GUIDANCE NOTE

Meeting fuel and energy needs in protracted crises

The SAFE approach
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This guidance note is part of a series on improving food security and nutrition in protracted crises. Drawing on FAO technical experience, the guidance notes series supports implementation of the Framework for Action for Food Security and Nutrition in Protracted Crises (CFS-FFA), endorsed by the Committee on World Food Security (CFS) in October 2015.
Access to fuel and energy – vital for food security – is often highly constrained in protracted crises.

The risks posed by limited access to fuel and energy are multiple and diverse depending on the context, including malnutrition, environmental degradation, a high work burden for women, gender-based violence (GBV) and unsustainable livelihood activities.

The inter-agency Safe Access to Fuel and Energy (SAFE) initiative and FAO work on SAFE address the multi-sectoral challenges associated with energy and contribute to resilience-building in protracted crises. They also make a contribution to a number of principles in the Committee on World Food Security’s Framework for Action for Food Security and Nutrition in Protracted Crises (CFS-FFA).
Access to fuel and energy, necessary to food security, is highly constrained in protracted crises.

Given that around 80 percent of the food consumed by humans requires cooking (Practical Action, 2014), food insecurity is exacerbated when vulnerable populations have limited access to cooking fuel. Many people are unable to access the modern energy services necessary for cooking food safely and sustainably.

In most countries affected by protracted crises, as well as many other developing countries, the most common cooking fuel is traditional biomass, with an estimated 2.7 billion people reliant on traditional biomass to cook their food (International Energy Agency, 2015). This includes energy sources such as fuelwood, charcoal, crop residues and animal waste which, in many countries, account for over 90 percent of household energy consumption and have a negative impact on a range of sectors including health, nutrition, environment and livelihoods. This is increasingly recognized as a serious problem and the need to address these multi-sectoral challenges is enshrined in Sustainable Development Goal 7: “Ensure access to affordable, reliable, sustainable and modern energy for all”.

In protracted crises, access even to preferred forms of traditional biomass may be severely constrained, forcing affected populations to rely on a range of negative coping strategies.

In such crises, several common features impact access to and the availability of fuel and energy:

- forced displacement and the establishment of camps which house refugees and IDPs;
- violent and often long-standing conflict;
- climatic, environmental and economic shocks and stresses;
- an increase in unsustainable livelihoods, which may be highly woodfuel-intensive;
- the breakdown of local institutions such as those regulating access and management of natural resources, coupled with a lack of legitimacy or accountability of state institutions; and
- lack of political will to address root causes.
Protracted crises and the associated challenges unfold in a range of different livelihood and agro-ecological zones, including camps and improvised settlements hosting displaced persons, arid- and semi-arid lands, tropical environments, rural and urban settings and areas with varying status and availability of natural resources. This has strong implications for availability and access to fuel and energy. In these different settings, the collection, production and use of fuel and energy are associated with a myriad risks and challenges encompassing malnutrition, environmental degradation, a high work burden for women, gender-based violence (GBV) and unsustainable livelihood activities. These risks are exacerbated for people affected by protracted crises, particularly in displacement settings, and affect women and children disproportionately.

For example, reliance on woodfuel for cooking poses grave environmental and health risks. Half of the illegal removal of timber from forests is thought to be for use as fuelwood (World Wildlife Fund, 2016), whereas household air pollution, caused by the burning of biomass using inefficient means of cooking, is responsible for 25% of black carbon emissions (GACC, 2015). Furthermore, women who walk long distances in search of fuelwood are exposed to the risk of harassment, assault and rape.

Access to fuel and energy in the CFS Framework for Action for Food Security and Nutrition in Protracted Crises (CFS-FFA)

This guidance note will draw on FAO experience and lessons learned to support FAO staff and strategic partners in addressing energy access as part of food and nutrition security interventions in situations of protracted crisis. Its purpose is to contribute to the implementation of the CFS-FFA principles (see table below) and demonstrate that understanding and responding to fuel and energy needs and related risks are critical for effective and sustainable food and nutrition security interventions in protracted crises.

