

The State of the Humanitarian Energy Sector:

Challenges, Progress and
Issues in 2022



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Lead Authors: Dr Sarah Rosenberg-Jansen and Dr Hajar Al-Kaddo.

Contributing authors: Joelle Hangi, Thomas Fohgrub, Elif Demir, Owen Grafham, Eva Mach, Luc Severi, Mark Gibson, Mattia Vianello, Laura Clarke, Cathleen Seeger, Aimee Jenks, Lama Gharaibeh, Cecilia Ragazzi, Iwona Bisaga, Jonathan Archimi, Philip Sandwell, Stephen Gitonga, David Kinzuzi, Arielle Ben-Hur, Vahid Jahangiri, Surabhi Rajagopal, Ziad Ayad, and Sadiq Zafrullah.

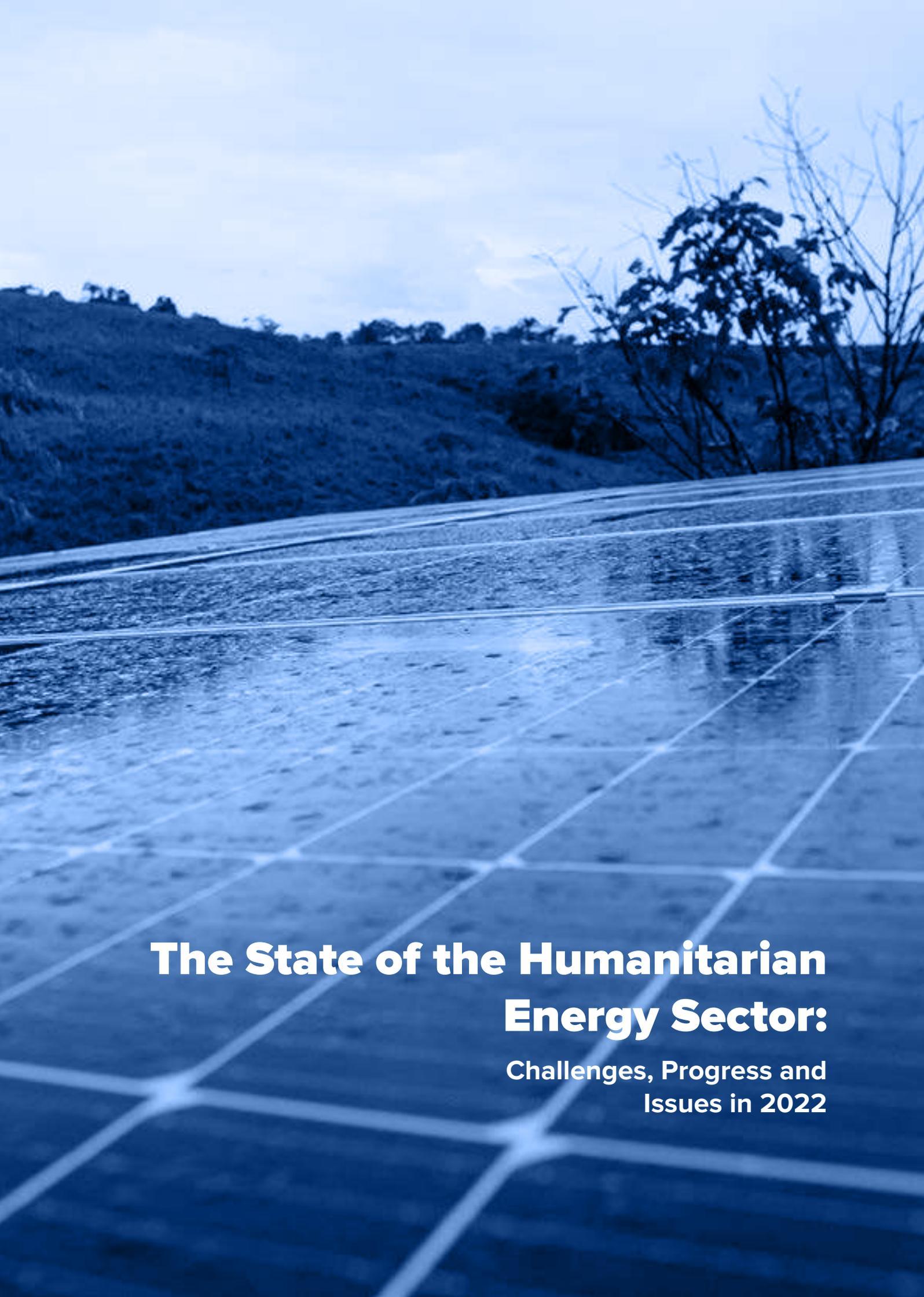
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The Global Platform for Action on Sustainable Energy in Displacement Settings (GPA) is the global initiative to promote actions that enable sustainable energy access and use in displacement settings, as laid out in the Global Plan of Action Framework and hosted by the United Nations Institute for Training and Research (UNITAR).

The GPA strives to remove barriers to energy access in humanitarian settings by providing a collaborative agenda for energy, development, and humanitarian partners to deliver concrete actions of Sustainable Development Goal 7 (SDG 7) for displacement contexts. It promotes and contributes to the humanitarian sector's transition to renewable energy, which will reduce health impacts and environmental damage, increase efficiency and reduce costs and carbon emissions, with the aim of supporting all displaced people in accessing sustainable energy.

This report has been produced by the GPA Coordination Unit with inputs from the GPA Steering Group, and partners including UNITAR, UNHCR, International Organization for Migration, GIZ, World Food Programme, Food and Agriculture Organization, Chatham House, Practical Action, UNEP, UNDP, Clean Cooking Alliance, Mercy Corps, Sustainable Energy for All, SNV, Lifeline Fund, NORCAP, SELCO Foundation, and MECS. The views contained in this report do not necessarily reflect those of all GPA Member institutions.

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Foreword

Climate change is a human and protection crisis. The impacts of a warming world are already being felt globally but are particularly devastating in regions like the Sahel, the Middle East, and South Asia. The interplay between climate change, environmental degradation, and lack of energy access are already leading to growing inequalities, conflict and persecution, and poverty. Climate action and the delivery of sustainable energy solutions are now urgently needed to reduce the negative impacts on the most vulnerable populations, including people already displaced, and the communities who host them.

Worldwide there are now an estimated over 102 million forcibly displaced people of concern to the UN High Commissioner for Refugees (UNHCR). The scale of displacement is shocking, with this figure doubling in less than a decade and not yet reflecting the impact from the Ukraine crisis. Increasing displacement is likely to continue, aggravated by the triple threats of conflict, COVID-19, and climate change.

About 90% of refugees under UNHCR’s mandate and 70% of internally displaced people are from countries highly vulnerable to climate shocks. Protection risks, such as violence against women and girls collecting firewood, are driven up when access to energy, including clean cooking, are unavailable. Displaced people also face literal darkness: the vast majority of the world’s refugees live without access to electricity and all the essential services it provides. Everyone needs energy for cooking, connectivity, heating, cooling, and communication. Clean cooking and sustainable electricity provide the opportunity for prosperous, dignified, and healthy lives.

Sustainable Energy for All (SEforALL) works to ensure a clean energy transition that leaves no one behind. Through partnerships and targeted action, we can achieve Sustainable Development Goal (SDG) 7: delivering clean, affordable energy for all, as well as achieving net zero greenhouse gas emissions by 2050. SEforALL is committed to bringing the humanitarian and energy sectors together, promoting a just and inclusive energy transition that includes populations vulnerable to humanitarian and climate crises. Renewable energy technologies offer a route to build back better, and greener, after the shocks of the COVID-19



Andrew Harper, Special Advisor to the High Commissioner for Refugees on Climate Action, UNHCR



Damilola Ogunbiyi, CEO and Special Representative of the UN Secretary-General for Sustainable Energy for All and Co-Chair of UN-Energy



pandemic and multiple humanitarian conflicts. Actors from across the energy, humanitarian and development sectors can drive progressive change: joining forces to deliver sustainable access and improve the lives of displaced people.

As co-founders of the Global Platform for Action on Sustainable Energy in Displacement Settings (GPA), UNHCR and SEforALL are determined to leave no displaced person behind in the global energy transition and to facilitate the comprehensive inclusion of displaced people in global climate and energy issues. Whether it be the current crisis in Ukraine, or conflicts in the Sahel, Syria, Afghanistan or Myanmar, the importance of emergency planning and preparedness is apparent, demonstrating the need to prepare for green operations at the start of emergencies. In protracted situations, which often last for decades, sustainable energy can offer a lifeline and chance to support self-reliant communities.

Local entrepreneurship and rapid advances in renewable energy technologies offer durable and viable solutions in displacement settings. Investments in energy data and capacity building can support the delivery of new sustainable energy projects. And innovative financing can reduce energy costs in the short-term and the long-term. The creation of livelihoods and green jobs offer income and economic opportunities for displaced people and host communities. Renewable and hybrid energy solutions can also support the decarbonization of the necessary electricity infrastructure in these settings and, combined with energy efficiency measures, they can offer an opportunity to invest savings from energy to other important life-saving activities.

There are many opportunities for collective action on sustainable energy: working together can

offer significant benefits for displaced people, offering new solutions and rapid progress to address conflict, COVID-19, and climate crises. As we move forward to address these challenges, we must see greater collaboration between humanitarian organisations, host governments, development organisations, and energy expert partners. Achieving real change will require all actors to work with displaced people as partners, rather than beneficiaries, to support the delivery of an inclusive and sustainable energy transition that leaves no one behind.

Finally, delivering sustainable energy and mitigating the impacts of climate change will require substantial investment from donors and partners, especially from the private sector. As this State of the Humanitarian Energy Sector report highlights, progress on policy and coordination is already underway: this is a real moment for bold reforms and commitments from across a range of partners. But to systematically improve the lives of displaced people and green humanitarian operations, much more change is needed. Words without action will not reduce emissions or provide the energy that displaced people need and deserve.

EXECUTIVE SUMMARY



In 2022 there are over 102 million people [forcibly displaced](#) from their homes: over 21.7 million people forced over borders as refugees, 52.1 million people internally displaced within their countries, 4.7 million asylum seekers, 4.7 million returnees, 4.6 million stateless people, and another 14.4 million persons of concern. The Russia–Ukraine crisis which started in February 2022 drives these figures up daily. In protracted and emergency situations, the vast majority of displaced people do not have access to clean cooking solutions and are not able to access modern electricity to meet their needs.

This report provides an analysis of the humanitarian energy sector in 2022: describing the state of play in energy access, governance, policy, financing, delivery, and evidence on energy in situations of displacement. The analysis and description covers energy issues in humanitarian situations: drawing on interviews with practitioners, experts on energy in displacement contexts and entrepreneurs, results from key implementation programmes and case studies, data assessments, progress on key topics, and expert recommendations for future programming and policymaking. The report highlights the core issues needed to deliver [Sustainable Development Goal \(SDG\) 7](#) on energy in displacement contexts.

Voices of Refugees and Displaced People: Energy is Essential

[Energy access is essential in humanitarian settings](#): refugees, displaced people, and host communities need electricity for their homes and businesses, to power their community spaces and water, sanitation and hygiene facilities, and to support humanitarian institutions. [Modern energy](#) supply includes clean cooking solutions and electricity access, and supports communities in moving beyond the use of traditional and biomass sources of energy. Life without modern energy is radically constrained and displaced people face protection and health issues without access to electricity and clean cooking sources. Without access to energy, displaced people cannot work or study at night, they do not have electricity for their livelihoods, and they are unable to move around safely after dark. Self-reliance and livelihood opportunities are limited without access to modern energy resources, and progress towards global climate goals will not be made without renewable solutions for energy needs. Chapter 1 provides an overview of energy access issues in humanitarian settings, including hearing from refugees and



displaced people directly on their energy needs. A short overview of technologies and spaces of access is provided, alongside a description of humanitarian contexts and the challenges of providing energy within UN institutions. COVID-19 has hit the humanitarian energy sector hard: energy needs have increased at a time when resources within the humanitarian system are stretched thin and have been redirected to pandemic response. Refugees and internally displaced people (IDPs) have seen their freedom of movement restricted by lockdowns and the financial impacts of the COVID-19 pandemic on displaced livelihoods has been severe. At the same time, energy access and connectivity have supported remote working by humanitarians, and in some spaces online working has enabled displaced people to connect into discussions that they may not have been able to join physically. The importance of a stable wi-fi connection, reliable electricity access, and ability to cook at home has been essential in keeping people worldwide physically and mentally healthy during the COVID-19 crisis. The same needs are present in refugee camps and displaced locations: a fact that is now being recognised internationally and by [UN agencies and their partners](#) who support the provision of energy in humanitarian settings. Despite this glimmer of hope, currently, the need for energy in displacement contexts remains considerable and many refugees and internally displaced people still live in the dark.

Governance and Coordination

While the emergence of energy for displacement as a specific sector has been a relatively recent development, there has always been programming within refugee camps and IDP settings to provide basic firewood and cooking solutions. Similarly, power has always been needed by humanitarian operations: largely this has been supplied in remote locations by diesel generators. Over the past ten years, the humanitarian energy sector has expanded considerably: traditional and innovative partnerships have developed, and specialist staff numbers have grown. There is still much to do, but the issue of the energy needs of displaced people is now firmly on the agenda.

Chapter 2 outlines the types of institutions and organisations working on humanitarian energy in the world today. Some progress within global forums is evident: for example, energy is included in some humanitarian policies, and displacement situations are included in relevant energy strategies. To some extent, there is also progress at the strategic level within humanitarian partners. Some organisations have introduced internal policies and strategies to work on energy and reduce their own environmental footprint. Resourcing within the sector has grown from just a few energy technical staffing positions in 2010 to over 200 energy professionals working in humanitarian agencies and partners. Despite this progress, there is still a desperate shortage of technical staff, with an estimated 2,000 to 5,000 energy staff needed for the sector. Governance within humanitarian energy is a complex topic, with many competing priorities and actors. The Global Platform for Action on Sustainable Energy in Displacement Settings (GPA) has led coordination, advocacy, and analytical learning within the sector: bringing together actors from across the humanitarian–development nexus to drive progressive change on energy access. Collective action and alternative leadership, working beyond traditional humanitarian structures, has enabled rapid policy progress. Investing in technical capacities and coordination will enable partners to build on this progress to ensure sustainable energy is available for all displaced people.

Key messages

A number of key messages have emerged from this report:

- The vast majority of the world's displaced people do not have access to affordable, reliable, sustainable and modern sources of energy: an estimated 94% of displaced people in camps do not have access to electricity and 81% rely on firewood and charcoal for cooking.
- Millions of displaced people live in the dark, surrounded by smoke and pollution, unable to access basic electricity services or sustainable cooking solutions.
- The total energy and environmental investment funding requirements listed in current humanitarian response plans, covering 28% of global refugee populations, was estimated at US\$300 million for 2021. Scaling this to all refugee populations would have cost over US\$1 billion for 2021. To cover all refugee energy needs globally between 2022 and 2030 would require over US\$10 billion.
- Without substantial investment and decisive political action, Sustainable Development Goal 7 is highly unlikely to be achieved in displacement contexts by 2030.

Action is needed on:

- **Governance and Coordination:** Alternative partnerships that collaborate beyond the traditional humanitarian mechanisms are required to deliver energy access. While investment is required to increase clean energy deployment, dedicated support is also critically needed for coordination and advocacy for policy change and increased resources.
- **Policy and Access to Clean Energy:** While there has been some progress on policy at the global level, national and local progress on delivering access to sustainable energy and transitioning to cleaner energy sources in infrastructure is still highly limited.

- **Funding and Financing:** Alternative forms of institutional funding are needed to finance the supply of sustainable and renewable energy in displacement contexts. Innovative financing mechanisms and collaboration with the private sector can enable new ways of working, but institutional changes within agencies and collaboration with local markets are necessary to support such progress.
- **Delivery and Technical Capacity:** There is a critical deficit for funding of staffing and expert technical capacity within the sector. Urgent resources are needed at the local, national and global levels to ensure low-carbon energy delivery is possible. There are many complex delivery models and implementation mechanisms which require new research to facilitate more effective implementation.
- **Evidence and Data:** There is limited reliable data within the sector that could guide larger-scale programming. Practical progress and systematic reform of humanitarian energy cannot take place without high-quality data. Inclusive and targeted research is necessary to work with displaced communities and their hosts and generate evidence to inform systemic change.
- **Climate Action and Decarbonisation:** The humanitarian sector contributes to greenhouse gas emissions, much of which is driven by the use of fossil fuels. To reduce its contribution to the global climate crisis, the humanitarian sector must invest in renewable and low-carbon sources of energy.
- **Practical Tools and Inclusive Action:** Practical solutions and expert energy partners are available to support the humanitarian sector in delivering sustainable energy access and decarbonising energy infrastructure. Progressive action must be inclusive, working with displaced people at every stage of response: facilitating jobs and livelihoods for refugees, internally displaced people, migrants and host communities.

Policy Action and Collective Targets for Delivering Sustainable Development Goal 7

Sustainable Development Goal 7, to ensure access to affordable, reliable, sustainable and modern energy for all, offers a framework for reaching global and national energy-related targets. However, ensuring energy access for displaced people is challenging within many national contexts. This is especially true in developing countries where nationwide energy availability, access and affordability remain obstacles. Within competing national and local priorities, energy access for displaced people often receives limited attention and in many cases is entirely omitted from national planning and policies. At the global level, progress has been made to ensure humanitarian energy issues are embedded within institutional decision-making processes and global energy strategies.

Chapter 3 offers an overview of the global, national and sectoral policies supporting action to increase clean energy deployment in displacement settings. Substantive progress on policies has been made within humanitarian organisations and on sectoral issues. However, the integration of energy needs into national government planning is still slow. Practical progress on delivering energy access for displaced people is glacial and measurement of progress remains challenging. Still in 2022, we do not know how many people have access to what types of energy, nor is there a clear figure on the progress towards SDG 7. Our analysis suggests that the vast majority of displaced people do not have access to affordable, reliable, sustainable and modern energy, and that SDG 7 targets will not be met by 2030 in displacement situations. This chapter also recommends a series of targets for the humanitarian energy sector: in the short term, humanitarian agencies and their partners should ensure basic energy access for households, displaced enterprises and community facilities before 2030. In the longer term, more ambitious targets on renewable and sustainable solutions are required to meet international climate goals.

Energy access is critically important in humanitarian settings,¹ as refugees and displaced people need electricity to power their homes and businesses, their community spaces, facilities such as water, sanitation and hygiene (WASH), and their supporting humanitarian institutions.² The vast majority of refugees and displaced people have almost no access to sustainable energy solutions. Life without modern energy is radically constrained, limiting the quality of life of displaced people. Progress towards global climate goals will not be made without renewable solutions for energy needs in contexts of displacement.³

Focus area	Status	Progress in Humanitarian Energy 2012–2022
<p>Access to Sustainable Energy</p>	 <p>Overall Reduction in Progress</p>	<ul style="list-style-type: none"> • While a substantial number of sustainable energy access programmes have developed in recent years, these have not been enough to match the rising rate of displacement globally. • 94% of displaced people in camps do not have access to electricity and 81% rely on firewood and charcoal for cooking. • There are now more displaced people than ever before and we estimate that overall there has been a reduction in energy access rates, with millions of displaced people currently living without energy access. • As very limited measurement is currently happening, estimating the overall level of access is challenging. However, given rising fuel costs, the impact of COVID-19, increasing energy access needs, and the rising numbers of displaced people, it is likely that overall energy access rates within displaced populations are declining in real terms.
<p>Sufficiency of Access</p>	 <p>No Progress</p>	<ul style="list-style-type: none"> • Levels of access are still very low and there are limited resources within the system to raise ambitions to provide more electricity and cleaner cooking solutions. • Fuel for cooking is provided in some locations. Solar lanterns are often part of non-food distribution packages and therefore widely distributed, but challenges with recycling and disposal of electronic waste remain. These technologies only offer basic lighting and minimal cooking. • Tier 2 for household electricity access is still the minimum standard and ‘clean’ access to cooking is often not defined. • Within community facilities, spaces are often unelectrified or do not have sufficient power. Within institutions, access is usually sufficient but still relies on diesel and other fossil fuel sources. • As a result, no progress has been made in terms of the humanitarian system in raising levels of sufficient access to energy.
<p>Reliability</p>	 <p>Limited Progress</p>	<ul style="list-style-type: none"> • At the household level, displaced people have been supported in some settings to access solar home systems or mini-grid connections, which can increase the reliability of their connections. For community spaces and businesses in displaced settings, there are cases of sustainable technologies providing more reliable access. • The reliability of energy access at the institutional level is a very mixed picture. In some locations, projects have supplied mini-grid and back-up systems which can reduce problems of variability and broken systems.

		<ul style="list-style-type: none"> • Therefore, it is estimated that some limited progress has been made in terms of the reliability of access within humanitarian contexts.
<p>Affordability</p>	 <p>Mixed Progress</p>	<ul style="list-style-type: none"> • Some projects actively support the reduction of energy costs through provision of solar and renewable solutions, which can reduce fuel costs. A few household projects have also made sustainable sources of energy affordable for displaced people. • However, many communities are not served by such projects. In these locations, refugees and internally displaced people are forced to secure and pay for their own energy. These costs place a significant burden on displaced communities. • Therefore, mixed progress has been made on the affordability of energy access.
<p>Sustainability</p>	 <p>Limited Progress</p>	<ul style="list-style-type: none"> • There has been some progress on the sustainability of technologies, using low-carbon and renewable sources of energy. New global policies and strategies have committed to provide sustainable energy and to move beyond traditional and fossil fuel sources. • Environmental sustainability is increasingly considered by programmes and decarbonising energy infrastructure receives a lot of attention from agencies and donors. • Energy efficiency is recognised as an important topic but is still underutilised. • However, in terms of the financial and long-term sustainability of programming, little progress has been made to reduce free distribution of energy items in protracted situations, and practical examples of alternative delivery models are not yet delivering at scale. • Therefore, there is limited progress on the sustainability of programming in humanitarian systems.
<p>Accountability of Institutions for Energy Provision</p>	 <p>Improvement</p>	<ul style="list-style-type: none"> • Since 2018, many institutions have committed to providing energy access for refugees and displaced people. The UN Refugee Agency (UNHCR) and the International Organization for Migration (IOM) have created strategic plans and suggested measurable targets to achieve SDG 7 for displaced people. • Such commitments enable progress to be tracked and institutional accountability to be facilitated within the sector. • However, it should be noted that currently progress towards many of these targets is not measured or tracked. While some measurement tools exist, detailed data is not available, and so overall accountability of institutions remains low.

<p>Inclusion and Participation of Displaced People</p>	 <p>Limited Progress</p>	<ul style="list-style-type: none"> • Building on the experiences of the humanitarian system in other sectors, inclusion remains a key programming principle. Progress is being made within energy programming on inclusion accordingly. However, inclusive change is still limited due to the need for funding for specific technical expertise on energy within displaced communities. • Several humanitarian energy programmes have pursued active hiring processes for refugees. • Many events are still happening without meaningful participation of refugees or internally displaced people, and programming is not inclusive. The Global Platform for Action is committed to mainstreaming inclusion and has secured funding to ensure displaced people have a voice in data and programming discussions. • Therefore, progress on inclusion and meaningful participation is limited.
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Table: Progress towards SDG 7 within the Humanitarian Energy Sector in 2022.

Understanding Institutional Funding and Innovative Financing

Many existing energy markets have developed organically in protracted situations from the needs of displaced people, local supply options, and entrepreneurship by refugees and host community businesses. However, such local energy markets are sometimes not considered by humanitarian interventions. Understanding energy market dynamics is complex, and further challenged by the difficulties faced within the humanitarian system due to lack of funding and complex financing arrangements. There is currently a lack of funding for humanitarian energy programming, and humanitarian procurement and supply mechanisms are not necessarily designed to deliver innovative financing approaches.

Chapter 4 outlines some of the core terms used on funding and financing across the sector. The chapter explores the prevailing delivery mechanisms within the sector, with a focus on grant funding, donations, challenges and opportunities within market systems. Conventional approaches to energy financing and funding in displacement settings have traditionally been led by humanitarian organisations. To date, progress has been slow and many agencies lack energy budgets on a global and institutional scale. However, there has been some progress within the development of innovative financing, through the use of blended approaches and market-based solutions. Considerably more investment and research are needed to understand the costs of humanitarian energy, and there is a need for collaborations with existing markets to enable alternative ways of sustainably financing the sector.

Delivering Change at Scale: Technical Capacity and Alternative Delivery Modes

Energy is sourced and supplied in many different ways in displacement contexts, with energy supply structures, access mechanisms, and payment processes highly dependent on context and national hosting arrangements. Understanding the state of play on delivery and technical capacity requires

analysis of the actors and institutions involved, how programming is developed and delivered, and what funding routes are used to deliver sustainable energy interventions.

Chapter 5 describes the main types of energy delivery mechanisms in displacement settings, which include: humanitarian provision, public or governmental provision, NGO provision, community-based provision, and independent access through markets. The chapter analyses progress in terms of effective delivery and building sectoral expertise, and the major capacity challenges and alternative delivery mechanisms. Much has been achieved in recent years in terms of improving the overall capacity and skills related to sustainable energy in the humanitarian sector. However, there remain systemic challenges affecting delivery mechanisms based on procurement and distribution. The report emphasises the need to continue to build effective public–private partnerships, push for more dedicated energy expertise within the humanitarian system, focus on developing capacities of local communities and energy utilities, and share knowledge across stakeholder groups about successes and failures equally.

Clear Evidence: Data and Measurement Needs

The challenge of providing energy data in humanitarian settings is considerable. Currently, there is very little data directly on humanitarian energy. While national urban and rural data on electrification rates and access to clean cooking fuels and technologies exist, there is limited accurate quantitative evidence on how displaced people use energy. Energy data reporting in humanitarian situations is multifaceted. It covers everything from reporting needs for UN agencies, to project assessments by NGOs and implementing partners, to the results of feasibility and impact assessments, alongside evidence from academic and research reports. Currently, data that does exist is piecemeal or site specific, and is not comparable between camps or settlements.

Chapter 6 showcases the types of evidence that is missing in humanitarian settings, including the lack of evidence from programmes and planning processes, and summarises the limited global baseline data available. Without sufficient baseline data for the sector, progress towards SDG 7 cannot be accurately tracked. This chapter outlines progress on evidence: highlighting global strategies that provide specific baselines and targets, describes where current sources of energy data can be found, and suggests what actions might be taken to deliver high-quality usable evidence on energy within the humanitarian system.

Climate Action: Ensuring a Clean Energy Transition for All Displaced People

Climate change is increasing and exacerbating multiple displacement risks. Extreme weather events and changing climates can induce displacement and the effects of these are disproportionately felt by people in vulnerable situations, increasing the need for both immediate humanitarian assistance and long-term adaptation strategies. The effects of climate change, both present and future, will have a significant impact on the humanitarian system. But while humanitarian agencies respond to these crises, their activities also contribute to climate change. Achieving SDG 7 on sustainable energy in displacement settings can also support the realisation of SDG 13: to take urgent action to combat climate change and its impacts.

Chapter 7 indicates the major challenges associated with climate impact and climate resilience in displacement contexts. It highlights that increasing energy access means going beyond energy provision alone and identifying pathways for enhancing the role of clean energy solutions in national development plans and key strategic sectors. The chapter provides case studies and examples of where UN agencies and humanitarian organisations have encouraged environmentally sustainable and clean energy transitions, which bridge the gap between humanitarian and development work and help address climate action. Although there has been progress towards climate action, there is still much to do to scale up action and identify issues around the climate impact of the humanitarian sector.

Inclusive Change: Practical Recommendations and Learning within the Sector

Experience within the sector demonstrates the importance of learning from existing projects to support energy access for displaced populations. Although the humanitarian sector is evolving quickly, many topics require further exploration, these range from knowledge of levels of energy access, inclusive planning, embedding policy knowledge to support host countries, and energy targets within humanitarian agencies. Chapter 8 therefore, explores practical learning that is essential to the progression and sustainability of the humanitarian energy sector and for the implementation of necessary energy services for displaced populations. The chapter provides an overview of recommendations on household cooking, household electricity, energy for enterprises, energy needs for community facilities, and energy for operations and institutions. It is vital to place the voices and knowledge of displaced people at the heart of global and national decision-making on energy policies in humanitarian contexts. While some displaced people demonstrate considerable knowledge and skills on sustainable energy, policy-making and programming, they are not included in the development of the humanitarian energy sector. Inclusive change is essential to drive forward progress on delivering sustainable energy with displaced people.

Concluding Thoughts: Progressive and Collective Action

Chapter 9 highlights that the world faces a growing humanitarian challenge with over 102 million people forcibly displaced from their homes by multiple and protracted conflicts in 2022. The realities of living without access are extreme. Many people still cook over three-stone fires using firewood and live in the dark at night. Small enterprises run by displaced people are unable to access the energy they need to run their businesses, provide local jobs, or drive local economic development. Community facilities such as schools, hospitals, water, sanitation and hygiene facilities, and refugee community spaces are without reliable power. Humanitarian facilities, offices, compounds and registration spaces use expensive and polluting diesel fuel. These factors reduce the quality of life of refugees and displaced people, cause financial and environmental pressures on humanitarian agencies and host communities, and contribute to global climate emissions. The final concluding chapter of this report summarises the key advocacy issues and recommendations suggested from our analysis: demonstrating the urgent need for sustainable investment and political commitment to delivering SDG 7 in humanitarian settings.

Topic	Advocacy Issue	Recommendations
Coordination and Governance	<ul style="list-style-type: none"> • Substantial investment is required to embed sustainable energy within humanitarian response, dedicated support is needed for coordination and advocacy for policy change and increased resources. • Collaborative working is essential to deliver sustainable and long-term change. Individual actions and stand-alone programmes by agencies will not deliver change at scale. • Alternative partnerships that collaborate beyond the traditional humanitarian mechanisms are required to deliver energy access. 	<ul style="list-style-type: none"> • Dedicate funding for coordination: Donors to invest in long-term, multi-year, adaptable funding with resourcing for core coordination functions. • Work in partnership: Develop and deliver programmes and investments using substantive co-design with partners and displaced people. • Actively coordinate and share learning: Donors and programmes to openly and publicly share knowledge, data, evidence and reflections from their programming. • Mainstream sustainable energy response: Cluster leads should mainstream transformation on sustainable energy solutions within their activities.
Policy and Advocacy	<ul style="list-style-type: none"> • There has been some progress on policy at the global, national and local levels and within some humanitarian partners. • Progress on delivering access to sustainable energy and transitioning to cleaner energy sources in infrastructure is still highly limited. • The majority of the world’s displaced population still live without access to sustainable, reliable, affordable or modern sources of energy. • Sustainable Development Goal 7 is highly unlikely to be achieved in displacement contexts by 2030. 	<ul style="list-style-type: none"> • Support progressive national and global policy-making: Host countries to be supported to include displaced populations in national and regional energy planning, in line with the Global Compacts on Migration and Refugees. • Reduce emissions levels: Organisations should commit to a clear timeline and investment plan to reduce greenhouse gas emissions related to the use of diesel generators. • Set measurable targets to measure progress: Setting short-term targets for 2025, medium-term targets for 2030, and long-term targets for 2050 can provide accountability and demonstrate progress. • Advocate for inclusive change: Donors and other energy stakeholders to firmly include displaced people in the ‘leave no one behind’ agenda.
Funding and Financing	<ul style="list-style-type: none"> • Alternative forms of funding are needed to finance the supply of sustainable and renewable energy in displacement contexts. 	<ul style="list-style-type: none"> • Increase of donor funding: Donors should consider cross-sectoral funding of energy programmes and include displaced people in existing broader energy programmes.

	<ul style="list-style-type: none"> • Innovative financing mechanisms and collaboration with the private sector can enable new ways of working, but institutional changes within agencies and collaboration with local markets are necessary to support such progress. • Free distribution of energy products in protracted situations can damage local markets and reduces self-reliance opportunities for displaced people. 	<ul style="list-style-type: none"> • Make use of new financial mechanisms: Organisations should collaborate and learn about new innovative financing and alternative funding structures, such as blended finance, cash-based transfers and vouchers for energy. • Use market-based approaches: Organisations should align with local markets and in protracted situations support private-sector provision of energy services for long-term sustainability, for example, potential carbon financing support for clean cooking solutions. • Use holistic approaches: Organisations should identify financial synergies in the decarbonisation of existing energy infrastructure and electricity provision for displaced people.
<p>Delivery and Capacity</p>	<ul style="list-style-type: none"> • There is a critical deficit for funding of energy delivery staff and expert technical capacity on energy within the humanitarian sector. • Urgent resources are needed at the local, national and global levels to ensure low-carbon delivery is possible. • There are many complex delivery models and implementation mechanisms which require new research to facilitate more effective implementation. 	<ul style="list-style-type: none"> • Collaborate with expert energy partners: While core staffing is needed within agencies, humanitarians cannot deliver sustainable energy approaches alone – working with expert NGOs and energy suppliers is essential. Organisations should invest in energy expertise providers, such as NORCAP or GIZ, to support capacity. • Develop new sustainable delivery models: The GPA and World Food Programme delivery models training is available to kickstart innovative delivery processes.
<p>Evidence and Data</p>	<ul style="list-style-type: none"> • There is limited reliable data within the sector. New data and analysis can guide sustainable programming with clear evidence. • Practical progress and systemic reform of humanitarian energy cannot take place without high-quality data. • Inclusive and targeted research is necessary to work with displaced communities and their hosts and generate evidence to inform systemic change. 	<ul style="list-style-type: none"> • Develop a global baseline for energy access: Core funding for data collection and analysis on most of the world’s displacement sites is needed to measure progress towards delivering SDG 7 by 2030. • Invest in new research and evidence: Organisations should support the development of new data on humanitarian energy needs and programming. • Utilise and build inclusive evidence structures: New evidence on humanitarian energy must be developed with displaced people.

Climate Action and Decarbonisation

- The effects of climate change are already being felt in displacement contexts and all stakeholders must act immediately to reduce their greenhouse gas (GHG) emissions.
- In order to reduce its contribution to the global climate crisis, the humanitarian sector must invest in energy efficiency as well as renewable and low-carbon sources of energy.
- Efforts to achieve SDG 13 on climate action can spur direct action towards SDG 7 on sustainable energy as a means to reduce emissions, and unlock climate financing to make these a reality.
- Policy action and international commitments can motivate local and national change.

- **Action to address climate change must happen now:** A rapid and sector-wide scale-up of sustainability interventions is necessary to stand a chance of meeting organisational or national GHG reduction targets by 2030.
- **Leverage sustainability targets to catalyse large-scale implementation:** Organisations could capitalise on political and organisational commitments to reduce emissions by identifying the ways in which energy efficiency and sustainable energy can support GHG reductions.
- **Link sustainability with operations:** Organisations should support the alignment of decarbonisation of energy infrastructure with the provision of energy for displaced households and businesses.
- **Raise political ambitions on supporting climate action:** For example, by adopting the Climate and Environment Charter for Humanitarian Organizations.

Practical Tools and Inclusive Action

- Practical solutions and expert energy partners are available to support the humanitarian sector in delivering sustainable energy access and decarbonising energy infrastructure, for example, through resources developed by the GPA and partners.
- Progressive action must be inclusive, working with displaced people at every stage of response, facilitating jobs and livelihoods for refugees, internally displaced people, migrants and host communities.
- Without such approaches, displaced people will always be viewed as beneficiaries rather than decision-makers or customers. A change in language is needed to support systemic reform of the humanitarian system to work with displaced people as partners.

- **Open-source collaboration:** Continue and expand the use of open-source-platforms, such as Energypedia to distribute results and offer training for interested stakeholders.
- **Build a bottom-up inclusive sustainable energy system:** Ensure priority involvement of displaced people, host communities and host governments from planning to implementation of sustainable energy interventions. Hire displaced people and host community members within humanitarian energy programming and policy-making.
- **Be site-specific in response planning:** Develop context appropriate solutions, not one-size-fits-all approaches, as energy is not an end in itself, but a means to enable human development. Promote recovery, self-reliance and livelihood opportunities.

		<ul style="list-style-type: none"> • Align progressive inclusive approaches on energy with key response issues: Integrate gender-sensitive approaches and work directly with displaced people. Focus on local solutions and financial sustainability. Adhere to the ‘do no harm’ principles and ensure consumer protection measures are in place if using market-based approaches.
Energy for Households	<ul style="list-style-type: none"> • 94% of displaced people in camps do not have access to electricity and 81% rely on firewood and charcoal for cooking. • A step-up in investment is needed to move to cleaner cooking options to meet World Health Organization guidelines: Tier 4 for indoor emissions from stoves is a minimum for improving health outcomes. • Basic solar lantern provision only provides Tier 0 or 1 lighting solutions, which often do not align with national energy provision standards. • Free distribution of products can damage livelihoods in protracted situations where existing local energy markets already exist. Extremely poor people within displaced communities may need additional cash-based support. • Power demand will grow once electricity is available; designing scalable solutions is necessary, which may also include displaced people paying for additional services. 	<ul style="list-style-type: none"> • Conduct a full needs assessment before designing solutions. • Develop market-based solutions for electricity and cooking interventions, where possible. • Cash-based assistance can also be used to support the extremely poor and most vulnerable displaced people, who may be unable to access markets without support. • Design interventions to include electricity as well as lighting provision. Solar lanterns should also include mobile phone charging capacity. • Design of household electricity solutions should be market-based and align with existing local markets. • For cooking needs in households: Tier 4 solutions to reduce indoor pollution should be provided, using clean technologies and fuels. • For electricity in households: Tier 3 or above access to electricity should be provided and should be powered by renewable technologies.
Energy for Enterprises	<ul style="list-style-type: none"> • Energy for refugees’ and internally displaced people’s (IDP) livelihoods is often a neglected topic in humanitarian actions. 	<ul style="list-style-type: none"> • Include energy planning for livelihoods in response planning. • Local informal businesses should be supported and engaged throughout design of interventions. Conduct a market assessment before designing solutions.

	<ul style="list-style-type: none"> • Local businesses in refugee and IDP settings do not currently have enough energy to support their livelihoods or to develop self-sufficient communities. This includes the energy needs for small-scale agriculture and productive uses. • Informal refugee and IDP-led businesses can provide considerable access to energy in protracted camp settings. 	<ul style="list-style-type: none"> • For energy for enterprises: Tier 3 or above access to electricity should be provided for displaced businesses and should be powered by renewable technologies.
<p>Energy for Community Facilities</p>	<ul style="list-style-type: none"> • Electricity for public spaces such as community halls, playgrounds and refugee governance spaces is often a forgotten investment area: many of these spaces are without electricity access. • Water, sanitation and hygiene and health posts are a key electricity need in displacement settings. • In most cases, electricity production through solar or renewable solutions is significantly cheaper over their lifetime than through traditional fossil fuel generators. • Systems can be aligned with national and institutional power provision to decarbonise electricity supply effectively. 	<ul style="list-style-type: none"> • Conduct a co-design and needs assessment before developing solutions. • Include energy planning for public spaces in response planning. • Align provision of power for water pumping, other water, sanitation and hygiene facilities and other community services, to reach economies of scale. • Support energy service models through local partners through grant-based energy products. • For community facilities: Tier 4 or above access to electricity should be provided for community facilities in displacement settings and should be powered by renewable technologies.
<p>Energy for Institutions</p>	<ul style="list-style-type: none"> • Slow progress is being made to decarbonise humanitarian operations. The sector is not on track to meet SDG 7 by 2030, emissions from the humanitarian sector are driven by energy use and continue to rise. 	<ul style="list-style-type: none"> • Conduct a co-design and needs assessment before developing solutions. • Include energy planning for public spaces in response planning. • Align provision of power for water pumping, other water, sanitation and hygiene facilities and other community services, to reach economies of scale. • Support energy service models through local partners through grant-based energy products.

	<ul style="list-style-type: none"> • Renewable and mini-grid energy can support low-carbon, reliable, lower-cost solutions in humanitarian settings. Payback rates for solarisation projects are usually between three to five years, for energy-efficiency projects even lower. • Grant subsidies can support alternative parts of the energy delivery chain, but need to be market-based and planned. Purely grant-based models without long-term operation and maintenance support, including finance for spare parts, are not recommended. 	<ul style="list-style-type: none"> • For institutions: Tier 4 or above access to electricity should be provided for community facilities in displacement settings and should be powered by renewable technologies.
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 **UNHCR**
The UN Refugee Agency

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01

ISSUE

ANALYSIS: HUMANITARIAN ENERGY NEEDS IN CONTEXT

Chapter contributing co-authors: Joelle Hangi at the University of Oxford and Sarah Rosenberg-Jansen at the University of Oxford and GPA.

UNHCR Photo: Aref Karim

Energy Access and the Needs of Displaced People

Energy access is critically important in humanitarian settings,⁴ as refugees and displaced people need electricity to power their homes and businesses, their community spaces, facilities such as water, sanitation and hygiene (WASH), and their supporting humanitarian institutions.⁵ The vast majority of refugees and displaced people have almost no access to sustainable energy solutions. Life without modern energy is radically constrained, limiting the quality of life of displaced people. Progress towards global climate goals will not be made without renewable solutions for energy needs in contexts of displacement.⁶

The world faces a growing humanitarian challenge: over 102 million people are currently forcibly displaced from their homes by multiple and protracted conflicts.⁷ This is a growing crisis, with more than 21 million people forced over borders as refugees and 52 million people displaced within their own countries. The long-term impacts of the COVID-19 pandemic, together with forced migration from armed conflicts and climate change, are expected to acutely affect a substantial number of countries that currently host forcibly displaced populations, increasing the number of globally displaced people in the coming years.

Key statistics⁸

In 2015, Chatham House developed an end-use accounting model for energy consumption for cooking and lighting by displaced populations. The findings from this - which have been widely cited and replicated - estimated that 89% of the forcibly displaced people in camps have no access to meaningful electricity supply for lighting, and that 77% of this same group have minimal access to anything other than biomass for cooking.⁹ In 2022, Chatham House and the GPA coordination unit updated the model to better reflect our knowledge

of how cooking and power are being delivered to refugee camps.

The refreshed findings to support this report suggest that - eight years later - far from getting closer to delivering energy access to forcibly displaced people, we are actually getting further away. Building on what we now know about the specifics of energy supply and usage in camps around the world, we now estimate that 94% of forcibly displaced people living in camps do not have meaningful access to power, and 81% lack anything other than the most basic fuels for cooking.

The realities of living without energy access are extreme.¹⁰ Many people still cook over three-stone fires using firewood, and live in the dark at night. Small enterprises run by displaced people are not able to access the energy they need to run their businesses, provide local jobs, or drive local economic development. Community facilities such as schools, hospitals, water, sanitation and hygiene facilities, and refugee community spaces are often without reliable power or do not have access to electricity.

Humanitarian facilities, offices, compounds and registration spaces use expensive and polluting diesel fuel. These factors reduce the quality of life of refugees and displaced people, cause financial and environmental pressures on humanitarian agencies and host communities, and contribute to global climate emissions.¹¹

The importance of Energy

“There is no better life, no progress or self-development without energy. Limited or no access to energy makes access to both quality studies and work opportunities difficult for refugees in camps. Drawing from my own forced displacement experience and relationship with energy, a lot of success and development happened only when access to energy was at the centre of everything. Starting from the application process to the completion of my undergraduate studies which was exclusively remote, a journey that I couldn’t make without access to energy. The same with the forced migration studies fellowship that I am currently enrolled in at the university.

“Access to energy in camp settings is not guaranteed. Talking about access to energy, I am referring to access to a reliable source of energy for lighting, working and cooking. For example, many refugees in the camp rely on unreliable and unsustainable rationed electricity powered by diesel generators for only a few hours per day – four hours. This is the source of energy that comes at a high cost in terms of price, impact on the environment, value for money and other inconveniences on health. For example, I had countless sleepless nights during my undergraduate studies because I could access electricity only at night for four hours to use and recharge my electronic devices – smartphone and

laptop. This situation made my learning journey stressful as I could easily miss submitting an assignment after spending hours on it because electricity is not stable and reliable, which affected the internet. In addition, I had many unproductive hours every day once I ran out of saved power.

“Electricity is a crosscutting utility that enables one to access other important things such as the internet, have better security, access news and information as well as entertainment. Electricity also enables other needs that refugees have to overcome limitations that they face while accessing learning and working opportunities and career development while being in transit or rather the long stay in camps.

“My journey with energy in the camp has been marked by overcoming challenges, failures and loss of opportunities that I have experienced. I have seen people who failed to seize the opportunities they got, others missed deadlines of important submissions only because they didn’t have access to reliable energy. The fact that refugees face a lot of difficulties accessing energy makes them more vulnerable and keeps them in a vicious circle of poverty and dependency on humanitarian aid.”

Refugee living in Kenya.

Access to energy is important for all categories of displacement: including refugees, who are often managed under the remit of the UN High Commission for Refugees (UNHCR), and internally displaced people (IDPs) who are supported by the International Organization for Migration (IOM), as well as asylum seekers, migrants, and those displaced by natural disasters and the impacts of the climate crisis. Humanitarian energy is a new and emerging sector, one which has a number of definitions

and elements.¹² Currently the key definition of the humanitarian energy sector is:

“Institutions, policies, programmes, 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.

Humanitarian energy covers needs during emergencies and protracted situations, and all populations impacted by war, famine, violence and persecution, climate change, and natural disasters, and can be considered the umbrella term for the sector”.¹³

There are many social, economic and environmental co-benefits of sustainable energy provision in crisis contexts: benefits which cut across Sustainable Development Goals such as SDG 13 on climate action and SDG 16 on peaceful and inclusive societies. Sustainable energy solutions can create jobs, support health provision and education, support the recovery of lost livelihood activities, and provide security for local enterprises and households. Clean cooking fuels and sustainable electricity technologies such as renewables can improve

public health and reduce respiratory risks from smoke produced by firewood and charcoal, especially among the women and children who spend significant amounts of time within their households. A further co-benefit of sustainable energy is that it offers stable energy prices once technologies have been installed, as systems are not reliant on fluctuating fossil fuel prices.¹⁴ Distributed energy systems, such as biomass, wind and solar mini-grids, are less prone to large-scale failure as they are independent and often modular systems. Distributed systems can cover large geographical areas and so are more resilient to localised impacts of severe weather events.

An important feature of scaling up clean energy transition in a crisis context is finding the optimal public policy mix that balances the benefits of supply-side energy management actions (actions

When it is dark in a refugee camp, it stays dark

“My first encounter with this topic was in 2014 when I was just a warm body selected to participate [in] a meeting in New York, as part of the climate summit. I was at the High-level Political Forum on Sustainable Development 2018 forum, and I was thrown into a room in New York and suddenly one guy said ‘a refugee camp is dark when it is dark’. That triggered me to start looking into this sector because I thought it was just awful that we are discussing how to provide energy to communities, to the people and that refugee camps seem to be completely forgotten. This caught my interest. Since then, I’ve been following the development of all the initiatives from a long-term political point of view.

“For me, it is quite self-evident that in a refugee camp, electricity or energy should be provided. So just being in the same village near [host communities]

they deserve it, they should also gain access and it’s the role of the humanitarian agencies to provide it to them.

“The SDGs apply to all, which includes people within the humanitarian settings. When the GPA and report were launched in New York in 2018, during events I met the humanitarian energy community, and they asked me into a meeting that was convened by the German delegation in New York, where the GPA was presented. I felt that it was important to ensure that the agencies themselves included this as a priority. During these meetings, they are always asking for extra personnel and resources. My role, during this meeting, was to ask questions of the UNHCR, to what extent do you give priority to this? as this should be part and parcel of your activities. It was important to me to say: energy is needed.”

Senior Political Adviser

that ensure the generation, transmission and distribution of energy are conducted efficiently) and demand-side energy management (energy efficiency measures that modify or reduce end-users' energy demand). Besides strengthening human capacity gaps, there are also challenges for fiscal policies that allow use of energy subsidies as a social safety net, while at the same time creating incentives for both supply- and demand-side energy management, and also attracting private sector participation through policy de-risking. In situations where a country in a crisis context is dealing with the challenges of a pandemic situation such as COVID-19, it is particularly important to reduce the high risk factors associated with indoor and outdoor air

pollution, and drivers of exposure, and to provide energy for health services.

Sustainable energy access in humanitarian settings is now more critical than ever, to support the mitigation of the climate crisis and enable recovery from the long-term impacts of the COVID-19 crisis.¹⁵ Displaced communities are being left behind in progress on sustainable development. It is highly likely that Sustainable Development Goal 7, to ensure access to affordable, reliable, sustainable and modern energy, will not be met for refugees or internally displaced populations by 2030.

Energy Technologies and Spaces of Access

Energy in displacement settings is currently sourced from fossil fuels, traditional biomass sources, and some sustainable energy sources. Many displaced people in sub-Saharan Africa use firewood to cook their food and rely on basic lighting technologies using kerosene or batteries. In the Middle East and South Asia, technologies powered by liquefied petroleum gas (LPG) or other clean cooking fuels are often used for household cooking.¹⁶ Electricity is mostly provided in humanitarian contexts by polluting and expensive diesel generators, although solar solutions for both small-scale use (lanterns and solar home systems) and larger power needs (solar or hybrid mini-grids or renewably generated grid power) are increasingly being used in displacement settings.¹⁷ It is important to recognise the range of spaces requiring energy across displacement contexts – including in refugee and IDP settlements, urban spaces, and informal and self-settled migrant and refugee sites.

Energy is needed in displacement contexts across a range of settings.¹⁸ Firstly, at the household level, providing people with lighting, heating, cooling, cooking and power abilities within their homes or temporary dwellings. Common energy technologies in displacement settings at the household level are solar lanterns, small cookstoves, and firewood. Secondly, at the local business and enterprise level. Local enterprises and businesses run by displaced people and host community members in displacement settings use many types of technologies, including solar systems, informal mini-grids, cooking technologies powered by gas and electricity, cooling solutions, and power for micro-enterprises and productive uses.¹⁹ Thirdly, at the community facility level. Many community spaces connect formally or informally to local

diesel generators, mini-grids, and, at times, the national grid.²⁰ Solar street lighting is common to light public spaces. Finally, at the institutional and humanitarian aid provision level. Humanitarian actors, such as UNHCR and their NGO partners, need substantial electricity supply to power their facilities and activities. Often facilities in remote locations, such as refugee camps, are powered by diesel generators. Humanitarian offices based in capital cities or towns are frequently connected to the national grid.²¹ The sections below provide further detail on the spaces requiring energy access in displacement settings.

Household Level

At the household level, technologies include “energy for lighting and power, appliances and technologies such as lanterns, kerosene lamps, solar home systems, and basic and improved cook stoves. Some households may also be connected to mini-grids or the national grid. Within this category, three distinct sub-categories are distinguished within household needs: access to electricity, access to cooking fuels and technologies, and access to space heating and cooling where applicable” (Bisaga and Rosenberg-Jansen 2021, p10).²²

Household Electricity Access: Differing Contexts and Physical Spaces

“We never had issues of access to electricity or on-grid electricity. But we used to have blackouts. For me to study, I would use a small kerosene lamp, which was normal for me. Everyone in the neighbourhood had these lamps and it was very normal for us to access energy that way. For cooking, we would also use kerosene stoves, where we use petrol and then use that to cook. In Kenya, we would use charcoal but when we moved back to Burundi there was a transition from using kerosene as a heating source to cook to using charcoal for cooking everything.

“Things then became stable, and we had access to electricity, but for cooking, we would use charcoal

mainly. Then we transitioned to clean cooking using natural gas. But there was a bias against gas because they don't want their house to explode. There was a myth about families that died because they left the gas open, and it burst. So there was that context.

“The schedule of outages did affect how I studied. I knew that if I wanted to study, I had to do this in a certain timeframe. If not, I would have to use a candle and this was not ideal.

“When I moved to Kigali, people cooked using natural gas. So, we became accustomed to that. There was no issue with electricity, and it was widely available because I was living in urban areas. But there was an issue with access to water heaters. It was a privilege to shower with hot water. But right now, when I came back to Burundi, we still use charcoal to cook.”

Displaced person in East Africa

The majority of displaced populations still lack sufficient access to clean, sustainable, reliable, appropriate and affordable energy. In 2015, it was estimated that 80 per cent of refugees in camps burn biomass such as firewood for cooking, and roughly 90 per cent of refugees have limited or no access to electricity.²³ The impacts of limited access to energy can have severe repercussions on the safety and security of displaced people. Cooking energy shortages, which are often inadequately addressed throughout all phases of the humanitarian response, can lead to protection and health risks. In refugee camp settings, the lack of lighting and connectivity affects refugees' feeling of security and limits opportunities for social lives and well-being, learning and self-reliance. In situations where firewood is the main source of fuel, the competition for dwindling natural resources is frequently a trigger for tension between refugees and host communities. Lack of access to clean

cooking resources also has negative impacts on local ecosystems, for example, environmental degradation from tree-cutting for firewood can be long-lasting and difficult to reverse. Additionally, financial and environmental costs are high where the energy needs of communities and support facilities are addressed, as energy is often used in inefficient appliances with poor monitoring of energy consumption and no incentives for energy efficiency or shifting to renewable energy.²⁴

Household Energy and Cooking Access

“Firewood and charcoal were the primary sources of energy I used for cooking. Being a woman, the house chores, including making sure the family has something to eat, is my responsibility. Considering the difficulties one faces to get a reliable and satisfying source of income in the camp, many women are forced to take risks to collect firewood in the bushes. This is the primary source of energy in refugee camps and rural areas. However, it is hard to get. Women get firewood by exchanging their food ration with firewood or charcoal, cutting trees to prepare food for the entire family.

“Putting food on the table requires a lot of effort that women have to pay. Women encounter a lot of violence, gender-based violence, fatigue, and are exposed to the risk of rapes which affect them physically and emotionally.

“Collecting firewood is a labour-intensive task that cannot be afforded by a single hand. This situation pushes young girls to bring their hand of support as well. Earlier involvement of girls in house chores and

subjected to the search for energy. This situation affects girls awfully to the point of not performing well at school and even dropping out of school.

“Children in refugee camps do not make an exception when it comes to the consequences of poor and inadequate use of energy for cooking. They are exposed to smoke that affects their respiratory system and other risks such as burning. Regardless of the efforts and sacrifices women, young girls and children make, the rate of malnourished children is still higher in refugee camps as food is not well cooked because the process of collecting firewood is hard and time-consuming.

“The fact that access to food is a basic need that one has to respond to, women in refugee camps are forced to sacrifice themselves including the development of their career and future to respond to the current needs of the family. This is a situation that makes women more dependent and vulnerable. Inadequate source of energy for cooking is something affecting refugees from their childhood and continues throughout the time that they have to stay in the camps.”

Refugee living in Kenya.

Local Business and Enterprise Level

Informal and formal businesses led by displaced people have both electricity and cooking needs: “enterprise access and productive use refers to energy access for businesses or income-generating activities, which can be inside or outside of households and can be formal or informal in humanitarian settings. This can include small businesses within displaced settlements such as mobile phone charging shops, restaurants, and small-scale shops and traders as well as the energy needed for larger-scale productive uses such as agriculture, agro-processing, hospitality, and entertainment. This energy category covers several sub-categories of energy access services for businesses:

access to electricity (e.g. for lighting, phone charging, powering different appliances, water pumping); cooking fuels and technologies; heating (for space, products and water) and cooling (e.g. refrigeration); and motive power (energy used to power machinery). While some smaller businesses may be able to use off-grid technologies such as solar home systems and lanterns to provide some electricity, larger amounts of power are often needed for productive uses and enterprises” (Bisaga and Rosenberg-Jansen 2021, p10).²⁵

Energy Businesses Run by Displaced People

“The fact is that only a few refugees are able to secure a job in the camp on incentive terms. This is because of the difficulties refugees face to obtain work permits in Kenya.

“Theoretically, refugees are eligible to obtain a work permit and are employed, but practically that is not happening. On one hand, NGOs offer voluntary work and incentive-based positions to refugees. However, the monthly remunerations that both qualified and unqualified refugees receive vary between US\$30 and US\$100 for the highest-paid. The difference in remuneration between a refugee and Kenya national at the same position is on average ten times less for a refugee. Such remuneration is not enough to satisfy all their needs including energy ones. On the other hand, there is an insignificant presence of private companies in the camp, which also explains the lack of employment opportunities for refugees. For the private companies, refugees are mostly hired as casual workers, and even in this case, the remuneration is still lower since the offer is considered as a favour rather than merit because they don't have official authorisation to work.

“The situation in refugee camps is difficult and refugees have to struggle to earn an income. Most refugees depend on remittances from their relatives and friends abroad, micro-businesses and entrepreneurship as sources of income. The majority

of refugees run small businesses that are not scalable and face difficulties to expand them. These small businesses have to cater for all their needs that are not covered by humanitarian aid. There is still a huge number of refugee households that depend entirely on aid, which prevents exploring alternatives for accessing energy.

“Limited access to electricity for example has created a business opportunity for other refugees in the camp. Some refugees venture into phone-charging kiosks during the day to respond to the needs of those who don't have electricity in their homes. Even those who are able to purchase electricity from diesel power generators still take their phone to solar-powered phone-charging kiosks as their electricity is accessible only for a few hours a day, four hours on average. This is one of the reasons why many refugees can't be reached on the phone during the day, leading to poor adoption of digital technology and the internet among refugees.

“Most diesel generators are run by Somali refugees. This is the only commercial source of energy in the camp for the refugees who can afford the cost. The business owner charges between US\$5 to US\$15 to a household for lighting (one bulb), charging smartphones and laptops. They charge between US\$30–US\$100 for businesses. A few refugees have installed solar panels at their premises and use them for lighting and charging their phones.”

Refugee living in Kenya

Community Facility Level

Energy access for community facilities refers to “access to electricity, cooking fuels and technologies, and heating and cooling within public and communal spaces for displaced people. Community facilities and services covered include street lighting, health (clinics, hospitals, etc.) and educational (schools, training centres, etc.) facilities, community spaces, including community buildings (community halls, centres of prayer, etc.), and community water pumping facilities. This energy can come from a range of sources, but often higher capacity power is required from mini-grid technologies or grid connections. Almost all energy needed

for community facilities is electrical, as only some facilities need cooking energy or energy for heating and cooling. There are two energy access components in this category: energy access for facilities that do not currently have power (for example, unelectrified spaces where power is needed for street lighting, health clinics, etc.), and energy transitions from unsustainable to sustainable sources (for example from diesel generators to solar power, or to cleaner cooking fuels and technologies from firewood, charcoal or other unsustainable biomass)” (Bisaga and Rosenberg-Jansen 2021, p11).²⁶

Community Access to Energy

“Some public spaces in the camp, such as hospitals, schools and a few locations along the main streets have solar-powered lights. However, some other locations such as markets, community squares, and food distribution centres are not powered.

“Small businesses which can’t afford to pay for electricity provided by other refugees through diesel generators have difficulties extending their working hours in the darkness. This affects refugees who work in the food retail sector. Since access to energy is expensive and the camp is located in a semi-arid area, cooling is a luxury utility that most refugees can’t afford, including even business people who need refrigeration the most. Expensive and unreliable access to electricity leads to food insecurity and makes conservation of fresh foods a serious challenge. The fact that the majority of neighbourhoods around the camp are not lit, the level of insecurity and other risks of violence including rapes are very high and dangerous insect biting.

“The presence of certain energy projects such as street lights have brought a lot of positive impacts in the refugee community. For instance, businesses near a street light can extend their working hours. Children

who don’t have electricity in their homes use these public lights at night to revise their lessons.

“However, as good as this initiative might sound, it is important to highlight the failure, inefficiency, poor management and maintenance due to poor participation of the refugees in the project. Refugees are at the centre of the project but are less considered when experts are designing the solution to their problems. Consequently, experts fail to understand the micro context of the refugee living conditions and their needs. For instance, many children have been abused on the way either going or coming back from the street light spot because of proximity to their homes. In addition, the location and management of the street lights have contributed to their vandalism. It is obvious that the project developers did not take into account these issues.

“I believe these issues could be avoided with the meaningful participation of refugees who understand their context well. Considering the perspectives of refugees, giving the refugee perspectives consideration, especially in the energy sector, is crucial to ensure inclusive and sustainable energy solutions in displacement contexts.”

Refugee living in Kenya.

Institutional and Humanitarian Operational Level

Among the most substantial sources of energy consumption in humanitarian settings are humanitarian institutions and organisations themselves. Organisations and institutions (such as the UN Refugee Agency, the UN Food and Agriculture Organization, the International Organization for Migration and the International Committee of the Red Cross and others) rely on energy to run their daily activities. Institutional energy needs include “operational uses of electricity, energy for cooking, heating and cooling, and transport. The use of electricity, in addition to powering various appliances, also covers water pumping and energy for boreholes,

and the power needed within humanitarian organisations’ facilities (whether inside or outside of the designated displacement areas, such as refugee camps). Operational energy uses are often electricity for core operational provision of humanitarian services, such as energy needed for public offices (e.g. camp administration), at food distribution points, and in refugee registration or administration spaces, as well as the power needed for compounds, housing staff and energy for transport (land and air). Higher capacity power is needed for operations, and power is often supplied through diesel generator sets (gensets), connection to a mini-grid, or electricity from a national grid” (Bisaga and Rosenberg-Jansen 2021, p11).²⁷

Institutional End-Users and Higher Levels of Access

“The use of solar energy is very great because it is environmentally friendly, and because it does not emit annoying sounds or pollution to the atmosphere, it is clean and safe energy that can be used in our personal lives and can be used by the community as well.

“The electric power project in Yemen is innovative because it is an innovation in all respects. First, in terms of the idea, it is the first project in the governorate to provide green energy services commercially. Second, it

is an environmentally friendly project.

“This innovation is not limited to the idea of the project only, but also to the people involved in the project, in the governorate and it is managed and implemented through a distinguished female cadre. This brings quality energy services to society at all levels and the female cadre is helping create a new culture to promote sustainable development. Of course, solar energy has positive environmental, social and economic effects.”

Internally displaced person living in Yemen.

Technology Options and Access Spaces

In humanitarian contexts, different populations of concern may access energy in different ways. Refugees or internally displaced people in closed camps may be largely reliant on the services provided by UN agencies and implementing partners. Internally displaced people and self-settled refugees may have more access options if they live in urban environments or have access to local markets. Migrants and asylum seekers who have travelled to Europe or middle-income countries such as Turkey may have access to

national grid power and a number of market suppliers.

Planning for the type and level of energy in such spaces requires energy systems and interventions that can vary from household to household, and from business to business. Energy access often includes a mix of both traditional technologies, such as firewood and candles, and modern technologies such as LPG cooking solutions and solar home systems.

**Humanitarian
Energy Access
Space**

Traditional Technologies

Modern Technologies

<p>Household Cooking</p>	<ul style="list-style-type: none"> • Firewood and charcoal. • Kerosene, kerosene, biomass fuels. • Traditional cookstoves. • Improved cookstoves. • Cooking pans, matches. 	<ul style="list-style-type: none"> • Modern cookstoves and electric cooking • LPG and ethanol fuels • Chimneys and flue systems • Rice cookers and electrical cooking appliances, such as kettles
<p>Household Electricity</p>	<ul style="list-style-type: none"> • Candles, burning sticks, kerosene lanterns, solar lanterns. • Wires, batteries, cables. • Light bulbs, plug sockets. • Batteries and chargers. 	<ul style="list-style-type: none"> • Solar lamps and lanterns. • Solar home-systems, solar panels. • Light bulbs, plug sockets. • TVs, radios, fans. • Mobile phones, clocks. • Lamps, torches, heaters. • Extension and connecting cables.
<p>Energy for Enterprises</p>	<ul style="list-style-type: none"> • Firewood, charcoal, candles. • Kerosene lanterns. • Traditional and Improved cookstoves. • Diesel fuel and generators. 	<ul style="list-style-type: none"> • Solar home-systems, solar panels. • Printers, Sound systems. • TVs, Computers. • Hair Clippers, Fridges. • Satellite dishes. • Motorbikes.
<p>Energy for Community Facilities</p>	<ul style="list-style-type: none"> • LPG and community kitchens. • Diesel fuel and generators. • Street lighting connected to national grids. 	<ul style="list-style-type: none"> • Solar street lights. • Mini-grids and grid connections. • LPG cooking sets. • Solarised WASH facilities. • Public lighting systems.
<p>Energy for Institutions and Operations</p>	<ul style="list-style-type: none"> • Diesel fuel and generators. • Plug sockets, connecting wires. • Extension cables. • Transformers, battery systems. • Connection to national grid or mini-grid systems. 	<ul style="list-style-type: none"> • Solar systems, solar mini-grids and hybrid mini-grids. • Wind turbines. • Low-carbon energy grid connections.

Table: Energy Access Technologies: Traditional and Modern.

Importantly, across all of these levels and their respective spaces “energy can be supplied both on-grid (from a national grid or large-scale energy supplier), or off-grid (through provision of technologies such as mini-grids or small-scale energy technologies – such as diesel generators, individual solar home systems, or products such as lanterns and cook stoves)” (Bisaga and Rosenberg-Jansen 2021, p11)²⁸. In many Middle Eastern and South Asian contexts, displaced people often live close to national grids and are grid connected. In sub-Saharan Africa, grid connection is less common

and many solutions need to be supplied off-grid. Globally, refugees and displaced people who live in urban areas rely on national and local energy supply to access both electricity and cooking resources, which can offer more choice of solutions and technologies than are available in camp settings.

Meeting the energy needs of displaced people must go beyond the provision of basic technologies. While some progress has been made to provide communities with solar lanterns and improved cookstoves, the

Key report: Renewables for Refugee Settlements: Sustainable Energy Access in Humanitarian Situations²⁹

In 2019, the International Renewable Energy Agency (IRENA) and UNHCR collaborated on assessing four refugee settlements in Iraq (Darashakran and Domiz) and Ethiopia (Tsore and Sherkole) to identify the ideal renewable energy solutions to provide the refugees and the humanitarian organisations operating in the settlements with efficient, clean, affordable, and reliable energy. The study found an overall lack of information on both the generation and the distribution of electricity in the four settlements, including on the consumption of electricity among refugees, the energy needs of the settlements’ support facilities such as health posts, schools, and offices, and the consumption and energy efficiency levels of humanitarian organisations’ compounds.

Assessments made during the study found that though all households in Iraq had access to electricity either through the grid or via diesel gensets for 16 to 24 hours daily, they experienced frequent blackouts and brownouts, even at grid-connected sites. In Ethiopia, most refugees lacked any reliable access to electric lighting and only 7% of the refugees had electricity access through a generator for roughly four hours per day. Records

of energy use in humanitarian aid facilities across the study sites showed that diesel generators were greatly oversized compared to the loads they serviced, therefore leading to significant inefficiencies.

Through the energy assessments carried out across the settlements, UNHCR and IRENA found that standalone solar systems with battery banks could cushion the impact of voltage fluctuations on the grid. Recommendations were made to install larger solar parks to supply electricity in and around the settlements as these would also provide an enduring asset for local host communities. Solar mini-grids were recommended to increase the efficiency of humanitarian operations while supporting efforts to lower diesel consumption and assist in ensuring that incoming refugees are provided with immediate, reliable electricity access. The use of energy loggers was highly recommended to enable humanitarian organisations to properly scale and deploy solar systems and optimise the use of diesel generators.

majority of energy needs in displaced communities are unmet. Demand for electricity services and modern cooking solutions are high. Energy is often still not considered a basic need in humanitarian settings. For quality of life to improve for refugees and IDPs, access to energy is essential. Energy needs go far beyond the level of energy needed to survive, more access is needed for displaced people to thrive, support livelihood opportunities, and to build resilient and prosperous communities.

Energy access is often talked about as an ‘all or nothing’ concept: you either have energy or you do not. In practice, energy access is a spectrum and there are different levels. These levels are commonly measured in ‘tiers’ within the energy access world, building on the World Bank’s Multi-Tier Framework (MTF) which allocates certain levels of access, types of technologies, and categories of access to different tiers.³⁰

As the sections above have highlighted, energy access and sustainable technologies are critical resources that refugees and displaced people need. Without access to safe, reliable, and affordable energy, life in refugee and IDP camps, in urban environments and settlements, and in both protracted and emergency situations, will continue to be limited and unsustainable. Local livelihoods and self-sufficient communities will struggle to emerge, and displaced people may continue to live in poverty for generations.³¹

Meeting Basic Needs and Energy for Survival

“From my experience in displacement, access to energy either for cooking or lighting is still not considered an essential need. Energy receives poor attention in humanitarian programming.

“More efforts and advocacy are needed for energy to be considered a basic need for the protection of the refugees. For example, limited access or no access to electricity threatens refugee protection, especially for women, young girls, children and elderly people as well as people living with disability, by exposing them to violence and excluding them from empowerment activities such as education. Women have to engage in fights to defend their rights at firewood collection sites. Energy has the potential to thrive the livelihood of refugees and provide them with a better future. Access to energy has the potential to drive creativity and entrepreneurship for refugee needs.”

Refugee living in Kenya

Why Energy is Important

“Electricity went from being a basic need to something that I need day-to-day. I can’t think of my life without electricity right now. I am very dependent on electricity to eat, and if we had a power cut, I would not be able to study or work unless my laptop has longer battery life. My life would stop and that would affect my income because I would be in a place that strips me of that privilege and my ability to afford things. That privilege means that I cannot imagine my life without energy and especially without electricity.”

Displaced person in East Africa

Understanding the Tiers: Levels of Energy Access are Not All or Nothing

- In their 2020 'Inclusive Energy Access Handbook', Mercy Corps highlight how important it is to understand levels of energy access: The World Bank has created a method of measuring energy access called the Multi-Tier Framework (MTF).
- “Energy access is measured in tiers, based on a spectrum of service levels and attributes, rather than being measured as a binary yes or no question. Energy tiers understand energy access as a continuum: there are a variety of different types of energy products and services that people may or may not have access to. Tiers for electricity are determined based on availability, duration, affordability, legality, quality, and reliability. Tiers for cooking consider emissions (indoor and total), safety, and reliability....
- “The MTF takes a technology-neutral approach to grouping appliances and technologies in terms of energy supply. Essentially, this means that Tier 0 and 1 access means little or no access to energy, Tiers 2 and 3 a low level of access, and Tiers 4 and 5 roughly equivalent to the levels of access and types of technologies common in western countries, i.e. almost full power and clean cooking access...
- For example, households with Tier 0 access may only have candles or burning sticks, whereas households with Tier 3 level access may have enough electricity to power several lights, a TV, a fan, and some medium-sized appliances for at least eight hours.”

Humanitarian Contexts and Action on Energy in Displacement Settings

Humanitarian Settings and Displacement Environments

The majority of the world's displaced people live in protracted situations, where their displacement is long-term. For example, Kakuma refugee camp in Kenya was established in 1992,³² and Palestinian refugees have been displaced since 1947.³³ In many protracted situations, people have experienced displacement for over 30 years. A minority of displaced people are refugees in camps; many people live in urban, self-settled, or informal situations. Over 85% of the world's displaced people are hosted in developing countries: nations like Pakistan, Afghanistan, South Sudan, and Rwanda host thousands of displaced people. Energy situations and energy provision

varies considerably between and across different countries, hosting environments, and camp and non-camp settings. As the following sections of this report will outline, there is no one single clear picture on the status quo on energy access for displaced people.

There are few agreed definitions within the humanitarian energy sector, which as an emerging space has seen many changes in recent years. A few key terms are explained below. A glossary and list of acronyms is also available at the end of the report for further commonly used terms within the sector.

Displacement Situations:

The majority of displaced people in 2022 live in informal or non-camp environments: only 6.6 million refugees are estimated to live in camps.

Hosting Countries:

The vast majority of displaced people live in developing countries (86%). In 2022 the top 5 refugee hosting countries are: Turkey (3.7 million), Colombia (1.7 million), Uganda (1.5 million), Pakistan (1.4 million), and Germany (1.2 million).

Protracted situation: Long-term displacement communities are displaced for over five years or more. The majority of displaced people today live in protracted situations.

Emergency situation: Where immediate or urgent risks displace people during the first months of a crisis.

Humanitarian communities: There are 102 million people of concern to UNHCR in 2022 – 52 million are IDPs and 21 million are refugees.

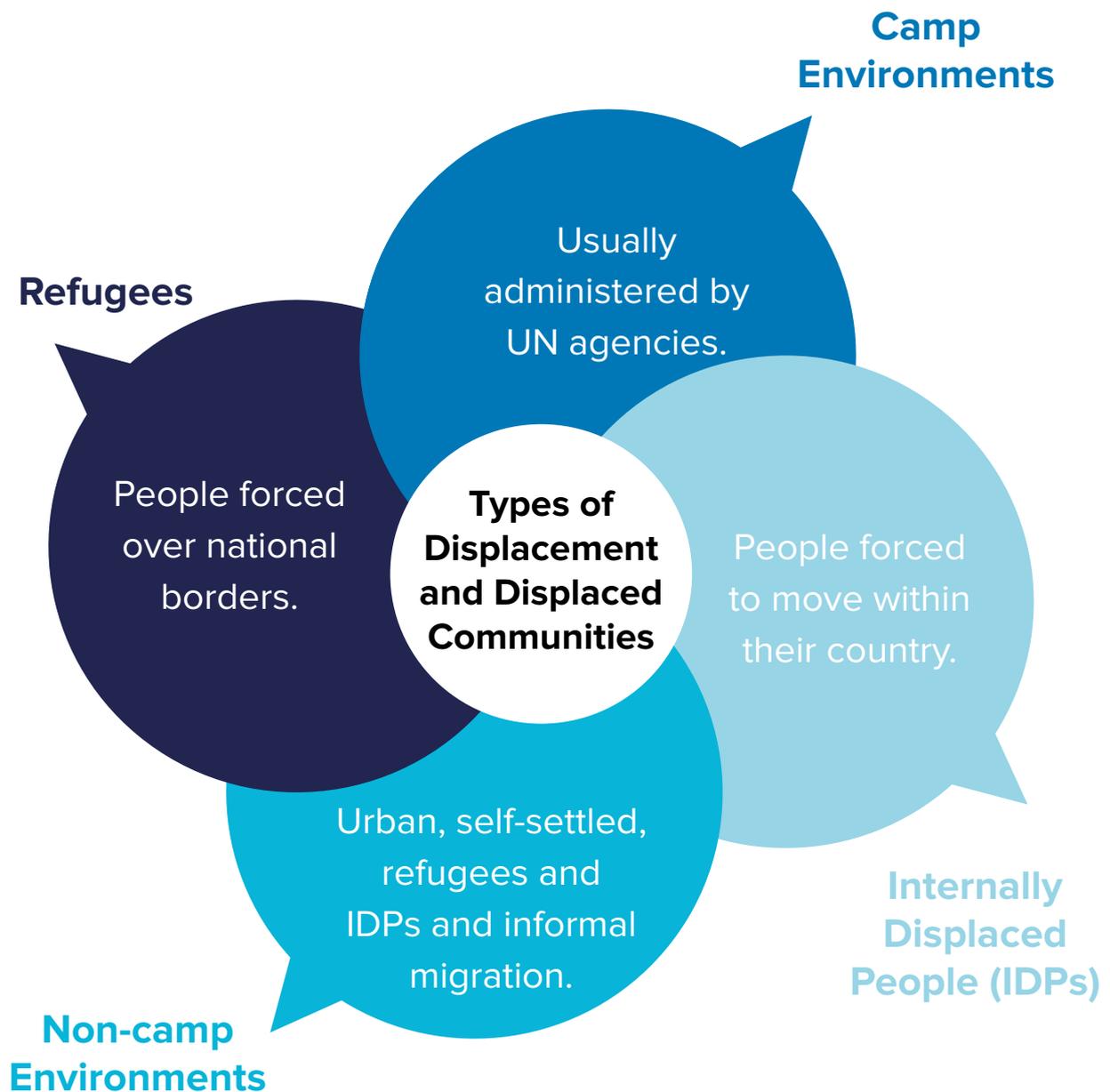


Figure: Types of Displacement and Displaced Communities.³⁴

Key Term

Explanation of Term and Key Facts

Humanitarian Energy³⁵

- The catch-all term covering the whole sector.
- Energy needs (including lighting, cooking, power, heating, and cooling) across all humanitarian situations: including both emergency and protracted crises, the needs of refugees and internally displaced people in camps, as well as those in non-camp, urban, and self-settled environments.
- The terms ‘humanitarian energy’, ‘energy for displacement’, and ‘energy needs in forcibly displaced settings’ are used interchangeably within the sector.

