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Building resilience through safe access to energy

Andreas Thulstrup
Natural Resources Officer, Climate, Energy and Tenure Division, FAO HQ

Indira Joshi
Liaison-Operations Officer, Emergency and Rehabilitation Division, FAO HQ

The importance of fuel and energy

An estimated 1.3 billion people currently lack access to modern energy services[1] (Practical Action 2014) and almost three billion people rely on wood, coal, charcoal or animal waste as sources of fuel for cooking and heating (SE4ALL 2014). In emergency settings, such as disasters induced by natural hazards[2] and complex emergencies[3] caused by conflict, even basic access to traditional biomass may be constrained. These settings include protracted crises, which are characterised by "environments in which a significant proportion of the population is acutely vulnerable to death, disease and disruption of their livelihoods over a prolonged period of time. The governance of these environments is usually very weak, with the state having a limited capacity or willingness to respond to or mitigate the threats to the population, or provide adequate levels of protection" (Harmer & McCrae 2004). Protracted crises are becoming the norm while short-lived acute emergencies are becoming the exception, not the rule (FAO 2012).

Despite the realization that crisis-affected populations have significant fuel needs, the importance of providing fuel and appropriate cooking technologies in emergencies and protracted crises is often overlooked or inadequately prioritized by humanitarian and emergency response actors. While food may be provided, e.g. through the World Food Programme food basket, the means to cook that food is not consistently provided and when aid agencies do provide cooking fuel they often do not provide enough to cover needs (WFP 2012).

It is now a well recognized fact that lack of access to cooking fuel as well as appropriate technologies for cooking and heating has far reaching consequences, influencing: food

[1] The Global Bioenergy Partnership defines modern energy services as availability for the end user of: electricity for lighting, communication, healthcare, education and other uses; modern fuels or technologies for cooking, heating and cooling; mechanical power for productive use (e.g. irrigation, agricultural processing), provided through electricity or modern fuels, or directly through renewable sources such as hydropower; and transport, provided through electricity or modern fuels (http://www.fao.org/docrep/016/ap506e/ap506e.pdf)
[2] According to the UNISDR, disasters often follow natural hazards. A disaster's severity depends on how much impact a hazard has on society and the environment (http://www.unisdr.org/who-we-are/what-is-drr)
[3] FAO defines complex emergencies as **a** major humanitarian **crisis** that is often the result of a combination of political instability, conflict and violence, social inequities and underlying poverty (http://www.fao.org/emergencies/emergency-types/complex-emergencies/en/)

assistance outcomes; long-term food security; beneficiaries' safety, dignity, health and livelihoods; women's vulnerability to gender-based violence; and the ecosystems on which crisis-affected people depend.

Women and children are often tasked with the collection of fuelwood and often spend several hours per day collecting wood in areas with degraded forests (Sepp 2014). Refugees and Internally Displaced People (IDPs) often face a severe lack of access and availability of fuelwood partly due to the fact that displacement camps are established in fragile, sparsely forested ecosystems in which both displaced populations and host communities rely on the scarce natural resources found in the area surrounding the camps. The time spent collecting fuelwood takes time away from school attendance, income-generating activities, child care and leisure and can reduce the effectiveness of other humanitarian and development programs targeting women and children.

The cross-cutting nature of the energy sector in protracted crises therefore poses a range of challenges but also a unique opportunity for building resilient livelihoods when context-specific and holistic approaches are used.

Building resilience

There is a growing consensus among donors, governments and humanitarian policy groups on the importance of building resilient livelihoods that can "efficiently anticipate, adapt to, and/or recover from the effects of potentially hazardous occurrences (natural disasters, economic instability, conflict) in a manner that protects livelihoods, accelerates and sustains recovery, and supports economic growth" (Frankenberger et al. 2012).

This consensus is the result of concerns that while humanitarian responses have helped to save lives, they have not done enough to enable affected populations to withstand or absorb shocks and to avert future crises. Increasing the resilience of livelihoods to threats and crises is one of the five Strategic Objectives of FAO and is implemented through cross-divisional and inter-disciplinary work that strengthens the linkages between humanitarian and development contexts. Ensuring energy access in emergencies is a core component of this work which can help foster the transition from vulnerable, crisis-prone livelihoods to sustainable and resilient livelihoods.

