

HUMANITARIAN ENERGY. A LITERATURE REVIEW

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ABSTRACT

Today, the world is on the eve of a major energy crisis, a situation that seems to be accelerating steps towards a revolution in identifying complementary energy sources to ensure continuity in all activities, including humanitarian ones.

Starting from the relationship between disasters - humanitarian emergencies - complex humanitarian emergencies, the paper highlights the novelty of the concept of humanitarian energy and highlights the important role of energy in the management process of humanitarian activities.

This paper defines humanitarian energy as the interface zone between humanitarian response and energy.

Our method of documenting the topic is based on bibliometric analysis that involved extensive literature screening.

The research put into evidence the results of recent studies revealing the links between energy and humanitarian clusters, and the recent research subjects related to humanitarian energy.

The study's findings indicate that humanitarian energy is a new and emerging theme, approached from multiple perspectives and disciplinary areas, including economic one, that requires a broad level of knowledge, integrated analysis, and public-private management.

The research results reveal that most of the studies related to this field are on renewable energy and energy access. Although security (protection) issues are recognized as a priority in the management of humanitarian problems, this topic has not received much attention given the risks that lack of access to energy generates in humanitarian settings.

Considering the applicability of the research studies linked to the humanitarian energy for all the stakeholders and the predictable dynamics of forced displacement movements in the context of climate change and/or conflict, as well as the risks arising from lack of inadequate planning, we conclude that research studies should further deep explore the issues of humanitarian energy management in emergencies and crises from both an economic and security perspective.

KEYWORDS: *cluster system, displaced people, displacement settings, humanitarian emergency, humanitarian energy, humanitarian organization, energy access.*

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1. INTRODUCTION

The world is facing a growing humanitarian challenge!

The Russia–Ukraine crisis which started in February 2022 demonstrated to us the need to be permanently prepared to answer to emergencies.

Energy is a key resource for ensuring a safe and secure environment in humanitarian settings.

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According to United Nations High Commissioner for Refugees (U.N.H.C.R.) restrictions on energy access have a negative impact on populations in humanitarian settings. The most exposed categories of people who may be affected by the lack of secure access to energy are displaced and vulnerable people. Well-planned energy policy interventions can offer important benefits related to connectivity, education, environmental protection, food security, gender equality, sanitation and health, livelihoods, protection, and water. (U.N.H.C.R. a, p.7).

Humanitarian services, including energy responses, have traditionally been delivered according to the 'protect and provide' approach often used in emergency responses, in which camps or settlements are set up (in theory, on a short-term basis) to provide a place of physical protection for displaced people (Thomas, Rosenberg-Jansen & Jenks, 2021).

According to data presented in *The State of the Humanitarian Energy Sector 2022*, there are millions of displaced people who live in darkness, surrounded by pollution and smoke, without access to primary electricity facilities or sustainable solutions. Nowadays, it is estimated 94% of displaced people living in camps have no access to electricity and 81% depend on firewood and/or charcoal to cook. (United Nations Institute for Training and Research - U.N.I.T.A.R. & Global Platform for Action - G.P.A., 2022, p. 201).

In line with the *Global Strategy for Sustainable Energy 2019-2025*, restricted access to energy may have serious consequences for the safety as well as for the security of refugees; in a particular way, it may expose them to increased risks of sexual and gender-based violence (S.G.B.V).

Ensuring safe access to affordable clean energy is intrinsically related to the fulfillment of rights associated with food, health, education, nutrition, peaceful coexistence, livelihoods, protection, safety, and W.A.S.H. (Water Sanitation and Hygiene) (U.N.H.C.R. a, 2020, p. 9).

The understanding of humanitarian energy issues requires consideration of the governance structures, institutions, and practices involved in energy for displacement (Rosenberg-Jansen, S. 2020).

According to Robinson et al. (2022) to achieve *Sustainable Development Goal 7 - “universal access to affordable, reliable and modern energy services by 2030”* – is a significant major challenge. At present, 40% of the world's population has no access to sustainable energy sources and depends on the burning of biomass in view to supply their energy needs (p.1.)