Energy Access

- Energy supply can come from fuels (such as firewood, charcoal and diesel) and technologies (such as solar home systems, generators, grid connections).
- Renewable technologies are from resources that are naturally replenished on a human timescale: solar, wind, geothermal, water, and renewable biomass. Of these, currently solar technologies, and to some extent renewable biomass, are used regularly in humanitarian settings.
- Sustainable (or clean) energy technologies include the renewable technologies listed above, but also include ‘cleaner’ fuels and technologies that do not pollute as much carbon as coal or other fossil fuels. Liquefied petroleum gas (LPG), biogas, and biomass, for example, are frequently said to be clean fuels. It should be noted that while these fuels can reduce local pollution and improve air quality, their use still involves burning hydrocarbons and so releases carbon emissions, contributing to global climate change.
- This report covers all technologies neutrally to describe the current state of play, but encourages the switch to renewable solutions as soon as possible.

Forcibly Displaced Settings, Refugees and IDPs, Camps and Non-camp Settings

- Forced displacement refers to involuntary or coerced movement of people away from their home due to persecution, conflict, violence, war, human rights violations, famine, or disasters. Increasingly, climate change impacts are considered among the reasons people are forced to leave their homes. Displacement can be short-term (an emergency or crisis) which resolves in a few months, but is usually long-term (protracted situations) and for many displaced people lasts for years or decades.
- Refugees are displaced people who have been forced over a national border while internally displaced people have been forced to move within a country. In 2022, there are 102 million forcibly displaced people: over 21.7 million people forced over borders as refugees, 52.1 million people internally displaced within their own countries, 4.7 million asylum seekers, 4.7 million returnees, 4.6 million stateless people, and another 14.4 million persons of concern.
- Only a minority of refugees and internally displaced people live in camps. Most displaced people live in urban spaces, within local host communities, in self-settled or informal environments.

<p>Humanitarian System and Humanitarian Agencies</p>	<ul style="list-style-type: none"> • The humanitarian system covers all the UN organisations, emergency relief providers, NGOs and partners who respond in emergency and protracted crisis situations. • Humanitarian agencies: The Office of the United Nations High Commissioner for Refugees (UNHCR) supports refugee protection, while the International Organisation for Migration (IOM) supports internally displaced people and migrants. The World Food Programme (WFP) is the world’s largest humanitarian organisation and provides food in emergency and protracted settings. • Often UN agencies are understood to lead on emergency relief, through organisations like the Office for Coordination of Humanitarian Affairs (OCHA). However, NGOs such as the International Committee of the Red Cross (ICRC), Médecins Sans Frontières (MSF), and Mercy Corps are equally important in delivering aid, emergency resources, medicine, shelter, and water access. Importantly, many UN agencies do not directly provide implementation services: direct provision is undertaken by local implementers, the private-sector, or NGOs.
<p>Independent Access to Energy through Markets</p>	<ul style="list-style-type: none"> • Informal markets led by refugees and internally displaced people in camps and displaced settlements are very common. Markets and informal trading often provide substantial access to energy for displaced people in protracted situations: through sales of cookstoves, solar home systems, lanterns, and by selling power connections from informal generators. This is referred to as ‘independent access’ as displaced communities are accessing energy independently of humanitarian provision. In urban or self-settled contexts, displaced people pay for power from national grids or local private-sector suppliers. • All displaced people pay for energy; humanitarian provision of free resources (such as firewood or lanterns) only meets a small portion of their needs. • The majority of access to energy in protracted situations is independent of humanitarian provision. Therefore, local markets and businesses led by displaced people must be considered in the humanitarian provision of energy products and services and the design of new programmes.

Table: Key Terms and Issues in Humanitarian Energy.

Depending on the environment, displaced people access energy in different ways. Each context is highly specific, but a number of examples are provided below to highlight typical environments:

- Refugees and IDPs in emergency locations, transit locations, or on the move: may have very low levels of access and be dependent on humanitarian providers to distribute cookstoves, fuel, and basic lighting

technologies. For example, displaced people currently on the move in 2022 in Tigray in Ethiopia or in and around Ukraine.

- Refugees and IDPs in protracted camps: have limited access to energy, and often obtain energy from both humanitarian providers and local markets. For example, displaced people living in Kakuma camp in Kenya.
- Host communities in rural environments: often have low levels of energy access similar to

displaced people, and access energy from local markets or national governments. For example, rural host communities living close to Kigeme camp in Rwanda.

- Displaced people and host communities in urban environments, self-settled displaced people: often use national or local private-sector mechanisms to access energy. For example, refugees and host communities living in urban environments in Irbid in Jordan.
- Asylum seekers in the global North: often access grid-level equivalent energy through national or private-sector structures. For example, asylum seekers living in the UK or Germany.

Humanitarian Action on Energy for Displaced People

A considerable number of forced migration crises evolve into protracted situations,³⁶ and medium-term planning is necessary during the initial phases of emergency response.³⁷ Despite this, for many years short-term planning and the emergency nature of humanitarianism meant that energy needs were not prioritised. Agencies and partners would supply non-food items, such as blankets, cooking pots, and medicine, which would sometimes include a torch or small lighting device as part of emergency response. Planning on energy beyond the emergency phase rarely occurred, however. The emergency nature of humanitarianism has sometimes been used as a rationale not to provide energy resources for displaced people. In addition to this, a number of challenges have limited the emergence of humanitarian energy as a sector:³⁸

- Energy previously was not recognised as a formal priority in humanitarian assistance: There is no cluster for energy within the Inter-Agency Standing Committee process, previously leadership has been limited on

humanitarian energy issues, and no formal governance or coordination processes exist at the global level for sustainable energy access.³⁹

- Displaced people are often not included in national or international energy access agendas: National governments and humanitarian agencies often do not prioritise energy needs and there is an absence of policies and programmes on sustainable energy access in humanitarian settings.
- Energy in displacement settings is underfunded: There is a considerable lack of funding for the energy access space.⁴⁰
- Expertise and capacity to implement humanitarian energy solutions is limited: Very limited technical knowledge, staffing or resourcing exists for the sector.⁴¹ While some support has been provided through the Norwegian Technical Capacity Programme (NORCAP technical roster), supplying energy experts to emergency settings, humanitarian agencies and implementing partners do not have substantial expertise on energy.
- Data on humanitarian energy needs and solutions is limited and not widely shared: Even in 2022 we do not have a global baseline for how displaced people have access to energy, or how much they pay for it.⁴²

Alongside these challenges, leadership and coordination across the sector compound the slow progress. To support coordinated action on sustainable energy in displacement settings, key organisations working in humanitarian settings have come together to support coordination and policy actions and drive the sector forward. The Global Platform for Action on Sustainable Energy in Displacement Situations (GPA) is the global UN-led initiative to promote actions that enable sustainable energy access and use in displacement settings.⁴³ Together with partners in UNHCR, IOM, WFP, FAO, UNDP, UNEP, SEforALL, Chatham House, NGOs, and leading advocacy

organisations, the GPA network strives to remove barriers to energy access in humanitarian settings by providing a collaborative agenda for energy, development, and humanitarian partners to deliver concrete actions of Sustainable Development Goal 7 for displacement contexts.⁴⁴

GPA: Vision and Mission to Support Sustainable Energy and Climate Action in Displacement Settings

The Global Platform for Action on Sustainable Energy in Displacement Settings (GPA) is the global initiative to promote actions that enable sustainable energy access and use in displacement settings,⁴⁵ as laid out in the Global Plan of Action Framework. The GPA strives to remove barriers to energy access in humanitarian settings by providing a collaborative agenda for energy, development, and humanitarian partners to deliver concrete actions of Sustainable Development Goal 7 (SDG 7) for displacement contexts. It promotes and contributes to the humanitarian sector's transition to renewable energy, which will increase efficiency and reduce costs and carbon emissions. Hosted by the United Nations Institute for Training and Research (UNITAR), the

GPA Coordination Unit galvanises collective action towards the GPA's realisation.

Vision

"Displaced persons, host communities, and associated humanitarian response mechanisms have access to affordable, reliable, sustainable, and modern energy services by 2030."

Mission

"Delivering collective change on energy in displacement settings by providing supporting services to mainstream sustainable, affordable, and reliable energy access for crisis affected communities and those that serve them."

The humanitarian system has repeatedly made international commitments to improve the lives of displaced people, through the Grand Bargain and the UNHCR-GPA Clean Energy Challenge.⁴⁶ However, in practice, progress on sustainable energy remains limited despite these commitments. Ahead of the High-Level Dialogue on Energy (HLDE) in New York in September 2021 and the UN Climate Change Conference in Glasgow in November 2021,⁴⁷ the GPA and partners issued a Call to Action for sustainable energy to be urgently provided for humanitarian communities across the world. The Call to Action, under the Clean Energy Challenge, was founded

as a global campaign to mobilise support toward the vision: "all refugee settlements and nearby host communities will have access to affordable, reliable, sustainable and modern energy by 2030".⁴⁸ One of the key ideas underpinning this vision is to mainstream energy activities within existing humanitarian response processes: ensuring that activities are aligned with ongoing protection, gender and vulnerability programming to enhance the resilience of displaced communities.

Mainstreaming Energy and Switching to Renewable Energy

“It’s undeniable that the attention on humanitarian energy has increased over the past years. We went from a forgotten situation and forgotten areas, especially in refugee-hosting countries and developing countries. And now a lot of attention to potential new places where the grid can be extended with electricity or fuel supply chains has been opened up.

“Energy is streamlined across many sectors in the humanitarian world, it’s connected to WASH, it’s connected to healthcare, it’s connected to most other sectors. This switch has also been in the

perception of the renewable energy process or solar systems, battery storage, etc. We see in recent years that there was a switch also to using renewable energy compared to before. The direction has changed in humanitarian and peacekeeping settings. For example, when using diesel generators. There is a switch especially in protracted situations due to the operating costs, which means operations supporting communal facilities are investing more in this. In the past, we could see quite a bit of a switch from investing in diesel generators to renewable energy, so this is my overall global takeaway.”

UN Humanitarian Energy Expert.

Humanitarian systems are increasingly moving to provide energy access through renewable or sustainable sources, such as solar power. Sustainable and clean energy can provide significant benefits associated with protection, gender equality, food security, water, sanitation, health, education, livelihoods, connectivity, and environmental protection. Access to energy also enables women to gain greater control over their lives and futures, especially by improving the feeling of security when moving around at night and by reducing the time and physical burdens of collecting firewood.⁴⁹ Cleaner cooking fuel can reduce indoor pollution and fire-related hazards while improving nutrition. Installing solar energy or other electrification services to health posts also improves the availability of clinical services. Energy access allows for diversification of livelihood activities, improved education opportunities, less reliance on diminishing local resources and overall increased resilience. Sustainable, clean energy, therefore, is a critical means of achieving the protection and well-being of forcibly displaced populations, as well as a key factor in creating

more sustainable and inclusive communities and mitigating climate change impact.⁵⁰

Looking beyond humanitarian provision of energy products and solutions, it is important to acknowledge the existing modes of access to energy and the informal provision of energy within displaced communities. In many places, humanitarian provision of services is limited and displaced people rely on their own initiatives, businesses, markets, and support networks to access resources. Many refugee and IDP camps have markets where energy products and services are sold. Almost all of these markets have privately run generators or solar home systems where displaced people can pay to connect or charge their phones. The role of these markets and this independent access will be explored throughout this report.

Self-sustaining and Humanitarian Assistance

“The struggle of living in the camp and the decreasing humanitarian aid are pushing refugees to the limit of self-resilience. Through entrepreneurial business activities, casual work and support from relatives outside the camp, refugees work hard to sustain themselves and cater for their needs. Some programmes that are brought in by humanitarian organisations to the refugees such as training, business incubation, and microloans, lack clear and concrete pathways for programmes durability.

“Refugees want to engage with meaningful and tangible projects to live a decent life and to be masters of their destiny. Programmes with practical approaches such as providing loans to refugees or sewing machines fail to give enough support to refugees such as helping them expand their market even beyond the camp so that their initiatives can drive and become sustainable. A lot of non-profit organisations claim to help refugees but the impact and result of the work can’t be traced or survive beyond the project timeline.”

Refugee living in Kenya

This chapter has highlighted some of the core challenges and activities ongoing within the humanitarian energy sector. However, it must be highlighted that understanding energy needs in humanitarian settings is a highly complex topic: there are no simple solutions as there are no simple problems. To add nuance to these debates, several core resources are available to support learning and knowledge sharing, such as the book *Energy Access and Forced Migration* by Owen Grafham and the publicly available paper *Moving Beyond Informal Action: Sustainable Energy and the Humanitarian Response System* by Peter Thomas, et al.⁵¹

Key Publication: Energy Access and Forced Migration

Energy Access and Forced Migration, published in 2020 by Routledge, is a core resource for the humanitarian energy sector.⁵² Developed by Owen Grafham, it brings together a selection of expert authors and draws on a wide range of case studies, geographies, and perspectives to explore the links between forced migration and energy access. Chapters address governance across the sector, the migration–energy nexus in international policy, global patterns of forced displacement, and energy response. The book also highlights evolving approaches, new data and evidence on market systems, and future opportunities and solutions.

on how energy is delivered to the millions of people currently forcibly displaced. The contributions assess the current energy governance regimes, models of delivery, and innovative solutions that are dictating how energy is – and can be – provided to those who have been forced to move away from their homes. By bringing together author-teams of practitioners, academics, businesses, and policymakers, this collection encourages interdisciplinary dialogue about the best way of approaching energy provision for the forcibly displaced.

This book addresses the paucity of academic study

COVID-19 Impact on the Humanitarian Energy Sector

The COVID-19 pandemic has brought a new urgency to the humanitarian energy sector.⁵³ Investment in achieving access to affordable, reliable and sustainable energy during the humanitarian response to the pandemic continues to be important as a means to help mitigate infection risks (for example, through providing sufficient and clean water) and improve the medical response (for example, through securing cold chains and enabling treatment). It also enables affected populations to become more resilient when facing future economic shocks.

The pandemic has highlighted the urgent need for sustainable energy provision in displacement settings: the importance of connectivity, wifi, and online communications has been demonstrated at a global scale since March 2020. The impacts of COVID-19 on the humanitarian response, however, have hurt an already struggling humanitarian system: reducing available resources and humanitarian access even further at a time when the world faces a multitude of complex emergencies.

Little detailed evidence is currently available on how COVID-19 has changed energy access opportunities for displaced people.⁵⁴ Where studies have been done,⁵⁵ the findings have highlighted a number of negative impacts.⁵⁶ Refugees and IDPs in camps face increased risks from health problems associated with COVID-19 and airborne diseases, especially as people tend to live in close physical proximity and have limited access to healthcare facilities. It has been reported that nearly 90% of displaced people have needed additional support since the crisis began, but only 20% have received extra resources or support.⁵⁷

Refugees in many camps have faced restrictions on their freedom of movement, as well as increased prices for food and basic necessities.

Access to camp spaces by energy suppliers and businesses became a key issue during the pandemic. This affected the sales of new products and services, and hindered displaced people from connecting with companies responsible for fixing technical issues with energy systems. Many refugees have seen local markets and livelihoods affected by COVID-19. In Rwanda, the pandemic has significantly affected refugees' ability to pay for energy access. Lockdowns within camps and the closure of schools has impaired access to education and learning resources for children and families. The financial impact on households has also been severe. In refugee camps in Rwanda, 30% of refugees reported they have not been able to work, 20% reported a decrease in their income and many have experienced a substantial increase in the cost of basic goods and services.⁵⁸

While initially, there was positive news that COVID-19 had not spread as quickly in African countries and refugee camps as anticipated, the long-term impacts of the pandemic will be felt for years to come within the humanitarian and development sectors.⁵⁹ International organisations were forced to reduce the number of international staff in the field, placing an even heavier burden on local partners and staff. In addition, the global economic downturn has further contributed to widespread funding gaps across the humanitarian and development sectors.⁶⁰

The impacts of COVID-19 have highlighted the importance of the deployment of power solutions to health facilities, which are often hampered by a lack of reliable data on the exact location of health facilities, their current energy needs, and their current energy status.⁶¹

The challenges of COVID-19, and multiple protracted emergencies in the humanitarian sector continue to reduce access to humanitarian

situations and hinder the ability of aid organisations to respond. Research and evidence to support the health, energy, and climate sectors can help identify new delivery models that improve long-term sustainability, driving resilience for future pandemics and health crises. Within this context, access to sustainable and local energy solutions is more important than ever. The pandemic has highlighted that preparedness for emergency responses, whether for health, disasters or conflict, is closely tied to long-term development and recovery strategies.

Report Aim and Structure

Objectives and Structure

The aim of this report is to provide an analysis on the state of the humanitarian energy sector in 2022: by providing an analytical description of what we know about the sector, results from key implementation programmes and case studies, an assessment of the data and progress on humanitarian energy issues, and recommendations for future programming and policymaking. The GPA hopes to produce a similar full report analysis approximately every three years to demonstrate change and progress within the sector. Yearly updates and data analysis will also be made available on specific topics and issue deep-dives to provide practical advice and learning for the sector.

This report has been commissioned by the Global Platform for Action on Sustainable Energy in Displacement Settings (the [GPA](#)),⁶² hosted by the UN Institute for Training and Research (UNITAR). The report was developed throughout 2021 and 2022 with inputs from the GPA Steering Group and partners, expert practitioners, displaced people, and sector analysts. The data and evidence presented was collected through an assessment of existing, publicly available information, case studies and resources. During the first three months of 2022, interviews were conducted with dozens of specialist practitioners and humanitarian energy experts to understand how the sector has changed and collate their views on the sector's progress.

The report provides an overview of energy needs (Chapter 1), an overview of current governance of the sector (Chapter 2), assessment of policies and progress (Chapter 3), the types of funding and financing arrangements seen in different contexts (Chapter 4), how delivery and implementation are happening

and progress on technical capacity building (Chapter 5), understanding the types of data and evidence available (Chapter 6), highlighting the connection between climate change and the sustainable development goals (Chapter 7), turning to recommendations on inclusive access and practical advice (Chapter 8), and finally, concluding remarks and core lessons generated from the report (Chapter 9).

STRUCTURE OF THE REPORT AND KEY GUIDING QUESTIONS



WHAT IS THE STATE OF THE HUMANITARIAN ENERGY SECTOR IN 2022?



02

GOVERNANCE AND COORDINATION: SYSTEMATIC STRUCTURES AND SECTOR LEADERSHIP

Chapter contributing co-authors: Thomas Fohgrub and Elif Demir at UNITAR GPA, and Owen Grafham at Chatham House.

UN Photo/Mark Garten

State of Play: Coordination Challenges and Emerging Governance

Historical Overview

Over the past ten years, the humanitarian energy sector has grown rapidly. Millions of dollars have been invested, traditional and innovative partnerships have emerged, and technical energy staff numbers have grown from single figures to the hundreds. There is still much to do, but the subject of the energy needs of displaced people is now firmly on the agenda. Though much has changed for the better in the humanitarian sector, the vast majority of displaced people still live without basic access to basic electricity or clean cooking solutions: large-scale investment is still required to deliver sustainable energy access at scale.

While the emergence of energy in displacement settings as a standalone topic has been a relatively recent development, there has always been programming within refugee camps and internally displaced people's (IDP) settings to provide firewood and basic cooking solutions. Similarly, power has always been a necessity for humanitarian operations. Despite clear household and operational needs, for many years, energy was not prioritised as a need for displaced households. A lack of coordination meant that individuals toiled away within their own organisations working on isolated cooking and lighting programmes. Businesses led by displaced people secured their own energy access when and where they could afford to and where energy was available. Public spaces within refugee camps often lacked lighting. Diesel generators were purchased through standard procurement mechanisms to generate power – and are still the default in emergency situations and beyond. Connection to the national grid for displaced households was in the past thought too challenging or too costly. Off-grid and

renewable energy solutions were too new, too untested, too unreliable. Little attention was given to the costs of energy sources, who was paying for the solutions, or the damaging impacts of the lack of energy access. Climate change and the risks posed from a warming planet were regarded as a distant issue, detached from the daily activities and crises driving the humanitarian sector. Energy was always a silent necessity across the humanitarian clusters.⁶³ But despite this, its importance was never prioritised, and so energy needs were not given the space to develop.

Over time, this picture has begun to change. Practitioners began to come together to learn from each other and initial analysis on energy in forcibly displaced settings emerged.⁶⁴ The energy access sector recognised that refugees and displaced people should not be left behind in the clean energy transition.⁶⁵ The humanitarian sector began deploying some solar lighting and clean cooking solutions.⁶⁶ Institutions started to issue energy and climate strategies.⁶⁷ Donors invested in pilot funding for renewable and sustainable humanitarian energy programming. Academic institutions and research groups started to explore technological and social analysis on energy and forced migration.⁶⁸ Within this context, the Moving Energy Initiative's 2015 Heat, Light and Power report was critical in driving change in the energy response to situations of forced migration: outlining for the first time the energy access needs of refugees in camps, placing a figure on the number of people without access, and suggesting an investment volume needed to change the situation.⁶⁹

Key Publication: Heat, Light and Power for Refugees⁷⁰

In 2015 Chatham House and the Moving Energy Initiative produced a seminal report on the heating, lighting, and power needs of refugees and the communities who support them. The report noted that energy use by displaced people is economically, environmentally and socially unsustainable, and that children and women bear the greatest costs and energy burdens. In 2015, household energy use among forcibly displaced people amounted to around 3.5 million tonnes of oil equivalent at an estimated cost of US\$2.1 billion. However, this small amount of energy consumption generates disproportionate emissions. The report suggested that improving access to cleaner modern energy solutions would reduce costs, cut emissions and save lives.

Several key figures emerged from the report, including that the widespread introduction of improved cookstoves and basic solar lanterns could save US\$323 million a year in fuel costs in return for a one-time capital investment of US\$335 million for the equipment. The report highlighted that the barriers to a sustainable, healthier, more cost-effective system are not technological but institutional, operational and political – highlighting that there is a severe shortage of energy expertise in the humanitarian system and no systematic approach to planning for or managing energy provision. Despite this negative picture, the report suggested that energy investments can help integrate displaced populations and provide a legacy asset for local communities, while also contributing to national and local sustainable development objectives.

Developing energy programmes in displaced contexts can take upwards of three years from planning to implementation, demonstrating a medium-term timeframe, which the short-term nature of humanitarian response struggles to plan or budget for. This highlights a division between development and humanitarian actors which is further fuelled by different systems of organisation. For example, different ministries, different budget processes, different reporting lines, and of course different aims: short-term life-saving actions versus long-term improvement of quality of life. Often in humanitarian contexts, providing energy services to displaced people is seen as a long-term task. As a result, humanitarian agencies have not considered such action until refugee and IDP responses change into a development situation. As many emergencies now turn into protracted situations, the humanitarian sector increasingly plans for resilience-based and development-led actions.⁷¹ Much learning from the energy for development spaces and development agencies have supported humanitarian colleagues to learn

and prioritise energy issues. Donors such as the Norwegian Ministry for Foreign Affairs and the Norwegian Technical Capacity Programme (NORCAP) have been critical in bringing these two sets of actors together.

Prior to a shift in humanitarian energy activities, many agencies were predominantly focused on energy for cooking: distributing limited firewood in camps, with minimal action on sustainable or renewable forms of energy. New programmes and actions within the sector have been phased, with a first phase of action from 2010 when collaboration began to emerge. Initially organisations like the Moving Energy Initiative (MEI) and the Clean Cooking Alliance took the lead on driving the humanitarian energy agenda forward.

A second phase of development then followed from 2015 to 2018, with the rapid expansion of activities officially beginning in 2016. This included a considerable scale-up of investment in the sector and the start of many new energy-related pilot projects. A number of significant events occurred during this period, including the

An Evolving World

“There was a community of people back in 2014 to 2015 who were making an argument about why it was important to consider energy in humanitarian programming, but they were relatively siloed within the cooking world. There was ample discussion around gender-based violence and cooking but it wasn’t a very holistic argument.

“Over time, that started changing. In 2018 – three or four years had gone past and what we saw was many more stakeholders in this space having a much better understanding of the importance of energy provision. Many of the agencies were willing to acknowledge the importance of this issue, engage in substantial conversations and think about programming (and perhaps even start to appoint people to a limited extent). There were more donors in the humanitarian energy world, and they were giving money and incentivising further interest.

“If we fast forward another three or four years from that, the community of practice has grown again. The GPA has done an amazing job in terms of bringing together the community of interested groups and encouraging them to learn from the latest information and from what everybody else is doing. So you see almost the full range of agencies involved now. The humanitarian energy sector is much more considered, and there is more money on the table from donors. Although there has not been a sea change in donor funding yet, there is a much more regular trickle of money into the world and also increasing internal awareness of the value of energy projects. So there is more internal money being made available for mainstreaming energy interventions. So far it is a progression, but not yet a revolution.”

Policy Expert

installation of the world’s first solar energy plant in a refugee camp and new investments in clean cooking technologies for refugee households.⁷²

A third phase of development involved the consolidation of programmes and innovative delivery partnerships, namely, the Practical Action and GIZ collaborations with UNHCR on the Renewable Energy for Refugees (RE4R) and Energy Supply for Displacement Settings (ESDS) programmes.⁷³ This phase has seen many programming activities start moving towards scale and multi-site programming. However, overall progress and delivery of access across the sector is still limited.

First-Mover Projects in Humanitarian Energy

Prior to 2018 there were several examples of ‘first-mover’ and pilot projects which demonstrated how energy could be supplied by alternative partnerships that collaborated with humanitarian agencies but supported new ways of working in the humanitarian sector.

- Solar lighting for communities: In 2010, Energias de Portugal (EDP) installed an integrated set of renewable energy solutions, including lighting, irrigation systems, solar ovens and solar flashlights at Kakuma refugee camp in Kenya. The project installed 1500 efficient light bulbs, 31 street lights, 4500 rechargeable solar lanterns, and saved over 50,000 litres of fuel. Working with the local NGO Don Bosco, the project also supported local training and capacity building to embed changes within the local community.⁷⁴
- Renewable lighting and cooking solutions: The IKEA Foundation funds projects and programmes to ensure access to energy, clean cooking, renewable energy solutions, and energy efficiency in line with its commitment made towards SDG 7. It works alongside different partners, such as UNHCR and Practical Action, by providing grants

as well as implementing projects in the field. IKEA Foundation works with its climate partners by providing grants for projects focusing on energy efficiency, the utilisation of cleaner and renewable energy sources such as biomass, briquettes, and solar technologies, as well as the development and construction of solar power plants.⁷⁵ The Brighter lives for Refugees campaign raised funds for refugees in five countries; Bangladesh, Chad, Ethiopia, Jordan, and Sudan, to support education and renewable energy projects that focus on providing solar lanterns, fuel-efficient cookstoves, and solar street lights.⁷⁶

- Low-carbon energy access projects: The Moving Energy Initiative ran low-carbon projects between 2015 to 2017 in Jordan, Kenya and Burkina Faso.⁷⁷ The projects used a range of market-based approaches to support renewable energy solutions in urban environments in Jordan, support energy suppliers in accessing camps in Kenya, and to develop demand-side market activation activities in Burkina Faso.

To build on momentum connecting development and humanitarian issues, sector practitioners came together to form the Global Platform for Action on Sustainable Energy in Displacement Settings at the Berlin Conference on Energy for Displaced People in January 2018.⁷⁸ Initially titled the Global Plan for Action for Sustainable Energy Solutions in Situations of Displacement, the GPA produced a key strategic framework document guiding the sector. The GPA then developed into the Global Platform for Action, to drive forward change within the sector and demonstrate leadership on climate and energy issues within humanitarianism. From 2015 to 2020, many new organisations and partners joined the humanitarian energy sector, and the GPA, bringing considerable new expertise

and knowledge to support programmatic and systematic learning.⁷⁹

In recent years, commitments have been made to refugees and displaced people to improve their quality of life. The High Commissioner for Refugees, Filippo Grandi, stated that the international community should be “helping refugees thrive, not just survive”,⁸⁰ leading to the launch of the Clean Energy Challenge in 2019 by UNHCR with “the ambitious goal of bringing affordable, reliable, and sustainable energy to all settlements of forcibly displaced people and nearby host communities by 2030”.⁸¹ An individual’s ability to ‘thrive’ requires adequate access to energy, so humanitarian agencies and donors have responded to the increasing

needs of displaced people by developing sustainable energy access programming. These commitments, combined with the falling cost of solar energy (which has reduced by 82% in the last decade) and the increasing accessibility of renewable energy technologies,⁸² has supported the development of new solutions, innovative delivery models, and inclusive change in the supply of energy for refugees and IDPs.

Institutions and Action on Humanitarian Energy

The landscape of humanitarian energy has shifted considerably in the last 20 years, with a notable increase in the number of actors, agencies, institutions, and organisations becoming involved in the sector.⁸³ Significant progress can be witnessed as humanitarian agencies are increasingly accessing the technical support and partnership models they require in order to launch new initiatives and deliver them effectively. There are several types of actors working in the humanitarian energy sector in 2022.

- **Humanitarian agencies:** these organisations often lead on the protection of vulnerable and displaced populations. For example, in many of the interviews carried out for this report, reference was made to UNHCR's core remit of protection and leadership for refugee communities. The capacity of humanitarian agencies to directly implement energy programming is limited, however, due to restrictive remits or internal planning constraints. Such agencies generally rely on implementing partners and collaborators to lead the installation of solutions, management of energy, and other such projects.
- **Implementing partners and NGOs:** these organisations are usually directly responsible for delivering energy solutions in the field, often working with private-sector suppliers and local communities. Many large NGOs, such

as MSF, Mercy Corps, ICRC and NetHope,⁸⁴ have substantially invested in internal capacity on energy in humanitarian contexts, and are leading the sector forward on good practice implementation.

- **Donors and funders:** Many funders have been instrumental in driving forward change in the humanitarian sector and supporting the development of sustainable and renewable energy. Increasingly, donors are moving towards standardised guidelines and indicators which encourage partners to develop renewable, zero-carbon, and low-impact environmental projects.⁸⁵
- **National governments:** Nation states have different approaches to hosting refugees and supporting displaced people. For example, countries that are signatories to the Comprehensive Refugee Response Framework (CRRF), such as Rwanda, have facilitated sustainable energy solutions for refugees alongside those in host communities.⁸⁶ To date, many national governments do not directly implement energy solutions within refugee or IDP settings due to existing national pressures and resource constraints. Rather, national governments lead policy-setting and regulatory permissions processes within national energy systems.
- **Private sector and funders:** This group includes suppliers of energy products or services that provide energy technologies and fuels, as well as finance institutions such as banks. Some progressive private sector organisations, such as Schneider Electric, Shell, and Energie De Portugal,⁸⁷ have supported the development of the sector from internal financing, and have directly funded pilot programmes.
- **Research partners:** Researchers often provide expert technical advice, undertake energy assessments, and analyse data and evidence in humanitarian energy settings.

Universities, such as Coventry University⁸⁸ and Loughborough University⁸⁹ in the UK, have been instrumental in providing evidence and data for the sector, driving forward both research discussions and critical evaluations of humanitarian energy programming.⁹⁰

Type of Institution **Examples of Institutions Currently Working within Humanitarian Energy**

Inter-governmental and UN Bodies – Humanitarian Focused	International Organization for Migration (IOM), United Nations High Commissioner for Refugees (UNHCR), World Food Programme (WFP), Food and Agriculture Organization (FAO), United Nations Office for the Coordination of Humanitarian Affairs (OCHA).
Inter-governmental and UN Bodies – Energy Access and Development Focused	United Nations Institute for Training and Research (UNITAR), United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), United Nations International Children’s Emergency Fund (UNICEF), United Nations Industrial Development Organisation (UNIDO), International Renewable Energy Agency (IRENA), UN-Energy.
International NGOs, Development Agencies, and Implementing Partners	Mercy Corps, Norwegian Refugee Council (NRC), International Committee of the Red Cross (ICRC), Médecins Sans Frontières (MSF), Practical Action, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Netherlands Development Organisation (SNV), SELCO Foundation.
Nation states and Local Government	Governments who host a large number of displaced people and refugees include: Jordan, Rwanda, Kenya, Uganda, Bangladesh, South Sudan, Somalia, Democratic Republic of Congo, Nigeria, Colombia, Turkey, Afghanistan, Iraq.
Donors and Funders	Norwegian Ministry for Foreign Affairs (MFA) and the Norwegian Technical Capacity Facility (NORCAP), Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG ECHO), Swedish International Development Cooperation Agency (SIDA), the UK Foreign, Commonwealth and Development Office (FCDO), KfW Bank Group, Germany, The German Ministry for Economic Cooperation and Development (BMZ) and Federal Foreign Office (GIZ), World Bank, European Union, IKEA Foundation, and the Olympic Committee.
Think Tanks, Collaborative Initiatives, and Policy Bodies	Clean Cooking Alliance, Energy for Development partnership (EnDev), Global Off-Grid Lighting Association (GOGLA), Sustainable Energy for All initiative (SEforALL), World LPG Association, and the Moving Energy Initiative (MEI).

Private Sector and Investment Partners	Eurelectric, Energias de Portugal (EDP), Schneider Electric, Inyenyeri, Little Sun, Kube Energy, Bboxx, African Clean Energy, BioLite, Brightlife, BRIGHT Products, d.light, Pesitho, Shell, SolarKiosk, TOTAL.
Research Organisations and Universities	Chatham House, Chalmers University, Coventry University, Engineers Without Borders (EWB), University of Oxford, EPFL (École Polytechnique Fédérale de Lausanne), Arizona State University, Imperial College London, and Loughborough University.

Table: Examples of Institutions within the Humanitarian Energy Sector

Resourcing and Organisational Structures

In 2022, the humanitarian energy sector is underfunded and under-resourced. Although there are over 274 million people needing humanitarian assistance worldwide,⁹¹ including access to energy, there are very few humanitarian energy experts. In recent years the size and scale of the humanitarian crisis has continued to grow. Twenty-two UNHCR operations in 2019 reported a high risk of new or escalating refugee or IDP situations⁹². IOM have experienced similar levels of increased needs, with 281 million international migrants recorded in 2020, an increase of 3.5% from 2019.⁹³

New decentralisation initiatives within UN agencies have led to an increase in technical staff being employed at the local and regional levels. Few UN agencies have dedicated technical energy teams with more than a couple of people within their headquarters. The NORCAP energy roster currently sponsors many technical employees with funding from the Norwegian Agency for Development Cooperation (NORAD), German Federal Foreign Office, and the Swedish International Development Cooperation Agency. These technical staff members are based within UN agencies but often only for a period of months or a year, meaning that it can be challenging for them to develop longer-term energy work or see projects through to completion. While there is some technical resourcing within agencies,

Key Statistic

In 2022, over 274 million people need humanitarian assistance and protection, and over US\$41 billion dollars are requested by UN organisations and their partners to support people in over 63 countries.⁹⁶

the majority of energy staff are based within NGOs and implementing partners rather than humanitarian agencies. For example organisations like GIZ and Mercy Corps have dedicated humanitarian energy teams who support energy access projects all over the world.⁹⁴

There are a considerable number of people working as humanitarian practitioners on emergency and protracted situations. The ALNAP humanitarian sector report in 2018 estimated that there were 78,000 field personnel in UN agencies and over 330,000 staff in humanitarian NGOs.⁹⁵ Only a tiny fraction of these work on energy or environmental aspects. Despite this, demand for technical staff is considerable and the operational need for technical energy staff is in the thousands. Currently there are only two technical energy team members working within UNHCR's head office in Geneva – a number that has stayed roughly the same for most of the last decade. Within other humanitarian agencies, such as IOM and WFP, the picture is slightly better, with technical teams leading energy for food work within WFP and solarisation and data projects within IOM. In many

cases, technical staff working on water, sanitation and hygiene, shelter or coordination also cover energy within their remit. As a result, it is difficult to get a clear picture on how many people actually work on energy within humanitarian settings.

As an indicator of the level of interest in the sector, there are hundreds of people involved in the Humanitarian Energy Practitioners

group on LinkedIn (over 800 in April 2022) and a considerable number of individuals and institutions follow the GPA on Twitter (over 1,600). This suggests that the size of the community working on sustainable energy in displacement settings is large.

Resource	Current Resourcing in 2022
Current Humanitarian Sector Staff Numbers	<ul style="list-style-type: none"> • UNHCR: 20.7 million refugee beneficiaries across 132 countries⁹⁷ (with 530 field operations) with 17, 878 staff.⁹⁸ • IOM: 37 million beneficiaries across 54 countries⁹⁹ with 15,311 staff.¹⁰⁰ • WFP: 115 million beneficiaries across 84 countries with 20,600 staff.¹⁰¹ • Estimated need for energy technical staff within humanitarian agencies and partners: 2,000 to 3,000.¹⁰²
Current Technical Energy Staff in 2022	<ul style="list-style-type: none"> • UNHCR: estimated 9 working on household response: 2 in the Geneva technical unit and 7 field energy officers (an additional 8 NORCAP deployments within UNHCR extended in 2022). For Greening the Blue staffing: 7 staff (5 in Nairobi, 2 in Geneva). • IOM: 1 at HQ and 16 total. • WFP: 10 at HQ directly working on energy, 2 energy project managers in Chad and Burundi. • NORCAP: 30 energy technical staff currently deployed (out of 52 experts in the NORCAP pool). • GPA Coordination Unit: about 10 full time positions (including core secretariat staff members, NORCAP experts and consultants). • GIZ: 25 working on the ESDS programme, globally and nationally. GIZ has approximately 1,000 staff working on development energy within the organisation
Size of Practitioner Community	<ul style="list-style-type: none"> • Humanitarian Energy LinkedIn practitioner group members: over 800. • Twitter community following the GPA online: 1,600.
GPA	<ul style="list-style-type: none"> • 16 steering member organisations and agencies on the GPA Steering Group. • 72 organisations and field practitioners within the GPA Humanitarian Energy Exchange Network (HEEN). • In 2020, the GPA hosted 24 events attended by a total of 1,968 people. This increased in 2021 to 26 events with a total of 2,264 participants.

Table: Current Resources in the Humanitarian Energy Sector.

Progress: Good Practice in Coordination and Case Study Examples

Progress Across the Levels of Governance

Formal governance and coordination are limited within the humanitarian energy sector. Traditional humanitarian structures are coordinated by bodies such as the Office for Coordination of Humanitarian Affairs (OCHA)¹⁰³ and the Inter-Agency Standing Committee (IASC).¹⁰⁴ However, the formal space for energy access within these structures is limited. The same is true of the energy sector. While institutions such as the International Energy Agency (IEA), SEforALL, and the World Bank offer some coordination of energy access at the global level, there is no international regulator for energy access in humanitarian settings.

To understand governance, we draw from definitions which highlight the roles of institutions in developing policies, rules, coordination structures, and sectoral leadership.¹⁰⁵

Humanitarian governance can be defined as an “attempt to regulate the humanitarian field – including rules, structures, and mechanisms for promoting accountable and effective humanitarian practice. Linked to the overall aim of humanitarianism, of helping vulnerable populations in need, humanitarian governance can be seen as an increasingly organised and internationalised attempt to save the lives, enhance the welfare, and reduce the suffering of the world’s vulnerable populations”.¹⁰⁶ In this report, governance is used not in the sense of government and regulation, but rather in the softer sense of coordination. Similarly, formal coordination and authorisation of project development is not currently present in the humanitarian energy sector. In many places, authorisations for the installation and delivery of energy projects must have permission from national governments or humanitarian agencies

who control access to the area(s) of concern. This is especially relevant to refugee-hosting settings. However, formal structured coordination for the management of energy projects is not present within the humanitarian sector in 2022.

While formal governance is limited, many forms of management exist at the local, national, sectoral and global levels. The humanitarian energy sector has witnessed a number of good practice examples in coordination in recent years. This section outlines some examples which demonstrate how alternative partnerships and coordination mechanisms have collaborated beyond the traditional spaces of humanitarianism to realise effective change.

Governance and Coordination – What Do They Mean in an Emerging Sector?

“We call it soft coordination. Then coordination means on the one hand, for us to basically advocate for the topic to also provide recommendations, but also challenge the colleagues and organisations. It is about challenging ourselves to not repeat the same mistakes and to support the colleagues to learn from existing experience and the network and to point them in the right direction.”

Sector Leader

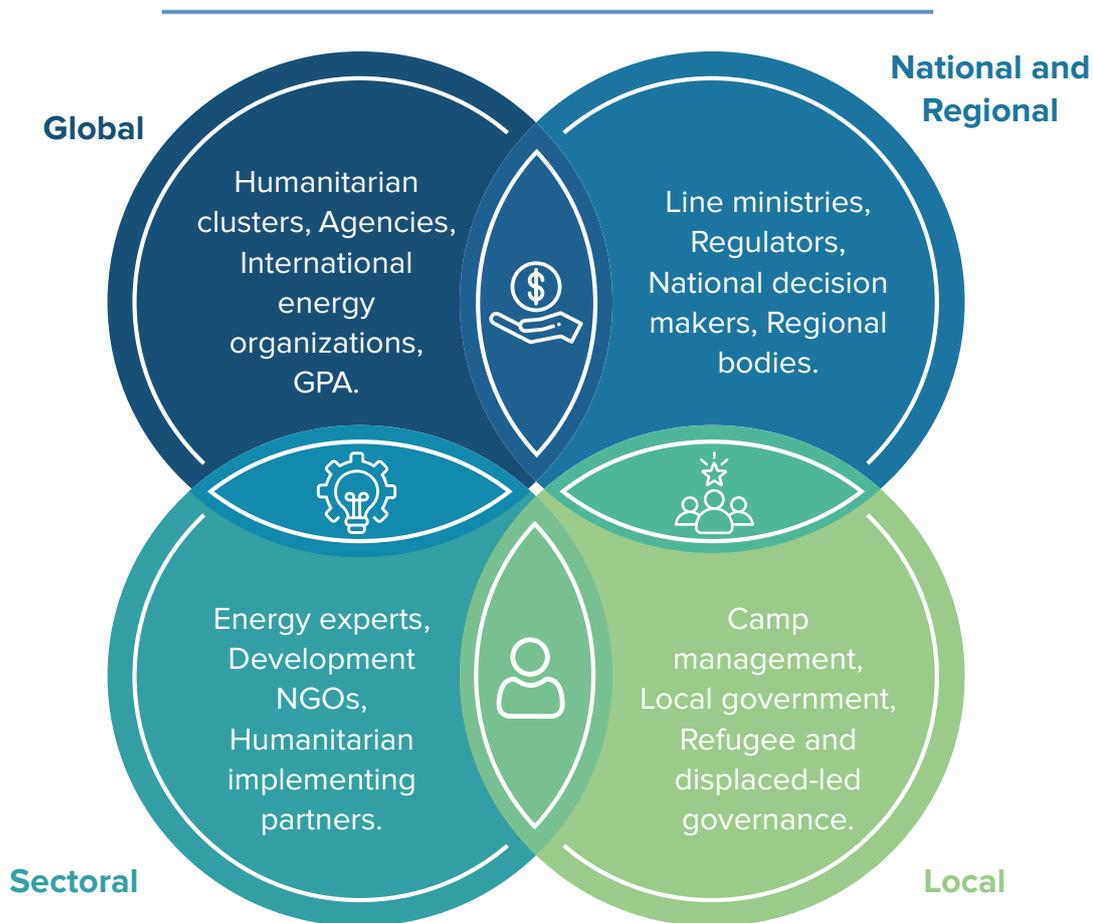


Figure: Governance Levels and Types of Institutions Present within the Humanitarian Energy Sector.

At the local level, camp management and local national government perform important coordination functions, particularly in more populous settings. The Camp Coordination and Camp Management cluster often plays a role here and in the local coordination of shelter, WASH, and health interventions connected to energy access needs. While the need for energy access is typically well understood by humanitarian staff in the field, awareness of energy programming options might be less evident. Energy is a cross-cutting need among the clusters and cannot be easily managed within existing local humanitarian structures. At the field level, resources (staff, tools and finance) will be required to make sure implementation is effective. Strong information

management systems are crucial to ensure that administrators and policymakers understand who is doing what, and where.¹⁰⁷

One example of local level action on coordination is the Humanitarian Energy Exchange Network (HEEN), which brings together actors from across the humanitarian and development nexus to support field-level practitioners working in-country on energy access. HEEN brings together actors previously under the Safe Access to Fuel and Energy (SAFE) Working Group, which was managed while it existed by different partners, such as the Clean Cooking Alliance, Practical Action, FAO, Mercy Corps, and WFP. One of the key achievements of the network has been to support field-level practitioners in coordination

Case Study: Local Governance and the Humanitarian Energy Exchange Network (HEEN)

The Humanitarian Energy Exchange Network (HEEN)¹⁰⁸ is the central platform for coordination and collaboration between humanitarian and development practitioners working on improving sustainable energy access of displacement-affected communities at the country or regional level. The HEEN supports a holistic approach to programming, and fosters inter-agency collaboration including joint assessments, evaluations, knowledge sharing, strategic planning, programme design, and project implementation.

The HEEN builds upon the previous structure of the SAFE Working Groups,¹⁰⁹ focusing on the practical and operational-level humanitarian energy programmes in countries that lack an existing coordination mechanism among the humanitarian and development agencies. In 2020, the Global Platform for Action on Sustainable Energy in Displacement Settings (GPA) and Safe Access to Fuel and Energy (SAFE) Humanitarian Working Group structures agreed to join forces to strengthen the link between global and field levels and improve knowledge and expertise sharing among practitioners. The HEEN was officially launched in April 2021. The network meets monthly, in which the practitioners exchange knowledge and expertise, synthesise lessons learned from experiences, express the need for support from the network, and explore opportunities for collaboration to develop sustainable energy programmes.

The monthly meetings of the HEEN follow an alternating structure: a coordination session in one, and a learning session in the next. The coordination sessions focus on updates from member organisations about their current and future projects and aim to build connections between members based on energy technology, delivery model or location. The learning sessions consist of presentations and deep-dive discussions on project implementation and case studies from member organisations and their partners, and aim to disseminate learnings to the wider sector. Membership of the HEEN is open to all relevant stakeholders contributing to energy access for displacement-affected communities. Interested organisations can apply to join the HEEN using an online form.¹¹⁰

activities at the national level, supporting learning both within humanitarian agencies and on technical energy issues.

At the national level, many stakeholders are involved in energy coordination, including: national governments, regulators, humanitarian agencies and NGOs. Sometimes a national energy working group for refugee needs exists, aimed at coordinating sustainable energy programming across refugee sites in the country. Examples are working groups in Bangladesh and Uganda. Rarely do these groups reach all those affected by displacement in the country, however. The focus of such groups is often on refugee communities, excluding IDPs or the energy needs of other

communities in displacement settings. In Bangladesh agencies such as UNHCR, IOM and WFP collaborate to co-develop energy solutions. In Uganda, GIZ has supported the Ugandan national government with the Sustainable Energy Response Plan (SERP) process to provide a four-year plan to develop energy solutions for refugees in line with national development plans.

Case Studies: National Governance, Local Energy and Environment Technical Working Groups

The following examples describe the national governance and humanitarian energy working groups in four countries as laid out in their commitments towards the Comprehensive Refugee Response Framework (CRRF) and within the remit of, or applicable to, energy and environmental programming.

Uganda

Uganda was one of the first countries to implement aspects of the CRRF.¹¹¹ Its progressive refugee policy model¹¹² has shaped the formulation of the New York Declaration¹¹³ and its own national CRRF and plans. Under the umbrella of the CRRF, the national Working Group on Energy and Environment (WorkGrEEen)¹¹⁴ coordinates the country-wide Energy and Environment response for refugees and host population empowerment (ReHoPE).¹¹⁵ The role of the WorkGrEEen is to ensure that all populations of concern receive timely, appropriate, effective, and sustainable support in line with SPHERE and Ugandan Government specific standards in the field of energy and environment.¹¹⁶

Bangladesh

In 2018, the Energy and Environment strategy under the Shelter and Non-Food Items Sector was devised to deal with clean cooking, environmental degradation and food security for populations affected by the refugee crisis in Bangladesh. The Energy and Environment Technical Working Group for the Rohingya Refugee Response developed this strategy in coordination with government and civil society stakeholders with the aim of meeting the immediate and short-term needs of both the host community and refugee population, while contributing to longer-term positive sustainability and development outcomes. The working group has been jointly coordinated by UNHCR, IOM, FAO and WFP, and remains a key forum to develop joint and coordinated strategies to meet the energy demands and needs of refugees and host community members in the Cox's Bazar region.¹¹⁷

Yemen

The United Nations Development Programme (UNDP) with partners (FAO, ILO, WFP) have supported the Enhanced Rural Resilience in Yemen Programme (ERRY II), financed by the EU and SIDA in six vulnerable governorates in Yemen. The ERRY II Joint Programme has applied a coordinated resilience-based approach to reducing vulnerabilities, and contributing to improved levels of community stability, resilience and self-reliance in target areas, improved local governance, and reduced competition over scarce resources, through the expansion of renewable solar energy.¹¹⁸ Energy resilience building includes results such as 44 public institution facilities (health, education and district offices) supported with solar systems, 399 women and youth being trained and certified in solar system installation and the establishment of 210 solar micro-enterprises¹¹⁹. Another recent achievement of ERRY II is a pilot project implemented by UNDP providing a mini-grid solar energy system that can support local communities.¹²⁰

Nigeria

The Food Security Cluster was established in 2011 to coordinate food security responses during humanitarian crises and bring together UN agencies, governments, donors, NGOs and implementing partners. It is co-led by FAO and WFP.¹²¹ In Nigeria, the Cluster is titled Food Security Sector and comprises

organisations like IOM, WFP, FAO, ICEED, and CARE International, and is hosted by FAO and WFP. FSS is actively working on meeting the needs of IDPs, returnees and host communities in Borno, Adamawa and Yobe states in North East Nigeria. FSS meets monthly to coordinate activities such as training delivery and cookstove distribution, and address common challenges like underfunding, limited availability of materials needed for fuel-efficient stoves, low technical capacity, and expertise on energy solutions. In 2021, as part of an exercise with the HEEN, FSS completed an assessment to understand the country's training and capacity needs. FSS is in the process of connecting with partners in Nigeria for capacity building.¹²²

At the sectoral level, the energy and humanitarian sectors are often disconnected as they have different industry bodies, governance and coordination structures. Energy sector bodies and industry member associations, such as the Alliance for Rural Electrification (ARE), the Global Off-Grid Lighting Association (GOGLA), and IRENA¹²³ are quite separate from the humanitarian system processes such as the Sphere Standards.¹²⁴ Further knowledge on energy in displacement settings comes from industry bodies, such as GOGLA, off-grid solar energy industry associations, and specialist energy organisations such as the Clean Cooking Alliance.¹²⁵

At the regional level, governance has been less systematic. Some organisations have invested

in regional coordination functions on energy to bring together institutional learning across national operations. WFP, as an example, have resourced their team in Nairobi to offer energy support across their East Africa operations.

At the global level, major energy sector organisations such as SEforALL, IASC, and OCHA act across the different humanitarian and energy spaces. Actors such as the World Bank and the ESMAP programme often work across these levels, focusing on the global and national governmental spaces. The GPA Steering Group brings relevant actors such as these together to support advocacy, research, skills building, and coordinated action across the sector. While the humanitarian sector was initially slow to respond to the issue of sustainable energy, some

Case Study: Regional Governance and WFP in East Africa

Access to energy remains a cross-cutting theme and informs many of the operations where WFP provides its life-saving assistance and contributes to the 'Energy for Food Security' dialogues and activities in the eastern Africa region.¹²⁷ Since 2009, WFP, through the SAFE initiative, has contributed to meeting the energy needs of displaced people worldwide, while protecting both the populations and the environments in which they live. The WFP's Climate and Disaster Risk Reduction Programmes Unit oversees the energy activities, which includes the Energy for Food Security and Energizing School Feeding programmes. The WFP's energy activities are implemented in 36 countries, with over 100 projects mostly focussing on reforestation and the diffusion of energy products.¹²⁸

For example, as part of WFP's Safe Access to Fuel and Energy (SAFE) programme, in 2020, WFP distributed 21,168 household fuel-efficient stoves in Burundi and 361 fuel-efficient stoves were installed in WFP-supported schools in Burundi and Rwanda.¹²⁹

progress can now be observed. The cluster system has recognised energy within its shelter, camp coordination, and WASH branches. A recent literature review paper by Thomas, et al¹²⁶ presents academic analysis of how sustainable energy and the clusters interact.

Sector and Cluster Leadership

The global humanitarian system supports people who face emergency and urgent needs, for example people displaced by war, famine, conflicts, natural disasters, and other complex global challenges. This system is characterised by a specific set of coordination functions, rules, partnerships and goals, which are coordinated through the humanitarian cluster system managed by the Inter-Agency Standing Committee (IASC)¹³⁰ and organisations like the Office for Coordination of Humanitarian Affairs (OCHA).

This system was first implemented in 2005 and is structured around 11 topics, including: camp coordination and camp management; early recovery; education; emergency telecommunications; food security; health, logistics; nutrition; protection; shelter; and water, sanitation and hygiene (WASH). This structure, among other reasons, makes it challenging for emerging or cross-cutting topics, such as access to clean energy, to receive recognition, support and funding. However, access to fuel and energy is critical to essential activities

such as cooking meals, heating shelters, cooling vaccines, charging mobile phones, and powering humanitarian operations.

Although the cluster approach is not used for the protection of, and provision of assistance to, refugees, which is delivered through UNHCR's Refugee Coordination Model, many of the challenges faced by humanitarian actors in providing energy access in non-refugee situations are mirrored in the refugee response.

There are currently no plans to create a formal IASC cluster for energy, and previous advice on creating an energy cluster suggested this would not be the most efficient way to deliver sustainable energy access for displaced people.¹³¹ As a result, the GPA was formed to offer a practical way for humanitarian and development organisations to coordinate on energy programming and to provide a cross-cutting exchange mechanism on sustainable energy issues.

Progress on Coordination Nexus Issues

More coordination is needed within the humanitarian energy sector. Analysis of the different types of leadership and coordination across the sector presents an interesting picture, and a number of coordination nexus issues have appeared, for example:

- Coordination between humanitarian and development actors: the emergency aid and energy access sectors have previously been siloed, with development actors often focusing

on market-based sustainable energy solutions to facilitate the long-term transition to clean energy for all, and the humanitarian community focused on emergency provision of lighting and basic cooking resources in the short-term. Coordination across this divide has often focused on building a shared understanding, bringing actors together to learn from each other, and developing a collective responsibility for achieving SDG 7 on sustainable energy and SDG 13 on climate action in displacement settings. Such coordination efforts have

included the Energypedia and GPA webinar series on humanitarian energy access, which supported knowledge and learning between humanitarian and energy actors considerably.¹³² Spaces such as the SEforALL Forum and the SDG 7 policy discussions have also facilitated space for policy and advocacy coordination.

- Coordination between humanitarian and implementing partners: within the humanitarian system a considerable amount of coordination between the different partners is also necessary. Where national working groups are present, they often have representation from NGOs, implementers and humanitarian agencies. The HEEN network is one example of practitioner support within the humanitarian sector, which works across the national and global levels to facilitate learning. At the strategic level, advocacy coordination between humanitarian and energy partners has been led by the GPA. To some extent the Clean Energy Challenge (CEC) offered such a coordination space for the energy needs of refugee communities during 2020 and 2021, under the remit of UNHCR.
- Coordination within the donor community: national donor governments such as Germany and Norway have invested in humanitarian energy programming in recent years. As the level of investment in the sector ramps up, coordination and strategic alignment between donors is becoming increasingly important. To support such coordination the GPA and UNHCR have been co-facilitating a donor exchange group under the CEC. The group brings together national donors from countries such as the Netherlands, Sweden and the UK, to exchange learning on humanitarian energy programming and strategies. Such exchanges have supported institutions like ECHO in developing new minimum environmental standards, including on sustainable energy, for their partners working in humanitarian settings.¹³³

Coordination between partners is often challenging. In some cases, donors emphasise an interest in implementing only emergency funding through traditional aid channels, whereas other donors take a more long-term approach. When such funding starts to be implemented, especially in the same refugee camp or location, programmes can start to compete or even conflict with one another. An example of that is the Moving Energy Initiative low-carbon projects¹³⁴ that explicitly worked to support local markets and refugee entrepreneurs, which were disrupted and negatively affected by the free distribution of solar lanterns by another donor in the same locations.

One of the key challenges highlighted in the introduction to this report was the lack of a formal coordination process for energy activities in the humanitarian system. Much effort is still needed to resolve this issue, however, within international action on sustainable energy for displaced communities, much progress has been made in recent years by the GPA network. Working collaboratively, breaking down institutional barriers and restrictive remits, GPA partners have driven forward the issue of humanitarian energy both at the advocacy and policy levels, and by supporting innovative programming directly within refugee and IDP situations. Collaborative partnerships between organisations like UNITAR, IOM, NORCAP, SELCO Foundation, GIZ, and Chatham House, have laid the foundation for successful technical assistance, delivery partnerships, and evidence-led decision-making. Collectively the GPA and partners have striven for a form of soft coordination across the sector, enabling partners to work together effectively while respecting institutional boundaries and remits. An example of such knowledge sharing has recently been realised through the GPA's support to DG ECHO in the development of their Environmental Guidelines.

Although progress has been made in the

sector, there is still much left to be done, within and beyond the humanitarian cluster system, where coordination on energy is needed. The diagram highlights how humanitarian energy sector leadership has evolved since 2018. New coordination mechanisms, such as the GPA with

its multi-sectoral approach to achieving SDG 7 goals and soft coordination, have shown the need to focus on scaling up and up-skilling agency technical expertise, knowledge sharing and resources.

DG ECHO and Environmental Guidelines

“What we’re trying to achieve is gradual systems change. [We’re not yet at] best practice, [but we encourage] good practice [by] aiming to bridge business as usual and the best practice.”

Donor policy lead.

As part of DG ECHO’s alignment with the principles of the European Green Deal, it has established an ambitious position on reducing the environmental impact of its humanitarian aid operations.¹³⁵

The DG ECHO minimum environmental requirements and recommendations state the necessity and commitment to reduce the environmental footprint of humanitarian aid guiding DG ECHO’s actions and its cooperation with partners.¹³⁶ Such impacts are said to be addressed at the organisational and the project levels to increase a ‘mainstreaming’ approach to mitigating environmental issues across all projects and programmes. The guiding environmental principles include sector areas, such as waste management, water management, energy, supply chain and material efficiency, biodiversity, natural habitat, land preservation and the localisation of resources.

The project-level minimum environmental requirements encourage partners to adapt and reassess their organisational policies relating to direct and indirect emissions. From the DG ECHO perspective, these minimum requirements will ensure that partners and implementers are aware of such standards, signalling to partners “which measures DG ECHO will be looking for in project proposals and project monitoring” and their “immediate potential to reduce the environmental

impact of humanitarian aid”. DG ECHO acknowledge that sustainable solutions may entail higher costs, and that interventions therefore should seek to include change mechanisms and different approaches to approach the problems. In case these have been exhausted, co-funding and further financial incentives will be provided to partners.

DG ECHO guidelines will also look at the environmental requirement from a multi-sectoral perspective. They acknowledge that food and shelter projects that also provide energy “would add costs to the programs, in terms of individual energy access” thus potentially causing a “hindrance”. To combat this, “partners can start applying for money in [sectoral] areas more systematically. The minimum requirements will therefore trial a 10% figure, where they encourage greening of operations, and [thus] they won’t ‘penalise partners for submitting more expensive projects’ that are in line with environmental priorities”.

“We need to stop funding fossil fuels in humanitarian programs to the furthestmost extent possible. And to start relying on renewable energy and cleaner energy as a transition fuel with a more long-term vision. Considering the way the EU is structured and in terms of humanitarian versus development funding, a vision worth striving towards is that development funding goes much more towards refugees and internally displaced persons, not just host communities, and it should be really about operationalising the nexus.”

Donor policy lead.

Lack of formal humanitarian energy sector coordination of cluster for energy

Implementation at Scale: 2018 onwards

- Consolidation of the sector.
- Working more through alternative delivery partnerships.
- Oversight and coordination, agencies up-skilling and more delegations, knowledge and resource initiatives, joint fundraising.



Critical need to reshape humanitarian response to support sustainable energy provision for displaced people



Technical assistance and implementation by expert partners.

Humanitarian Agencies supported.

Technical learning with implementing partners.

Delivery partnerships and innovative financing analysis.

Private sector collaborations.

Advice and knowledge sharing with donors.

Research produced, data analysis, and intellectual leadership.

Initiatives and academic research aligned.

Inclusive partnerships and collaborations.

State of Play before 2018

- Firewood distributed in most camps, CASH and cooking markets start emerge in some places, more solar home system and lantern sales, still diesel generation for operations, more solar street lighting.
- Enterprises and refugee-led action largely ignored.
- Lack of coordinated action.
- Donor-funded programmes without collaborative working.
- Little sector experience, new investment models or successful delivery models.



Coordination and facilitation role.

Since 2018: GPA coordinates sectoral activity. Multiple forms of partnership and collaboration, COVID-19 response and importance of energy for healthcare. Inclusive and progressive action for households and communities.



Global Platform for Action

Covering range of energy needs, multiple sector participants involved.

Figure: Evolving Humanitarian Energy Sector Leadership since 2018.

Donor Priorities and Coordination

“Another challenge for coordination is also to work with not only the humanitarian agencies but also the donor community. In certain respects, donors are also challenging to work with because they have their internal structures, needs and financing mechanisms to make sure the money is spent in a good way, to justify to the taxpayers and others. The donors have a very important role to play because they can make many of our recommendations happen. So it can also be challenging to coordinate all these different actors at these different levels.”

Sector Leader

Despite some progress, governance within humanitarian energy is still unclear. Roles and responsibilities remain mixed and research suggests that lines of accountability remain unclear within and between institutions. This picture is still evolving as innovative partnerships emerge, new forms of alternative leadership develop within the sector, and collective action delivers change at scale. Collaborative working within the sector is essential to deliver sustainable and long-term change. Individual actions and stand-alone programmes by agencies will not deliver change at scale. Still in 2022 there is no formal governance of the humanitarian energy sector. Platforms such as the GPA are driving forward change together with key partners, but more must be done within traditional humanitarian systems to recognise and prioritise the issue of energy for displaced people.

Issue Analysis: Collective Action and Alternative Leadership

Alternative Coordination and Collaboration in Humanitarian Energy

A number of coordination challenges face the humanitarian energy sector. Organisational constraints and formal remits are among the most commonly cited reasons for organisations struggling to support the coordination of sustainable humanitarian energy programming. Institutional inaction, compounded by national political or policy restrictions, lack of budgets or funding, limited technical staff or expertise, and implementation challenges, were all listed by the interviewees for this report as critical barriers for both coordination and implementation within the sector. This report outlines examples of these challenges and presents suggestions on how they may be overcome. Analysis for this report suggests there are a number of ways in which sector actors can reach out to partners (such as those listed in this section) to learn about

how such challenges have been tackled and understand the experience of other organisations in addressing such systemic challenges.

Financial limitations are cited as one of the key restrictions facing coordinated action in the sector. To some extent this is true, as little direct funding is available for global or regional coordination and organisational capacity on sustainable energy policy and programming. However, institutional and partnership challenges are a far greater issue facing the sector. Many of the partners interviewed for this report described how, despite successful fundraising for energy projects, institutional, political, and implementation challenges ultimately limited the success these programmes could have.

Challenges and Restrictions

Institutional restrictions: often the organisational remit can appear to prevent the development of certain programmes or addressing of certain issues, such as energy, for example when organisations focus on protection only.

Political restrictions: in some countries refugees are not able to move freely and do not have the right to work; in some circumstances refugees are considered migrants or formal support is limited. Political decision-making also affects the

Alternative Way of Working and Partnership Examples

- Reach out to partners to develop innovative partnerships which bring together different remits rather than stretching the scope of an organisation internally.
- This can be done, for example, by working with GPA partners and the GPA Steering Group.
- Political challenges can be particularly difficult to address and progress may take a long time. Partnering with national government agencies and regulatory bodies can support programme options, in line with the Global Compacts on Refugees and Migration.
- Include host communities and national energy providers in discussions from the outset and align with national coordination structures.

<p>type of energy programming that may be developed, for example sustainability or grid connection requirements.</p>	<ul style="list-style-type: none"> • Collaborate with national governments and support refugee and IDP advocacy. For example by working with partners such as the World Bank, SEforALL, and Chatham House, who have strong connections to existing national structures.
<p>Budget restrictions: a lack of funding for energy programmes and a lack of prioritisation of energy as an issue in country budgeting.</p>	<ul style="list-style-type: none"> • Agencies: Accept benchmarked funding directly for sustainable energy programming. Collaborate with implementing partners directly to raise funding. For example, the GIZ and UNHCR ESDS programme was able to raise considerable funding by working through GIZ and national government structures. • Donors: consider multi-year and long-term funding for sustainable energy access programmes. Increase the funding available for renewable and low-carbon projects. For example, the IKEA Foundation makes multi-year investments in renewable energy for refugee communities.
<p>Capacity restrictions: often staff time or internal capacity is limited, teams are exhausted or overworked, technical expertise is not present within the team or organisation, knowledge on energy is limited, or individuals don't know where to start on the complexity of energy issues.</p>	<ul style="list-style-type: none"> • Investing in capacity development is not easy, especially where funding is limited. However, partners such as NORCAP support capacity needs. The NORCAP energy roster can support agencies and partners with technical secondees to develop programmes and build internal capacity. • Where staff knowledge is an issue, the WFP and GPA Energy Delivery Models collaboration can offer training and programme development support. For learning, the EnergyPedia webinars and GPA resources provide a considerable amount of detail. Please also see the annex to this report for further resources.
<p>Implementation restrictions: delivering successful programmes can face so many challenges. For example, how to work with the private sector, procurement and installation rules, technology challenges, and delivery model considerations.</p>	<ul style="list-style-type: none"> • Develop flexible programming and understand national rules and regulations before starting a programme. • Learn from experienced energy project implementers on some of the pitfalls and lessons of previous programming. For example, the GPA facilitates learning sessions from implementers such as GIZ, EnDev, SNV, and Mercy Corps, who have led some of the largest humanitarian energy programmes in the world.

Table: Governance Challenges and Restrictions.

To overcome governance challenges, collective action on coordination offers many solutions. The 'protect and provide' model of traditional humanitarianism has many limitations, especially for sustainable energy supply. Moving beyond

the idea that humanitarian agencies can be expected to extensively deliver all solutions, several programmes have now demonstrated how innovative collaborations can deliver working through new forms of partnership.

For example, the GIZ and UNHCR collaborative Energy Supply in Displacement Settings (ESDS) programme has demonstrated a collaborative approach linking together agency actors (UNHCR), energy experts (GIZ), the national governments of Uganda, Ethiopia, and Kenya, and private-sector energy suppliers of renewable energy solutions.¹³⁷ Many lessons can be learned from this programme on the value of alternative partnerships and innovative delivery models such lessons are considered in detail in this report within Chapter five on delivery and Chapter eight on practical progress.

The case studies analysed for this report suggest a number of examples of how traditional remits and institutional challenges have been overcome, such as SEforALL's progressive work on the Powering Healthcare

initiative in responding to the COVID-19 crisis in humanitarian settings.¹³⁸ The Coventry University Humanitarian Engineering and Energy for Displacement programme also provides an example of an alternative partnership model between research actors and those in the practitioner community. The project showcases how academia (researchers at Coventry University), humanitarian agencies (such as UNHCR), NGO partners (Practical Action), and private-sector suppliers (such as MeshPower)¹³⁹ can partner together to deliver innovative programming. Such examples demonstrate how collective partnerships can deliver new ways of working and types of interventions that no single partner could deliver independently.

Coordination and Learning

“The power of donors is quite large, of course, we have the power of money, as it were, but at the same time, we also have a responsibility to make sure that we support our partners in the energy transition. So we have been quite conscious of whenever we ask for, whether it is environmental or energy-related programming. Firstly, we have to be ready to fund in one way or another or support the capacity-building aspect of such an ask. So we have a dedicated pot of money for support, innovation and capacity building in the sector.

“Now for the second year in a row, we will have a priority on greening, under this workstream, and we have received lots of different project proposals. Which we think will help move this sector forward, in terms of developing solutions, coordination and knowledge sharing and all that is needed, alongside also making experts available at our help desk to provide essential support. What we hope to leverage

is this power through our donor requirements. Through coordination with other donors, which the GPA is very much leading on from the energy side. We are also conducting our own informal coordination and formal discussions on greening more broadly, not just on the topic of energy. So donors are coming together around these issues and are increasing. There is a lot of power in that. Looking at it positively, organisations that can make the shift will be looked upon more favourably in the project evaluations. But at the same time, we cannot set requirements that inhibit the delivery of aid. That's been a very important discussion in the development of these requirements. It is also a balance, we would rather try to work with our partners collaboratively to see how they can adapt their projects and programmes to fit our new environmental requirements.”

Donor policy lead

Case Study: Working in Partnership – Researchers and Practitioners

From 2017 to 2021, Humanitarian Engineering and Energy for Displacement (HEED), an interdisciplinary team based at Coventry University in partnership with the international development charity Practical Action and social enterprise Scene Connect, have been working to develop innovative responses that improve energy services in displacement settings. The project worked with Congolese refugees in three camps in Rwanda (Gihembe, Kigeme, and Nyabiheke) and internally displaced people in Nepal to understand energy usage in refugee camps and IDP settlements.

HEED explored the potential of alternative energy ownership models using renewable technologies. The first stage of the project was to collect data existing energy provision and the energy needs and aspirations of refugees using sensors and surveys. This data included 1000 survey responses and sensor data from footfall monitors (Nepal), individual energy appliance monitors (Nepal) cookstoves (Kigeme in Rwanda), and solar mobile lanterns and communal lighting (Nyabiheke). In the second stage HEED delivered a series of design and end-user workshops, which offered individuals and community leaders the opportunity to develop energy protocols that respond and embed the lived experience in the displacement setting.

The final stage of the project was the piloting of community co-designed solar interventions. In Khalte, Nepal, seven advanced solar street lights were handed over to the community in December 2020. In Rwanda, HEED installed a standalone solar system for a community hall and 40 solar mobile lanterns in Nyabiheke; a PV-battery micro-grid for two nursery buildings and a playground in Kigeme; eight solar street lights and four advanced solar street lights in Gihembe. The interventions were handed over to Alight and World Vision in January 2021 but are still managed by the community leaders. Over half the people HEED employed over the project lifetime were displaced people: in Rwanda 34 refugees as security guards, enumerators (who collected survey data) and community mobilisers, and in Nepal, 11 internally displaced people as enumerators and community mobilisers.¹⁴⁰

A number of forms of alternative leadership have emerged within the humanitarian energy sector. Alternative here refers to a way of working that differs from traditional humanitarian structures. For example, a traditional structure in a humanitarian context would be that the cluster system or OCHA would coordinate action, UNHCR or the lead agency would conduct a needs assessment and develop interventions, implementing partners would implement, and local actors would supply energy products, services, or deliver intervention activities. This structure is often not supportive of sustainable energy activities for a number of reasons, notably, because the energy needs of displaced people go beyond the provision of simple energy

products such as cookstoves or solar lanterns.¹⁴¹ Instead, a number of alternative collaborations have developed to demonstrate how coordination can deliver sustainable long-term solutions. Analysis for this report demonstrated alternative leadership within:

- Local action and inclusive change: in many humanitarian situations, refugees and displaced people are leading action on energy independently of the humanitarian system.¹⁴²
- National coordination: while national coordination is often led by state governments, in the sector we often see NGOs and implementing partners providing core coordination and learning solutions.

- Global and sectoral coordination functions: traditional international humanitarian organisations have limited presence within humanitarian energy, while institutions such as UNITAR have demonstrated considerable leadership.

Driving Forward Collective Governance

Due to restrictive remits within some institutions, for many years no single organisation has been able to take on leadership and coordination across the humanitarian energy sector. Several initiatives such as Safe Access to Fuel and Energy (SAFE) run by the Clean Cooking Alliance, the Moving Energy Initiative (MEI), and the Smart Communities Coalition (SCC) have supported innovative work in humanitarian energy. However, until 2018, governance and leadership were to some extent unsystematic and unstructured.

The majority of initiatives have joined forces under the Global Platform of Action on Sustainable Energy in Displacement Situations (GPA), which since its creation in 2018 has been the leading institution and informal coordination mechanism for the sector. The UN Institute for Training and Research (UNITAR), which is well known and respected for its peacekeeping capacity-building portfolio or for general training for diplomatic personnel, alongside its other research and training activities, hosts the GPA. Many of the sector’s stakeholders reflected that this was a strategic choice, as the remits of other organisations could not cover the breadth and depth of the complex issues within the sector. For example, UNHCR is required to focus on the protection needs of refugees and would not have been able to host an initiative covering the energy needs of IDPs or other displaced people. Similarly, WFP is focused on food and would be unlikely to host an energy initiative focused beyond cooking and food-based energy needs. UNITAR was identified as a neutral and progressive institution, and most suitable to host

the GPA Coordination Unit. Many interviewees for this report have also remarked on how the remit of training and technical expertise within UNITAR has strengthened the content leadership and capacity-building activities of the GPA,¹⁴³ enabling the platform to achieve much more than was initially envisioned. Recently, the GPA has refocused its efforts towards international collaboration, policy action, research, and technical analysis to support coordinating efforts – further information is available in the GPA work plan, [online](#).

Competing Priorities and Secondary Needs

“The humanitarian agencies do not want to be seen as development agencies and we also hear from the donor community that they shouldn’t act as development agencies. There’s a lot of competition in the field between humanitarian and development organisations. Agencies struggle to include new topics, such as energy, climate, connectivity and digitalisation into their operations. In a way, this is understandable, because it is difficult to change these organisations. If an organisation is working to protect refugees that means providing the first level needs, such as water, shelter, and food. Then everything else for the humanitarian agencies is secondary. For many decades secondary needs have been education, livelihoods, and of course energy.”

Sector Leader

GPA: Foundations and Emergence

The GPA was founded by the leading stakeholders from the humanitarian and development sector, who joined forces in January 2018 to develop a global platform that would promote and foster actions that would equip all stakeholders with the necessary tools to mainstream sustainable energy into programming in displacement settings.¹⁴⁴ Given the complex nature of

humanitarian operations and the challenges of integrating sustainable energy solutions into the humanitarian programme cycle, there is a need for systemic actions to mobilise resources, build capacity, raise awareness, and use the opportunity for energy solutions to enhance positive impact in areas such as health, protection, food security, education, and WASH.

Reflections on the Creation of Coordination Functions within the Humanitarian Energy Sector

“I think one of the reasons why the GPA was created four years ago was that we saw a lot of small-scale projects in the field with little or no coordination, on a global basis. Back then none of the big agencies had a substantive commitment to a humanitarian climate strategy or something similar. That has definitely changed. We see a lot more interest in this topic of energy and climate in general. When we look back

ten years or even four years ago, the only body with a coordinating role was SAFE, and that was run by half a person at the Clean Cooking Alliance. It was never meant to be as holistic and large as the GPA. At the global level, the GPA is the central place for coordination now. There is no other coordination mechanism, neither in the energy space nor in the humanitarian space. So in that sense that is why the coordination mechanism was established. What’s missing now is a coordination mechanism in all relevant countries but also we still see progress.”

Sector Leader.