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According to WHO, 4.3 million people die every year of Household Air Pollution (HAP) – more than HIV, Malaria, and TB combined.
Multiple risks posed by limited access to fuel and energy in protracted crises

Limited access to fuel and energy in situations of protracted crisis results in a wide range of risks in relation to the environment, malnutrition, health, gender, livelihood, disasters and natural resources and conflict. These are outlined in greater detail below.

Environmental degradation and deforestation

Forests and woodlands in areas surrounding displacement camps and rural villages are often used to provide the wood needed as fuel for cooking. The energy needs of refugees and IDPs living in camps can increase pressure on surrounding forests and woodlands, ultimately causing a high risk of deforestation and/or forest degradation.

In these contexts, forest management can face several interlinked challenges, including overharvesting of fuelwood, uncertain land and tree tenure regimes and conflict and tension between displaced and host communities. In post-emergency contexts, the needs of returnees may also have a profound ecological impact.

The impact of returnees on forests in Ethiopia

In the Tigray region of northern Ethiopia, the return of several hundred thousand refugees from Sudan from the mid-1990s onwards has resulted in the unsustainable exploitation of vegetation for fuel, fodder and building materials (UNHCR, 2005). Primarily as a result of instability in Somalia, Sudan and South Sudan, the towns of Dadaab and Kakuma in Kenya host large refugee populations.
Women’s work burden and protection risks

Women and girls are often tasked with both collecting fuel and cooking. In protracted crises this often exposes them to multiple dangers as they walk long distances in search of fuelwood, including attacks by wild animals, assault and rape by men, and risk of getting hurt when cutting wood, exhaustion and thirst. The collection of fuelwood can be particularly dangerous in displacement settings and areas of scarce or depleted natural resources, as the increased population pressure may heighten competition for resources and increase the risk of conflict between displaced and host communities. Furthermore, the social structures that may previously have provided protection are often no longer in place in displacement settings.

The time women spend collecting fuel is also time away from income-generating activities, child care and leisure. Furthermore, children are often also tasked with collecting fuel for the household, which exposes them to protection risks and reduces the time they spend on their education.

Women and girls exposed to protection risks in Karamoja while collecting cooking fuel

WFP has reported that the widespread reduction of forest cover in the Karamoja region of Uganda is forcing women and girls to walk increasing distances in order to collect grass and wood for use as cooking fuel. The heavy reliance of households on fuelwood in Karamoja has created serious protection risks for women and girls (WFP, 2011).

Tanzania - Kigoma. Elderly women carrying firewood back to their homes. ©FAO/Simon Maina.
Inadequate cooking practices and malnutrition

Protracted crises may involve the displacement of people to places with few livelihood opportunities. With few livelihood opportunities and meagre savings, there is little money to spend on cooking fuel.

In these situations, the scarcity of fuelwood and other sources of energy can increase the risk of malnutrition. As cooking fuel becomes scarce, households may resort to negative coping mechanisms such as switching to less nutritious foods with shorter cooking times, undercooking food or reducing the number and size of meals. WFP has reported that selling or bartering food for fuel is a commonly adopted strategy, especially in contexts where food is the main, if not the only, source of income. These practices negatively affect the quantity, quality and nutritional value of the food consumed (WFP, 2011) and pose particularly grave risks for pregnant and breastfeeding women and their children.

Health and safety risks

In many countries affected by protracted crises, as well as in many other developing countries, populations rely on the use of a three-stone fire or other forms of open fires to cook food. Cooking may be carried out in crowded and poorly ventilated dwellings, e.g. in refugee camps, and the subsequent exposure to indoor air pollution disproportionately affects women and young children, who spend the most time near open fires inhaling smoke.

The indoor burning of biomass fuel releases smoke containing numerous pollutants into the environment, including carbon monoxide, particulate matter and other organic compounds (Barnes, 2014). Over four million people die each year as a result of inhaling lethal smoke from open fires (WHO, 2016), and more than 50 percent or premature deaths among children under five are due to pneumonia caused by particulate matter inhaled from household air pollution (WHO, 2016).