Access to energy in acute emergencies, protracted crises and rehabilitation settings is strongly linked to the resilience of livelihoods. Ensuring that people gain access to key livelihood resources, including energy, is central to resilience-building (Thulstrup 2015). Approaches that improve access, production and use of energy can help to diversify income sources, reduce environmental impacts and improve food and nutrition security, encompassing both immediate emergency response interventions and longer-term Disaster Risk Reduction activities that help to build resilient livelihoods.

A multi-sectoral challenge requires a multi-sectoral response

The collection, production, and use of biomass fuel, mainly firewood and charcoal, in emergencies create a myriad of risks for crisis-affected people and their environment. The same risks occur in protracted situations where displaced persons rely on biomass fuel to cook their meals as well as for lighting and heating at night. Such risks include sexual and gender-based violence or assault during firewood collection, loss of livelihood and education opportunities, environmental degradation, and respiratory illnesses caused by household air pollution. The approaches and interventions to address these issues require greater attention, strong partnerships and a multi-sectoral approach from the humanitarian community.

FAO is a member of the inter-agency Safe Access to Fuel and Energy (SAFE) Steering Committee along with key partners such as WFP, UNHCR, UNICEF and the Global Alliance for Clean Cookstoves[4]. As a member of the SAFE Steering Committee, FAO aims to contribute to a coordinated, predictable, timely, and effective response to the fuel and energy needs of crisis-affected populations. In order to design and implement effective SAFE activities, FAO is harnessing its full technical, programmatic and operational expertise in partnership with relevant stakeholders at headquarters, regional and country levels.

FAO is adopting a holistic and integrated approach under its SAFE programme, addressing multiple sectors, including natural resources (including forestry and land), nutrition, gender, protection, livelihoods and climate change. FAO has been using this approach in several locations/countries (South Sudan, Kenya, Ethiopia, Somalia and Myanmar) in order to assess the multi-sectoral challenges and opportunities pertaining to the collection, production and use of fuel in acute emergencies and protracted crises.

Country-level support

The following boxes present some of FAO's work on SAFE, highlighting the objectives, key results achieved and the main challenges faced.

South Sudan

Following the outbreak of the conflict in December 2013 and the associated mass displacement of people across South Sudan, environmental degradation and protection risks for women were identified as key issues to be addressed by the humanitarian community (Thulstrup & Henry 2015). As part of FAO's emergency livelihood response programme, specifically under a pillar focusing on minimizing the environmental impact of IDPs, FAO promoted the use of fuel efficient stoves in camps and agro-forestry rehabilitation interventions in areas surrounding the camps. Approximately 40 000 durable and portable fuel-efficient stoves were procured (based on specific criteria of relevance to IDPs: durability, portability, weight of stove and predominant fuel type used). Beneficiaries were trained on how to use and maintain the stoves as well as being trained on fuel-saving cooking practices.

[4] http://www.safefuelandenergy.org/about/partners.cfm?org=FAO

Stoves have been distributed in Bentiu and Melut while distributions are ongoing in Nimule and Mingkaman.

This intervention was well appreciated, in particular because of its contribution to the protection of women in the context of South Sudan, where women are systematically exposed to GBV when venturing outside the relative safety of IDP camps and Protection of Civilian sites to collect fuelwood. For example, a post distribution monitoring assessment conducted in Bentiu reveals that 90% of respondents indicated spending less time on the collection of fuelwood compared to the situation before they received fuel-efficient stoves and very importantly, collection trips have been reduced from 4 to 2.4 per week (on average, each collection trip took 4 hours).

In terms of challenges, it took time to identify the most appropriate stoves and issues of acceptability were initially a concern. In order to address the latter, FAO is ensuring that women have access to comprehensive training on the use and maintenance of the stoves as well as awareness-raising on fuel-saving cooking practices and benefits of stove use. Further work is planned to assess existing Integrated Food Energy Systems and opportunities for upscaling these.