Current Structure and GPA Leadership

GPA’s Framework Document¹⁴⁵ was launched during the High-Level Political Forum on Sustainable Development in New York in July 2018. It addressed challenges that impede energy access in humanitarian settings, and thus provides a basis for a systemic, collaborative approach towards the delivery of its vision. The document was the result of extensive consultation among humanitarian and development organisations, private sector, governments, academia, and other stakeholders

involved in the provision of fuel and energy to displaced people. The framework document is structured around five challenges: Planning and Coordination; Policy, Advocacy and Host Community Resilience; Innovative Finance and Funding; Technical Expertise and Capacity Building; and Data, Evidence, Monitoring and Reporting.¹⁴⁶ To address these challenges, more than 60 recommendations were developed and outlined in the framework document. In addition, a supporting structure was suggested, which entered into force in October 2018, consisting of

the Steering Group, the Coordination Unit and Working Groups, in line with the five challenges.

- The GPA Steering Group consists of key organisations in the humanitarian and development sector, such as UN organisations and NGOs, who are providing strategic direction, advocacy and are leading on implementation activities. The joint activities of the Steering Group, which deliver the recommendations outlined in the GPA Framework Document, are captured in annual GPA Work Plans.
- The GPA Coordination Unit, housed at UNITAR, is the operational arm of the GPA and works on the day-to-day activities to implement the joint GPA Work Plan. The purpose of the Work Plan is to provide clear, coordinated, and measurable activities which are led by sector professionals to deliver real, lasting and progressive change to support humanitarian actors and the displaced people they serve.
- UNHCR founded, together with GPA members and in co-chairmanship with the GPA Coordination Unit, the Clean Energy Challenge (CEC) at the Global Refugee Forum in December 2019. The CEC is a tool

to advocate for the goals of the GPA and the UNHCR energy strategy and gain traction and support from additional partners, who were not part of the GPA movement before, such as UN Member States, private sector representatives and the donor community.

In 2021 a rebranding of the GPA was finalised to, among other things, distinguish the Framework Document from the wider support structure and to reflect on changes within the delivery model. The Steering Group decided to rebrand the group to the Global Platform for Action on Sustainable Energy in Displacement Settings and to use the abbreviation 'GPA' for the Platform, rather than for the Framework Document. The working groups were replaced by ad hoc task forces, to allow a more flexible and timebound way of working.

The GPA partners work together to practise collective governance for the sector. The monthly meetings of the Steering Group offer a space for all institutions to share programme updates and learning, while the donor coordination group enables funders to coordinate their actions. At the local level, the HEEN network facilitates practitioner developing and skill-building.

Driving the Issue Agenda

Forward

"I gradually see the sector movement from 2014, when we discussed how 'in a refugee camp when it gets dark, it stays dark' to where it is today. I can see that we have made considerable progress, and the GPA has been extremely instrumental in providing us with the necessary analytical work, and the advocacy needed to move in the right direction. But the job is not done. There is a lot more work that needs to be undertaken. There is a key capacity void that we still haven't solved, and there is still quite a difference between the short-term humanitarian aspects and the longer-term

development cooperation. We still lack a mechanism on how to work better together.

"So far, the GPA has been instrumental in putting this issue on the agenda. We have also gradually managed to include the GPA and humanitarian energy into the global agenda. That's a testament to the work of GPA. However, the work is not done and we still have to roll up our sleeves and do more. But we have achieved quite a lot over the years and we need to keep up the good work. I can see, increasingly, the number of donors is expanding. I would like to see other donors stepping up and coming into this space".

Senior Political Adviser.

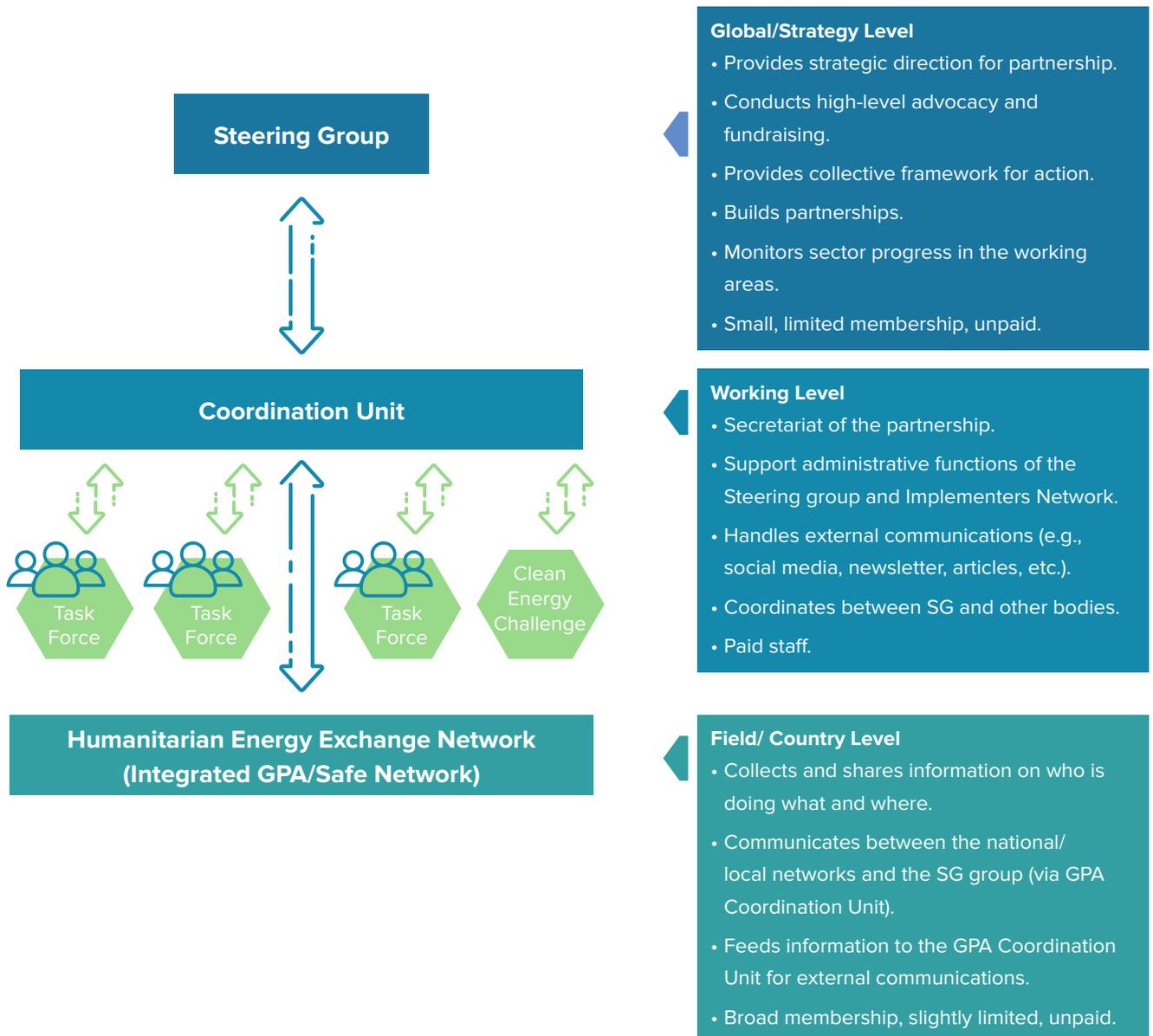


Figure: Structure of the GPA Coordination and Support Mechanisms.

Future: Investing in Global Governance and Local Coordination

Looking to the future, investing in global governance and local coordination mechanisms will be critical. This chapter has considered the challenges facing governance within energy in situations of forced migration, and demonstrated some of the progress being made. However, there is still much to do. Substantive investment and action are now required from donors and lead agencies. Financing coordination both at the global and local levels is required to drive the sector forward. To date, small pilot and implementation projects have had some success. Most progress, however, has been observed when national and local coordination functions have been supported by international actors and systemic change within the humanitarian system. To ensure long-term change for displaced people, programmatic change and effective governance must sit hand in hand.

Within international spaces, the humanitarian energy sector operates non-traditionally. Leadership and governance have often come from non-traditional actors, such as UNITAR, and much change has been driven bottom-up by NGOs and policy institutions such as Chatham House. Soft coordination and technical leadership have been critical elements of this progression. Moving forward, it is clear that collaborative coordination is essential in this non-conventional sector and that partnership will be a crucial element in meeting SDG 7 for displaced settings.

This report suggests a number of recommendations on governance and coordination within the humanitarian energy sector:

- **Dedicate Finance:** Donors must accept that part of their funding would be dedicated to

long-term coordination for the sector, ideally embedded in implementation programmes. Funders should provide multi-year, adaptable funding with resourcing for core coordination functions, and support local coordination mechanisms, such as national humanitarian energy working and coordination groups, which are essential for better programming. For example, by funding the GPA coordination mechanisms through to 2030, financing supporting national humanitarian energy coordination groups, and by investing in energy experts embedded within the cluster system.

- **Work in Partnership:** Agencies must develop and deliver programmes and investments using substantive co-design with partners and displaced people. No single actor or institution will be able to provide sustainable energy to all displaced people, therefore, working in partnership is vital. Alternative models of delivery and new ways of working can offer opportunities to develop truly sustainable programming for the long-term. For example, by reaching out to partners in the development, humanitarian, or energy sectors agencies can learn from successful delivery models.
- **Actively Coordinate and Share Learning:** Programmes must openly and publicly share knowledge, data, evidence and reflections from their programming. Agencies, implementing partners, and energy sector organisations must pursue active methods of coordination, for example, by working with the GPA Secretariat and Steering Group to support coordination and governance across the sector.

03

PROGRESS AND POLICIES: SUPPORTING SCALING SUSTAINABLE ENERGY ACCESS

Chapter contributing co-authors: Hajar Al-Kaddo at UNITAR GPA, Eva Mach at IOM, and Luc Severi at SEforALL.

UNDP Photo

State of Play: Global, National and Institutional Policies for Access in Displacement Settings

Policy Framing for Energy in Displacement Settings

There are a number of challenges with aligning policies on humanitarian energy.

Firstly: the lack of recognition of humanitarian energy within the Sustainable Development Goals and global frameworks. In 2015 the 2030 Development Agenda and the Sustainable Development Goals (SDGs) were adopted, including SDG 7 which calls on all actors to provide access to affordable, reliable, sustainable and modern energy for all. However, initially the energy needs of displaced people were not mentioned explicitly under SDG 7. Similarly, while all relevant global policy frameworks – including the Sustainable Development Goals,¹⁴⁷ Paris Climate Agreement,¹⁴⁸ Agenda for Humanity,¹⁴⁹ and Sendai Framework for Disaster Reduction¹⁵⁰ – have implications for displaced communities, many such agreements only marginally refer to energy access in displacement settings. Responding to the energy access challenge for displaced people requires recognition and commitment at the international and national levels in line with the commitment in Agenda 2030 to leave no one behind.¹⁵¹

Secondly, national host governmental challenges: Displaced people often fall outside national plans for energy access, thus missing a potential opportunity to access and combine development and humanitarian aid with investment towards sustainable development targets. Energy access for displaced people is challenging for many governments to prioritise and balance alongside the energy needs of non-displaced people. This is especially true in developing countries in remote locations where nationwide energy

availability and access remain an obstacle. In many countries, there is a lack of clarity over the process and legalities for implementing sustainable energy projects, especially in displacement settings. Host governments also regularly emphasise that the needs of displaced populations should not be prioritised above local and national ones, particularly where energy-access conditions are similar between the host and displaced communities.

Thirdly, humanitarian programming challenges: In spite of its relevance to enabling other humanitarian priorities, energy is still not widely integrated into humanitarian programming due to the lack of sectoral policies and dedicated resources. This means that opportunities to benefit from cross-sector efficiencies and sustainable solutions are missed. Incorporating energy in the wider effort to reduce the environmental footprint of the humanitarian sector is urgently needed when considering how humanitarian programming contributes to SDG 7.

Together these factors highlight the importance of clear national policies and international commitments to the energy needs of displaced people. Energy access for displaced people often receives less attention and, in many cases, is entirely overlooked during global, national and humanitarian planning and policy development.¹⁵² However when national plans and global frameworks take a progressive standpoint, there are more possibilities to include displaced populations in energy and environmental policies beyond the scope of refugee, IDP, or migrant-specific frameworks. An example of this can be observed in Jordan, where national government policies and strategies have embedded displaced populations

into national targets, generating higher levels of inclusion. Energy interventions have the power to create associated benefits for displaced people, which may also be experienced by local host communities. Having access to energy can create livelihood opportunities for micro-businesses like barbers, tailors, and food sellers by allowing them to operate tools of the trade. Acknowledging these types of positive outcomes, can support national and global policies in supporting the rights of refugees and local host community development.

To date, progress within the humanitarian sector is driven both by policies and practical delivery. In this section we outline the types of policies that are present within the sector: at the global, national and institutional levels. While there are some direct strategies on humanitarian energy, other national and international policies from within the humanitarian and energy sectors also provide guidance, rules, and targets for delivering sustainable access.

What is Policy?

Policies play a significant role in who acts, depending on need and priorities, the way in which governments and stakeholders act in terms of need, and what structures and governance mechanisms are used to fulfil these actions, priorities and targets.

- Public policies are anything that a government chooses to do or not to do when approaching a problem that affects society as a group.¹⁵³ Energy policies tend to be part of wider policies, for example those related to climate change and economic development.
- Energy-specific policy, or policy priorities associated with energy access for displaced populations, are still at an early stage, and are still not well defined within the humanitarian sector. Understanding policies is challenging, not only because they are usually wide ranging with different economic, social, technological and development goals and objectives, but usually because there is not a clear distinction between policy, strategy, policy tools and international frameworks that are usually accepted as policy.

- Within the humanitarian sector, policies are wide ranging and are based on humanitarian priorities and remits which sit at different levels: at the institutional, national and global levels of NGOs and UN agencies. For example, the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), as a global coordination mechanism, helps set the agenda for “humanitarian sector reform and effectiveness in response to a shifting global landscape, to new global frameworks, and increased capacities of national governments and local actors”,¹⁵⁴ therefore they are considered as policymakers within the humanitarian sector. Another example is policymaking within humanitarian agencies, such as IOM’s policy hub, which is designed to facilitate information flow within IOM. It has the core objective of drawing together and delivering policy knowledge internally across their organisation.¹⁵⁵
- This chapter will explore the different levels of policies available, the tools that have been used to fulfil global and national targets, such as the SDG 7 targets, and examples of national policies in hosting countries.

Policy Levels and Core Frameworks

There are several layers of energy policy within the context of displacement: at global, regional, national, and local levels. This picture is further complicated by humanitarian and energy sector

specific policies and frameworks.

Global-level policies can be broadly grouped into international agreements, humanitarian and migration management global policies, and frameworks.¹⁵⁶ For example, Sustainable

Policy Level

Global Policies and Frameworks

- Paris Agreement, Agenda for Humanity and New York Declaration for Refugees and Migrants.
- Sendai Agreement for Disaster Reduction.
- Global Compact for Refugees (GCR).
- Global Compact for Migration (GCM).
- Sustainable Development Goal (SDG) 7 on energy.
- SDG7 Tracking Framework Annual Progress Reports.
- UNHCR Global Report.
- IOM World Migration Report.
- WFP Annual Review.
- UNFCCC Climate Change Reports.

National and Regional Policies and Frameworks

- National Comprehensive Refugee Response Frameworks (NCRRF).
- Jordan Response Plan (JRP) and JREEF
- Jordan: national Comprehensive Refugee Response Framework (NCRRF).
- Ethiopia CRRF Road Map, Ethiopian Climate Resilient Green Economy Strategy (CRGE) and National Electrification Plan.
- Rwanda Energy Strategy.
- Uganda Sustainable Energy Response Plan (SERP).
- East African Centre for Renewable Energy and Energy Efficiency (EACREEE) advice documents.
- East African Community (EAC) and Energy Charter Treaty process.

Sectoral and Institutional Policies and Frameworks

- IOM Institutional Strategy on Migration Environment and Climate Change, 2021-2030 (MECC).
- IOM Environmental Sustainability Work Program (2021-2025).
- UNHCR Operation Strategy for Climate Resilience and Environmental Sustainability.
- WFP Environmental Policy.
- IASC and cluster strategies, eg: Shelter and WASH policies.
- Sphere Standards.
- GOGLA and energy industry association frameworks.
- ECHO Environmental Guidelines.

Humanitarian Energy Specific Strategies and Frameworks

- GPA Framework for Action (2018).
- UNHCR Global Strategy for Sustainable Energy (2019).
- UNHCR Strategic Framework for climate Action (2021).
- IOM Institutional Strategy on Migration, Environment and Climate Change (2022).
- WFP Energy and Food Strategy.
- UN Greening the Blue frameworks and guidance.
- Sectoral and NGO SAFE Strategies.
- NGO guidance and strategies, ICRC decarbonization strategy, Mercy Corps low-carbon strategy.

Example of Policies, Strategies, Guidance and Frameworks

Figure: Structure of the GPA Coordination and Support Mechanisms.

Development Goal (SDG) 7¹⁵⁷ on energy access, and UN climate change policies, negotiated within the United Nations Framework Convention on Climate Change and proposed by UN-Energy,¹⁵⁸ guide climate and low-carbon energy action.¹⁵⁹ Global humanitarian and migration policies include international frameworks, such as the Global Compact for Refugees (GCR) and the Global Compact for Migration (GCM).¹⁶⁰ Humanitarian and migration management specific policies and strategies include the Agenda for Humanity¹⁶¹ and the New York Declaration for Refugees and Migrants.¹⁶²

While global-level policies and frameworks guide international action and often reference sustainable development or climate action, they generally do not offer specific advice or provide direct guidance on how to deploy and increase access to clean energy in displacement settings. Rather, they provide important framing for the direction of the sector. Some of these frameworks, such as the GCR and GCM, are negotiated by Member States and have a considerable sign-up and authorisation process underpinning their commitments. Such policies have international, national, and sub-national drivers which are guided by international politics or global motivations, such as those on climate change.¹⁶³ International agreements and policies also include multilateral and bilateral agreements or treaties, agreements by intergovernmental organisations, and the exchange of ideas between nation states.¹⁶⁴

National and regional policies exist in different forms and are geographically specific. Firstly, there are national policies, such as development and energy policies, which are in line with national priorities and international targets or pledges. National energy policies are usually more complex and are connected to, and known to be a subset of, economic policy, foreign policy, and national and international security policy. National and regional policies tend to

include specific goals, such as ways to increase energy efficiency, respond to the provision of a variety of energy types (renewable energy, fossil fuel usage), and include climate and environmental priorities important to national energy development and progress. These policies can take many forms, such as the Rwanda Energy strategy,¹⁶⁵ Jordan's national Green Growth Plan,¹⁶⁶ or Ethiopia's national electrification plans.¹⁶⁷ The second set of relevant policies at the national level are refugee and IDP focused policies. These national policies or agreements can guide humanitarian response related energy activities. These policies help enable coordination and stakeholder engagement, and include specific laws with regard to camp settlements, refugee rights to work, and regulations pertaining to refugee and IDPs in the national context. Refugee and IDP focused policies can be considered as regulatory or rule-based policies. For example, the Jordan Response Plan¹⁶⁸ clearly outlines a course of action on energy in line with the hosting country's national priorities and needs, connecting also directly to humanitarian response in Jordan. These policies can offer legal or stakeholder guidance on how projects can, and often must, be conducted within a national or regional context. Uganda provides a progressive example of national energy policy inclusive of the energy needs of displaced people.

Sectoral and institutional policies are often humanitarian and migration management focused policies, frameworks, and policy tools within the humanitarian system or led by humanitarian agencies.¹⁶⁹ Examples of this type of policy include the sustainability strategies specific to UN agencies such as UNHCR's global greening strategy, IOM's Institutional Strategy¹⁷⁰ on Migration, Environment and Climate Change,¹⁷¹ and the Climate and Environment Charter for Humanitarian Organizations.¹⁷² Some of these policies set measurable targets for progress.

National Policy Example: Integrated National Planning in Uganda

Uganda applies an integrated approach, where refugees are included in the National Planning Frameworks and National Statistics.¹⁸⁹ Progressive approaches to refugee hosting often support displaced communities to live in settlements, rather than camps. Many settlement approaches are also supported by relevant laws and promote a response which integrates humanitarian and development approaches in addressing the immediate and longer-term needs of both host communities and refugees more sustainably.

Uganda operates such an approach in line with the Global Compact on Refugees and the Comprehensive Refugee Response Framework (CRRF).¹⁹⁰ Uganda has designed the Refugee and Host Population empowerment (ReHoPE) strategic framework¹⁹¹ to ensure more harmonised and effective programming between stakeholders to help achieve national, host, and refugee plans, ensuring a more integrated approach to programming for both humanitarian and development needs. The use of the ReHoPE framework helps deliver protection, social and economic development for programming in line with the CRRF for refugees and displaced populations.

Uganda's CRRF critically embeds several energy-related objectives, such as devising standards for briquettes and charcoal, which are issued and shared with all CRRF stakeholders. Uganda has set in motion various other integrated objectives, such as developing a household Energy Guidance Note for sustainable access to energy interventions in refugee-hosting districts and establishing quality standards for cooking stoves. There are plans to conduct an institutional Energy Needs Assessment in displacement contexts across Uganda, and access energy studies to determine and inform future national energy activities.

These texts often discuss energy and sustainable access in depth, and cover issues such as climate adaptation, environmental action, and financial sustainability. In some cases sectoral tools also offer routes to develop policy planning, such as, SEforALL's Integrated Planning Tool (IEPT)¹⁷³ and WRI's Energy Access Explorer.¹⁷⁴

Humanitarian energy-specific policies are still in the early phases of production, although there have been good examples of toolkits, policy instruments and strategies to date. Examples of such successful instruments include the GPA (2018) Framework for Action,¹⁷⁵ which states the agreed policy recommendations for the sector, and the UNHCR (2019) Global Strategy for Sustainable Energy,¹⁷⁶ which outlines UNHCR's views on the need for clean energy and high-level ways to support a clean energy transition. These types of policies usually focus on practical guidance or raising ambition levels. Often they

are not legally binding, but rather seek to support actors or institutions in delivering sustainable energy access. In some cases, documents set targets or measurable aims, such as those put forward by UNHCR to advocate that "refugees have access to at least 200 [watt-hours] Wh per household per day, allowing for basic lighting and connectivity".¹⁷⁷

Within these policies and strategies, several nexus issues compete for attention. Environmental action, climate mitigation and adaptation, sustainability, protection and supply of humanitarian solutions, long-term provision of services, systemic reform of the humanitarian sector, self-reliance and livelihoods, all intersect with energy needs in discrete ways. Different themes guide different policies and often result in specific framings of the energy issue. For example, where a climate action framing is used within policy documents, strong policies on

renewable and sustainable energy are proposed. One such policy is the UNHCR (2021) Strategic Framework for Climate Action, which states that:

- “Refugees and host communities have sufficient access to safe, sustainable energy to cook three daily meals.
- Refugees have access to 200 Wh/household/day, allowing for basic lighting and connectivity.
- Energy-efficient technologies and renewable energy are used to meet the electricity needs of communities: centralized water supplies, street lighting, educational and health facilities and humanitarian support facilities such as offices and staff accommodation”.¹⁷⁸

Other actors might frame action on energy within broader policy objectives. For example, IOM’s (2021) Institutional Strategy on Migration, Environment and Climate Change (MECC) 2021 to 2030, states: “We develop solutions for people on the move: assisting and protecting migrants and displaced persons in the context of climate change, environmental degradation, and disasters due to natural hazards” (IOM 2021, p17).¹⁷⁹ Such policies tend to embed dedicated action on sustainable energy within their project-based programming. For example, IOM’s policy commitments have supported their work as one of the leading agencies driving forward energy assessment and data work.¹⁸⁰

Many humanitarian organisations align their policies directly with SDG 7 on the provision of affordable, reliable and clean energy. In their Strategic Plan for 2022 to 2025, WFP commit to “turning the tide against hunger” and providing “affordable and clean energy for preparing and storing food properly” (WFP 2021 p16).¹⁸¹ Global-level commitments can be reinforced by dedicated institutional strategies on energy. WFP’s (2019) Energy for Food Security policy provides a good example of this, acknowledging that “energy is vital in every situation: within humanitarian settings and in vulnerable areas

to enable improved livelihoods, preventing shocks and building resilience. Access to energy is a necessary condition for development and underpins the achievement of two-thirds of the other SDGs including equality, peace, prosperity and gender” and notes that 53 countries have identified energy access issues, and that 36 countries and over 100 projects are working on mitigating energy issues (WFP 2019, p2 and p4).¹⁸²

Humanitarian energy-specific policies seek to bring these issues and framings together to understand the systematic action needed. The GPA Framework for Action offers one such strategic document. The framework outlines the collective vision of the humanitarian sector to provide “safe access to affordable, reliable, sustainable, and modern energy services for all displaced people by 2030” (GPA 2018, p7).¹⁸³

Under the leadership of Secretary-General António Guterres, the UN’s Chief Executives Board for Coordination endorsed the first ever Strategy for Sustainability Management in the United Nations system. Phase I was approved in 2019 and Phase II in 2021, both cover the years 2020–2030.¹⁸⁴ Building on previous commitments made from 2007 and the work done through the UN Greening the Blue initiative,¹⁸⁵ The Strategy for Sustainability Management in the United Nations System 2020–2030 provides a global internal policy framework for all UN entities to guide the transition towards greater environmental sustainability, in facility and operations management as well as programming. In line with its vision for the UN to become a “leader in integrating environmental and social sustainability considerations across its work in a systematic and coherent way, practising the principles that it promotes and leaving a positive legacy”, UN agencies are working on translating the sustainability commitments into agency-specific strategies and strategic frameworks. Among the key environmental areas, the

The GPA Framework

The GPA Framework for Action provides a set of non-binding recommendations on sustainable energy in displacement settings for humanitarian, development organisations and all relevant groups, in line with SDG 7 targets. The Framework is intended to align with the New York Declaration for Refugees and Migrants, the Agenda for Humanity, and other international initiatives such as the Paris Agreement, to strengthen and coordinate energy access in situations of displacement. It covers the energy needs of households, businesses, community facilities and

operations. The GPA Framework in 2018 outlined five major challenges and core areas for energy progress. These are: energy not being a formal priority in humanitarian operations; the absence of displaced populations in national and international energy access agendas; the underfunding of energy in displacement settings; limited expertise and capacity to implement humanitarian energy solutions; and limited data (as well as lack of data sharing) on humanitarian energy needs.¹⁹²

commitments made to reduce greenhouse gas emissions and air pollution are directly related to the energy transition and clean energy deployment both in facilities and programming. Such policies provide examples of the types of political and institutional action currently supporting the humanitarian energy sector.

Bridging the Humanitarian and Development Nexus

Fragile contexts, including situations of displacement, often exist at the 'triple nexus' of humanitarian, development and peacebuilding activities.¹⁸⁶ They are marked by resource scarcity and energy poverty with 86% of the global population without access to electricity living in fragile contexts. Such settings are treated with emergency response tactics. Due to short funding cycles, humanitarian and peacekeeping operations often rely on diesel generators for power, contradicting global commitments and sustainability targets, including the UN system-wide strategies to reduce operational greenhouse gas emissions. The provision of affordable, reliable, clean energy for displacement-affected people has yet to be made a formal priority within the humanitarian system.

Sustainable energy can act as a successful bridge between humanitarian, development and peacebuilding activities. Policymakers

and humanitarian actors should transition to renewable energy generation for humanitarian and peacekeeping operations, reducing energy costs, emissions, and security issues posed by fossil fuel reliance. Implementing cleaner, more reliable, longer-term solutions will help alleviate resource conflicts and provide a new foundation for peacebuilding. Policymakers would greatly benefit from ensuring the congruence of their socio-economic and climate commitments and activities at the triple nexus and use sustainable energy as a means to create synergies between them.

A triple nexus approach offers widespread benefits if realised through policy recognition, intersectoral coordination and multi-year planning. New ways of working that call on humanitarian and development actors to work collaboratively towards collective outcomes that reduce need, risk and vulnerability are necessary to integrate environmental considerations within wider humanitarian, development and peacebuilding programmes. Several nexus issues are present within the SDG framework and the 2030 Sustainable Development Agenda. For example, SDG 7 on energy interacts with SDG 1 on poverty, SDG 5 on gender and equality, SDG 6 on clean water, and SDG 10 on reducing inequalities.

Several interviewees commented on the challenges of implementing SDG-related activities within humanitarian spaces. Many humanitarians see the SDGs as development-focused goals that do not necessarily apply in emergencies.

There are three prerequisites needed to bridge the humanitarian – development nexus in order to scale-up clean energy transition in the humanitarian sector.¹⁸⁷

- Firstly, there is a need for an innovative mechanism for applying sustainable energy solutions for stabilisation, resilience building and crisis recovery in the context of internally displaced people, returnees, refugees and host communities. Policies, regulatory frameworks and technology deployment that address the changing stages of crisis are needed, as well as those that explore new approaches to address underlying causes of crisis and/or civil strife to prevent relapse in crisis-prone regions.

- Secondly, there is a need for stronger integration of long-term sustainable energy policies that incorporate resilience building and recovery, risk reduction and preparedness systems, to allow a continuum from humanitarian to development trajectory. The aim is to address the long-term sustainable energy needs to prepare countries before a crisis happens, during a crisis and after the onset of a crisis.¹⁸⁸ This is needed in all kinds of crisis, including large-scale climate-induced crises, protracted human conflicts, and natural shocks including hurricanes, earthquakes, floods and droughts. Additionally, clean energy actions to strengthen coping mechanisms, including to improve adaptation to climate change, address cross-border and internal civil threats and deal with fragility factors, are a crucial point for integration.
- Thirdly, sustainable energy, climate and disaster risk reduction challenges must be acted upon together and must be integral

The Humanitarian - Development Nexus or Divide

“Humanitarian agencies operate according to the humanitarian principles.¹⁹³ So, humanitarian agencies do not necessarily need to work with the government. While development organisations always have to work with governments when we are providing long-term development cooperation.

When I follow the Security Council, I hear my humanitarian colleagues are always harping on about these humanitarian principles. I fully respect that point of view, but with [energy] we have a different set of factors to deal with.

“When you look at providing energy services to people that’s a long-term [solution]. It’s becoming easier these days, [as] we have developed access to

solar technology [and] you can install solar solutions in a few months [in development settings]. But you need time to develop the necessary transmission system and distribution system, it’s a long-term task where we don’t see immediate results in one year. There used to be a difference in timescales in development compared to humanitarian.

“We also need to look at the institutional system, the policy framework, and what is acceptable. Due to technological changes, now we can provide quick access to energy services and have centralised systems. It is important to see how we can provide long-term support – by developing the electricity system in countries that [have] refugee camps. How to use systems being developed in refugee camps to serve neighbouring communities, to connect host communities.”

Senior Political Adviser.

parts of sustainable development planning and budgeting which require leadership, partnerships, advocacy, technical guidance on the operationalisation of holistic stabilisation, resilience building and recovery frameworks for countries affected by protracted crises.

UN political bodies and organisations can further support bringing together policy discussions on energy access and climate change, and can create links across humanitarian and

development spaces. For example, UN-Energy can support the development of a clean energy transition in humanitarian settings by sharing knowledge from the development sphere on how energy access is achieved in national and international development processes.

UN-Energy: Learning from the Development Sphere

UN-Energy was founded to lead the energy access and clean energy transition for development partners, supported by senior leadership from UNDP and SEforALL. It states its vision as follows:

“To accelerate the achievement of the 2030 Agenda for Sustainable Development and the Paris Agreement, countries increasingly adopt sustainable energy solutions, embarking on an energy transition by creating the enabling conditions that catalyse public and private investment to scale-up action on energy access, renewable energy and energy efficiency. By making their energy sectors more sustainable, their economies can follow a more

equitable growth path, contributing to poverty eradication while combating climate change and increasing their resilience.

“Specifically, UN-Energy aims to:

- Promote coherence in the UN system’s multidisciplinary response to achieve SDG 7 in support of the 2030 Agenda and the Paris Agreement;
- Enhance coordination and collaborative actions within the United Nations with regards to policy development, implementation and knowledge sharing in the area of energy”.¹⁹⁴

Progress: Changing the Policy Status Quo and Understanding Progress on Clean Energy

Overall Policy Progress

Considerable progress has been made within the humanitarian energy sector, in terms of policy development, practical programming, and technological change. As this chapter outlines, progressive policies, national government action, and institutional commitments to supply sustainable energy for displaced people and humanitarian infrastructure serving vulnerable people have been key in driving this change forward. Agencies such as UNHCR, IOM, and WFP have developed core energy strategies for their work, while NGO partners have created practical guidance to deliver sustainable energy solutions. Global actors such as the GPA and SEforALL have driven forward global policy discussions and embedded the issue of humanitarian energy within both development and humanitarian policy agendas.

Since 2018, the sector has undergone substantive changes on a number of fronts. Planning and coordination of energy policy

activities in contexts of forced displacement have been supported by organisations such as UNITAR, while many agencies now have their own dedicated sustainable energy strategies. Innovative financing and funding solutions have been trialled in some locations and technical expertise has been supported. Data and evidence work has also developed and demonstrated the value of quantitative information within humanitarian decision-making spaces. One key change within the sector is that sustainable energy has developed to include both the mainstreaming of energy activities within existing policy frameworks, and dedicated programmatic action.

In 2018, the GPA Framework outlined policy recommendations on topics such as coordination, advocacy, finance, capacity building, and data.¹⁹⁵ In just four years, considerable progress has been made on these topics – with new dedicated and funded action taking place across a range of partners.

Topic	Policy Recommendation	Example of Progress
Planning and Coordination	Systematically consider the clean energy transition and sustainable energy access within the humanitarian system.	<ul style="list-style-type: none"> • GPA formed as a policy, research and advocacy network in 2018 to coordinate advocacy efforts and define a common framework to advance clean energy deployment in displacement settings. • UNHCR annual reporting now includes energy and UNHCR developed a Global Strategy for Sustainable Energy in 2019. • IOM Institutional Strategy on Migration, Environment and Climate Change and IOM Environmental Sustainability Work Program (2021–2025) consider sustainable energy use. • WFP Energy for Food Strategy 2019 considers sustainable energy.

		<ul style="list-style-type: none"> • UN-Energy is drawing attention to left behind communities and the need for progress for all. • NORCAP and development and humanitarian NGOs have supported planning and coordination across the sector.
Planning and Coordination	<p>Foster ‘bottom-up’ collaborations and engagement on energy and environment interventions between displaced people, host community members, local experts and energy product and service providers.</p>	<ul style="list-style-type: none"> • Humanitarian Energy Exchange Network funded as the central platform for coordination and collaboration between humanitarian and development practitioners working on improving sustainable energy access of displacement-affected communities at the country and regional levels. • Ashden Awards and Humanitarian Grand Challenges support prizes for local community and sustainable energy businesses who deliver local change.
	<p>Systematically integrate energy activities into other humanitarian assistance.</p>	<ul style="list-style-type: none"> • GPA supports humanitarian clusters aligning on energy and learning about sustainable energy solutions. • Dedicated water, sanitation and hygiene and COVID-19 recovery energy work developed by partners such as SEforALL, GPA, and IOM.
Policy, Advocacy and Host-Country Resilience	<p>Bring displaced people into the global policy framework, including SDG 7 agenda and High-Level Dialogue on Energy, with a clear link to the response and resilience agenda.</p>	<ul style="list-style-type: none"> • SDG 7 tracking framework included energy for the first time in 2017. • World Bank Multi-Tier Framework for measuring energy access is developed for application in displacement settings. • High-Level Dialogue on Energy’s global road map integrated displaced communities. • UN processes and UN-Energy events recognise energy for forced displacement within their events and processes.
	<p>Encourage and support the design and implementation of response and resilience plans, including attention to energy priorities and energy linkages with other priorities such as housing, water supply, environment, food security and health.</p>	<ul style="list-style-type: none"> • GPA provides policy and advocacy support for humanitarian national working groups, such as the Local Energy and Environment Technical Working Groups and national response alignment processes in Bangladesh, Uganda, Mauritania, and Djibouti. • Policy support also builds alignment on sustainable energy through programming support, such as the Energy Delivery Models training developed by WFP and GPA.¹⁹⁶

	<p>Foster national-level dialogue to enable successful sustainable energy-access interventions at the country level.</p>	<ul style="list-style-type: none"> • UNHCR supports national-level energy technical working groups and policies supported in Bangladesh, Nigeria, Kenya, and Uganda through the Sustainable Energy Response Plan. • World Bank ESMAP national-level discussions include energy for displaced people.
	<p>Provide examples of how clean energy investment and self-reliance create a virtuous circle of beneficial change.</p>	<ul style="list-style-type: none"> • Chatham House analyses fuel costs, market-based models, programming in Kenya, Burkina Faso, and Jordan linked to self-reliance. • Investment on research and technical advice on clean energy for displaced contexts. For example, the Humanitarian Engineering and Energy for Displacement programme at Coventry University and the UK Modern Energy Cooking Services programme at Loughborough University. • Dedicated research on energy in micro-enterprises in displacement settings by EnDev and University of Bristol.
<p>Innovative Finance</p>	<p>Conduct further data mapping and research on the different types of projects or parts of the value chain that require financing, the instruments that would be best suited to each, and how they can be developed through discussions with different stakeholders.</p>	<ul style="list-style-type: none"> • Development of dedicated programmes, data and research, such as: the EnDev results-based financing and market-based financing innovative programmes (e.g. Smart Communities Coalition Innovation fund projects, the Practical Action market-based solar home system investment in Rwanda, and Mercy Corps market-based programming in Uganda). • Dedicated GPA-NORCAP innovative work on blended financing. • IOM NORCAP-funded work on energy data and innovative financing. • UNHCR Green Fund due to start implementing activities from 2022 onwards. • WFP energy for schools programme.
	<p>Hold discussions with donors to identify potential sources of funding to test out new financing instruments, with an emphasis on coordinating investment approaches and exploring more</p>	<ul style="list-style-type: none"> • GPA donor group convened quarterly to share lessons on financing instruments, funding mechanisms, and priority investment ideas. • GPA and UNHCR Clean Energy Challenge matchmaking and advocacy process.

	<p>innovative financing options.</p>	<ul style="list-style-type: none"> • UK FCDO Transforming Energy Access programming to fund future leave no one behind window on innovative financing and grassroots action in humanitarian energy.
	<p>Design a financing facility or financial instruments that could be used to support energy investments in displacement settings.</p>	<ul style="list-style-type: none"> • GPA-NORCAP innovative financing, blended finance work, and contracting mechanisms analysis. • UNHCR Green Fund launched in 2021. • IOM’s energy supply agreement¹⁹⁷ and Peace Renewable Energy Credit (P-REC) agreement¹⁹⁸ supported by Energy Peace Partners.¹⁹⁹ • Sweden’s Development Agency has been supporting greening operations and productive use development in displacement settings.
<p>Technical Expertise, Capacity Building and Training</p>	<p>Build in-house capacity of staff at the field and international levels to plan for multi-year interventions and energy strategies and to implement projects.</p>	<ul style="list-style-type: none"> • NORCAP leading funding for in-house secondments for humanitarian and development partners to establish skills and capacity on energy for displacement specialists, or example by funding staff positions within IOM and UNHCR: 26 NORCAP secondees currently deployed. • GPA support on in-house capacity-building activities. For example, supporting agency field colleagues in programme design and learning on data.
	<p>Develop tailored training packages according to stakeholders’ capacity needs.</p>	<ul style="list-style-type: none"> • WFP and GPA development of the Energy Delivery Models training, funded by the Modern Energy Cooking Services programme.
	<p>Create or adopt a common repository to exchange knowledge, discuss issues and receive support from peers and experts</p>	<ul style="list-style-type: none"> • Energypedia GPA collaboration to develop humanitarian energy webinars, online resources, and knowledge repository.²⁰⁰ • GPA website and resources developed, including LinkedIn Practitioners’ Group and Twitter space. • Online Zotero academic research library on humanitarian energy established for academic research specialists.

Data, Evidence, Monitoring and Reporting	<p>Integrate energy indicators into planning and assessment tools for the humanitarian sector.</p>	<ul style="list-style-type: none"> • IOM developed dedicated data work, including country deep-dive assessments in Mozambique and Nigeria, an energy toolkit, and embedding energy indicators within the global IOM Displacement Tracking Matrix. • UNHCR scoping exercise for energy indicators and alignment with UNHCR reporting processes. • GPA hosted dedicated data workshops to support integration of energy indicators within institutional processes. • ESMAP Multi-tier Framework (MTF) survey adapted to include displaced situations. Potential roll-out in some national contexts from 2022 onwards.
	<p>Harmonise and standardise the types and forms of data collected to enable comparison and to facilitate effective monitoring and evaluation.</p>	<ul style="list-style-type: none"> • GPA developed an indicator mapping report to support standardisation and harmonisation of data across the sector.²⁰¹ • NORCAP investment for UNHCR energy data assessment methodology. • GPA developed a data sharing platform (BI Tool) to facilitate sharing of project and national information on humanitarian energy programming. 16 organisations have shared data.²⁰² • Chatham House and GPA collaborating to develop modelling and analysis to support effective monitoring of global progress.
	<p>Design and deliver holistic monitoring, evaluation and learning tools for humanitarian energy programmes, with ways to share data and best practices between the humanitarian, development and private sectors.</p>	<ul style="list-style-type: none"> • Chatham House hosted dedicated ‘learning from failures’ workshops on clean cooking and mini-grid interventions in displacement settings. • GPA and Energypedia support learning webinars and best practice sharing between practitioners. • International Lifeline Fund produced a guide for practitioners on learning and programme development.

Table: Demonstrating Practical Progress from the GPA Framework for Action.

Global Policy Progress

In recent years the importance of advocacy for energy in forced displacement settings has emerged at both the national and global levels. Change within traditional humanitarian systems can be slow and challenging. To date, many agencies have not prioritised sustainable energy access. International actors can help to facilitate change at the global level through policy discussions and planning processes, raising energy access and decarbonisation of UN operations to the top of the political agenda. This occurs in a number of ways currently.

Firstly, through participation in global events and policy-making discussions: SEforALL's policy support²⁰³ and Chatham House's hosting of discussion events on humanitarian energy

issues²⁰⁴ are clear examples of such action. Secondly, through knowledge sharing and expertise building: for example, through the GPA Steering Group processes and events such as those hosted by Energypedia. Thirdly, through the development of key research and data, which provides evidence on current situations, what works, and what does not work in humanitarian energy settings. The research work on clean cooking by Loughborough University²⁰⁵ is an example of this, as are the outcomes of the Humanitarian Engineering and Energy for Displacement (HEED) programme.²⁰⁶

Progress has been particularly rapid in the global policy space. Several interviewees for this report have outlined the importance of policy leadership within the sector.

Global Policy Leadership on Humanitarian Energy Issues

"At the global level, there is more of an advocacy focus and there needs to be more leadership. There are platforms, like the GPA, but above them there are big speeches, big segments like the Global Refugee Forum and the Clean Energy Challenge. These matter, as they show leadership and a willingness to tackle such a difficult subject.

"We also need better advocacy statements that indicate our progress. Such statements should help us monitor and show we are reaching a specific

percentage of how many displaced people have energy access. Because, currently we are not making progress. So, we need to track progress in a similar way as the SDG 7 tracking is happening in the SDG 7 tracking reports. This is why we need to invest in policy and capturing data and knowing what the energy status is at any point in time, or at least regular points in time, so that we can track this progress. Currently, the only reliable number we have is the number of refugees worldwide and that goes up every year."

Senior Political Adviser.

The Clean Energy Challenge

The Clean Energy Challenge (CEC)²⁰⁷ is a multi-stakeholder effort to collectively address energy challenges and help deliver a high-energy, low-carbon future for displaced populations by 2030. Led by UNHCR and the GPA Secretariat, it aligns the humanitarian community with Climate Action and the UN's efforts in Greening the Blue.²⁰⁸ The campaign builds on host government recommendations to support inclusive national and development planning for refugees, IDPs, and host communities and the creation of a favourable environment for investments for the private sector.²⁰⁹

The CEC is a platform to show innovative approaches to transition from grant-based to sustainable market-based energy models, engaging the private sector to develop local market capacities. It creates a space for sharing data and best

practices between the humanitarian, development and private sectors. It welcomes innovative energy solutions, advanced finance mechanisms and increased collaboration among stakeholders in the humanitarian energy community. More than 250 personnel have joined the challenge from various organisations including private companies, international and national NGOs, research institutes, UN agencies, donor and philanthropic organisations. In 2020, the CEC Secretariat along with partners and host governments organised several key events, such as action group meetings, member states briefing, and marketplace meetings to help match-make the demand of energy needs and emerging projects from implementing partners to the supply of resources existing in the action group, especially in light of the COVID-19 pandemic.²¹⁰

One stand-out example of policy progress is the inclusion of the issue of energy in displacement contexts within the World Bank's published SDG 7 tracking reports and various UN energy policy processes. While initially references to humanitarian energy within these reports focused on the needs of refugees within camps, more recent publications, such as the 2021 policy brief by UN DESA for the High-level Political Forum on Sustainable Development, covered sustainable energy needs across the humanitarian system.²¹¹

Policy progress is driven by a number of partners within the energy for displacement world. Organisations like Chatham House have been vital in driving forward learning and evidence, while organisations like SEforAll and IOM have been very engaged in policy-making activities and international advocacy issues. The Ashden Awards have supported work on climate, sustainable energy and refugees' and IDPs' energy needs, bringing this important issue to the attention of energy sector specialists and donors.²¹²

Limited capacity, and pressures within humanitarian agencies, often mean that global advocacy tasks fall to other organisations. SEforALL, Chatham House, and the GPA have been instrumental in pushing this forward within global policy forums and strategic documents. A further function of global actors is to support humanitarian agencies in delivering progress towards their stated goals and ambitions on sustainable energy access. This is an important role as there are few formal accountability mechanisms within the UN system on energy access, and so actors must hold each other responsible through collaborative mechanisms.

Reporting on Humanitarian Energy Access Figures in SDG 7 Tracking Processes

Over the past six years, displaced populations have been included in the Sustainable Development Goal 7 tracking reports published by the World Bank.

- In the 2017 report included a box on displaced populations, using figures from the Moving Energy Initiative and Practical Action highlighting the energy needs of refugees in camps, and a box on the cooking needs of refugee people.²¹³
- The 2019 report drew on learning from the GPA and UNHCR on the rates of electricity access and cooking solutions, and commitments to leave no one behind in the clean energy transition. The report also built on work by Chatham House and UNITAR to ensure targets and policy insights on marginalised communities included displaced communities.²¹⁴
- The 2020 the report included substantial mentions of refugees and displaced people drawing on research by Practical Action, Chatham House, and the GPA. The UNHCR data team provided a box on the percentage of refugees who have access to energy compared to host communities. The vulnerability of displaced women was highlighted in the sections on clean cooking and gender. The report also cited data from the UNEP DTU Partnership on Tanzania, from Imperial College London on energy access in Rwanda refugee camps, and data from the Moving Energy Initiative published on the Humanitarian Data Exchange.²¹⁵
- In 2021, the report included a substantial paragraph on displaced people, drawing on work by the GPA and UNHCR, and a whole section of the report

covered electricity access in fragile and conflict-affected countries, including presentation of data from crisis countries. UNHCR also provided analysis of differences in access to energy between refugee sites and host communities in two of their intervention countries.²¹⁶

Additionally, in 2021, the UN Department of Economic and Social Affairs produced a detailed policy brief in support of the High-Level Political Forum on Sustainable Development . Within this brief the energy needs of displaced people were extensively considered by Peace, Justice and Strong Institutions on SDG 16 to connect with SDG 7. The chapter was drafted by the GPA. Partners from UNITAR, Imperial College London and IOM drove this work forward and considered in depth the links between the humanitarian-development-peace nexus, presenting data, indicators and targets for leaving no one behind. Displaced populations were also mainstreamed in references and discussions throughout the report to ensure refugees and IDPs were not left behind in policy discussions on SDG 7.²¹⁷

It is hoped that future SDG 7 tracking reports will have a dedicated chapter on the energy needs of displaced people to reflect the over 102 million people who are now forcibly displaced globally.

Within international and global discussions, progress has been rapid on humanitarian energy issues. There have been several policy events focused on humanitarian energy needs, including the Clean Energy Challenge High-Level Dialogue and the Clean Energy side-event at the HLDE Ministerial Thematic Forum in 2021.²¹⁸ The GPA and partners also co-hosted four events at the COP26 UN Climate Summit in 2021,²¹⁹ on decarbonisation, greening infrastructure, clean cooking, and refugee energy needs.²²⁰ Nation State representatives, UNHCR, and GPA colleagues presented at the UNHCR High-Level Officials Meeting in December 2021, and a refugee-led side event was held on green jobs and energy livelihoods opportunities²²¹ in the margin of this event. A number of webinars and learning events were also held by the GPA community over the past

three years, including the Energypedia webinar series,²²² workshops on data and financing,²²³ and training on Energy Delivery Models in displacement settings.²²⁴

Ashden Awards

The Ashden Awards accelerate climate innovation, helping a range of stakeholders from businesses to charities and governments to power up their impact in low-income nations and the UK. Ashden supports organisations that advance social justice and those working on lowering their emissions.²²⁷ Grants, publicity and endorsement from globally-recognised climate experts and increased publicity are awarded to prize winners. These awards help to highlight businesses and innovations across the energy sector in low-income nations.

For the past three years, one of the Ashden Awards has focused on humanitarian energy. The Humanitarian Energy Award has highlighted the work of some outstanding applicants and winners so far:

- In 2020, the Award was won by the United Nations Development Programme in Yemen for their community-owned microgrids that have brought energy, income, and a new role for women to villages shaken by years of war.

- In 2021, the Award was granted to Solar Freeze,²²⁸ a Kenyan-owned-and-run company which offers cooling for food and medicine in Kakuma refugee camp. Its sustainable and affordable service has supported health clinics and small businesses and 100 women and young people have received free technical training in the field of renewable energy and agriculture.
- In 2022, the Ashden Humanitarian Energy award focuses on 'Energising Refugee Livelihoods' to support refugee-led businesses who are delivering sustainable energy within their communities.

As well as supporting businesses and humanitarian energy programming directly with prize funding, Ashden highlights the winners to policymakers and practitioners, evidencing how successful energy access initiatives can be supported within the humanitarian sector. The Ashden business support process also facilitates grassroots action and the development of local businesses, enabling micro-businesses and local programming to scale up within refugee and displacement settings.

National Policy Progress

There are several examples of national policies which use integrated approaches to solving refugee, energy and environmental issues. The interlinkages between global refugee policies and frameworks, such as the CRRF, and energy for displaced populations can be seen in the examples in this section. Although national policy frameworks designed by governments, such as that of the Government of Ethiopia, may take one step closer to including energy access for displaced populations, the lack of implementation mechanisms can present a challenge. This could be due to several factors; one being that the governance of energy in the national context is designated to energy ministries that are usually not connected to

refugee response. Research shows that a siloed approach to integrating displaced populations within national frameworks, specifically relying on refugee mandates in the country, slows progress.

In contrast, when national energy plans are inclusive of displaced communities through a multi-sector approach and embedded within national priorities, swifter progress can be observed.²²⁵ Jordan is an example of such progressive action, with energy plans for displaced communities integrated in national energy priorities, such as challenges associated with water scarcity. This has motivated rapid progress. The case of Jordan demonstrates how national policies for refugees and renewable energy integration can connect together, guided by progressive national entities and ministries.²²⁶

A National Road Map Based on the CRRF: The Case of Ethiopia

The Government of Ethiopia has signed the Comprehensive Refugee Response Framework (CRRF) as part of its national response for refugees. It created a road map for the implementation of the CRRF based on the needs of the country and its commitments to Ethiopia-based refugees. The Administration for Refugee and Returnee Affairs (ARRA), the main governmental agency for refugee affairs, works closely with UNHCR Ethiopia to implement the CRRF, which has been adopted as an official Ethiopian policy and is enshrined in legislation. The CRRF is said to be the only “real national policy that helps humanitarian energy in Ethiopia”.²²⁹

The dominant energy programmes run by Ethiopian and international NGOs focus on cooking technologies and traditional energy interventions and are intended to combat food poverty and insecurity challenges. Therefore, many ministries and NGOs prioritise increasing technological efficiencies associated with cooking stoves and the use of ethanol, LPG, and biogas.²³⁰

Ethiopia has made and nine significant pledges, embodying a vision where refugees would gradually be allowed to live outside of camp contexts, work, cultivate land, and access national education and health services and birth and vital events registration. The move from a camp-based approach to an increasingly integrated model of refugee assistance will be guided by the government’s 10-year National Comprehensive Refugee Response Strategy.²³¹ Ethiopia has also pledged to expand its Out of Camp Policy to all refugees as defined by Ethiopian law and policies, to benefit 75,000 refugees, or 10% of the current total refugee population in Ethiopia.²³²

Although the Ethiopian government is progressive in its policy pledges, and has invested in a National Comprehensive Refugee Response Framework and a CRRF Road Map, there has been no clear action or implementation plan established for either, and very little follow through on energy targets.

National Policies outside the CRRF: The Case of Jordan

To address its refugee challenges, Jordan signed a memorandum of understanding with UNHCR to adhere to international laws and regulations. Jordan designed its own framework, the Jordan Response Plan (JRP), to address these issues. This progressive policy and framework is similar to the CRRF in that it seeks to address both host and refugee community challenges but it includes a nexus between development and humanitarian aid. The government has proudly referred to the JRP as the “most sophisticated response to the Syrian refugee crisis of all the major neighbouring host countries”.²³³

The JRP relies heavily on other policy frameworks, since it is multi-sectoral. The government-run JRP has two components, bringing together refugee and host communities through resilience and humanitarian components, thus linking humanitarian and development needs in the country. Additionally, it is the main platform for implementing clean energy projects in humanitarian interventions in Jordan. It has seen major progress in response and funding for Syrian populations in Jordan, has helped integrate refugees in national plans, and enabled higher levels of funding for both humanitarian and development projects. The JRP also strives to work towards the Global Compact for Refugees. During the 2019 Global Refugee Forum, Jordan used the JRP to identify the needs of refugees and host communities, according to national priorities, in partnership with all concerned parties and at all levels.²³⁴

Based on the identified priorities Jordan enhanced its work for communities in health, COVID-19 response, and by granting refugees the legal right to work and establish home-based businesses.²³⁵ The electricity and energy consumption by refugees in both urban and refugee settlements, were included in the JRP and national energy policy responses to help deal with the increase in electricity consumption, which is said to have grown by 34% between 2009 and 2014 due to the influx of refugees.²³⁶

Although there has been significant progress attributed to the Government of Jordan, in cooperation with international donors and UN agencies, in addressing both humanitarian and development needs due to the influx of refugees, it is also important to note the decreased humanitarian funding for energy-related projects in the country, attributed not to policies, frameworks, or identified need, but due in part to the funding and financial mechanisms available to the humanitarian sector dealing with sustainable energy provision in the country.²³⁷

National policy events have also supported the inclusion of displaced people in energy policies. In 2019 SEforALL, Smart Communities Coalition, and GIZ carried out two policy roundtables, one in Uganda and one in Kenya, to support the integration of refugee and host community energy issues.²³⁸ Events such as these, and the national process for the Uganda Sustainable Energy Response Plan, are examples of progressive policy change moving the needle on political discussions on refugee hosting.

National policy environments which are not supportive of refugee inclusion in society can have damaging impacts on the outlook and viewpoints of displaced communities. These issues can translate into the marginalisation of displaced communities and the view of refugee camp settlements as short term. Some of the implications of such an approach are noted in the box below, with challenges associated with relocating refugees to security and economic burdens imposed on the displaced populations.

Progressive National Policies and National Energy Planning

Sustainable Energy Response Plan: The Case of Uganda

Uganda's Sustainable Energy Response Plan (SERP) grew out of a multi-stakeholder secretariat that was established by the Office of the Prime Minister to consider how best to implement the CRRF. The process of drafting the SERP was initiated by the CRRF Secretariat, but is led by the Ministry of Energy and Mineral Development (MEMD), with the support of a task team comprised of government and development partners including the OPM, UNHCR, GIZ (through the Energy Solutions in Displacement Settings project) and the World Bank (Energy Access Scale-Up Project). The SERP provides a four-year costed plan from 2021 to 2025 to align with National Development Plans (NDPs). To achieve large-scale and sustainable impacts, the costed plan is based on what is realistically achievable, from both resource and time perspectives. The activities will be carefully prioritised and phased, so that targets and objectives can be realistically achieved. There will be an annual progress evaluation and report and a comprehensive SERP review in 2024 which will inform the preparation of NDP IV.

While MEMD will lead both the strategic direction and the coordination of the implementation of SERP, they will be supported on a strategic level by a Steering Committee selected from government ministries and key stakeholders. The MEMD will report on a regular basis to the CRRF Steering Group on the implementation of the SERP. The Operational Coordination of SERP implementation will be the responsibility of a SERP Secretariat, directed by, and reporting to, the Steering Committee. This new entity will be led by a dedicated team within MEMD who will work exclusively on SERP coordination and implementation. The core team of the Secretariat will be recruited by MEMD with secondments from key partners.

Where there are overlaps/linkages, the SERP will align with existing Sector Response Plans, in particular the Water and Environment Response Plan and the Jobs and Livelihoods Response Plan. As such, the SERP aligns with the overall objectives of the CRRF, to support government policy and ensure resilience and self-reliance of refugees and host communities. It falls under both Pillars (2) Emergency Response and Ongoing Needs and (3) Resilience and Self-reliance of the CRRF. For the energy sector, the main change is a shift away from limited in-kind support provided by humanitarian actors, towards sustainable service delivery. Targeting both refugees and host communities, the SERP plan includes investment to kick-start market-based solutions. A later phase of the SERP aims to mainstream refugees and host communities in national renewable energy and rural electrification strategies, interventions and projects. If implementation runs as planned, the SERP will boost both public and private energy access programmes in humanitarian settings, and enhance coordination across the key stakeholders, providing both the government and UNHCR with improved oversight on programmes that promise to increase access to energy for host communities and refugees.

Source: Box developed with the support of Chatham House.

National Policy Challenges Facing Refugee Communities

“The high cost refugees pay to access energy is partially occasioned by the host country policy. Despite being found that refugees contribute significantly to host country development through humanitarian aid that host communities benefit from, as well as remittances that refugees receive from outside which boost the host country’s economy, refugees are still subjected to difficult measures that affect them seriously. Being forced to overstay in a refugee camp, refugees have difficulties finding their place in those spaces because of hostile policies in their host countries.

The no access to electricity from the national grid in the Kakuma refugee camp for instance is a living reality of a discriminatory policy that prevents refugees to get access to this energy. This situation affects the productivity of the refugees and makes them more vulnerable.

“The camp closure in Kenya is a repetitive announcement that has threatened the refugees’ security, well-being and hopes for the future. Dedicated places that are prescribed in the refugee policy of Kenya force refugees to live in difficult conditions. The refugees have to look for alternative means to meet their needs and survive. Refugee endurance becomes tough in the face of limited freedom of movement,

employment, and business making their situation worse.

“Unfortunately, the most vulnerable group of people such as women and girls, children, elderly people and people with disability have to pay a high cost. Limitations imposed by the refugee policy in host countries affect their personal, professional and academic development and disadvantage them in the competition with their non-refugee peers. For example, a refugee entrepreneur does not have direct access to the market and has to incur extra costs for the same business transaction compared to their non-refugee peers.”

Refugee living in Kenya.

Technological Progress: Understanding Technology Development and the Role of Innovation

As well as progress on policy change, across the humanitarian energy sector we have also witnessed progress on technology development and deployment. While this has been somewhat piecemeal, there is evidence to suggest that a switch from traditional and fossil fuel powered technologies to cleaner energy sources and modern appliances is taking place. Some organisations provide data on the types of technologies they deploy. For example, during 2020, WFP provided over 1.2 million people with direct access to clean cooking, supported over 27,000 people with direct access to energy products and services for productive uses, and supplied 100,000 fuel-efficient stoves to homes and schools.²³⁹

However, overall progress appears to be slow. UNHCR estimated that 1.6 million persons of concern²⁴⁰ had access to a sustainable source of cooking and 1.7 million had access to a sustainable source of electricity (UNHCR 2020, p226).²⁴¹ There are now estimated to be over 102 million forcibly displaced people worldwide, suggesting that there is a considerable number of displaced communities who still need support on energy, reinforcing the idea that progress on supporting sustainable solutions is not on track to meet SDG 7 to ensure access to affordable, reliable, sustainable and modern energy for all by 2030.

Despite slow progress overall, some NGOs and humanitarian partners have embedded the sustainable energy transition into

their operations. An example of this is the International Committee of the Red Cross (ICRC) who have been developing dedicated energy programming.²⁴² Many new investments focus explicitly on renewable or low-carbon technologies.²⁴³ Appliance use and energy supply needs are increasingly considered. While basic lighting can be provided by kerosene lamps or burning sticks, electrical light is markedly better, both in terms of output and minimising pollution and smoke. Switching to

electrical sources of light also offers power connection opportunities: solar lanterns can provide mobile phone charging connections whereas kerosene lanterns cannot. Similarly, solar home systems and solar photovoltaic solutions offer more electrical output compared to more basic technologies. Within the humanitarian energy sector, the technological switch from basic lighting technologies to electrical power options has been quite rapid in some locations.

ICRC and Sustainable Energy

Against a backdrop of climate change, population growth and urbanisation, the International Committee of the Red Cross (ICRC) has been working towards building environmentally sustainable practices within its operations by reducing the organisation's carbon footprint and increasing access to safe, resilient, and sustainable energy.²⁴⁴ In 2018, the 'Inno Board' launched the 'Energy Challenge', which has supported endeavours to identify opportunities and address obstacles to an ICRC energy transition, through the development of partnerships, to help accelerate the use of renewable energy in ICRC missions.

Alongside this an 'Internet of Things' energy monitoring platform is being developed "to allow the ICRC to better manage its energy consumption at its premises".²⁴⁵ ICRC, with UNITAR and Energypedia, is hosting the sustainable energy webinar series

which has helped contribute "to building a network of practitioners in the field of power supply for humanitarian operations sharing best practices, reference case studies and publications".²⁴⁶ The ICRC is also looking for new and innovative ways to fund the energy transitions by working on its eligibility to use carbon credits which would amass from activities such as the distribution of clean cookstoves or the installation of solar water heaters. ICRC plans to green its premises with solar panels, to reach its ambition of "reducing carbon emissions from its diesel generators by more than 25% over five years".²⁴⁷

its recent energy-related work includes electrification projects in two villages in rural Homs, Syria, benefiting 2,000 returnees. The ICRC and partners rehabilitated the electrical power network, the water pumping station, and two elementary schools in each village.²⁴⁸

The falling cost of solar and the mass production of solar home systems and solar panels has made these technologies rapidly accessible for displaced communities. Action on climate change and the need to reduce emissions has also supported the switch to using renewable technologies. For the end user, using electricity powered by renewables is much the same as using that from a diesel generator or grid

supplied by fossil fuels. Several successful electricity projects have demonstrated scalable change in recent years, including Practical Action's Renewable Energy for Refugees (RE4R) household and community solar investments in refugee camps in Rwanda.²⁴⁹ The large-scale solar mini-grids for refugee camps in Jordan also provided camp-wide access in Azraq and Zaatari.²⁵⁰

Success in Solar System Access Supply

The Practical Action Renewable Energy for Refugees (RE4R) programme has worked with UNHCR, private-sector suppliers, local government agencies and refugee communities to deliver market-based programming in Kigeme, Nyabiheke and Gihembe camps in Rwanda.²⁵¹ In 2017, before the RE4R project, 58% of households either had no lighting at night or used only basic sources such as candles and torches. Three-quarters of households relied primarily on three-stone fires, mud stoves, and firewood for cooking. 90% of households coped with the lack of firewood by skipping meals, reducing portion size, or exchanging food for cooking fuel.

In order to change this picture, the RE4R project worked to strengthen local markets and support refugees in gaining “access to affordable sources of renewable energy by encouraging the engagement of private sector actors and strengthening local markets.”²⁵² This was done in a way that was deemed economically sustainable beyond the life of the project, enabling refugees to choose the solutions most suitable for them.

RE4R supported private sector suppliers of solar home systems to expand their operations within the three refugee camps, to enable refugees to directly purchase their products and services. This facilitation of the private sector aimed to increase access to energy for households and small businesses to power lighting, phone charging, and small appliances, such as radios. 84% of refugees who purchased a system through the programme now use it as their primary source of light. This has enabled children to study, families to socialise and work, and individuals overall to have more freedom in how they spend their time after dark. The project also created jobs for refugees, as technicians, customer care and sales agents, security guards, and business owners. Overall, the project supported the installation of 4,279 solar home systems across the three camps, as well as camp-wide street lighting, clean cooking, and supporting livelihoods and income-generating activities.

In a couple of locations, some progress on clean cooking has been made. For example, UNHCR IOM, WFP, FAO, and other partners have collaborated to fund a multi-million LPG programme in refugee camps in Bangladesh. Although this programme has had some positive impacts, there are still major challenges associated with economic sustainability, such as how to continually fund such interventions over many years in protracted situations.

One clear lesson from the sector is that delivering progress on clean cooking is far more challenging than for electricity use.²⁵³ There are a number of technological and financial reasons for this. Technologically

speaking, there is a considerable difference between a three-stone fire and modern technologies: they require fundamentally different fuels (firewood compared to electricity or gas) and different appliances. There is no one-size-fits-all clean cooking solution: cooking is highly contextualised with a range of technologies and fuels available, from improved biomass stoves, the use of clean fuels, such as biogas, ethanol and LPG, to electric cooking.²⁵⁴ There is also a learning curve to using new cooking solutions, whereas with electricity the end-user experience is often a plug-socket and to some extent the source of the power is not important. There is also a considerable cost difference between providing firewood and

Clean Cooking Programming

Providing reliable power to both the 900,000 Rohingya refugees hosted in informal camps and spontaneous settlements and the host community in Cox's Bazar, Bangladesh, has been an ongoing challenge for the host country and agencies providing aid. Meanwhile, the reliance on scarce wood fuel had high environmental, economic and social costs.

An inter-agency coordination project conducted between 2017–2021 on energy and environment helped contribute to food and nutrition security, refugee self-reliance and the livelihoods of 125,000 refugees and host community households in Cox's Bazar. The project, run by several agencies (FAO, IOM, UNHCR, WFP), targeted households, especially women-headed households, to help decrease their monthly expenditure on firewood and to mitigate the negative

environmental impacts of displacement through land and forest rehabilitation.

The Energy and Environment Technical Working Group, FAO, IOM, UNHCR and WFP standardised the operations methods for LPG support to ensure the strengthening of the whole LPG value chain and deliver LPG cooking sets to communities in partnership with the government of Bangladesh and its partners.

The project met the energy needs for refugees for cooking and lighting. 173,000 LPG cooking sets were distributed, including 6,000 to the host communities. 600,000 LPG refills including 17,000 for the host communities. 150 hectares of land were restored in line with environmental and deforestation restorative objectives.⁶⁰¹

basic cookstoves, compared with supplying LPG or electric cooking solutions.²⁵⁵ As a result, many agencies feel it is too expensive to provide advanced solutions and only basic emergency cooking needs are met.

In the future, potential for carbon credits and climate financing may offer innovative solutions to support the financial challenges of modern cooking solutions. However, to date these approaches have been slow to launch for many reasons, including the challenges of measuring the sustained adoption of modern cooking solutions over time, and 'stove stacking' (use of multiple stoves on the same day).²⁵⁶ Additionally, cooking is often cited as a 'cultural' issue,²⁵⁷ which may be accurate in some cases, but is often used to suggest that it is too complex or too expensive to supply modern energy cooking solutions to displaced people. As a result of these issues, progress on establishing and providing clean and modern cooking solutions in refugee settings has been very slow.

Many humanitarian energy programmes are innovative in terms of delivery, rather than using innovative technologies. Technologically speaking, advancements in solar PV solutions and electric cooking have been around for some time. Rather, the form of innovation most common in the humanitarian energy world is process innovation, which focuses on providing solutions differently and finding alternative funding and financial models to support energy access. Innovative delivery can ensure long-term and sustainable access, facilitating humanitarian energy activities in moving beyond grant-based models and the free distribution of energy products.

Innovative investment may be more appropriate in some national contexts than others. For example, Uganda offers an enabling environment for innovative and market-based approaches as refugees are able to work and move freely. However, other national contexts may not provide such enabling environments.

Beyond Cookstoves

“The starting point was 2014, at that time what we had amongst the main agencies was widespread ignorance about the importance of energy within their programming and how energy could help deliver better outcomes for protection, livelihoods and education. What I would draw attention to is that we were encountering a very low baseline, when we were first looking at this problem.

“At the time what we observed was what the cooking world had done relatively well. As they had decades of experience in the humanitarian sector. From the development sector we could learn about why cooking interventions were important and why fuel for interventions for supporting humanitarian response. Primarily, that was being led by a political

alliance, the Clean Cooking Alliance, which had a specific remit in humanitarian settings. And had done a really good job of working to highlight links between energy provision and protection. But essentially there was a relatively small and closed world associated with cooking and cooking fuel. And this knowledge was used to relate to humanitarian settings to help provide solutions. So the Moving Energy Initiative tried to think much more broadly about energy provision. Not only in just cooking but also about the potential benefits of power and how energy needed to be mainstreamed across programming and how humanitarian agencies have more of a responsibility – not only in delivering that energy better but how they were using energy themselves.”

Policy Expert.

Innovative delivery in displacement contexts is still contextual. What may be considered innovative in the development and energy access sector or in high-income spaces may still be some years off in humanitarian settings. This is a function of the challenging contexts, but is dictated by how open to new approaches local communities and humanitarian organisations are, and how well integrated the humanitarian contexts are into national-level energy access policies and programmes.

Innovation within energy for forced displacement can be a challenging issue. Many of the refugees and displaced people interviewed for this report highlighted that focusing on only innovative products can cause poor delivery and limit progress on sustainable energy issues within local communities.

Innovation in Humanitarian Energy

Innovation is an increasingly common term in the language of humanitarian support. However it is also an ambiguous term meaning different things to different people. Viewed through a broad lens, innovation can be thought of as doing different things, or doing things differently. However several structured theoretical frameworks also exist including Rogers' diffusion of innovation,⁶⁰² technological innovation systems (see for example Bergek et al., 2008⁶⁰³), socio-technical regimes (see for example Fuelfschilling & Truffer, 2014⁶⁰⁴), and the multilevel perspective (see for example Geels et al., 2017⁶⁰⁵).

Nonetheless, scholars have urged caution and care in applying prevailing innovation theory – often conceptualised in the Global North – to the Global South, for example noting that this often leads to the African continent being framed as a recipient as opposed to maker of innovation (Mavhunga et al., 2017⁶⁰⁶). While not specific to humanitarian energy, these issues illustrate the care that must be taken in transporting innovation theory outside the contexts in which it was originally conceived. Uncritically applying pre-existing innovation theory to humanitarian energy risks conceiving refugees as merely recipients of innovation benefits, and may exclude them as actors with agency. Similarly, it may misrepresent the complexity of humanitarian settings.

There are a number of possible ways to attempt to counter these risks in humanitarian energy innovation. Working with a broad, flexible and critical understanding of innovation can avoid implicitly valuing technological innovation over service, delivery, business model, or social innovations, for example. This acknowledges the common view held amongst humanitarian energy practitioners that it is delivery model innovation which presents the most immediate opportunity to drive change in humanitarian energy. This is despite an enduring tendency of funded programmes to focus on trialling and experimenting with specific product innovations and technologies. Within the domain of technological innovation, efforts can be made by practitioners to avoid a techno-futurist

mindset which prioritises exciting and marketable technologies (at least to funders) which are out of step with humanitarian realities.

Here, understandings of innovation which originate from contexts closer to the lived experience of refugees should be given consideration, such as Jugaad or frugal innovation (see for example Kabwete et al., 2017⁶⁰⁷, Jammulamadaka, 2019⁶⁰⁸). These innovation understandings emphasise the agency of energy users as innovators and see contextual dimensions such as financial resource scarcity as potential drivers of innovation as opposed to barriers. Using innovation scholarship from the Global South to inform humanitarian energy may help to locate critical aspects of both knowledge production and innovation processes closer to the humanitarian settings they seek to benefit. This could lead to the development of contextually relevant and embedded solutions (Ali et al., 2022⁶⁰⁹). These themes were unpacked in the recent HEED webinar on innovation related to humanitarian energy (see HEED, 2021⁶¹⁰).

One critical learning is to perceive failure as a productive and necessary process to be collaboratively learned from. Rather than perceiving a failed experiment as cause to redirect resources elsewhere, failure should be seen as part of an iterative innovation process between all humanitarian practitioners and communities. Clearly, this should be balanced with the importance of ensuring value generation from scarce resources. From the perspective of funders, meaningfully locating ideation and innovation processes within communities of displaced peoples may generate significant additional complexity and increase the risk of perceived 'failure' to meet desired objectives. But it is critical. Alongside the priorities of cost-effectiveness and feasibility, patience and care are required from both humanitarian practitioners and finance providers to create space to recognise and foster a diverse range of innovations around and within communities of displaced peoples.

Contribution from Sam Unsworth, Chalmers University⁶¹¹

Innovation: From the Perspective of Displaced People

“Drawing from my work experience with humanitarian agencies, particularly in the energy sector, the following points are critical to highlight when talking about innovation:

One, the efforts toward improving the access to energy in humanitarian settings have been overshadowed by the pressure to engage in the pace of innovating, which leads to poor and unviable standards to guide users in humanitarian contexts. The expansion of energy projects and focus to ensure every person in the displacement setting has access to clean energy at the minimum level is diverted by the shift of the focus from access to innovation. A multitude of energy products that are introduced in displacement settings confuses

targeted users, with some of the innovations never tried elsewhere or in other contexts to measure their value.

Two, some stakeholders in the energy sector struggle to communicate the value proposition of renewable energy in displacement settings where the scale of usage is lower with many poor households and micro-enterprises. These projects failed to accommodate key elements of the contexts they are deployed in. The approach of one size fits all that is often used in humanitarian programming leads to new challenges for the displaced.”

Refugee living in Kenya.

There have been a number of failed technological innovations in refugee camps, such as solar cookstoves,²⁵⁸ which have led agencies and communities to be hesitant in adopting approaches which involve newly-designed or untested technologies. As a result, it is important that future innovative projects do not seek to ‘test’ western-designed technologies on local communities without substantive co-design and collaborative development. Here the concept of ‘responsible innovation’ is proposed, and a number of recommendations for policymakers and practitioners from the Humanitarian Engineering and Energy for Displacement (HEED) Project have emerged, suggesting that new innovation projects should:

- “Anticipate impacts by conceptualising responsible innovation in the humanitarian setting by connecting definitions with understanding.
- Reflect, recognise and address how cultural context and hierarchies of knowledge shape responsible innovation.

- Meaningful engagement requires an understanding and appreciation of the energy needs, awareness, skill and risks to the forcibly displaced.
- Identify existing and future beneficiaries of responsible innovation when planning humanitarian energy products and services.” (Robinson et al 2021, p1)²⁵⁹

Technological progress in energy access is a complex topic. Many authors use the concept of an ‘energy ladder’²⁶⁰ by which people use basic technologies, such as three-stone fires and kerosene lanterns, before moving up the ladder to more advanced technologies, such as solar lanterns and batteries, before continuing to climb step-by-step, until ultimately reaching higher power technologies and grid-equivalent access. However, this view of technological progress is generally a damaging one, implying that progress is linear over time and that communities must climb up each step of the ladder before being able to progress.²⁶¹ Recent literature on leap-frogging largely debunks

The Humanitarian Grand Challenge

Under the slogan ‘Creating Hope in Conflict’ the Humanitarian Grand Challenge seeks “life-saving or life-improving innovations to help the most vulnerable and hardest-to-reach people impacted by humanitarian crises caused by conflict”.⁶¹² It does so by bringing about global attention and resources to international problems and promoting innovative approaches to solving them. The Challenge is a partnership between The U.S. Agency for International Development (USAID), the UK Foreign, Commonwealth & Development Office (FCDO), the Government of the Netherlands Ministry of Foreign Affairs, and Global Affairs Canada, with support from Grand Challenges Canada. This partnership seeks to scale up the solutions that are proven to work, where innovations are said to involve a connection to the private sector and input from affected communities.

