuel efficient stoves and technical backstopping in fabrication and use of the stoves. The same households will be linked with commercial entrepreneurs dealing in Ethanol, briquettes, LPG and solar equipment.
- To improve energy access to schools, health centres and other institutions, the on-going LPG pilot project will be up-scaled; bio-gas digesters will be installed where appropriate; and solar panels will be mounted.
- The Strategy acknowledges the dire need to rehabilitate areas degraded by refugees while harvesting fuelwood and also the need to manage existing woodlots. In line with this, the on-going pilot projects on fabrication of briquettes from Prosopis by FAO in Kakuma and WFP in Dadaab will be up-scaled. In addition, the rehabilitation interventions will be expanded to cover wider acreage.

5.2. Stakeholders

This Strategy has been developed at a time when energy issues are receiving a lot of attention from a wide range of stakeholders ranging from UNHCR persons of concern, to government partners, implementing partners, donors, academia, research agencies, and private entrepreneurs. Table 10 below presents the various stakeholders expected to play key roles in actualization of provisions of the Strategy.

Table 10: Actors and Partner

PARTNER/ACTORS	AREA OF INTERVENTION
Department of Refugee Affairs	Camp Management
Garissa County Government	Policy formulation, enforcement and project implementation
Turkana County Government	Policy formulation, enforcement and project implementation
RRDO	Implementation of projects on Energy & Environment in Dadaab Sub county
FaIDA	Implementation of projects on Energy & Environment in Fafi Sub county
LOKADO	Implementation of projects on Energy & Environment in Turkana West Sub county
Ministry of Energy and Petroleum	Policy guidance, enforcement and implementation
Donors	Support with funding
Private Entrepreneurs	Management of Energy using the Business Model
Universities	Research on energy and environment issues
NEMA	Enforcement of Government policies on energy & environment management
WFP	Provision of Stoves and briquettes
UNHCR	Coordination
FAO	Piloting briquettes from Prosopis

5.3. Monitoring and Evaluation

Prior to implementation of the Light Years Ahead Project which was undertaken in the Dadaab Refugee Complex in 2014 with support from the people and Government of Canada, UNHCR commissioned a Monitoring & Evaluation System and Baseline Survey Report. The Report, which effectively captures the energy situation in the Kenya Programme of refugee support as at 2014, provides a comprehensive and practical basis for a Monitoring and Evaluation (M&E) mechanism that will guide overall implementation of the activities envisaged under the SAFE Strategy. The M & E structure will provide a mechanism for tracking implementation of the Strategy as well as its overall Impact on the respective stakeholders.

5.3.1 Monitoring

Through regular field monitoring visits, field surveys/assessments and reporting by UNHCR and Partners, the M & E structure will, on a periodic basis, generate data that will show progress on selected indicators as indicated in Table 11 below.

Table 11: Strategy Implementation Indicators

Objective	Indicator(s)
Integrating Energy into Emergency and Response.	% of households with access to sustainable energy
	Availability of CRI kits containing energy efficient stove & renewable energy for cooking and lighting (Yes/No)
Improved Access to Energy at Household Level	# of households using alternative sources of energy
	# of households cooking with an energy efficient stove
	# of refugee and host community members trained on fabrication & maintenance of energy efficient stoves
	Application of the “Business Model” in provision of Energy to persons of concern (Yes/No)
Improved Access to Energy at Institutional Level	# of institutions using renewable energy for cooking and lighting
	# of biogas plants established
Establish and manage woodlots for fuel provision and environmental protection	# of hectares of degraded land rehabilitated
	Level of funds raised through carbon credit schemes
	Amount of <i>prosopis</i> supplied for firewood
	Quantity of briquettes made from Prosopis
	Area planted with plant species for bio-fuel
	# of EIAs, EAs and SEAs conducted
	Availability of Biomass Survey Reports (Yes/No)
	Coordination structures established (Yes/No)

5.3.2 Mid-term Review

A mid - term review of implementation of this Strategy will be conducted at the beginning of 2017 against the set indicators and will involve the main stakeholders, partners, refugees and host community. The report will be presented to all stakeholders for review and adjustments on strategy implementation based on findings and recommendations.

