

Energy Issues and Solutions for Disaster and Conflict Affected Refugees: A Prognosis

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Abstract:- Providing proper access to energy is often inadequate in humanitarian activities for refugees. Energy is essential for safe, secured, and dignified living. If energy is not available, it negatively affects the lives of refugees while retarding allied humanitarian services. The energy needs are diverse and they can be met from different sources of energy, technologies, appliances, and equipment. Apart from meeting basic energy needs, there also could be other productive uses of energy reaping win-win situations. Following a good planning process, energy demands, and available resources could be assessed and accordingly energy solutions could be designed, sometimes using multi criteria decision making tools. Sustainable energy solutions coupled with 5As of access to energy can help address the gaps and allow refugees to live their lives with dignity.

I. INTRODUCTION

79.5 million people were forcibly displaced worldwide at the end of 2019 as result of persecution, conflict, violence, human rights violations or events seriously disturbing public order; of these, 26.0 million are refugees (IOM, 2020). They have to leave their homes and familiar environments and migrate to locations within the same country (internally displaced persons -IDPs), or as refugees and asylum seekers to a foreign territory (for their safety and security. Sometimes, they may have lost or missed their family members, loved ones and property resulting in trauma. The internally displaced or refugees may or may not be welcome by the host countries or communities. They face multiples of difficulties and dangerous situations challenging not only their wellbeing, but also mere survival. According to the World Migration Report 2020 published by International Organization for Migration, the global refugee population was nearly 26.0 million.

II. ATTENTION GIVEN TO ENERGY IN HUMANITARIAN RESPONSE

It is well understood and accepted that persons who are affected by natural disasters or conflicts and have become refugees also have rights similar to the rest of the population to good quality of life and to live with dignity. Their suffering and fear arising out of disasters or conflicts should be alleviated. The humanitarian practitioners have to plan and implement many interventions within the information, time, and resource constraints in an aftermath of a disastrous situation to assist the shock-affected population, some of whom may have been doing well prior

to the incidents. The experience world over has shown that access to energy resources and energy services remain a serious challenge under humanitarian settings for both the refugees and humanitarian agencies engaged in field operations. Refugees confront situations of not having access to adequate, quality, reliable and cost-effective energy for their everyday purposes. Under such situations, energy can become a rare and difficult commodity, along with water, food, sanitation, shelter and security. Not having proper energy sources and services can hinder development efforts and resilience building of the refugees making them vulnerable. Sadly, it is observed that the value and role of energy is often overlooked in most of the humanitarian responses.

III. ENERGY NEEDS

Simply defined, 'energy' is the ability to do work or produce heat. Energy is used for many purposes to meet needs of the people, including for getting water, boiling water for drinking or to prepare infant milk, cooking food, lighting, refrigeration (preserve or cool food, medicines, vaccinations), space conditioning (ventilation, air conditioning to cool rooms or room heating), transportation, livelihoods and income generation, communication, entertainment and operating of different kinds of appliances or equipment etc., Depending on many factors, for example, the standard of living the refugees have lived prior to the events, access to resources and technologies, the facilities available within the hosting neighborhood and attitude towards the refugees by them, and financial means etc., the type and level of energy and energy services may differ. This also can change or fluctuate in line with energy related needs and appliance availability, not forgetting the natural diurnal (Ex. morning, daytime and night environmental temperature, humidity, or changes in wind intensity and directions); sunny, cloudy, or rainy days; and seasonal changes (winter, summer, spring). The energy needs may also differ based on the different phases and transitions the refugees are undergoing within the disaster cycles (response, relief, restoration, rehabilitation, reconstruction, or resettlement), and these may call for different energy solutions too.

IV. ENERGY IN HUMANITARIAN WORK GUIDELINES

During all the phases of disaster response, UNHCR for instance, envisions engaging in establishment, improvement, and maintenance of shelter and infrastructure. These are supported by equitable assessments of needs and creation of opportunities for affected populations to access services and infrastructure. UNHCR identifies the requirement of ensuring accurate, up-to-date, comprehensive and quality data and information in support of assistance and service delivery. Among the essential services and infrastructure, the role of energy cannot be ignored. The Global Strategy for Sustainable Energy of UNHCR for 2019-2024, clearly identifies the strategic outcomes to be providing energy in emergency situations; sustainable safe cooking energy; household lighting and electrification; and sustainable electrification of community and support facilities.