The key focus areas are to provide, supply, or locally generate safe drinking water and sanitation, energy, life-saving information, or health supplies and services to help conflict-affected people.

Some of the innovations and supported projects:

- In 2021, An energy project in Nigeria focused on Enabling Food Storage in Displacement Camps, Using Solar Powered Cold Chain by ColdHub.
- In 2020, Energy project ‘Turning on the Lights in Eastern DRC’ for Scaling up solar-based mini-grids in conflict affected communities by Nuru SARL.
- In 2019, the Rainmaker Solar Powered Water Pumps in South Sudan by The Rainmaker Enterprise.

the theory of the energy ladder: challenging policymakers and practitioners to take a more progressive view of energy needs.²⁶² An example of where innovative progress has been made by policymakers and donors, is the Humanitarian Grand Challenge.²⁶³ This challenge gives funding and project support for innovations in areas of conflict, encouraging greater attention and progression through donor programming for innovative projects, including on energy.

While this section has highlighted some of the technological examples which have driven forward practical progress on energy, access levels in many communities remain low and a further set of challenges exists in accurately measuring the levels of energy displaced people have access to.

Practical Progress: Challenges with Measuring Access in Displacement Contexts

Practical progress on sustainable energy in humanitarian settings is a challenging thing to measure. Still in 2022, it is unknown how many people truly have access to energy. There is also no clear figure on the progress towards sustainable energy.²⁶⁴ UNHCR has suggested that “over 90% of refugees living in settlements have no access to electricity or clean sources of energy”. (UNHCR 2021, p10)²⁶⁵. However, this estimate builds on data from Chatham House published in 2015, and current estimates vary considerably.²⁶⁶

While some sustainable energy programmes have had great success in recent years, such as those in Uganda and Kakuma camp in Kenya, the overall reach of sustainable access remains very low. If the other criteria for meeting Sustainable Development Goal 7 (that energy supply should be sustainable, affordable, and reliable) were also taken into account, access rates for ‘modern’ energy would be even lower.²⁶⁷ With

these caveats, this report estimates that the vast majority of the world's displaced people do not have access to sustainable, reliable, or affordable energy. With just eight short years to go, it is highly unlikely that SDG 7 will be met for displaced people by 2030.

The SDG 7 tracking report for 2021 highlights that “although the number of people without access to electricity fell from 1.2 billion globally in 2010 to 759 million in 2019, the unfortunate fact is that gains in energy access are being reversed

Challenges with Estimating Global Progress on Sustainable Energy

Access

Producing a global picture on energy access is a difficult task due to an overwhelming lack of data. Initial estimates on the number of displaced people were produced by Chatham House in the Heat Light and Power Report in 2015. The report estimated figures suggesting that 89% of refugees in camps in 2015 did not have access to electricity and 80% had tier 0 cooking access.⁶¹³ To date, this figure has been cited many times within global policy discussions, often merging the household cooking and household electricity figures and losing some of the nuance of these numbers, to suggest that 90% of displaced people do not have access to energy.⁶¹⁴

In reality, accurately assessing how many people have what type of access requires more detail. A number of caveats and challenges are important to consider:

- Household access focus issues: While there is some information available on energy access in enterprises, community facilities, and UN institutions, most data focuses explicitly on household access for displaced people. This focuses on displaced people's access to energy in their homes, as opposed to access to public street lighting or access within UN compounds. In the majority of cases, data is only available for refugee communities, rather than IDPs or people affected by other forms of displacement.
- Minimum level of access issues: Access is not binary, rather it is measured on a spectrum. There is no internationally agreed definition of what constitutes a minimum level of access. UNHCR suggests a boundary for 'access' set at Tier 2 and above, as outlined in the UNHCR Global Energy strategy, which aims to provide access up to tier 2

for electricity⁶¹⁵, which is in line with the World Bank Multi-Tier Framework measurement scale.⁶¹⁶

- Household cooking access issues: Many humanitarian operations focus on basic firewood provision for cooking resources. There is no commonly agreed definition within the humanitarian sector of clean cooking, or what constitutes clean cooking access. Very limited information on the different types of stoves, fuels, and stacking cooking practices is available.⁶¹⁷
- National coverage issues: In the majority of countries, quantitative data is only available for some sites. However, as many camps and settlements within a country have similar levels of access, it is possible to suggest that this data can be scaled up to provide a national average.
- Partial coverage issues: some of the locations listed have seen sustainable energy interventions which cover part of the settlement or camp. In these cases, coverage is 'partial' and consideration must be given to the size of the intervention in listing the access levels possible across a location or country.
- Increased levels of displacement issues: Previous estimates were based on the figure of 50 million displaced people using data from 2013 to 2015. There are now double the number of displaced people, 102 million persons of concern to UNHCR, as reported at the start of 2022.⁶¹⁸ The numbers of displaced people is still growing considerably and this picture is likely to increase over the coming year due to the projected rise in displaced people due to armed and political conflicts, as well as the growing climate crisis.

in the wake of the COVID-19 pandemic” and that “unless efforts are stepped up significantly, an estimated 660 million people would remain without access to electricity in 2030 and 2.4 billion people will be left with no access to clean cooking”.²⁶⁸ This picture is also reflected in displacement contexts, with COVID-19 and ongoing humanitarian challenges affecting access levels considerably.

So far the discussion on energy access rates has focused on household access. To consider the full picture for humanitarian energy we must also understand the rates and types of access in enterprises, businesses, and micro-enterprises

of displaced people, productive uses of energy, access for community facilities such as public spaces and schools, and access for humanitarian facilities such as offices, compounds, and operational spaces. There is very limited evidence on the energy used by businesses run by displaced people,²⁶⁹ and no global estimate for access levels within community facilities. In institutional and operational spaces, the majority of energy users do have access, but this access is fuelled by diesel and other fossil sources,²⁷⁰ and is considerably expensive.²⁷¹ To summarise, the global picture for humanitarian energy access rates is very challenging.

Different Access Levels in Different Contexts

“There are a variety of aspects, why we cannot always replicate the good example of Azraq and Zaatari solar plants, it depends on different factors and it is context-specific. It is very difficult to make a global statement on that. There must be an inclusive environment that facilitates large-scale projects to promote electricity access at scale. We go from zero to Tier 4 in some refugee settings. But we go from zero to Tier 4 in rural areas in sub-Saharan Africa – where it’s mostly Tier 0 to Tier 1, to begin with. It’s not on and off, with 100 per cent access with 24/7 per kW in these contexts, and sometimes it’s just a solar lamp or flashlight. So there is a variety of access.

“In other cases, the environment makes it not possible to achieve a specific tier or the regulations of the country are more complex. So it depends as well on the policy framework that is in the country. For example, the question of how easy it is to open a business in the country because at the end of the day a business is based on power provision. So power in the country might not be favourable. Also, the hosting country often sees the refugee camps as temporary. So, the governments do not want to invest in long-term infrastructure unless there is a clear advantage for the host community and the rural areas of the countries.”

UN Humanitarian Energy Expert.

Currently the sector is unable to accurately measure energy access levels or track progress towards SDG 7. We do know, however, that practical progress on energy access levels is being made slowly in some locations. More detail on this discussion, as well as energy access data, is presented in Chapter 6 of this report.

Modelling Humanitarian Energy Access

In 2015, Chatham House developed an end-use accounting model for energy consumption for cooking and lighting by displaced populations. The findings from this - which have been widely cited and replicated - estimated that 89% of the forcibly displaced people in camps have no access to meaningful electricity supply for lighting, and that 77% of this same group have minimal access to anything other than biomass for cooking⁶¹⁹. In 2022, Chatham House and the GPA coordination unit updated the model to better reflect our knowledge of how cooking and power are being delivered to refugee camps. The refreshed findings suggest that - eight years later - far from getting closer to delivering energy access to forcibly displaced people, we are actually getting further away. Building on what we now know about the specifics of energy supply and usage in camps around the world, we now estimate that 94% of forcibly displaced people living in camps do not have meaningful access to power, and 81% lack anything other than the most basic fuels for cooking.

Whilst it is undoubtedly true that there has been significant progress in the humanitarian energy sector in the time since our first findings were reported, it is also true that progress has not kept up with the increasing numbers of displaced people that are living in camp settings. In 2014 - when we first developed the model - the number of people living in camps was 8,696,922 (from a total forcibly displaced population of 59.5 million reported at the end of 2014). In 2022 the number in camps was 12,110,432 (from a total forcibly displaced population of 82.4 million reported at the end of 2020). This means that the overall number of people included by our assessment has increased by 28%. However, the increasing lack of access indicated by our model can be attributed not only to increasing numbers of people, but also to a better and more nuanced understanding of how energy interventions are impacting people on the ground. For example, better data from camps in Ethiopia and Sudan has led us to reclassify a number of camps at a lower level of

access to power than previously assumed.

Several updates to the methodology of the model are important to highlight. The model utilises a typology for cooking and power use which allows the diverse energy situation of displaced households to be grouped into a manageable number of camp 'types' to make the analysis more tractable. These categories were developed following examination of published energy assessments and field results, to align with the types of access that are reported and evidenced by humanitarian partners. For cooking, the camp types have been updated and are now 'firewood dependent', 'firewood-charcoal mix', 'liquid-fuel dependent', 'LPG-dependent' and 'urban refugee household'. The lighting typologies have been reclassified for 'power' rather than 'lighting' and are now 'low/no power camp', 'diesel-battery mix', 'grid-connected', 'solar-transitioning' and 'lower-power-solar-mix'. While each type tends to have a dominant fuel, other fuels are included to account for the wider set of households in the camp.

Further details of the precise mechanics of the original model are available elsewhere (see Lehne et al, 2016)⁶²⁰. It is important to highlight that the model uses a simplified methodology which is intended not to reflect reality precisely, but rather to give a sense of the scale of the problem and to provide a context for, and to help guide, policy-making. With better data from the field the model can provide greater descriptive and analytical detail, rather than an indicative overview of the situation. However, this would require more primary data, granular evidence, and context-driven analysis. The figures from our analysis therefore present a basis for more detailed research and funding of data collection on energy access in displacement settings. Details of the updates to the model will be published later in 2022 and efforts are underway to ensure that the model can be accessed online.

Box and analysis produced by Owen Grafham from Chatham House and Paola Acevedo from the GPA.

Issue Analysis: Sustainable Change and Progressive Policies

Sustainable Change and Humanitarian Energy Access in 2022

Chapter 3 has reflected on progress in energy policies, technologies and global access levels. We now turn to consider the overall impact of such changes on key sustainable energy access issues. As the sections above highlight, while there has been considerable policy progress in some areas, results on the ground and in the lived experience of refugees and IDPs are still minimal. When considering progress on energy, it is important to look beyond access alone and consider the different elements of energy supply, according to the criteria under Sustainable Development Goal 7 that energy should be sufficient, reliable, affordable, and sustainable.

In terms of access rates, while a substantial number of sustainable energy access programmes have developed in the past couple of years, they have not been enough to match the rising rate of displacement globally. There are now more displaced people than ever before and an estimated overall decrease in energy access rates. With very limited measurement currently taking place, the overall level of access is challenging to estimate.

For sufficiency of access and quality of life, it is important to look beyond the binary categorisation of energy access as having energy or not. In many displaced homes and businesses, minimal access is present. This is not enough for refugees and IDPs to effectively live their lives, benefit from social experiences, or have productive jobs, run their businesses, or support their communities. Many UN agencies still use Tier 2 electricity measurement as the 'basic' level of energy required, and have not set higher targets. This means that quality of life metrics are unlikely to be improved over

time. According to assessment of sufficiency, no progress has been made.

The reliability of energy access is a very mixed picture. In some locations, projects have supplied mini-grid and back-up systems which have reduced problems of variability and broken systems. At the household level, displaced people have been supported to access solar home systems or mini-grid connections which can increase the reliability of their connections. For community spaces and displaced businesses, there are examples of sustainable technologies providing more reliable access. Therefore, it is suggested that some limited progress has been made in terms of the reliability of access within humanitarian contexts.

The affordability of energy is a very mixed picture. In some locations projects have actively supported the reduction of energy costs. Similarly, within community spaces, solar street lighting and mini-grid systems have supplied power and lighting to unlit spaces at very affordable rates. While some household energy projects, such as the UNHCR Bangladesh LPG roll-out and the RE4R Solar Home System intervention in Rwanda, have made sustainable sources of energy affordable for displaced people, there are many communities that are not served by such projects.²⁷² In these locations, refugees and IDPs are forced to secure and pay for their own energy. These costs place a significant burden on displaced communities. Therefore, mixed progress has been made on the affordability of energy access.

When considering sustainability, a number of factors come into play. Firstly, there has been some progress on the sustainability of energy technologies. Many of the new programmes implemented use low-carbon

and renewable sources of energy. There are now global commitments to move beyond traditional and fossil fuel sources of energy, and instead to provide energy through sustainable means. Environmental sustainability is often considered by programmes. However, in terms of the financial and long-term sustainability of programming, little progress has been made to reduce the free distribution of energy projects in protracted situations, and practical examples of alternative delivery models are few and far between. Therefore, a mixed picture on the sustainability of programming in humanitarian systems emerges.

In terms of the accountability of the humanitarian system, many institutions such as UNHCR have committed to providing energy access for refugees and displaced people. In some cases, organisations have created strategic plans and set measurable targets to achieve SDG 7 for displaced communities. Such commitments enable progress to be tracked and institutional accountability to be facilitated within the sector. However, it should be noted that, currently, progress towards many of these targets is not measured or tracked, and so overall accountability of institutions remains low.

Finally, in analysing the inclusion and the meaningful participation of refugees and IDPs in humanitarian energy discussions, some initial progress is being made. The GPA has committed to mainstreaming inclusion throughout the pillars of their work and has secured funding to ensure displaced people can be brought into global discussions on energy access and data. An event on energy and green jobs in humanitarian settings was held for the first time in December 2021.²⁷³ Several humanitarian energy programmes have pursued active hiring processes for refugees within their delivery mechanisms, such as the Practical Action RE4R programme which hired refugee data collectors and facilitated the creation of jobs for refugees working on energy access.²⁷⁴ However, despite these activities, progress on inclusion is still slow. Many sector events are still happening without refugee or IDP participation or representation, and programming is not inclusive.

The table²⁷⁵ reflects the overall level of progress across key issues within the sector, highlighting that in many focus areas progress is slow with limited results to date. The criteria presented build on the SDG 7 language that access to energy should be affordable, reliable, and sustainable,

Performance of Humanitarian Programming on Meeting Energy Needs

“Meeting the energy need in displacement by the humanitarian agencies is an approach that presents little progress because the provision of access to clean energy is not prioritised and it is given less attention in the displacement context. The presentation of the refugee situation and energy projects running in refugee camps on paper is different from the refugee living experience. Some energy project reports do not accurately reflect the

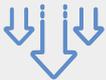
reality on the ground.

“Humanitarian agencies working in the energy sector are doing poorly because they are not developing local production capacity that would enable refugees to transform unclean and dangerous sources of energy they have access to. In addition to this, the agencies seem to be leaving energy needs to the private sector without doing much on advocating for the regulation and proper oversight of energy solutions introduced in displacement settings.”

Refugee living in Kenya.

and also consider how displaced people access energy, their involvement in the humanitarian energy system, and the accountability of UN systems in the provision of energy.

The GPA Framework document from 2018 outlines a clear set of policy recommendations for the sector.²⁷⁶ However, there are few formally agreed targets or measurable indicators across humanitarian energy organisations.

Focus area	Status	Progress in Humanitarian Energy 2012–2022
<p>Access to Sustainable Energy</p>	 <p>Overall Reduction in Progress</p>	<ul style="list-style-type: none"> • While a substantial number of sustainable energy access programmes have developed in recent years, these have not been enough to match the rising rate of displacement globally. • 94% of displaced people in camps do not have access to electricity and 81% rely on firewood and charcoal for cooking. • There are now more displaced people than ever before and we estimate that overall there has been a reduction in energy access rates, with millions of displaced people currently living without energy access. • As very limited measurement is currently happening, estimating the overall level of access is challenging. However, given rising fuel costs, the impact of COVID-19, increasing energy access needs, and the rising numbers of displaced people, it is likely that overall energy access rates within displaced populations are declining in real terms.
<p>Sufficiency of Access</p>	 <p>No Progress</p>	<ul style="list-style-type: none"> • Levels of access are still very low and there are limited resources within the system to raise ambitions to provide more electricity and cleaner cooking solutions. • Fuel for cooking is provided in some locations. Solar lanterns are often part of non-food distribution packages and therefore widely distributed, but challenges with recycling and disposal of electronic waste remain. These technologies only offer basic lighting and minimal cooking. • Tier 2 for household electricity access is still the minimum standard and ‘clean’ access to cooking is often not defined. • Within community facilities, spaces are often unelectrified or do not have sufficient power. Within institutions, access is usually sufficient but still relies on diesel and other fossil fuel sources. • As a result, no progress has been made in terms of the humanitarian system in raising levels of sufficient access to energy.

<p>Reliability</p>	 <p>Limited Progress</p>	<ul style="list-style-type: none"> • At the household level, displaced people have been supported in some settings to access solar home systems or mini-grid connections, which can increase the reliability of their connections. For community spaces and businesses in displaced settings, there are cases of sustainable technologies providing more reliable access. • The reliability of energy access at the institutional level is a very mixed picture. In some locations, projects have supplied mini-grid and back-up systems which can reduce problems of variability and broken systems. • Therefore, it is estimated that some limited progress has been made in terms of the reliability of access within humanitarian contexts.
<p>Affordability</p>	 <p>Mixed Progress</p>	<ul style="list-style-type: none"> • Some projects actively support the reduction of energy costs through provision of solar and renewable solutions, which can reduce fuel costs. A few household projects have also made sustainable sources of energy affordable for displaced people. • However, many communities are not served by such projects. In these locations, refugees and internally displaced people are forced to secure and pay for their own energy. These costs place a significant burden on displaced communities. • Therefore, mixed progress has been made on the affordability of energy access.
<p>Sustainability</p>	 <p>Limited Progress</p>	<ul style="list-style-type: none"> • There has been some progress on the sustainability of technologies, using low-carbon and renewable sources of energy. New global policies and strategies have committed to provide sustainable energy and to move beyond traditional and fossil fuel sources. • Environmental sustainability is increasingly considered by programmes and decarbonising energy infrastructure receives a lot of attention from agencies and donors. • Energy efficiency is recognised as an important topic but is still underutilised. • However, in terms of the financial and long-term sustainability of programming, little progress has been made to reduce free distribution of energy items in protracted situations, and practical examples of alternative delivery models are not yet delivering at scale. • Therefore, there is limited progress on the sustainability of programming in humanitarian systems.

<p>Accountability of Institutions for Energy Provision</p>	 <p>Improvement</p>	<ul style="list-style-type: none"> • Since 2018, many institutions have committed to providing energy access for refugees and displaced people. The UN Refugee Agency (UNHCR) and the International Organization for Migration (IOM) have created strategic plans and suggested measurable targets to achieve SDG 7 for displaced people. • Such commitments enable progress to be tracked and institutional accountability to be facilitated within the sector. • However, it should be noted that currently progress towards many of these targets is not measured or tracked. While some measurement tools exist, detailed data is not available, and so overall accountability of institutions remains low.
<p>Inclusion and Participation of Displaced People</p>	 <p>Limited Progress</p>	<ul style="list-style-type: none"> • Building on the experiences of the humanitarian system in other sectors, inclusion remains a key programming principle. Progress is being made within energy programming on inclusion accordingly. However, inclusive change is still limited due to the need for funding for specific technical expertise on energy within displaced communities. • Several humanitarian energy programmes have pursued active hiring processes for refugees. • Many events are still happening without meaningful participation of refugees or internally displaced people, and programming is not inclusive. The Global Platform for Action is committed to mainstreaming inclusion and has secured funding to ensure displaced people have a voice in data and programming discussions. • Therefore, progress on inclusion and meaningful participation is limited.

Table: Progress towards SDG 7 within the Humanitarian Energy Sector in 2022.

Future: Realising Commitments and Policy Targets

The Sustainable Development Goals provide a framework for energy access, including advice on measuring progress, but do not set specific targets to achieve these goals. One document that has recently outlined targets that institutions can follow if they wish to, is the GPA Mapping Indicators for Humanitarian Energy Access and the Decarbonisation of Operations report (2021),²⁷⁷ which proposes a number of targets for minimum access standards in displacement settings.

During the interviews and research carried out for this report, several interviewees outlined the need for measurable targets to drive ambitions on sustainable energy in humanitarian contexts forward. Some interviewees suggested that having a collective target across the community would be useful to motivate actors and track progress. Others highlighted the importance of minimum standards in ensuring high-quality renewable energy products and well-designed sustainable solutions.

This report suggests a number of recommendations on policy and progress for the sector:

- Support progressive national and global policymaking: Host countries to be supported

Minimum Access Standards in Humanitarian Energy⁶²¹

- For electricity in households: Tier 3 or above access to electricity should be provided for displaced households and such access should be powered by renewable technologies, as this allows families to use energy for livelihoods and education.
- For cooking needs in households: Tier 4 solutions to indoor pollution for cooking and such access should be provided using clean technologies and fuels: as this reduces health risks for displaced families.
- For heating and cooling in households: Tier 4 for heating and cooling access should be supplied using renewable technologies.
- For energy for enterprises: Tier 3 or above access to electricity should be provided for businesses run by displaced people and such access should be powered by renewable technologies.
- For community facilities: Tier 4 or above access to electricity should be provided for community facilities in displacement settings and such access should be powered by renewable technologies.
- For institutions and operations: Tier 5 or above access to electricity should be powered by renewable technologies and clean cooking solutions should be provided for humanitarian operational needs.

The Importance of Minimum Standards

“It’s important to have indicators in the humanitarian situation analysis because the minimum standards will be required to at least make people think about energy-related indicators. At the sectoral level donors have made a big difference by taking the lead on that. For example, ECHO has done this

very concretely with the minimum standards and others having their framework of assessment. This, however, is required much more for development projects. So, standard-setting is an important part of the policy, which is needed in the sector to drive this agenda now.”

Senior Policy Expert.

Need for a Collective Sustainable Development Energy Target

“At the global level, what would be helpful is if we collectively have a target that we all work towards. For example, assuming we have a baseline of 80% of refugees do not have access to reliable power or 90% don’t have access to clean cooking. In this regard, we have a target, to reduce those numbers by half by a specific date – then this becomes the global target we set which then is undersigned by all UN agencies.

“This would be something more helpful and tangible that would be in line with big targets, such as the SDGs. This also means that not one single organisation is responsible for reaching the target, but we all collectively feel responsible and start monitoring progress. To design such a target needs an absolute number, for example, to make sure that 20 million refugees have access to power in the next five years. Then you count from zero and can count the interventions being implemented; doing both would show ambition and progress.”

Senior Policy Lead.

to include displaced populations in national energy planning. Support enabling policy environments to foster cross-sectoral policies and implementation. Donors should consider cross-sectoral funding of energy programmes and include displaced people in existing broader energy programmes, for example, by funding existing sustainable energy programmes to include displaced people and refugees.

- Develop a global baseline on energy access and emissions levels: Set a clear timeline and investment plan to reduce greenhouse gas emissions related to energy use. Invest in data collection and analysis.

- Set measurable targets to measure progress: Short-term targets by 2025, medium-term targets by 2030, and long-term targets by 2050 could provide accountability within the sector for demonstrating progress.

Beyond these recommendations, it is also possible for organisations to adopt concrete measurable targets to track progress on access in the short, medium and long term. Suggested targets are provided here to spur discussion and facilitate ambitious programming where possible in humanitarian contexts.

Targets

<p>Short-Term Targets by 2025</p>	<p>By 2025: Ensure basic energy access for households, displaced enterprises and community facilities.</p> <ul style="list-style-type: none"> • For electricity in households: provide Tier 2 or above access. • For cooking needs in households: provide access to cooking using clean technologies and fuels. • For heating and cooling in households: enable access to heating and or cooling solutions. • For energy for enterprises: enable facilitation of access to electricity. • For community facilities: provide Tier 2 or above access to electricity. • For institutions and operations: deliver Tier 5 or above access to electricity powered by sustainable technologies.
<p>Medium-Term Targets by 2030</p>	<p>By 2030: Deliver SDG 7 on sustainable energy for all displaced people.</p> <ul style="list-style-type: none"> • For electricity in households: provide Tier 3 or above access to electricity. • For cooking needs in households: provide Tier 4 for cooking using clean technologies and fuels. • For heating and cooling in households: enable Tier 4 for heating and cooling access. • For energy for enterprises: enable Tier 3 or above access to electricity. • For community facilities: provide Tier 4 or above access to electricity. • For institutions and operations: deliver Tier 5 or above access to electricity powered by renewable sources.
<p>Long-Term Targets by 2050</p>	<p>By 2050: All displaced people have substantial access to renewable electricity and modern cooking sources, which improves their quality of life.</p> <ul style="list-style-type: none"> • For electricity in households: provide Tier 3 or above access to electricity and such access should be powered by renewable technologies. • For cooking needs in households: provide Tier 4 access for cooking using clean technologies and fuels. • For heating and cooling in households: provide Tier 4 access for heating and cooling supplied using renewable technologies • For energy for enterprises: enable Tier 3 or above access to electricity powered by renewable technologies. • For community facilities: provide Tier 4 or above access to electricity powered by renewable technologies. • For institutions and operations: deliver Tier 5 or above access to electricity powered by renewable sources and clean cooking solutions.

Table: Short-term, Medium-Term, and Long-term Targets for Energy Access in Displacement Settings.



04

INSTITUTIONAL FUNDING, INNOVATIVE FINANCING, AND ENERGY MARKETS

Chapter contributing co-authors: Mark Gibson at UNITAR GPA, Mattia Vianello and Laura Clarke at Practical Action, and Cathleen Seeger at GIZ.

State of Play: Prevailing Funding Mechanisms, Challenges and Opportunities

Prevailing Structures and Terms: Funding, Financing and Markets

This chapter covers three core issues: funding flows within humanitarian energy, financing mechanisms for interventions and investments, and markets supporting energy supply and access. Understanding market dynamics and

humanitarian funding are complex, and are further challenged by the difficulties faced within the humanitarian system, such as a lack of funding and complex financing arrangements.

The Figure highlights the three distinct, yet interwoven, topics covered by this chapter:

Funding, Financing and Markets in the Humanitarian Energy Sector

Aligning existing humanitarian systems and informal energy markets in displacement settings with humanitarian provision of energy and implementation solutions.

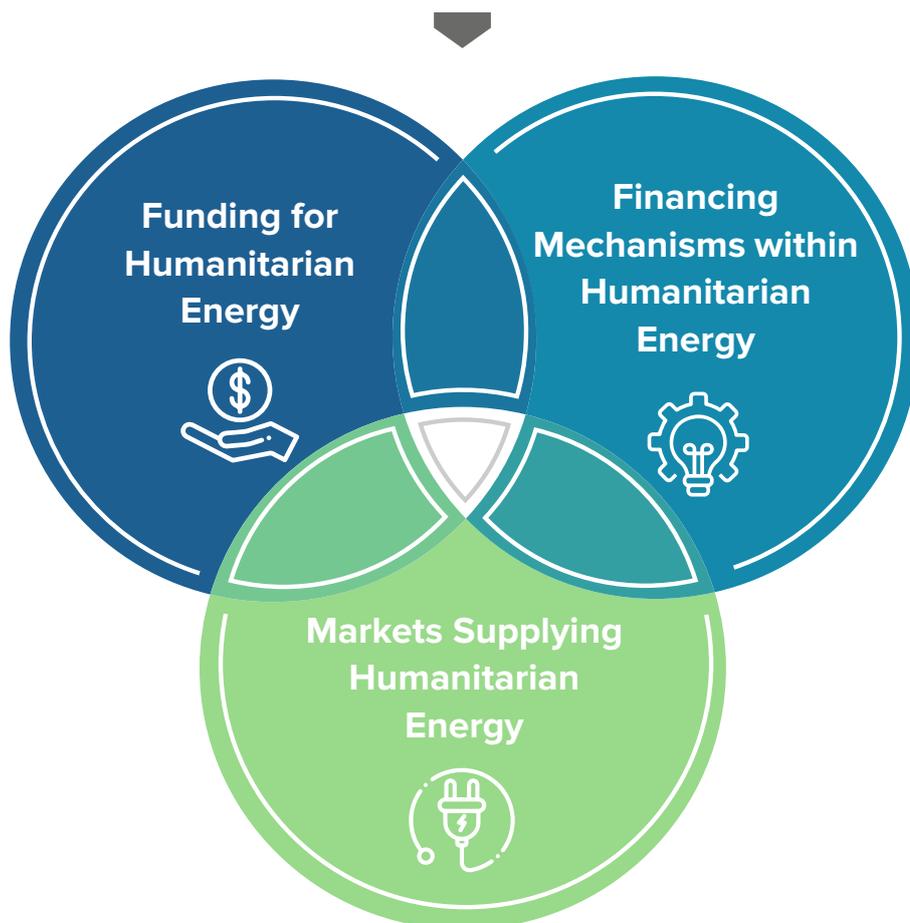


Figure: Funding, Financing and Markets in the Humanitarian Energy Sector.

Firstly, funding processes: which consider how money is raised within institutions for energy programming and intervention activities.

Specifically:

- Institutional funding covers the types of grants and donor-supported mechanisms (from foundations, funds, nation states or investors), which have traditionally been used to support energy access projects.
- Alternative funding mechanisms is frequently used by the humanitarian community to discuss new ways of using grant funding or donor financing.

Secondly, financing mechanisms: that use alternative and new ways of working on energy in humanitarian systems, aiming to support the provision of sustainable energy through access to markets and private-sector supply. Specifically:

- Innovative financing is used to refer to newer flows of money which support sustainable changes using non-traditional mechanisms to raise additional funds for interventions and investments.
- Blended financing is a subsection of innovative financing, which uses grant-based funding to leverage financing from other sources to deliver returns on investment and development, social, environmental and humanitarian impact.
- Private-sector investment is often used more specifically by humanitarians and non-specialists to refer to ways to raise funding and support investment pathways from for-profit companies.

Thirdly, energy markets: which focuses on how formal and informal businesses can and do supply energy in humanitarian settings.

Specifically:

- Market-based solutions is most often used

to refer to programming for communities and includes ways of using market principles to develop solutions for energy for displaced households, enterprises and institutions: “A market-based approach (broadly defined) includes any type of interventions based on market principles, particularly to facilitate access to energy products and services to meet the target groups’ needs. A market system approach instead uses a system-thinking lens to diagnose the underlying constraints in the energy market where interventions are aimed at unlocking barriers to create functional markets”.²⁷⁸

To some extent terminology on funding, financing and market processes is used interchangeably within the sector, and some terms are used differently by different actors. In this chapter, each term is used to cover a discrete topic. While the three are inexorably linked – and all are about supporting increased investment into the humanitarian energy sector – funding processes are often managed within agencies and institutions, while financing mechanisms are discussed by private sector actors and innovative policymakers, and market-based solutions are used within programmatic decision-making. The sections below provide an overview of the state of play across these different issues.

Funding Processes and Challenges

Many displaced people rely on some form on energy provided by humanitarian agencies and their partners. Funding for such provision is often grant-based to support free distribution of energy products. Core funding for humanitarian agencies is often provided on a yearly basis by nation states, who donate un-earmarked funding that agencies can use for any purpose.²⁷⁹ This funding is often not tied to any specific country, project outcome, or intervention area. As a result, it is up to internal agency processes and national

operations to determine how much of this funding goes to providing energy, which is not always considered to be a priority.

Funding for energy activities often targets a specific intervention, such as making cookstoves available to displaced people, or funding a piece of infrastructure for powering operations. In general, these programmes do not consider the whole value chain or take a holistic view of the challenges involved; as a result, many projects lack a plan for follow-on funding, scaling up, or for providing continued servicing of products and equipment. In addition, short-term funding cycles restrict agencies from investing in energy infrastructure with long-term payback periods, such as solar energy systems for their offices and operations. Importantly, traditional grant-based funding that funds core humanitarian operations, is not sufficient to meet the needs of displaced people, or to decarbonise

humanitarian response.²⁸⁰ If humanitarian actors only rely on traditional funding mechanisms, it is highly unlikely that SGD 7 will be achieved in displacement settings.

Considerable investment has been spent by donors on funding humanitarian energy projects in some locations. In Ethiopia the IKEA Foundation invested more than €75 million in Dollo Ado camps on agriculture and solar energy projects. Further investment in UNHCR from the Foundation's 'Brighter Lives' campaign and the Renewable Energy for Refugees (RE4R) programme takes the IKEA Foundation's investment in energy for refugees to over €100 million. Despite this large-scale investment, many practitioners criticise the way this funding has flowed due to the limited results in terms of energy access that these projects have produced.²⁸¹

Donation and Grant Money Funding

The IKEA Foundation has been one of the largest funders of humanitarian energy programming in recent years. Their investments have run over several years and supported humanitarian agencies and partners in supplying renewable energy solutions for refugee communities. Over time, much has been learned by the Foundation and other donors on the sustainability of investments. As a result, the funding of free distribution of solar lanterns and other technologies has largely been phased out and investments which use a market-based approach have been developed.

- The first phase of the Brighter Lives campaign raised over €6 million during 2014. The project worked from a model whereby for every LED light bulb purchased in IKEA stores, the IKEA Foundation donated €1 to the United Nations Refugee Agency (UNHCR). This enabled UNHCR to bring sustainable lighting and energy to over 350,000

people living in refugee camps in Ethiopia, Chad, Bangladesh and Jordan by providing solar street lights and indoor solar lanterns.⁶²² Total funding for the Brighter Lives campaign was €31 million from 2014 to 2019, including funding for solar farms investment in Jordan.

- From 2012 to 2018, the Foundation invested €75 million in Dollo Ado refugee camps in Ethiopia, to fund projects on education, livelihoods, agriculture, and solar energy.⁶²³ This was one of the largest private sector investments in a refugee-hosting area in the history of the international refugee system. It aimed to transform the lives of refugees and host communities, in collaboration with UNHCR, to support self-reliance and functioning economies of refugee camps. Through the programme, refugees in the camps created energy cooperatives to support local development.⁶²⁴
- Current investments by the IKEA Foundation, such as the Practical Action €8.7 million Renewable Energy for Refugees (RE4R) programme in Rwanda and Jordan, match expert energy practitioners

such as the NGO Practical Action with agencies like UNHCR to facilitate effective sustainable programming.⁶²⁵

Much of the initial funding from the IKEA Foundation was not tied to specific objectives, therefore humanitarian agencies and their partners were able to decide how to spend it. While in principle this offers flexibility, a lack of expert energy capacity or specialist energy programme designers meant that organisations struggled to implement sustainable projects. As one interviewee reflected:

“Every year, the challenge is that there is less and less, even though the needs are more and more. When it comes to humanitarian issues because the number of people is growing, money that gets channelled through the UN is all technically, free grant money from the Member States. The other kind of grant funding stream is when the big foundations donate money to certain initiatives, projects, programmes, and one of the classic ones, and recent ones like the IKEA Foundation”.

Finance and delivery expert.

Financial flows within humanitarianism are complex and often not transparent. National governments donate a considerable amount on an annual basis to humanitarian agencies: such funding is both earmarked and tied to funding for specific projects or objectives, and unrestricted, which is often labelled core funding. Unrestricted funding is not tied to specific activities or investments, rather the agency decides how to spend it: the proportion of total humanitarian funding provided unrestricted to UN agencies grew to 17% in 2020.²⁸² While untied funding may be appropriate in the first days or weeks of an emergency, once a displacement situation becomes protracted (which many do), this system faces many challenges associated with yearly budget cycles and a lack of long-term planning. To date, the humanitarian system has not had the expertise or resources necessary to develop alternatives and change this status quo.²⁸³

There are substantial challenges on funding levels within the humanitarian sector and current funding mechanisms cannot meet today's demands. The UNHCR had a funding gap of 48% in 2021²⁸⁴ due to the increased global crises and COVID-19. Such funding gaps, combined with the problems of annual budget cycles which can contribute to inefficient allocation of resources, make it difficult for the humanitarian sector to make long-term investments to meet

the energy needs of displacement settings in a sustainable manner. Spending on the provision of basic cooking and lighting technologies in refugee settings was estimated to be US\$1.6 billion dollars in 2020.²⁸⁵ Rising costs due to the global energy crisis and COVID-19 impacts are now heavily affecting the sector. As a result of recognising these challenges, the humanitarian sector is starting to change the way it approaches the supply of energy. There is some progress visible, with many actors moving towards using renewable technologies, sustainable financing modes, and more cost-effective and sustainable energy sources than diesel and firewood.

Currently, clean energy and sustainability investments must compete with other priorities, such as livelihood or innovation programming, and often go unfunded.²⁸⁶ Challenges associated with delivering energy solutions in displacement settings are exacerbated by limited financial resources, which restricts data collection, staff recruitment and retention, which in turn affects coordination activities and policy development. More specifically, there is insufficient funding for energy projects and a general lack of understanding within the humanitarian system on how relevant business models and commercial funding vehicles could support sustainable interventions. These limitations have resulted in

ad hoc energy interventions that lack scalability and are unsustainable once the initial funding has been exhausted. These constraints have led to the free distribution of energy products becoming the predominant delivery model for energy access programmes.

Free distribution may be the only option at the onset of humanitarian emergencies. Energy solutions delivered through partnerships with the private sector could, however, result in sustainable energy access in protracted displacement settings. Displacement settings are widely considered by the private sector as a high risk, low return market, however. Limited market data and a lack of proven delivery models hamper private sector engagement, leading commercial entities to focus on investing in markets with fewer challenges. As such, there is a need for an increased understanding on how displaced people (and their host communities) can be engaged as consumers, what solutions are affordable within a particular context, and which ones may require blended finance to support the initial engagement of the private sector. It is necessary to establish mechanisms that counter the perceived risk of investment, therewith presenting a more attractive market to commercial entities.

Key Statistic

Estimated spend on cooking and power in refugee settings in 2020 was approximately US\$1.6 billion. By 2030, this figure is estimated to reach between US\$3.9 and US\$5.3 billion.⁶²⁶

Most figures on funding needs and energy budgets are either unknown or unreported.²⁸⁷ However, some alternative approaches to mapping the funding needs for energy activities are beginning to emerge. UNHCR's Transforming into a Green UNHCR report is an example of this. They have calculated that investment

of US\$60 million will be required to kickstart UNHCR's green transformation.²⁸⁸ This one-off investment will help switch all the UNHCR offices to primarily renewable energy by 2030 according to the report. However, it is likely that considerably more financing will be required to support decarbonisation initiatives across the UN system and provide sustainable energy access for displaced households and businesses. To develop such funding, many practitioners have turned to innovative financing mechanisms and alternative sources of funding, for example, by working with development funders, investors, and private-sector actors.

Financing Mechanisms

Financing mechanisms can be used to support humanitarian energy professionals in mobilising funds to support long-term sustainable investment in energy programming; for example, to support the provision of sustainable energy through access to markets and private-sector supply. Innovative and blended financing approaches can leverage financing from sources beyond traditional humanitarian grant-based funding. In recent years, the humanitarian energy sector has seen a number of new financing mechanisms emerge. However, progress on this topic is slow and incremental as many humanitarian agencies have large bureaucratic structures which can be resistant to change. New financing mechanisms can both leverage new funding from the private sector, and work with the private sector as innovative suppliers of energy services and solutions.

One core challenge facing innovative approaches is the opening up of the humanitarian space to private sector actors, and aid being viewed as a commercial opportunity. Occasionally, humanitarian practitioners suggest that private sector involvement in the provision of services for refugees places an undue burden on

already vulnerable communities. While this could be a risk if humanitarian systems are completely privatised, currently most sector experts suggest a blended approach where resources are used effectively to reduce the costs of energy for both displaced people and the humanitarian system. Subsidies and free distribution may also be appropriate in the first months of an emergency. It is important to note that private sector companies already supply diesel generators and fuel to refugee camps and that humanitarian agencies already pay for energy and suppliers of lanterns and firewood. Similarly, many refugees already pay for their own energy access, often at an enormous cost proportional to their income.

Therefore, the private sector has always been involved in the humanitarian provision of energy, and refugee communities have always shared the burden of payment for access. This report seeks to showcase examples where involving the private-sector in an efficient manner can reduce costs and increase energy access, while meeting 'do no harm' humanitarian requirements.

There are many benefits to using innovative financing approaches, such as reducing the costs of energy for both humanitarian providers and displaced communities. The potential to reduce costs, and increase access levels is considerable. Savings on fuel use from solar or renewable solutions could be recycled into

Key Publication: Innovative Financing for Humanitarian Energy Interventions⁶²⁷

The 2019 Moving Energy Initiative (MEI) Innovative financing for humanitarian energy interventions report outlines the challenges of financing humanitarian energy interventions. Due to the complex and unpredictable operating environments that displacement settings present, private enterprises and investors often view such contexts as being too high risk. Alternative structures need to be put in place in order to finance energy access projects in displacement contexts.

From outlining the existing challenges of financing energy interventions, MEI proposes potential mitigation instruments for the private sector. Drawing on research completed under MEI's programme of work and interviews with a range of stakeholders in the sector, the following conclusions are drawn:

- Energy interventions should be regarded more holistically and should take a cross-sector approach to both the supply of and demand for capital.
- Targeted pilot schemes should be designed and implemented aimed at generating data on the introduction of such financing schemes.

- Financial instruments developed should be coupled with technical assistance to support market data.
- More research is needed into the merits of a global pooled facility versus more localised and project-specific approaches.
- There is a need for a dedicated vehicle to aggregate projects across humanitarian settings.

The following next steps were recommended to mitigate the identified financing challenges and advance the design of tailored financial mechanisms:

- Explore more deeply specific consumptive, productive and public energy use cases.
- Collect existing market data to understand the appropriate blended financing instruments needed.
- Collaborate with donors, impact investors and private-sector actors interested in sustainable energy investments on designing financial and risk mitigation strategies.
- Investigate existing projects around innovative finance and draw on lessons learned from the application of these mechanisms.

humanitarian programming. Reducing energy costs and expanding access would also reduce the burden on displaced people and enable them to spend income on other needs, including education, business development, and improving the self-reliance of communities. Research suggests that every dollar spent on greater energy access represents a value of US\$1.40 to US\$1.70 from employment, improved health, productivity, time saving and, IF replacing diesel generators with solar energy, environmental

benefits.²⁸⁹ Alternative financing also offers the humanitarian energy sector opportunities to expand its resource base and develop new ways of working.

Energy Markets

Energy markets are present all over the world. In the global North, energy suppliers, distributors, and retail companies provide energy and consumers pay for electricity and gas. These

Investment Opportunities and Financial Sustainability for Energy Projects

“Now the sector can benefit from blended finance. You need early injections, and they tend to be in the form of grants, to help demonstrate ability and to prove that something is feasible. But then you start gaining the attention of the more traditional investors and funders, who will not just give you money to do whatever you want: investors expect real results, and you will be accountable for what you said you wanted to do.

“Investment finance becomes a bit of a snowball and you start getting funding from all different angles,

rather than just grant funders and the foundations. Groups like Power Africa, USAID do grant funding too, but often it is to minimise that risk. Because that risk is high for the provider. So supporting them in that way leads to financial sustainability.

Companies are starting to make enough revenue to be sustained. In the long term, they can achieve profit. And if they want to scale up operations, and need investment, then they already have a portfolio and have a record of their revenue streams, as well as the sales that they have made. They then can go to investors showing their good business in a location and this opens up opportunities for investment.”

Finance and Delivery Expert.

companies are regulated and often subsidised by national governments. In developing countries, energy markets can be fragmented and informal, however, national energy suppliers still provide access directly and/or local private sector businesses sell products and energy services. In refugee camps and displacement settings, however, energy markets tend to work a little differently. The majority of energy economies in displacement settings are informal, as in refugee spaces particularly, the right to work and own a business is often contested. Even when

displaced communities have the right to work, they may face additional barriers in accessing bank accounts or tax structures. IDP environments may face uncertainty of national processes and formal supply of energy may be disrupted in conflict or fragile settings. Despite these challenges, energy markets do exist in displacement settings. Research conducted by Shell, Vivid Economics, and Dalberg on energy in displacement contexts suggests that: “people who live and work in and around [refugee] camps and settlements spend more than US\$1.6 billion per year on power and

cooking”.²⁹⁰ This figure suggests how large the market for energy in refugee and displacement settings could be.

Bellanca suggests there are “fifty shades of market” present within displacement settings, and that different market modes are required for cookstove solutions, solar products and fuels.²⁹¹ Markets for energy can be formal or informal, regulated or unregulated. As a summary: “an energy market facilitates the exchange of goods (such as fuels, cookstoves, lamps, torches and batteries) or services (such as electricity through grids and LPG refilling services) between a buyer (the demand side) and seller (the supply side). The exchange could be in return for a transaction of currency or of another form of value, such as information, status and power ... Market actors are the individuals, institutes and organizations that deliver and pay for the exchanges, supporting functions and rules that comprise the market system”.²⁹²

Currently within displacement contexts, and especially within refugee camp settings, there are many energy market limitations. Markets may be remote, unable to access different suppliers, or restricted by humanitarian or national governmental policies. In countries such as Bangladesh and Tanzania, where refugee rights are severely restricted and local livelihoods are limited, building markets and supporting private sector action can be very challenging. In these locations, it is necessary for humanitarian agencies and NGO partners to act as public suppliers of energy, as it is challenging for local markets to exist. However, in many protracted situations, where there are existing markets and freedom for refugees to work formally or informally, market-based support for energy interventions can flourish.

Humanitarian provision of energy is often focused on the provision of basic products such as lanterns and firewood. However, energy

markets have developed organically from the needs of displaced people, local supply options, and dynamism of refugee entrepreneurs and host community businesses. This mode of accessing energy can be described as ‘independent access’, whereby refugees and displaced people find, secure, and pay for their own energy –often independently of humanitarian systems.²⁹³ Independent access is enabled by local existing energy markets, such as, informal shops and kiosks in refugee camps who sell phone charging services, solar panels, or offer household connections to informal diesel generators. Much has been written on the informal nature of economies of refugee spaces, and how the income generation possibilities of markets can lead to increased levels of self-reliance.²⁹⁴ For energy, existing markets and informal modes of action are vital in supplying displaced people with access to energy, and currently provide the main forms of access in households and businesses in displacement settings.

To some extent, humanitarian implementation of energy solutions has been conducted independently of existing energy markets within displacement settings. For example, projects have been designed by head offices or international actors without conducting market assessments or site visits to understand current access mechanisms. This has occasionally resulted in disruptive activities, especially in refugee camps, where some large-scale free distribution of solar lanterns had negative impacts on existing livelihoods and informal energy markets.²⁹⁵ Energy solutions designed by humanitarian agencies, development practitioners, and implementing partners can no longer afford to ignore independent access and informal provision of products and services, and must include existing modes of supply and end user needs within the design of humanitarian energy programming.

While forms of market access are common in protracted situations, they are not totally divorced from humanitarian systems. One key point of interaction between market provision and humanitarian provision is the use of cash-based support for displaced people. Where local markets are working and appropriate goods and services are available, the cost of energy provision, especially of cooking fuel, has sometimes been included in the 'minimum expenditure basket' for cash-based interventions²⁹⁶ (also referred to as cash and voucher assistance, cash transfer programming, and cash-based assistance), where households

are provided with money to buy what they need. The key benefit of such a system is that it gives freedom of choice to displaced people and supports local markets. Unfortunately, energy is not always considered when calculating what a household requires to meet basic needs.

In summary, the funding, financing, and creation of markets in the humanitarian energy sector are rapidly evolving and challenging to tackle. However, as the sections below outline, there are several examples of best practice and learning to guide future action.

Independent Access to Energy

“Diesel generators are a big source of energy that refugees use for lighting their homes and powering their businesses. For most businesses in the camp, energy is used for cooling beverages and storage of fresh food. A few refugees use solar to power their businesses or homes. Refugees’ adoption of the solar system has transformed local dynamics in the refugee community by improving the quality of life, revolutionising the way business is done, creating new opportunities across sectors, and leveraging the local economy.

“The energy generated from diesel-powered generators operates only for a few hours and at a higher cost which affects the productivity of local

enterprises. However, renewable energy for the refugees who could afford it enabled them to extend the time of service at no extra cost thus generating more revenues.

“Firewood is the most used form of energy in most refugee homes for cooking. WFP through its partners distributes a round of firewood ration of 10kg for an individual. Some refugees prefer to use charcoal that they buy or trade with their food ration. In the refugee camp, charcoal is perceived to be more convenient and less risky without considering the impact on the environment. Very few refugees can afford LPG gas for cooking because it is expensive, and a bad value for a family of more than three people.”

Refugee Living in Kenya.

Cash Supporting Energy Markets

“Sometimes you have free cash distribution, which is effectively just giving people money to buy whatever they need. The result is that they are able to become more self-sustained and start up small businesses or can perform some activities that bring in more income. So, they believe that free cash distribution is better than the free distribution of goods – so that

you don't choose for people what they need. They choose what to do with the money that has been given to them through the voucher system or the different modalities of cash-based transfers. If you receive cash or vouchers, it's usually tied to either food or energy products, or services or other items that the organisation wants to trigger.”

Finance and delivery expert.

Progress: Moving Towards Market-Based Solutions and Innovative Financing

Progressing from Traditional to Alternative Funding and Financing Structures

Traditionally, humanitarian agencies procure and provide energy for their own needs and supply basic lighting and cooking fuel solutions for households. This is often done through grant-based financing and un-tied humanitarian aid funding. Under traditional structures humanitarian agencies receive funding directly from donors or nation states and decide which energy solutions to support.

For energy for displaced people, an example of traditional donor-led investment is the International Olympic Committee (IOC) investment in lighting in Mahama camp in Rwanda.²⁹⁷ IOC teamed up with UNHCR to bring light to the camp, supporting its vision of building a better world through sport. In the ‘Become the Light campaign’, the IOC aimed to transform positivity into light by providing sustainable, solar-powered lighting solutions in the camp backed by supporters registering a fitness tracking device online and ‘donating’ their physical activity. This activity was logged and once certain thresholds were reached, the IOC would light parts of the camp. Such donor-led or traditional investments may be useful in providing some energy solutions for public lighting or energy for community facilities. However, they have rarely reached scale or provided energy solutions for households or businesses in displaced settings.

In some refugee camps, humanitarian agencies buy their own generator, transport diesel at a very high cost to a remote location, and only connect their offices and compounds, leaving the rest of the camp, including displaced households and businesses, in the dark. The agencies pay the fuel bills and the capital cost for the diesel generators. Such an approach is often significantly

more expensive than alternatives, such as hybrid mini-grid solutions²⁹⁸ or connection to a low-carbon national grid. This results in inefficient and expensive energy access, while failing to respond to the needs of energy consumers and end users. The burden of securing energy also falls on humanitarian agencies, who often do not have the time or resources to investigate cheaper or more sustainable solutions.

Alternative funding and financing routes have now started to emerge which support private-sector involvement and collaborative ways of working across the humanitarian system. In these cases, market actors and humanitarian organisations can act in alternative ways, such as using market-based programming or suppliers to provide energy access directly to end users. Using alternative and innovative funding mechanisms can help provide solutions at a lower cost than buying, owning or operating expensive capital assets. Such approaches can also support higher levels of access within displaced communities, by offering energy solutions directly to households and businesses instead of waiting for delivery through humanitarian systems.

Debates and discussions on conventional and alternative approaches to energy funding and financing in displacement settings have developed considerably in recent years. However, while policy and research discussions have provided much new thinking, in many humanitarian situations traditional funding and grant-based structures are still followed.

Over the past five years, there has been an increasing emergence of private-sector approaches to supplying energy access in humanitarian settings. This change has been driven both by energy for development experts and the donor community, who have invested

in pilots to highlight the costs of energy and demonstrate alternative supply and financing mechanisms. Such approaches seek to change the status quo of how humanitarian organisations procure energy for both themselves and displaced people. An example of delivering new ways of working on financing and funding is provided by the UNHCR and GIZ Energy Solutions for Displacement Settings (ESDS) programme.

There are several examples within the sector of programmes which seek to utilise grant or traditional funding in alternative ways. For example, as many large-scale investments have multiple objectives and work across different countries, some projects make use of multiple modes of financing throughout the project lifetime. For example, the Practical Action Renewable Energy for Refugees (Re4R) programme used

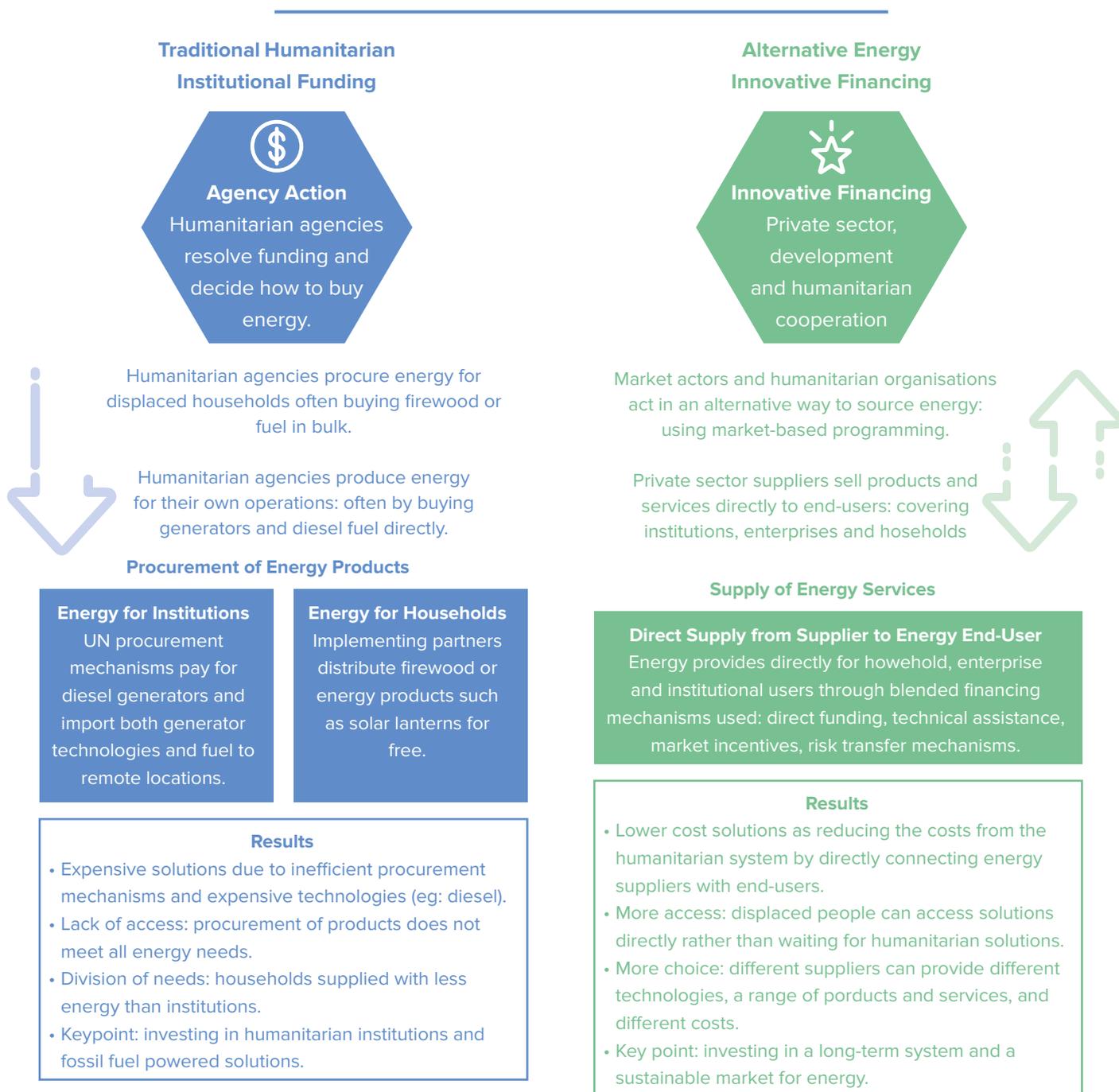


Figure: Traditional and Innovative Finance Mechanisms in Humanitarian Energy.

direct funding to support solar home system suppliers in de-risking entry to the market in refugee camps and reduce the initial costs of overheads, and offered technical assistance to suppliers and partners to activate local markets. The project also made use of market incentives

to reduce the cost of solar home systems to enable low-income households to afford them. The project has been successful, with over 4000 solar home systems installed across three refugee camps in Rwanda.²⁹⁹

Market-based Programming: GIZ Energy Solutions for Displacement Settings

The Energy Solutions for Displacement Settings (ESDS) project is one of four components of a global programme sponsored by the German Federal Ministry of Economic Cooperation and Development (BMZ) to support UNHCR in the implementation of the Global Compact on Refugees (GCR). The focus of ESDS is on providing sustainable energy solutions to refugee and host communities in Ethiopia, Kenya, and Uganda to enhance self-reliance. The €12 million programme began in November 2018 and is funded until the end of December 2022. It is understood that a project extension, along with an additional funding request, is presently being prepared. ESDS activities are structured along with three intervention areas, namely:⁶²⁸

- Working with policymakers to create the required framework to implement the GCR and ensure sustainable energy access for refugees and host communities at national, regional and district levels.
- Greening UNHCR infrastructure, by providing technical advice to UNHCR to support the implementation of energy efficiency measures to reduce its diesel consumption and to help its

transition to solar-based energy infrastructure via market-based approaches.

- Improving market-based access to energy by promoting markets for sustainable energy products and services for refugee and host communities in collaboration with UNHCR and private sector actors.

The ESDS project team works, in selected regions, in collaboration with UNHCR and local and national authorities. For instance, ESDS has also provided technical assistance to UNHCR to support the finalisation of the technical designs and comparative financial modelling for twelve project sites in the three countries that are to be solarised under the Green Finance Facility. In addition, ESDS designed a financial model adapted to UNHCR requirements regarding tariff setting and cost comparison for its solarisation programme.

ESDS Uganda is working with results-based financing schemes for improved cookstoves and solar home systems. A similar scheme is implemented for Ethiopia. To date, 4439 improved cookstoves have been sold.

To create a market, you need to establish a supply chain and also a demand

“To create a market for improved cookstoves, you need to establish a supply chain and also a demand. That’s something we are looking at: how to create the demand and how to create the supply chain. So if we want to have private companies going into

the settlement and selling improved cookstoves they need a ‘carrot’. So, that’s step one, to create a market, you have to talk to the people, make awareness campaigns and do capacity building on the products.”

Senior Technical Expert.

Tailoring Innovative Finance Solutions: Renewable Energy for Refugees (RE4R)

The Practical Action and UNHCR Renewable Energy for Refugees (RE4R) project, funded by the IKEA Foundation, has taken a market-based innovative financing approach in two countries: Rwanda and Jordan.⁶²⁹

Household access: direct market subsidies and supporting suppliers

- Household electricity access via solar home system suppliers in Rwanda: the project supported two solar home systems suppliers to provide affordable products directly to refugees. This activity aims to strengthen the market for energy in the camps and has also created jobs for refugees, as technicians, customer care and sales agents, security guards, and business owners.
- Community fund for inclusion in Rwanda: The project established a community fund to promote financial resilience, increase household incomes and support the poorest households to afford solar home systems. The fund provides loans and savings schemes to groups of refugees, supports the establishment of micro-businesses, and builds financial management skills.
- Hot water subsidy for households in Jordan: RE4R has installed solar-powered hot water systems for refugee families living in rented accommodation in Jordan. In exchange for the installation, landlords agreed to reduce refugee tenants' rent for a year. Improvements to insulation, doors, and windows were also made to these homes. Reduced rent payments and lower energy bills are making a huge difference to refugees' monthly budgets.

Energy for Businesses and Jobs: Employment Training and Job Creation

- Livelihood support for market development in Rwanda: RE4R supported 150 entrepreneurs and small businesses in and around the camps in

Rwanda through the Productive Uses of Energy for Livelihoods Programme. The programme matches entrepreneurs with business mentoring programmes, technical training, and access to finance, to help them use energy and electrical appliances to grow their businesses and boost their incomes. Some of the businesses supported include hairdressers and salons, butchers, a cybercafé, phone repair shops, tailoring and shoe repair shops, food production, egg incubation, carpentry, and cafes.

- Employment training for refugee jobs in Jordan: Training on solar technology has helped young people gain key skills to enter the renewable energy sector. Students have completed certified training to design, monitor, and maintain solar systems and on how to transition to employment, including interviewing skills and matching with employment opportunities.

Community Access to Energy: Grant Provision of Public Services

- Community street lighting in Rwanda: Following consultation with refugees, RE4R installed solar street lights in three camps in Rwanda. Refugees prioritised the locations that needed lighting. These included health centres, water and sanitation facilities, markets, playgrounds, and sports fields, as well as access routes to them. Night-time lighting has transformed life after dark: shops stay open, children are able to play and study, and residents feel safer moving around the camps after nightfall.
- Power for schools in Jordan: To support the schools' infrastructure, RE4R installed on-site solar photovoltaic (PV) systems and made energy efficiency upgrades, such as installing LED lights, solar water heaters, and shading panels on windows. These changes have helped make schools more comfortable, cooler in summer and warmer in winter, and contributed to reducing their electricity bills.

UNHCR connected the entire camp to the national grid, which was extremely progressive

“For Azraq and Zaatari, UNHCR had enormous costs because they connected the entire camp to the national grid which was extremely progressive because what we see in most camps, this is not the case in almost all settlements. For the first time, UNHCR tried to include electricity from the outset of an emergency into the direct programmes and activities for the people on the ground. This is very logical because the refugees that came from Syria had electricity back home so obviously there was so high demand”.

Sector Leader.

Projects such as this offer examples of how using blended finance and market-based approaches can lead to positive outcomes for uptake, sustained usage and quality of life benefits, and make the best use of donor funding.

Innovative finance initiatives have been led by both implementing partners and donors. Some donors have taken the bold step to trial new approaches and deliver grant funding in an alternative way, such as the construction of solar farms in Jordan, supporting Syrian refugees, that have used blended financing and private sector investment to fund large-scale electricity supply. These projects demonstrate the notable potential of alternative institutional funding approaches and innovative financing mechanisms.

Decarbonising at Scale: Power in Jordan

Zaatari, Jordan solar plant. Established in 2012, the Zaatari camp in northern Jordan is under joint administration of the Syrian Refugee Affairs Directorate and UNHCR Jordan. Housing a total of 77,447 refugees out of the registered 762,088 refugees in Jordan in 2019, Zaatari is the largest camp for Syrian refugees.⁶³⁰ The earliest energy project in the camp was the installation of electric grid lines in 2012. The electricity network was predominantly set up by refugees in an unsystematic manner. Due to safety concerns and increasing electricity bills the need for a safer option surfaced. As a result, all the networks were disconnected by 2014 and reconstructed by 2015. However, energy scarcity in the camp was still an issue.⁶³¹ In November 2017, a 12.9 MWP solar PV power plant was constructed to increase the hours when power was available. The plant helped UNHCR save an estimate of US\$5 million in energy costs.⁶³²

Azraq, Jordan solar plant. Azraq refugee camp construction began in May 2013 to respond to the overflow of Syrians unable to be hosted in Zaatari camp. The camp's population in 2019 was 35,752 and is located roughly 20km from the town of Azraq in the Zarqa Governorate.⁶³³ In 2014, electricity was brought to Azraq to create equality of service for the Syrian refugee population in the two Jordanian camps. UNHCR developed the Azraq Electricity Project, which had two components: the construction of an electricity network in the camp and the construction of a 5MW solar PV power plant.⁶³⁴ Connecting to the local grid with power provider EDCO (Electrical Distribution Company), Villages 3 and 6 of the camp were connected to mains power in 2017, and Villages 2 and 5 were connected in 2018. The overall camp renewable power generation became 3.5 MW, covering 55% of shelter electricity needs.⁶³⁵ The construction of the electricity network consisted of an extensive network of cabling, poles and transformers, linking shelters and public street lights to the national grid and solar power plant. Each shelter was equipped with LED lights and electrical sockets and linked to a smart metering system. In external public areas, grid-connected, high-efficiency LED street lights and energy saving controls were installed to provide light in shelter plots, schools, clinics, market areas, sports areas, and roads.⁶³⁶

Despite this progress in sectoral understanding, and several successful implementation projects, progress on new financing approaches and changing institutional funding mechanisms is still limited. In terms of supplying energy and solutions for households and businesses, projects like the establishment of electrical grids in Azraq and Zaatari refugee camps are outliers. The majority of energy funding is still through traditional grant programmes.

For operational energy provision, progress on innovative mechanisms has been similarly slow. Integrating solar energy into existing diesel-powered electricity systems in refugee camps could reduce costs by more than 30 per cent and greenhouse gas emissions by more than 80 per cent.³⁰⁰ While the evidence for change is clear, UN institutions have been slow to change their processes and procurement methods. Therefore, there has been limited progress overall for the sector in decarbonising operational energy spaces. Although there has been significant investment and effort directed to solarising diesel-based water pumps in displacement settings, there are concerns that this has reduced the potential for private sector-led solutions to support water pumping solutions, as anchor clients have been removed.

Progress on Innovative Financing and Use of Blended Financing Options

The topic of financing and fundraising humanitarian energy activities is complex. It covers both the necessary funding to support the energy access needs of refugees and displaced people, and the financing mechanisms needed to decarbonise UN energy supply. It encompasses a number of mechanisms and financial flows, often with non-traditional involvement of the private sector, and innovative finance activities disrupting action in both helpful and unhelpful ways.

Innovative financing in the humanitarian sector

Key Statistic

Six UN agencies and ICRC operate more than 11,000 generators in displacement situations⁶³⁷. More than three generators would need to be decarbonised every day for the next nine years to meet the 2030 targets. Integrating solar energy into existing diesel-powered electricity systems in refugee camps could reduce costs by more than 30% and greenhouse gas emissions by more than 80%.

has no clear definition and takes many forms. In their 2022 report, *Blended Finance Solutions for Clean Energy in Humanitarian and Displacement Settings*, the Norwegian Refugee Council (NRC) and GPA highlight that innovative financing can be:

“Everything that is not direct, traditional grant funding; The generation of additional money from non-traditional sources; Combining funds from multiple sources to accomplish one financing objective; Increasing the effective use of existing financial resources, including money received from traditional humanitarian donors, i.e., achieving more impact with the same amount of money; A finance mechanism that is new in the humanitarian system or one in which there is little experience; and/or Creating platforms which connect providers of capital/funds with borrowers” (NRC and GPA, 2022, p7).³⁰¹

Scaling up clean energy transitions in humanitarian situations calls for increased investments and finance both from the private and the public sector. The humanitarian–development nexus provides great opportunities for accelerated actions on providing energy solutions in crisis contexts, including for humanitarian energy needs. The nexus provides avenues for channelling financing and investments in line with countries’ national energy plans. This scales up efforts to implement the climate mitigation pillar of countries’ Nationally Determined Contributions to the UN

Key Publication: Blended Financing Research

The GPA Coordination Unit, with support from NORCAP, has produced an overview of blended finance mechanisms and their role in delivering sustainable energy solutions in displacement settings, aimed at supporting energy specialists in developing market-based clean energy solutions.⁶³⁸

The report, *Blended Finance Solutions for Clean Energy in Humanitarian and Displacement Settings: Lessons Learnt – An Initial Overview*, along with its associated Blended Finance Toolkit, provides an overview of blended finance mechanisms and their role in delivering sustainable energy solutions as part of humanitarian response, as traditional grant-based funding, which humanitarian organisations rely on, is not sufficient to deliver the energy needs of the displaced. The report highlights key lessons learned from the use of different blended finance mechanisms in displacement settings and makes recommendations for their continued development. Attention is brought to the potential benefits of employing finance mechanisms such as direct funding, technical assistance, risk transfer mechanisms, and market initiatives.

The Toolkit includes a high-level summary of developing blended finance solutions in humanitarian and displacement settings, containing a Blended Finance Compatibility Matrix identifying the most favourable blended finance mechanisms for a particular clean energy project. A more in-depth overview of the three most promising financial mechanisms, as evaluated by the NORCAP Blended Finance Working Group, is provided.

The authors argue that in order to assess whether blended finance is needed and how it can be effectively structured, it is essential to understand the relevant restrictions and market failures, and the sectoral, country and humanitarian context. Although examples of blended finance mechanisms in displacement settings that can provide crucial insights are emerging, there is limited experience in using blended finance mechanisms to deliver SDG 7 in displacement settings. If the risks and returns are to be appraised fully and future mechanisms structured appropriately, more data is needed.

Framework Convention on Climate Change.

A particular need exists to further de-risk the policy landscape for renewable energy financing and investment, and scale up public–private partnerships. Partnerships are a prerequisite for scaling up finance solutions and galvanising partners from the private sector and international financial institutions to unlock concessional climate finance beyond general national development plans.

To mobilise investments, **blended finance** mechanisms may help accommodate humanitarian financing, development financing and private sector financing into a common basket of initiatives bound together by the need to jointly provide energy to affected communities. Blended finance approaches can support the

development of energy solutions in displacement settings. Blended finance can be defined as: “an approach for increasing the amount of project funding by combining different types of financing from different sources and/or for different purposes, which contribute to development, social, environmental or humanitarian goals and generate financial returns. It is common for one source of funding within the blended finance solution to act as a catalyst for raising additional funds”(NRC and GPA, 2022, p8)³⁰².

Other innovative finance approaches include the use of green finance (equity, lending, insurance, guarantee mechanisms and investment); accelerating instruments such as green sukuk, green bonds and green insurance; engaging the financial sector in opportunities such as

green Islamic finance; identifying and mapping emerging financing needs and opportunities; and supporting innovations specifically targeted to providing energy needs in other SDG sectors.³⁰³ Attracting private sector investments calls upon the use of blended finance approaches to help incentivise, de-risk and attract investment into contexts it would not otherwise engage in. These can include loan guarantees for sustainable energy, climate indexed insurance strategies, and adaptive social protection measures. With such mechanisms, the establishment of partnerships would extend to stakeholders such as commercial banks, international financial

institutions, insurance companies, and investors, in order to understand, prevent, reduce, and transfer risks related to climate change impacts. Fintech's role in scaling up participation of the private sector in situations of displacement can be tied to catalysing innovation, policy de-risking and the scaling up of green finance.

There are several examples of these four types of blended financing within the humanitarian energy sector. **Direct funding** is often in the form of a grant from a donor, given to reduce barriers as part of a functioning market system. A successful example of this type of approach

Understanding Blended Financing Mechanisms

There are four common types of blended finance mechanisms: direct funding for the removal of commercial barriers, technical assistance, risk transfer mechanisms, and market incentives.

Direct funding is usually money provided in the form of a grant donated to a project to remove a barrier that prevents an otherwise commercially possible project from starting.

Technical assistance can attract private-sector financing to energy projects by providing technical experience to reduce knowledge gaps. It can take the form of advisory or consultancy services to reduce staffing, training, or knowledge costs within a project.

Risk transfer mechanisms are management tools used within the private and development sectors to move risks to a third party who assumes liabilities and financial consequences of actions, reducing future financing gaps that might emerge. Two types of risk transfer tools are insurance policies, which are contracts agreeing to make a payment in case of an event occurring, and guarantees mechanisms to ensure that a guarantor assumes financial responsibility if problems occur. Guarantees can be used within humanitarian energy both at the

household level, for example if a household cannot meet their payments for a solar home system, and at the institutional level, where guarantees can help reduce risks to commercial companies or agencies by covering an investor's losses if a decarbonisation investment underperforms.

Market incentives aim to support investment with high-impact outcomes in situations where normal market conditions do not exist, for instance, in a refugee settlement. They look to create commercial markets where they did not originally exist by encouraging capital to move into areas with humanitarian and/or development needs. For example, results-based financing (RBF) is a market incentive which offers payment by results. Other examples of market incentives are impact bonds, which use private funding from investors to cover up-front capital costs, and enterprise challenge funding, which distribute grants or financing to projects based on a competition.

Further detail on blended finance approaches is available in *Blended Finance Solutions for Clean Energy in Humanitarian and Displacement Settings: Lessons Learnt – An Initial Overview* by NRC and GPA⁶³⁹.

is the energy transition project at IOM's Humanitarian Hub in Malakal in South Sudan, which used grant funding to decarbonise local energy supply using a private sector supplier.³⁰⁴ UNHCR has used direct funding in several places to reduce the cost of LPG for household cooking. In Niger, UNHCR ran an LPG pilot programme for cooking with € 2 million funding from the European Union.³⁰⁵ The programme enabled 25,000 LPG kits to be distributed to families, and for UNHCR to supply a voucher system for payment of the LPG. As a result of the intervention, the cost of LPG has fallen and 70% of the families who took part in the pilot are now able to afford LPG. The market changes have also attracted 4,000 new customers in the region to use LPG. Direct funding opportunities can enable energy provision to be subsidised throughout the market chain and can reduce the cost of doing business in complex emergencies.

Technical assistance is critically important

for many programmes, as it allows for the development of project pipelines, and improves understanding of the context, risks and potential returns. By extension, this can help to de-risk projects by demonstrating that risks have been overpriced. An example of this is feasibility studies and market analysis, which can show the viability of a project. There is also the dimension of complementary technical assistance to a project: assistance which runs concurrently with an ongoing investment and helps ensure it meets its long-term goals (for example, community engagement around investments).

One example of technical assistance used within humanitarian programming is the GIZ Energy Solutions for Displacement Settings programme, which is funded by the German Federal Ministry of Economic Cooperation and Development (BMZ). The €12 million programme has several components, including supporting household energy needs through technical assistance

Direct Funding in Practice: The Case of IOM's Malakal South Sudan Project⁶⁴¹

IOM's operation in Malakal, South Sudan, supports IDP communities and was previously powered by diesel generators. When IOM examined the possibility of transitioning the facility to run on solar energy, they decided to sign an energy service agreement to reduce the level of their own capital investment. This contract, subject to a confidentiality agreement, allowed IOM to purchase energy-as-a-service from Scatec Solar, the project developer and independent power producer, who installed the 700 kWp solar photovoltaic system.

As part of the terms of the deal, IOM had to cover a portion of the initial hardware and installation costs and pay for the solar panels and batteries for the duration of their operations in Malakal. These payments reduced commercial barriers to the project. Thanks to a donor grant of £300,000 from the UK's Department for International Development (now the UK Foreign Commonwealth and Development Office), the project was greenlighted and completed in June 2020.

The Malakal project accounts for an 80% reduction in the Hub's consumptions of diesel fuel, equating to a saving of around 800 litres of diesel per day, or 292,000 litres per year (equivalent to a saving of approximately 76 tonnes of CO₂ per year), resulting in annual energy savings of approximately 18%. It is believed that further cost savings could have been achievable if a suitable de-risking mechanism was available to de-risk the termination clause within the long-term agreement between the two parties.⁶⁴⁰

modalities in Kenya, Uganda, and Ethiopia. In Uganda, the programme has used a result-based financing scheme for the sales of improved cookstoves and solar home systems, which has resulted in 2,000 stoves being sold and 3,750 solar PV systems.³⁰⁶ Similarly, the Netherlands Development Organisation (SNV) EnDev Market Based Energy Access project has supported technical assistance within their programme in Kakuma, Kenya.³⁰⁷ A key example of technical assistance in the humanitarian energy sector is NORCAP's support in providing energy experts through their energy pool, as well as developing knowledge products with partners on key skills needed to progress towards achieving sustainable and longer-term solutions, further

details of which are outlined in Chapter 5.