The use of a three-stone fire for cooking also greatly increases the risk of women and children getting burned, causing permanent disabilities and even child mortality. FAO has carried out rapid fuel needs assessments in protracted crisis settings in Kenya, Somalia, Ethiopia, South Sudan and Myanmar and the use of the three-stone fire was found to be widespread in all of the locations visited. The negative impacts of using this cooking technology were reported by female respondents, which included refugees, IDPs and host populations.

Unsustainable livelihood activities

Vulnerable populations in emergencies and protracted crises often rely on the sale of fuelwood and charcoal, which are risky and unsustainable livelihood activities. Charcoal production is highly inefficient and as little as 10-20 percent of the wood used in traditional charcoal making is actually marketable as charcoal, while the rest is often wasted in the process.

Charcoal production, the main livelihood activity of the poorest and most marginalized people in Somalia and South Sudan

In crisis-affected parts of Somalia, charcoal production is the main source of income primarily for the poorest and most marginalized parts of the population. In South Sudan, charcoal production is becoming an important livelihood activity for many people, including ex-combatants, who have few other opportunities to rely upon. An increasingly significant share of the charcoal produced is exported to Sudan, Uganda and the Middle East (Thulstrup and Henry, 2014).
Disaster risks and pressure on natural resources

Many countries face multiple natural and man-made disasters, which have negative impacts on people, goods, services and the environment. Livelihoods are disrupted and the resources needed to recover in the short or medium term are often lacking. Drought, floods, landslides and fires are among the major natural hazards faced by populations in protracted crisis situations, who depend on fuel and energy for cooking and productive activities. Drought, for example, drives people into other areas in search of natural resources which may increase tension and conflict between various livelihood groups. The production of charcoal and the unsustainable cutting of fuelwood contributes to deforestation and forest degradation, which is the third largest contributor to climate change.

In areas with high population pressure, the extraction of wood for fuel purposes may accelerate deforestation and forest degradation, which increases the risk of drought, soil erosion and landslides. Conversely, both slow- and sudden-onset natural hazards impact the availability of woodfuel resources. As this availability declines, e.g. as a consequence of drought and overharvesting, women also have to walk longer distances, in even more difficult conditions, in order to obtain fuelwood.

To compensate for deficiencies in fuelwood availability, there is widespread use of animal dung, harvest surpluses or agricultural residues which could be better used as fertilizers. If animal dung and crop residues are excessively deployed as a source of fuel by affected populations, soil fertility may decrease. Furthermore, pollution derived from cooking on open fires is responsible for 25 percent of black carbon emissions, thus further contributing to climate change.
Conflict and tension

Conflict has been the main driver of the rapidly increasing demand for fuel as a result of forced displacement. For example, an estimated 50 percent of the population in Darfur, around 3.5 million people, are directly affected by conflict through violence, displacement and disruption of livelihoods (ProAct, 2012). The displaced are forced to find fuelwood in areas surrounding camps due to a lack of consistent and reliable fuel supplies.

In addition, conflict may also increase in the areas with high numbers of displaced people. Inter-communal tension and conflict may arise between communities as a result of the combined fuel needs of displaced populations and their hosts. In these situations, gender-based violence is also liable to increase as fuelwood collectors are attacked. Charcoal producers may compete with pastoralists for access to trees that are used to produce livestock fodder, provide shade for both animals and humans, for medicinal purposes as well as for charcoal production.

FAO SAFE assessments

FAO has conducted SAFE assessments in Kenya, Somalia, South Sudan, Ethiopia and Myanmar. The following are some of the challenges faced by vulnerable populations, primarily women and children, who collect and use solid biomass for cooking in protracted crises:

- lack of fuel causes food to be undercooked (Somalia);
- reliance on less preferable “coping” fuels such as biomass from Prosopis trees, twigs, fencing materials, plastic bottles, leaves and animal dung;
- an increasing number of trips per week needed to collect fuelwood, such as 7 trips/week (Somalia), increasing distances walked and the amount of time spent collecting;
- safety and protection risks during collection trips including harassment and assault by men, hyena attacks, snake attacks, hunger, thirst, scratches from trees and injuries sustained from falling down due to heavy loads;
- lack of water for the establishment of woodlots to supply fuel (Somalia);
- physical confrontations between displaced and host communities due to competition for scarce forest resources (Somalia and Kenya) and due to existing conflict and tension (Myanmar and South Sudan);
- headaches, coughing, phlegm, red eyes, poor vision and overheating due to cooking over an open fire in poorly ventilated areas; and
- assessments of changes in forest cover around a refugee camp in Ethiopia showed a reduction in the available above-ground biomass which has implications for the future supply of cooking fuel and the risk of further degradation.
According to 2015 estimates by the International Energy Agency, 2.7 billion people rely on traditional biomass to cook their food.
FAO work on SAFE in protracted crises

The SAFE approach

The multi-sectoral challenges outlined above clearly require a multi-sectoral response. One such response measure is Safe Access to Fuel and Energy (SAFE) – an inter-agency initiative and adopted by FAO to address the challenges associated with energy and to contribute to resilience-building in protracted crises.

FAO SAFE approach comprises three interlinked pillars

Ensuring sustainable supply of energy

Addressing energy demand

Promoting sustainable livelihoods

The multi-sectoral challenges associated with energy access in emergencies

Climate Change

Energy Access

Nutrition

Gender and Protection

Forests

Conflict

Livelihoods

Health

Desired outcomes and processes

Food security, sustainably managed natural resources, small-scale employment generation and livelihood diversification, improved health, enhanced nutrition, climate change mitigation, women and youth empowerment, peacebuilding and social cohesion.
SAFE is comprised of three interlinked pillars:

1. Ensuring a sustainable and diversified supply of energy through the establishment and management of tree nurseries, the promotion of agro-forestry systems, (which can provide fuel and food from the same land), multi-purpose communal woodlots and other modes of reforestation and afforestation, sustainable natural resource management, the use of agricultural residues, (where there are no competing uses), and other alternative fuels. These options include the piloting of other forms of renewable energy such as solar. However, there is substantial evidence showing that dependence on woodfuel will not decrease in the foreseeable future, particularly in sub-Saharan Africa, where a substantial number of countries are experiencing protracted crises. Options can also include the promotion and establishment of Integrated Food-Energy Systems (IFES) – agricultural systems that produce both food and energy on the same land or in the same integrated production system. Food and energy crops can be cultivated at the same time, such as in agro-forestry systems, or in sequence, through crop rotations. Biogas for cooking, heating and lighting can be generated through the use of anaerobic digestion of crops, livestock and, where culturally acceptable, human waste while also producing bio-slurry as a by-product, which can be used to fertilize agricultural plots.

2. Addressing energy demand, for example, through the promotion of fuel-saving cooking practices and fuel-efficient technologies for cooking and productive uses. Fuel is often provided by humanitarian actors to displaced populations but is often insufficient. The use of fuel-efficient stoves (FES) can save 10–50 percent of the biomass consumed when using a three-stone fire (Energypedia). Fuel-saving cooking techniques include using less water for boiling, cutting food into smaller pieces before cooking, pre-soaking beans before cooking, preventing the loss of steam by using lids, managing the fire and other simple procedures that can reduce the amount of wood or other biomass needed for cooking.

3. Promoting social and economic benefits and diversified livelihoods in order to build resilience and limit environmental degradation resulting from negative coping strategies. The establishment and sustainable management of tree nurseries, woodlots and agro-forestry can be promoted as a livelihood activity for both men and women. These livelihood activities should ideally target vulnerable households that rely on unsustainable, coping activities such as charcoal production. FAO has identified a number of FES which are resilient, diverse systems that can not only produce food and energy but also marketable products for income-generation from the same land or integrated farming system (Bogdanski et al. 2010). Women can also produce fuel-efficient stoves using local materials, which constitute safer and cleaner alternatives to the three-stone fire. Mud, ceramic and metal stoves can be produced using local materials and appropriate designs and sold to generate income. The diversification of livelihood activities can also include non-fuel-related pursuits such as raising small ruminants, micro-gardening, beekeeping and other agricultural- and non-agricultural activities. Reducing reliance on fuelwood collection and charcoal production and promoting the use of fuel-efficient stoves has numerous social benefits including food security and nutrition, health, protection, safety and social cohesion.
Fuel-efficient stove technology

Fuel-Efficient Stoves (FES) are specifically designed to reduce fuel consumption per meal and curb smoke emissions from traditional three-stone fires inside poorly ventilated dwellings. They may be made of mud, clay or metal, and use different types of fuels, such as firewood, charcoal, briquettes, biofuels, Liquefied Petroleum Gas (LPG) or kerosene. The materials used to make the stoves may be available locally, helping to improve levels of sustainability and cost-efficiency for the practice.