The new global trend of overlapping crises facing contemporary society, such as climate change, conflict, and natural disasters tends to generate an increase in the phenomenon of forced displacement of people. This situation could lead to an increase in energy needs for humanitarian assistance activities, including for climate-related emergencies caused by climatological disasters such as droughts.

2. METHODOLOGY OF RESEARCH

In order to document the chosen topic, we used bibliometric research based on an extensive screening of the literature.

The review was conducted using the United Nations (U.N.) legislation and strategies, as well as the U.N. common programs with non-governmental organizations (N.G.O.) that operate in the field of humanitarian energy (i.e. Moving Energy Initiative - M.E.I.) as well as the *Scopus* research database, and *Zotero* resources.

Also, separate searches of the *Journal of International Humanitarian Action*, *Journal of Refugee Studies*, *Energy Research & Social Science*, and *Institute for Environmental Security* were conducted using the same keywords.

Grey literature available on key websites such as *Energypedia* and *ReliefWeb* was also studied.

More than 15 websites of key humanitarian organizations, global initiatives, academic institutions, and scientific journals have been accessed during this documentation process.

We have deepened the research work of more than 19 authors or co-authors.

3. HUMANITARIAN EMERGENCIES

Every disaster, whether natural (epidemic, slow-onset, sudden-impact diseases) or man-made (complex, industrial/technological emergencies), can become a humanitarian emergency if international humanitarian assistance is urgently needed to provide relief to the affected population. Under international rules, we can be facing a humanitarian emergency if international support is needed to provide for the necessities of a population, including food, protection, shelter, water, and other life-sustaining measures.

U.N.H.C.R. defines a humanitarian emergency as being any situation where the lives, the rights, or the well-being of refugees and any other persons of concern to U.N.H.C.R. would be threatened if appropriate and immediate action is not immediately taken (U.N.H.C.R..c., Version: 4.7., p. 3).

Figure 1 shows the functional mechanisms of the relationship between *disasters* - *humanitarian emergencies* - *complex humanitarian emergencies*.

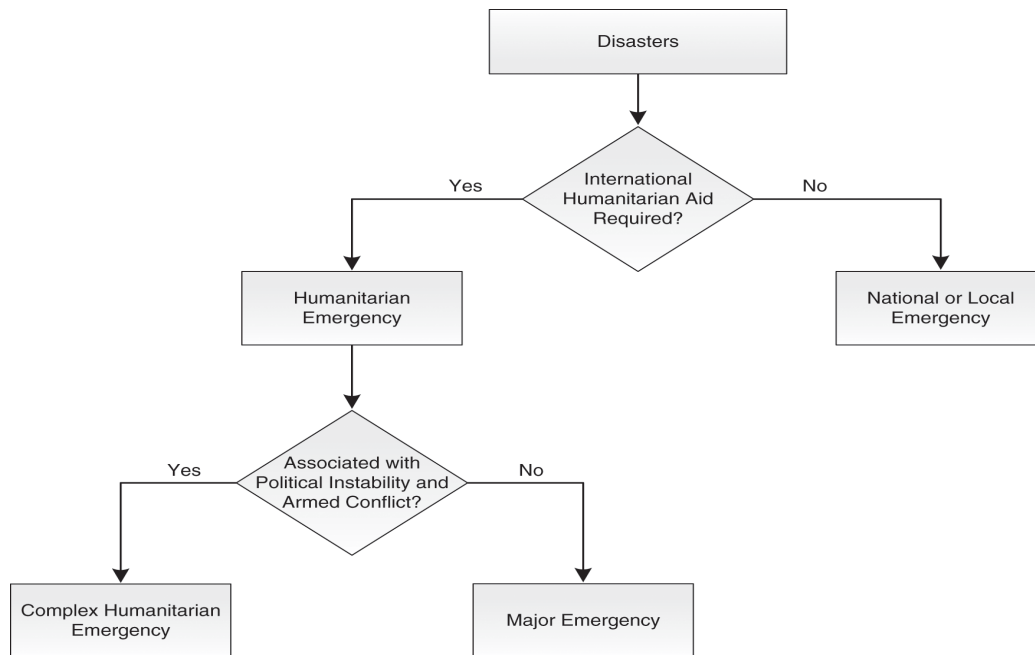


Figure 1. Disasters, humanitarian emergencies, and complex humanitarian emergencies