There has been considerable discussion within the humanitarian energy sector on the use of risk transfer mechanisms, including guarantee funds, in recent years. To drive this learning forward, the GPA has run a series of webinars and blogs on guarantee mechanisms and humanitarian energy contracts.³⁰⁸ These training events have demonstrated alternative business models, where humanitarian partners can outsource electricity supply to private partners by de-risking the termination clause in UN contracts.

Several projects have used market incentive mechanisms to drive forward locally implemented work which aims to encourage the expanding of commercial markets to humanitarian contexts

Developing a clean energy market in Kakuma refugee camp: The case of SNV's EnDev Market Based Energy Access project

SNV implements the EnDev Market-based Energy Access (MBEA) project to provide improved cooking and solar-powered solutions for refugees and host communities through market development in Kakuma refugee camp, Kalobeyi integrated settlement, and Kakuma town. The project started in 2017 with a pilot phase called MBEA I,⁶⁴² and from 2019 progressed to the upscaling phase, MBEA II, which is expected to last until mid-2023.

SNV supports private sector companies selling cookstoves and solar solutions for household, commercial, and institutional use to enter the market in Kakuma and build distribution channels through technical assistance and financial support based on co-financing. The private sector partners plan and pre-finance their own market activation activities, and the project reimburses costs on a pre-agreed co-financing basis after implementation is verified. This support structure stimulates the companies to take financial risks and prioritise activities essential to build sustainable distribution structures in the camp.

To increase demand for clean energy access products and shift away from a donation-based mindset among the communities, SNV also works to create awareness and change behaviour and perception towards clean energy products. This includes a targeted behaviour change communication campaign to promote improved cooking.

So far, the private sector companies have sold 13,500 solar products and 11,000 improved cookstoves to households, and 330 solar products and 500 improved stoves to microbusinesses. The MBEA project is now increasingly focusing on introducing clean energy products for commercial and institutional use, including electric cooking, with payment models tailored to the market in Kakuma, in partnership with the private sector.

through investment. One mechanism that has been used in displacement settings is the enterprise challenge fund. Challenge funds operate by distributing grants to profit-seeking projects through a competition, using public sector funding to stimulate the private sector to develop competitive and market-based solutions. The Humanitarian Grand Challenge Fund focuses on innovative technological solutions in displacement contexts. The Fund had had invested US\$21.3 million in 23 countries by 2021, of which at least 11 were dedicated energy projects.³⁰⁹ Another example is the Kalobeyei Challenge Fund, which is supported by the International Finance Corporation, and implemented by the Africa Enterprise Challenge Fund, Turkana County Government in Kenya, and UNHCR.³¹⁰

Innovative financing mechanisms offer hope for future progress within the humanitarian energy sector. However, to date, many proposed funds have yet to start commissioning projects or distributing funding. It is important to note the high up-front cost of establishing individual funds and managing them in the long term. For example, while the UNHCR Green Finance Facility offers opportunities to decarbonise UNHCR operations, the fund has yet to start implementing its projected activities. It is not yet clear whether the Green Finance Facility will offer sustainable energy connections for refugee households or businesses, or whether it will only facilitate existing institutional spaces to switch from high-carbon to lower-carbon energy use. While decarbonising UN operations offers many opportunities to reduce emissions, address the global climate crisis, and reduce costs within humanitarian budgets, this fund does not yet appear to directly facilitate displaced people accessing energy in their households or businesses.

Driving Learning on Innovative Financing: GPA Financing Workstream

Since 2018, the GPA has been driving forward new research and learning on innovative financing. A number of high-impact events and publications have driven forward discussions in the sector regarding the possible types of funding and financing. These include:

- The GPA and NRC [Blended Finance Report](#) and technical advice on innovative financing, including resources for [practitioners](#).
- [Design](#) of guarantee and standard energy service contract clauses with contracting mechanism with energy sector partners.
- [Workshops](#) on the UN legal framework de-risking mechanisms, and technical sessions on guarantee mechanisms.
- Collaborative [design analysis](#) with Energy MRC, Shell, and GIZ on co-design of innovative financing solutions.
- [Research analysis](#) demonstrating the number of diesel generators operated by UN organisations and ICRC and the levels of CO2 they emit.

Future Progress? UNHCR's New Green Finance Facility

UNHCR estimates that its compounds and institutional energy needs generate greenhouse gas emissions equivalent to 97,000 tonnes of carbon dioxide annually. To reduce these emissions, UNHCR has established a Green Finance Facility (GFF) to support the decarbonisation of its operations. For this, UNHCR has received US\$8 million dollars of funding from Sweden and Germany. The Facility has yet to start implementing, but hopes to use innovative financing mechanisms when doing so, where “for larger offices, the GFF has a guarantee mechanism to back commercial contracts with the private sector via long-term agreements such as power purchase agreements or leases. For smaller offices, the GFF has a revolving fund mechanism to cover the up-front capital expenditure for renewable energy systems while capturing the resulting savings over multiple years so that additional offices can be transitioned to renewable energy. The summary of the Green Finance Facility also suggests that the mechanisms will use 50% less donor funding than traditional donor mechanisms.”⁶⁴³

Progress Towards Future Investment Pathways

There are a number of emerging sustainable investment pathways and mechanisms that can be used to secure progress in the coming years, such as climate funding, carbon financing, and micro-financing opportunities. Climate funding is seen as a new source of potential grant funding for sustainable energy projects in displacement settings.

The application process for such funds is often long and expensive and, as such, is not conducive to supporting humanitarian activities in displacement settings. For instance, UNHCR's application for funding for the 'Climate resilient development in refugee camps and host communities in Kigoma region, Tanzania'

project, reportedly took five years to develop and complete, involving 1.5 staff members full time, and third-party costs of approximately US\$500,000. Although the concept note requests a grant of approximately US\$19 million, very few organisations have the resources to 'invest' in such an application, especially given that the funding outcome is uncertain, and the context of the setting may change over the application period.³¹¹ Other climate funds are available and may be more appropriate for displacement settings, however, the same challenges will exist with regard to establishing the climate context of a displacement setting and the carbon footprint of the proposed project itself. Very little information on either exists. A toolkit to support field colleagues in such processes would be greatly beneficial to the sector, and may ultimately have to be developed. Although climate funding could provide much needed financial support for sustainable energy projects, it is recommended that the financial potential of any grant is increased by matching additional funding through blended finance solutions.

Decarbonising electricity supply and clean cooking programmes that reduce or avoid greenhouse gas emissions could result in environmental attributes that can be sold to third parties as carbon credits.³¹² In doing so, an additional income is generated. A recent presentation from the United Nations Framework Convention on Climate Change (UNFCCC) suggested that carbon credits are costing UN agencies on average US\$1.7 per tonne to offset their own activities.³¹³ As a result of changes to the way the carbon credits system is managed through the Paris Convention, the cost of carbon offsets could rise to between US\$50 and US\$200 USD per tonne. Not only would this cost increase drive carbon reduction projects in the UN, it could also be a significant source of revenue. As an example, the 11,000 diesel generators used by UN humanitarian organisations and the ICRC,

are estimated to emit almost 200,000 tonnes of CO₂ annually.³¹⁴ Offsetting these emissions could cost humanitarian actors between US\$10 and US\$40 million per year, based on the projected costs of carbon credits. It has, however, also been estimated that a total investment of around US\$250 million would be necessary to solarise viable systems, which could save around US\$70 million in fuel costs and around 125,000 tonnes of CO₂ per year. The fuel savings alone would have a payback period of less than four years across the portfolio, which would be significantly reduced if the carbon reduction was generating (based on UNFCCC predictions) further savings of between US\$6.25 and US\$25 million per year.

Given this potential revenue, it is important that humanitarian actors take ownership of the environmental benefits associated with a respective project in any long-term contracts with energy service providers. This can be done through power purchase or lease agreements, to ensure the agency has the right to sell carbon credits. It is, however, noted that the size of many energy systems in humanitarian operations are relatively small and thus organisations may

need to ‘bundle’ projects together to receive an attractive return on investment.

Displaced communities often find saving or borrowing money challenging, given the perceived financial risks and lack of interest from traditional financial services. As such, the role of microfinance needs to be better understood to establish its potential role in providing savings accounts and loans to local enterprises and start-ups, as well as households, in order to support the development of sustainable energy market-based solutions. As part of the RE4R project, solar home systems from Belecom were geared towards lower-income households, many of which were subject to fluctuating income, often as a result of seasonal work. Belecom therefore was concerned about the risk of non-payment during lean financial periods and, developed a revolving loan and savings facility for its customers. The RE4R project provided the seed capital for the revolving fund after it successfully completed a pilot.³¹⁵

The Potential for Carbon Financing

- Humanitarian actors are also looking at internal carbon taxes, not only as a way to reduce carbon emissions but to also generate project financing. WFP’s Energy Efficiency Programme (EEP) is partly funded through an internal carbon tax⁶⁴⁴ on WFP vehicles. All WFP vehicles are leased to country operations from a central facility. The country operation then pays a monthly fee to the central facility, which includes a small carbon tax. The carbon tax is collected and used to fund energy efficiency projects. Country offices can submit a proposal to the Energy Efficiency Programme which would cover up to 50% of the project costs. The actual percentage of project costs that can be requested is based on the amount of CO₂ the proposed project saves per dollar of investment.
- When submitting a project proposal to the EEP, the country office must also include a signed Purchase Order for its share of the project. The review generated by this internal mechanism is not enough to fund all energy efficiency projects, so WFP is looking to also incorporate a carbon tax on flights. Similar initiatives are being taken up by UNHCR through their Refugee Environmental Protection Fund,⁶⁴⁵ Energy Peace Partners,⁶⁴⁶ ICRC, MECS,⁶⁴⁷ and others.

Issue Analysis: market Development and Sustainable Financing

Supporting Markets and Sustainable Financing

A key message emerging from analysis for this report is the importance of supporting local markets and sustainable financing approaches. There are some existing energy projects which provide good practice examples of how such long-term change can be embedded within donor and development programmes, including the EnDev programme and Smart Communities

Coalition Innovation Fund investments.³¹⁶

Overall within humanitarian energy settings, it is important to consider the concept of supported markets, which are neither fully privatised nor fully subsidised.³¹⁷ Blended and mixed market approaches will be necessary to ensure that the energy needs of all displaced people are met, rather than just those who can afford to pay independently. As the Figure highlights, it is

Financing Innovation: EnDev's Investment in Micro-Enterprises in Displaced Contexts

The Smart Communities Coalition (SCC) is a public–private effort seeking to transform the humanitarian operating model to empower host communities and the private sector to effect positive change in refugee settings.⁶⁴⁸ The SCC has over 60 members and is co-chaired by Mastercard and USAID. Specifically in refugee settings, the Smart Communities Coalition Innovation Fund aims to bring private sector-led innovative solutions to displaced populations and crisis-affected host communities. The fund is managed by EnDev and is designed to address three strategic pillars to trigger a paradigm shift in humanitarian settings – energy, connectivity, and digital tools.

In 2020, the fund advertised a competition to disburse grant amounts between €10,000 to €120,000, focusing on refugee-hosting areas of Kenya and Uganda. Four awardees were selected from 57 eligible proposals in November 2020:

- EleQtra will deploy off-grid workspaces in two refugee settlements in Uganda: Rhino Camp in Arua and Palabek in Lamwo, to provide energy access to 'pay-as-you-go' workspaces and appliances.
- MOBAN Savings and Credit Cooperative Society (SACCO), BiziSol and OffGridBox will establish solar-powered energy hubs providing modern and

affordable energy, drinking water and connectivity in the Nakivale refugee settlement in Uganda and will establish a financially sustainable utility to maintain and grow the offered services.

- PHB Development, Yelekeni Farmers' SACCO and BrightLife will develop a solar powered hatchery and individual solar home systems for small-scale poultry farming and improved electricity access in Kiryandongo, Uganda.
- Solar E-Cycles, Strathmore University and OFGEN Limited will launch an e-mobility solution in the Kakuma-Kalobeyei area in Kenya using solar-powered electric bicycles.

EnDev has also invested in research on learning about enterprises developed for refugees, and in 2020 published the Humanitarian Energy: Energy for micro-enterprises in displacement settings report which provided an analysis of key enabling factors that need to be addressed for the provision of income-generation based upon new access to clean energy sources and technologies.⁶⁴⁹ The report outlined several successful case studies focused on entrepreneurship and local business development in humanitarian energy and highlighted how important the role of local entrepreneurs is in supplying energy in displaced contexts.

important to identify the type of market, the point of subsidy, and the market actors involved before developing blended finance or market-based approaches.

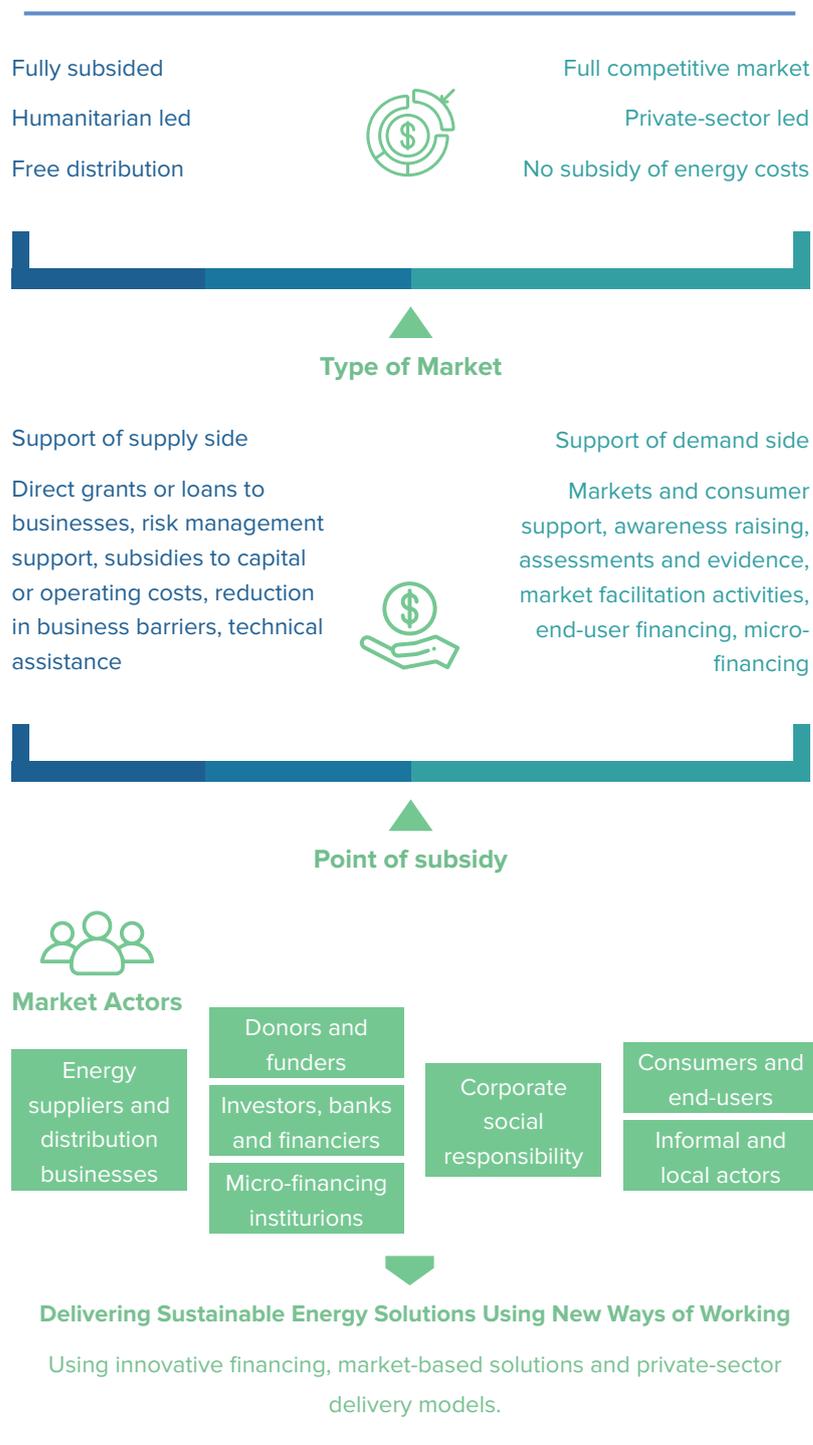


Figure: Markets and Subsidies in Humanitarian Energy.

Some practitioners refer to alternative financing options as ‘outsourcing’ the supply and provision of energy from humanitarian organisations to the private sector and NGOs, suggesting that “at the end of the market engagement spectrum are solutions that move the implementation responsibility away from humanitarian to specialised companies”.³¹⁸ While this makes sense for the energy and power needs of humanitarian agencies, for refugee and IDP households, humanitarian actors are likely to continue to have a role in the provision of services, not least because some refugee camps are bounded spaces and require permissions from agencies to access them. Learning from the sector suggests that it is possible for agencies to remain key stakeholders in energy programming, especially for supplying permissions and access, while outsourcing implementation and energy supply to more specialist actors who have the right skill sets to set up market-based responses. Therefore, agencies continue to meet ‘do no harm’ and protection objectives, while enabling access for communities.

While acknowledging the opportunities of market-based approaches, some humanitarian contexts, especially new emergencies, may still require additional support or subsidy options. There are well developed informal or formal markets in many refugee and IDP spaces, however, there are also many vulnerable displaced people with limited purchasing power. In these situations, free distribution of emergency energy products such as solar lanterns, cookstoves and firewood may be appropriate for meeting very short-term needs. In long-term protracted situations, the resources available to refugee and IDP communities can also be very limited. Therefore, specifically designed subsidy options must be developed to reach the poorest of the poor. An example of such an approach has been provided by the Practical Action Renewable Energy for Refugees programme (RE4R), which

took a dual supplier approach to enable solar energy products at different price points to enter the market and make different types of energy solutions available.

Cooking needs are a prime example of some of the challenges of financing in humanitarian energy, as supplying renewable cooking solutions for displaced people is currently very expensive. Despite the falling costs of solar PV technologies, and innovations in the electric cooking market,³¹⁹ cooking from renewable sources remains a complex financial and technological challenge which requires considerable long-term investment. In many cases, LPG or improved cookstoves will be financially affordable for many communities, whereas electric cooking solutions may be more expensive.³²⁰

There are also opportunities provided by energy service contracts and the types of cost reductions and decarbonisation opportunities they can offer. Changing the way the humanitarian system currently procures energy would be a huge step forward, however, institutional willingness and capacity to change internal systems is limited. In order to meet climate goals and reduce expensive diesel costs, change will be necessary. Energy service contracts, which offer the UN the opportunity to pay for energy services (rather than buying their own diesel, generators, and assets) can reduce the risks they face and the expensive costs of capital ownership within a bureaucratic UN system but they need to be supported by a financially efficient de-risking mechanism.³²¹

Affordability and Different Supplier Approaches: Ensuring Market Access for All

“In 2017, Practical Action started the RE4R project to deliver inclusive access to affordable and reliable clean energy within protracted displacement contexts. The project adopted a total energy access approach with the aim of addressing energy access for households, enterprises, and communities in displaced settings. In a bid to deliver systemic change and reduce dependency on continuous aid, the project sought to use market systems development approaches to stimulate change within local energy systems in order to improve clean energy access for refugees in three camps in Rwanda.

“RE4R identified a number of systemic constraints restricting clean energy access for refugee communities and developed an intervention strategy to address them. A key component of this strategy for households and enterprises involved engagement with the private sector as a key market actor. Through a rigorous selection process, Practical Action chose to work with two different companies: one an established multinational solar home system (SHS) provider across African households with some experience in refugee contexts and reputable SHS products; the other an established Rwandan solar business breaking into a new market, looking for opportunities to test new business models for hard-to-reach consumers.

“This provided an opportunity to compare two private sector actors – Bboxx Ltd and Belecum Ltd – operating in the same market with two different business models and levels of business maturity and market experience. Facilitating these two different companies would require different strategies in order to deliver the systemic changes in the market needed to achieve the intended impact of the RE4R project...

“The two business models offered different products, services, and financing mechanisms to reach different parts of the target market.

“As an incumbent supplier, Bboxx managed to achieve its sales targets for RE4R in just three months with a high-quality product, validating a willingness-to-pay price point and appetite to engage with refugees in

long-term payment models.. To date, Bboxx’s signals to maintain a permanent sales operation in the camps are low, with new sales ceasing once subsidies expired, no permanent staff or retail outlets established in the camps, and no long-term refugee employees.”

However, the company has continued to provide after-sales support for the customers it engaged under RE4R on an ongoing basis (provided the customers continue to pay the monthly “energy service fee”) long after its partnership with Practical Action was formally completed in early 2021.

“Belecum has generated sales over a longer time period but without any financial subsidies for a lower capacity, lower quality product and it has invested in maintaining a permanent market presence in the camp. Belecum’s go-to-market strategy has been slower to roll out as it has developed its understanding of the market and adapted its model accordingly. Belecum’s revolving fund is designed to increase access to its products for lower income households and, therefore, its sales reach and repayment rates, but is still in a pilot phase due to the operational restrictions imposed by the COVID-19 pandemic.”

Practical Action 2021.

- When this report was published in 2021: 42% of households across the three camps had access to a SHS (representing more than 2700 SHS sold in the 12-month period that the companies have been operating in the camps) with a 96% customer satisfaction rate. The majority of customers of both companies have reduced their energy expenditures on non-renewable sources to nil and defaulting rates on loan repayments have been very low (between 3.5% and 9%).⁶⁵⁰

Financing for the Long-term: Energy Service Contracts

Humanitarian agencies recognise the need to shift their dependence from fossil fuels and transition to more sustainable approaches to generating and consuming electricity, however, systemic barriers are preventing them from doing so, which results in the continued purchase of diesel generators as their primary source of power in locations suffering from energy poverty. For instance, although there is interest from humanitarian actors in receiving electricity from solar solutions owned, operated, and maintained by private energy companies, paid for on a monthly basis through power purchase and lease agreements, the inclusion of termination clauses that could cancel the contract in 30 days limits the energy service companies' ability to source funding and/or provide a cost effective solution, as the financial risk of termination is incorporated into the cost of energy. A guarantee underwriting the termination risk within such contracts would unlock private sector investment in solar solutions for humanitarian actors.

With technical and financial support from Shell, Energy MRC was contracted to develop a de-risking mechanism that could facilitate long-term energy service contracts between humanitarian actors and third-party renewable energy providers.⁶⁵¹ The proposed de-risking mechanism is based on a two-phased approach:

- Phase One: A short term liquidity facility would provide post-termination cash flow to the energy service company for up to 12 months, which would provide an opportunity to explore alternatives uses for, and/or off-takers to, the existing energy system to offset termination liabilities and act as a time buffer for the UN Agency to draw down on the guarantee mechanism.
- Phase Two: A guarantee mechanism would pay out to the UN to cover its termination liabilities to the

energy service company.

The proposed approach mitigates contractual and financial risks associated with the termination clause, in doing so:

- It attracts energy service companies to the humanitarian sector;
- It limits the possibility of energy service companies charging a premium for electricity to cover its contractual and financial risks;
- It permits humanitarian actors to outsource electricity supply and concentrate on its core activities; and
- High-level modelling of a sample portfolio of 70MW of solar projects (~700 facilities) with an assumed capital expenditure of US\$65 million could be underwritten by a guarantee fund of just US\$6 million.

When IOM examined the possibility of transitioning their Malakal Humanitarian Hub facility to run on solar, instead of opting for the traditional donor-funded capital investment model, they decided to sign an energy service agreement to reduce the level of their own capital investment.⁶⁵² The contract allowed IOM to purchase energy-as-a-service from Scatec Solar, the project developer and independent distributed power producer, who installed the 700 kilowatt peak solar photovoltaic system at Malakal Humanitarian Hub in South Sudan. It is believed that further cost savings could have been achievable if a suitable de-risking mechanism was available to de-risk the termination clause within the long-term agreement between the two parties.

Financing for the long term meets the triple needs of reducing costs, limiting damaging emissions which contribute to the climate crisis, and providing energy access for millions of displaced people. To achieve this, new delivery models and ways of working are essential. Agencies cannot manage long-term energy supply in-house, outsourcing will become

essential. This may be a challenging process, but involving the private sector collaboratively and learning from energy for development experts can speed up progress considerably. A dramatic scale-up of finance is needed if the goal of delivering SDG 7 for refugee populations is to be achieved. Estimates compiled by

Investment Costs for Refugee Energy Needs

Chatham House analysis of existing humanitarian response plans suggests that

- The total energy and environmental funding requirements listed in current response plans (covering 28% of global refugee populations) was estimated \$300 million for 2021.
- Assuming a similar level of investment would be needed for those refugees not covered in existing response plans, scaling this figure to cover all refugee populations would mean an investment of over \$1 billion for 2021.
- Noting that similar funding needs would also be required in forthcoming years, refugee energy and environmental needs globally between the years

2022 and 2030 are estimated to cost over \$10 billion.

The figures listed above are derived from humanitarian response plans developed locally and are not always based on precise data or energy plans. They can also be inflated in the knowledge that response plans are often not fully funded. The approach to scaling funding requirements to 2030 also assumes a similar financial requirement would be needed each year which ignores the potential for savings once initial capital outlay on infrastructure has been committed.

Box contributed by Owen Grafham and Lavina Ranjan from Chatham House, and derived from analysis in Grafham, Lahn and Haselip (2022).⁶⁵³

Chatham House, derived from existing humanitarian response plans, suggest that roughly USD \$10 billion by 2030 is needed if energy and environmental goals for refugee populations around the world are to be met.³²² Although much less would be needed (potentially as little as \$60m per year) in order to substantially change the way that over 6.6 million refugees located only in camps access energy.³²³

Aligning with Local Market Mechanisms and Private-Sector Supply

The private sector is a very broad term, whose range of stakeholders can include energy suppliers, investors, and any for-profit businesses. In displacement contexts, energy businesses can be run by national businesses,

international large-scale businesses, and local refugee or displaced entrepreneurs. Displaced people access energy through both informal and formal markets, and are supported both by humanitarian provision and independent market mechanisms. Institutional users of energy tend to use formal market supply mechanisms. The private sector is involved in many stages in the supply of energy products and services. In some cases, market access is formal and regulated by national governments, in other situations local markets are informal and have emerged organically within protracted contexts. Market mechanisms can include direct sales, use of cash or vouchers, offering support to local entrepreneurs, or external supply.

Private-sector Energy Provision and Market Mechanisms in Humanitarian Energy

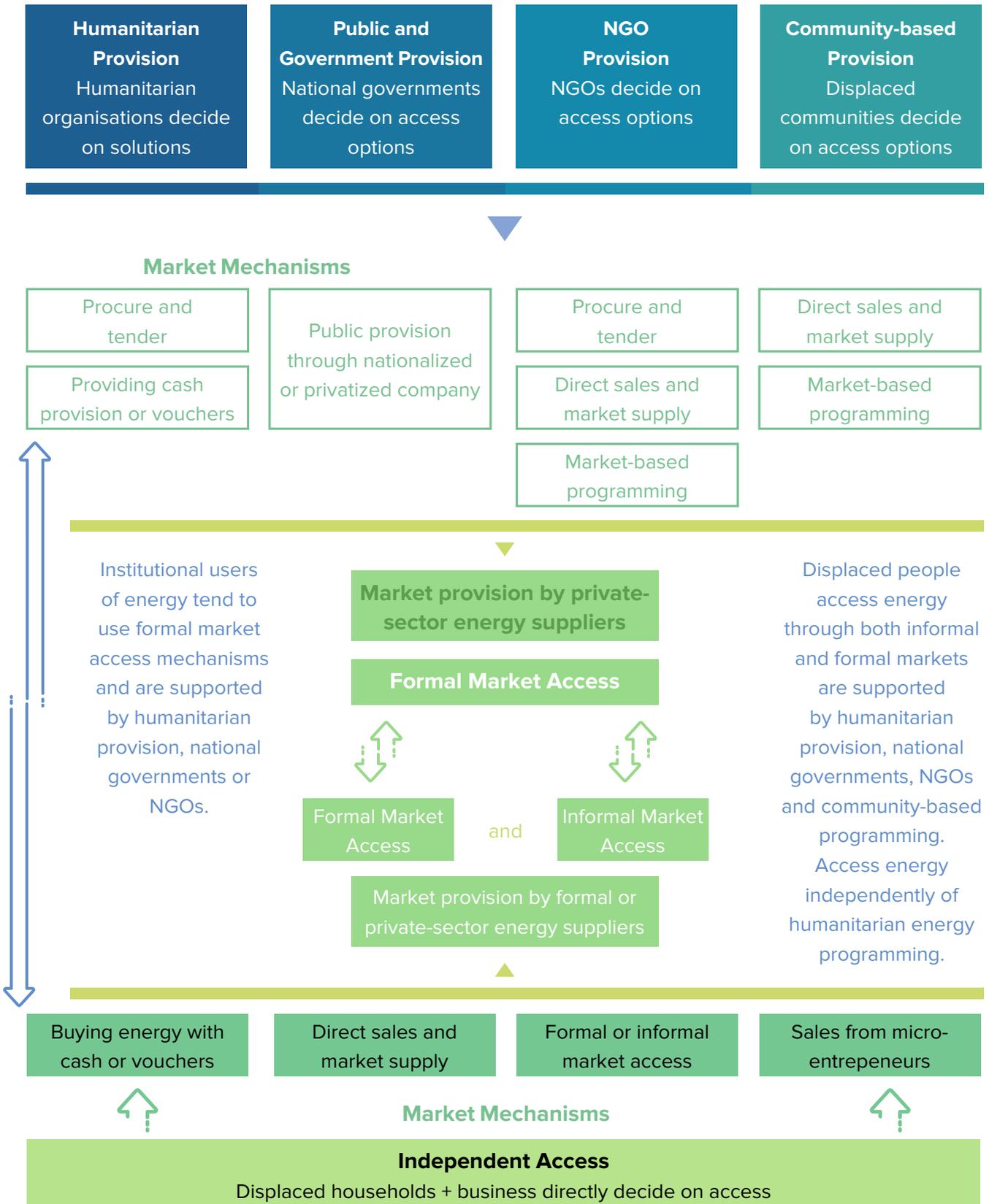


Figure: Private Sector Energy Provision and Market Mechanisms in Humanitarian Energy.

Market Choice: Supply and Demand

“If there is a market, people can choose from a variety of sources. They can choose if they want to go for a solar home system, get connected to a mini-grid or buy a solar lantern or a pellet cook stove. They can choose to buy a firewood improved cookstove or an LPG tank and stove. That gives people the flexibility to choose.”

Finance and Delivery Expert.

Key Statistic

- Displaced households pay disproportionate costs for energy. For example, a Moving Energy Initiative report suggests that households in Kakuma Camp in Kenya pay an average of US\$9 dollars a month on energy.⁶⁵⁴
- Similarly, studies on the energy needs of small enterprises and micro-businesses run by refugees in camps suggest that 73% of businesses need additional electricity.⁶⁵⁵

In some displaced contexts, the provision of free goods does not respect the autonomy of displaced individuals. Humanitarian agencies at times have failed to acknowledge the impact and power of choice: “when aid agencies engage in a bulk distribution of products, like solar lanterns or cookstoves, this will generally be undifferentiated and treat the refugee population homogeneously. Refugees who do not need or use these products or prefer alternative products end-up sending what they have been given to the market-place” (Vianello and Boodhna 2020, p109)³²⁴. Free distribution within humanitarian settings can distort local markets and led to inefficient costs for agencies who distribute products that are not needed or welcomed by displaced people.

A number of key messages have emerged from the interviews with finance specialists and practitioners for this report:

- Aligning with existing markets is especially important to avoid negative disruption to local informal livelihoods. This is of most significance where refugees and displaced businesses are already accessing energy through markets.
- The cost of energy within humanitarian settings is very high. Refugees pay considerable amounts for energy, and agencies are spending multi-millions of dollars on diesel generation.
- The myth that displaced people do not pay for energy products or services is false. There are often substantial informal economies within refugee settlements.³²⁵ In the case of energy, displaced people face the burden of an array of costs.

Much has been learned about market-based approaches in humanitarian energy settings. As the section below outlines, market-based solutions invest in the long-term resilience of communities and facilitate local- and refugee-led livelihoods. Private-sector and market-based approaches can bring together existing markets on energy in displacement settings and humanitarian action to provide long-term energy solutions. There are many opportunities for displaced people to benefit from market-based programming:³²⁶

- Increased access to energy: supplying energy by using private-sector mechanisms can increase the level of electricity or range of fuels available by offering access to different services and products.
- Reducing costs: acknowledging that energy markets already exist in displacement settings can open up opportunities for new suppliers and reduce the costs of energy.
- Making more funds available for humanitarian

action: minimising energy costs for humanitarian agencies and partners can reduce the use of public funds spent on traditional energy provision and free up funding for other humanitarian needs.

- Improving livelihoods: offering opportunities for suppliers and companies (including those led by displaced people) to sell energy products and services can increase the economies of displaced settlements, and enable access to jobs and livelihoods related to energy.

One of the first pilot projects for a market-based approach on energy was led by the Moving Energy Initiative's (MEI) low-carbon investments in Goudoubou camp in Burkina Faso. MEI developed a series of market assessments to facilitate market-based change, stimulate interest in energy products, and demonstrate market opportunities. Practical Action acted as a market facilitator, supporting businesses connecting with refugees and communities through trade fairs organised with local municipalities, support

for marketing material, and development of business strategies for companies and 'last mile' entrepreneurs.

The project supported several refugee- and host community-led businesses to expand their opportunities and build consumer confidence. The project produced a catalogue of energy projects and resulted in two energy firms piloting market-engagement activities, with over 1000 people aware of the benefits of renewable solutions.³²⁷ Several large-scale programmes are currently building on this approach to develop energy markets in displacement settings, including the GIZ Energy Solutions for Displacement Settings programme which works to build local markets and capacity in order for refugees to access energy in Kenya, Uganda and Ethiopia.³²⁸

Developing approaches over the long term is one of the key elements needed within humanitarian energy. To reduce both costs and emissions in the long term, it will be important to

Key Publication: Learning from Market-based Experience: Practical Action's Approach

Within refugee contexts in Kenya (Kakuma camp complex) and Burkina Faso (Goudoubo refugee camp), the Moving Energy Initiative sought to examine opportunities to use market interventions to test the delivery of market-based approaches and improve clean energy access over the long-term. A report entitled *Adopting a Market-based Approach to Boost Energy Access in Displaced Contexts* from Practical Action provides an overview of this energy access imperative as well as the rationale for considering market-based approaches for energy provision in displacement settings.⁶⁵⁶ Reflections are made on the experience of adopting commercial energy-delivery approaches in Kakuma and Goudoubo.

The report highlights that aid agencies have a tendency to undermine market systems, as they do not always consider established markets in the planning of their interventions and activities. Adopting a market-based approach in the humanitarian sector means working within existing market systems (or establishing new markets) to support access to sustainable, affordable, and quality goods and services that are critical to the survival of vulnerable populations in displacement contexts.

The provision of energy through a market-based approach facilitates the inclusion and autonomy of refugee and host communities in developing markets and delivering tailored solutions. Such an approach can hence be better targeted than traditional humanitarian programming to meet specific community and individual needs.

test and develop blended finance and market-based approaches for the sector. The issues discussed within this section cover much more than ‘just money’: highlighting how important it is to understand finance flows and the conception of energy delivery. Engaging the private sector early in any process is important to understand what types of solutions and services are available. Understanding local markets in order to align with existing formal and informal energy supply mechanisms is imperative. Tailoring financing and funding approaches to local needs

is essential, as is leveraging the lessons learned from the deployment of market-based piloting. Adopting an inclusive and participatory approach to the energy solution is also key to delivering a sustainable energy project, as the end user, especially one paying for the proposed solution, must see value in what is being offered with regards to their needs.

Future: Collaborating with Existing Markets and Delivering New Financing

Innovative financing and market-based approaches offer considerable benefits and opportunities for actors in the humanitarian energy sector. It has been made evident that there is growing interest from private sector entities and financial institutions. Such prospective stakeholders are recognising the range of opportunities associated with participating in the clean energy transition, and its respective access initiatives, as well as the “emerging bottom of-the-pyramid consumer markets for energy solutions” (NRC and GPA 2021, p17)³²⁹. However, considerably more data and evaluation of approaches are needed to ensure the lessons learned are shared, and that there is absolute transparency in the pursuit and outcome of such activities across the sector. To date, a number of key lessons have emerged from the sector on innovative financing and market-based approaches:

- Where possible, the free distribution of energy products should be avoided in protracted situations, and may cause disruptions to market structures and livelihood opportunities.
- Displaced people already pay considerable amounts for energy access in both their homes and businesses.
- More must be done to reduce the perception that there is not a market for energy in refugee and IDP camp settings, and that private-sector energy payments are always too high for displaced communities.
- There are well developed informal or formal markets in many refugee and IDP spaces, however, there are also many vulnerable displaced people with limited purchasing power. Therefore, specifically designed subsidy options

must be developed to reach the poorest of the poor.

- Private-sector energy provision can offer cost savings, improve access to sustainable solutions, and support access to energy in displacement settings.
- Humanitarian and development actors can recognise that there are opportunities to work constructively with the private sector and suppliers, and that shared risks and blended financing opportunities offer a new way of working.
- Donors and funders have an important role to play in both offering grants and supporting innovative blended financing opportunities: flexibility at the start of donor programming will enable actors to undertake a market assessment and pursue the best institutional funding or innovative financing approach.
- Humanitarian agencies will need to change their financial systems and procurement mechanisms to meet SDG 7 in displacement settings: finding new ways to pay for renewable and sustainable solutions, and planning for the long-term costs of energy both for displaced households and their own operational needs.
- NGOs and implementing partners should use long-term financial sustainability and market-based approaches when planning interventions, understanding the payment model for energy supply before providing products or services.
- Private sector actors and companies can offer solutions and advice in scoping markets, without damaging their commercial opportunities, recognising humanitarian principles such as do no harm and protection-based challenges in their discussions with emergency actors.

The sector's finance experts have also shared recommendations on funding and financing within the sector and suggest the following key principles moving forward:

- Increased flexibility of donor funding: Donors should consider cross-sectoral funding of energy programmes and include displaced people in existing broader energy programmes. Alternative forms of institutional funding are needed to finance the supply of sustainable and renewable energy in displacement contexts. Developing approaches that support blended finance mechanisms is required.
- Make use of new financial mechanisms: Collaborate and learn about new innovative financing and alternative funding structures that support both the supply and demand sides of sustainable energy projects. Innovative financing mechanisms and collaboration with the private sector can enable new ways of working, but institutional changes within agencies and collaboration with local markets are necessary to support such progress.
- Use market-based approaches: align with local markets and, in protracted situations, support private-sector provision of energy services for long-term sustainability.



05

EFFECTIVE DELIVERY AND BUILDING SECTORAL EXPERTISE

Chapter contributing co-authors: Aimee Jenks at UNITAR GPA, Cecilia Ragazzi at Mercy Corps, and Lama Gharaibeh at NRC - NORCAP.

UN Photo/Mark Garten

State of Play: Delivery Processes, Staffing, and Training

Understanding Delivery: How Displaced People Access Energy and How Programmes Supply Solutions

Delivery mechanisms, technical capacity, and training needs are interconnected within the humanitarian energy sector. Many energy solutions are currently developed by staff who are not energy experts. As a result, system awareness is low on the types of delivery options and sustainable investment available. Without solid partnerships with dedicated organisations and high-quality training and expert knowledge on energy ecosystems, delivery of energy interventions will continue to be challenging. Energy is sourced and supplied in many ways in displacement contexts, with the energy supply structures and ways end users access and pay for energy highly dependent on context.³³⁰ Within the sector there is often no clear agreement on delivery terminology or approaches. However, a distinction is made between delivery mechanisms, delivery models, and funding models in this report:

- **Delivery mechanisms:** Who is doing what? How humanitarian, development and energy stakeholders collectively deliver change, identifying which actors do what, and how responsibility for implementation flows.
- **Delivery models:** How is it being done? As the International Institute for Environment and Development (IIED) suggests: “an Energy Delivery Model is the combination of the technology, finance, management activities, policy support, legal arrangements and relationship types required to supply energy to a group of people or end users. The design of such models must consider the broader environment in which the service is to be

provided, or ‘context for intervention’, which includes the ‘enabling environment’, i.e. the institutional structures and public policies, the existing transport and communications infrastructure, the local capacities and the wider socio-cultural context in which the end users live”.³³¹

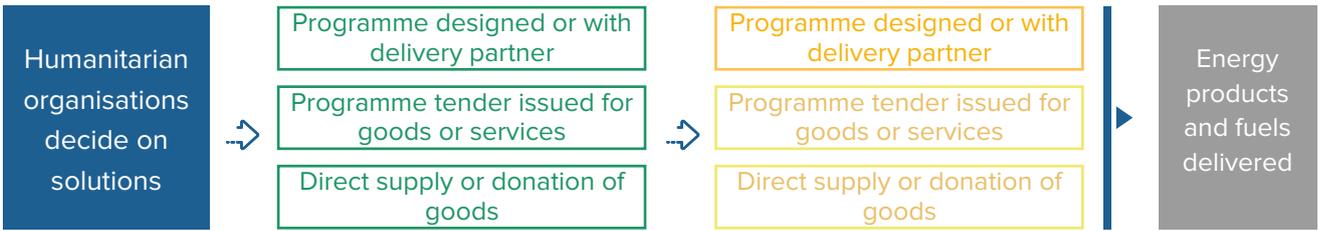
- **Funding models:** What funding options are being used? Financial flows and how grants, loans, and innovative financing arrangements are connected in delivery mechanisms and models; this is linked to the information provided in Chapter 4 of this report.

There are five main types of delivery mechanisms outlined by this report: humanitarian provision, public or governmental provision, NGO provision, community-based provision, and independent access through markets. Importantly, these are not mutually exclusive: humanitarian organisations and governments can partner together to collectively deliver access. Many NGO programmes now use community-based or market-based mechanisms to support forms of independent access. End-users of energy, including refugees, IDPs, host and local communities, marginalised groups, and institutional users such as UN operations or NGOs, may access energy through multiple mechanisms. The Figure outlines some of the approaches taken in humanitarian energy settings for energy delivery, including examples of delivery actors, implementation partners, access mechanisms, and the types of access that different provision mechanisms enable. Implementation and provision of energy in this case include both the set-up and design of energy programming, and the management of repair and maintenance.

Humanitarian provision and mechanisms: In

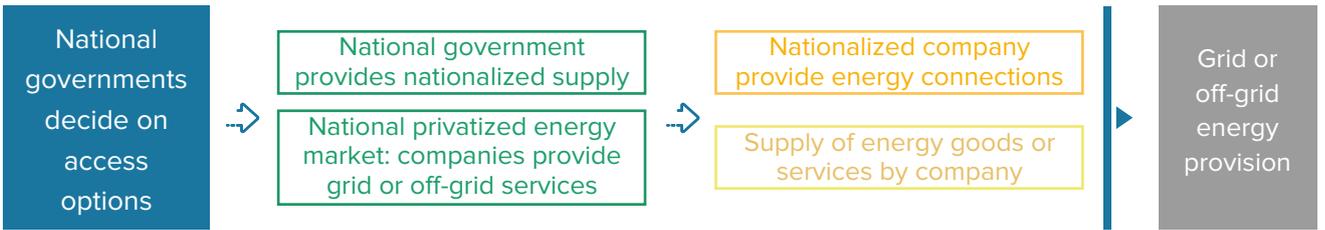
Delivery Actor → **Delivery Mechanism** → **Implementation Actors** → **Access**

Humanitarian Provision



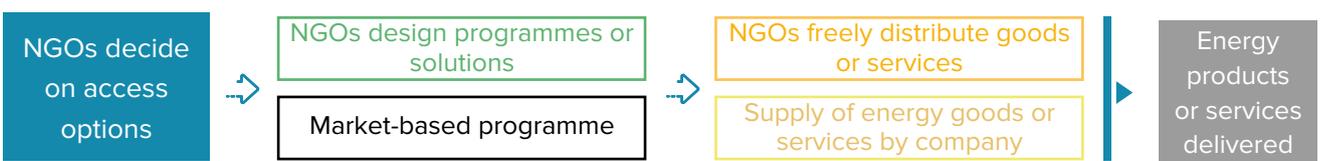
Choice of energy products and services decided by humanitarian organisations and suppliers.

Public and Government Provision



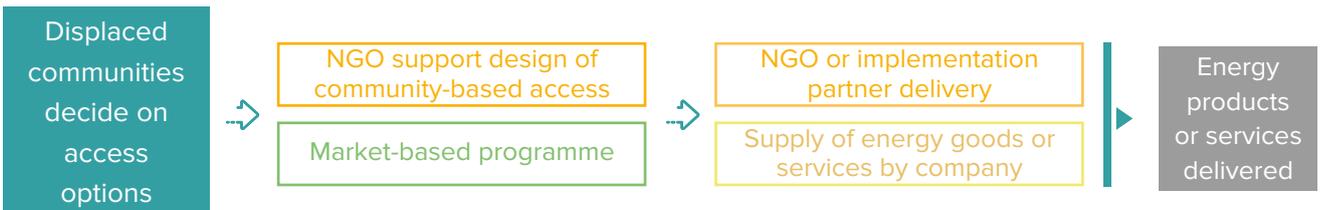
Choice of energy connections decided by national agencies and suppliers.

NGO Provision



Choice of energy connections decided by NGO decision-makers within displaced communities and suppliers.

Community-based Provision



Choice of energy connections decided by decision-makers within displaced communities and suppliers.

Independent Access through Market Mechanisms



Choice of energy connections products and appliances decided by displaced households, businesses and suppliers

Figure: Delivery Mechanisms for Energy Access in Humanitarian Contexts⁶⁵⁷.

most displacement contexts humanitarian organisations and implementing partners provide some form of energy access. Agencies such as UNHCR, WFP, or NGO partners procure firewood and cookstoves, and electricity technologies for lighting, phone charging and other uses, to meet the needs of displaced people. This type of provision is sometimes called direct provision. There are several forms of provision within humanitarian structures. For example, an agency can issue a tender which the private sector can then respond to supply energy products or services. In some cases, direct supply or donation of goods is provided by an NGO or supplier. Increasingly, humanitarian organisations partner with NGOs and suppliers to design a programme (rather than just issuing tenders) to support needs. The GIZ–UNHCR Energy Supply for Displaced People programme collaborates across Kenya, Ethiopia, and Uganda to provide energy access³³² is an example of this type of mechanism.

For humanitarian provision, the choice of energy products and services is decided by humanitarian organisations or suppliers. Displaced people are given, or sometimes asked to pay a subsidised price for, these products. Often energy services (such as household electricity connections) are not provided to households and only basic products or fuels (such as lanterns or firewood) are distributed. Some solar street lighting solutions have been delivered using humanitarian provision. Many UNHCR solar street lighting programmes use this mechanism.³³³ Energy for enterprises and power for households were previously not considered under traditional humanitarian provision. For institutional use, humanitarian organisations often procure their own diesel and generators through framework agreements or in-country tenders, while firewood for cooking in social institutions such as schools, clinics and reception centres is distributed through humanitarian provision. As an example

of this, in Kenya: 101.32 metric tons (MT) of firewood was distributed to various institutions in Kakuma camp and Kalobeyei settlement including; 51.27MT to schools, 37.22MT to reception centres, and 12.83MT to child-headed households.³³⁴ In some cases, cash-based incentives have been used to support energy access. For example, in Kenya where cash for energy and food needs are disbursed around every two weeks .³³⁵

Public or governmental provision and mechanisms: National governments provide access either through a national energy provider or through the privatised energy system and local suppliers. This is sometimes called public delivery of services. This type of provision is common for displaced people living in urban areas, especially those living within host communities. Some refugee camps are also grid connected, but often only for institutional users, with households and businesses excluded from access. Under governmental mechanisms, grid or off-grid power can be provided, but usually higher tiers and levels of access are available. For example, in Jordan, power is supplied through the national grid.³³⁶ The choice of energy connections under this mechanism is decided by suppliers and decision-makers in national agencies.

NGO provision and mechanisms: NGOs design programmes or solutions to meet the needs of displaced people and also procure them to meet their own energy needs. While NGOs often work with humanitarian and governmental providers (linking to humanitarian or governmental provision mechanisms), they can also act independently to secure energy. An example of such provision is ICRC, which operates many generators in displacement contexts. Several NGOs also run market-based programmes, such as the Practical Action Renewable Energy for Refugees (RE4R) programme in Rwanda, the SNV EnDev Market Based Energy Access

project, which supports market-based supply of energy for refugees in Rwanda and Jordan³³⁷ and Kenya,³³⁸ and Mercy Corps' Enter Energy programme that solarises refugee households connections, productive uses hubs and humanitarian operations in Ethiopia.³³⁹ Here the choice of products, services, technologies, and connections is decided by NGO decision-makers, displaced communities, and suppliers.

Community-based provision and mechanisms: While this type of provision is less common in displacement settings, in some cases NGOs have supported community-based programming where refugees or IDPs are supported in designing their own solutions, such as cooperatives run by displaced people. Here the choice of energy connections is decided by decision-makers within both displaced communities and companies, connecting suppliers and end users directly. While community engagement is present in many programmes, co-design and co-development of programming is less common. Many programmes claim to be based on co-design principles, but in reality, true community-based provision is rare within the humanitarian energy sector.³⁴⁰ A distinction is made between community-based provision (which still uses humanitarian or development programming to develop solutions) and independent access mechanisms (which often act outside of these spaces).

Independent access through market mechanisms: Not all displaced people access energy through humanitarian organisations, national governments, or NGOs. In refugee and IDP camps, especially those in protracted situations, and in urban and self-settled situations, displaced people independently access energy through markets by buying from informal suppliers or creating their own businesses and markets which trade products and services. This type of provision is somewhat independent of humanitarian providers, however,

is still linked to the humanitarian system, displacement hosting environment, and national market dynamics. Many displaced people live in urban centres, and access energy through formal and informal market-based provision such as national grids, local suppliers, or informal mechanisms. In all cases, displaced people pay for and secure their own access to energy. Even in cases where some humanitarian, governmental or NGO support is provided (such as through free distribution of firewood, local mini-grids or cash-based support), households and businesses still pay for additional power and energy appliances. In such situations, the choice of connections, products and appliances is decided directly by displaced people: who determine what types of energy and technologies they spend their money on.

In some cases, displaced people have to trade food for fuel, and use of coping mechanisms to secure access to energy are common in displacement settings.³⁴¹ Such coping mechanisms can include selling sex or favours for energy products or cash to buy energy, not feeding family members, undercooking foods due to a lack of energy, skipping meals, or borrowing energy resources from neighbours or family members.³⁴² All of which present substantial protection issues and negatively impact the lives of displaced people.

Limited quantitative analysis has been done to establish the balance of provision mechanisms in displacement contexts: how many people access energy under which model. However, one thing is clear, humanitarian agencies do not provide all the access needed by displaced households and their businesses: partnerships across actors are needed to ensure sustainable access in the long term. A range of energy delivery mechanisms and coping mechanisms are present in humanitarian settings.³⁴³ New research on delivery in humanitarian settings is currently being developed at University College

London³⁴⁴ and by the Modern Energy Cooking Services (MECS) programme at Loughborough University.³⁴⁵ Initial results from these programmes suggest that new collaborative delivery mechanisms offer many benefits for displaced people and can reduce pressures on the humanitarian system.

Within different delivery mechanisms in the sector, different delivery models can also be used to support the implementation of programming. These models speak to how change and interventions are being delivered. As Mercy Corps outline in their 2020 'Inclusive Energy Access Handbook':

- “Direct delivery: Aid agencies procure and redistribute energy products such as stoves, lanterns, etc, to targeted individuals.
- Private sector partnerships: Aid agencies support access to goods/services provided through market systems and the private sector. Interventions can include: cash and voucher assistance to improve purchasing power and/or support to market systems to improve supply of critical goods.
- Public service delivery: Delivery of energy services (such as electricity, liquid petroleum gas, etc.) through government entities, humanitarian agencies, or highly regulated private entities. These can be delivered free, subsidized, or at market rates.
- Enabling environment interventions: Activities that improve access, efficiency, or use of energy products and services. Examples include behaviour change campaigns to encourage energy conservation or adoption of renewable fuel sources, improving access to energy-efficient or productive use appliances, or increasing women’s employment in energy value chains” (Mercy Corps 2022, p19 to 20)³⁴⁶.

This picture is further complicated by how

State of Play - Humanitarian Agencies and Capacity

“The reality of things is that the humanitarian agency never has enough time. Importing new technology in different countries and logistics is difficult. We don’t want to be the ones bringing the solution. We would like to have a supply chain, so we would like to be able to work with the dealer (private sector/markets) so that’s important and that brings benefits to those beneficiaries. That’s not something that is well structured to do so, we need to work hand in hand with the other actors and the energy NGOs that are able to really work for years in the same place and set up a value chain. They do the evaluating, they can set up a change in a short timeframe and that is not our capacity or our core competence – for some specific programmes and then we do bad energy programmes. And maybe that is not our role either”.

Delivery Model Specialist.

funding is provided, as the institutions and actors outlined above can use a mixture of grant-based, market-based, cash-based, or independent access funding and financing modes. And different actors can execute different delivery models which can even have a counteractive effect on the effectiveness of these models. Funding models focus on the financial and funding elements of delivery: how money flows within different delivery mechanisms and who pays for what.

- Grant-based delivery uses grants and donations from donors. Usually, grants are provided directly to humanitarian organisations, NGOs, or private-sector organisations to subsidise the costs of energy or provide in-kind donations. Under market-based funding models, donors or funders may provide grants or financing.

Delivery of Energy Services in Displacement Settings

During the interviews for this report, one interviewee outlined the most common types of delivery models seen across the sector:

“In middle- and high-income countries you see public delivery of services, so there is a public utility that provides an extension of the grid to your house. You pay them the bill, either you pay up front by credit and then you use [the energy service], or you pay after you’ve used a certain amount of energy monthly. So, this is the principle, the ideal model of delivery because it’s centralised and everyone gets the same. There are tariffs and depending on how heavy a user you are, this is what you pay for.

There is direct provision, where the UN or a non-governmental organisation gives you the means to access those services, through cash distributions and vouchers to use your system. [This] is basically another

model that has been quite commonly deployed in the last few years among the development, humanitarian and the UN organisations working with the displaced [people], or working with low-income households etc. So basically you get the resources from organisation X to access the market of energy products and services that are available near you.

The private sector delivery models, where private sector companies oversee providing services. They can do it in direct sales, people buy your product, and that product provides you a service. In the case of cooking, there’ll be cookstove providers, they sell the cookstoves and then you’re responsible for buying or collecting fuel. Or they’ll sell you the cookstove and there’ll be the provider of fuel as well. So you have this continuous supply of fuel that comes from that company. Within that there are a whole lot of different business models.”

Finance and delivery expert.

- Market-based delivery supports access to markets, improves incentives for the private sector, or increases the affordability of energy products or services.
- Within independent access, refugees and displaced people pay for energy directly and purchase products or services from formal or informal energy suppliers, using both formal and informal market access.

As is highlighted by the private-sector diagram in chapter 4, the private-sector and energy suppliers already have a considerable role in this system. While this report refers to funding models, such routes are often referred to as financial or business models informally within the sector.

Funding Models in Humanitarian Energy

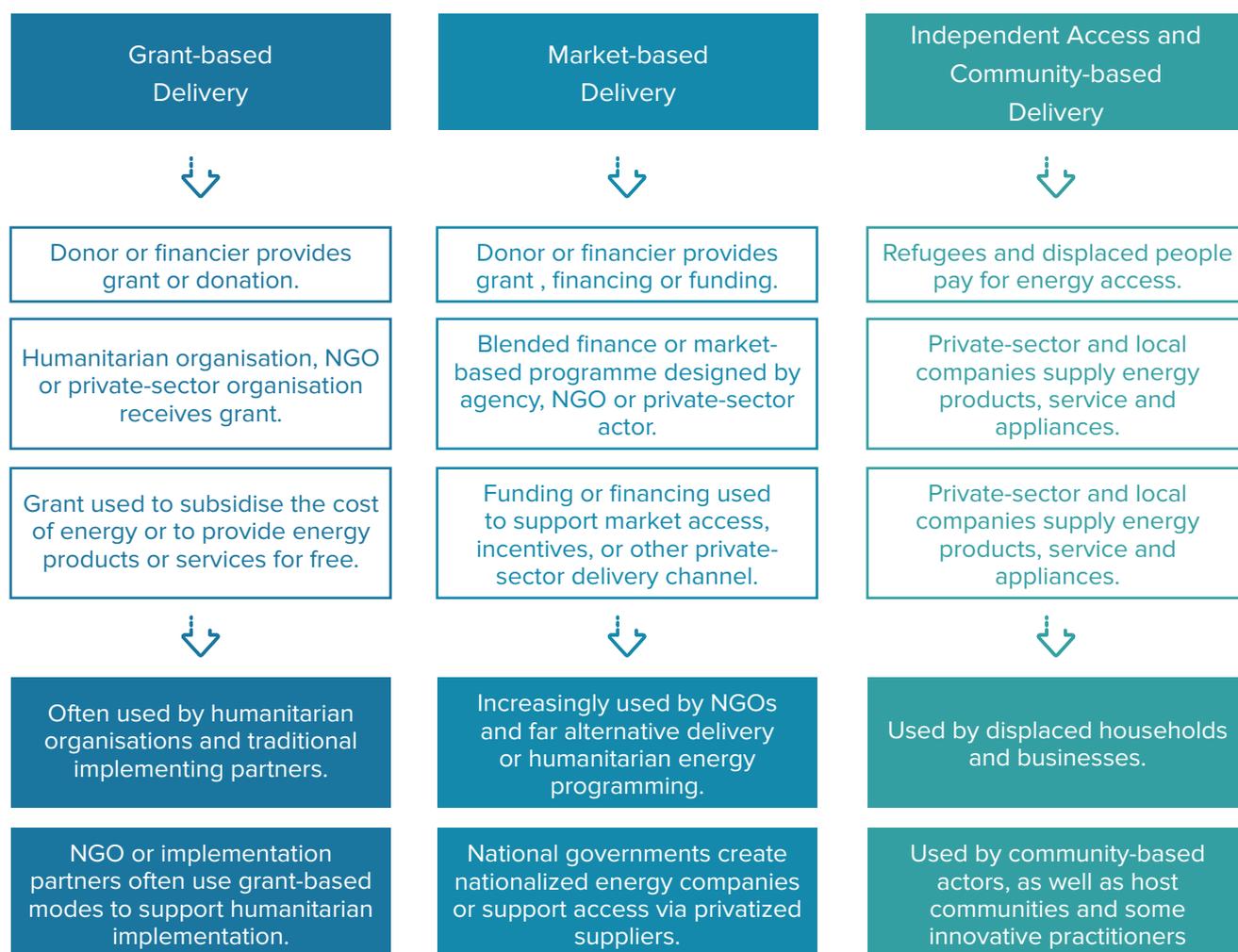


Figure: Funding Models and Pathways.

Delivery Challenges: Resource Constraints and Knowledge Gaps

There are a number of challenges facing energy delivery in humanitarian settings:

- A lack of knowledge and capacity. This ranges from technical and engineering skills to capacity on procurement and programme design. There is also a lack of knowledge within the humanitarian system on technical repair and basic maintenance of energy systems as well as a lack of expertise on delivery models and specialist programme designers.
- A lack of data and evidence to support staff in learning about energy complexities. This problem is both a lack of data and a lack of available accessible and concise practical information.
- A lack of knowledge exchange and coordination on programming. Within agencies energy is often siloed into the energy needs for WASH, shelter, nutrition, protection and logistics, and experts often do not coordinate or share experiences.
- A lack of funding for technical expertise and a

lack of investment in longer-term contracts for staff. This is paired with a lack of funding for delivery solutions.

- A lack of holistic thinking on capacity and energy needs within the sector.

Together, these forces undermine technical capacity in the humanitarian energy sector.

Staffing and Training: Energy Officers and Technical Experts

A major challenge facing the widespread adoption of sustainable energy and energy access in displacement contexts is the shortage of technical energy experts working in the humanitarian sector. Another is the short term and revolving nature of typical humanitarian contracts.

While some institutions have one or two staff members at headquarters, and field officers in some locations, overall energy staffing is very limited, especially when compared to other humanitarian operations such as water, sanitation and hygiene and shelter.

Different levels and skills of staff are needed, and there are challenges at the local, regional and global levels due to the general lack of energy expertise throughout the humanitarian system.

Within country operations, strong technical and project management skills are needed to assess energy demand, supply, engage relevant stakeholders, and design financially sustainable projects and programmes. On average, it takes two to three years to build an energy access programme that is sustainably financed and holistic in nature (that is, accounts for the individual, communal, and institutional energy needs of refugees and host communities), yet within the UN and NGOs there is rarely the budget or mindset for energy experts to invest extended periods of time into programme design and staff often change positions every

few years. This makes it difficult to develop and deliver programmes that are more holistic and transformative than the typical ‘procure and deliver’ approach. In recent years, there have been efforts to change this through dedicated spool of energy experts (such as the NORCAP energy roster),³⁴⁷ as well as in humanitarian contexts where energy has been prioritised from the start of the emergency. An example of this has been in the Rohingya response in Bangladesh, where energy provision was prioritised and longer term staffing was put in place. Despite this, the humanitarian sector is still lacking in energy expertise at the local level, and will continue to be as multi-year contracts for energy specialists are in short supply.

There are similar capacity challenges at the global and regional levels. At the global level, staff are needed to develop medium- to long-term global energy strategies and policies, facilitate knowledge management and sharing of good (and bad) practices, develop standard operating practices, and advocate for sustainable funding and partnerships to improve energy delivery across institutions. At the regional level, staff are needed to support country offices with advice and needs assessments for new project development, support rolling out of standard tools and processes (such as data collection surveys), and aggregate demand across projects and countries in order to reach scale. In recent years there has been an increase in the consistency of global energy staff numbers and some investment in staff at the regional level, however, the number of energy specialists within the humanitarian sector is still insufficient to meet the energy demands of humanitarian institutions and end users.

This report estimates that there need to be an additional 2,000 to 3,000 energy-focused staff members hired into humanitarian agencies, implementing partners, NGO teams, and expert energy supporting organisations.

Technical Capacity

“We also have the issue of capacity support, so we have them providing support from the Norwegian Refugee Council, which is a key vehicle to provide necessary technical assistance to various humanitarian agencies, including the secretariat. For us it’s important that we will continue to use NORCAP, it’s an important vehicle. Though at the end of the day, this needs to be mainstreamed by the agencies themselves and they have to come up with their own resources and hire necessary staff in order to do the work.

“We’ve also been looking at this from the private sector side, so we’ve had an initial discussion that happened many years ago with the guys that are running Kube Energy. So, when they started, they were also former Foreign Affairs officials. At least one of them actually was instrumental in setting up the company, so we had discussions with them also quite early on this.

“When we move more locally, we need more

champions that can take this agenda and bring it into the key issue here. There is a huge turnover in staff. Because in a foreign affairs system people typically move on, after two or three years maximum and, then it’s difficult to mainstream something when people keep changing so suddenly you get the champion and then you get a new one coming in. There [have been] three counterparts, at least within the humanitarian section over the years that I’ve been working on this, at least three of them.

“I’ve been sitting stuck in my office for 10 years, so in that sense, I have the institutional memory also but the rest of my colleagues are just like a revolving door sometimes. The institutional knowledge in our system is not very good either so we’re not good at keeping knowledge. So, for me that is maybe a critical component of how do you ensure that you can maintain the ownership of the interest when there is huge turnover of staff?”

Senior Political Adviser.

As this section has highlighted, there is considerable lack in technical capacity within the humanitarian energy sector. This problem is compounded by structural system challenges in delivery. Even with considerably more staff, humanitarian organisations will still struggle to implement energy programming without investment in training and capacity building.

Estimating Capacity Needs for the Humanitarian Energy Sector

Estimating how many energy staff members are needed to develop sustainable energy programming and decarbonise humanitarian operations is a challenging issue. Currently there are over 150 countries experiencing forced displacement⁶⁵⁸. In such situations there are usually at least 3 humanitarian agencies or lead response partners., and UNHCR is active in 132 countries. For the calculations below, the example of 132 countries is used to estimate capacity needs. This report suggests figures based on scaling-up existing capacity:

◇ Staffing needed within humanitarian agencies for national operations: As a result, different countries often have multiple agencies present. For example, UNHCR work in 132 countries⁶⁵⁹, IOM have operations in 54 countries⁶⁶⁰, and WFP have staff in 84 countries⁶⁶¹.

- Therefore, within agency operations: If there is one energy expert per agency, per national operation this would require roughly 300 energy agency staff.

◇ Staffing needed within implementing partner organisations: there are at least 4 NGOs or humanitarian partners present in each country experiencing forced displacement.

- As NGOs and partners deliver the majority of energy implementation work in humanitarian settings, energy staffing levels in these organisations are higher than in agencies. For example, in 2022 WFP has approximately 10 energy staff members dedicated to working on energy issues while GIZ, an energy expert partner, has 25 energy staff working on the ESDS programme alone. From this it can be suggested that 4 implementing partners could have 2 energy staff members each per country.
- Therefore, within implementation partners: 8 energy implementing experts per country across 132 countries would require roughly 1,000 energy implementing partner staff.

◇ Staffing needed within private-sector implementing partner companies: there are a number of different energy needs that need to be met within displacement contexts for which specialist suppliers are required across household electricity (such as solar home system providers), household cooking (such as fuel suppliers), energy for enterprises (such as mini-grid companies), energy for community facilities and public spaces (such as street lighting providers), and energy for operations (such as energy service companies or hybrid mini-grid suppliers).

- As a result at least 5 suppliers may be needed, with at least 2 staff members each.
- Therefore, within private-sector suppliers: 10 energy staff per 132 countries may be needed, creating jobs for over 1,300 private-sector humanitarian energy staff.

◇ Within global organisations staff are needed to support coordination, research, knowledge and learning on humanitarian energy issues.

- There are already 50 such professionals working across the GPA coordination team and the 16 GPA Steering Group partners (such as Mercy Corps, ICRC, Practical Action, GIZ, EnDev, the MECS programme, Chatham House). To scale this figure up to support the needs outlined above would require roughly 5 times as many global level experts.
- Therefore, within global structures and international policy-making organisations: 250 global energy and high-level staff may be required.
- Therefore in total: 300 energy agency staff, 1,000 energy implementing partner staff, 1,300 private-sector humanitarian energy staff, and 250 global energy and high-level staff.
- The humanitarian energy sector is likely to require around 2,850 energy-dedicated staff members based on current humanitarian operational needs.

The estimations for staffing in humanitarian contexts presented in this report require a lean, efficient system of delivering energy in displacement contexts, one which works through private-sector delivery routes. If such delivery mechanisms are not possible, staff needs in humanitarian settings will need to be much higher. For example, within three of the main humanitarian agencies there are already 53,000 humanitarian staff employed: UNHCR have 17,878 staff⁶⁶², IOM have 15,311 staff⁶⁶³, and WFP have 20,600 staff⁶⁶⁴. If only 1% of those people were energy professionals, that would require at least 500 energy staff in just 3 agencies. This number expands much further if the staffing needs of organisations like FAO, UNICEF, ILO, ICRC, and other core

humanitarian response organisations are considered.

Estimating a need of 2,000 to 3,000 humanitarian energy staff may seem extensive. However, there are now 102 million displaced people globally- a number roughly the equivalent to the combined populations of the UK and Canada. When considering the scale of the energy sector in these countries, and the number of staff employed in both the public and private sectors in the global north to supply energy, an estimation of 3,000 humanitarian energy staff is in fact minimal.

Progress: Scaling Capacity and Building Expertise on Humanitarian Energy

Often, energy is seen as an extra task allocated to the already resource-constrained and overburdened humanitarian staff. Typically, energy projects in the humanitarian sector are delivered by generalist humanitarian staff focused on improving protection and food security outcomes, or technical experts in other sectors such as WASH or shelter. In order to deliver more transformative and holistic energy access solutions, dedicated energy expertise over multiple years is necessary. In response to this need, there has been an increase in the number of energy experts working in humanitarian contexts in recent years. Capacity has increased both for operational staff working on greening humanitarian supply, as driven by growing climate concerns and enabled by UN-wide commitments through the Greening the Blue framework, as well as on the programmatic side focused on increasing electricity and cleaner cooking access with and for communities. This section outlines recent progress in increasing energy expertise across the humanitarian sector. As outlined in the GPA Framework, there are multiple ways to increase energy expertise within humanitarian response. These include:

- Building internal expertise within agencies to support minimum partnership and strategy development capabilities at the global and regional levels, as well as core project management skills needed to assess needs and develop sustainable delivery at the local level.
- Building external expertise beyond humanitarian agencies to support the delivery of clean energy access. This can be done by partnering with local energy utility companies in host countries, local enterprises in the refugee and surrounding host communities, the private sector at local and global levels, and development partners already

running energy access programmes.

- Building knowledge and learning to support all forms of capacity. This can be achieved by exchanging good and bad practices in order to learn from experiences, and centralising knowledge as a collective resource for practitioners to draw from when designing new energy programmes.

Progress in Building Internal Capacity

There has been an increase in the number of staff dedicated to energy over the period of 2018–2022 – a positive indicator that the humanitarian system strengthening its capacity on energy. At the global level, key humanitarian agencies such as UNHCR, IOM and WFP have dedicated global lead managers focused on developing and supporting implementation of global energy visions and strategies in line with their mandates. This is essential to provide support to country and regional offices on how to move toward more sustainable implementation of energy solutions as well as to advocate for increased funding and focus on renewable energy and energy access within their institutions. Global energy staff for key institutions are connected regularly through the GPA Steering Group, providing a space for exchange and collaboration across agencies.

There has also been an effort to invest in staff at the regional level within WFP and UNHCR, with the UNHCR East Africa regional bureau hosting a technical team focused on greening UNHCR's infrastructure. In some locations, such as Bangladesh and Jordan, substantial investment in energy capacity has even been made at the start of emergencies.

In addition to humanitarian institutions investing in their own staff, one of the most impactful

developments on increasing the number of energy experts working in displacement contexts has been through increased investment in expert rosters that deploy energy specialists to humanitarian organisations.

The most prominent deployment roster in the humanitarian energy systems is the NORCAP Pool of Energy Experts, which deploys over 30 staff to different humanitarian organisations such as IOM, WFP, UNHCR, NRC, and UNITAR.³⁴⁸ The energy expert roster has played an essential role in providing key energy support needed within humanitarian country, regional and global offices. This network of expertise has been essential to the implementation of global policies and strategies on the ground, and has

provided consistent expertise for multiple years necessary for the development and delivery of sustainable energy programmes that are taking new approaches.

Other rosters such as the Swedish Civil Contingencies Agency, the Dutch Young Expert Programme, and Dutch Surge Support provide experts on short deployments on demand during emergency responses.³⁴⁹ Experts were recently deployed to UNHCR in Sudan during the response to displacement caused by the Tigray conflict in Ethiopia.³⁵⁰ To meet further gaps in technical capacity, the Swiss Development Cooperation has developed a multi-year partnership with UNHCR and has staffed an integrated technical team with multiple

UNHCR Bangladesh: Building in Energy Access from the Start of Emergencies

Typically in emergencies, energy is not a core focus or well resourced during the initial humanitarian response. Without a focus on integrating energy planning into yearly budget cycles and doing assessments on the cost-benefit of different energy solutions, energy often continues to be under-prioritised for multiple years after the emergency phase. Yet the 2017 Rohingya response in Cox's Bazar, Bangladesh, is an exception to this rule and demonstrates how integrating energy access from the start of the emergency response can reap long-term benefits and change the lives of communities, while protecting the environment.

During the emergency phase of the response, WFP, IOM, UNHCR and FAO coordinated an initial working group to set a joint strategy on how to address the cooking and electricity access issues from the beginning.⁶⁶⁵

A senior energy specialist position was hosted within UNHCR, and the expert carried out cost benefit assessments during the emergency phase. It was found that, due to the large-scale migration, that

an LPG solution would be the most feasible and appropriate to mitigate heavy dependence on and damage to the local forest as communities were sourcing wood fuel for cooking. With the expertise in place, a full-scale LPG programme addressing both host community and refugee needs was designed, all relevant stakeholders engaged and coordinated, and multi-year funding was secured for implementation.

An energy team was also established within UNHCR to maintain the programme as well as focus on medium- to longer-term electricity needs of the community. Due to this coordinated approach with sufficient expertise and staffing in place during the emergency phase, structures were set up to continue prioritising energy needs in the years to come. After many years in place, the energy team within UNHCR has been able to implement sustainable energy solutions for water pumping, street lighting and other essential community services, as well as improve the efficiency of the LPG cooking solution.

energy experts to advise and support UNHCR's country operations on their energy planning and implementation.³⁵¹

These case study examples highlight how important investing in humanitarian system capacity on energy is. Without qualified expert staff members, designing and developing energy programming becomes deeply challenging. There are many examples of programming that has been developed without the input of energy experts, and the failures that have resulted from such programming. While investing within traditional humanitarian aid structures, such as through rosters and deployment systems, is one way of building capacity, expert knowledge and training partners can also support building internal expertise within partner organisations.

While investing within traditional humanitarian

aid structures is one way of building capacity, another way has been through delivering training to humanitarian specialists and donors to learn more about different aspects of energy.

The main training needs identified by multiple humanitarian agencies are around how to assess the energy needs of individuals and communities in order to develop clean energy programmes, and how to assess energy demand and design renewable energy systems to power humanitarian operations and switch from reliance on diesel. The development of the Energy Delivery Models training funded by NORCAP and implemented by UNITAR and WFP and the Energy in Emergencies: Reducing Risks of Gender-based Violence training programme implemented by Mercy Corps are examples of such training. Both programmes have supported humanitarian field staff in

Case Study: NORCAP Energy Technical Capacity Building Investments

The NORCAP energy project was established in 2018 and is the largest team of experts working together across agencies and locations. Most of the NORCAP energy deployees are working at the local level to support their hosting agencies to increase energy access for end users, green the humanitarian response and improve overall coordination and collaboration. This has resulted in progress within humanitarian operations in Africa, as well as strategic roles in HQs in Europe, such as supporting technical positions in the GPA, WFP, and IOM.

- At the local level, multiple agencies have been able to assess energy needs at the local or country-wide level in order to develop energy strategies and projects that benefit refugees and host communities. For example, in Kakuma, Kenya, a NORCAP deployee to UNHCR led the development of a Kakuma-wide energy strategy that is now being implemented, one component of which is private-sector-led provision of renewable energy for all social institutions (i.e. health centres and schools) within the camp and hosting community. In Malakal, South Sudan, a NORCAP expert deployed to IOM enabled access to clean gas for cooking by restoring a non-functioning biogas plant in a community kitchen, and is now focused on addressing the cooking needs of the wider community through a range of clean cooking options.
- At the regional level, WFP was able to set up a network of energy advisors throughout their four regional offices in Africa, who have the role of providing assessment and new project development to country offices in their region, as well as support longer-term planning and budgeting for energy access efforts within their regions. This structure of expert deployment has increased attention to energy throughout WFP programming and made progress on integrating energy into country strategic planning in multiple countries.

- At the global level, NORCAP has deployed key strategic advisors to IOM to work on key issues such as data collection and innovative finance, as well as to the GPA Coordination Unit at UNITAR to develop and implement key aspects of the GPA Framework, the collective global energy strategy for the humanitarian sector.

This long-term investment in energy specialists working across agencies has been a catalyst both to prove the benefits of addressing energy from the bottom up through innovative proof of concept projects developed by NORCAP experts, and to create the enabling environment from the top down by creating long-term energy strategies and innovative finance mechanisms that will increase access to renewable energy at scale.