The humanitarian services of disaster risk reduction may be guided by the Sendai Framework 2015 – 2030, which is an international document adopted and endorsed by the United Nations member states in 2015. It sets four priorities for action, and seven targets, focusing on disaster risk reduction and building resilience among communities and states. However, it sheds some light on 'building back better' in recovery, rehabilitation, and reconstruction phases, suggesting the integration of disaster risk reduction with development measures in the post-disaster processes, and facilitating the link between relief, rehabilitation and development, where access to energy and energy services could play a vital role.

V. ENERGY AMONG ESSENTIAL SERVICES

The relief and humanitarian development agencies may resort to a variety or combination of many temporary or semi-permanent solutions such as distribution of water, food, medicines or essential goods; providing sanitation facilities and shelter; distributing rations or cash vouchers for food and essential items; offering food for work or cash for work programmes; health, education and other services. As indirect responses, refugees may be facilitated to produce goods and services linking them with traders and market systems, or to get them engaged in the livelihoods especially in agriculture and livestock, for which grants or concessionary loans may also be linked supported with technical expertise and business advisory services. These may be strengthened by quick restoration and rehabilitation of infrastructure such as essential institutions, roads, bridges, and communication. All these require appropriate integration of energy sources and energy services.

When a disaster strikes or conflicts devastate the infrastructure, one of the first services that may become unavailable for the affected communities is the electric power supply. When refugees position and try to settle themselves in a particular area, it may be very possible that they have no access to electricity. Generally, electricity is considered as the most versatile form of energy as it can be used in many applications and also transform into many

other forms of energy such as heat, light and motion. While losing electric power can result in many repercussions including hampering quantity and speed of other service deliveries, having a reliable and stable electricity supply can facilitate and speedup the services and communication of the humanitarian agencies, health, education and essential administrative services. Similarly, while refugees will be severely affected when they do not have electricity, they can benefit in numerous ways if they have access to it. This is why restoring, rehabilitation, reconstruction or extension of electricity infrastructure should be one of the initial activities for a refugee settlement. If electricity is not available in the area, then, providing electricity should be attempted. Of course, providing electricity can be done using many technologies and sources by various methods. The refugees also may have or they have to be provided with relevant appliances and equipment in addition to attending to electrical wiring and ensuring safety measures, such as lamps, torches, radios, phones and computers with chargers, fans, refrigerators, cookers, ovens, water heaters, water dispensers, televisions, washing machines, power tools, and many more if they already do not have them. Water and gas supplies also can be affected similarly, and they need to be handled accordingly.

VI. AS ON ACCESS TO ENERGY AND SUSTAINABLE ENERGY

As on Access to Energy

- Energy Awareness
- Energy Availability
- Energy Access
- Energy Affordability
- Energy Adequacy

Many organizations want to contribute towards achieving SDG 7, among other goals. Goal 7 emphasizes on access to affordable, reliable, sustainable and modern energy for all people, leaving no one (including refugees) behind, along with increasing the share of renewable in the energy mix and improving energy efficiency. However, in the domain of eradicating energy poverty among the refugees and providing them with energy access, and encouraging productive use of energy, the fundamental energy access 5A's (Awareness, Availability, Access, Affordability, and Adequacy) must be looked into while ensuring the dimensions of their quality and timeliness.

One of the derived definition or an interpretation of sustainable energy is "Energy that meet the needs of the present generations without compromising the ability of the future generations to meet their own energy needs". Therefore, sustainable energy consists of not only renewable energy and energy efficiency, but all of the following.