5.3.3 Evaluation

To be continuously done as monitoring function but the fine evaluation exercise conducted 2019 after completion of all activities within the strategy. This will be expected to analyse the achievement on impacts, outcomes, sustainability, cost effectiveness, adoption other alternative renewable energy sources by refugees, innovations, partnership success, funding stream, comprehensive coverage of strategic objectives, technology and most important the improvement of access to energy by the refugees among other target and results variables.

5.4. Strategic Implementation and Approach

Implementation of this Strategy requires concerted efforts by the main stakeholders who include: Agencies of the United Nations; UNHCR Implementing Partners, National Government; County Governments, NGOs and the private sector. To move this forward, a joint Action Plan will be drawn by the Steering Committee for the Kenya SAFE Strategy that will be nominated by stakeholders during the National Stakeholder’s Validation Workshop scheduled for early 2015. UNHCR will be the lead agency in coordination of Strategy implementation but will require the goodwill and support of both the county and national Governments. The proposed Refugee Bill 2014 is likely to affect the dynamics of how this Strategy is implemented.

Table 12: Key factors necessary for Strategy Implementation

Strategy Component	Forward Planning for strategy implementation
Funding for 2015	Commitment from UNHCR programming
IP capacity	Carry out a training needs assessment on IPs personnel
UNHCR Capacity	Set up the UNHCR Coordination Desk to support fund-raising and implementation of the Strategy.
Stakeholders’ Role Play	Sign agreements with County Governments, academia, research institutions and private sector actors involved in the implementation of the Strategy
National Government support	Get commitment from Government line ministries/departments on their support for the Strategy
Donor Support	Organise a launch for the Strategy and use the occasion to solicit funding for implementation
Host community involvement	Set up steering committees for implementation and co-opt host community representation.

6. FUNDING

The estimated cost of implementing this Strategy over the four year period (2015 – 2018) is projected at USD 28 million. The cost has been budgeted under the Branch Office as a cost centre while the actual activity implementation has been budgeted under the Sub Offices where the energy and environmental challenges are being addressed. The main role of the Branch Office Nairobi in the implementation of this strategy will be to coordinate with the National Government, partners and the private sector and to a larger extent with potential donors for the Strategy. Below is a list of potential partners and sources of funding.

Table 13: Funding the Strategy

Potential Partner	Area of Support
Private Sector	<ul style="list-style-type: none"> To develop business lines for energy products such as ethanol stoves, ethanol fuel supply and solar powered equipment
County Governments	<ul style="list-style-type: none"> Budgetary allocations to energy projects targeting host communities.
Refugee Community	<ul style="list-style-type: none"> In-kind participation (labour) on activities such as land rehabilitation
Host Community	<ul style="list-style-type: none"> In-kind participation (labour) on activities such as reforestation
National Government	<ul style="list-style-type: none"> Budgetary allocations to line departments (Energy, NEMA, Forestry) Waiver of Excise Duty on Ethanol Tax rebate on solar equipment Establishment of large scale renewable energy harvesting projects (solar, wind, geo-thermal & bio-fuel plantations)
Universities/Technical Colleges	<ul style="list-style-type: none"> Capacity building and promoting innovation in energy sector
Village Polytechnics	<ul style="list-style-type: none"> Capacity building/training of artisans on renewable energy
Small Scale Enterprises (SME)	<ul style="list-style-type: none"> Fabrication and sale of energy efficient stoves at affordable rates

Anticipated innovative financial mechanisms could take the form of Public private partnerships as in the case of establishing off grid solar power stations in the operation area, jointly funded research collaboration as with Jomo Kenyatta University of Agriculture and Technology (JKUAT) and Kenya Industrial Research and Development Institute (KIRDI). Build Operate and Transfer (BOT) as in the case of establishing ethanol infrastructure and production systems

in partnership with local or foreign private sector investors where the facilities are later transferred to local investors under the guarantee ship of the County Governments.