In addition, the energy roster functions as a team across geographies and organisations, which increases coordination and collaboration at multiple levels within the humanitarian sector. It has also been instrumental in generating different knowledge products such as the following reports: *EmPowering Africa's Most Vulnerable*,⁶⁶⁶ *Blended Finance Solutions for Clean Energy in Humanitarian and Displacement Settings*,⁶⁶⁷ *Electronic Waste (E-Waste) Management for Off-grid Solar Solutions in Displacement Settings*,⁶⁶⁸ and *Urban Transitions: Clean Energy in Urban Recovery*.⁶⁶⁹ In 2020, the NORCAP Pool of Energy Experts, further expanded its work to include a Female Accelerator Programme, aiming to increase female participation and build capacity within the renewable energy sector.⁶⁷⁰ The NORCAP Roster as of 2022 is funded by NORAD, the German Foreign Office and the EU.

assessing energy demands of communities and co-design solutions with communities in a participatory manner. Through these training programmes, over ten innovative and inclusive pilot projects have been designed with a pathway to scale outlined and hundreds of humanitarian staff have developed essential capacities on conducting energy assessments and programme design, which they can apply in future emergencies and field operations.

In terms of developing internal engineering capacity, ICRC has developed a regional training centre with Strathmore University and Schneider Electric in Kenya, aimed at building technical capacities of their engineering staff to be able to design and implement renewable energy systems for operational and community use in conflict-affected areas. The training will first be delivered to ICRC staff once the centre is up and running, and is intended to be a resource for the wider humanitarian sector.

To build donor knowledge, the GPA Coordination Unit and UNHCR as a part of the Clean Energy Challenge have supported management of a Humanitarian Energy donor group, led by SIDA and the EU and comprised of key donor governments which provide funding for humanitarian and development programming. The donor group was established to coordinate funding, share and learn from each other and explore opportunities for joint investment to reach energy access at scale for displaced and host communities. Focus areas include greening humanitarian operations in line with global climate goals, and sustainable provision of energy access for individuals and communities. As of 2021, multiple training and good practice sharing sessions have been delivered to the donor group, and will continue to be an outlet for mainstreaming good practices through training in the future.

Finally, a number of capacity-building resources have been developed, such as toolkits and

Expertise and Specific Knowledge

“Our energy experts, they mostly come from the private sector. So, when many of them start working in a humanitarian context, they face a lot of challenges because they don’t know how the humanitarian context operationalises or works. They don’t understand the logistics and procurement processes of the humanitarian sector. It can be really hard for them to cope with that because the sector

can be highly limiting and inflexible. It is important to conduct capacity development to ensure that the humanitarian aspect is considered. Energy experts need to know how to do a context analysis and understand the needs of the culture in the context they are working in”.

Technical Energy Expert.

guidelines, sector specific programming supported, and workshops aimed at supporting capacity development within humanitarian organisations. One key sector programme is the Global Solar and Water Initiative,³⁵² which has been running since 2016, focused on mainstreaming solar pumping technology in emergency WASH contexts. The programme is implemented by IOM and OXFAM and has supported 230 organisations in 72 countries to introduce and scale up quality solar water pumping solutions.³⁵³ Multiple training tools were developed through the programme, including online training,³⁵⁴ in-person training³⁵⁵ and a webinar series³⁵⁶ on technical aspects related to solarising WASH.

Another example of system capacity support is the decarbonisation workshop series delivered by the GPA Coordination Unit, GIZ, and UNDP Copenhagen, focused on standard processes, innovative finance mechanisms and collaboration structures for switching to solar to power humanitarian facilities.³⁵⁷ Additionally, multiple guidelines have been developed on to design and implement interventions, such as the Guidelines for Outdoor Lighting Interventions in Humanitarian Contexts from Signify Foundation.³⁵⁸ Collaborative training such as the Access to Modern Energy Humanitarian Accelerator programme led by the Dutch

Coalition for Humanitarian Innovation also supports humanitarian NGOs in developing new sustainable energy projects.

Together the case studies in this section demonstrate substantial investment in the technical capacity of the humanitarian system to respond to energy needs. However, much more action and funding is still needed. Especially to reduce the short-term nature of expert staffing positions, ensure that system knowledge is built and retained over time, and to find the right types of experts to support complex system change. Capacity building internally within humanitarian systems can offer considerable benefits and support the mainstreaming of energy solutions in displacement settings. However, to support a fully functioning sustainable energy system: external capacity and learning is required. It is to these topics that the chapter turns to consider next.

Training on Energy Programme Design – Energy Delivery Models and Energy in Emergencies: Reducing Risks of Gender-based Violence Training Programmes

Since 2018, the GPA has been leading new research and learning on training and capacity building and energy delivery models. A number of high-impact events and publications have driven forward discussions in the sector. These include:

- Energy Delivery Models (EDM) training: WFP and GPA developed and piloted the EDM training to build capacity in humanitarian and development organisations to design sustainable energy models that meet energy needs of communities affected by forced displacement. The training is based on the Energy Delivery Model pro-poor energy planning methodology devised by IIED and CAFOD and consists of online learning modules, interactive workshops, and one-on-one mentoring from energy specialists from SELCO Foundation, IIED and MECS. Funded by MECS programme, the pilot phase of the EDM training was run in 2020–2021, in three cohorts with 55 participants from 5 humanitarian and development agencies working in 14 countries in the sub-Saharan Africa and Middle East and North Africa regions. The online learning modules were made open access and reached an additional 300 participants. Through the training, 11 projects were developed and presented in the donor dialogue sessions and 3 projects have already received funding through their organisations or external sources for assessment and piloting phases. Projects developed through the EDM training include:
 - WFP Lesotho – Electric Pressure Cookers for Schools⁶⁷¹
 - WFP Armenia – Financial Inclusion of Micro Enterprises to Access Renewable Energy⁶⁷²
 - SNV Kenya – Cooking with electricity in institutions in the Kakuma refugee camp, with MECS and UNHCR⁶⁷³
 - WFP Guinea Supporting schools to access solar refrigeration for food preservation and income generation.
- Energy in Emergencies: Reducing Risks of Gender-based Violence (EEMRG) training and tools: Mercy Corps implemented a two-year programme in 2019–2020 for humanitarian practitioners to introduce core concepts of energy and inclusion and provide practical tools to address energy needs in emergencies, funded by the US Department of State’s Bureau of Population, Refugees and Migration. Mercy Corps developed in-person training and facilitation materials,⁶⁷⁴ customisable assessment, design, and implementation tools,⁶⁷⁵ and an Inclusive Energy Access Handbook⁶⁷⁶ and delivered the training in Jordan, Uganda and Afghanistan. As part of the EEMRG, Mercy Corps and Women’s Refugee Commission developed a self-paced edition of Inclusive Energy Access,⁶⁷⁷ reaching a wide range of practitioners to increase the capacity of country offices and partners.⁶⁷⁸

Access to Modern Energy Humanitarian Accelerator Programme

The Access to Modern Energy (AME) Humanitarian Accelerator Programme was designed by the Dutch Coalition for Humanitarian Innovation and Netherlands Enterprise Agency, with support of the Netherlands Ministry of Foreign Affairs, to support humanitarian organisations to improve access to modern energy in humanitarian settings.

Using an open-innovation design methodology, the AME programme supported humanitarian organisations to collaborate with development organisations, the private sector and other solution partners. Using a three-step innovation model, organisations explored the potential of market-based

approaches for meeting energy needs of communities and humanitarian operations; share their challenges with solution partners, experts and investors; and collaborate for joint impact. Partnerships that were built over the AME programme include:

- Mercy Corps, GIVE, Entventure & FRES on de-risking private sector entry in Bidi Bidi refugee settlement in Uganda.⁶⁷⁹
- UNICEF, Practical Action & UNDP on clean energy in Sudan.⁶⁸⁰
- Habitat for Humanity & Engineering for Change on pre-disaster building and financing conditions.⁶⁸¹

Progress in Expertise Beyond the Traditional Humanitarian Systems

Currently, considerable energy expertise lies mostly outside the typical humanitarian system. This includes expertise within NGO partners and local energy utilities in host communities who work on clean cooking solutions, electricity grid extension, and off-grid energy planning. Private sector capacity also exists in larger multinationals building energy ecosystems and smaller small and medium-sized enterprises providing innovative technologies and business models that meet end users' needs. Capacity also exists within refugee and hosting communities themselves in the form of energy entrepreneurs and technicians, and within development programmes and organisations that specialise in energy access. One route to bringing in the necessary expertise and skills to meet SDG 7 for displaced communities is to collaborate with experts by developing partnerships or by facilitating or incentivising utilities or the private sector to supply energy services to refugee communities. Multiple efforts to do so have been made over the past years, as outlined in this section.

A primary way to collaborate with energy expertise outside of the humanitarian system is to leverage the skills and capacities of the hosting and displaced community members and local energy utilities. This can be done by identifying local energy businesses and supporting them directly with training, market linkages, finance access, or business development support. Examples of such work includes:

- Schneider Electric and UNHCR have focused on training refugees and host community members to work as electricians and energy system technicians, equipping them with the skills to operate and maintain solar systems in the Jordanian refugee camps.
- The Alianza Shire programme, a public-private partnership working in the Dollo Ado region of Ethiopia has worked with refugee communities to provide training on solar street lighting, and developed a programme to train the Ethiopian national utility company on electricity distribution and grid integration aspects.³⁵⁹
- In Rwanda, Practical Action and Energy for Impact have delivered training, technology support and provided direct business

mentorship to refugees, resulting in increased income generation and business outputs.³⁶⁰

- The Acumen Accelerator programme provides essential training for developing and building scalable business models supporting displaced and hosting communities in East Africa. The course by Acumen, supported by IKEA Foundation, SIDA, and the Refugee Investment Network, helps identify opportunities for growth through entry points to the local markets, strengthening the workforce, identifying value chains and helping develop sustainable business solutions for displaced or host communities. The 10-week training also offers an audience with investors and entrepreneurs and a chance to receive a share of US\$75,000 of grant funding.³⁶¹

These examples illustrate the need for more local investments that support and amplify existing value chains and skills in the existing community.

Another way to involve external expertise is by partnering with the private sector. There are multiple ways of doing so, such as forming a shared value partnership where humanitarian agencies (typically NGOs with less stringent procurement regulations compared to the UN) and private companies enter into clear agreements and work together to co-create energy programmes.

Through Corporate Social Responsibility investments, companies such as Schneider Electric and Shell have invested in financial and human resources, have developed and maintained key relationships with NGOs

Alianza Shire Programme: Ethiopia

In Ethiopia, only 7% of refugees have electricity access and depending on the camps, this is mainly provided through a diesel generator for roughly four hours daily.⁶⁸² The Alianza Shire project was the first Spanish multi-sectoral and multi-stakeholder partnership in the Ethiopian camps. It was developed as a pilot project in 2014 in one of the Shire Refugee Camps in Northern Ethiopia to develop innovative solutions for improving displaced populations' access to energy.

The first phase of the project (2014–2017) was a pilot for improving the electricity distribution and street lighting networks in the Adi-Harush refugee camp, benefiting 8000 thousand refugees. The electricity grid to which both field and community services were connected was improved and public lighting was installed for more than four kilometres. Refugees were trained using the 'Lab Shire'. This innovation lab led by the Alianza Shire team allowed for research and exploration of how best to provide electrification, energy interventions and training based on the needs of the communities. For example, they explored biogas generation for cooking.⁶⁸³ A training toolkit was developed for maintenance and repair of the electricity grid, and a report on the energy logistics and operations in the field was published.

In 2018, the project was scaled up to cover four camps in Shire targeting 40,000 people in the refugee camps and host communities, with the help of implementing partner ZOA. This second phase was co-funded by the European Union and offered both on-grid and off-grid solutions. It aims to provide an extension of the electricity network and seeks to connect community services and businesses to this network. More than 20 kilometres of street lighting will be installed. Businesses will also be created for the distribution of 1,700 Solar home systems.⁶⁸⁴ The refugees and host communities will receive training on installation and maintenance of the network and on entrepreneurship.

and UN agencies, and provided in-kind and financial support to transformative programme design.³⁶² Other companies, such as Kube energy and Solarkiosk,³⁶³ have developed strong partnerships with humanitarian agencies and are implementing electricity systems in areas where humanitarian practitioners may not have the expertise or time to deliver. On the infrastructure side, one way is to switch from purchasing diesel and generators to entering into power purchase agreements (PPA) or leasing contracts with private companies to buy electricity from them as a service. The Malakal Humanitarian Hub managed by IOM in South Sudan is an example of where outsourcing energy supply to the private sector has been used with success³⁶⁴ (covered in more depth in Chapter 4).

Collaborating with partners can also take the form of partnerships with development and research programmes to deliver the energy components of the humanitarian response. A recent example is the GIZ-UNHCR Energy Solutions for Displacement Settings programme, in which GIZ supplies policy, technical and

implementation support in the form of human resources and finance to UNHCR, funded by the German Development Ministry. The programme focuses on Kenya, Uganda and Ethiopia, has been running for more than three years, and has received significant funding which has allowed it reach larger-scale implementation compared to most energy programmes in humanitarian contexts.

Alianza Shire is another development funded public–private partnership supported by the Spanish Development Agency, focusing on market-based approaches to energy access in Ethiopia. This programme brings together private sector companies, researchers, and the development actors to deliver the expertise needed to support community electrification.

Finally, research programmes can be leveraged and provide additional expertise. The Modern Energy Cooking Services programme had £1 million dedicated to humanitarian contexts, and had dedicated staff supporting advisory and project design of humanitarian staff on the integration of electric cooking into projects.

The Value of Socially Minded Businesses: Co-creating Public-Private Solutions

One recent example of a successful private-public partnership is the Enter Energy – Ethiopia programme, a joint effort of Mercy Corps and Shell to deliver electricity at scale to hosting and refugee communities in the Somali region in Ethiopia.⁶⁸⁵ Through their partnership, and most notably thanks to the extra engineering, legal, procurement and commercial expertise brought by Shell, a commercially viable community electrification programme covering households, businesses and industry needs in the camp and host community was designed and is in the pipeline for implementation. Shell is also working with IOM in Mozambique on building a market for access to energy products and services in a resettlement area where communities have been displaced from natural disaster and cyclones.

Another is the work of Schneider Electric, which has also invested human resources and expert advice by co-creating innovative projects with humanitarian partners, such as an innovation hub and training centre to support electronic waste management in refugee contexts while improving employability of training participants. This time and expertise spent co-developing solutions and providing in-kind training curriculum and trainers is a unique investment and enables development of proof of concept projects.

GIZ Energy Solutions for Displacement Settings (ESDS) - Providing Technical Expertise and Policy Support to UNHCR in Kenya, Uganda and Ethiopia

In 2018, in response to the Global Compact for Refugees call for integrating development sector expertise to support host countries with high refugee populations, the German Development agency (BMZ) provided financing for a multi-year programme 'Support to UNHCR in facilitation the operationalisation of the Global Compact on Refugees in the Humanitarian-Development-Peace Nexus'. Energy was identified as a key area of support needed, in which UNHCR and GIZ developed the Energy Solutions for Displacement Situations programme focused on Uganda, Kenya and Ethiopia. The project has three main objectives:

- Improving the policy framework: ESDS works with national and regional governments and UNHCR to create the framework conditions that encourage self-reliance of communities' energy supply through facilitating local market development.
- Greening UNHCR infrastructure: ESDS supports UNHCR in its transition to renewable energy solutions for their infrastructure by reducing diesel consumption and improving energy efficiency.
- Increasing market-based access to energy: ESDS develops pilot projects to address barriers for market-based sustainable solutions and promote the collection, disposal and reduction of electronic waste (e-waste).

To meet these objectives, GIZ produced a number of resources and developed pilots on Access to finance for energy in displacement settings, Access to energy for livelihoods in displacement settings, End-user finance in payment systems in displacement settings, Potentials of biomass cooking fuel production in displacement settings, User-centred design for cooking energy solutions, Sustainable operation and maintenance plan, and E-waste reduction in displacement settings and Humanitarian E-waste Network.

Building capacity also critically requires working with local communities and displaced people directly. This can be achieved through local capacity-building schemes, such as previous SAFE trainings.³⁶⁵ Such programming can also be developed to work with and through local market structures, such as the E4I investments in productive use trainings in Rwanda.³⁶⁶ Finally, many innovative programmes now try to work directly with refugees and displaced people as co-designers and co-developers of humanitarian energy programming. An example of such a programme is the UNDP Yemen Enhance Rural Resilience (ERRY) programme which supports local energy access through displaced entrepreneurs.³⁶⁷

One example of how alternative delivery can connect innovative technology approaches with humanitarian energy provision is the work undertaken by Arizona State University Laboratory for Energy And Power Solutions, which supported the supply of off-grid healthcare solutions for refugee communities in Uganda.³⁶⁸

Collaboration within the humanitarian system requires much more than simple skills-building processes. High-quality delivery of humanitarian energy programming requires a broad understanding of the types of energy needs and systemic constraints present within the sector. Often there is the perception in the humanitarian world that to develop high-quality energy programming, engineers are needed. While having an electrical

engineering or highly technical background can support the development of programming, it must be matched by programmatic and financing capacity to deliver interventions and

decarbonise humanitarian systems. Individual engineers can not achieve transformative change without the support of procurement, programme, and operational colleagues.

UNDP Yemen: Building Local and Women-led Capacity

The UNDP-managed joint project, Enhanced Rural Resilience in Yemen (ERRY), supported by the European Union, addresses two major issues for the communities of Hajjah and Lahj in Yemen. It provides access to affordable and sustainable energy and it provides sustainable income to Yemen's most vulnerable population, women and youth.⁶⁸⁶ UNDP has worked with women and young people to train, develop and manage micro-grid businesses to help electrify their communities and cut the cost of energy by 65%. The project has helped 2100 people gain access to disposable income and 10,000 people with access to sustainable energy.

In 2021, Iman Hadi, the solar power plant manager from Abss, was announced as one of the world's most influential women for leading positive change and making a difference during Yemen's turbulent times.⁶⁸⁷ UNDP's project also won the Ashden Award in 2020 helping UNDP to scale up the solar micro-grids projects across Yemen, thus helping to further cut carbon emissions while supporting more vulnerable families access important services, such as schools and health centres during the conflict.

Supplying Off-Grid Power for Healthcare in Uganda

In 2019, Arizona State University's Laboratory for Energy And Power Solutions (LEAPS) partnered with Medical Teams International and SolarNow Uganda⁶⁸⁸ to supply off-grid power to healthcare services for refugees in northern Uganda. The project is a successful example of combining the humanitarian knowledge of an NGO, the technical expertise of a solar developer, and the innovation and collaborative mindset of a university.

The power system is housed in a shipping container, along with a water filtration system and space for patient care. A shipping container was used to enable ease of transporting the entire system, rapid deployment, and long-term durability of the structure. The power system is made up of 9 kilowatts of solar PV and 60 kilowatt hours of battery storage, which supply power to patient examination space, laboratory services, vaccine refrigeration, UV water filtration, and staff housing.

The system has been successfully operating since 2019 and serves approximately 200 patients a day. A vital aspect of the ongoing operation and success of this project was including SolarNow for warranty and maintenance of the power subsystem. The agreement covers five years with the option for renewal. SolarNow performs scheduled maintenance visits and service visits if there is any interruption of power supply. This means that clinic staff are able to focus on the needs of their patients instead of having to juggle the added burden of becoming power system experts.

Ultimately, drawing on expertise from outside humanitarian structures can prove to be a successful way to ensure quality delivery, and should be explored further in the years to come. This can be done both by working with expert partners such as energy NGOs or the private-sector, and by co-designing solutions with displaced people and building local capacity.

Expertise - Beyond Traditional Humanitarian Systems

“When we ask for a technical person when we advertise an energy job, we don’t necessarily want an electrical engineer. We need to make sure people have been exposed to the economic, the social aspects, the context and the humanitarian sector. Because what we do, mostly, is to understand how the market functions, that’s economics and we look at what a payment system looks like. So we need someone who can look at the problem from different disciplines. It’s a profile, which is very specific, which we always need.”

Delivery Models Specialist.

Progress in Progress in Building Knowledge and Learning

Much still needs to be achieved in terms of building knowledge sharing and learning within the sector. Sharing lessons learned from implementation of projects, especially around what went wrong and why, is often a challenge. Humanitarian projects often don’t factor in independent evaluations into implementation, making it difficult to have an objective reflection on successes and failures. Some recent projects have undertaken evaluations and generated reflective evidence. For example, there was a final evaluation of the Renewable Energy for Refugees (RE4R) project, findings and reflections from which were discussed at a conference.³⁶⁹ Through the GPA there has been a core focus to centralise

knowledge and create spaces for practitioners to share learning across stakeholder groups, which are outlined in this section.

The GPA and other partners has worked to centralise knowledge and share lessons in order to speed up the learning curve and create a foundational base of examples and knowledge for practitioners to pull from. Energypedia, the ICRC and UNITAR (GPA Coordination Unit) have developed a set of webinars, tools and knowledge products featuring up-to-date information on project implementation and lessons learned. To share experiences more informally, the GPA held a workshop series in June 2021 on Field Stories – Solutions to Improve Household Electricity Access,³⁷⁰ at which partners from UNHCR Jordan, GIZ Kenya, Practical Action Rwanda, and Mercy Corps shared outcomes and leanings in relation to livelihoods, production, sustainability and resilience based on on-the-ground experiences. In a similar vein, the Humanitarian Energy Exchange Network hosts knowledge-sharing sessions every two months in which network members share successes and lessons they are learning from ongoing implementation.³⁷¹ Topics covered so far are implementation of electric pressure cookers in schools, learnings from energy access support to refugee enterprises, and learnings from design of market-based energy programme in displacement contexts.

A key milestone in terms of sharing and collective learning was the first annual Humanitarian Energy Conference in 2019, in which humanitarian energy practitioners, donors and government partners, refugees and displaced people and companies united to exchange, connect and critically discuss evidence emerging from the sector. A second Humanitarian Energy Conference is being held in 2022 alongside the Sustainable Energy for All Forum.

A series of reflective and independent reviews of market-based projects have also been

Energypedia: Making Knowledge Available

Since 2019, the GPA Coordination Unit, ICRC and Energypedia have hosted a webinar series⁶⁸⁹ to share experiences, knowledge, tools and findings from energy projects in humanitarian contexts across contexts. The series featured overview webinars on topics such as energy for WASH, health systems, livelihoods, mini-grid implementation and alternative implementation models.

Demand was observed for deeper dives into topics, so the series shifted to mini-series on certain topics, starting with decarbonisation of humanitarian infrastructure and energy access for benefiting livelihoods and productive uses.

The webinar series was broken down into a video library⁶⁹⁰ in which practitioners can search for videos relevant to them based on their interest. Two new knowledge tools produced through the collaboration include a private sector database,⁶⁹¹ in which energy suppliers interested or experienced in working in humanitarian contexts can input their information, as well as the Humanitarian Energy landing page⁶⁹² as a central space to source all relevant resources such as case studies, data, information on markets and regulatory environments, and reports.

documented based on projects implemented throughout 2019–2022, generating evidence and lessons from new types of implementation. The Accessing Markets through Private Sector Enterprises for Refugees Energy (AMPERE) Project implemented by Mercy Corps³⁷² focused on assessing scalability of pay as you go models for energy in refugee settlements in Bidibidi, Uganda, and the project was reviewed by Columbia University,³⁷³ who found that access to mobile phones was key to purchasing products, limited livelihoods opportunities hindered purchasing power, and that continued subsidy was needed to ensure refugee purchasing power for clean energy products and services.

SNV published a report of lessons learned on private sector involvement and access to finance from its Market-Based Energy Access programme in Kakuma camp in Kenya.³⁷⁴ IKEA Foundation commissioned an evaluation of their energy–livelihoods related investments in Dollo Ado in Ethiopia, in which many interesting insights emerged.³⁷⁵ Additionally, Columbia University recently published a cross-project evaluation³⁷⁶ comparing market-driven solutions in refugee

settlements in sub-Saharan Africa. All of this documentation offers interesting evidence to draw upon and learn from when designing future programmes.

While some progress has been made on knowledge sharing and learning within the humanitarian energy sector, there is still much to do. Many programmes do not currently share data or results, final end of project evaluations are not always planned for or made publicly available, and staff face time constraints in being able to spend time developing knowledge outputs. New funding on knowledge sharing and training capacity building will be required to support the sector moving forwards. For example, by funding a scale-up of the GPA Energy Delivery Models technical training and capacity building workstream, donors could invest long term in supporting both internal and external capacity building across the sector. Delivery of sustainable energy programming to meet Sustainable Development Goal (SDG) 7 on energy access and SDG 13 on climate action in displacement contexts by 2030, will require considerable funding and new financing over the coming years.

The First Humanitarian Energy Conference - Building a Community in Addis in 2019

In 2019, a broad community of actors convened the first global Humanitarian Energy Conference in Addis Ababa, Ethiopia. The two-day conference was hosted by the Clean Cooking Alliance and UNITAR, with support from the Norwegian Agency for Development Cooperation and Shell International. The Conference brought together 161 participants from 76 organisations across 28 countries to learn, exchange knowledge, and collaborate toward achieving the vision of affordable, reliable, sustainable, and modern energy services for all crisis-affected people by 2030.⁶⁹³ The HEC included several high-level lightning talks on electrification and clean cooking programmes, such as the electrification program in Azraq camp in Jordan and private sector refugee energy access in Kigeme in Rwanda.⁶⁹⁴ The conference sought to include crisis-affected people and host communities, giving them a platform to share experiences and challenge. There were collaborations between humanitarian and non-humanitarian actors based on diversification, as well as sessions on ways to increase innovative finance solutions for energy access and exploring ways to branch out from the usual grant funding mechanisms.

During the Conference and the 2019 SAFE Workshop, a set of strategic recommendations from participant feedback, partner consultations, and facilitator observations were gathered. These recommendations included sector-wide recommendations, from improving multi-sector coordination on humanitarian energy access, significantly increasing the participation and inclusion of crisis-affected people in the design and development of energy solutions that affect their lives, and fostering partnerships between humanitarian and non-humanitarian actors, especially host country governments, private sector actors, and financing institutions.⁶⁹⁵ Resources from the conference can be found [online](#).

Pay as you go model

“This is a very common model in the off-grid solar sector. It is something that allows people to pay small instalments over time. In this case customers pay as they consume. They pay small amounts depending on how much they use or how much credit they can afford. This means there’s a continuous relationship with the provider. The service is not delivered as a one off, but as a long-term relationship. If you’re just selling a product, yes, it offers you an energy access service, but it doesn’t offer you anything else. Sometimes there’ll be maintenance that’s included, maybe you’ll have free maintenance for a year, maybe for three years. Sometimes there’s just none [and] no after sales services. So typically what you want is [a] period after that product sale to give improved sustainability, because things break inevitably and often there’s no capacity to fix them.”

Finance and Delivery Expert.

Progress in Knowledge Sharing and Learning

“I see that there is interest in energy from colleagues. We had quite a few colleagues taking the two modules on the Energy Delivery Models E-learning module developed by UNITAR and WFP as a part of the GPA. The main barrier is really the background of most people at our organisation from the humanitarian side, for them energy is another alien area for them to learn about.

Including the communities in the project design phase, where you test the market, let’s not just do a needs assessment. It’s market scoping and is not beneficial to me. The client and clients that have a say in the solution to their problems should be known to be beneficial.”

Delivery Models Specialist.

Issue Analysis: Capacity Challenges and Alternative Delivery

Much has been achieved in recent years in terms of improving the overall capacity and skills related to sustainable energy in the humanitarian sector. However, systemic challenges still remain and result in a preference for delivery mechanisms that are based on procurement and distribution. Therefore it is essential to continue building effective partnerships with other actors, push for more dedicated energy expertise within the humanitarian system, focus on developing local capacities of communities and energy utilities, and share knowledge across stakeholder groups about successes and failures. This overall transition to more sustainable delivery will be accelerated by widespread knowledge sharing, detailed exchange among practitioners, and even events such as 'learning from failures' workshops. This section details how such progress might be possible.

Increasing Capacity on Energy within the Humanitarian System and Building Stakeholder Capacities

In order to meet SDG7 for displaced and hosting communities, it will be essential to increase the number of energy specialists working in humanitarian response. NORCAP and other expert rosters have proven their value in providing the longer-term stable experience necessary to assess energy needs, lobby within humanitarian operations to focus on energy, and design transformative energy programmes that are sustainable and fit to the end users needs. More support to rosters such as the NORCAP one are needed, with a guarantee of multiple years of contract time. If multiple rosters are created, they should coordinate to reduce duplication and develop joint strategies that

maximise each other's presence. In addition, investment in longer-term contracts of lead energy staff within key humanitarian agencies is critical for organisations to maintain institutional memory and mainstream energy across country operations.

As well as increasing the number of dedicated energy specialists in agencies, tailored training and skills development of different stakeholder groups will be useful to build the right partnerships and local capacity needed to reach energy access at scale. The following examples of training and capacity building efforts can be adapted to context to provide skills development across the sector.

- **Local capacity building.** Refugees, host community members and local energy utilities are the people who will use energy systems and have the presence to operate and maintain energy products and services. Vocational and business training which supports refugees and host community members to become electricians, maintain and install energy services, and set up their own energy enterprises would not only improve the sustainability of clean energy systems, but also provide them with livelihoods and income generation opportunities. In addition, supporting local utilities with the expertise and capacity to provide energy services to local communities and refugees is a win-win and can meet humanitarian-development outcomes. Any local capacity development efforts should be coordinated with development partners who are already working with communities and national energy utilities on capacity development, especially to support people who have been trained in energy in finding jobs and opportunities.

- **Humanitarian practitioners.** Investment in training humanitarian staff should focus on supporting them to conduct energy assessments, analyse results and design sustainable delivery models that break the ‘procure and provide’ mindset, are based on end users’ needs and preferences and support or leverage local market systems and energy value chains. Further technical training on system sizing and design for different end uses should be explored, building on programmes such as the ICRC East Africa regional training hub or the Global Solar and Water initiative.
- **Donors and financiers.** Donors and financiers can invest in training and awareness raising on good and bad practices, common challenges and opportunities, and new strategies to invest in energy access with scale in mind could be useful to explore with donors and financiers interested in humanitarian energy.
- **Private sector and development organisations.** Private sector companies often have the business models, technologies, and commercial sustainability necessary to deliver energy services through innovative and user-centred methodologies. Development partners are often already supporting energy access through sustainable approaches in countries hosting many refugees and displaced people. Awareness raising and training to these groups focused on building understanding of how to work in refugee contexts could be useful to stimulate future transformative partnerships such as the UNHCR–GIZ ESDS Programme or Shell–Mercy Corps Enter Energy programme³⁷⁷.
- **Energy Experts.** Often when trained energy experts join the humanitarian sector, they do so from formal training in engineering or economics and have little experience of the aid or development sectors. This can lead energy experts to focus only on technological or economic approaches, without an

understanding of the types of delivery or the different roles of stakeholders in humanitarian settings. Energy experts could receive context training on displacement settings and collaborate with existing institutions, such as the GPA, to build their knowledge on humanitarianism and energy needs in displaced contexts. The Energypedia webinars and learning site are also a useful platform for energy specialists to start learning about humanitarian settings.³⁷⁸

Innovative Partnerships and Institutional Change

“Leadership interest is very important. If the country director in a specific location is interested in the energy or the environmental topic, the idea will be easily transferred to other staff members. For example, while working on the Greening the Orange team, the leadership aspect was very important to help in our vision in moving toward becoming a more carbon-neutral agency. We needed a collaborative approach to work towards achieving this. We also received funding from donors to hire experts to do the energy audits and measurements for several different countries we were working in.”

Technical Energy Expert.

Develop Transformative Partnerships and Sustainable Energy Delivery

As discussed in Chapter 4, and above, partnerships between humanitarian, development and private sector partners are essential for shifting from energy strategies based on free distribution to more sustainable market-based mechanisms). Much more commitment and facilitation support to forming such partnerships between should be prioritised. Partners from the wider energy access sector can bring expertise and high quality tools,

processes and experiences sector into the humanitarian context and help bridge the gap between humanitarian and development ways of working. For example, the SELCO Foundation has provided in-kind support and expertise to advise humanitarian practitioners on how to conduct energy assessments for health clinics and livelihoods, and how to use the insights to integrate energy aspects into their programming. Other programmes and partners such as EnDev and Energy for Impact play a similar role.

Capacity Challenges and Alternative Delivery Mechanisms

“One challenge is that we have to work with colleagues within the organisation to build capacity to find better approaches for implementation. Another is from the donor side, the money we receive from the donors isn’t sufficient and the fact that the donors also lack energy competence. One of the key learnings is having more savvy donors that can learn new energy approaches. Another learning is to have commitments from NORCAP and others which has made a lot of difference because now we have people at the regional and bureau level working with energy expertise. This has been very helpful as these experts are much closer to the country offices, and they can engage in conversation with the national workforce and the different ministries, helping encourage more energy funding and implementation.”

Delivery Models Specialist.

Learning from Implementation Experience and Centralising Knowledge

A core area of focus going forward needs to be on continued knowledge sharing and expertise exchange among different stakeholders in order to standardise good practices and learn from bad ones. The GPA and HEEN offer central

platforms for exchange, sharing and connecting with practitioners. These tools such as webinars, tailored workshop series, the website, private sector database and video library will evolve and expand to serve as a rich central space where practitioners can source relevant information.

More safe spaces are needed where practitioners can dig into details to learn from failures in order to avoid repeating mistakes, and should be a responsibility of all implementers. Continuing to implementing projects without independent evaluation (and thus not critically learning, sharing and integrating key insights for future project planning) will only perpetuate flaws in programme design which can have unintended consequences. Committing to learning as a sector and being open about successes as well as failures will help speed up collective impact. One example of such learning is provided by the GPA work on electronic waste, which has brought together practitioners to address the issue of waste from solar lanterns and electrical investments in refugee camps.³⁷⁹

While much has been achieved on the topic of training and capacity building in humanitarian settings, notable gaps still remain. For example there is limited knowledge on how innovative delivery models and mechanisms can be developed to reach the poorest communities within displacement settings. Nor does the sector have clear evidence to inform programming design or staff learning. There is a knowledge gap on how displaced people can be supported to be involved with humanitarian energy delivery and support the design, deployment and installation of sustainable energy solutions. Looking to the future, investing in technical capacity and expert sustainable delivery is an immediate priority need for the sector.

SELCO Foundation: Capacity on Energy and Enterprises

The SELCO Foundation is an open-source, practitioner-led solution lab that creates pathways from innovation to scale across areas of livelihoods, health, education and well-being by improving access to energy through financially and socially sustainable business models.⁶⁹⁶ They are based in India and have many years of experience in the off-grid energy access sector, specialised in building energy ecosystems through facilitating ‘ecosystem enablers’ such as improving access to finance, delivery training, increasing market linkages, and building technology supply chains.

The SELCO Foundation has provided in-kind support to the humanitarian sector by doing energy

–livelihoods assessments in refugee contexts, advising humanitarian practitioners on data collection, analysis and programme design that meets end users’ needs and sustainably designed, and sharing knowledge on solutions at the nexus of energy access and healthcare, education and livelihoods. This has resulted in the development of new programmes, inspiration of new forms of delivery and connecting energy to ongoing humanitarian livelihoods work and raised awareness within the humanitarian sector on how energy connects to all sectors.

Green Innovation Centre: Building Skills of Refugees and Hosting Communities Electronic Waste Management in Cox’s Bazar

Currently over 860,000 Rohingya refugees are living in settlements across Bangladesh’s Cox’s Bazar district, most of whom were forcibly displaced due to violence during the crisis in Myanmar in 2017. Basic energy services for refugee and host community households in Cox’s Bazar are currently provided in the form of portable solar lanterns and solar home systems. These products vary in quality and have an operating life of a few months to three years at most.

The operation and maintenance, repair and recycling of the mini-grids and solar technologies poses a significant challenge in displacement and rural settings due to the limited local skills development initiatives, availability of spare tools and parts, and accessibility of recycling infrastructure.

To address these challenges, UNHCR Bangladesh, Schneider Electric, Electriciens sans frontières and

UNITAR are collaborating to develop the capacities of Rohingya refugees and host community members while improving the sustainability of the humanitarian operation.⁶⁹⁷

The project intends to use existing spaces within the refugee camps to develop Energy and Environment Innovation Centres, where refugees and host community members will be trained in the installation, operation and maintenance of solar energy systems and recycling and upcycling of solar products. The project will implement e-waste management schemes, and develop a business model for local ownership of the centres.

The project partners aim to pilot the training centres in 2021–2024, with a targets of training 100 refugee and host community members and delivering a replicable e-waste management scheme for other areas within and outside the Cox’s Bazar region.

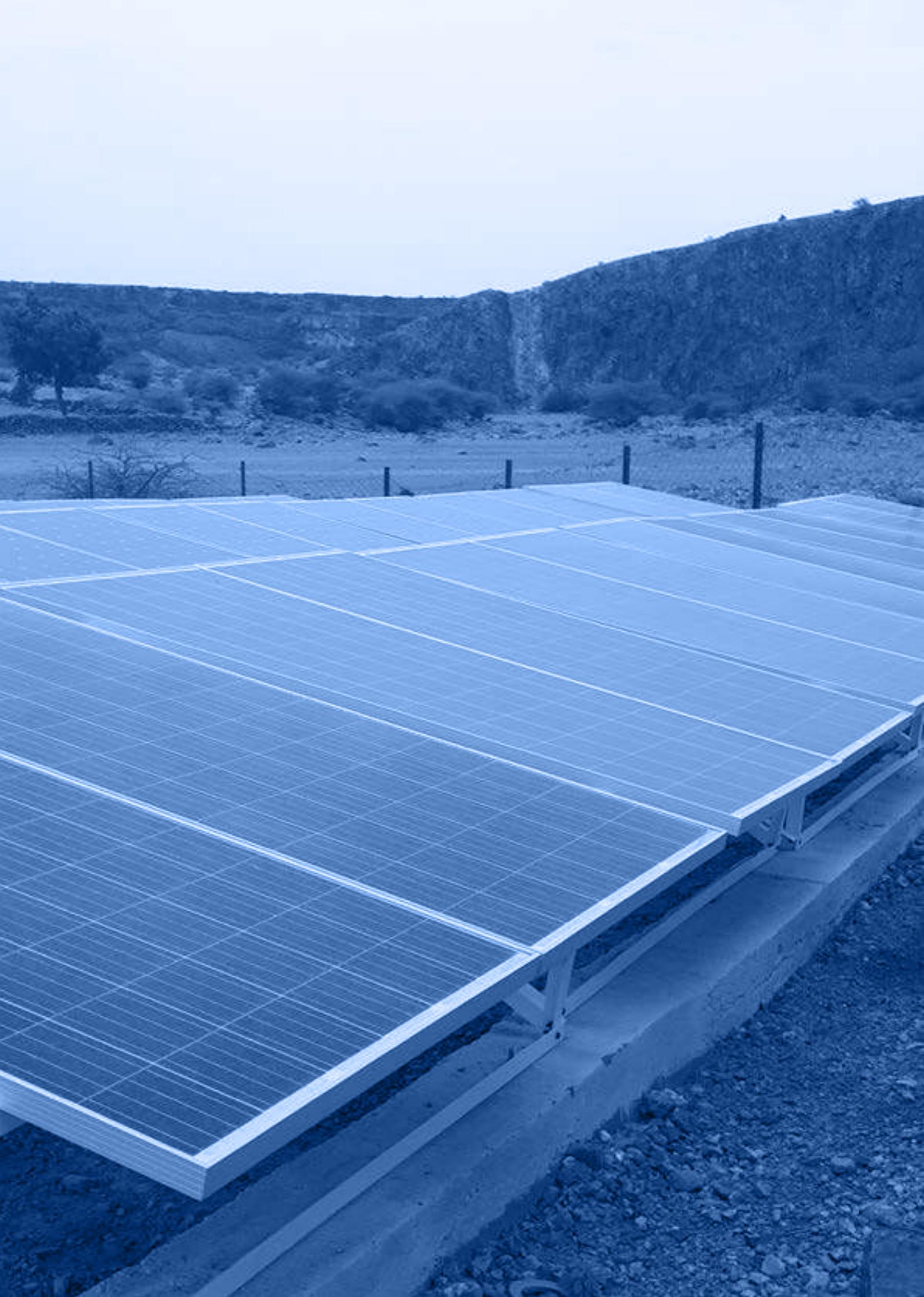
Future: Innovative Partnerships and Institutional Change

Progress on building humanitarian sectoral expertise since 2018 is evidenced by the plethora of emerging innovative partnerships and new delivery models being implemented, increased number of energy specialists working in the humanitarian sector, and skills developed through training and capacity development initiatives. Going forward, it will be essential to double down on these efforts to reach the scale needed to achieve universal sustainable energy goals for displaced and host communities. This report makes the following recommendations on improving sustainable delivery and capacity building within the sector:

- Invest in core staffing within humanitarian agencies and partners: core staffing is needed to collaborate with external partners and deliver results. There is a critical deficit for funding of staffing and expert technical capacity within the sector. Resources are needed at the local, national and global levels to ensure low-carbon delivery is possible.
- Invest in training and capacity development, specifically at the local level: tailored training and skills development on energy is needed for all stakeholders working in humanitarian response (practitioners, communities and municipalities, donors, and development

and private sector actors) to improve quality delivery of energy access, build essential technical skills for the use and maintenance of energy systems, and create the grounds for public–private partnership.

- Collaborate and partner with expert energy partners: while core staffing is needed within agencies, humanitarians cannot deliver sustainable energy approaches alone. Working with expert NGOs, energy suppliers and utilities, and financial institutions is essential to reach scale.
- Focus on design of sustainable delivery: use ecosystem approaches, sustainable business models and end user focused programme design frameworks (such as the Energy Delivery Models framework) to support local value chains and enable more market-based programming.
- Share experiences, learning from successes and failures equally: continue build the central knowledge base and share in-depth experiences among practitioners, displaced and host communities, donors and other partners delivering energy services to increase the quality of energy delivery and avoid common mistakes in project design.



06

CRITICAL EVIDENCE AND EMERGING DATA

Chapter contributing co-authors: Sarah Rosenberg-Jansen at the GPA and University of Oxford, Iwona Bisaga at University of Loughborough Modern Energy Cooking Services (MECS) Programme, and Jonathan Archimi at UNITAR GPA.

UNDP Photo

State of Play: Evidence on Energy within Humanitarian Settings

An Absence of Data and Why Data is Needed

There are many potential types of energy data in humanitarian situations: from reporting data within UN agencies, to project assessments by NGOs and implementing partners, to the results of feasibility and impact assessments from expert partners, and evidence from academic and research reports produced by universities.³⁸⁰

Despite these many possible sources, within the humanitarian sector there is limited accurate energy data available.³⁸¹ While some data exists for refugee camps, there is often scarce information on other displacement settings, such as on the energy needs of internally displaced people (IDPs) or urban refugees.

Currently in 2022, there is no accurate global figure on how many displaced people have access to energy or the type of access they have. Detailed data on emissions and energy access levels is currently not being reported in a comprehensive or standardised way. Furthermore, UN agencies and partners are restricted by their mandates in terms of the data they can collect and analyse. When humanitarian energy evidence does become available it is usually site specific, scattered, or emerges from incomparable assessments. There is a critical need for comprehensive and robust global baseline data, which should be a starting point for identifying energy needs and creating a baseline measurement of emissions, to help inform decisions on priority actions. There is also currently no comprehensive guidance on how the humanitarian sector could make the journey from data collection and assessment to using results. Without substantial investment, data and evidence for the sector will continue to be limited.

The World Bank notes that “the need for energy is highly acute in displacement contexts”

(Thulstrup and Joshi, 2017, p1)³⁸², but that “data on energy use among displaced people in camps and host communities are scarce” (World Bank, 2017, p44)³⁸³. The Global Platform for Action on Sustainable Energy in Displacement Settings Framework for Action identified data as a key issue in 2018, suggesting that there is a need to:

- “Integrate energy indicators into planning and assessment tools for the humanitarian sector.
- “Harmonize and standardize the types and forms of data collected to enable comparison and to facilitate effective monitoring and evaluation.
- “Design and deliver of holistic monitoring, evaluation and learning tools for humanitarian energy programmes, with ways to share data and best practices between the humanitarian, development and private sectors” (GPA 2018, p9).³⁸⁴

Evidence on energy is critical for two reasons. Firstly, data is essential in humanitarian decision-making and programme planning. Without evidence on how displaced people use energy and how much electricity and cooking fuel they currently consume versus what their actual needs are, effective programming to support sustainable solutions will not be possible. Examples of unsuccessful programmes that have tried to implement without key information on end users’ needs are common within the sector.³⁸⁵ Without data, programmes are working in the dark to guess what resources displaced people have, what support they may need and what solutions might work. Similarly for operational uses of energy, more evidence is needed to support investments into decarbonisation efforts within the UN, with the aim of reducing both costs and emissions from humanitarian sources.

Reasons Why Data and Research are Essential for Humanitarian Energy

Seven key reasons are driving the need for data and research in humanitarian energy. They are needed to:

- Allow global tracking of progress towards Sustainable Development Goal 7 for displaced people in line with the ‘leave no one behind’ principle.
- Enable tracking of progress on reducing emissions to limit the impacts of the climate crisis.
- Facilitate private sector investment and involvement in the humanitarian energy sector through clear identification of areas of priority need and investment opportunities.
- Enable host governments to better understand

the energy use of displaced people within given settlements and urban environments and to make plans for incorporating these people into national energy access targets and for better incorporation of sustainable energy solutions.

- Enable humanitarian agencies, donors and partners to more effectively plan, resource, and align their energy programmes and facilitate energy transition of operations.
- Facilitate accountability for energy provision across the humanitarian sector and support the delivery of sustainable energy access for displaced communities.
- Evidence progress towards UN commitments on energy, such the UNHCR sustainable energy strategy commitments or the Greening the Blue Initiative.

Secondly, quantitative data is required to measure global progress towards achieving SDG 7 for displaced people. Current energy systems are unable to provide clear evidence on how many displaced people access energy, and as such there is no comprehensive baseline for humanitarian energy. Without such information, humanitarian agencies and implementing partners cannot be held to account against their own targets. For example, UNHCR currently sets the ambition that “refugees have access to 200 Wh per household per day” and yet suggests that “currently only 10 percent of households in camp settings have access to electricity” (UNHCR, 2019, p19)³⁸⁶. Without accurate data to understand if these targets are being met, progress for the sector will not be measured accurately and organisations responsible for achieving these targets cannot be held accountable.

The humanitarian sector still faces challenges to provide both global comparative data to measure

global or institutional progress, and project-level data to support the design and monitoring of programmes and projects to boost energy access in displacement settings. Without data, it is impossible to understand whether and how SDG 7 on energy access will be met for displaced people, nor is it possible to analyse detailed investment and access data for project and internal agency decisions.

Since the Global Platform for Action on Sustainable Energy in Displacement Situations (the GPA) was launched in July 2018, there has been considerable debate on why data is needed. However, often these discussions have taken place without detailed explanation or consensus on the types of data needed. Before considering specific data sources and results, it is important to consider how data is defined. A hierarchy of related terms is provided below:³⁸⁷

- Data is unprocessed objective facts or observations that can lack meaning, without appropriate context. Data comprises products

of observation and can be used to provide statistics, once processed.

- Information is data processed for a purpose, shaped into something that has meaning and can inform the recipient. Information management systems organise how information is displayed, ranging from static repositories that collect information to intelligent processing systems, including to visualise data.
- Knowledge is data and information that has been processed through expertise and skills, that is, it implies human 'uptake' and later interpretation that can influence decision-making.
- Evidence is a collective set of data and facts presented in support of assertions and options.

As such, evidence can be used selectively to justify or advocate for any given policy, programme or project.

The majority of published evidence in the humanitarian energy sector can be characterised as data or information. The Figure highlights the different types of data and evidence that it is possible to develop, linking these to specific examples from the humanitarian energy sector.

Types of Data and Evidence in Humanitarian Energy Settings: What is Available and What is Needed?

There are several examples of the types of evidence missing in humanitarian settings, including both of programme and planning evidence as well as core baseline data. Currently,

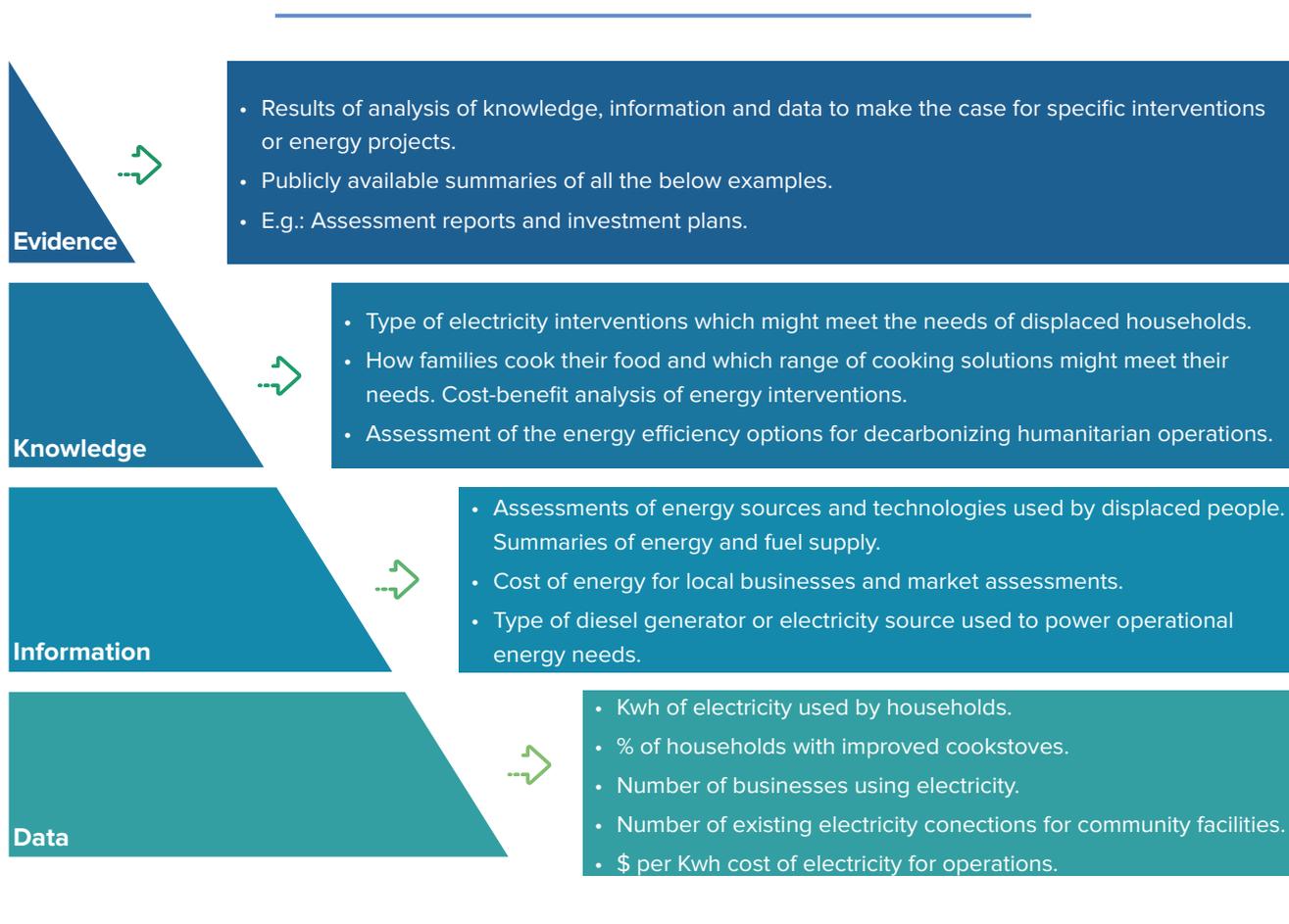


Figure: Examples of data points within humanitarian energy.

the data that does exist is piecemeal or site specific, and is not comparable between camps or settlements. Compared to other sectors, such as shelter or WASH, there is very little quantitative information on costs, limited evaluation of technologies, or programming monitoring data.³⁸⁸ While there is some basic information on access levels and estimates on costs available, the level of detail is not comparable compared to the level of data in the wider energy access sector.³⁸⁹ For example, while national urban and rural data on electrification rates and access to clean cooking fuels and technologies exist, there is limited accurate quantitative evidence on access levels within refugees and displaced communities.

Currently three core types of energy data are missing within the humanitarian energy sector: global baseline data, project data, and

emissions and cost data. Humanitarian energy practitioners need global baseline data that helps us understand the need for energy and how many people have access. For example, it is vital to have data on global-level indicators such as:³⁹⁰

- Percentage of persons of concern population with access to electricity.
- Percentage of persons of concern population with primary reliance on clean fuels and technology for cooking.
- Percentage of businesses and enterprises with access to electricity.
- Percentage of community facilities with access to electricity.
- Percentage of humanitarian operational facilities with access to electricity through renewable sources.

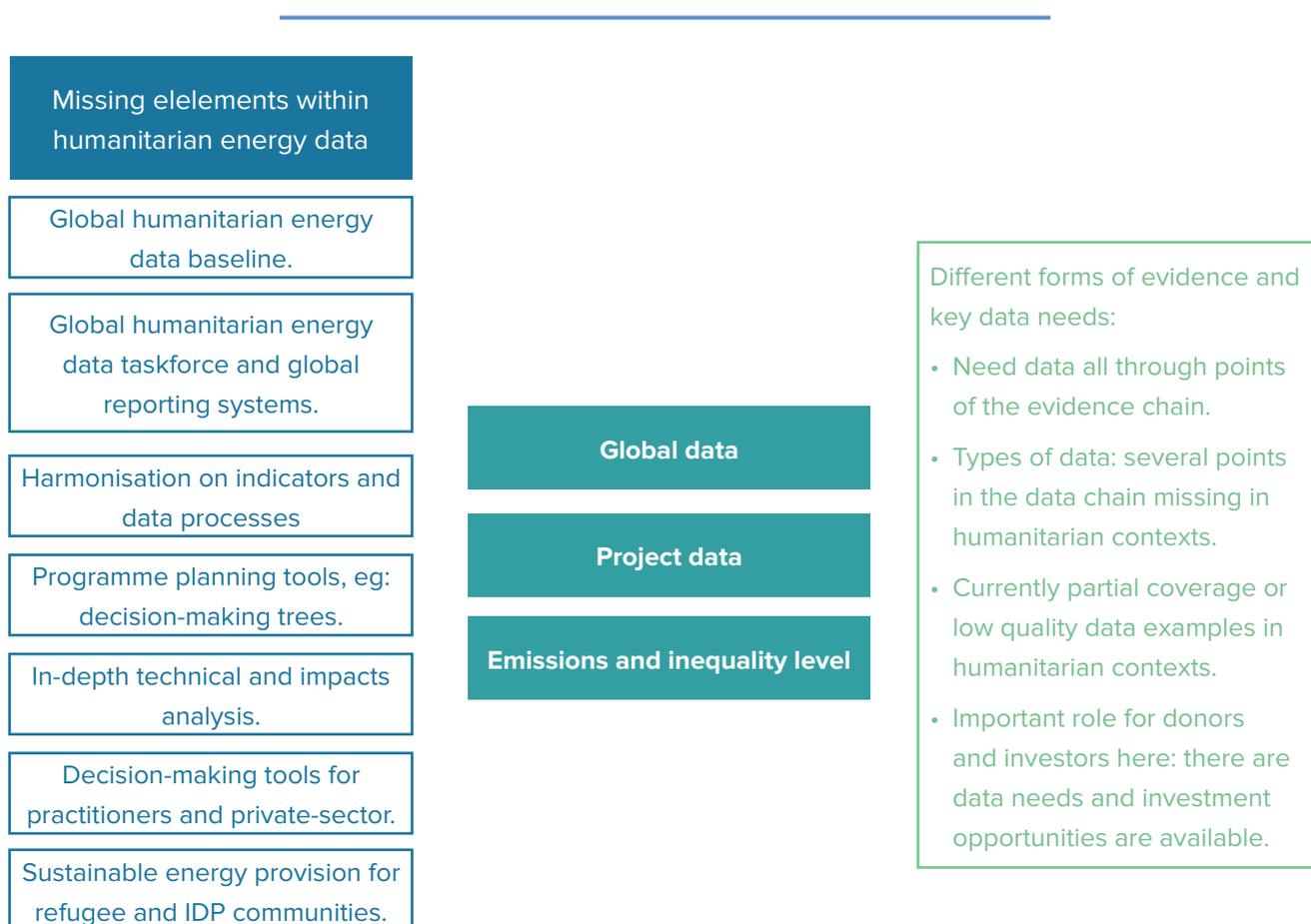


Figure: Data gaps in Humanitarian Energy

Global-level data is primarily needed by humanitarian and development decision-makers, and is essential for accountability and measuring global progress. Such data can be used to develop a comprehensive global energy baseline to include displaced populations into the SDG 7 tracking. Examples of global data include energy

data produced under the IOM Displacement Tracking Matrix process,³⁹¹ but such sources currently only provide partial coverage.

Project data – data to support action, interventions and reporting needs – is missing within the humanitarian energy sector. Project data supports the identification of key information

Global Data Sources

There are some sources of evidence which currently aggregate organisational data from countries or site locations to the global level. These examples are presented below, but many provide limited data focused on energy, or provide only partial coverage:

- UNHCR Clean Energy Challenge (CEC) visualisation:⁶⁹⁸ Basic information estimated from a staff survey within UNHCR operations at the end of 2019.
- UNHCR Energy Information System (EIS):⁶⁹⁹ Energy monitoring tool that produces information on UNHCR interventions (not the state of play or how many people have access). Includes 22 performance indicators on household lighting, cooking and street lighting. The 2020 data covers six countries: Bangladesh, Jordan, Niger, Rwanda, South Sudan, and Zimbabwe.
- UNHCR Results-based Monitoring (RBM) process:⁷⁰⁰ Designed to replace the UNHCR focus country reporting system. The system development is currently ongoing, but the RBM is not yet producing publicly available energy data.
- UNHCR Operational Data Portal:⁷⁰¹ The Operational Data Portal was created in 2011 to fulfil UNHCR's institutional responsibility to provide an information and data sharing platform to facilitate coordination of refugee emergencies; limited energy data is available within this system.
- UNHCR Microdata library:⁷⁰² Database of microdata containing information about UNHCR persons of concern: refugees, asylum seekers, IDPs, returnees, stateless people, and others. The library contains unit-level microdata collected directly

by UNHCR or indirectly through its partners but supported in some way by UNHCR; limited energy data is available within this system.

- IOM Displacement Tracking (DTM) energy toolkit and country case studies:⁷⁰³ Will provide four country energy case studies (Mozambique, Niger, Nigeria, and South Sudan). DTM energy data collection is being piloted across these four IOM operations missions throughout 2022.
- Energy Sector Management Assistance Program (ESMAP) Multi-Tier Framework for Energy Access (MTF) survey:⁷⁰⁴ Currently being developed for application in displacement settings. Ongoing consultation process with the GPA and experts. Possible start of data collection through national government processes from 2023 onwards. The MTF survey offers a detailed household energy needs and costs survey, however, it does not cover data for community facilities or institutional energy.
- SDG 7 tracking processes: Do not yet formally cover displacement situations. In recent years the tracking reports have included a box or short section on energy needs in refugee camps, but formal reporting on access in displacement settings is not included in the framework yet. In 2021 the SDG 7 tracking report UNHCR provided analysis of access to energy differences between refugee sites and host communities in a couple of their intervention countries.⁷⁰⁵ In 2021 a detailed policy brief was produced by IOM, Imperial College London and the GPA in support of the High-Level Political Forum led by UN DESA.⁷⁰⁶
- The Greening the Blue initiative: Provides some data on the emissions and energy use of humanitarian institutional users. The system

provides estimates of the carbon emitted from energy use for humanitarian offices and compounds etc., rather than household access.⁷⁰⁷ IOM and WFP have emissions reporting systems and report into the Greening the Blue Initiative, with metrics on total s and per capita greenhouse gas emissions.⁷⁰⁸

- The World Resources Institute (WRI): Developed an open source energy access mapping tool that could include displacement settings.⁷⁰⁹
- Clean Energy Access Tool (CEA): Developed by the European Commission, this is a visualisation and analytical tool providing information on Africa's electricity access and its overall energy outlook. The CEA tool focuses on rural populations and social infrastructure with minimal or no access

to electricity and could include displacement settings.⁷¹⁰

These sources do not offer global coverage for all displaced people or all types of energy. In many cases the information provided is focused on programming results on household lighting or cooking and does not provide a baseline level of access for whole camps, settings, or countries. In addition, there is very limited information in these databases on energy for enterprises, community facilities or institutions. While the sources provide some indication of the levels of energy access for displaced people, and highlight where sustainable energy programming is supporting change, they are not currently comparable.⁷¹¹

needed to develop projects to increase the use of and access to clean energy in displacement situations. Project and feasibility assessment data contains energy data for humanitarian agencies and their partners to develop sustainable energy interventions, including: detailed information on energy needs in households, businesses, community facilities; and operations, financial, regulatory, and market insights. Local or project-specific evidence can be analysed to be brought together in some countries to present a national picture. Such data is also important for private sector needs, driving investment decisions and enabling feasibility assessments to inform private sector involvement.

Emissions and cost data that can be used to show the humanitarian sector's impact on the climate and the costs of energy is needed. Costs and emissions data are critical in demonstrating who pays for energy and how. While emissions data is needed to demonstrate progress towards climate change mitigation efforts, data on inequality and costs can demonstrate critical evidence to show the costs of energy for humanitarian agencies and displaced people. It

can also help with humanitarian sector-specific and global greenhouse gas emissions reporting efforts.

While there have been some recent analyses that outline the orders of magnitude of energy access and costs,³⁹² still in 2022 there is no clear global baseline for the sector. The GPA is working with partners such as Chatham House, the University of Loughborough, IOM, UNHCR, and the World Bank to change this picture through a dedicated programme of work from 2022 to 2025.³⁹³

Overwhelmingly, an absence of high-quality or usable data for the sector has undermined progress to date within the humanitarian energy sector. To change this picture, substantial investment in data collection and analysis will be required over the coming years. This will require agreement among organisations on the type of data that should be collected, how data will be shared, and which institutions can coordinate, process, and visualise data. The following section turns to consider what progress has been made on data and summarises some of the key facts and figures known so far.

Project-level Data Sources and their Applications

Several humanitarian organisations undertake energy programming and collect project-specific data on humanitarian energy, such as MercyCorps, GIZ, Practical Action, NORCAP, and NRC. Some examples of these projects and related publicly available data are included in the project list below:

- Moving Energy Initiative (MEI) energy survey data from 2015. Data is based on MTF survey and applied in Kenya and Burkina Faso with coverage of two camps.⁷¹²
- Practical Action–UNHCR Renewable Energy for Refugees Project (Re4R) conducted a survey in Rwanda in 2018 based on MTF and MEI surveys for three camps.⁷¹³
- GIZ Energy Solutions for Displacement Settings (ESDS) and EnDev programmes conducted multiple surveys in Tanzania, Mozambique, Ethiopia, Kenya and Uganda from 2019 onwards: partial coverage of camps within five countries.⁷¹⁴
- SNV Market-based Energy Access (MBEA) project in Kenya conducted enterprise survey within Kakuma camp in detail.⁷¹⁵
- MercyCorps and research-led interventions collect data as part of the AMPERE project to gain in-depth understanding of the existing energy market in Bidibidi camp in Uganda.⁷¹⁶
- UNEP and UNHCR in Tanzania: gathered detailed survey data from 500 households in Nyarugusu refugee camp in Tanzania to understand the energy baseline scenario.⁷¹⁷
- IOM produced some project-specific data in South Sudan: evidence from a solar energy system to power the Humanitarian Hub in Malakal which produced quantitative results.⁷¹⁸ IOM and Energy Peace Partners also partnered on P-RECs and some data is available from this project.⁷¹⁹ a biogas project for clean cooking piloted in Malakal has been subject to several assessments including socio-economic aspects and monitoring of the technology.⁷²⁰
- IOM's innovation project in partnership with NORCAP CashCap in Mozambique, funded by Innovation Norway, collects data through household-level surveys, key informant interviews, business-level interviews, and focus group discussions.⁷²¹ IOM Mozambique is also working on building a market for access to energy products and services in a resettlement area where communities have been displaced from natural disaster and cyclones under the Shell Enter Energy project.
- UNICEF WASH and energy expertise.⁷²² UNICEF also works with Solar Hub for their project development in Africa.⁷²³
- The United Nations Integrated Strategy of the Sahel resilience pillar compiles energy projects by country, organisation and theme in the Sahel region.⁷²⁴
- The Health and Energy Platform of Action compiles energy for health projects by country and organisation.⁷²⁵

Emissions Data Sources

There is currently limited data available to track emissions levels or evidence on inequality in energy access within humanitarian systems. UNHCR has committed to move 530 field offices to clean energy by 2030,⁷²⁶ which would require a rate of more than

one every week for the next nine years. Across the UN, agencies and partners have signed up to the Clean Energy Challenge⁷²⁷ and the Greening the Blue ambitions.⁷²⁸ However, currently little detailed data is available from these sources and publicly available data progress remains slow.

A Lack of a Global Baseline and GPA Data Commitments

There is no global figure on how many displaced people have access to energy. Including what type of access displaced households have for their electricity or cooking needs, how much this costs, or information on environmental and health impacts. In 2015 the Moving Energy Initiative estimated figures for refugees in camps:

- The MEI Heat, Light and Power figures suggest 89% of refugees do not have access to electricity and 80% have Tier 0 cooking access.⁷²⁹
- This figure was produced in 2015 so is now seven years old: during which time the number of displaced people has risen by nearly 20 million people.
- The figure is also a modelled estimate, based on empirical results from refugee communities in only three countries, and only covers displaced people in camps (8 million modelled compared to 50 million displaced in 2015). There are now more

than double that number of forcibly displaced people worldwide, with UNHCR suggesting in its 2022 Global Appeal that there are now 102 million persons of concern.⁷³⁰

Initial analysis has been done to update this figure (see Chapter 3), however, further funding is needed to support analysis on a global baseline for the sector. Currently no single UN agency has a remit to provide global-level analysis across energy needs for all displaced people (including refugees, IDPs, asylum-seekers, migrants, etc.), or operational energy usage. To support data development within this system, the GPA has dedicated resources to facilitate the production of impartial evidence and ensure that data is made publicly available for all sector participants. To do this, the GPA is working with data collection partners, as well as with UNHCR, IOM, and WFP's existing data systems, to support the development and analysis of data. GPA partners and Chatham House are collaborating on developing critical evidence and core analysis to support this process.

Progress: Delivering the Detail and Analysing the Evidence

Data: What We Know to Date

The landscape of humanitarian energy data is currently a complicated and disordered one.³⁹⁴ It remains challenging to compare evidence across the sector as data collected is not standardised.³⁹⁵ Despite this, since 2018, some progress has been made. For example, several new research programmes have started collecting data and new energy assessments have been undertaken in Rwanda, Bangladesh, Uganda, Kenya and Ethiopia,³⁹⁶ As well as UN data from sources such as the IOM Displacement Tracking Matrix (DTM), which has started to include energy data.³⁹⁷ In recent years, a few key statistics and estimations have emerged, suggesting that displaced people have very limited access to energy and that they pay considerable amounts for the access they do have. This chapter highlights a number of startling statistics:

- Millions of displaced people live in the dark, surrounded by smoke and pollution, unable to access basic electricity services or sustainable solutions. Previous analysis suggested that 89% of refugees in camps do not have access to electricity and 80% use firewood and traditional cooking technologies.³⁹⁸ However, it is now suggested that an estimated 94% of displaced people in camps do not have access to electricity and 81% rely on firewood and charcoal for cooking.
- Displaced households pay disproportionate costs for energy. Analysis suggests that households in Kakuma Camp in Kenya pay an average of US\$9 dollars a month on energy: a figure which means refugees face extreme fuel poverty and shoulder the burden of household energy costs.³⁹⁹
- Similarly, research conducted by UNEP in Tanzania in 2017 found that refugee households paying for wood fuel or charcoal spent on average US\$12 a month, more than 3 times the average paid elsewhere in the country and equivalent to 45% of the capped salaries in the camp.⁴⁰⁰
- Research on refugee energy access in Uganda found that deforestation led to households spending an average of 122% and 34% more per month to purchase wood and charcoal respectively. Local environmental degradation also led to strained relationships between refugees and the host communities.⁴⁰¹
- Studies on the energy needs of small enterprises and micro-businesses run by refugees in camps suggest that 73% of businesses have a need for additional electricity and pay considerable amounts for the limited access they do have.⁴⁰²
- People who live and work in and around refugee camps and settlements spend more than US\$1.6 billion per year on power and cooking, of which displaced households spend over US\$250 million directly on their own energy needs.⁴⁰³
- In 2020, UNHCR estimated 1.6 million persons of concern had access to a sustainable source of cooking and 1.7 million had access to a sustainable source of electricity,⁴⁰⁴ suggesting that progress towards SDG 7 on sustainable energy is limited.
- Six UN agencies and ICRC operate more than 11,000 generators in displacement situations. More than three generators would need to be decarbonised every day for the next nine years to meet SDG 7 and climate 2030 targets.⁴⁰⁵
- The total energy and environmental investment

funding requirements listed in current humanitarian response plans, covering 28% of global refugee populations, cost US\$300 million for 2021. Scaling this to all refugee populations would cost over US\$1 billion for 2021. To cover all refugee energy needs globally between 2022 and 2030 would cost over US\$10 billion.⁴⁰⁶

- There is a chronic underfunding of cooking programmes in displacement settings. The vast majority of cooking programmes in humanitarian contexts have been grant funded and focused on Improved Cookstove technologies that deliver marginal health or environmental benefits⁴⁰⁷.
- Integrating solar energy into existing diesel-powered electricity systems in refugee camps could reduce costs by more than 30% and greenhouse gas emissions by more than 80%.⁴⁰⁸
- Given the startling statistics above, the

humanitarian sector is not on track to meet SDG 7 of universal sustainable energy access by 2030.

Many of the reports and evidence provided through humanitarian systems are outline estimations, and draw on limited case study information or small sample sizes. Some attempt has been made to draw these together, but limited global analysis is possible. An example of the snap-shot style of information that is available is captured briefly in the SDG 7 tracking report from 2021: within this report, UNHCR provided analysis of access to energy differences between refugee sites and host communities in a couple of their intervention countries.⁴⁰⁹ The report suggested that: “focusing on refugees and their surrounding host communities, data gathered by the United Nations High Commissioner for Refugees (UNHCR) in 18 countries between 2018 and 2020 reveals that even though host communities had on average 34 percent access and refugees 19 percent only, the access rates

Progress and Importance of Data

“What we want to do is to improve the quality of the data that we get to the furthest extent possible. We then need to use this to inform the programmes and to plan for new interventions. Also, there are many other initiatives from other sectors to help collect energy data. For example, from the nutrition sector, there is a lot of data, but we need to streamline the data and make use of the data in these other sectors.”

UN Humanitarian Energy Expert.

“As long as we don’t have baseline data, how can we develop milestones and certain aspirations in the next couple of years?”

Sector Lead.

“Humanitarian systems have done quite well to collect large amounts of data [but not on energy]. There are usually quite good tools for gathering data to inform their operations and predictive analysis. There’s lots of high-tech data analysis in other parts of the humanitarian world, predicting crises and predicting needs. The humanitarian energy access world is a good way behind that. In terms of the level of data that is available, in terms of who has energy access to what level, what technologies people are using, what people want and need from their energy technologies, is still very much a very foggy environment. There are better or worse case studies available within countries that dive into a lot of detail about energy access in general but a lack of information is the modus operandi of humanitarian energy”.

Quantitative Energy Data Expert.

for refugees and host communities remain very low”.⁴¹⁰ A more detailed policy brief on this topic was produced in 2021 in support of the High-Level Political Forum by UN DESA.⁴¹¹

At the household level, there are a number of country specific estimates on energy use available due to ongoing sustainable energy programming. For example, we now know that many of the refugees in Cox’s Bazar camps are cooking with LPG provided in the Bangladesh clean cooking programme by UNHCR, IOM, WFP, and FAO, which had reached over 95,000 households and 860,000 people by April 2018 (approximately 94% of all refugees).⁴¹² In settlements in Iraq, many refugees have access to energy through local mini-grids or generator connections with access to power up to 16 hours a day.⁴¹³ Likewise in Jordan two large solar plants have been developed in Azraq and Zaatari camps to provide household electricity for Syrian refugees. Therefore, we can summarise that

some progress is being made in South Asia and the Middle East.

In sub-Saharan Africa, however, levels of access to energy are generally much lower. In Rwanda, 58% of Congolese refugees in camps have no electric lighting and 81% rely on firewood as the primary fuel source.⁴¹⁴ While in Ethiopia, IRENA estimates that only 7% of refugees have some access to electricity through generators or mini-grids in Tsore and Sherkole refugee settlements, and that 87% of refugees use firewood in a traditional three-stone fire for cooking (IRENA, 2019, p11)⁴¹⁵.

The table provides an overview of some recent figures from selected refugee camps across Africa where energy data has been collected. The overall picture here is clear: the majority of displaced people do not have access to sustainable electricity or cooking resources.

Country	Access to Electricity (Tier 2 and Above)	Access to Clean Cooking (Tier 2 and Above)	No. Refugees in Camps (2020)	Total No. Refugees in Country (2020)	Total No. Refugees Globally (2020)
IRAQ	100%	100%	~95,000	~245,000	21.7 million in 2022
JORDAN	100%	>90%	~745,000	>126,000	
LEBANON	96%	98%	~230,000	>1.5 million	
BURKINA FASO	33%	5%	~25,000	~25,000	
BANGLA-DESH	32%	88%	~880,000	~880,000	
RWANDA	19%	40%	~164,000	~164,000	
KENYA	14%	14%	~420,000	>500,000	
DJIBOUTI	7%	7%	>29,000	>29,000	
ETHIOPIA	7%	6%	>735,000	>735,000	
UGANDA	1%	45%	~1.4 million	~1.4 million	
TOTAL	/	/	>4.7 million	>5.6 million	

Table: Data estimates of household electricity and cooking access in selected refugee settlements⁷³¹

For access to energy in enterprises, data is even more sparse. SNV and EnDev have conducted one assessment through their Market Based Energy Access project in Kakuma in Kenya which suggests that more than half (54%) of businesses in the camps use electricity for their business operations. 73% would like to obtain (additional) electricity access to have longer opening hours and expand their product and service offering, and 58% of businesses involved in cooking would like to switch to new cookstove types.⁴¹⁶ Such data however, is an exception and in many locations there is limited information on how small informal businesses in displacement settings use energy.

There is also limited data on energy access in community facilities – such as public space lighting. While energy is essential for community facilities, such as schools, hospitals, WASH facilities, community halls and play spaces, quantitative data on these needs is rarely available. Recently new evidence on the levels of energy in community facilities has started to become available, for example, reporting on the energy uses in Mahama and Gihembe camps in Rwanda.⁴¹⁷ The UNHCR Energy Information System (EIS) provides some data on community access. For example, EIS measures information on the percentage of streetlamps installed and maintained, but no information on electricity access in community facilities.⁴¹⁸

Finally, we come to the topic of data on operational uses of energy (usually electricity provided for humanitarian institutions and their NGO partners for offices, compounds, and registration centres, etc). Despite international commitments such as Greening the Blue, limited evidence is available externally on how much electricity is produced by humanitarian agencies, what the sources for the electricity are and what the associated costs are. Existing data mostly focuses on emissions figures or energy costs. Where it exists, it is often not shared beyond the organisations collecting it. For example, NORCAP and Boston Consulting Group (BCG) suggest that “the average carbon intensity of generator-produced electricity in UN compounds is over 1.6 times China’s and over 1.4 times India’s national carbon intensities of the power sector” (NORCAP and BCG, 2020, p22).⁴¹⁹ Notwithstanding this shocking figure, little action has so far been taken to decarbonise UN energy infrastructures. Even where renewable energy solutions have been put in place, data on the impacts of these programmes is not made public. Some quantification of the costs of institutional energy has been undertaken by Chatham House, who suggest that “the sector spent some US\$1.2 billion on polluting fuel in 2017” but that switching to more sustainable sources could produce “operational savings of over US\$517 million a year for the humanitarian sector” (Grafham and

Investment and Evidence in Tanzania

The UNEP DTU partnership gathered detailed survey data from 500 households in Nyarugusu refugee camp in Tanzania to understand the energy baseline scenario.⁷³² This was used to inform a social cost-benefit analysis of an energy intervention in a displacement setting, monetising the impacts of biomass-based cooking, compared to LPG. The data and research also revealed the latent market

demand for LPG among refugees, as a cleaner, safer and lower-carbon option compared to the baseline scenario. This led to a US\$3.4 million market creation plan and funding proposal submitted by the Global LPG Partnership in 2020, endorsed by UNHCR and the Government of Tanzania. The project aims to provide subsidies to supply 88,000 refugees and 40,000 host community members as a means to overcome the capital barriers to market entry.