In addition, FES can ensure that food is properly cooked. The more efficient cooking provided by this technology can also lower the risk of meals being skipped in an effort to save fuelwood and reduce expenditure on fuel, while the local production and sale of FES can become an income-generating activity for women. As the amount of fuelwood needed for cooking is reduced, women spend less time collecting it, resulting in a dramatic decline in the risk of gender-based violence (GBV) and more time for productive or leisure activities.
SAFE and the CFS-FFA

The operationalization of the three pillars of SAFE contributes to the following principles in the CFS-FFA:

**Principle 1: Meet immediate humanitarian needs and build resilient livelihoods**

The need to strengthen and diversify livelihoods is a crucial part of Principle 1, which seeks to meet immediate needs and build resilient livelihoods, e.g. through responsible investments that create economic opportunities for women and men of different ages among affected, at-risk, vulnerable and marginalized groups.

**Principle 2: Focus on nutritional needs**

Nutritional risks, such as those associated with the undercooking of food and skipping of meals, are highlighted under Principle 2, which emphasizes the need to improve the nutritional status of affected and at-risk populations through strengthened policies and actions and the incorporation of nutrition-related objectives and indicators in policies and programmes. The same principle also indirectly addresses health risks in seeking to strengthen primary and local health care systems.

**Principle 4: Protect those affected by or at risk from protracted crises**

By addressing gender and protection risks, SAFE contributes to Principle 4 which emphasizes the need to ensure the protection of those affected or at risk in protracted crises, including protection against all forms of gender-based violence and sexual exploitation and abuse, particularly towards refugees and IDPs.

**Principle 5: Empower women and girls, promote gender equality and encourage gender sensitivity**

SAFE contributes to Principle 5, which seeks to empower women and girls, promote participation and address gender inequalities, in particular by providing livelihood opportunities with the production and sale of fuel efficient stoves, reducing the exposure to the risk of gender-based violence, and diminishing the share of women’s workload caused by fuelwood collection.

**Principle 9: Contribute to peacebuilding through food security and nutrition**

The need for conflict prevention and mitigation is highlighted in Principle 9, which seeks to contribute to peacebuilding through food security and nutrition. Specifically, the Principle highlights the need to identify opportunities to support and reinforce peace initiatives, particularly those that are local, and to guarantee that affected and vulnerable populations are not at risk when food assistance is phased out. SAFE’s contribution to this Principle includes the reduction of competition and conflict over access to fuelwood resources through the provision or local production of alternative fuels and energy-efficient technologies for domestic and productive use.

**Principle 10: Manage natural resources sustainably and reduce disaster risks**

Principle 10, in particular, emphasizes the need to promote the sustainable use of natural resources through the use of fair and inclusive processes such as the Participatory Negotiated Territorial Development (PNTD) approach, effective strategies for preventing and managing shocks and stresses, policies and actions for rehabilitation and restoration of degraded areas and promoting the land tenure rights of affected and at-risk populations.
Participatory and Negotiated Territorial Development (PNTD)

PNTD is an approach to conflict resolution. It aims to identify actors, their interests, power relations and margins for negotiation so as to facilitate an agreement on common grounds at the negotiation tables. Its specificity lies in the search for a ‘shared’ territorial development. Thus, FAO strives to carry out empowerment, awareness raising and capacity building activities along with partnering international agencies, NGOs, and Civil Society organizations in order to support development opportunities among previously conflicting actors.