Somalia

The long-lasting conflict in Somalia has affected the lives of millions of people, causing widespread displacement, physical and emotional injury and loss of life. Internally Displaced Persons (IDPs) have been forced from their homes due to conflict and continue to be the largest single population group affected by the protracted crisis. In the areas where IDPs settle there is risk of competition over natural resources and income earning opportunities with host populations. Forest and tree resources are particularly at risk of being depleted in a country where 95% of the population relies solely on fuelwood and charcoal as energy sources, primarily for cooking and heating.

FAO recently conducted an assessment on fuel needs, cooking technologies and related challenges in two districts – Hargheisa and Doolow – of Somalia. Focus Group Discussions, 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 relevant stakeholders. This strategy will be multi-disciplinary and articulated around a number of interventions to address the multi-disciplinary nature of the issue, drawing upon the programmatic and technical expertise of the Organization, in close partnership with other relevant actors and stakeholders.

Ethiopia

Ethiopia is endowed with an abundance of natural resources and biodiversity, including the country's forests. However, forest resources are subjected to pressure from a range of socio-economic and environmental drivers, resulting in forest degradation and deforestation. This situation is alarming in most part of the country, particularly in areas surrounding refugee camps. The situation makes a strong case for identifying and promoting alternative fuels and/or more efficient means of utilizing woodfuel.

The need for cooking fuel in densely populated refugee camps is leading to a significant deterioration of surrounding forests and woodlands since woodfuel often constitutes the main source of energy for refugees. Such degradation, particularly where forest resources are becoming limited, may cause or increase social conflicts between host and refugee populations in addition to a number of other challenges. Given the increasing number of refugees living in camps in Ethiopia, it is urgent to support improved energy access and ecosystem restoration activities.

In 2013, FAO was asked by UNHCR to participate in the External Advisory Committee for the development of the UNHCR Global SAFE Strategy and provided inputs for the Strategic Objective on "Reforestation, Energy and Environmental Sustainability". The continued engagement with UNHCR led to a request for direct collaboration on an assessment of woodfuel demand and supply in and around two refugee camps in Ethiopia in 2014.

The assessment included the following components:

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

The results of the assessment in Ethiopia as well as in the other countries included here highlighted the need for FAO to develop global products on SAFE. Currently, FAO is finalizing a manual for assessing woodfuel demand and supply in displacement contexts and an excel-based tool for planning supply and demand interventions in and around camps.

Kenya

Kenya's dryland areas (or ASALs – arid and semi-arid lands) make up more than 80% of the country and are mainly found in the Rift Valley. They are home to approximately 4 million pastoralists who constitute more than 10% of Kenya's population plus other rangeland users. Livestock raised by pastoralists is worth US$800 million per year. Pastoralists occupy most of the border areas of Kenya, with pastoral groups straddling borders with Somalia, Ethiopia, Sudan, Uganda and Tanzania. Pastoralist areas in the ASALs have the highest incidences of poverty and the least access to basic services of any in the country. Droughts are common in the ASALs and there is evidence that they have increased in frequency. The ASALs are also prone to conflict, particularly in Northern Kenya, which is highly complex, politicised and involves many actors including cattle rustlers, bandits, various tribes, forest/conservancy rangers and others.

The frequency of droughts and conflict has caused significant changes in the livestock sector and pastoralist livelihoods in the ASALs. Some households have shifted from holding cattle to small livestock, which are more easily converted into cash. Other households are now destitute, ex-pastoralist households who are sedentary and rely on purchased food, food aid, gathering of wild foods, begging and production and selling of woodfuels.

Conflict over natural resources in the ASALs is exacerbated by the demand for woodfuel and the increasing reliance on traditional charcoal production as an income-generating activity. Women who collect fuel wood are exposed to a number of risks including protection. These risks are increased by the degradation of natural resources since women and young girls are forced to walk longer distances to collect sources of fuel. The FAO Kenya office recognized the relevance and importance of this approach and requested support, through the SO5 Country Support Process, for a study on the fuel-related challenges faced by women in the ASALs. The study focused on several contexts: refugee and host population contexts in Kakuma, Turkana County as well as rural and urban settings in Samburu County. The study involved the use of a rapid questionnaire survey coupled with focus group discussions with women concerning 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 selling of woodfuels.