Lahn, 2018, p4)⁴²⁰. This suggests that switching to renewables could in fact make more money available for humanitarian responses in the future.

Some initial data has also started to emerge on the investment possibilities and market size for refugee and displaced households, for example on UNEP's LPG market assessment in Tanzania⁴²¹ and the International Finance Corporation's Lighting Global programme in Lebanon.⁴²² The Lighting Global programme provides expertise to relief and humanitarian agencies supporting energy access needs for displaced people.

An Energy Market Assessment is used to help better collect data on income, power supply and expenditure on power by Syrian refugees in Lebanon. The analysis focused on the vulnerable Lebanese host community, Syrian refugees living in rented accommodation and Syrian refugees living in camps. The analysis suggested that "globally in 2018 alone, it has been estimated that more than US\$223 million were spent by refugees and internally displaced people for off-grid lighting: US\$121 million in camps, US\$27 million in slums, US\$65 million in rural areas, and US\$10 million in urban areas" (Lighting Global, 2018, p1)⁴²³.

When we take a step back from these individual assessments and figures, however, there is very little comprehensive data available across the sector. While some estimations of access levels in countries have been possible, detailed evidence on costs, energy consumption, types of technologies, or analysis of how energy access underpins the social and economic lives of displaced people is missing. Market-based assessments undertaken by practitioner organisations can provide raw data on energy needs,⁴²⁴ but these are rarely analysed from a research perspective due to capacity and timing constraints within humanitarian organisations. Moving away from quantitative evidence, few qualitative studies have been undertaken.⁴²⁵

Much more research and evidence is needed before a clear picture on energy access and use can emerge.⁴²⁶

Progress on Energy Data within Humanitarian Institutions

Historically, data on energy from humanitarian organisations has been limited to results from individual in-country assessments or small-scale results from intervention monitoring. However, it is possible to identify several initiatives which are supporting progressive change.

UNHCR launched an energy strategy in 2019, which specifies that "refugees have access to 200 Wh per household per day" (UNHCR, 2019, p19)⁴²⁷. This minimum target presents a measurable aim for the refugees under UNHCR's mandate. Progress was also made during 2020 on a concrete framework to measure progress towards this target – as UNHCR plans to collect energy data through its new results-based reporting mechanism COMPASS, being rolled out in 2022. UNHCR is also using their Energy Information System, which gathers monitoring data from sustainable energy intervention programmes.⁴²⁸

IOM has resourced their energy team with two experts working on an energy assessment framework through funding from NORCAP. The framework supports energy data collection within IOM's operations, providing an energy needs toolkit, specifically focusing on energy for displaced populations under IOM's remit.⁴²⁹ The new energy data have become available through the IOM Displacement Tracking Matrix (DTM) during the course of 2021 – 2022 and to date, in-depth country case studies have been produced on energy needs in Nigeria⁴³⁰ and Mozambique.⁴³¹ Two additional case studies should be produced for South Sudan and Niger in 2022.

UNHCR Energy Indicators and Results-based Monitoring (RBM)

Process

Since 2020, the UNHCR Division of Resilience and Solutions (DRS) energy team have been supporting institutional efforts to mainstream energy data collection through the new UNHCR RBM data collection and reporting process, COMPASS⁷³³. UNHCR has suggested two core indicators will be collected by all operations with energy programming: one on the level of lighting that displaced people have access to, and one on

the sources of cooking fuels and technologies that are currently used. Additional energy indicators on energy needs of enterprises, community facilities, and the costs of energy are also available when operations are interested in collecting and analysing data on these topics.⁷³⁴ GPA partners provided support on this process by offering expert advice on energy indicators, including by consultation throughout the GPA data workshop and indicators mapping report and exercise.⁷³⁵ UNHCR data collection is due to be rolled out through field operations from 2022 onwards to produce new data on the energy needs of refugee communities.

IOM Energy Assessments and Displacement Tracking Matrix (DTM) Process

Since September 2020, IOM has invested substantially in their internal energy data capacity, with the support of NORCAP. The IOM team developed a dedicated Energy Analysis Framework, Energy Toolkit, and data assessment process through which energy data collection is mainstreamed through the IOM Displacement Tracking Matrix (DTM).⁷³⁶ The process has so far been piloted in Niger, Nigeria, South Sudan and Mozambique. Two reports were produced, one on Nigeria and one on Mozambique⁷³⁷ – these highlight the energy needs of displaced people in those regions, and can be rolled out to other IOM operations in the future. In addition, IOM Mozambique has now systematically mainstreamed energy as a sectoral need in their Multi-Sectoral Location Assessment reporting in the North and Central provinces to compare priority of needs.

Depending on the context, the data produced covers household cooking and electricity needs, as

well as space heating and cooling for households, energy for WASH facilities and a general data category to cover gaps. The dataset is publicly available through the DTM reporting process and published online with a report. The data is supported by a Multi-Sectoral Location Assessment and a dedicated energy field companion tool to standardise questions and answers. The tool aligns with the World Bank ESMAP MTF framework to ensure comparability of results produced.

This process was supported by the GPA data workshops and indicators mapping development, in order to support the harmonisation of data and evidence across the sector. The creation and publication of the data and energy tool represents a significant step forward for IOM as an institution, which is now able to use the tool to support energy reporting and energy access measurement across the missions where DTM is active. However, further investment is needed to resource the roll-out of this process across IOM's operations and develop core staffing capacity to support the analysis of data and sustainable energy programme design.

Several new research programmes have been developed specifically to produce research and evidence within humanitarian energy. Firstly, the Humanitarian Engineering and Energy for Displacement (HEED)⁴³² programme based at Coventry University, which focused on remote-sensing and quantitative data on displacement communities in Rwanda and Nepal. Secondly, the Modern Energy Cooking Services (MECS)⁴³³ programme based at Loughborough University, which is developing a portfolio of work on clean energy cooking solutions in refugee and displacement settings. These research programmes provide some in-depth analytical and technical capacity to understand humanitarian energy data further, as well as supporting new pilots and data for the sector.

The GPA coordination unit has been supporting partners and stakeholders across the sector to come together to discuss data and evidence. For example, the GPA has provided technical advice to UNHCR and IOM throughout their indicator and data processes on energy, and convened a series of data workshops throughout 2020 and 2021 to share developmental and humanitarian learning on this topic.⁴³⁴ This has culminated in the production of a humanitarian energy data sharing online tool,⁴³⁵ which can be used by the sector to visualise data and measure global progress on energy access. Over the coming years, the GPA coordination unit data team will support analysis on data and research issues to bring actors across the sector together on evidence.

GPA Data and Evidence

Workstream

Over the past two years, the GPA focused on three core areas to drive the data agenda forward:

- **GPA Data and Evidence Working Group and Data Harmonisation Process.** The workstream aims to facilitate data analysis and sharing among energy practitioners, aid organisations and academics. The GPA work coordinates learning and exchanges across the humanitarian sector on energy data, evidence, monitoring and evaluation techniques, through activities such as workshops and webinars. During 2020 and 2021 the GPA data workstream supported a sector-wide data learning process and produced an indicators mapping report to support sector practitioners.⁷³⁸
- **Enhancing Humanitarian Energy Data Sharing and Access.** The process aims to assemble the different parts of the humanitarian energy puzzle to give sponsors, practitioners and aid organisations a multisectoral overview of the humanitarian energy situation in displacement settings at camps and country level. The process combines different sources of information to help partners to spot gaps and opportunities, prioritise intervention, track progress and connect stakeholders. This

workstream delivers a service to streamline a data reporting process, a product with a business intelligence tool, and training sessions with workshops.

The data reporting process aims to secure, automate, and standardise the transfer of data from a variety of sources into one centralised global platform. The business intelligence tool synthesises and visualises information from different sources to provide five types of report that support the decision-making process for humanitarian energy interventions. The five topics are: the site's energy access and demand profile, the site's enabling environment, the humanitarian energy projects and activities list, the national energy policy and market, and the humanitarian and energy stakeholders register.

- **Direct support to organisations in developing data indicators and assessment frameworks.** This activity aims to support institutions on embedding data within existing processes. It provides technical advice on indicators and data collection processes for humanitarian agencies, consultations on survey processes and MTF alignment. It supports the development of energy survey products with the integration of standardised indicators and guidelines for data collection methodology.

Together these initiatives from across the sector mean that by early 2023, it may be possible to see a global baseline on humanitarian energy access for the first time. However, in order for this vision to be realised, new investment from donors in energy data and analysis will be needed. We estimate that funding of US\$5 million between 2022 and 2025 will be necessary to support primary data collection and progress analysis to understand whether the humanitarian sector is on track to meet SDG 7. The GPA briefing paper on Critical Concepts and Research Needs in Humanitarian Energy identifies future research topics.⁴³⁶ In particular, investment on data collection and analysis has been noted as a particularly important area to inform donor and private-sector decisions.⁴³⁷ Similarly, the topic of energy access for displaced people running enterprises and small businesses within refugee camps has been identified as an urgent topic for research to consider.⁴³⁸

Progress in Data Harmonisation: Indicators and Data Sharing

Within the sector, progress is currently being made on the measurement of energy access. Throughout 2020 the GPA convened humanitarian and development practitioners to develop a data sharing and indicators mapping exercise.⁴³⁹ The process outlined common indicators and ways of measuring access, building on the MTF framework and best-practice examples within the energy sector for data collection. This work has been further developed by the GPA coordination unit, who have produced a data sharing platform⁴⁴⁰ on humanitarian energy that enables future data and evidence on this topic to be shared. The results of the workshops on these topics revealed a core set of indicators that can be measured across agencies, countries and partners to provide a global picture on humanitarian energy. This

analysis was developed in partnership with Chatham House and the Modern Energy Cooking Services Programme (MECS).⁴⁴¹

Key Publication: Understanding Data Measurement: GPA and Loughborough Indicators Mapping

In 2021 the GPA and Loughborough University produced a report on 'Mapping Indicators for Humanitarian Energy Access and the Decarbonisation of Operations'.⁷³⁹ The report summarised a number of resources to guide practitioners and donors in understanding humanitarian energy data needs. The aim of this work was to support the production of high-quality, usable energy data for the humanitarian sector and practitioner partners in delivering sustainable energy solutions. Throughout 2020 and 2021, several core resources on this topic were produced by the GPA community, including discussion workshops on data needs to develop knowledge across the sector and a detailed mapping of indicators and forms of data used with the humanitarian energy sector.

The GPA 'Mapping Indicators for Humanitarian Energy Access and the Decarbonisation of Operations' report outlines 16 core indicators which all humanitarian and development organisations working in humanitarian settings can collect in order to inform a global baseline. The indicators cover energy access needs at the household, enterprise, community facility, and institutional levels for both electricity and cooking needs. The analysis urges all organisations and projects working in the humanitarian sector to collect data based on these indicators, as well as to share the results across the GPA community so that a global baseline on energy access can be developed over time. Such data will also support measuring progress on greenhouse gas

emissions and achieving SDG 7 on clean energy access for all displaced people by 2030. The report suggests that “measuring what matters is critical to establish both a global baseline to demonstrate progress towards sustainable

to demonstrate progress towards sustainable development and climate goals, and support positive learning within the humanitarian sector on where energy needs are most severe” (Bisaga and Rosenberg-Jansen 2021, p1)⁴⁴².

Energy Needs Location	Key Indicator for Access to Energy (Global Baseline)	Key Indicator for Intervention Assessment (Project Development)	Key Indicators for Reducing Inequality and Emissions (Leave No-One Behind)
Household Electricity	Proportion of Persons of Concern (PoC) population with access to electricity (on or off-grid) (Access %).	Type of electricity in households with access (grid, mini-grid, SHS, solar lantern, standalone diesel, shared diesel, other) (Technology %).	Average household monthly spend on electricity (Spend \$).
Household Cooking	Proportion of PoC population with primary reliance on clean fuels and technology for cooking (Access %).	Type of primary cooking fuel (fire-wood, animal dung, charcoal, LPG, biogas, other) (Technology %).	Average total monthly spend on cooking fuels and cooking technologies (Spend \$).
Energy for Displaced Enterprises	% of businesses and enterprises with access to electricity (Access %).	Type of energy in enterprises with access (covering both electricity and cooking sources) (Technology %).	Average businesses/enterprises monthly spend on electricity (Spend \$).
Energy for Community Facilities	% of community facilities with access to electricity (Access %).	Primary (most commonly used) source of electricity in community facilities (grid, mini-grid, SHS, solar lantern, standalone diesel, shared diesel, other) (Technology %).	Average monthly spend on electricity in community facilities (Spend \$).
Energy for Humanitarian Operations	% of humanitarian operational facilities with access to electricity through renewable sources (Access %).	Primary source of electricity in HO facilities (grid, mini-grid, solar (AC), solar (DC), diesel/petrol, other) (Technology %).	Average monthly spend on electricity (total) in HO facilities (excluding community facilities) (Spend \$). Annualised electricity use related CO2 emissions (absolute).

Table: Core Indicators for Energy Data in Humanitarian Settings⁷⁴⁰

While initial progress has been made on the alignment of indicators to measure energy access and costs, so too has progress been made in sharing existing data and evidence. For example, for the past two years the GPA and partners have collaborated on a data sharing exercise whereby 12 organisations have shared project and programme data to facilitate national and global level analysis. The GPA business intelligence tool aims to make indicators speak by associating them with

global and local factors. This combination of overview and granularity provides sponsors and organisations with the critical information necessary to support their prioritisation for humanitarian energy intervention.

Humanitarian Energy Data Sharing : GPA Business Intelligence Tool

The GPA business intelligence tool provides a data sharing process to support intervention prioritisation.⁴⁴³ To provide decision makers with relevant and reliable data, the tool can provide

updated and contextualised data. The tool offers several benefits, including offering options for global data sharing, streamlined reporting, synthesising and visualising data, and providing a holistic view of humanitarian energy evidence.

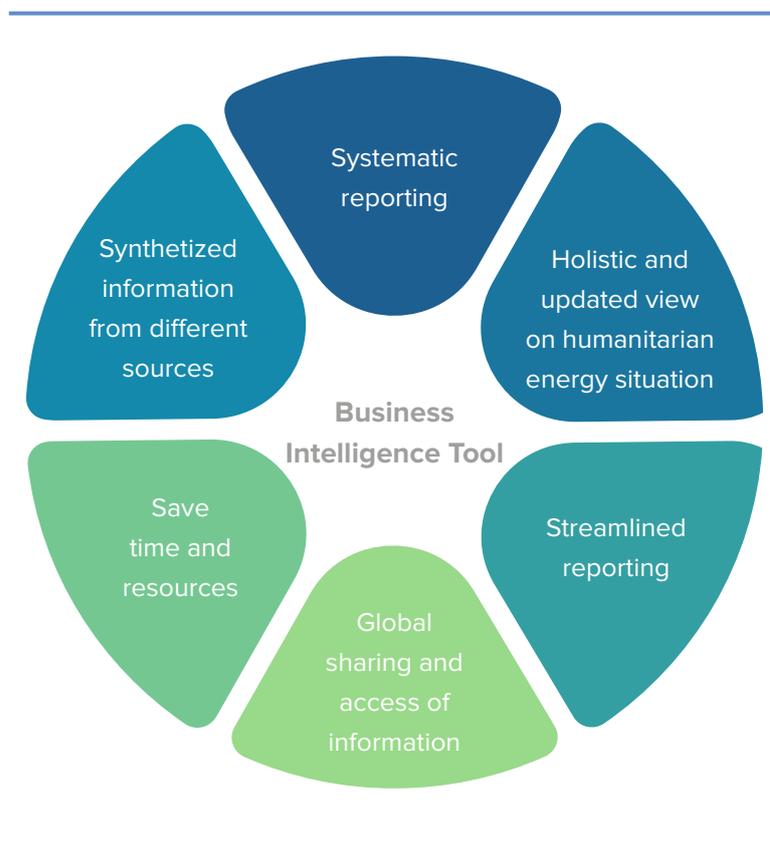


Figure: GPA Business Intelligence Tool

Limited Progress: Measurement Challenges and Outdated Data

While some progress has been made by organisations and across partners at the strategic level to harmonise data processes, there is still much work to be done across the sector on data collection, measurement standardisation, and automated data processes. This is particularly true in the challenging topic of measurement of energy access, which is complex and often highly technical. It is important to note that

much of the data cited in this chapter so far has relied on outline estimates and interviews with practitioners, rather than specific quantitative findings collected through surveys or direct measurements. As a result, such figures may be inaccurate and may underestimate the scale of the problem.

A second challenging problem is that energy access and consumption levels are difficult to present to non-technical audiences. Energy access is often thought of in binary terms: one either has

it or one does not. However, access to energy is actually measured on a spectrum. The World Bank Multi-Tier Framework – the MTF⁴⁴⁴ – is the most commonly used scale, starting with Tier 0 (almost no access), running through Tiers 1, 2 and 3 (minimal access to some electricity and cooking resources), to Tiers 4 and 5 (access to higher levels of energy roughly equivalent to that available in European countries for example): see Chapter 1 for more details. Despite substantial differences between these tiers, energy is often still reported as if access is binary, which can create a misleading picture of the progress being made in the sector. Humanitarian organisations and NGO partners have a responsibility to change this within their systems and provide accurate evidence on how much access displaced people currently have and what impacts their work is having to increase access sustainably and affordably.

Existing data is now rapidly becoming outdated and as there is no systematic data collection within the humanitarian energy system, the means for updating data is often piecemeal and scattered. For example, the Moving Energy Initiative previously modelled energy access in 2015 for 8.7 million people in refugee camps, suggesting that: “80% have Tier 0 cooking facilities” and “only 11% have access to reliable energy sources for lighting”. (Lahn and Grafham, 2015, p9 and p7)⁴⁴⁵. While this data was critical in informing our understanding of the issue back in 2015, many things have changed in the intervening seven years. Firstly, the number of displaced people has risen rapidly from 50 million in 2015 when MEI undertook data analysis to over 102 million in 2022. Secondly, initial estimates were focused on refugee communities (8 million people modelled in 2015, compared to 20 million people in 2022), and does not cover the additional 52 million internally displaced people or 4.7 million asylum seekers in the world today.⁴⁴⁶ To address this data gap, considerable investment and further modelling is needed.

Automation of data processes, to ensure that evidence sources are regularly and automatically updated, is particularly important. Currently, many data processes within the humanitarian energy sector are based on manual processes and data sharing is not common. As a result, evidence is often not shared between partners and can be lost in organisational processes or due to staff turnover. To some extent, standardised energy assessments can support such automated processes, as the data produced is comparable and shareable between different data systems, but standardised assessment cannot guarantee publicly available information. For this, organisations need to commit to and ensure that data is regularly collected, analysed, and published.

To support such processes, standardised energy assessments can be used. There are several types of energy assessments currently used in displacement settings.⁴⁴⁷ Many existing assessments are based on a basic summary of initial information, for example by visiting a field site or camp location for a short period to conduct a situation assessment. This type of assessment is often done at the onset of an emergency, but only provides basic information. More detailed energy assessments and feasibility assessments can provide in-depth information on energy needs, including evidence on energy costs and culturally-appropriate technology solutions. Finally, implementation and monitoring assessments can provide data on how programme activities are delivering solutions, and whether programmes are providing energy access and meeting their aims. Currently, most organisations collect data on energy using their own energy or needs assessment process. These processes often produce incomparable data and as a result, evidence from different organisations cannot be compared, hindering the ability to estimate global progress and the status quo of energy access in displacement contexts.

**General Terms, from
Project Management
Sector**

Initial information	Humanitarian Specific Terms	What is Involved
Embedding energy assessment information into existing programming	Situation assessment. Needs assessments. Often in emergency settings.	Basic information on which populations are impacted by crisis, where they are, what they overall needs and basic energy needs are.
Energy needs, feasibility assessments, design assessments, inclusive planning analysis, intervention design and developing investment routes	Basic energy needs assessment and intervention planning. Suitable for both emergency and protracted situations.	Energy assessment information embedded within existing programming, eg WASH, protection, shelter assessments. Focused on understanding how energy programming can support wider needs.
Implementation and monitoring assessments	Detailed needs. Assessment and intervention planning. Programme design. Vulnerability assessment. Community engagement. Can be more appropriate for protracted situations.	In-depth information on energy needs, including specific data on household electricity and cooking needs, sometimes assessment of community facility and operational needs, but largely focused on households. Start examining solutions: what types of technologies and delivery models could be used to meet these needs. Engagement with communities, sometimes through focus groups or refugee committees. Analysis of which are the critical populations that the intervention will reach. Planning for sustainability, gender and vulnerability analysis.
Implementation and monitoring assessments	Programme implementation, monitoring and evaluation.	Ongoing assessment of programme activities. How many technologies installed, delivered, monitoring of solutions provided. Assessment of whether the programme is meeting its objectives. Reporting on progress and output indicators.

Table: Energy Assessments and Types of Data

One example of a resource tool that can support the development of assessment information across the sector is the HOMER Powering Health Tool, a free online model to create initial designs of electric power systems for healthcare facilities that have no other power supply or have grid electricity available for a predictable period each day. This tool supports organisations in assessing their current demand, desired demand and energy supply gap.⁴⁴⁸ However, there is limited agreement within the sector about similar tools which can be used for household energy needs or the needs of

businesses run by displaced people.⁴⁴⁹ For energy needs within institutions, the UNDP Seven-Step process is regularly used as an assessment and intervention design method to support the greening of operations.⁴⁵⁰

Within the humanitarian energy evidence chain and assessment processes, analysis is a key missing step. An example of critical analysis is provided by the Moving Energy Initiative and the report The costs of fuelling humanitarian aid, which provided key analysis and evidence

to highlight the scale of the problem of carbon emissions within the humanitarian sector.⁴⁵¹ However, a key gap within the sector is the capacity to analyse data: while some organisations currently provide basic data, much of this information is not analysed or compared. There is now an urgent need to fund data collection and analysis, and simultaneously undertake long-term funding for technical capacity building within the sector.

Lack of data and assessment are a critical challenge, but they are matched by the problem of a radical shortage of technical expertise within the humanitarian energy sector. As outlined in Chapter 5, many humanitarian organisations do not have dedicated energy staff, and capacity

within HQ operations is often very limited. In some locations, humanitarian agencies are supported by employees from the NORCAP technical energy pool of experts, who provide some guidance and advice on data. However, as these positions are often temporary for a year or less, many agencies fail to gain the true benefits these experts could offer. Overall, much more quantitative evidence is needed and on-the-ground data collection will be necessary for the production of a global energy baseline by 2025.

Issue Analysis: Systematic Data Requirements and Research Needs

Inclusive Investment throughout the Humanitarian Energy Evidence Chain

Investment is needed along the humanitarian energy evidence chain. At the conceptualisation stage, mapping of existing projects and assessment approaches can enable harmonised approaches to data collection and analysis. Similarly, investments in capacity to embed analysis within decision-

making and disseminated results are required. Finally, high-quality evidence is essential for good programme design, implementation and evaluation processes. Without data and clear evidence within this chain, the sector will not be able to establish what progress is being made and limited information will be available on the types of sustainable energy programming that are needed.

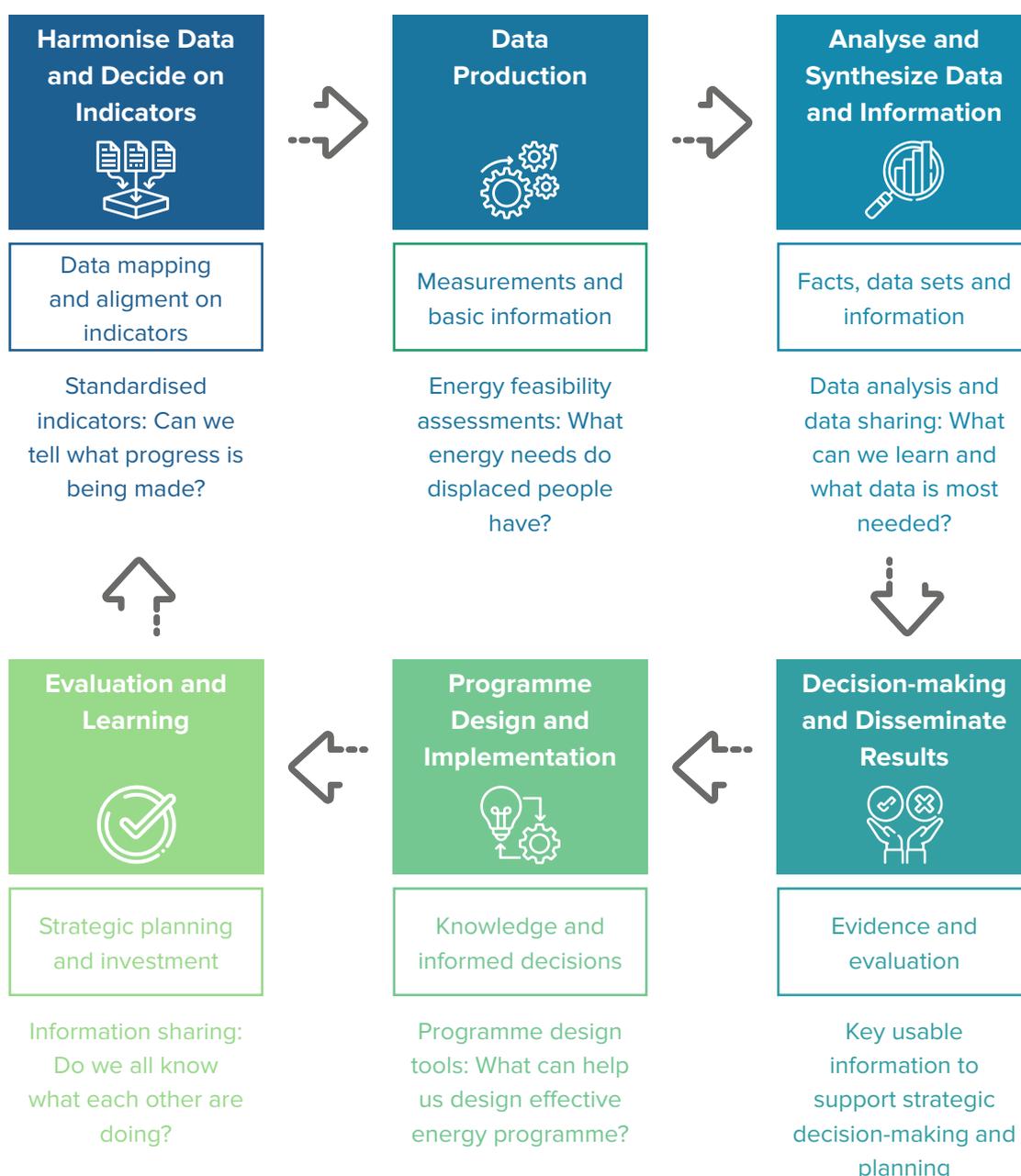


Table: Energy Assessments and Types of Data

Another challenge in current data production and analysis practices is the lack inclusion of displaced people as active participants and researchers. Refugees, internally displaced people, migrants and asylum-seekers are largely absent from international decisions on the clean energy transition. While some displaced and host community members demonstrate considerable knowledge and skills on sustainable energy, they are not included in the development of data or research for the humanitarian energy sector.⁴⁵² As a result, most data and evidence on humanitarian energy is not currently informed by the lived experience or practical realities of displaced communities. Particularly, the livelihoods and informal economies of displaced communities are often neglected by traditional humanitarian forms of intervention. Displaced businesses are often left to secure and provide they energy they need independently.⁴⁵³ Moving forward, it is vital to place

the voices and knowledge of people affected by displacement at the heart of global and national decision-making on energy policies in humanitarian contexts.

A number of core research and data topics have been identified by experts during analysis for this report. Firstly, quantitative and market-based data is needed to support the production of a global baseline and new project information. Secondly, new analysis and research is needed on topics where little evidence is currently available, for example, on the energy needs of displaced businesses and how inclusive evidence can be developed. Thirdly, it is vital that assessments and evidence become standardised and comparable. Fourthly, dedicated work is required to support minimum requirements in the humanitarian energy sector. Finally, embedding knowledge and learning within existing processes is vital.

Key Research Topic	Types of Activities	Example of Institutions Leading
Quantitative Global and Project Data	<ul style="list-style-type: none"> • Core evidence on energy access levels, needs, costs and technologies. • Produce analysis to demonstrate a global baseline on energy access in humanitarian energy. • Provide a tool for global sharing of data on progress and evidence. • Systematic analysis of data and evidence from projects to show national level pictures (to feed into global baseline). • Support project feasibility and reporting assessments. 	GPA, Chatham House, Imperial College London, MECS programme, and IOM.
Developing New Primary Research	<ul style="list-style-type: none"> • Collaborate to develop primary research and core data on the assessment of appropriate technologies, socio-cultural factors and community adoption of renewable and sustainable energy. • Example priority research topics: energy and enterprises, social and cultural energy practices of displaced people, inclusion and meaningful participation of refugees and IDPs. • Produce new data and analysis to support programme design and develop a baseline on energy needs, access, and progress. 	Currently led by a collection of partners, including UNITAR, IOM, NGOs, academic partners, and UNHCR core teams and field offices.

Standardising and Conducting Assessments	<ul style="list-style-type: none"> • Conduct a full review of existing tools for energy assessments in displacement contexts. • Produce a standardised energy toolkit and data collection process. • Invest in analysis of energy assessment results and link assessment evidence to the design of sustainable energy programming. 	<p>Currently led by NORCAP, GPA, and IOM.</p>
Developing Standards and Indicators	<ul style="list-style-type: none"> • Develop standards and a common set of measurable indicators for energy assessments. • Align and harmonise data and evidence across humanitarian settings. • Publish and standardise evidence to enable comparison and accountability mechanisms. • Conduct new research into minimum standards for energy and alignment with humanitarian processes such as the Sphere standards. 	<p>Led by a collection of partners, including MECS, SEforALL, UNITAR, and Chatham House. GPA Coordination Unit facilitating.</p>
Embedding Learning and Knowledge Sharing	<ul style="list-style-type: none"> • Embedding learning in humanitarian energy programming and working with practitioners to use data and evidence within their programming. • Share knowledge freely and publicly between institutions to enable collective learning on energy needs and effective delivery of sustainable solutions. 	<p>Led by UNITAR and GPA capacity building workstream initially.</p>

Table: Key Research and Evidence Topics Identified

In summary, systematic investment across these topic areas is required to develop the humanitarian energy evidence chain. However, humanitarian partners cannot deliver the systemic changes needed alone. Much support will be required from academic and specialist partners to ensure the production of data is high quality and rigorous.

Academic Investment: Support from University and Research Partners in Developing Data

Several academic and research partners have supported the development of data and evidence for the humanitarian energy sector in recent years. For example, programmatic research provided by the Humanitarian Engineering and Energy for Displacement (HEED) programme at Coventry University ran between 2016 and 2020

and delivered key evidence on the energy needs of displaced people in Rwanda and Nepal. One key output of this project is the definitional work published by Al-Kaddo and Rosenberg-Jansen in 2021 to understand some of the core terms and analytical framings used within the sector.⁴⁵⁴ The paper outlines the varying definitions that have evolved within the humanitarian sector. It covers specific terms, such as energy for both emergencies and in protracted (long-term) settings, and energy for refugees, internally displaced people, and for other migrants.

Research programmes such as the Modern Energy Cooking Services (MECS) Programme at Loughborough University have recently started new academic analysis of energy in displacement settings, focusing on cooking delivery models and access to energy in urban spaces. Organisations such as the UNEP

Humanitarian Engineering and Energy for Displacement (HEED) Project led by Coventry University

HEED explored the potential of alternative energy ownership models informed by sensor data⁷⁴¹ and using renewable technologies. The first stage of the project was to collect data on existing energy provision and the energy needs and aspirations of Congolese refugees in three camps in Rwanda and internally displaced people in Nepal. This data was collected through 1000 survey responses and sensor data from footfall monitors (Nepal), individual energy appliance monitors (Nepal) cookstoves (Rwanda), solar mobile lanterns and communal lighting (Rwanda). All the survey and sensor-based data sets have been curated and offered through the HEED data portal, alongside the open-sourced design documents for all interventions and sensor systems. The evidential data can aid practitioners, policymakers and energy stakeholders on implementing systems that are flexible and responsive to rapid changes in community needs. The second stage of the HEED project delivered a series of design and end-user workshops, which offered individuals and community leaders the opportunity to develop energy protocols that respond to and embed the lived experience in the displacement setting. This work led to the piloting of community co-designed solar interventions. In Khalte, Nepal, the interventions were seven advanced solar street lights, which were handed

over to the community in December 2020. In Rwanda, HEED installed a standalone solar system for a community hall and forty solar mobile lanterns in Nyabiheke camp; a PV-battery micro-grid for two nursery buildings and a playground in Kigeme camp; and eight solar street lights and four advanced solar street lights in Gihembe camp. The interventions were handed over to Alight and World Vision in January 2021, but are still managed by the community leaders.

Over half the people HEED employed over the project lifetime were displaced people: 34 refugees as security guards, enumerators (who collected survey data) and community mobilisers in Rwanda, and in Nepal, 11 internally displaced people as enumerators and community mobilisers.

The Renewable Energy Recommendations Tool (RERT)⁷⁴² was developed by HEED to aid practitioners, NGOs, policy makers and energy suppliers by allowing them to access technology recommendations based on energy-economic-environment-health performance indicators. This tool provides insight on how best to increase energy access in refugee camps and improve sustainability for cooking energy, household lighting and electricity and community and camp lighting and electricity.⁷⁴³

Box produced with the support of the HEED team at Coventry University⁷⁴⁴

Copenhagen Climate Centre have also delivered key evidence on cooking needs in Tanzania and the role that technologies such as LPG can play in displacement settings.⁴⁵⁵

As well as evidence on cooking, other organisations have developed a research focus on the electricity needs of displaced people. For example, researchers at Imperial College London have developed a research programme focusing

on sustainable mini-grids in displacement settings. Focusing on Rwanda, their research has revealed that sustainable mini-grids offer a low-cost, low-carbon, high-impact way of delivering access to displaced households, enterprises, and communities.⁴⁵⁶

Finally, several practitioner and policymaking organisations have provided assessments and research into the energy needs of operations. For

Modern Energy Cooking Services Programme led by Loughborough University

MECS is a five-year (2018-2023), funded programme by the UK Foreign Commonwealth and Development Office with the goal to break out of business-as-usual approaches and rapidly accelerate the transition from biomass to clean, modern energy cooking (biogas, LPG, ethanol, electric cooking, natural gas and solar) on a global scale. Recently, the programme launched its humanitarian energy stream, which aims to support innovation and its scale up in displacement settings, thus ensuring that the most vulnerable are not left behind.

Early analysis shows that there have been only 20 projects focusing on modern energy for cooking (Tier 4+) in recent decades as opposed to 132 focusing on improving biomass combustion in humanitarian settings.⁷⁴⁵ Furthermore, while estimates show that in rural and camp areas more than 80 per cent of

displaced people still primarily rely on solid fuels, such as charcoal and wood, and open fires or traditional stoves for cooking, we know little about the displaced people in non-camp locations, including in urban settings.

Yet, in 2019, an estimated two out of three internally displaced people and 60 per cent of refugees were in urban or semi-urban areas. Unlike those in rural and remote areas, they often have the local infrastructure to draw on, but they can be isolated by an absence of social inclusion or informal land occupation that prevents access to formal energy services, a lack of awareness of the options, and limited household budgets for upfront capital expenditure, which can all result in poor energy access. The humanitarian stream at MECS set out to address the data gap by promoting inclusive approaches to energy research and access provision for all displaced people (rural, urban, in camps) as well as host communities, both at household and community levels.

Box produced with the support of the MECS team⁷⁴⁶

Research on Mini-Grids in Displacement Settings at Imperial College London

Research at Imperial College, London, has used computational modelling to simulate and optimise mini-grid systems in displacement settings. Energy system modelling considers a variety of technologies, electricity demands and applications to quantify the estimated performance, costs and other impacts of a system over both short-term and multi-year timeframes. It can also be used to design the optimum sizing of a system based on its costs, how energy is used, and how the situation might develop over time. Building on Imperial's experience in electricity access for rural development,⁷⁴⁷ the application of powerful energy system modelling software allows new insights into the potential for community-scale electricity solutions in refugee

camp and other displacement contexts.

Using data from the RE4R project, the team at Imperial College modelled the existing diesel-based electricity system at Nyabiheke Camp, Rwanda, and ways in which to introduce solar energy and battery storage.⁷⁴⁸ Comparing different levels of hybridisation – the amount of energy coming from renewable sources – they found that solar power can reduce fuel costs by up to 32 per cent and reduce emissions by up to 83 per cent.

They also applied different financing models, including those led by the private sector, and found that systems with 70 per cent renewable power have payback times of just four years and fully renewable systems of six years. Under certain configurations, introducing solar panels alone can have a payback time of less than one year.

Further research, focusing on Mahama Refugee Camp in Rwanda, assessed how an existing solar-diesel-battery mini-grid can further reduce its fuel costs. By changing the times at which the diesel generator switches on and off, energy system modelling revealed that further fuel savings of around 10 per cent are possible without the need for additional equipment – simply by using the existing equipment more effectively. The present system supplies the health centre, organisational offices and other institutions, and so the team modelled the impact of connecting refugee businesses in the nearby marketplace, finding that this can be commercially viable without compromising system performance.

Quantitative, technical and economic modelling should also be supported by qualitative systems analysis and viable business models. Recent work has focused on integrating wider assessment tools into a framework for assessing energy access in displacement settings which includes stakeholder mapping, using the business model canvas, profit and loss accounting, and energy system modelling for a more well-rounded approach. This framework was applied to the case of Holl Holl Refugee Camp in Djibouti, and a solar mini-grid for institutional and business users.⁷⁴⁹

Supporting Sustainable Energy Assessments in Djibouti

In 2019–2020 the GPA Coordination Unit, UNDP and SELCO Foundation collaborated to support the transition to sustainable energy in displacement settings in Djibouti.⁷⁵⁰ The project, funded by the German Federal Foreign Office, had ambitious goals to bring together a diverse range of partners to catalyse sustainable energy projects through a combination of stakeholder engagement, practical implementation and livelihood development. Project activities included data collection and assessments of the energy access situations for domestic electricity and cooking, water pumping, livelihood activities, and for humanitarian agency facilities. Domestic energy access in Holl Holl and Ali Addeh settlements was found to be very low, while in Markazi settlement, displaced people were provided with relatively high-Tier connections to a diesel mini-grid. SELCO Foundation found that some livelihood activities had electricity access but opportunities for growth were limited by the capacity and availability of power, as well as other factors such as access to training and wider markets.

UNDP used the Seven-Step Green Energy Solution process to assess potential for renewable energy and energy efficiency measures for UNHCR and WFP facilities around Djibouti and estimated the investment costs, emissions savings and payback times for each site. A 30.6 kilowatts peak solar system was installed at the UNHCR Ali Sabieh field office and 37 air conditioning units were replaced by high-efficiency alternatives at the WFP Representation Office; these are estimated to reduce electricity bills by US\$9,300 and US\$17,000 per year respectively.

The assessments undertaken by this project have laid the groundwork for future implementation, catalysed further project designs,⁷⁵¹ and have garnered support amongst humanitarian agencies to incorporate sustainable energy planning into their activities in Djibouti. Developing durable solutions requires timescales and resources beyond those of this project and so further work will be needed to utilise the findings of this project to bring sustainable energy to displaced communities and to replicate these efforts in other countries.

Box produced with the support of Imperial College London.

example, UNITAR, UNDP, and Selco Foundation developed a series of energy assessments for decarbonising refugee settlements in Djibouti.⁴⁵⁷

Chatham House has produced a number of core research and evidence reports that have enabled key evidence to be directly used by policymakers and practitioners, or example, the Heat, Light and Power report of 2015 which galvanised action within the sector,⁴⁵⁸ critical statistics on the fuel usage of humanitarian agencies and NGO partners,⁴⁵⁹ and more recent analysis on understanding programme implementation failures within the sector that will be published during 2022. These examples highlight how important critical research is within the humanitarian energy sector. Without substantive contributions from universities and policy research organisations such as Chatham

House, little would be publicly known about the energy needs of displaced people.

As this section demonstrates, much of the leading research and analysis to date on humanitarian energy has been conducted by universities and organisations such as Chatham House. To truly drive forward progress on data, much more evidence will need to be produced by and with humanitarian organisations and their partners. The GPA data workstream offers coordination and collaborative processes to support humanitarian and energy organisations who wish to collaborate on research and data topics.

Leading the Research Agenda: Chatham House

Chatham House is one of the leading research organisations working on energy for displaced people. To date the UK-based think tank has produced seminal analysis that helped to shape the sector through the Heat, Light and Power for Refugees: Saving Lives, Reducing Costs report. Recent workshops on learning from failure within the sector and understanding data research issues have helped galvanise action by partners and share knowledge across practitioner and policy-maker circles. Chatham House has also been the lead research partner on several major humanitarian energy projects. For example:

- Research produced under the Moving Energy Initiative, which aimed to meet the energy needs of refugees and internally displaced people in a manner that reduces costs, is safe, healthy and respectful, that also benefits host countries and communities, and where possible creates opportunities for income generation and knowledge transfer to tackle energy poverty

and sustainability.⁷⁵² Chatham House supported many research publications as part of this project, including the Prices, Products and Priorities report on energy costs in refugee camps in Kenya and Burkina Faso⁷⁵³ and The Costs of Fuelling Humanitarian Aid, which analysed how much the humanitarian system spends on diesel and other fuel.⁷⁵⁴

- Chatham House has also supported research within the Renewable Energy For Refugees (RE4R) project, which delivers renewable energy investments through an innovative approach in humanitarian settings, working directly with refugees and host communities in Kigeme, Nyabiheke and Gihembe refugee camps in Rwanda and with urban-based refugees in Irbid in Jordan⁷⁵⁵. Within this project, researchers at Chatham House have led work on COVID-19 response and humanitarian energy, policy research workshops, data and evidence, and forthcoming policy analysis on host government approaches,⁷⁵⁶ as well as hosting research and knowledge-sharing events such as the RE4R final conference in March 2022.⁷⁵⁷

Future: Evidence supporting Change at Scale

There is still a great deal of work to be done on data and research for humanitarian energy. As this chapter makes clear, data on energy access and sustainable resources is only at the beginning of the journey.

There is an urgent need for quantitative and market data for both policy-makers and practitioners. It is often harder to make the case for qualitative data and informal information, but all types of data are vital for contextualisation and to add depth of understanding. Ecorys have noted that “while qualitative impact data suggests that access to renewable energy is both highly significant and cross-cutting in relation to other domains such as livelihoods, health, nutrition, protection, education and overall psychosocial wellbeing of refugee and host community populations, there is a widespread lack of robust quantitative data to support this, which also applies to other projects and pieces of research about this topic. This reliance on anecdotal narratives and lack of quantitative evidence contributes to the relatively low priority that this issue receives in the wider humanitarian debates” (Ecorys, 2017, p6)⁴⁶⁰.

Without even basic numbers on a global baseline, it is very difficult to know the true nature of the problem and scale of the challenge. Over the coming years it will be essential to move beyond global guesstimates and project reporting. Many partners will be needed to support this change and produce regular and recurring data on sectoral progress. Unless there is investment in data for humanitarian energy, it will be difficult to measure progress on reaching SDG 7 by 2030 for displaced people.

This report suggests a number of recommendations on data and evidence within the sector:

- Develop a global baseline for energy access: core funding for data collection and analysis on most of the world’s displacement sites is needed to measure progress to delivering SDG 7 by 2030.
- Invest in new research and evidence: support the development of new data on humanitarian energy needs and programming.
- Utilise and build inclusive evidence structures: new evidence for humanitarian energy must be developed with displaced people.
- Support the use and sharing of data and evidence throughout the humanitarian decision-making chain: use evidence within programme design to unlock new forms of delivery and energy technology options. Utilise feasibility studies to support the planning of sustainable energy interventions and renewable energy solutions.

07

ENSURING CLIMATE ACTION: THE CLEAN ENERGY TRANSITION AND HUMANITARIANISM

Chapter contributing co-authors: Philip Sandwell at Imperial College London, Stephen Gitonga at the United Nations Development Programme (UNDP), and David Kinzuzi at the University of Oxford.

Practical Action Photo/Edoardo Santangelo

State of Play: Sustainable Humanitarian Energy and Climate Change

Climate Change and the Need to Reduce Greenhouse Gas Emissions

Climate change is increasing and exacerbating multiple displacement risks: extreme weather events and changing climates are disproportionately felt by people in vulnerable situations, can induce displacement, and increase the need for both immediate humanitarian assistance and long-term adaptation strategies.⁴⁶¹ But while humanitarian agencies respond to these crises, their activities also contribute to climate change through their use of fossil fuels to provide essential services to displacement-affected communities. Achieving Sustainable Development Goal 7 in displacement settings can also support the realisation of SDG 13: to take urgent action to combat climate change and its impacts.

There is unequivocal scientific evidence that human activity has affected the Earth's climate.⁴⁶² Greenhouse gas (GHG) emissions, such as carbon dioxide (CO₂) and methane (CH₄), released as a result of human activity have warmed the land, air and oceans to unprecedented levels and are causing further extremes in climate activity such as heatwaves, droughts and cyclones. Evidence for the attribution of climate change and extreme weather events to these anthropogenic GHG emissions is overwhelming and continues to grow, with the most recent assessments by the Intergovernmental Panel on Climate Change (IPCC) estimating that, at current levels, the climate will warm by 3°C compared to pre-industrial levels.⁴⁶³ At present trajectories, those assessments also estimate that between 1.5–2°C of warming will be exceeded during the 21st Century, with subsequent increases in extreme weather events, unless significant reductions to GHG emissions are made across all aspects of society.

Climate Realities, Fragility and Multiple Displacement

“We had a lot of flooding issues in the houses. So residents put up tents and just sat in the streets where most of these UN agencies were located in Burundi. First of all, they still did not have access to electricity or clean cooking solutions because they were outside the camps and in the streets. Secondly, they are more likely to contract a cold because they were outside. Thirdly, they would use cooking wood and not charcoal.

“One of the main issues was that the agencies and government did not take internal displacement as seriously in comparison to refugees and migration issues. This was an issue because the agencies thought the IDPs would go back once the flooding stopped, but the flooding happened every few months. So the IDPs would move back home, then go back again to this ‘UN street’, and move back home again (so it’s like a cycle).

“When it comes to fragility, camps are not adapted to being resilient to climate change, such as the flooding issue. Another example is that temporary shelters, camps or shelters that use a tent become so hot, and it doesn’t help with adapting to climate changes. The issue is people think ‘I might have run away because of conflict, but now I have to deal with climate change.’”

Displaced Person in East Africa.

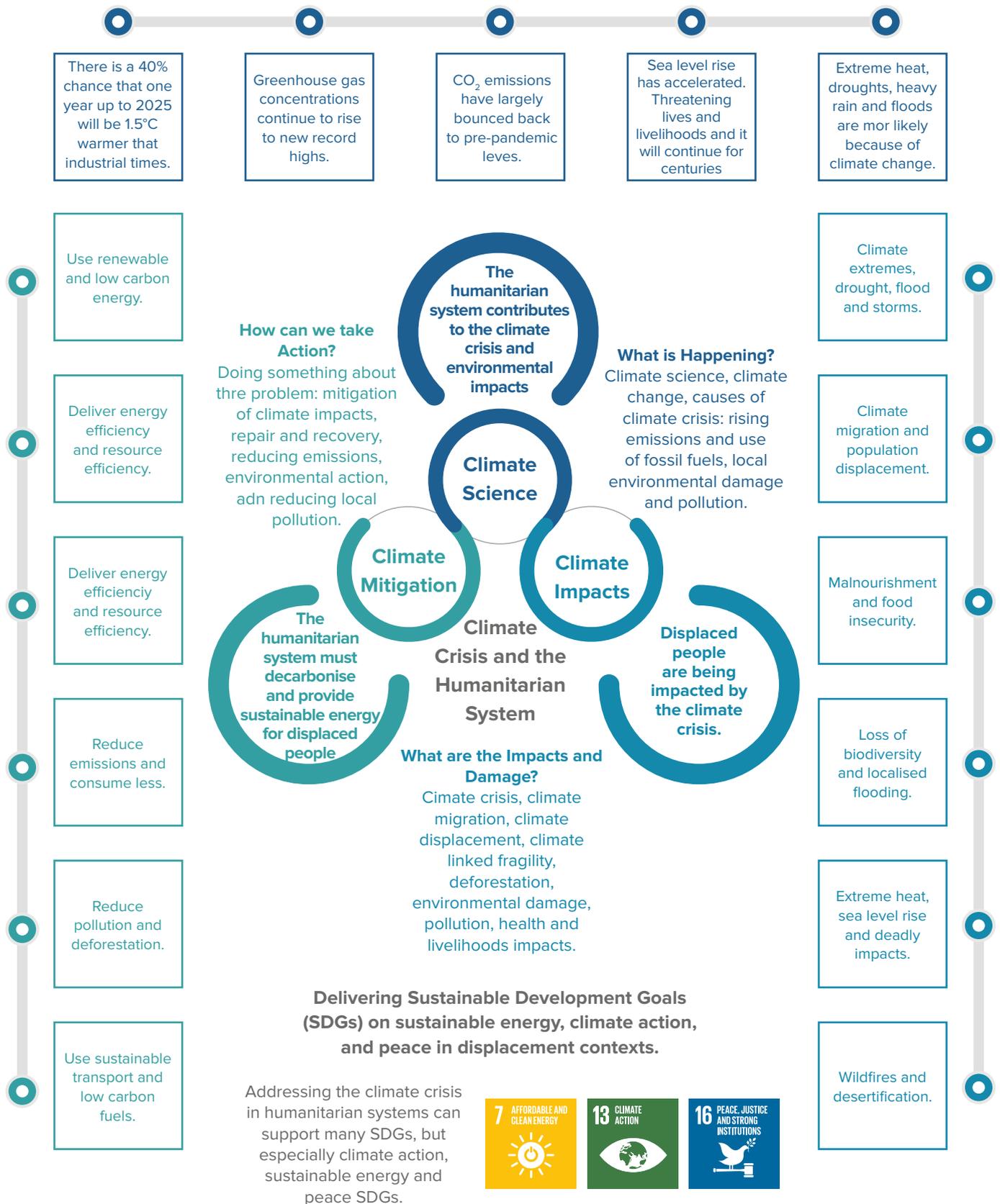


Figure: Climate science, climate impacts, and climate action in displacement contexts⁷⁵⁸

The effects of climate change, both present and future, will have a significant impact on the humanitarian system. Further assessments by the IPCC,⁴⁶⁴ which focused on the impacts, adaptability and vulnerability to climate change, stated with high confidence that climate change is contributing to humanitarian crises in which climate hazards and high vulnerability overlap. Climate and weather are also driving displacement in all regions of the world, in addition to contributing to food insecurity. The assessments further highlight that extreme weather has had small but adverse effects on the length, severity or frequency of internal violent conflicts and that displacement from extreme weather has increased and perpetuated vulnerability. UNHCR estimates that 90 per cent of refugees under their mandate, and 70 per cent of people internally displaced due to conflict are from nations which are most vulnerable to extreme weather events and least ready to adapt to the challenges of climate change.⁴⁶⁵

The need to reduce GHG emissions to mitigate further climate change, and to adapt to its effects, has catalysed global action. At the 2021 United Nations Climate Change Conference, known as the 26th Conference of the Parties (COP 26), the Glasgow Climate Pact was agreed which, among other actions, saw 153 countries put forward new emissions reductions targets by 2030 and 90 per cent of global GDP covered by net zero commitments.⁴⁶⁶ If realised, these pledges are expected to limit global temperature increases to below 2°C (down from 2.7–3.7°C expected following the Paris Agreement of COP 21 in 2015). Similar commitments are also increasingly common across organisations and international agencies: the UN system, for example, has an objective to reduce GHG emissions by 2030 in line with a 1.5°C target.⁴⁶⁷ The UN Secretariat aims to reduce GHG emissions by 45 per cent by 2030 and offset those emissions which are unavoidable,⁴⁶⁸ a policy which is replicated by

other UN organisations.⁴⁶⁹ Every organisation, including those with mandates which include responses to immediate humanitarian needs, has an obligation to reduce GHG emissions to mitigate the long-term effects of climate change and its subsequent effects on exacerbating potential future crises.

Energy and Climate Change

The Sustainable Development Goals (SDGs) and the 2030 Agenda for Sustainable Development call for integrated and resilience-based approaches to development. Access to energy is a key factor in helping individuals, households, communities, and states recover effectively from crises and shocks, ensuring that these do not lead to a downturn in development, while also helping communities transition to long-term resilient pathways. Scaling up clean energy in the humanitarian sector is complex and reflects the general dilemma of supporting sustainable development while also addressing, and minimising the exacerbation of, climate change. It calls for much reflection on how best to support the energy transition for affected communities while minimising GHG emissions.

Energy use for electricity generation, heat production, and transport each rely heavily on fossil fuels and together account for roughly 70 per cent of global GHG emissions.⁴⁷⁰ In the electricity generation sector the share of renewables now exceeds 25 per cent,⁴⁷¹ however this sector constitutes only 21 per cent of final energy use. The heat and transport sectors are responsible for the remainder and, in 2018, modern renewables accounted for around 9 per cent and 3 per cent of the global market respectively.⁴⁷² Traditional uses of biomass – such as the burning of wood for heat and cooking – still account for almost 14 per cent of global heat consumption.⁴⁷³

These figures provide context for how the

humanitarian sector can become part of the solution to reducing GHG emissions from the wider energy sector, especially by scaling up and accelerating clean energy the development–humanitarian nexus, both for displaced persons and host communities. These include clean energy needs in displacement situations for electricity use, heating and cooling, and transport-related aspects of humanitarian activities.

The 2021 UN Sustainable Development Goals Report highlights encouraging progress: the worldwide electricity access rate improved from 83 per cent in 2010 to 90 per cent in 2019, with 1.1 billion people receiving electricity for the first time. At the same time, the share of renewable energy in total energy consumption gradually increased from around 16 per cent in 2010 to 17 per cent in 2018. Global primary energy intensity, defined as total energy supply per unit of GDP, improved from 5.6 megajoules per dollar in 2010 to 4.8 megajoules per dollar in 2018, an annual rate of improvement of 2 per cent.⁴⁷⁴ Despite this progress, the Report notes that 759 million people were still without access to electricity in 2019, a number which includes communities in displacement situations.

In recognition of the importance of energy in addressing development and climate change challenges, the 76th session of the UN General Assembly on 24 September 2021 in New York convened, through the UN Secretary-General, the High-level Dialogue on Energy (HLDE).⁴⁷⁵ The summit was convened to accelerate action towards SDG 7 for the achievement of the 2030 Agenda for Sustainable Development and the Paris Agreement on climate change and resulted in an agreement of a global road map⁴⁷⁶ for achieving SDG 7 and climate action. This endorsement of action towards SDG 7 at the highest level provides a good template for scaling up clean energy in the humanitarian sector and for wider sustainable development.

In summary, the global road map focuses on increasing finance and investments, applying more innovation, using technology and data, enabling SDGs through an inclusive and just energy transition, and accelerating the energy transition and energy access.

In support of the HLDE a report coordinated by the UN Department for Economic and Social Affairs, *Leveraging Energy Action for Advancing Sustainable Development Goals*, detailed the intersections of SDG 7 with each of the other SDGs. It suggested that it is vital to bring together action on climate change, sustainable energy, and peaceful inclusive societies (SDG 16) which intersect at the ‘triple nexus’ where the objectives of humanitarian, development and peacebuilding organisations overlap. In particular, the report recommends that durability of solutions is paramount in fragile contexts where energy access in affected populations is well below SDG 7 targets, and in which humanitarian and other organisations rely primarily on diesel generators to provide essential services to affected communities. (UNITAR, Imperial College London, IOM, 2021, p141)⁴⁷⁷.

Climate and Emissions Impacts of Humanitarian Energy

Understanding and quantifying the sources of GHG emissions is an important step in identifying how, and in what areas, they can be reduced. Organisational GHG emissions can be categorised into three ‘scopes’.⁴⁷⁸

- Scope 1: direct GHG emissions such as those from vehicles, self-consumed power generation, and transportation of personnel in organisationally-owned vehicles;
- Scope 2: electricity indirect GHG emissions such as those from electricity purchased from a national grid network;
- Scope 3: other indirect GHG emissions such

as those from the production of purchased materials and employees commuting.

The UN system follows this approach to cover emissions under Scope 1 and Scope 2, and additionally travel-related emissions under Scope 3, owing to the significant contribution of these in UN operations.⁴⁷⁹ These are reported as part of the Greening the Blue initiative, the framework for emissions reporting for all UN bodies, and are also categorised into those from facilities, air travel, and other travel. The total estimated GHG emissions for selected UN entities is shown in the table below, with organisations which operate in humanitarian contexts each contributing around two to five per cent of the UN system’s emissions. These figures also show a significant impact of the COVID-19 pandemic in reducing emissions between 2019 and 2020, although

this could be expected to return to pre-pandemic levels as activities become less restricted. In total, across all of their activities, the six listed organisations have cumulative GHG emissions greater than the total across all sources of some small countries.⁴⁸⁰

For humanitarian agencies, future reduction of some GHG emissions may primarily rely on a direct reduction in activities that contribute to them. A reduction in GHG from air travel, for example, will likely necessitate a reduction in the number of flights rather than relying on a more efficient type of aeroplane. For other activities there may be far greater opportunities to reduce GHG emissions, such as those from electricity generation and usage, which fall under Scope 1 and 2, and which can switch to renewable sources to decarbonise.

UN entity	Estimated GHG emissions (tonnes of CO ₂ equivalent)		Share of UN system emissions (%)	
	2019	2020	2019	2020
World Food Programme	100,000	75,000	5	5
United Nations High Commissioner for Refugees	100,000	45,000	5	3
International Organization for Migration	40,000	30,000	2	2
World Health Organization	40,000	30,000	2	2
United Nations Development Programme	60,000	30,000	3	2
Food and Agriculture Organization	60,000	30,000	3	2
Total for selected UN entities	400,000	240,000	20	16
UN System (total)	2,000,000	1,500,000	100	100

Table: The estimated GHG emissions of selected UN entities⁷⁵⁹

Electricity usage by humanitarian organisations in offices, headquarters, logistics centres and field sites is a necessity for their operations but also a contributor to GHG emissions. Diesel and petrol generators are commonly used by organisations in field operations to supply power, and as a

back up where a connection to the national grid network is possible. However, these generators produce higher emissions per unit of energy provided even than other fossil-fuel sources, and many times higher than renewable alternatives. The GPA Coordination Unit estimates that

more than 11,000 generators are used by six UN agencies and ICRC which, in order to meet sustainability targets by 2030, would need to be removed from operation at a rate of more than three per day over the next 8 years.⁴⁸¹

For refugees and IDP communities, energy use currently has a small overall contribution to global GHG emissions but the typical fossil fuel and biomass technologies available to displaced people have disproportionately high impact. Estimates from the Moving Energy Initiative suggest that energy use by displaced households could contribute around 13 million tonnes of CO₂ per year from cooking and lighting, with the majority of emissions attributed to cooking.⁴⁸² This is approximately equivalent to the annual total GHG emissions across all sources of some countries, such as Latvia, Namibia and El Salvador,⁴⁸³ although these countries have much higher emissions per capita. Basic and inefficient technologies, often provided by humanitarian actors and commonly used in displacement contexts, can exacerbate the cumulative GHG emissions in providing the same levels of energy services: for example, burning firewood emits around 60 per cent more CO₂ than LPG for the same amount of energy supplied.⁴⁸⁴ Despite this, cumulative emissions from displaced households overall are still far lower than those from other contexts.

Emissions from energy use by humanitarian organisations are a consequence of their critical operations, while those from displaced people themselves primarily result from meeting basic needs for cooking and, at present, limited access to basic electricity services. While some GHG emissions will remain unavoidable, the magnitude of these emissions can be greatly reduced. Moving to cleaner alternatives – such as from diesel generators to solar power, or from firewood stoves to LPG – can minimise GHG while providing the same or higher levels of energy services. Favourable policy shifts and

demonstrations of low-carbon technologies in humanitarian contexts have begun to catalyse this transition.

The Energy Transition and Leaving No One Behind

Increasing energy access means going beyond humanitarian energy provision alone and identifying pathways for enhancing the role of clean energy solutions in national development plans and key strategic sectors. Energy access can be a critical component or supporting enabler in sectors such as healthcare, education, tourism, public security, waste management, water, agriculture, heating and cooling, transport, commerce, buildings, and industry: in both national and displacement contexts.

In crisis contexts, especially in situations of displacement, the driving motive for scaling up the clean energy transition includes objectives related to increasing resilience, building or rebuilding weakened livelihood strategies, stabilising affected social institutions such as schools, health centres and administrative institutions, promoting sustainable recovery, and supporting energy independence. It therefore requires a combination of short-term strategies and integrating those with medium- and long-term sustainable energy planning, within crisis responses and recovery measures. It should include use of clean energy solutions as an enabler for reintegration of populations to viable and decent productive economic activities.

Increasingly, humanitarian and development programming come together to address climate change challenges in crisis issues,⁴⁸⁵ for example in UNDP's Middle East and North Africa programming work.⁴⁸⁶ The case study illustrates how these main messages are applied by UNDP to scale up the clean energy transition in Sudan to address the energy needs of IDPs, returnees, refugees, and host communities.

UNDP: Scaling-up the Clean Energy Transition to Address Humanitarian and Development Nexus in Sudan

UNDP experiences in Sudan provide an example of scaling up clean energy and bridging the humanitarian and development nexus.⁷⁶⁰ In the last decade, UNDP has provided support to scaling up clean energy for resilience building and recovery to communities in displacement situations caused by protracted war in Darfur. By 2018, Sudan hosted over 2 million IDPs, one of the world's highest concentrations of displaced people, converging with high levels of poverty and energy insecurity. Despite benefiting from very high levels of solar radiation, only one third of the national population has regular access to electricity. Expanding clean energy solutions through solar energy was a practical way to expand access to energy in general as part of actions meant to build resilience, help the recovery process, and contribute to national poverty reduction efforts while supporting the critical needs of IDPs, returnees, refugees and host communities.

In the Darfur region of Sudan, the area was seeing waves of returnees from the devastating protracted conflict. As IDPs returned to Darfur, many recovery and development challenges arose, including issues of how to provide energy for household needs and for regeneration of livelihoods. In response, UNDP, with support of Qatar Foundation and in partnership with UNIDO, WHO, UN-Habitat and national partners, implemented a Darfur Solar Electrification Programme to help implement the Darfur Peace Agreement by building the resilience of returnees. Through the initiative, solar solutions were deployed across 70 villages for enhanced health clinics and schools, street lighting and solar water pumping, directly benefiting 7000 returnee households, with

additional dividends for 35,000 households in neighbouring target areas.

In other regions of Sudan, clean energy solutions were explored as a means of building resilience for IDPs, refugees, and vulnerable host communities. UNDP supported the Government to assess the opportunities for solar solutions in Sudan's health sector in particular, with pilot projects to energise primary health care units, health centres and rural hospitals, emergency wards, surgery and delivery rooms, and to increase refrigeration in medicine dispensaries. Solar solutions increased access to health services for IDPs, refugees and vulnerable host communities, improved the quality of medicines offered, and reduced operational energy costs of health facilities thereby increasing budgetary space for addressing patient and broader public health needs. Additionally, UNDP implemented a 'solar for agriculture' initiative with the Government of Sudan. UNDP provided technical and advisory support to the Government to scale up results from local initiatives into broader national policy frameworks and partnership platforms for expanding solar solutions.

Additionally, with support of UNDP, the Government of Sudan established an innovative financing and investment platform, a dedicated National Solar PV Fund, with partnership of the private sector, commercial banks, Government ministries, Sudan's development partners including the UN and International Financial Institutions, with the aim of supporting the promotion and deployment of solar energy to operate water pumps in irrigation areas in Sudan. The Fund represents an innovative finance mechanism that combines domestic and international economic resources from public and private sectors and connects them directly to rural communities across the country.

Leaving no one behind in the sustainable energy transition requires action to reduce emissions and to scale up access for displaced people. The relationships between climate, energy, fragility, and crisis are complex but two clear messages have emerged. Firstly, access to energy is essential for displaced people and must be sustainable in order to be compatible

with climate goals.⁴⁸⁷ Secondly, action on climate change cannot wait and stakeholders across the humanitarian, development and other sectors must now move from commitments to action.⁴⁸⁸ Credible commitments, meaningful policy change and dedicated renewable energy programming are urgently required to meet these two aims.

Progress: Transitioning to Clean Alternatives

Progress on Coordination towards Climate Action

In addition to the wider sustainability and GHG reduction commitments made by national governments and the UN system, individual humanitarian organisations have released targeted strategies to reduce their environmental impacts. UNHCR, for example, has produced an Operational Strategy for Climate Resilience and Environmental Sustainability,⁴⁸⁹ Global Strategy for Sustainable Energy,⁴⁹⁰ and a Strategic Framework for Climate Action.⁴⁹¹ These together offer commitments towards mitigating emissions, improving levels of clean energy access among displaced populations, and solarising community facilities in camps. Rather than a reaction to adverse future conditions, the UNHCR Operational Strategy for Climate Resilience and Environmental Sustainability presents these as an opportunity to work with affected populations and strengthen their resilience within specific responses.

Coordination towards climate action has also begun to transcend individual organisations. The Climate and Environment Charter for Humanitarian Organizations,⁴⁹² led by the International Committee of the Red Cross and the International Federation of Red Cross and Red Crescent Societies (IFRC), aims to galvanise collective action towards climate change mitigation and environmental sustainability. The Charter is composed of several points which, among others, commit organisations to reduce GHG emissions, develop evidence-based solutions, embrace local leadership, work collaboratively for climate action and response, develop targets, and measure progress towards environmental sustainability. More than 220 humanitarian organisations have

signed the Charter, which is also supported by the national governments of Switzerland, the USA and Norway, and most recently the EU. Organisations are also invited to publicly state their targets: ICRC, for example, has committed to a 50% reduction in GHG emissions by 2030, compared to 2018 levels. Other organisations make commitments through internal documents and processes. For example, UNHCR's Operational Strategy for Climate Resilience and Environmental Sustainability 2022 to 2025 makes a number of formal commitments to climate action and delivering decarbonisation.⁴⁹³

These commitments offer measurable targets for humanitarian organisations but, in order to fulfil such obligations, immediate action is needed. As the activities of humanitarian organisations increase in response to growing needs, the subsequent GHG emissions will likely also rise. Given that many organisational targets are based on emissions in reference years with lower activities, this means that annual emissions reductions must be at least the same as the annual increases in activity in order to maintain the same levels of total GHG emissions, let alone reductions compared to the baseline. Furthermore, during the clean energy transition the humanitarian sector will continue to emit GHGs, owing to continued reliance on energy from unsustainable sources, and so practical implementation and demonstration of sustainable alternatives will be critical in making progress towards organisations' sustainability targets.

Together, UNHCR and the Global Platform for Action on Sustainable Energy in Displacement Settings (GPA) have driven forward a number of coordination activities on climate action in recent years. For example the GPA, UNHCR, and partners have co-hosted the Clean

UNHCR and Climate Action

UNHCR's Operational Strategy for Climate Resilience and Environmental Sustainability 2022 to 2025 makes formal commitments to climate action and delivering decarbonisation, and outlines the parameters for UNHCR's response to the global climate emergency. The document provides an approach to increase UNHCR's involvement under three core pillars of action – law and policy, operations, and 'greening' UNHCR. The Framework will take shape primarily through the development of regional and country-level plans of action in collaboration with affected communities (both displaced and host), UN Country Teams, host governments, and a range of other stakeholders.

"UNHCR commits to actions such as the following: playing a leading role in guiding legal interpretation; supporting States in developing and implementing legal and institutional policy frameworks to prevent and respond to displacement; increasing sustainable access to and use of renewable energy, energy efficient technologies and energy conservation options; and advocating for the adaptation of urban and land-use plans and climate resilient public."⁷⁶¹

The Framework's three pillars of action each abide by four defined approaches: 'collaborative', 'evidence-based', 'innovative', and 'inclusive'. The document is aligned with the High Commissioner's Strategic Directions 2017–2021 and complements relevant UNHCR policy, strategy and guidance. The strategy makes a number of commitments, including ensuring that it will deliver:⁷⁶²

- Overall reduction of 172,000 tons of CO₂ emissions through improved sectoral operational responses by the end of 2025.
- 30 displacement sites in the most climate vulnerable countries will conduct integrated spatial planning and climate resilient studies.
- 10 displacement sites at greatest risk of flooding will benefit from strengthened infrastructure management plans.
- 10 refugee camps will benefit from improved solid waste management systems.
- 50% of solar lanterns will be repaired or recycled in 12 operations.
- 60% of persons of concern living in camps or settlements will live in an environmentally sustainable shelter.
- 80% of communal facilities will be environmentally sustainable.
- 30 sites at highest risk of drought will strengthen their groundwater monitoring.
- 30% of refugees will have access to clean cooking.
- Three countries will establish projects to generate 1 million tons of carbon offsets via reforestation and clean cooking programmes.
- 50% of water boreholes running on diesel generators will be solarised.
- 50% of UNHCR-supported health centres and schools running on diesel generators will be solarised.

Energy Challenge (CEC), which seeks to bring businesses, governments and organisations together to provide green and safe energy to forcibly displaced populations.⁴⁹⁴ Chapters 2 and 3 of this report provide examples of further coordination and policy collaborations on humanitarian energy issues.

The Directorate-General for European Civil Protection and Humanitarian Aid Operations

(DG ECHO) has also established an ambitious position on reducing the environmental impact of its humanitarian response.⁴⁹⁵ DG ECHO has established minimum environmental requirements and recommendations which underline the necessity of, and the organisation's commitment to reducing the environmental footprint of humanitarian aid, which guide its actions and cooperation with partners.

GPA and UNHCR: Clean Energy Challenge Activities

The Global Platform for Action on Sustainable Energy in Displacement Settings (GPA) and partners have been leading policy, research, and technical capacity building activities for the humanitarian energy sector. UNHCR and the GPA co-host the Clean Energy Challenge (CEC), a multi-stakeholder effort to collectively address energy challenges and help deliver a high-energy, low-carbon future for displaced populations by 2030.⁷⁶³ The CEC has delivered a number of concrete activities since its formation in 2019.⁷⁶⁴

- **CEC Members Meetings:** The CEC kicked off 2020 with a hybrid (in-person and virtual) meeting with the CEC members at the UNHCR premises. Several governments, private companies, international NGOs, academic institutions and UN agencies participated in the meeting and acknowledged the need for collective actions to provide clean energy solutions to the forcibly displaced population. In the subsequent CEC action group meeting in April 2020, CEC members together discussed the governance structure and entry points for the different stakeholders, and set the key priorities for three work-streams. During 2021, the group has focused on a number of activities, as outlined below.
- **Member State Briefings:** To facilitate collective actions in bringing clean energy solutions to the most vulnerable and displaced population, the CEC secretariat organises member state briefings to update ongoing activities and opportunities to both the refugee host governments and donor countries. It provides a common space to build partnerships, share information about policy actions, and increase awareness on progress towards achieving SDG 7.
- **The CEC Marketplace:** The CEC Secretariat organises Marketplace meetings to matchmake energy needs and emerging projects from implementing partners with resources existing in the action group. The Marketplace is a space to create partnerships among different stakeholders around shared values, ask for a variety of support and develop and refine project ideas. However, it is not a direct procurement or

tender portal (companies must go through the normal procurement process), nor is it a place to receive a direct energy grant. The marketplace provides an opportunity for different stakeholders to discuss and participate in providing support and suggestions on the methodologies for sustainable energy interventions

- **Donor Working Group:** The GPA hosts a quarterly donor working group to support donors in learning about humanitarian energy and climate-related issues in displaced contexts. Several governments have made marked efforts support climate action in displacement contexts:
 - Uganda is progressing on their pledge to promote inclusive and sustainable management of natural resources and ecosystems by integrating the refugee settlements into the national Sustainable Energy Response plan and Water and Environment Sector Response Plan for Refugees and Host Communities.
 - In 2020, Norway continued its role as driver of the Clean Energy Challenge, providing political, technical, operational, and financial support, and hosted a virtual briefing for Member States to review progress since the CEC's launch. Norway also fulfilled its Global Refugee Forum pledge to support innovation for the greening of humanitarian responses by contributing 29 million krone to this end through its Humanitarian Innovation Programme. Norway continues to finance NORCAP deployments of energy experts to humanitarian operations and in addition provides the core funding for the Coordination Unit of the Global Platform for Action.
 - Germany is fulfilling its pledge to the Global Refugee Forum through financial and technical resources provided in the multiyear Energy Solutions for Displacement Settings programme in Kenya, Uganda, and Ethiopia, delivering on the humanitarian–development–peace nexus.

Coordination of the humanitarian energy sector is no easy task as the remits and organisational scope for action lie across multiple partners, institutions, and agencies. To overcome some of these barriers, the GPA has worked to deliver practical and timely evidence, advocacy, and technical advice to humanitarian sector partners, in order to carry out its mission of “delivering collective change on energy in displacement settings by providing supporting services to mainstream sustainable, affordable, and reliable energy access for crisis affected communities and those that serve them”(GPA 2022, p1)⁴⁹⁶. The examples in this section demonstrate progress on policy commitments on climate action issues but much more is needed to achieve these goals and commitments.

Progress on Decarbonisation of Humanitarian Operations

Backed by organisational commitments and environmental strategies, sustainable energy projects have focused on opportunities to decarbonise humanitarian infrastructure. Reducing energy needs should be the first action towards lowering GHG emissions, before then assessing how to transition what energy demand remains from fossil fuel to renewable sources.

In order to identify these initial energy savings, it is necessary to measure the present energy demand. Since 2015, the WFP Energy Efficiency Programme (EEP) has installed ‘Green Kits’ in WFP offices and premises around the world.⁴⁹⁷ A further example of such a scheme is UNHCR’s ‘Green Box’ programme, which has seen over 100 energy meters installed in offices around the world.⁴⁹⁸ Such programmes can provide the energy measurements required to properly identify energy savings and other GHG mitigation measures that could be funded by the UNHCR Green Financing Facility. Financial resources from other organisations, such as ICRC’s Climate and

Environment Transition Fund, could also support the widespread uptake of similar GHG reduction initiatives.

Following energy measurements and the implementation of energy efficiency and reduction measures, the remaining energy demand can be transitioned to more sustainable sources. The Humanitarian Hub in Malakal, South Sudan, which is operated by IOM and serves as a base for 300 humanitarian workers across 34

WFP Energy Efficiency Programme and Green Kit

Recognising the role of energy in powering WFP’s operations, the organisation identified the potential for energy efficiency and renewable solutions to reduce their energy consumption and costs.⁷⁶⁵ Under their Energy Efficiency Programme (EEP), the WFP Engineering and Environmental Sustainability Unit and WFP Innovation Accelerator jointly developed the Green Kit.

The Green Kit is designed to facilitate field locations in setting up monitoring systems without the need for engineers from headquarters to visit the site themselves. Each Kit contains a survey and a monitoring device which connects directly to the distribution board and can monitor electricity consumption remotely. Engineers can analyse the survey and consumption data to recommend energy saving measures, which can form the basis of applications for co-funding from the EEP to implement them.