The stove production and use could be linked to Carbon Credit funding mechanisms where every stove used by the refugees earns carbon credit values that are consolidated and a % paid to refugees while another percentage is used to subsidize the cost of producing or acquiring of new energy efficient stoves.

7. RESOURCES AND REFERENCES

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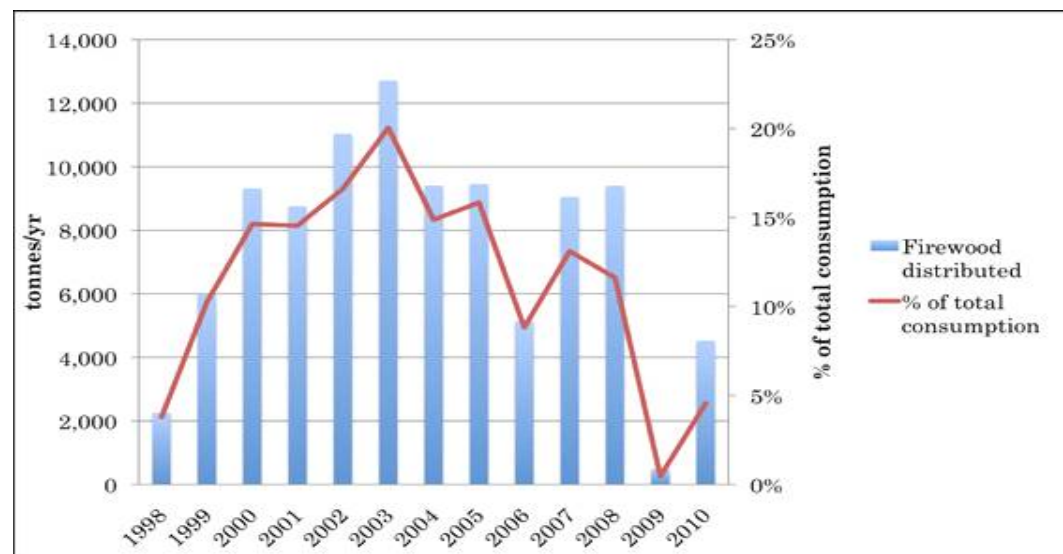
8. ANNEXES

8.1. Annex 1: Contracted firewood supply in Dadaab (1998-2010)

Year	Firewood distributed	Average refugee population	Average consumption per person (Kg/day)	Average consumption overall	% supplied
1998	2.265	108.827	1,50	59.583	4%
1999	5.999	110.000	1,46	58.552	10%
2000	9.322	123.138	1,42	63.673	15%
2001	8.761	120.000	1,38	60.225	15%
2002	11.041	136.445	1,33	66.403	17%
2003	12.716	134.552	1,29	63.436	20%
2004	9.411	138.618	1,25	63.244	15%
2005	9.458	135.354	1,21	59.697	16%
2006	5.142	136.671	1,17	58.199	9%
2007	9.053	168.227	1,13	69.078	13%
2008	9.405	204.646	1,08	80.920	12%
2009	489	270.638	1,04	102.899	0%
2010	4.525	272.029	1,00	99.291	5%
	93.060			905.200	11%

Source: Firewood supply records from GTZ Dadaab. Refugee populations from UNHCR (2005-2010) and internet research (1998-2004). Firewood consumption for 1998 from Owen (1998), reduced in linear fashion to 2010 measured figure of 1.0 kg per person per day (pppd)

8.2. Annex 2: Contracted firewood supply in Dadaab (1998-2010)



Source: Owen 1998

8.3. Annex 3: Solar lanterns distributed in Dadaab in households and schools (as at 2014)

Donor	Number of lanterns	Distributing Agency
IKEA	11,400	CARE and LWF
UNHCR Korea	2,372	UNHCR ENYA
UNHCR Geneva (Environment)	6000	KRCS
PANASONIC	250	IRC
WAKAWAKA FOUNDATION	142	FaIDA
CIDA	9000	RRDO and FaIDA
Environment (From India)	140	UNHCR