The study is currently being expanded to cover an additional three ASAL counties after which the results will be fed into the development of an FAO SAFE strategy for the ASALs in Kenya by the end of 2015.

Challenges and Opportunities

Across the board, the field work in different contexts reconfirmed some key recurring challenges faced by communities:

- The long distances women need to walk to gather fuelwood - exposing them to protection risks and taking time away from other more productive activities;
- The depletion of forest resources often also due to charcoal production as an economic activity;
- Selling of firewood is also an important livelihood activity for both host- and refugee populations;
- When firewood or charcoal is not available, women rely on unsustainable coping strategies such as using plastic jerry cans or small twigs as cooking fuel and bartering food for fuel;
- The use of a 3 stone fire for cooking has a number of detrimental impacts on human health. Women have reported experiencing excessive inhalation of smoke, coughing and expulsion of black phlegm, burns, back pain, poor vision, tearing of the eyes, fast heartbeat, high blood pressure, exhaustion and highly elevated temperatures in the kitchen/cooking area;
- In a number of arid counties in Kenya, women are responsible for producing charcoal using traditional methods which is a risky and unsustainable livelihood activity which exposes them to health and protection risks and constitutes a significant work burden. Women who produce charcoal have reported cuts from axes, lack of water, nausea, coughing, chest pains, poor eyesight, blindness, wild animal attacks and attacks from rival ethnic groups;
- In many cases there are economic and trade linkages between displaced populations and host communities. In Kenya for example, the host communities sell greens, cowpeas, meat, camel milk and cow milk;
- There is also significant tension and conflict between IDP and host communities due to the collection and cutting of live wood for domestic energy use;
- The unchecked extraction of indigenous acacia trees for the production of charcoal has caused intra-communal conflict between pastoralists and charcoal producers. Acacia trees serve important functions e.g. as a source of medicinal products, shade for people and livestock, animal fodder, as landmarks/signboards (now people get lost due to the sparse and homogenous vegetation), windbreaks.

In terms of opportunities to address the above, FAO sees ample scope for intervening with a range of interventions which can contribute to building resilience of the affected communities. These interventions include the promotion of alternative and less woodfuel-intensive livelihoods, income-generating activities, environmental rehabilitation, providing access to a safe and sustainable fuel supply, reforestation, sustainable natural resource management and access to energy-efficient cooking technologies.

More specifically, FAO's SAFE approach may include the following activities: provision and/or production of fuel-efficient stoves and alternative fuels, sustainable natural resource management for fuel and promotion of alternative livelihoods to counter environmental degradation resulting from activities such as traditional charcoal production. In some contexts where charcoal production is a major driver of forest degradation, a useful entry point is to improve the efficiency of the charcoal production process by promoting improved technologies and sustainable harvesting practices. Sustainable livelihood activities, such as the local production of stoves, can help to diversify income as well as energy sources while reducing environmental impacts. The use of more efficient cooking technologies can also free up time for women that they would otherwise spend collecting firewood. These activities contribute to resilience building so that future shocks are more easily absorbed.

Final thoughts

There an urgent need to address the energy and fuel issues in a holistic and comprehensive manner, drawing upon the concerted efforts of FAO together with key UN agencies and other partners and stakeholders. This requires FAO's strategic engagement at headquarters-, regional- and country level with key partners such as WFP, UNHCR and UNICEF who either have standalone SAFE programs of their own or are engaging in SAFE-related activities on the ground. FAO will also pursue the forging of partnerships with NGOs who have a strong presence in displacement contexts and protracted crises and who have technical capacities to carry out fuel-related interventions. Engaging with academia and research institutions will also be a priority in the coming period. Of direct relevance to FAO's SAFE work in Eastern Africa is the Inter-Governmental Authority on Development (IGAD) whose mission is to increase cooperation on food security and environmental protection, promoting peace, security and a focus on humanitarian affairs as well as economic cooperation and integration.