Sustainable Energy

- Renewable Energy
- Energy Efficiency
- Energy Conservation
- Energy Humility
- Energy Storage

- i. Renewable Energy (continuous energy supply with replenishment, generating more to consume more while maintaining or enhancing quality of life)(Supply Side Management - SSM)
- ii. Energy Efficiency (using less energy and increasing the output; general phenomena of improving on output divided by energy input)(Demand Side Management – DSM)
- iii. Energy Conservation (Saving some energy for future use by foregoing some benefits or comforts, or leaving or postponing use of energy for none-essential purposes)(DSM)
- iv. Energy Humility (Changes in behaviour and lifestyles by choice editing which lead to less demand for energy, closely linked to responsible consumption part of SDG 12)(DSM)
- v. Energy storage or stocking (Refrain from further energy exploration leaving what is available for future use or storing energy for future while continuing the current consumption patterns (Battery storage, stock fuel as a cushion for energy shocks, stock fuelwood for use during rainy season)(SSM)

VII. PRODUCTIVE USE OF ENERGY

In order to expect a better and semi-sustainable outcome, energy could be linked beyond self-consumption (households, use by humanitarian and service provider agencies), public safety (street lights), health centres and hospitals, schools, places of religious observations, and other service providers. To strengthen sustainability, and to reap win-win situations by productive use of energy by the refugees, energy can be used for example towards:

- Subsistence or commercial agriculture and livestock rearing
- Livelihoods for income generation (industrial, SME, and commercial)
- Energy based livelihoods (provision of energy related goods and services).

VIII. ENERGY PLANNING

For the agencies who support the refugees in numerous ways, the following sequence of steps in planning in the given order is proposed for their development planners and workers and related decision makers to appropriately integrate energy for the benefit of the refugees.

Productive use of Energy

- Subsistence agriculture & livestock
- Livelihoods & income generation
- Energy based livelihoods

- Clearly identify or articulate the energy needs of different categories of refugees (general, women and children, differently abled people, feeble, older, and sickly persons etc..) during the baseline data collection processes.
- Assess what type of appliances, equipment, or energy services could meet the energy needs (that would create a demand for energy). The refugees and agencies may already have some of them, or host communities or humanitarian agencies may be able to provide some or all of them, or they may have to be procured.
- Match the energy appliances and equipment data with their ratings (capacity) and duration of use (Ex. how many hours of use per day). Changes in use with seasonal variations should be taken into consideration. If more than one unit of appliances or equipment are necessary, consider all of them.
- Compute and project individual household and institutions energy demands and cumulative demand for different types of energy sources (electricity, kerosene, candles, charcoal, or fuelwood etc..). If more than one type of energy could be used to meet a specific demand (Ex. Cooking needs can be met with electricity, LPG, biogas, kerosene, briquettes, pellets, charcoal, fuelwood, saw dust, paddy or other husks, maize stalks, and crop residues), then, all possible options could be listed and their demand(as if they are the only source available) should be projected.
- Add the components from prospective energy linked livelihoods and business models for productive energy use to the above.
- Considering the energy needs (demands), available or able to supply appliances and equipment, and individual and cumulative demands for different types of energy sources, figure out an optimum combination of energy sources. If the situation is complex, a multi-criteria decision-making model could be used for this purpose, which also may consider cost, convenience, availability, feasibility and time dimensions.
- Decide on the sizing (capacity), numbers (quantity), and delivery models or methods

IX. ENERGY SOLUTIONS

The humanitarian agencies can consider many energy options as solutions to meet energy needs of the refugees. These can be classified into 4 main groups:

Energy Solutions

- Designs and behavioral
- Renewable Energy
- Cleaner Energy
- Polluting Energy

Energy Planning Process

1. What are the energy needs?
2. What are the methods, appliances, and equipment to meet the needs?
3. What are the quantities, ratings, and use duration of above?
4. What are the individual and cumulative energy demands?
5. What are the potential energy solutions?
6. What is the optimum combination of methods, appliances, equipment, and energy solutions?