Source: Anderson & Gerber (2018)

Anderson & Gerber (2018) divided humanitarian emergencies into two general categories: (a) the “major emergency” and (b) the “complex humanitarian emergencies” – related to armed conflict and political instability.

The fragmented nature of the humanitarian system has led to frequent and repeated challenges to coordinate humanitarian activity. Beginning in 2005, one of the well-resourced coordination mechanisms developed have been the *humanitarian clusters*, groups of U.N., and non-U.N. actors that are engaged in sectoral coordination of humanitarian response at the global and country level (Clarke & Campbell, 2018).

Inter-Agency Standing Committee (I.A.S.C.) is a global humanitarian forum established in 1992 under United Nations General Assembly Resolution 46/182. “*The I.A.S.C.’s main purpose is to improve the effectiveness of humanitarian action by coordinating the activities of I.A.S.C. members*

and other humanitarian actors, assigning responsibilities, and sharing resources and knowledge. The I.A.S.C. develops and agrees on system-wide humanitarian policies and resolves disputes or disagreements between humanitarian agencies or over system-wide humanitarian issues... The I.A.S.C. system deals with humanitarian issues that do not involve refugees" (U.N.H.C.R. d, Version: 1.9., 2022, pp.7-8). I.A.S.C. members are operational organizations that have links to the U.N. system.

The *Cluster Approach* (I.A.S.C.) is used for coordinating non-refugee humanitarian emergencies and could be used both in humanitarian emergencies caused by conflicts and in humanitarian emergencies caused by disasters.

Humanitarian organizations have also commonly agreed to conduct some clusters at the global level as well as to establish clusters structure at the country level in view of providing a humanitarian response for non-refugees persons. The cluster system was created to cover accountability gaps within the international humanitarian response. It allocates responsibility in view to delivering service (shelter, health, etc.) across some cluster lead agencies. Therefore, no single agency is responsible for the entire response (U.N.H.C.R. b., version 3.0, 2022, p.1).

Thus, in line with the *Cluster Approach* (I.A.S.C.) as presented in Figure 2 the clusters represent groups of humanitarian organizations, both UN as well as non-UN, operating in each of the principal sectors of humanitarian action (health, logistics, shelter, water, etc. They are appointed by the I.A.S.C. and have distinct responsibilities as regards coordination (U.N.H.C.R. b., version 3.0, 2022, p.2).

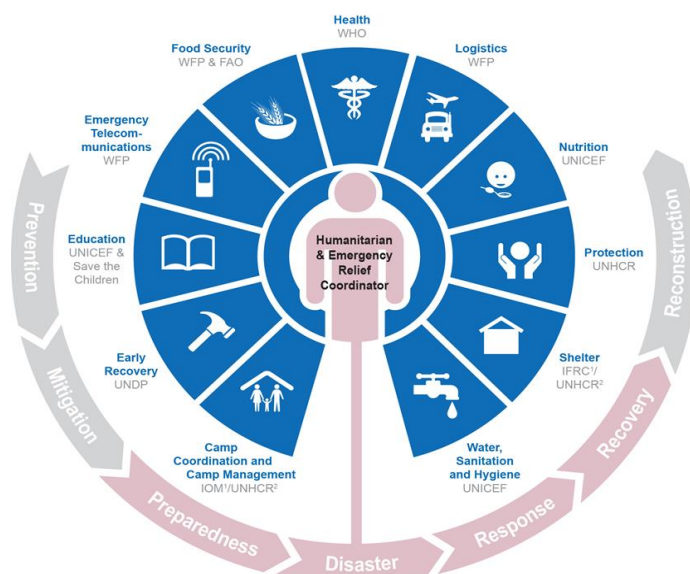


Figure 2. Humanitarian organizations within Cluster Approach

Source: U.N.H.C.R. b. (2022, p. 3)