A number of recent global initiatives provide strong justification for partnerships, inter-agency collaboration and greater overall engagement on the fuel issue in protracted crises. A major stream of work for the Committee on World Food Security, the recently endorsed Framework for Action for Food Security and Nutrition in Protracted Crises (CFS-FFA)[5] includes a number of principles of direct relevance and significance to the challenges and risks associated with the collection, production and use of fuel. These include the protection of people affected or at risk from protracted crises, empowering women and girls, promoting gender equality, contributing to peacebuilding, managing natural resources sustainably and reducing disaster risks.

The Sustainable Development Goals (SDGs)[6] also provide an important agenda for improving the well-being of the world's most vulnerable people in an environmentally sustainable

[5] The CFS-FFA is based on an inclusive process of consultations and electronic discussions that took place between April 2013 and May 2015. Consultations included representatives from governments, UN agencies, civil society and non-governmental organisations, international agricultural research institutions, private sector associations and private philanthropic foundations, and international and regional financial institutions. Formal negotiations on the CFS-FFA were held in July/August 2014 and during May 2015. The CFS-FFA was endorsed by CFS at its 42nd Session on 13 October 2015.
[6] For more information see: https://sustainabledevelopment.un.org/topics

manner and a number of goals are of direct relevance to FAO's work on SAFE. SDG 7 highlights the importance of improving energy access, particularly in least developed- and landlocked developing countries, which include countries that host large numbers of refugees. Also of key importance, SDG 12 highlights the need for sustainable management and use of natural resources and SDG 5 seeks to empower women and achieve gender equality.

This paper has presented the country level work of FAO thus far under the SAFE initiative. It has also provided an indication of the comparative advantage of FAO and what FAO can contribute in the context of inter-agency collaboration on SAFE. In the coming period it will be crucial to forge meaningful partnerships with governments, donors and partners in order to capitalize on the significant momentum on SAFE.

Lasting solutions which can address the fuel- and energy-related challenges faced by crisis-affected households should include a comprehensive package of context-specific interventions which include supply-side, demand-side and livelihood support activities. Supply side interventions may revolve around the sustainable supply of woodfuel, the promotion and the use of alternative biomass fuels, e.g. from agricultural residues and other types of renewable energy such as wind, solar or hydro. Demand side interventions may include the provision or local production of fuel-efficient stoves for wide dissemination or marketing which can reduce the demand for wood sourced from forests and woodlands. Charcoal production can be made more efficient by increasing the efficiency of the production process through improved technologies and wood harvesting practices. Finally, livelihood support activities should ensure that there are alternative income-generating activities which can provide an alternative to the selling of woodfuels. These alternatives may include the selling of locally produced fuel-efficient stoves, the management of tree nurseries and selling of tree seedlings, the establishment and management of Integrated Food Energy Systems (IFES) such as agro-forestry or biogas systems, value-added processing activities in the agricultural sector among other means of improving agricultural and rural incomes.

References

Food and Agriculture Organization. (2012). Food insecurity in protracted crises: an overview. FAO. Rome. Available at:

http://www.fao.org/fileadmin/templates/cfs_high_level_forum/documents/Brief1.pdf

Frankenberger, T.R., Spangler, T., Nelson, S., Langworthy, M. (2012). Enhancing resilience to food insecurity amid protracted crisis. High-level expert forum on food insecurity in protracted crises. Rome.

Harmer, A. & Macrae, J. eds. (2004). Beyond the continuum: aid policy in protracted crises. HPG Report 18, p. 1. London, Overseas Development Institute.

Sepp, S. (2014). Multiple-household fuel use. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). Bonn.

Sustainable Energy for All. (2014). Sustainable energy for all: an overview. United Nations.

New York.
Available at: http://www.se4all.org/wp-content/uploads/2014/12/fp_se4all_overview.pdf

Thulstrup, A. W. "Livelihood Resilience and Adaptive Capacity: Tracing Changes in Household Access to Capital in Central Vietnam." World Development 74 (2015): 352-362.

Thulstrup, A., & Henry, W. J. (2015). Women's access to wood energy during conflict and displacement: Lessons from yei county, south sudan. Unasylva, 66(243-244), 52-60.

World Food Programme. (2012). WFP Handbook on Safe Access to Firewood and alternative Energy (SAFE). World Food Programme, Rome.