Together, the SAFE and PNTD approaches can help ensure that fuel and energy resources are managed in a sustainable, conflict-sensitive manner with the full participation of all relevant stakeholders. Disaster risks and climate change, such as those associated with the collection and use of fuelwood, are also highlighted in Principle 10 which, alongside its focus on the sustainable management of natural resources, promotes the development and implementation of a comprehensive DRR/DRM framework, and effective measures that support the climate change adaptation of at-risk, affected and vulnerable populations.

The SAFE Partnership

Inter-agency collaboration is coordinated through the SAFE Humanitarian Working Group which seeks to facilitate a more coordinated, predictable, timely, and effective response to the fuel and energy needs of crisis-affected populations. Since 2012, FAO has been a leading member of the group, through which it coordinates its SAFE activities with other agencies, including the Global Alliance for Clean Cookstoves, UNHCR, WFP and others. SAFE functions as a consortium to which each agency contributes specific expertise critical to addressing the energy needs for the world’s most vulnerable populations, and the group is committed to ensuring that relevant stakeholders at all levels take action for energy implementation to achieve large-scale impact and long-lasting sustainable outcomes. FAO is currently co-chairing the SAFE Humanitarian Working Group together with WFP and the Global Alliance for Clean Cookstoves.

Guiding principles for FAO implementation of SAFE

In addition to contributing to the CFS-FFA principles, the following core implementation principles guide FAO work on SAFE:

1. FAO will work in partnership with governments, UN partners, NGOs and academia/research institutions and the private sector;
2. FAO has adopted a holistic approach which harnesses its full technical expertise in several areas of work;
3. FAO will seek to promote innovative practices and technologies and ensure that their impact on the lives of crisis-affected people is monitored and evaluated;
4. FAO will ensure that all of its SAFE interventions contribute to trust-building, reconciliation and social cohesion in contexts where people are exposed to conflict and tension; and
5. FAO will be accountable to affected populations and ensure that all interventions reflect the needs and perspectives of local men and women, boys and girls, and that appropriate feedback mechanisms are put in place.
According to WWF, half of the illegal removal of timber from forests is thought to be for use as fuelwood.
SAFE in action: case studies

In a number of countries, including South Sudan, Sudan, Kenya, Somalia, Ethiopia and Myanmar, FAO either coordinates or works directly with partners on energy-related activities. Key partners include WFP, UNHCR, the Norwegian Refugee Council, the Danish Refugee Council and the Global Alliance for Clean Cookstoves, as well as key government stakeholders at country and sub-national levels, such as the Ministries of Agriculture and the Environment.

Fuel-efficient stoves for IDPs and other vulnerable groups in South Sudan

Prior to the December 2013 crisis, FAO supported energy access issues in Yei County, where more than 94 percent of the community relies on woodfuel from nearby woodlands and bushes as a source of domestic energy. This pattern of woodfuel collection was disrupted by the influx of returnees and the subsequent expansion of the town to the rural areas, which resulted in dwindling forest areas (traditionally reserved for collection of woodfuel and other non-timber forest products). Furthermore, access to biomass energy became an increasing concern in the county due to the high concentration of returnees from within the country and refugees from the Democratic Republic of Congo.

Together with project implementing partners, FAO trained women's groups in the construction of mud stoves using local materials such as clay soil. The project beneficiaries were also provided with training to establish tree nurseries and woodlots for multipurpose tree species, which are useful for woodfuel, shade, fodder, windbreaks and soil fertility. These interventions helped to address a range of challenges faced by women including the work burden and opportunity costs associated with the collection of fuelwood.

More recently, following the declaration of the Level 3 emergency in December 2013 and the associated mass displacement of people across the country, environmental degradation and protection risks for women were identified as key issues to be addressed by the humanitarian community. As part of FAO emergency livelihood response programme, approximately 40 000 durable and portable fuel-efficient stoves were procured, based on specific criteria of relevance to IDPs.
The stoves were selected based on the need for durable, portable and lightweight devices that could use the predominant fuel types. In line with diverse preferences and needs, both a fuelwood and a charcoal stove were selected and beneficiaries were trained in their use and maintenance. This intervention was particularly appreciated, because of its relevance for protection from GBV. FAO ensured that women had access to comprehensive training on the use and maintenance of the stoves as well as awareness-raising on fuel-saving cooking practices and the benefits of stove use.