In the research article *Moving beyond informal action: sustainable energy and the humanitarian response system* (2021), Thomas, Rosenberg-Jansen & Jenks present an overview of energy interlinks with the cluster system. Starting from the exposure of the main categories of types of activities depending on access to energy (electricity for camp humanitarian offices coordination, registration, water, sanitation, and hygiene facilities (W.A.S.H.), medical facilities, vehicles, cooking, street lighting, lighting schools, internet, etc.) they highlight that "there is currently no official cluster for energy despite previous attempts to create one" (p.3).

Regarding this issue, Van Dorp, in his book *Dealing with energy needs in humanitarian crisis response operation* (2009) drew attention to the fact that the sustainability issue of energy is often not sufficiently approached by those who offer support within the humanitarian crisis response

operations either in the post-conflict situation or post-disaster situations. Although the UNHCR and other emergency relief organizations have integrated substantial elements of sustainable energy provision into their policies and plans, implementation is frequently delayed or not sufficient and, consequently, the long-term humanitarian and environmental effects that result can be dramatic (p.5.)

Taking as a point of reference the results of previous research studies, Thomas, Rosenberg-Jansen & Jenks underline that “*the distribution of energy products in emergencies works in the short terms*”, “*following the initial phase of an emergency (after around six months) such distribution mechanisms no longer meet people’s needs*” and “*humanitarian aid organizations are not set up to deliver such support*” (2021, p. 4). Their analysis demonstrates that humanitarian clusters “*should carefully consider energy to enhance the well-being and protection of displaced populations and to improve the sustainability of operations*” and “*it is vital that the link between energy and the clusters are more explicitly recognized and acted upon by donors, implementing agencies and coordinating bodies to progress the sector further*”. In this regard, they concluded that improving the quality of life that access to energy enables can be a bridge towards cohesion and development, as sustainable energy has a transformative role in the recovery of communities affected by the crisis (2021, p.15).

In our opinion, the research on optimizing the functioning of clusters should also pay deeper attention to the interdependent relationship between energy and protection in humanitarian emergency centers, considering the multiple risks that could appear in case of the lack and/or restriction activity of these two services.

4. HUMANITARIAN ENERGY DEFINITIONS AND PERSPECTIVES

Definitions related to the humanitarian energy field are both complex and in permanent evolution. In their recent research studies, *Definitions and differences: The evolving space of humanitarian energy access*, Al-Kaddo & Rosenberg-Jansen, presents a baseline definition of humanitarian energy as: “*Institutions, policies, programs, global initiatives, actions and activities which use a range of sustainable and fossil fuel energy sources in contexts of displacement, to meet the energy needs of people in camps and urban settings, self-settled refugees, host communities, and internally displaced people.*” From this perspective humanitarian energy meets the needs in emergency and protracted contexts, as well as all populations affected by climate change, famine, natural disasters, violence and persecution, and war, and could be considered the generic term for this sector (2021, p. 6).

Displacement settings and humanitarian energy access: In Rosenberg-Jansen’s (2022 b, p. 2) opinion, this definition *opens up the space to consider energy as an issue in a number of forced displacement settings, including both emergencies and protracted situations, and covers a range of humanitarian responses and energy uses.*

As presented in the chapter above, the academic paper by Thomas et al. (2021) introduces the topic of energy within humanitarian systems, providing an overview of how energy and humanitarian clusters are connected. As part of their approach energy access includes cooking, heating, and cooling as well as the electricity needs for people in displaced settings, including also the energy used by practitioners in their usual activities. This covers access inside the community facilities, homes, humanitarian operations, and enterprises. In their research studies, they use the words “*humanitarian energy*” and “*energy in displacement settings*” interchangeably to refer to all spectrums of activities on energy provision within the humanitarian response.

