



Improving nutrition through enhanced energy access

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Most food needs to be cooked before being consumed. In protracted crises, acute emergencies or multi-hazard contexts, vulnerable populations often face significant risks to their health and nutrition due to inadequate access to the means of cooking their food. Providing access to reliable and affordable energy and improved cooking technologies should be an important part of nutrition-sensitive interventions. This is at the core of the FAO SAFE approach. A direct way to tackle these issues is by promoting the use of fuel efficient stoves and fuel-saving cooking practices.

Key issues

Improving nutrition is fundamental to achieving FAO's vision of a world without hunger. Nutrition is increasingly being understood as not only an outcome of social and economic development, but also as an essential input, affecting health, productivity and overall well-being (FAO, 2014). The causes of undernutrition are the limited availability of and access to food of sufficient quantity (dietary energy consumption) and quality (nutrient content), poor caring and feeding behaviors for children, poor food choices for adults and inadequate health care and an unhealthy environment. These cut across multiple sectors, including food, agriculture, health, social protection, gender and education.

Ensuring safe **access to energy** is intrinsically linked to the goal of improving nutrition. When a source of cooking energy is not readily available it can have a considerable impact on the nutrition of vulnerable populations. The **nutrition risks** associated with a lack of energy for cooking include (FAO, 2018):

- Reduced time available, due to fuelwood collection, for caring and feeding of children with negative impacts on nutrition
- Undercooking of meals, which increases the risk of foodborne illness

- Skipping of meals, which can lead to malnutrition especially for children
- Switching to less nutritious foods with shorter cooking times
- Selling and/or trading food to obtain cooking fuel, leaving vulnerable people with less food
- Insufficient boiling of water, resulting in the consumption of contaminated water and/or poorly prepared food

Limited access to energy negatively affects the quantity, quality and nutritional value of the food consumed. In the **context of forced displacement**, the problem of energy access is even more pronounced. The distribution of food, e.g. dried beans, grains and flour to refugees and IDPs, is often not complemented by the distribution of cooking fuel (SAFE, 2017). Furthermore, displaced people are in many cases banned from collecting fuelwood on government land or other land used by the host community. 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 increases the risk of malnutrition.

Technical considerations

Nutrition-sensitive agriculture refers to the production of a variety of affordable, nutritious, culturally appropriate and safe foods in adequate quantity and quality to meet the dietary requirements of populations in a sustainable manner (FAO, 2017). Action should be taken to address input quality, production, post-harvest handling, processing, retailing and consumption. In this way, nutrition-sensitive agriculture contributes to improving health outcomes and income generation through the production of diverse, safe and nutrient-rich food. When developing SAFE interventions, it is important to pay close attention to nutrition-sensitive agricultural practices. The promotion of **fuel-efficient technologies and practices** is essential. Adequate baselines of cooking technologies and practices should be established. Closely examining the cooking practices will help to assess their influence on energy consumption. Participation of the local population is important to achieve lasting change in cooking habits. Furthermore, an in-depth understanding of and respect for existing cooking practices will enable a productive dialogue on energy-related issues with the different stakeholders. The important role of women in energy access issues should be emphasized and women should play a crucial part in discussions, capacity building activities and decision-making process. The development of trainings on Fuel Efficient Stoves (FES) use and fuel-saving cooking practices can be instrumental in achieving this. Some considerations include:

Fuel-efficient stoves

- Different types of Fuel Efficient Stoves exist. Generally, stoves can be categorized by the type of fuel used (solid, liquid or gaseous). The decision process for a certain type of FES depends on a number of factors, such as the type of fuel available, durability, stability, portability, cooking speed, fit with existing cooking utensils, price, efficiency and clean-burning performance. Decision-making also

depends on cooking preferences, e.g. cooking inside or outside the house. All these aspects together should be considered in the selection process to achieve the highest success rates for adoption.

- Several types of Fuel Efficient Stoves may be required in a given setting, due to the differences in cooking habits and preferences or the availability of different types of fuels. The number of people in a certain social unit may also influence the decision on which stove to promote. Both rural and urban households may be displaced in the same camp or settlement but may have different energy preferences. For example, urban populations cooking indoor prefer charcoal because it produces less smoke than woodfuel.
- The decision process for a certain type of Fuel Efficient Stove should be accompanied by training and sensitization of people on the benefits of these cooking technologies on the specific food cooked in the settlement.
- Besides the aspect of fuel efficiency, the aspects of emissions and climate change mitigation are becoming increasingly important. A balance should be found between efficiency, emissions and safety depending on the particular context. In response to this, global cookstove standards are established (GACC, 2012).