**Sustainable fuel production in Kenya and Somalia**

Conflict over natural resources in the Arid and Semi-Arid Lands (ASALs) in Kenya is exacerbated by the demand for woodfuel and the increasing reliance on traditional charcoal production as an income-generating activity. Women who collect fuelwood are exposed to a number of risks, which are in turn exacerbated by the degradation of natural resources, since women and young girls are forced to walk longer distances to collect sources of fuel.

Recognizing the importance of this approach, FAO carried out a study on the fuel and energy-related challenges faced by women in the ASALs in Kenya. The study focused on several refugee and host populations as well as rural and urban settings in the regions concerned. It involved the use of a rapid questionnaire survey coupled with focus group discussions with women in order to assess the fuel types used by households, types of cooking technologies used as well as the specific risks and challenges faced by women who, in the Kenyan context, are responsible for cooking, firewood collection, charcoal production and the sale of woodfuels.

FAO is also implementing a project in Kakuma, northwest Kenya, engaging with host communities to promote the sustainable production of charcoal using improved kilns that use small branches from Acacia trees and invasive species as a feedstock. This has reduced the impact on the environment as traditional charcoal-making requires the felling of large, indigenous acacia trees. The sustainably produced charcoal will be sold to refugees in the Kakuma camp through a voucher scheme. Furthermore, both refugees and host populations will benefit from locally produced fuel-efficient stoves. The project was designed to improve the incomes of men and women in Turkana, reduce social tensions between residents and refugees, and relieve pressure on the environment. The project has a strong gender dimension because the primary responsibility for charcoal production, an arduous and labour-intensive task, falls upon women in Turkana communities, while men are responsible for tending to animals. The fuel-efficient stoves and charcoal vouchers will significantly benefit women as in most cases, with the exception of single male households, they are responsible for the collection of fuelwood and cooking meals for the household.

In Somalia, FAO conducted a similar assessment on fuel needs, cooking technologies and related challenges in two districts, Hargeisa and Dolow. Focus group discussions, gender-sensitive participatory rural appraisal (PRA) sessions and a comprehensive questionnaire survey were conducted in IDP camps, host communities and rural villages. The key findings and analysis are being fed into a country strategy to be endorsed by the relevant stakeholders. This strategy will be multi-disciplinary and involve several interventions to address the cross-sectoral nature of the issue, and involve FAO in close partnership with other relevant actors and stakeholders such as WFP and UNICEF, with whom FAO is implementing the joint Somalia Resilience Programme.
Forest restoration in Ethiopia

In 2015, FAO and UNHCR collaborated on an assessment of woodfuel demand and supply in and around two refugee camps in Ethiopia, Kule and Shimelba. The assessment included the following components:

- energy demand assessment focusing on the fuel types, cooking technologies, energy needs and associated challenges inside the camps;
- woodfuel supply assessment, using both onsite surveys and satellite imagery analysis of the distribution of woodfuel resources, estimations of stocks and stock changes;
- integration of the supply and demand to identify deficits and appropriate interventions to address fuel supply and demand management.

The forests and woodlands in the immediate surrounding areas of these refugee camps have been under increasing pressure, which has resulted in forest degradation and deforestation. There is an urgent need to improve the management of forest resources and mitigate the impacts on forests and woodlands around these refugee camps. Furthermore, based on the results of the assessment, FAO has produced i) a technical handbook for assessing woodfuel demand and supply in displacement settings; ii) a complementary toolbox to support field-based actors in the analysis of data for planning interventions; and iii) a series of remote sensing analysis tools to assess woody biomass change using high-resolution satellite imagery.
Community forests in Sudan

The rural livelihoods of the majority of the population in Sudan’s Greater Darfur area remain at risk as a result of the on-going multi-faceted crisis. Coping strategies, particularly in and around IDP camps, have included activities that rely on scarce or unsustainable resources such as charcoal production and firewood and grass collection, further exacerbating the deterioration of the natural resource base. In response to this, FAO has been working with UNEP in the Greater Darfur Region in order to help displaced populations and conflict-affected communities obtain and use fuel wood in a sustainable and resource-efficient manner. Together with UNEP, FAO has distributed several hundred thousand tree seedlings to over 150,000 households, set up many community forests/woodlots and provided relevant inputs for their construction. FAO has trained hundreds of extension agents, community forest committee members and local leaders on seedling production, nursery management and seed broadcasting. FAO has also supported the production and distribution of 72,900 mud FES and trained 342 women as trainers in FES production and maintenance.