Another approach of Al-Kaddo & Rosenberg-Jansen (2021, p.6) related to energy access for displacement settings is linked to the role of energy in “*ensuring reliable, sustainable, and affordable energy access for all displaced people*” - which includes decarbonizing energy for the humanitarian facilities, energy for the enterprises and the community services, as well as the

household cooking and electricity solutions. The energy for forced displacement meets the needs arising during an emergency and/or protracted situations as well as all populations who are affected by famine, persecution, violence, war, and who are forcibly displaced.

From this perspective, access to energy in situations of displacement can be viewed as being directly related to the vision of the U.N.-S.D.G. Goal 7 on energy, which aims to “*ensure access to affordable, reliable, sustainable and modern energy for all*” (U.N. - S.D.G. 2017 - Goal 7).

The United Nations (U.N.) has initiated the Global Platform for Action on Sustainable Energy in Displacement Settings. This initiative aims to encourage actions that promote sustainable energy access as well as use in situations of displacement, in line with the elements set out in the Global Action Plan (G.A.P.). G.P.A. aims to remove barriers to energy access in humanitarian settings by providing an agenda for collaboration between energy, development as well as humanitarian partners. At the same time, G.P.A. promotes and contributes to the transition of the humanitarian sector towards renewable energy (U.N.I.T.A.R. - G.P.A.).

Migration and humanitarian energy-related policies: In the research paper, *The migration-energy nexus in international policy* (Mach, 2019, p.19), appreciate that “*the migration-energy nexus represents an emerging field of study both at research and policy levels*”. Starting to this point the author underlines “*the need to consider migration in energy-related policies and vice versa energy in migration policies as a way to contribute to effective migration management and governance*”.

In *The secret life of energy in refugee camps: invisible objects, technologies, and energy systems in humanitarianism*, Rosenberg-Jansen (2022 a) frames energy within forced migration debates on technology. The paper highlights the invisibility of energy as a marginalized topic, highlights the methodological challenges of revealing the energy needs of displaced people, and explores institutional ignorance on the importance of energy.

Protection and humanitarian energy access: Another perspective approach is revealed by Bradley & Liakos, in their paper *Vulnerability of women and girls in refugee settings* (2019), which illustrates that the complexity and prevalence of various forms of violence against women and girls (V.A.W.G.) in humanitarian refugee contexts are often missed. They underline that the connections between V.A.W.G. and energy frequently focus on outlining risk factors rather than creating a more detailed understanding of how different forms of violence intersect with poverty and vulnerability in refugee settings (p.18).

Economic and financial support in humanitarian energy: Related to the market system, Vianello & Boodhna (2019) have demonstrated in their paper *The role of market systems in delivering energy access in humanitarian settings*, that lessons learned from previous experiences in providing energy products in refugee camps reveal that for sustained access on modern energy technologies, “*a systems-thinking approach to market-based development is needed*”. Market exchanges are now complex and simplistic solutions are not sufficient. Thus, they assessed that “*there are emerging opportunities for energy market development that integrate the needs of both refugees and the wider host communities*” (p.14).

In their review entitled *Innovative Financing for Humanitarian Energy Interventions*, Cohen & Patel (2019) argued that in environments hosting displaced and refugee communities, energy can act as “*an enabler for improved healthcare, education, and access to clean water*”. They underline that more efficient sources of energy could at the same time save money which can be reinvested into life-saving actions. According to the authors, there are challenges inhibiting the effective and uptake management regarding cleaner energy solutions that can be used in displacement settings. These are enhanced by a lack of appropriate and available funding. From their point of view displacement settings is a relevant example of unpredictable as well as complex operating environments. Thus, they have shown that conventional approaches to financing energy access will not be supported by the risk and/or return features of this market opportunity, therefore alternative structures are required.