Fuel-saving cooking practices

Fuel and stove-related

- **Cut and split fuelwood:** Smaller pieces of wood will ensure a more complete burning process while keeping the same heat output. An important precondition is the availability of appropriate tools (e.g. axe, machete) which are often absent in refugee contexts because



Training on nutrition and fuel-saving practices have a multiplier effect on the environment and the well-being of crisis affected populations.

of safety concerns, theft due to conflicts over natural resources with the host community or since they represent a valuable asset.

- **Dry fuelwood:** As much water as possible should be removed from fuelwood before burning. Otherwise the combustion process will be slowed down and burning of wood will be incomplete, resulting in a significant production of smoke. A period of 2 months for drying fuelwood is optimal.
- **Shield stoves:** Shielding stoves from wind will prevent the acceleration of the burning process.
- **Monitor heat:** By restricting the amount of fuel in the initial heating phase, when the stove is absorbing heat from the fire, the total amount of fuel needed will decrease. Once the stove is hot, it will not take heat away from the fire and heat will go directly to the cooking pot.
- **Put out fire promptly:** Energy savings can amount to 15-20 percent if the fire is put out instead of being allowed to burn out naturally. The availability of materials to re-light fuels, such as matches or magnesium fire starters, is absolutely necessary.
- **Communal cooking:** Collective cooking arrangements will result in a significant reduction of fuels needed, especially when moving away from cooking groups of one or two persons. Social barriers, such as mistrust of neighbors in displacement settings, might prevent communal cooking practices. In turn, these barriers might be overcome by the promotion of communal cooking.

Food-related

- **Use fresh food:** Fresh food, if available, will cook more rapidly than dried food. For example, fresh beans can be cooked in 30-40 minutes, while dried beans may require several hours of boiling.
- **Simmer food:** Instead of boiling, most foods cook just as quickly when simmered. It also ensures that more nutritional value is retained. In some cases, fuel can even be removed once the boiling point is reached, since heat will be retained in the stove.

Policy recommendations

Limited access to energy can have a significant impact on the nutrition status of poor and vulnerable people, especially in areas of protracted crisis. Energy access should be taken into account when formulating **nutrition sensitive policies**. An important consideration when integrating concerns over energy access in nutrition policies is the need for participative processes. Changes in cooking habits and preferences take time and should come from within communities. Adapting solutions, such as fuel efficient stoves and fuel-saving cooking practices, to the local context is therefore crucial. There is a clear need to move beyond the purely technological aspects of stove performance into the socio cultural domain. Local norms and habits, together with cooking-related preferences, should feature prominently. Research institutions, including anthropology and other social science departments, may have valuable expertise on these issues. The promotion of **innovative and non-traditional partnerships** between research institutions, government entities and international organizations will be beneficial to further research on the context-specific issues related to energy access in protracted crises.

- **Pre-soak hard foods:** Hard grains and beans will require far less cooking time when pre-soaked in water for several hours. This practice is often met with resistance, due to changes in color, texture and flavor. Attention should also go to the availability of fresh and clean water.
- **Mill or pound hard foods:** Hard grains and beans, when milled or pounded, will require less cooking time and save fuel.
- **Cut food in smaller pieces:** Several types of hard food products (e.g. vegetables, meat, potatoes and other root vegetables) will cook faster when cut into smaller pieces.
- **Make food more tender:** The addition of tenderizers, such as salt, bicarbonate or papaya juice, reduces the cooking times for certain kinds of food.
- **Collect ingredients before cooking:** When all ingredients and tools are within reach before heating up the cookstove, the time used for cooking will decrease.

Related to cooking materials and utensils

- **Cooking pot material:** Metal pots are very well suited for boiling water, whereas clay pots will retain heat much longer and are better for preparing meals which require extensive simmering. There is an added advantage that clay pots can be produced locally and may constitute an income-generating activity for women.
- **Use tight-fitting lids:** Loss of energy can be prevented by using tight-fitting lids on cooking pots. Additionally, a weight on the lid will improve the energy efficiency and reduce the need for fuel.
- **Use fireless cookers:** Certain types of partly cooked food can be transferred to a fireless cooker or 'haybasket'. This is an insulated container, where food continues to cook without external heating source. Besides savings in energy resources, a fireless cooker has the additional benefit of being safer since the risk of burns and smoke inhalation is reduced.

Negative coping mechanisms

Data collected by FAO in Kenya (Turkana, Samburu, Marsabit, Kitui and Meru Counties) revealed an acute lack of energy resources due to environmental degradation, with an increasing distance that needs to be walked to collect fuelwood. This affects the number of meals cooked per day for a large number of people. For example, in Marsabit, Kitui and Meru, people have reduced the number of meals they cook from three to two meals (breakfast and supper) which clearly exemplifies how access to cooking fuel directly impacts the nutritional status of the household members (FAO, 2015).

Tools/references/further resources

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