1. Designs and behavioural: Passive housing designs; positioning, sizing, orientation and shading of housing units, their doors, windows and ventilation; selection of material helping in thermal comfort; inculcating consciousness and practices of energy humility, energy efficiency, energy conservation, and energy storage; make use of gravity; use muscle power (not forced labour) of people and animals where appropriate; direct applications of solar light and heat, wind, or water flows;
2. Renewable energy: Appliances based solar photovoltaics (PV) and solar thermal applications; wind and hydro energy - generating electricity or mechanical power; fuelwood and other biomass based sources such as briquettes, pellets, charcoal, and saw dust, provided they are sustainably sourced and sustainable production methods are adopted; and biogas from the organic wastes collected at the refugee settlements. Depending on the location, rarely, geothermal and marine renewable energy may be possible;
3. Cleaner energy: Natural Gas, LPG, and low carbon coal etc., fall under this category. These are unsustainable and polluting energy sources, but not as bad as the polluting energy sources listed below; and
4. Polluting energy: These include coal, petroleum products such as diesel, kerosene, petrol, and heavy oils, and unsustainably sourced or produced biomass related

sources or their incomplete combustion leading to indoor air pollution.

In today's context, most of the humanitarian agencies are inclined to resort to providing renewable energy solutions. Often, unless electrical power and gas grids are available, it is the diesel generator sets and solar PVs most of them opt for to generate electricity due to many reasons. For cooking purposes, either LPG or fuelwood is used in most cases. However, the planners and practitioners should re-think the solutions they provide ideally in the given order above (designs, behavioural, renewable energy) for a sustainable outcome. In fact, the creativity and innovation of people and their knowledge and skills may be brought to the fore, and novel and effective solutions may be devised and practiced by refugees under their constrained circumstances. The humanitarian agencies will have to pay due attention to the need for costs upto commissioning; operations, maintenance and repairs; security and dealing with theft; seed and working capital; consumables, and spare parts; monitoring and control; and replacement and fuel costs.

X. ISSUES

Even if electricity is available from a national, mini, or micro grid, it is very possible that electricity is provided to refugees only during certain times of a day (power cuts leading to blackouts). The refugee settlements also complain of poor energy services with frequent informed or sporadic power outages. It is also common to observe them with brownouts (lights getting dim) when electricity supply voltage drops far below the rated voltage. These instabilities can result in many issues including loss of productivity, need for rescheduling of activities, damages to the connected appliances and equipment, or them not functioning. Back-up power sources such as diesel generator sets or solar PV arrays may be necessary to deal with such variations at an added cost.

The refugees who are dependent on fuelwood collection from neighbourhood areas for cooking, space heating, and occasionally for lighting can be exposed to adverse conditions risking their safety and security due to harassment and abuse. The situation could be worse when the refugees and the host communities are dependent on the same sources of biomass leading to issues on access to lands and ownership of the natural resources. In some refugee settlement areas, there have been reports of conflicts with hostile hosting communities. There are also complaints that collecting fuelwood leads to degradation of nearby forests. Some of the refugees do not collect fuelwood due to fear, which ends up in inadequate fuelwood for their purposes or exchanging their food ration coupons for fuelwood with the host communities, depriving them from good nutrition. As incomplete combustion can lead to emissions and soot resulting in indoor air pollution, energy efficient stoves should ideally be used. Refugees can also use wood gasifier stoves, which may have comparable features with LP gas stoves.

Lack of access to physical resources, capitals, and market systems could pose a challenge for refugees. Poor communication, inadequate flow of information or weak coordination can limit their opportunities. Limited or no access to electricity supply, interrupted supply of fuel and consumables; lower attention given to operations, maintenance, and repairs; and security of property also are some of the issues linked to providing energy to refugees.

XI. CONCLUSION

Any person can face natural disasters or people induced conflicts at any time forcing them immediately to become internally displaced persons or refugees losing everything they possessed until then. They need to live a good life with dignity and without fear. Energy plays a catalyst role in this perspective, but often humanitarian agencies do not pay adequate attention to the importance of energy sources and energy services. While it is best to incorporate energy aspects from the disaster risk reduction and preparedness stages, in many instances, this has not been incorporated. Considerations for energy must be given from the early stages of response and relief phases, initial baseline data collection, planning, and towards the latter part of the disaster cycle (rehabilitation, reconstruction, and resettlement). This can help refugees live their regular lives happily, healthily, and with dignity.

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