Taking into account particular constraints of displacement places, Cohen & Patel (2019) assess that, today, any financing mechanisms are likely to be placed within the following two categories: *providing "more efficient aid"* - on the one hand, and *"more efficient aid through markets"* - on the other hand. In their opinion, these are liable to constitute a transitional phase from *"grant-making"* to the use of *"commercial investment vehicles."*

Sustainable humanitarian energy: Considering that *"standardized data for energy supply, energy use, efficiency, costs, and payment mechanisms are needed for most refugee settlements around the world"* at the international level Moving Energy Initiative (M.E.I.) is working to bring the emerging findings and act as a knowledge hub for best practice in humanitarian energy provision. Thus, M.E.I. has designed a model offering *"global estimates of the scale of energy demand, cost of energy use and CO2 emissions among populations of concern to the U.N.H.C.R."* As part of their activities, M.E.I. cooperates with host governments as well as national N.G.O.s to enhance energy security for local as well as refugee communities. M.E.I. activities represent a collaboration between Chatham House, Energy 4 Impact, the Office of the United Nations High Commissioner for Refugees (U.N.H.C.R.), Practical Action, the Norwegian Refugee Council (N.R.C.), and the United Kingdom Department for International Development (U.K. - D.F.I.D.). According to M.A.I. *"the expertise to create clean and financially sustainable energy services can often be found in the private sector, so finding the right model for public-private partnerships and outsourcing services is critical."* M.E.I. philosophy is that *"including refugees in national energy access targets and plans, host nations can harness humanitarian and development funding to bolster national energy resilience."* There is a potential for win-win solutions, fulfilling commitments to protect refugees and at the same time alleviating energy poverty for the local population.

(https://energypedia.info/wiki/The_Moving_Energy_Initiative)

Humanitarian energy access - energy implementation model: In the paper *TIME to Change: Rethinking Humanitarian Energy Access*, Robinson et al. (2022) started their analysis by finding that nowadays, many of the evaluation approaches do not consider sustained use in the long term. There are a lot of energy solutions end-user-oriented that are no longer used after project partners leave. In their opinion, these failures are very often due to a focus on increasingly complex technologies instead of on social methodologies, such as a better understanding of end-user priorities as well as contextual constraints that limit sustainable use. Thus, hereby the authors identified and expose a new interdisciplinary evaluative as well as formative implementation or delivery model: the qualitative *Technology Implementation Model for Energy* (T.I.M.E.), which is destined for policymakers and practitioners. T.I.M.E model concentrate on improving three fundamental energy technology implementation key areas, such as: to re-think the way in which impact is conceptualized; to understand the gaps between the perception of practitioners and the reality of end-users; and, to sustain a co-production approach that involves all key stakeholders in the field of the energy value chain or the energy system. In other words, T.I.M.E. is an energy implementation model which combines Sanitation and Hygiene behavioral change models, Water, Appropriate Technology, Social Enterprise, as well as International Development planning instruments whilst promoting an approach focused on co-production, resources use, ownership, as well as equality. (p.1).

5. TOPICS STUDIES ON HUMANITARIAN ENERGY

The landscape of humanitarian energy has developed rapidly over the last ten years.

Relevant publications related to the energy sector listed on ENERGOPEDIA (2022, November, 1st) reveal that most of the work in the field concerns renewable energy: Bioenergy (43); Cooking Energy (112); Climate Change (181); Energy Efficiency (134); Energy Access (407); Financing & Business Models (167); Grid (36); Humanitarian Energy (81); Hydropower (15); Impacts (74); Improved Cookstoves (50); Mini-grid (76); Mobility (11); Powering Agriculture (48); Policy &

Regulation (81); Productive Use (69); Renewable Energy (420); Solar (215); Wind (34); Other (335). (https://energypedia.info/wiki/Category:Pub_Database)