Cooking fuel and efficient technologies in Myanmar

Cooking fuel has recently emerged as an important issue in Myanmar, in particular with regard to the needs of internally displaced persons (IDPs) in Rakhine State. IDPs living in camps require a daily supply of cooking fuel to prepare food. However, heavy rains, security issues, poor availability of fuelwood and the limited number of fuelwood suppliers contribute to an unreliable supply of household energy and continued reliance on precarious livelihoods for the IDPs in the State. Under FAO leadership, the humanitarian community in Myanmar formed a SAFE working group to develop a joint and comprehensive strategy for crisis-affected parts of the country, to ensure context-specific solutions to the problems of energy access. This strategy is serving to ensure that cooking fuel and efficient cooking technologies used will minimize negative consequences for the environment and the safety of women and children, and contribute to improved food and nutrition security and more resilient livelihoods.

KEY FACTS

According to the Global Alliance for Clean Cook stoves (GACC), burning of biomass using inefficient means of cooking for household energy needs is responsible of 25 percent of black carbon emissions.
Future perspectives

Multi-disciplinary approaches

The integrated nature of the SAFE approach makes it suitable for merging with or complementing other multi-disciplinary approaches such as the FAO Caisses de Résilience where, in particular, the financial and social dimensions can serve to incentivize people to shift their livelihood activities away from precarious woodfuel-dependent income-generating activities (notably charcoal production and the collection and selling of fuelwood), towards more sustainable options.

Energy for productive activities

There are excellent opportunities to utilize research to expand SAFE into new areas. In terms of innovative approaches and technologies, FAO seeks to broaden its focus from energy for cooking to energy for productive activities. There is scope for examining the energy needs for food preservation, food processing and the reduction of food losses. This could contribute to building resilient livelihoods in protracted crises through the diversification of livelihoods.

Examples include the use of sustainable energy (including other non-bioenergy renewables) and energy-efficient technologies, such as the FAO-Thiaroye Processing Technique (FTT-Thiaroye) for fish smoking and drying or hybrid biomass-solar crop driers and solar milk cooling and chilling devices.

Energy-efficient technologies for conserving and processing vegetables are another area of interest. For example, a number of simple technologies exist for conserving food which can be produced using local materials, such as Zeer pots and clay refrigerators. The production of these low-cost and climate-smart technologies can also become an income-generating activity for youth and women.
Partnerships with the private sector

FAO and the other key actors involved will need to keep abreast of the latest developments in new technologies and approaches in the energy and related sectors. One example is the innovative partnership between UNHCR and the IKEA foundation to provide access to sustainable energy (in addition to shelter, care and education) to refugee and host communities. As part of this collaboration, the IKEA Foundation has committed over USD 166 million in both cash and in-kind donations to UNHCR’s programmes since 2010. The partnership shows how global companies can provide solutions that really work, helping the UN respond to emergencies, identify and scale up new ideas, and create more opportunities for refugees and IDPs to lead dignified lives.
References and resources for further information


**Internet resources**

[www.chathamhouse.org/about/structure/eer-department/moving-energy-initiative-project](http://www.chathamhouse.org/about/structure/eer-department/moving-energy-initiative-project)
[www.safefuelandenergy.org/resources/index.cfm](http://www.safefuelandenergy.org/resources/index.cfm)
[www.womensrefugeecommission.org/firewood/resources](http://www.womensrefugeecommission.org/firewood/resources)
This publication has received funding from the European Union through the “Improved Global Governance for Hunger Reduction Programme”. For more information, visit FAO portal on resilience www.fao.org/resilience