Rosenberg-Jansen (2022 b) has presented an *initial classification of the literature on humanitarian energy* which covers both academic publications and key grey literature, as well as institutional outputs specifically on the topic of humanitarian energy. The subject areas in connection with disciplinary classification hereby presented, reveal that most topics of interest are related to engineering (technical design of energy systems; quantitative data analysis and energy modeling), environmental science (environmental damage and deforestation), energy studies (energy demand and supply options analysis) and economics (techno-economic assessments; cost and finance analysis; energy economies of refugee camps). Also, the methodological classification research reveals that quantitative subject areas refer principally to the energy used and costs of energy; on the other hand, the qualitative ones are more focused on ethnographic studies (p.6).

In the research study, Rosenberg-Jansen & Haselip (2021), presented several research topics already being covered by the sector, as we mention below: Research needs and priority country topics for analytical and technical; Humanitarian Engineering and Energy for Development; Modern Energy Cooking Services (M.E.C.S.) humanitarian program; Energy Enterprises: Targeted data collection analysis and dissemination to show the commercial potential of displaced people; U.N.H.C.R. energy data survey and monitoring data sets; Energy needs assessment framework; Humanitarian Energy in Research; Renewable Energy for Refugees – global and research activities; Moving Energy Initiative (M.E.I.); Mini-grid research and energy system optimization (pp.11-12). Also, they appreciate that there is a considerable need for new information and evidence in the humanitarian energy sector and suggests some specific areas for open discussion, which we present below: *Community resilience and inclusive participation; Energy and inclusivity; Energy for health, education, protection, and S.G.B.V. needs; Environmental impacts; Energy technologies; Knowledge, learning and skills training; Productive use and income-generating opportunities; Infrastructure systems and institutional use; Monitoring and evaluating* (pp.12-13).

6. CONCLUSIONS

Nowadays, international organizations, responsible institutions in host countries, and academia have increased their studies to identify and implement sustainable energy solutions to avoid new humanitarian and/or security emergencies.

The conclusion of our research reveals that humanitarian energy definitions are used differently depending on the energy field or the needs of displaced communities.

Although research studies have demonstrated the vital importance of energy as a driver of humanitarian activities, energy responses are only informally linked to the existing cluster system, despite previous attempts, there is no energy cluster, at present.

Humanitarian energy studies have paid more attention to renewable energy and energy access issues.

Even if offering security (protection) in humanitarian settings is an obligation that is recognized as a priority in the management of humanitarian issues, the research topics related to not paid particular attention to this subject, till now.

Given the overlapping crises nowadays tendencies (including the energy crisis), the global objectives linked to sustainable energy access for displaced people by 2030 as well as to meet S.D.G. 7 in displacement situations, we appreciate that new deep research studies could be useful to find sustainable solutions for the humanitarian emergency settings, on medium and long term, including on security (protection) and economic perspective.

We consider that, major donors need to encourage innovative financing mechanisms and test them further to generate market data as well as evidence for additional investment in humanitarian energy.

As the challenges related to energy access in humanitarian settings are significant and in permanently growing, we conclude that the rising energy needs represent both a necessity and an opportunity for public-private collaboration in displacement settings.

Taking into consideration the wide spectrum of elements that shape the concept of humanitarian energy we concluded that it requires an approach from a triple perspective social - security - economic which must be involved all stakeholders, namely international organizations - public institutions – the private sector.

7. LINES OF RESEARCH

Given the unpredictable dynamics of forced displacements in the context of climate change and/or current conflicts, the strategies and objectives assumed at the global level - on the one hand, and taking into account the limited spectrum of research topics addressed at the academic and practitioners level, identified in the context of this research - on the other hand, we believe that special attention should be paid to deepening the issue of humanitarian energy management in emergency and crisis situations, including from the security and economic impact perspective. At the same time, in our opinion, the research studies should integrate the development of the public-private relationship approach related to energy access in humanitarian action.

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