Results of some of these interventions have reduced diesel consumption by 40 to 80 per cent via behaviour change, energy efficiency measures and renewable technologies. Many of WFP’s locations are in off-grid and remote areas and so these solutions can have large impacts in reducing costs, increasing safety and supporting greater operational resilience.

organisations, reduced its diesel usage by two-thirds following the installation of a solar power plant.⁴⁹⁹ This can be expected to also reduce its GHG emissions by more than 65%, in addition to estimated cost savings of 18%.

UNHCR has committed to transitioning its 530 field offices to renewable sources by 2030,⁵⁰⁰ each of which offers an opportunity to reduce GHG emissions. The solarisation of two field offices in the Democratic Republic of the Congo, Kananga and Gbadolité, cover 35 and 45 per cent of electricity use respectively and are expected to save around US\$50,000 per year in fuel costs.⁵⁰¹ A new compound in the Mogadishu, Somalia office, meanwhile, is expected to have 40 per cent of its electricity needs provided by solar energy and thereby reduce GHG emissions by more than 10 tonnes of carbon dioxide (tCO₂) per year. On average, more than one field office would need to be transitioned each week if the target for 2030 is to be achieved.

Each sustainable energy project is a step towards a lower-carbon future, but in order to meet organisational GHG reduction targets a significant scale-up will be necessary. Large-scale financing programmes, discussed in Chapter 4, will be required to fund the upfront costs of renewable energy and energy efficiency infrastructure. These will need to be grounded in data gathered from the field and used to design quantifiable GHG reduction measures. Furthermore, organisations will need to examine every opportunity for GHG savings. This could include how major humanitarian organisations can also support emissions reductions of their partner organisations, such as local NGOs responsible for implementation, which contribute to the overall climate impact of the humanitarian response, as was the case for the Humanitarian Hub in Malakal.

Opportunities for Further Decarbonisation

While the GHG emissions of individual displaced households are relatively low, the cumulative impact across the world amounts to the total emissions of a small country. In addition to the substantial quality of life and health benefits of transitioning from basic energy sources for domestic access to sustainable, higher-Tier alternatives, there are also significant GHG savings to be realised. The Moving Energy Initiative estimated that a widespread rollout of improved cookstoves and solar lanterns could save 6.9 million tCO₂ per year, approximately halving the GHG emissions from displaced households.⁵⁰² Implementing superior technologies, such as biogas or LPG stoves and solar mini grids, could save 11.4 million tCO₂ per year, a GHG reduction of more than 80%. As the number of displaced people has increased substantially since the time of their assessment, the total magnitude of both GHG emissions and potential savings has almost certainly increased.

In addition to energy efficiency and solarisation efforts for humanitarian offices and logistics centres, energy use in field operations and camps for displaced people can also provide significant GHG reduction opportunities owing to their higher reliance on diesel generators. Using data monitored from the electricity system in Nyabiheke refugee camp, Rwanda, as part of the RE4R Project, which at the time used diesel generators to supply power to offices and water pumping stations, techno-economic modelling suggested that integrating solar power and battery storage could reduce GHG emissions by up to 83%.⁵⁰³ This proposed system would also supply power to the businesses in the camp marketplace and have an overall financial payback time of around three years, reducing costs and emissions while also supporting productive livelihoods. This theory has already been put into practice elsewhere in Rwanda through the introduction of a solar energy

system in Mahama refugee camp, which has been estimated to have reduced diesel usage and GHG emissions by more than half whilst supplying the camp health centre, offices and refugee businesses.⁵⁰⁴

Large-scale implementation projects could have the greatest opportunities for GHG emissions reductions. The economies of scale inherent with larger projects can reduce costs but increase sustainable energy access to a wider group of beneficiaries, maximising the cumulative impact. Two of the largest-scale solar projects in displacement contexts, the solar plants at Zaatari and Azraq camps in Jordan, are together estimated to have reduced 20,000 tCO₂ per year.⁵⁰⁵ Projects of this scale, however, require detailed planning, multi-stakeholder agreements and considerable financial backing – all of which will need to become commonplace if more camps for displaced people are to experience wholesale transitions to sustainable energy.

Innovation to Accelerate the Sustainable Energy Transition

The clean energy transition is an ongoing process for provision of energy to displaced communities and host communities but also to agencies providing support to these communities. To expand energy access, accelerate the transition and build resilience in fragile and crisis contexts requires an all-encompassing risk-informed approach for upstream and downstream interventions, which can be characterised in three major elements, closely mirroring the three major phases of crisis:

- The pre-crisis phase, where upstream interventions include mainstreaming crisis preparedness or risk reduction into energy financing and investments, and programming through policy de-risking and institutional capacity development;

- The crisis phase, where interventions include the integration of vulnerability assessments of energy needs in crisis or disaster response plans, usually when a crisis starts, or disaster happens;
- The post-crisis phase, where interventions include upstream and downstream activities related to scaling up clean and sustainable energy solutions to support long-term resilience building, stabilisation and recovery.

To scale up clean energy access and bridge the humanitarian and development nexus, a mix of innovations is needed to develop an ecosystem of interrelated interventions. These include technology innovation, policy and regulatory frameworks innovations, finance and investments innovation, and institutional capacity innovations. Technology innovations entail such actions as diversification of energy supply resources including renewable energy, efficiency in production, supply and distribution and use, and energy storage. Policy innovations include actions such as developing public policy instruments including to support diversity of energy resources in humanitarian situations, efficiency in production, consumption, creating dedicated funds, integrating recovery responses with circular economy concepts, innovative regulatory frameworks for finance and investments and energy subsidy reforms.

Financing and investments innovations include such actions as applying integrated financing and investments linked to other SDGs, forming partnerships of public and private sector, new ways of delivering, use of blended finance and financial markets, developing guarantee mechanisms to reduce investment risks, applying digital transformation and embracing innovations in new business models and technologies. Institutional capacity innovations may include establishing dedicated entities including dedicated funds to promote innovations in

Sustainable Energy Technologies and Green Jobs

In addition to providing reliable and affordable power, sustainable energy can also promote livelihood opportunities and offer jobs in displacement settings. In Zaatari, Jordan, the implementation of waste-to-energy and solar energy project created green jobs in the construction of the systems.⁷⁶⁶ The programme also trained workers from the refugee camp and local municipality on the operation and maintenance of the plant. In the first quarter of 2020, 61 refugees were employed at the facility.

Sustainable energy can also be a catalyst for improving local capacities. UNHCR Innovation and UNHCR's Energy & Environment Unit have collaborated on the Energy Lab, which has

prototyped models to achieve this.⁷⁶⁷ In Dollo Ado, Ethiopia, the Energy Lab supported refugees with technical assistance in designing and producing stoves to reduce the firewood consumption and health hazards common with traditional stoves. In both Dollo Ado and Bokolmayo, meanwhile, solar cooperatives managed by displaced people have provided power for income generation.⁷⁶⁸

Access to energy is a critical component of many businesses, especially small and informal enterprises such as those in displacement contexts. Electricity for charging phones, entertainment services, hairdressing or refrigeration can unlock new or improved revenue streams that would be impossible without reliable power. A report by EnDev included case studies from Jordan, Nigeria, Burkina Faso, Kenya, Uganda and Rwanda which highlighted the demand for, opportunities to support, energy for livelihoods.⁷⁶⁹

scaling up clean energy transition and expansion of energy access to communities affected by displacement.

Overwhelmingly, addressing sustainable energy and promoting climate action will require bold steps and concrete investments over the coming decade. Partnerships at global, regional, national and local levels are shaping new ideas and are radically changing energy systems and services in both crisis and development contexts.

Issue Analysis: Climate Change as a Risk and an Opportunity for the Humanitarian Sector

Climate and Energy are Intertwined in Displacement Settings

Action to combat climate change is one of the most important global priorities and the humanitarian sector is not immune from the need to transition away from established, but carbon-intensive, ways of working and towards more sustainable alternatives. The impacts of climate change are already being felt and are expected to increase the number and severity of displacement events. This will require a similar increase in the responses of humanitarian actors. Reducing the emissions of these responses will be crucial in the humanitarian sector playing its part in mitigating its climate change impact and potential contribution to future displacement situations.

Reducing GHG emissions is embedded within international and organisational sustainability objectives. National government commitments, such as those announced at COP26, and UN system-wide GHG reductions targets provide

underlying support for organisations to reduce their climate change impacts. This has been embodied by individual organisational strategies, such as the target of the UN system to reduce emissions by 45 per cent by 2030, and cross-sectoral pledges, such as the Climate and Environment Charter for Humanitarian Organizations led by ICRC and IFRC.⁵⁰⁶ Development-led organisations such as UN-Energy can also support the clean energy transition in displacement settings with a focus on long-term stability and growth. Greater adoption, promotion and commitment towards these targets – and support with the resources to achieve them – will remain important as part of the sustainable energy transition.

Energy use by humanitarian organisations to power their offices, logistics centres, field operations and other activities is highly reliant on fossil fuel generation, either from local grid networks or diesel generators. This provides a measurable opportunity, such as via WFP's

UN Energy: Learning from the Development Sphere

UN Energy was founded to lead the energy access and clean energy transition for development partners, supported by senior leadership from UNDP and SEforALL, UN Energy. The aim of the group being to:

“Accelerate the achievement of the 2030 Agenda for Sustainable Development and the Paris Agreement, countries increasingly adopt sustainable energy solutions, embarking on an energy transition by creating the enabling conditions that catalyse public and private investment to scale-up action

on energy access, renewable energy and energy efficiency. By making their energy sectors more sustainable, their economies can follow a more equitable growth path, contributing to poverty eradication while combating climate change and increasing their resilience. Specifically to:

- Promote coherence in the UN system's multidisciplinary response to achieve SDG7 in support of the 2030 Agenda and the Paris Agreement;
- Enhance coordination and collaborative actions within the United Nations with regards to policy development, implementation and knowledge sharing in the area of energy”⁷⁷⁰.

Green Kit or UNHCR's Green Box programmes, to first reduce energy usage via energy efficiency measures⁵⁰⁷. Once this total energy demand has been reduced then efforts to reduce the carbon intensity of energy, such as through transitions to renewable sources, can take place. Renewable energy interventions such as those at IOM's Humanitarian Hub in Malakal, South Sudan, and numerous field offices around the world have already demonstrated significant fuel savings which, in turn, have reduced both costs and GHG emissions. Sustainable and modern energy for displaced people, in addition to its many other benefits, can mitigate large proportions of GHG emissions associated with lower-Tier and more basic technologies and fuels. Supporting the widespread transition from three-stone fires to improved cookstoves, LPG stoves or energy-efficient electric cooking appliances, and from candles and kerosene lamps to solar lanterns or connections to solar mini-grids, could reduce GHG by more than 80%, far exceeding organisational reduction targets⁵⁰⁸. Large-scale projects, similar in scale to the solar plants in Zaatari and Azraq in Jordan, could present opportunities for both rapid increases in domestic electricity access and decreases in GHG emissions from displaced populations.⁵⁰⁹

Several interviewees for this report commented on the challenges of implementing SDG-related activities within the humanitarian response. Many humanitarians see the SDGs as development-focused goals that do not necessarily apply in emergencies or crisis settings.

Meeting international and organisational climate targets, and the aims of SDGs 7 (sustainable energy), 13 (climate action), and 16 (inclusive societies) simultaneously, will require a major shift in the provision of energy in displacement settings. At present this is heavily reliant on fossil fuels but there are many options to reduce GHG emissions which are both technically viable and economically beneficial over increasingly shorter

The Struggle of Humanitarian Organisations to Connect with the SDGs

"I think it's even worse than the humanitarians not understanding how to implement the SDGs – I'm not sure they see it as connected to their work. This was apparent from the couple of conversations I had: the general point was, that 'we don't care because it is a development agenda and it's not a humanitarian agenda'. This is so unacceptable because according to the agencies, it means sustainable energy does not matter for refugees.

"The SDG framework was made for the entire world, including refugees. But it is a very much top-down approach, as it was decided on a global level to be implemented on a country level. But what about refugee and IDP groups in countries that are not captured by public entities, or not covered by public services in these host countries. Perhaps, they forgot a little bit to include the humanitarian sector into the design of the sustainable development goals."

Humanitarian Energy Sector Lead.

timeframes. In order to scale up sustainable interventions it will be critical to capitalise on the political and organisational commitments to reduce GHG emissions and to use climate action as leverage for improving sustainable energy access in displacement contexts.

Supporting the sustainable energy transition in displacement settings and mitigating GHG emissions from fossil fuels should go hand in hand with the long-term objectives of the Sustainable Development Goals. While political and organisational commitments are strengthening, and implementation projects are emerging as examples of best practice to replicate more widely, there is still much more

work to do to ensure a sustainable future for displacement-affected communities and wider society. On this subject António Vitorino, Director General of IOM, recently wrote: “We are heading towards a world in which the achievement of the Sustainable Development Goals will become increasingly distant, difficult and costly – and we are yet to change course”.⁵¹⁰ The SDGs can still be achieved but to do so we must change course now.

Future: Delivering Climate Action and Scaling-up the Sustainable Energy Transition

The level of support for climate action has never been stronger. Commitments from all types of organisations operating in displacement contexts offer broad alignment in the need to reduce GHG emissions and, increasingly, are being supported by tangible targets and the resources to meet them. While the direction of travel is positive, much more must be done to meet these environmental sustainability objectives.

This report suggests a number of recommendations on climate action within the sector and suggests that all actors can facilitate action on the climate crisis and fast-track progress on scaling up the sustainable energy transition in displacement settings. This can be achieved in a number of ways:

- Action to address climate change must happen now. The effects of climate change are already being felt, including in displacement contexts, and all stakeholders in displacement settings must act now to reduce their GHG emissions. A rapid and sector-wide scale up of sustainability interventions is necessary to stand a chance of meeting organisational GHG reduction targets by 2030.
- Leverage sustainability targets to catalyse large-scale implementation. Efforts to achieve SDG 13 on climate can spur direct action towards SDG 7 on energy as a means to reduce GHG emissions, and can unlock climate financing to make these a reality. Organisations could capitalise on the political and organisational commitments to reduce emissions by identifying the ways in which energy efficiency and sustainable energy can support GHG emissions reductions.
- Identify how sustainable energy can exceed organisational targets. Sustainable energy interventions can exceed GHG reduction targets, both for organisations and displaced people. Organisations could explore how reductions under the remit of sustainable energy could provide leeway for activities in which GHG reductions may be more difficult to achieve, such as air travel, in support of overall sustainability targets.
- Decarbonisation of humanitarian operations is a low hanging fruit. Operations that rely on high-carbon diesel generators or grid energy can achieve significant GHG reductions via relatively simple and cost-effective energy efficiency measures and renewable energy technologies. Organisations could identify how emerging examples of decarbonised facilities can be replicated at scale across their operations.
- Energy for displaced people could offer large GHG emissions reductions. While emissions from individual displaced households are typically low, the cumulative GHG impact of all displaced people is comparable to the total emissions of some countries. In addition to the many other benefits, investing in local-scale projects which provide access to sustainable energy for displaced people would significantly decrease overall GHG emissions at the global scale.
- An increase in displacement events linked to climate change will increase the need for more ambitious GHG reduction targets. The expectation that climate change will lead to more numerous, more severe, or lengthier displacement events will likely increase the magnitude of the humanitarian response and,

as a result, the GHG emissions associated with it. For organisational targets that are pegged to baselines based on previous years, action towards decarbonisation will need to occur just to offset the growth in activities, let alone decrease it to reach organisational targets.

Despite initial progress, addressing the climate emergency in humanitarian settings requires urgent attention.⁵¹¹ There is a considerable need for investment in the sector. It has been estimated that more than US\$100 million will be required to decarbonise diesel generators currently in use by humanitarian agencies, while training and capacity building urgently require investment as there are no energy experts in the majority of humanitarian locations worldwide. New investments, policy support and coordinated action across every stakeholder group will be necessary to address the climate crisis and achieve SDG 7 in displacement settings by 2030.⁵¹²



08

PRACTICAL LEARNING: RECOMMENDATIONS AND INCLUSIVE ACTION

Chapter contributing co-authors: Arielle Ben-Hur at UNITAR
GPA, Surabhi Rajagopal at SELCO Foundation, and Vahid
Jahangiri at International Lifeline Fund.

Practical Action Photo: osorio Santiago

State of Play: What We Know and Don't Know about Humanitarian Energy

The previous chapters have demonstrated a great deal of learning within the humanitarian energy sector over the past 10 years. However, there are still a large number of topics about which relatively little is known.

In terms of knowledge on energy access levels and inclusive planning, still in 2022 we do not know specifically how many displaced people have what type of access to energy. Nor do we know how displaced people themselves see energy and the voices and efforts of refugees and IDPs are not included in sustainable energy planning.⁵¹³ One clear message from the analysis for this report is how important access to higher levels and tiers of energy is for displaced people. Considerable investment is needed in inclusive research and to support systematic institutional reform for the inclusion of displaced people in policy, planning and implementation activities.

In terms of knowledge on climate action and renewable technologies, little is known on the types of operational planning for effective governance mechanisms that will be needed to deliver substantive and rapid climate change. While there is some evidence on how solar technologies can offer low-cost reliable solutions for electricity for displaced households, businesses, and institutions,⁵¹⁴ clean cooking in displacement settings remains a deeply challenging issue. Similarly, while many UN institutions have committed to climate action, emissions from the humanitarian sector continue to rise. Considerable investment in coordination, governance, modern cooking solutions, and alternative procurement routes will be required to change this picture.

In terms of knowledge on capacity, funding and financing, short-term contracts and a lack of investment in specialist energy staff to support the humanitarian sector has meant that energy programming is often not well designed or delivered. Training and expert capacity on sustainable energy is urgently needed within displacement contexts to support locally-developed programming. There is also a shortage of knowledge on the types of delivery models that work and how innovative financing might support sustainable action. Therefore, both systemic change and investment are required to support alternative delivery of energy in the humanitarian system.

In terms of knowledge on energy markets and private sector engagement, evidence suggests that free distribution of energy products in protracted situations damages local and displaced-led energy markets.⁵¹⁵ Private sector suppliers, both formal and informal, are led by national, international companies and displaced people themselves. Investment is required to support programming that works directly with energy entrepreneurs and local businesses in displacement settings, and considerably more research is needed on informal energy markets and energy supply led by displaced people.

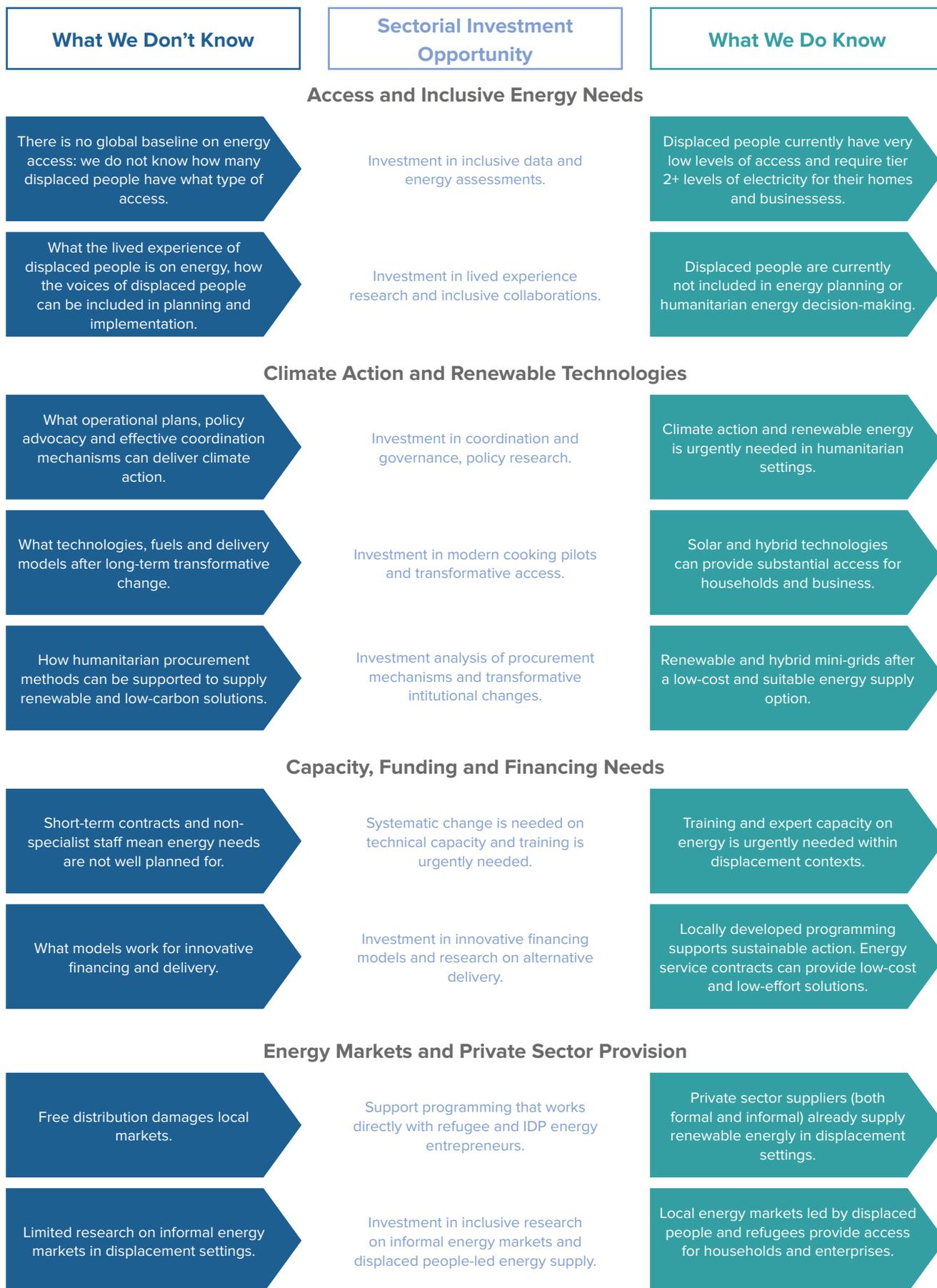


Figure: Investment opportunities for learning within the humanitarian energy sector.

Progress: Lessons Learned and Practical Recommendations

Sector-wide Learning

Over the past 10 years, practitioners across the sector have shared many lessons. The GPA and SELCO Foundation have been collaborating on an analysis of learning within programmes which will be published in 2022 and which highlights how interventions can plan and deliver sustainable energy solutions in migration and displacement settings.⁵¹⁶ Progressive programming such as that by MercyCorps through their Energy in Emergencies: Mitigating Risks of Gender-based Violence programme have also supported the production of core resources on inclusive energy solutions.⁵¹⁷ Key partners such as the International Lifeline Fund have supported field-based learning and practitioner recommendations to be embedded throughout national, international and institutional planning processes.⁵¹⁸

Before turning to practical recommendations for the sector, it is important to acknowledge that working on energy in displacement settings is deeply challenging. Not all programmes have been well designed or well delivered. Learning from failure in humanitarian energy settings is particularly important. During recent workshops hosted by Chatham House, a number of key types of failures and learnings were identified.⁵¹⁹ Three core types of failures were identified. Firstly, challenges in engagement with the enabling environment, such as a lack of understanding of national regulations. Secondly, challenges in partnership or collaboration, such as a lack of inclusion of displaced people or private sector partners when scoping an intervention. Thirdly, challenges in implementation such as a lack of technical capacity, procurement challenges, and poor implementation.

Many of these challenges centre on a lack of technical capacity within organisations, and are

Practical Challenges from the Field

“At the field level, there’s a mismatch of people’s skills in connection to the decisions that have to be made for their users. Donors’ or organisations’ incentives are not aligned with the incentives and the needs of the users. Genuine solutions are not critiqued – for example, there is no questioning on what technology has already been implemented, and how it’s going to materialise, or how it is analysed. There is still a significant gap in understanding the context on the ground.

“Also, finding cooking solutions is not the job of just any person, especially those who have no expertise, or are from a different sector, like WASH. The person needs to understand that cooking is a very intimate experience for humans. Cooking is a memory. Cooking is a culture. Cooking is identity, it draws a connection between people. So you cannot disregard this and just focus on the combustion efficiency, or satisfying a donor that wants to show their emissions reductions.”

Field-based Practitioner.

in some way caused by individuals working in isolation without expert support. The GPA partner community offers a network of expert energy practitioners that can support policy, research, programme design, innovative financing, and data development activities.⁵²⁰ Many of these partners come with their own funding, or network of donors, who they can reach out to for investment and funding support; therefore, increasing both the financial support available and reducing the burden on traditional humanitarian partners and agencies.

Learning From Failure

Practitioners in the sector often talk of different types of failure to be aware of when developing interventions:

Enabling Environment Challenges

- Failure to anticipate energy needs: household consumers often use more than projected when they have electricity access, also energy efficiency can reduce energy needs within institutions.
- Failure in contextual environment: a lack of knowledge about national regulations, refugee rights, mini-grid regulations, and a lack of understanding of the local culture and complex dynamics of various stakeholders.
- Failure in assessment and feasibility: projects forget to assess part of the situation or do not compare with grid connection assessments or consider wider cooking technology options or local cooking practices. Projects have also failed to identify areas where energy can support livelihood development or reduce drudgery, particularly in protracted humanitarian settings.
- Failure of the economics: mini-grid costs often need up-front capital investment, whereas grid connections don't, and individual solar home systems are often cheaper.

Partnership and Collaboration Challenges

- Failure of inclusion: displaced people are not included in the design or delivery of programmes; institutional end-users of energy are connected but refugee households and enterprises are not.
- Failure to work with the private sector: suppliers not coming forward, private finance not available, etc.
- Failure in partnerships: struggles to consult or gather support with stakeholders, or to work effectively with UN institutions.
- Failure within UN agencies, NGOs, and development organisations: a lack of coordination or harmonisation on programme strategies has led to many ad hoc projects without clear goals.
- Fear of failure: low risk appetite by agencies and sometimes investors, mini-grid solutions viewed as 'too complex' and individuals don't want to have a

failed project or to invest time to develop ideas.

- Failure in leadership: agencies and donors don't always understand or lead projects and are more passive partners. Consultants and NORCAP technical deployees don't always have the political power to push forward projects within organisations.
- Failure of a lack of energy strategy or guidance on how to respond to the humanitarian contexts, a lack of agreed goals on the focus of interventions: sustainability aims, access goals, reducing costs, providing livelihoods, reducing deforestation, etc, may pull programmes in different directions.

Implementation Challenges

- Failure in technical capacity: staffing changes and lack of technical knowledge on different solutions.
- Failure in procurement: internal agency or partner rules, tendering difficulties, terms of reference poorly written, etc.
- Failure of momentum and timing: often years between initial ideas for project assessment and delivery. Issues and regulations change over time and often projects are reconceptualised part way through the process. For example, the UN procurement system takes time and framework agreements can slow things down.
- Failure in implementation: projects start to implement but delivery challenges get in the way.
- Failure in repair and maintenance: projects implemented have often not considered the cost and technical capacity required for maintenance over a longer period. This forces agencies to address maintenance requirements through ad hoc means or simply renders solutions obsolete.
- Failure to anticipate unexpected challenges: for example, last minute changes and connections to the grid at the last minute, competition with other projects or supply options.
- Failure to decarbonise: energy connection made in some protracted situations, but through a fossil fuel-based connection.
- Failure to launch: all the pieces in place, but somehow the context or national contexts changed.

As discussed in the previous chapters and sections of this report, delivering sustainable humanitarian energy interventions is difficult. Partners are encouraged to reach out to the expert network to build expertise and secure support where needed. The practitioners involved in the development of this report

have also suggested a number of practical recommendations to facilitate effective delivery of policy action and governance, drive forward investment and renewable solutions, enhance technical capacity and research, and deliver high-quality sustainable energy programming.

Topic	Instead of	Try ...
Governance and Coordination	Short-term yearly planning and limited budgets.	<ul style="list-style-type: none"> • Partner with energy practitioners, donors, and GPA to develop new funding from development and alternative funders. • Advocate with donors and senior management on need for multi-year programmes. • Establish/participate in technical working groups on energy at local, country and global levels.
	Working in isolation on technical provision of products.	<ul style="list-style-type: none"> • Collaborate with other agencies, NGOs, the private sector and GPA partners, including development and peace partners. • Align with national development plans and local government initiatives.
	Struggling to keep pace with technological and energy sector learning.	<ul style="list-style-type: none"> • Invest in core coordination and collaboration staffing and capacity functions, partner with expert energy organisations and build capacity through partnerships.
Policy and Progress	Focusing on displaced populations only, with limited engagement with host communities and national actors.	<ul style="list-style-type: none"> • Support progressive global and national policy discussions. Work with national governments and local research partners to evidence change. Embed energy investments for refugees and displaced people within national regulatory and host government processes.
Finance	Using a 'protect and provide' model to directly supply low-tier energy solutions.	<ul style="list-style-type: none"> • Support sustainable and long-term solutions which provide higher-tier levels of access in protracted situations.
	Being restricted by a lack of goals and clear timelines.	<ul style="list-style-type: none"> • Develop strategies with clear policy targets, actions, and timelines that organisations can follow.
Innovative Finance and Institutional Funding	Directly procuring lanterns and firewood.	<ul style="list-style-type: none"> • Invest in sustainable energy delivery models for solar home systems and clean cooking market-based interventions.
	Procuring generators and diesel fuel.	<ul style="list-style-type: none"> • Invest in renewable or hybrid systems.
	Owning and operating capital assets.	<ul style="list-style-type: none"> • Use energy service contracts and buy renewable energy supply.

Training and Delivery Learnings	Designing an energy initiative around a specific technology/product/service.	<ul style="list-style-type: none"> • Design an energy initiative around a demand driven by the target community or end users. • Consider livelihood requirements for local communities in protracted settings, and opportunities to use energy to increase value capture within the community.
	Assuming the target community understands the benefits and use of the energy intervention.	<ul style="list-style-type: none"> • Conduct an extensive consumer awareness campaign and user training sessions with product and service demonstrations; co-design solutions with communities.
	Training or engaging any available member of the targeted household or institution.	<ul style="list-style-type: none"> • Train/engage the member of the household or institution who will be the main user of the technology/product/service.
	Conducting monitoring and evaluation only at the end of the initiative.	<ul style="list-style-type: none"> • Conduct monitoring and evaluation throughout the entire course of the initiative.
Data, Research and Evidence	Struggling to collect energy data through over-burdened field staff.	<ul style="list-style-type: none"> • Invest in data collection and analysis expert capacity, and work with expert energy partners to collect evidence.
	Using only internal data collection processes.	<ul style="list-style-type: none"> • Share data publicly and collaborate with the GPA data team to make evidence available for sector partners.
	Having limited capacity internally to analyse data or embed learning within programmatic decisions.	<ul style="list-style-type: none"> • Connect with the GPA network of energy expert partners, independent researchers, and universities to undertake analysis and build analytical partnerships.

Table: Practical Options for Sustainable Change with Humanitarian Energy⁷⁷¹

To expand the evidence base to aid decision-making within humanitarian energy, the Humanitarian Engineering and Energy for Development project developed several solar energy interventions in Rwanda and Nepal that supported refugees and internally displaced communities in becoming active participants in the energy planning and governance of these facilities.⁵²¹ Learnings from these interventions included:

- Plan for longer projects and provide more post-project support: to increase the benefits and impacts of energy interventions, significant time is needed to properly embed interventions, so

that displaced communities can leverage newly available energy resources and mobilise around energy use for entrepreneurship; longer funding cycles are needed to give time for stakeholders to work alongside and support communities in developing infrastructure that provides opportunities for community capacity building, skills development and self-determination.

- Co-create interventions using co-design protocols: participatory methods need to bring together communities and energy actors not only at the design and development stage, but must be embedded throughout the lifetime of a project, so that energy systems can respond and adapt to community needs and aspirations.

This shift positions displaced people, including marginalised groups, as users, maintainers, and suppliers of energy services throughout a project's timeframe.

- Introduce displaced 'energy specialists' and 'energy apprentices' to future-proof interventions: recruit displaced people as community mobilisers to work with the community to encourage engagement with new technologies and promote fair sharing of access to community resources. Partner with local energy suppliers to build in training mechanisms to invest in skills development to support community self-reliance. This development of new skills for both displaced people and local suppliers will build trust and strengthen relationships between all stakeholders.

- Implement sustainable exit strategies for humanitarian programming that promote community ownership and self-governance: prior to deployment, where possible, ascertain how communities can support governance to situate displaced people as integral energy actors. Devising and developing a handover process with the community at the start of the project will afford opportunities for sustainable exit strategies that engage with national structures, ownership laws and energy regulations and look to empower communities to be project stakeholders.

Sector practitioners have made a number of recommendations that apply to all humanitarian energy programming.

Sector-wide Learning on Humanitarian Energy Programming: Practical Recommendations

- Always conduct a needs and feasibility assessment at the start of a project: work with expert energy partners and local communities to design and deliver assessments at the conception of programming.
- Always understand the local market before planning an intervention: assess both the local and national supply options, and the existing formal and informal markets in a particular location. In many protracted camp settings, refugees or IDPs may already supply energy through small businesses, and some forms of intervention may disrupt or destroy local livelihoods.
- Avoid technology-centred approaches: innovative and advanced technologies can provide many benefits in humanitarian settings. However, sustainable energy programming design should focus on co-design and co-creation, local supply chains, markets, long-term investments, maintenance and repair, and energy services.
- Consider combining power sources for operational, community, household and business users, including water pumping and WASH facilities where feasible.
- Understand the differing roles of stakeholders: national governments, humanitarian agencies, development partners, NGOs, energy expert partners, the private sector, and existing market actors may play very different roles in different camp, non-camp, and urban settings.
- Understand who currently pays for energy and how energy payments are made: many displaced people already bear much of the cost of meeting their energy needs; understand the impact of end-user subsidies and build in programme safety nets to support the most vulnerable and extreme poor.
- Plan for the long-term: request multi-year funding from donors, plan and budget for a scoping and assessment design phase within programming budgeting.
- Consider using an energy service model for energy supply: buying power or cooking fuel services rather than individual products to technologies.

A Word of Caution on New Financing Models

In recent years there has been a rapid push to develop many new financing and delivery models. While new ways of working are essential in the humanitarian sector, limited research or evidence on how these models work has been conducted, particularly on the issue of protecting vulnerable consumers and customers.

- The humanitarian sector is pulling in two different directions: on one hand there is the narrative that refugees are vulnerable people who need to be protected; on the other, that displaced people should be customers and the private sector should supply energy. These two narratives are often confused and there is no clear understanding of the different market and subsidy arrangements that might work for displaced people. Some private-sector approaches can work in certain settings but are unlikely to reach the needs of left-behind communities and the extreme poor. Right now, in 2022, we simply do not know which approaches work where and need much more evidence on the different approaches.
- Due to the Paris Agreement, there will be many new carbon financing programmes targeting refugee settings. Many of these programmes suggest distribution models where clean cookstoves will be given for free. This is likely to be a damaging trend for the sector, which has worked hard to reduce free distribution in protracted settings as it damages local market development.
- Many results-based financing (RBF) programmes are now discussed.⁷⁷² However, in many displacement settings the maths and investment

models underpinning RBF ideas do not add up. RBF approaches often pressure small and medium-sized enterprises (SMEs) to develop the marketing, distribution, and sales of their products. While in theory this is positive for the businesses, it removes the option for the business to choose how they spend their money to help their businesses grow. There is also considerable administrative work involved in RBF approaches and in the end, such projects can result in losses rather than gains for SMEs. This is not to say that RBF projects cannot work in humanitarian energy settings. Rather that caution and co-design approaches should be used in the development of programming to understand where money can be best spent.

- Any new technology options have been deployed in humanitarian settings in recent years, and there is much talk of the benefits that mini-grids and solar home systems can bring. However, these interventions and their long-term impacts have been subject to minimal analysis. From a user point of view, and in different settings, the performance and technical reliability of technologies can vary considerably. The tariff structure of solar home systems and mini-grid provision must be analysed in detail to learn about the cost burdens being placed on refugee households and business. Technical assessments at the start of programming are also essential, to support the development of the application, cost and services provided.

Box developed with the support of Vahid Jahangiri at the International LifeLine Fund.

While these recommendations can support the development of humanitarian energy programming, there is still much the sector does not know about the types of delivery and implementation mechanisms that work on the ground. Critical thinking and evaluations are essential to understand if and how humanitarian energy programming is working.

Learning on Household Cooking

Clean energy for cooking in displacement settings should be prioritised on the humanitarian agenda. Household cooking is one of the most difficult areas to address in humanitarian settings.⁵²² However, it is by far the greatest energy need within homes. Many displaced communities still heavily rely on three-stone open fires and traditional fuels for cooking. This has negative health implications, land degradation and some deforestation impacts, and unsustainable and inefficient cooking technologies or practices can have direct impacts on food preparation and nutrition.⁵²³ It is estimated that “87.9% of refugees and IDPs living in camps rely on biomass for cooking. That reliance is not a matter of choice but necessity:

camp residents either receive firewood as part of aid from humanitarian partners or collect it from the surrounding areas. Residents who receive fuelwood allocations often have to collect supplementary firewood as the allocations are insufficient to satisfy all of their cooking needs”. In non-camp and urban settings, many displaced people rely on national provision and energy markets to access cooking fuels, technologies and services, and the cost of cooking fuel is often very expensive.⁵²⁴

Cooking Projects and the Importance of Embedding Clean Cooking in Community Action

“Refugees are highly exposed to dangerous means of cooking their food. The traditional way of cooking on an open fire is the method mostly used in refugee camps. Most refugee households are not able to incur extra costs on top of their steady budgets to be in a position to procure a cooking stove. Cooking on an open three-stone fire has consequences on the health of refugees and causes the risks of developing respiratory infections and burning – that women and children are most exposed to because they are responsible for most house chores. The penetration of the private sector in the Kakuma refugee camp has introduced ethanol fuel and briquettes into the refugee community. However, due to the shortage of supply of cleaner cooking products that are mostly subsidised by NGOs, the local economy in the refugee camp is not able to sustain the flow of such supplies. This situation makes cleaner energy products that are not sustained by the local

economy to be unreliable for refugees who have difficulty replenishing their stocks for continuous usage of these products. The high cost implication determines who goes for what alternative source of energy and this is a challenge for all.”

Refugee living in Kenya.

“We were able to create community access which was connected to growing the skills of the host community. We constructed various ceramic or cookstove parts to enhance and create a cookstove industry in the refugee and host community contexts. There was a lot of success in this project. The secret was to understand what was on the ground, whom we were trying to serve, what their needs are, and what products can fit in this area. From a design point of view, we always use the three f’s: does it fit? will it function? and what form is required. These criteria help us build technically better products and ensure we do the very best we can for the people.”

Field-based practitioner.

Learning on Household Cooking Interventions

- A step up in investment is needed to move to cleaner cooking options which would meet World Health Organization health guidelines.
- Tier 4 for indoor emissions stoves is a minimum. While this aim may be ambitious in some contexts, it is important to for health outcomes.
- Development of interventions must consider both stove design and fuel sources, alongside cultural and operational factors such as local manufacture and community design, in addition to efficiency and emissions.

- Private sector investment can build durable capacity to sustain cookstove and fuel supply chains.
- Public funds have most often been successful when directed towards supporting functions rather than acting as a direct product subsidy.

- Awareness creation through mass media can be effective in reaching large audiences quickly, but one-on-one marketing is still often required to fully convince households to take up an unfamiliar technology.
- Awareness building, product marketing, and market development are essential.
- Successful marketing focuses on direct personal benefits such as income or timesaving, rather than less tangible outcomes such as environmental protection or health improvements.
- If households don't continue to use stoves and return to using traditional methods, or are unwilling to purchase stoves, accept that the cookstoves do not meet consumer needs instead of blaming the culture or lack of education.

Practical Recommendation

- Successful cooking programmes must consider the combination of cookstoves and fuels, incorporating design aspects, costs of purchase and operation, financing options and promotional approaches. Be realistic about what is achievable in the context, considering affordability, remoteness and stability.
- Move beyond the technological aspects of stove and fuel performance to provide an integrated, modern cooking solution that consumers find attractive, functional, appropriate to their needs and – most importantly – a measurable improvement on the system they currently use.
- For cooking in households: Target Tier 4 for indoor emissions for cooking and such access should be provided using clean technologies and fuels.

- Develop market-based solutions for cooking interventions. Resources to support that are available from the WFP [here](#).⁵²⁵
- Engage experienced energy professionals and local community members to conduct a full needs assessment before designing solutions, including comparison of options and multi-sectoral analysis.

- Focus on user perspectives such as cost time saving rather than donor perspectives for marketing to households.
- For fundraising and investment, focus on donor priorities such as climate, environment, development issues to support programming.
- Cookstove and fuel promotion in all communities (e.g. to poor or rural communities) requires extensive community engagement, with personal visits and one-on-one marketing, in addition to marketing via mass media.
- Marketing messages need to be reinforced by respected figures within the community such as health workers, community leaders, and teachers. Men must be included in sensitisation efforts as they are most often the decision-makers for new household purchases.
- Design and implement user-centred clean cooking interventions to ensure uptake and sustained use
- Move away from the historical free cookstove approaches to a user-centric, market-based approach that is rooted in the local context. Learn from the low uptake globally of improved cooking solutions.

Table: Learning on Household Electricity Interventions and Practical Recommendations

Cooking is highly individual, with homes and families choosing and needing different technologies to meet their cooking needs. Access to energy also enables women to gain greater control over their lives and futures. Especially by improving the feeling of security when moving around at night and by reducing the time and physical burdens of collecting firewood⁵²⁶. Designing cooking programmes with displaced communities and embedding cooking projects within local needs is essential to ensure people's needs are met. Design of interventions should be led by communities, including product design or selection, supported by training and capacity building to generate awareness and understanding on the range of cooking technologies, fuels, and solutions available.

To date, many cooking projects have been implemented in refugee and IDP settings, with limited degrees of success.⁵²⁷ Many cooking initiatives and businesses have struggled to develop or scale up over the long-term. For example, the Inyenyeri business in Rwanda.⁵²⁸ Future cooking programmes may build on the expertise of academic partners. For example, experts at the Modern Energy Cooking Services programme⁵²⁹. At the University of Queensland, WeCook is a project designed by researchers looking at subscription-based services seeking to help to transform cooking and health for refugees in developing countries by providing access to electric cooking.⁵³⁰

To further understand how clean cooking can be achieved in displacement settings, further research and investment are needed: A number of practical recommendations on household cooking have emerged from practitioners, including highlighting the importance of raising awareness on clean cooking options, the need for sustainable and modern fuel and technology solutions to reduce negative health impacts from indoor

pollution from cooking, and developing holistic societal wide programming that includes both women and men.

Learning on Household Electricity

Responsibility for electricity in displaced households often sits within the shelter cluster remit, however, increasingly, other clusters such as health, WASH, and education have developed sustainable electricity programming for households.⁵³¹ Evidence suggests that:

- “As many as 7 million displaced people in camps have access to electricity for less than 4 [hours] a day.
- Energy expenditure for cooking and lighting by displaced people is estimated to be around US\$200 per year per household.
- Introducing improved cookstoves and solar lanterns could save US\$303 million annually in fuel costs after an investment of US\$334 million.
- A systematic approach to collecting data is needed to tailor appropriate and lasting energy solutions for refugees”.⁵³²

In the past, much attention was focused on displaced people's need for basic lighting.⁵³³ This resulted in considerable free distribution of solar lanterns in refugee settings.⁵³⁴ However, attention has now moved to consider the whole electricity needs of displaced people, including lighting, power, electricity for connectivity, wifi and appliances.⁵³⁵ This represents an important shift in the humanitarian energy sector, one which has started to take the energy needs of displaced people in their homes seriously. For example, UNHCR have committed to supporting a minimum of 200 watt-hours per household per day for refugees, which allows for lighting, electricity, and connectivity.⁵³⁶

Electronic Waste Management in Displacement Settings

Supported by NORCAP, GPA Coordination Unit has undertaken a study on e-waste management⁷⁷³ in displacement settings which defines e-waste from solar products, identifies several e-waste management tools for humanitarian organisations, highlights the importance of circular economy principles, lists an overview of key actors and ongoing projects, and provides a reflection on the findings and recommendations for stakeholders.

The GPA Coordination Unit, together with GIZ ESDS hosts the E-waste Management in Displacement Settings Task Force with IOM, NORCAP, UNHCR, and WFP, aiming to improve coordination and knowledge

sharing, build capacity of partners and stakeholders, engage in advocacy for action on e-waste in displacement settings, and develop pilot programmes at the country level. Ongoing pilots on e-waste management in displacement settings include:

- IOM project to establish of a battery repair and recycling centre, launch a learning platform for solar products, and development of procurement guidelines.
- GPA, UNHCR, Schneider Electric, and Electriciens sans frontières Green Innovation Centre for repair and recycling and vocational training for refugee and host communities.
- GIZ ESDS market-based e-waste collection pilot project in Rhino Camp, Uganda, and launch of Humanitarian E-waste Network.⁷⁷⁴

Learning on Household Electricity Interventions

Basic solar lantern provision only provides Tier 0 or 1 lighting solutions, which often does not align with national energy provision standards.

Tier 1 lighting provision does not meet household electricity needs or support local livelihoods.

Free distribution of products, especially solar lanterns, can damage refugee and IDP livelihoods in protracted situations where existing local energy markets already exist.

Household electricity often supports the creation of micro-enterprises run by displaced people in or near to their homes.

Practical Recommendation

- Design interventions to include electricity as well as lighting provision.
- If solar lanterns are distributed they should be Verasol⁵³⁷ approved and should also include mobile phone charging capacity.
- For electricity in households: Aim for Tier 3 or above and such access should be powered by renewable technologies.
- For heating and cooling in households: Ensure Tier 4 as a minimum and such access should be supplied using renewable technologies.
- Design of household electricity solutions should be market-based and align with existing local markets.
- Engage experienced energy professionals to conduct a market assessment before designing solutions.
- Household electricity programming should consider livelihood and business needs as well as basic home electricity use.

Grid connection or mini-grid connections for households have the potential to provide considerable access at a low cost for displaced people.

- Programme designers should consider connecting households to solutions for operational users of energy, for example through mini-grids or sustainable grid provision.
- Compare all possible options including grid, mini-grid, solar system, and take account of wider programmes, timescales and existing systems.

Table: Learning on Energy for Enterprises Interventions and Practical Recommendations.

As the number of initiatives focusing on improving energy access for displaced and host communities increases, so does the quantity of electronic waste (e-waste). This can create local environmental damage in displacement settings.⁵³⁸ The availability of electronic products such as solar lanterns, solar home systems, radios, televisions, mobile phones, torches and electric cooking systems is recognised as improving the quality of life in these settings.⁵³⁹ However, there is often no consideration to what happens when they break or after their expected lifetime. E-waste management practices are either absent in displacement settings or are not sufficient in eliminating or reducing health and environmental hazards due to leaking batteries or exposure to heavy metals. Most of the waste ends up unused: buried, burned, or informally disposed of on the ground.

A number of practical recommendations have emerged on household electricity needs. These recommendations cover both technology-focused learnings and recommendations on the process of developing household power programming.

Learning on Energy for Enterprises

Energy is essential for micro-businesses and SMEs run by displaced people. In many protracted refugee and IDP situations there are markets and businesses led by displaced people selling energy products and services for

households and other businesses. Energy for displaced livelihoods is a very under-researched topic and to date there is limited learning on this issue.⁵⁴⁰ EnDev has produced an analysis report on energy for micro-enterprises in displacement settings which suggests some core lessons on market creation and project implementation on energy for enterprises.⁵⁴¹ Lessons include that there is a need to understand energy needs for existing and potential livelihoods, across small businesses and subsistence agriculture, and animal husbandry practised by both refugee and host communities. In protracted settings, this is critical to reducing drudgery and increasing productivity and income generation opportunities within the settlement.

While investments in the energy needs of SMEs and displaced businesses is a relatively new topic, some core lessons have emerged from existing programmes.⁵⁴² There has been some initial learning on the finances and economies of refugee camps and displaced communities, demonstrating that local markets can support the development of self-reliant communities.⁵⁴³ For example, research at the University of Bristol has suggested that investment in solar systems can support business development in Rwandan refugee camps.⁵⁴⁴ Much of the learning to date has focused on how the energy economies of refugee camps function in protracted situations, and has suggested that local and refugee-led and IDP-led businesses are suppliers as well as consumers of energy. A number of core

recommendations have emerged to support the energy needs of displaced people, including that it is essential to analyse local and displaced economies before starting intervention planning,

and that working with local lenders and finance specialists can improve access to markets and business opportunities.

Learning on Energy for Enterprises Interventions	Practical Recommendations
<ul style="list-style-type: none"> • Energy for refugee and IDP livelihoods is often a neglected topic in humanitarian energy. 	<ul style="list-style-type: none"> • Include energy planning for livelihoods in response planning. • Analyse the informal economy to engage entrepreneurs and partner with grassroots business developers supporting entrepreneurs. • Design entrepreneurship programmes that target the specific needs of women entrepreneurs and address women’s energy technology and service preferences.
<ul style="list-style-type: none"> • Local businesses in refugee and IDP settings do not currently have enough energy to support their livelihoods or to develop self-sufficient communities. 	<ul style="list-style-type: none"> • For energy for enterprises: Aim for Tier 3 or above. Access to electricity should be provided for displaced businesses and such access should be powered by renewable technologies.
<ul style="list-style-type: none"> • Informal refugee- and IDP-led businesses often both provide and need considerable access to energy in protracted camp settings. 	<ul style="list-style-type: none"> • Local informal businesses should be supported and engaged throughout intervention design. • Engage experienced energy professionals to conduct a market assessment before designing solutions.
<ul style="list-style-type: none"> • Local markets can support the development of self-reliant communities. • Refugee energy economies often exist in protracted situations.⁵⁴⁵ 	<ul style="list-style-type: none"> • Work with local lenders to develop finance products adapted to local conditions and engage with the finance sector to understand local market conditions. • Raise awareness and marketing efforts for quality energy products and services. • Integrate feedback from demonstrations and testing of products to build trust and engagement. • Facilitate market linkage of local entrepreneurs with energy companies and local distributors. • Assess and present different proven business models to local entrepreneurs and financiers. • Identify efficient equipment for productive use to replace manual labour or inefficient appliances. • Ensure strong technology supply chain linkages and availability of spare parts, including servicing networks.
<ul style="list-style-type: none"> • Grid connection or mini-grid connections for enterprises have the potential to provide considerable access at a low cost for the businesses of displaced people. 	<ul style="list-style-type: none"> • Programme designers should consider connecting enterprises run by displaced-people within solutions for operational users of energy. For example through mini-grids or sustainable grid provision.

Table: Learning on Energy for Enterprises Interventions and Practical Recommendations.

Learning on Energy for Community Facilities

Public spaces and community facilities in displaced settings are often not electrified, or facilities are powered by costly and inefficiently operated diesel generators. Attempts to improve community facility energy access through top-down designed renewable energy interventions have often failed (for example due to a lack of management, security, maintenance and/or financing).

One of the most common interventions within community spaces has been the installation of solar street lighting in refugee and IDP camps. Solar street lighting interventions have often faced resistance in camp settings, and high levels of vandalism and breakdown have been reported. New research suggests that co-creation with communities can reduce some of these problems, but reliability remains a major challenge. For example the Humanitarian Engineering and Energy for Displacement (HEED) project installed 19 solar street lights across two displaced settlements: a refugee camp in Rwanda and an internally displaced population settlement in Nepal.⁵⁴⁶ There were no reported cases of vandalism or theft, but technical performance was poor due to: issues with LED drivers and lights, limited availability of parts at local markets, mismatching and low-quality components and cables, lack of supplier experience with non-standard components, and limited access for maintenance and cleaning.⁵⁴⁷

Considerable learning has emerged on public lighting and gender-based violence in displacement settings. Initially, one of the key arguments for public street lighting was that it helped to reduce incidents of rape in refugee camps. However, the majority of sexual and gender based violence against women and girls is domestic violence, which happens in or around their homes, rather than in unlit public spaces.⁵⁴⁸ While public lighting can increase the feeling of

safety within communities, it does little to reduce rates of violence.⁵⁴⁹ One suggested reason for this is that the perpetrators will still find a dark or private space to commit violence, and that behavioural and gender training is needed across communities to reduce such incidences.⁵⁵⁰ This is not to say that lighting of public spaces is not an important issue. Public lighting has many other benefits, including reducing rates of physical accidents in the dark and improving people's sense of well-being. Research by UNHCR suggests that: "For example, in Dollo Ado, Ethiopia, refugees communicate that household and community lights are important because they help expose snakes, wild dogs, and hyenas. Whereas in Damak, Nepal, refugees talk about the importance of light for reducing vandalism and theft. And, in Azraq, Jordan, refugees feel that without community level lighting, their life outside the shelter is restricted to daylight hours only" (UNHCR 2015, p1)⁵⁵¹. To expand the evidence base to aid decisions and policies about community energy services, the HEED project piloted several community solar energy interventions that encouraged refugees and internally displaced communities to become active participants in the energy planning and governance of these facilities.⁵⁵² Evidence such as this can support sector-wide learning about the value of energy and how electricity can improve life in displacement settings.

A number of critical recommendations on developing energy programming for community facilities have emerged from pilot programmes in recent years. For example, co-developing energy solutions with communities is essential, aligning the provision of public lighting with operational energy supply can reduce vandalism and repair issues, and sustainable energy solutions can offer cheaper alternatives than fossil-fuelled supply.

Learning on Community Facilities Interventions

- Public spaces and community areas, such as community halls, playgrounds and refugee governance spaces, are often a forgotten investment area and many of these spaces are without electricity access.⁵⁵³

- Solar street lights can be difficult to site and maintain in displaced contexts; they are difficult for communities to repair and clean, which creates investment challenges in providing street lighting interventions.⁵⁵⁴
- More than 80% of gender-based violence cases are domestic violence, which is not resolved by street lights.
- It is vital to work with communities to evaluate other mechanisms to make moving about at night safer.

- Water pumping is a key electricity need in displacement settings: systems can be aligned with national and institutional power provision to decarbonise electricity supply effectively.⁵⁵⁶
- There is a need for flexible and back-up systems that can adapt to rapidly changing water demands.

- Intermittent electricity and power shortages at health clinics and hospital cause major life-threatening problems in displacement settings.⁵⁵⁷

Practical Recommendations

- Include energy planning for public spaces in response planning.
- Engage experienced energy professionals to conduct a co-designed needs assessment before developing solutions.
- Co-create solutions to position refugees and IDPs as energy service users, maintainers, and suppliers of energy services.
- Invest in skills development to support community self-reliance.
- For community facilities: Aim for Tier 4 or above and such access should be powered by renewable technologies.
- Work with communities throughout the lifetime of a project to embed systems, so that communities can properly leverage newly available resources.
- Plan sustainable exit strategies before implementing a project.

- Plan for site access and mitigate access limitations to install and maintain systems.
- Ensure that the design stage takes account both of desired functionality and implementation challenges and opportunities.
- Develop robust data monitoring, handling and analysis approaches to take into account scheduled and unscheduled downtimes, which are likely to be numerous and challenging to track over a long analysis period.⁵⁵⁵
- Engage experienced energy professionals to conduct location and needs assessments before developing solutions.
- When designing public lighting systems, consider powering street lights from central sources, connected to operational facilities: if multiple lights are to be installed it is likely to be cheaper to install and maintain a centrally connected system, with lower risk of vandalism.

- Align provision of power for water pumping and WASH facilities with operational sustainable energy provision: consider combining power sources for operational, community, household and business users where feasible.
- Support renewable and hybrid solutions to reduce water trucking and emissions associated with water pumping.

- Power hospitals and health clinics with operational sustainable energy provision, using renewable and hybrid solutions to reduce emissions where possible.

Table: Learning on Energy for Community Facilities and Practical Recommendations

Learning on Energy for Institutions and Operations

Increasingly, attention is being paid to the energy used by institutions and operations within humanitarian spaces. Currently many humanitarian operational spaces, such as offices and compounds, have electricity. Much of this is powered by fossil fuels and has considerable costs and carbon emissions. GPA analysis suggests that, “based on feedback from six UN organisations and ICRC, (...) there are currently more than 11,000 generators in use around the world. (...) initial conservative estimates are that humanitarian agencies spend more than US\$100 million on fuel per year, emitting almost 200,000 tonnes of CO₂”. (GPA 2022, p1) ⁵⁵⁸.

Humanitarian agencies are paying too much for the energy they consume. The ‘Costs of Fuelling Humanitarian Aid report by Chatham House suggests that the humanitarian sector “could save at least 10 per cent of fuel costs on ground transport, 37 per cent through behaviour change and more efficient technologies, and 60 per cent on generation – all using currently available, affordable and proven practice and technology changes. At current prices, this could mean operational savings of over US\$517 million a year for the humanitarian sector, roughly equal to 5 per cent of UNHCR’s funding gap for 2017”(Grafham and Lahn, 2018, p1)⁵⁵⁹. A toolkit accompanying the Chatham House report suggests quick wins and a practical guide for humanitarian operations wishing to reduce their carbon footprint and make costs on energy savings.⁵⁶⁰

There are a number of advantages of switching to renewable and hybrid solutions in displacement settings. An example of the switch to renewable energy solutions is provided by the Humanitarian Hub in Malakal, South Sudan, which is managed by IOM.⁵⁶¹ The Hub serves

300 humanitarian workers from 34 organisations and uses solar electricity from a hybrid solar power plant to meet 80 per cent of its electricity needs. Previously, the Hub was using 1,200 litres of diesel per day and this consumption is now considerably reduced. Energy costs are reduced by an estimated 18 per cent, alongside a significant reduction in CO₂ emissions and noise pollution. The solar power plant was developed by Scatec Solar and Kube Energy, was partially funded by the UK government, and demonstrates the type of decarbonisation opportunity that can be provided by bringing together the private sector, humanitarian agencies, and energy expert partners.

The GPA and partners have undertaken considerable research into the types of emissions⁵⁶² and solutions possible for institutional energy users.⁵⁶³ From this analysis, a number of lessons have been learned and recommendations have emerged:

- Where systems are owned by a humanitarian organisation, their operation and maintenance should be undertaken by a specialist third party to reduce downtime. Some form of savings account should be developed for the purchase of spare parts.
- Many systems are too small and remote to be of interest to the private sector if tendered piecemeal. Consideration should be given to bundling projects across an operation or region.
- Humanitarian organisations should consider the risks associated with only tendering the largest most commercial systems, which may result in the less commercial systems requiring grant funding or an expensive private solution; consideration should be given to bundling them together and having one company manage and maintain all systems.
- Where practicable, opportunities to anchor

renewable energy solutions that provide access to displaced and host communities should be considered.

- Technical energy efficiency measures should be considered before installing a renewable energy solution, the costs of which could be incorporated into a power purchase or leasing agreement.
- Given the expected increase in the value of carbon credits over the coming years, consideration should be given to their role in generating additional revenue to decarbonise humanitarian activities.

A number of practical recommendations are also suggested within the GPA Mapping Indicators for Humanitarian Energy Access and the Decarbonisation of Operations report (2021),⁵⁶⁴ which are outlined below. For example, humanitarian organisations and partners might consider switching to paying for energy as a service rather than operating and owning hardware, and that moving from grant-based to market-based models can reduce the costs of supplying energy, and that creating a culture of energy efficiency can reduce energy burdens within operations.

Learning on Institutional Energy Interventions

Practical Recommendation

<p>Slow progress is being made to decarbonise humanitarian operations, the sector is not on track to meet SDG 7 by 2030, emissions from the humanitarian sector are driven by energy use and continue to rise.</p>	<ul style="list-style-type: none"> • Humanitarian organisations should set targets for phasing out diesel for electricity generation across operations. • Humanitarian organisations should set a target and a timeline for improving the efficiency of agency fleet vehicles, and for investigating how plane, car and truck journeys can be reduced. • For institutions and operations: Aim for Tier 5 or above access for electricity powered by renewable technologies, and clean cooking solutions for humanitarian operational needs.
<p>Renewable and mini-grid solutions can support low-carbon reliable, low-cost solutions in humanitarian settings.</p>	<ul style="list-style-type: none"> • Advocate for the promotion of renewable energy as primary sources and when selecting back-up solutions, choose renewable energy options, such as solar PV (with storage). • Give preference to hybrid or fully renewable mini-grids where other options are unavailable, use renewable standalone decentralised electricity generation (e.g. solar PV instead of diesel generators).
<p>Providing energy for free or at low cost does not work. Grant subsidies can support alternative parts of the energy delivery chain, but need to be market-based and planned.</p>	<ul style="list-style-type: none"> • Move from grant-based delivery models to market-based models. • Use innovative financing approaches and blended financing. Report online here.⁵⁶⁵
<p>Measuring energy consumption and investing in energy efficiency measures are essential to drive forward progress on institutional access.</p>	<ul style="list-style-type: none"> • Install energy metering systems to monitor consumption. • Create a culture of energy efficiency by choosing energy-efficient appliances, creating appropriate incentives and providing training.
<p>Detailed data and mini-grid design are complicated. Further evidence and lessons online here.⁵⁶⁶</p>	<ul style="list-style-type: none"> • Hire expert energy partners and suppliers to undertake a feasibility and design assessment to support low-carbon energy transition for operational and institutional energy provision: conduct a co-design and end-user needs assessment before developing solutions.

Table: Learning on Energy for Institutional End-Users and Practical Recommendations.

Practical Tools and Resources

A number of key tools have emerged to support sectoral learning and guide the development of humanitarian energy activities. For example, the International Lifeline Fund (ILF) has produced a practitioners guide to support the design and implementation of programming. Energypedia has also created a Preparation Guide for a Sustainable Energy Project in Refugee Settings, which can also be applied in many internally displaced or migration settings.⁵⁶⁷

Across the humanitarian energy sector there is now an increasing number of tools and resources available for practitioners. For example, the GPA provides links to a number of research results and key tools on its website.⁵⁶⁸ Key resources are also provided by the Moving Energy Initiative toolkits⁵⁶⁹ and Energypedia Humanitarian Energy Portal.⁵⁷⁰

Key Publication: International Lifeline Fund – Energy in humanitarian Settings Guide⁷⁷⁵

The International Lifeline Fund (ILF) has developed a guide for practitioners and funders in the humanitarian energy field. ILF describes this guide as an evolving tool to help keep practitioners and funders on track towards developing and implementing a respective energy initiative – improving impact, lowering risk and increasing the sustainability of targeted results.

The guidance shared in the document has been developed from the collective learnings and experiences of Lifeline’s team throughout more than 15 years of work in post-conflict, displacement, and emerging market settings.

The document outlines basic guiding principles and shared values, provides a table of common mistakes and effective, just approaches to take in their place, and includes a pre-assessment checklist for the design and implementation of energy interventions.

Topic

Practical Tools and Resources

Governance and Issue Resources	<ul style="list-style-type: none"> • Humanitarian Energy Exchange Network (HEEN) for field practitioners link. • GPA website, newsletter and online resources link. • Humanitarian Energy Practitioners Network link and Twitter account link. • Energypedia Humanitarian Energy Portal and learning resources.
Policy and Advocacy	<ul style="list-style-type: none"> • GPA policy framework link. • Key success factors and obstacles for FAO energy projects in humanitarian settings. Link. • Chatham House briefing on Effective Engagement with Host Communities. Link. • Chatham House briefing on Private-Sector Engagement The Key to Efficient, Effective Energy Access for Refugees. Link.
Finance and Funding Tools	<ul style="list-style-type: none"> • GPA report on Blended finance link. • GIZ and GPA report on Identification and analysis of standard clauses of PPA and leasing agreements for energy provision in the humanitarian sector. Link.

Training and Capacity Building for Energy Access Programme Design	<ul style="list-style-type: none"> • Energypedia knowledge sharing webinars link. • WFP Energy Delivery Models training link and blog link. • The Solar Hub: WASH website and training resources. Link.
Implementation Guides	<ul style="list-style-type: none"> • EnergyPedia, 2022. Preparation Guide for a Sustainable Energy Project in Refugee Settings. Link. • ILF - Energy in humanitarian settings a guide for practitioners & funders. Link. • EEMRG Inclusive Energy Access in Emergencies: A Handbook for Humanitarians (link) • Compendium - Protection-sensitive access to clean cooking. Link.
Energy Assessments	<ul style="list-style-type: none"> • IOM Energy Needs Assessment Framework. Link. • IASC Matrix on Agency Roles and Responsibilities for Ensuring a Coordinated, Multi-Sectoral Fuel Strategy in Humanitarian Settings. Link. • IASC Decision Tree Diagrams on Factors Affecting Choice of Fuel Strategy in Humanitarian Settings. Link. • The HEED Renewable Energy Recommendations Tool. Link.
Energy Research, Data and Indicators	<ul style="list-style-type: none"> • GPA Research concepts report link. • GPA data sharing and analysis workshops link. • GPA Indicators mapping report link.

Table: Practical tools and Resources within the Humanitarian Energy Access Sector

Issue Analysis: Inclusive Action to Support Delivery of Sustainable Energy Solutions

Inclusive Action

Moving forward, it is vital to place the voices and knowledge of refugees and forcibly displaced people at the heart of global and national decision-making on energy policies in humanitarian contexts.⁵⁷¹ While some displaced and host community members demonstrate considerable knowledge and skills on sustainable energy, policymaking and programming, they have not been adequately included in the development of the humanitarian energy sector. Context-informed individuals with lived experience of displacement often hold an understanding of the needs and possibilities for energy transitions in a way that external humanitarian actors cannot. Beyond refugees as one important group of actors, the voices of internally displaced people (IDPs), migrants and asylum-seekers could and should be more meaningfully reflected in international decisions on the clean energy transition. The livelihoods and informal economies of displaced communities often require substantial levels of energy and are often neglected by traditional forms of humanitarian interventions. Displaced businesses are often left to secure and provide these resources independently.⁵⁷² As a result, most action on humanitarian energy is not currently informed by the lived experience or practical realities of displaced communities.

Integrated, decentralised planning that is sensitive to local cultural customs, values and norms is key in the formation of successful models for humanitarian intervention. The successful delivery of sustainable energy solutions depends on the involvement of local communities, those most affected by any decision taken on energy activities or a potential energy transition. It is imperative that the humanitarian sector engage with

those communities through a co-management framework. Co-management practices must be organised such that communities of concern are involved in any projects or initiatives from the initial stages of the decision-making processes. Rather than consult with the displaced and host communities after the implementation of prospective solutions, their participation should take place when multiple futures are still possible.

Often, humanitarian interventions are piloted through the development of a project pipeline proposed by humanitarian and aid actors. A promising and necessary adjustment to this approach would be to simply ask the communities what they need before taking or suggesting any action. Humanitarian response mechanisms should work to act more in response to the shared experiences and requests of the affected communities. A proposal that is not wanted or experienced as a solution by the affected community will not be successful in the long term. Interventions led by displaced people and community-based energy planning will play an increasingly important role in improving energy access in displaced settlements. Amplifying the voice of refugees and internally displaced people in the design, deployment and maintenance of energy systems will transition thinking towards energy as a common resource that can respond to the socio-economic-political complexities of improving energy access in refugee camps.

Many refugees and displaced people will have useful knowledge and experience. Some will have been technical experts or sector leaders in their home countries. But discriminatory approaches towards the displaced can mean that their previous experience is not considered. As one displaced community member noted, “it

took a while to understand why once a person is displaced they lose all their dignity. However, when I arrived at the camp, like any newly arrived refugee, ‘senior’ refugees introduced me to a concept about the logo of UNHCR that portrays a person with a head but with cut hands and legs. Until I had a considerable lived experience as a refugee interacting with those who claim to support refugees, that is when I understood the meaning of what the ‘seniors’ told me during my first days in displacement. As refugees, we face limitations in our visions and we are excluded from the socio-economic life. We are not involved even in issues that concern us. When the street light project was introduced into the camp, there was no meaningful participation of refugees as key stakeholders other than working as

casual labourers for the contractor. The street light project was an excellent one with a direct measurable impact on the lives of refugees in the camp where refugees do not have the right to access the national electrical grid. However, the same beneficiaries of that energy project vandalised the equipment mostly because there was a lack of ownership by the beneficiaries. The narration around the refugee person with a head but with cut hands and legs is perceived that as refugees we have no means to do anything even for ourselves thus excluded in humanitarian programming.”

To overcome these issues, there is a need for inclusive action within the humanitarian energy sector.

The Need for Inclusive Action

“On average a refugee spends 17 years in a camp before they can attain a lasting solution. Humanitarian agencies, including the energy sector, should reconsider the position they attribute to refugees for their involvement in projects that target them to define a path to sustainability. The current displacement situation is a complex one with over 26.6 million refugees in need of a durable solution. This fact highlights the need to consider refugees as key actors in efforts to design energy solutions to support their livelihoods for self-reliance.

“The inclusion of refugees in the energy sector in displacement is very important. The level of energy expertise might be low in refugee communities, but the living experience is a crucial and valuable asset that energy practitioners can build upon to make a meaningful impact in the refugee communities. Poor consideration of the refugees’ capability, knowledge and skills in the development of the energy projects partially justify the collapse of multiple energy projects in the displacement context. It is unfortunate how the level of engagement

systematically limits refugees, as the approach of humanitarian programming is more of considering refugees as beneficiaries and not key players in this field. The refugees’ sentiment toward energy projects is not widely extended in the energy sector because refugees are considered outsiders rather than insiders in the energy space.

“The engagement with refugees doesn’t go beyond dry conversations that occasionally happen on the ground about existing energy projects on which they don’t have clear and enough information. The approach in the energy sector does not build the capacity of targeted communities to allow them to sustain the projects after the funding period. Energy projects in displacement are rather tailored to run with the involvement of the ‘providers’. The opinion of the refugees on energy projects have often been paraphrased in reports and debates as if refugees are invisible creatures who can’t speak for themselves. Refugees lack agency in the energy sector at the local and international level, less in the policy and high-level discussions where refugees are the main agenda.”

Refugee Living in Kenya.

Inclusive Humanitarian Energy Programming and Interventions

Truly inclusive and embedded programming with displaced people requires doing things differently in humanitarianism: Raise funding, budget and plan from the start to hire displaced people to support the planning, implementation, evaluation and policy activities supporting energy interventions.

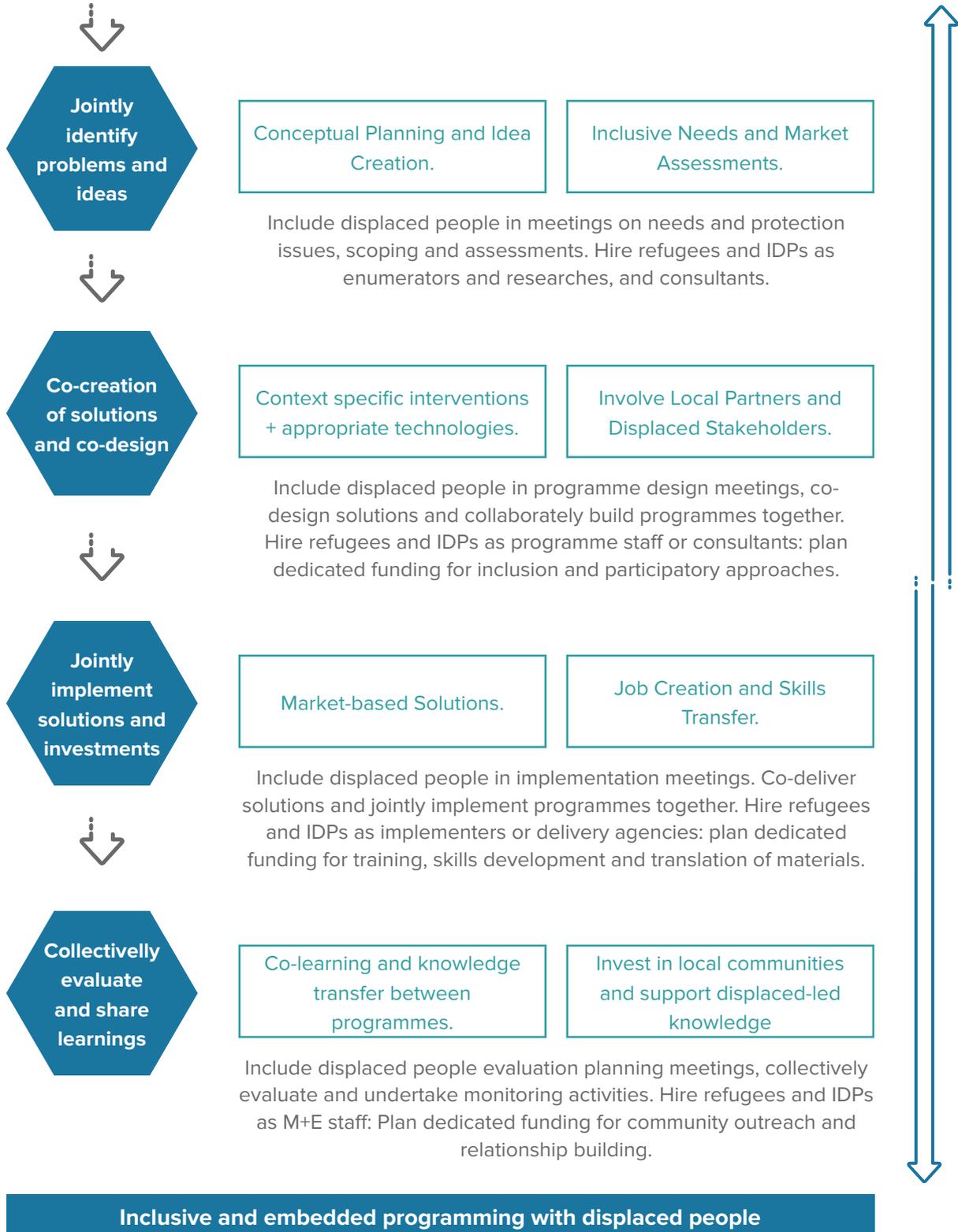


Figure: Inclusive Humanitarian Energy Programming and Interventions

Refugee-Led Action to Support Practitioners in Learning

“I believe that there are so many things that both refugee leaders and energy practitioners can learn from each other. The exchange of knowledge and expertise is needed to address key challenges that forcibly displaced people are facing because of limited or no access to energy. Meaningful cooperation and mutual support between refugees and energy practitioners are essential to developing efficient energy solutions in displacement settings.”

Refugee Living in Kenya.

Previous analysis suggests that displaced people should “not be regarded as helpless beneficiaries but as agents of change with talents and valuable skills. Solutions should build on local skills and capacities and achieve a compromise between technical efficiency and culture appropriateness” (Rosenberg-Jansen et al, 2018, p16)⁵⁷³:

- Displaced people know their own needs and should be involved in every stage of humanitarian energy policy, planning, design and implementation: participation in programming must be meaningful.
- Energy needs and market assessments should be undertaken before developing humanitarian energy projects or programmes.
- Organisations operating in refugee camps can promote beneficiary inclusion and bottom-up approaches. Challenges such as sample bias and lack of trust must be overcome through alternative methods.
- It is vital to build holistic relationships with the community and promote inclusion through informal engagement and job creation.

- Participatory approaches should be regarded as upfront investments that will lead to sustainable solutions in the long run.
- All actors need to be integrated into well-functioning communication networks to improve vertical and horizontal collaboration.
- Organisations should mitigate the potential risk of exploitation that might arise from market-based approaches: working with local communities to understand existing local markets and displaced livelihoods.
- Solutions must be context-specific and culturally appropriate, as one-size-fits-all has proven to be highly unsuccessful.
- Energy service programmes should incorporate existing local knowledge while facilitating skills transfer through education and training sessions.

Future: An Inclusive Humanitarian Energy Sector

In order for SDG 7 to be reached inclusively of displaced people, progress on energy access in refugee and IDP settings must accelerate rapidly: such progress must be progressive and radically inclusive. Without such approaches, displaced people will always be viewed as beneficiaries rather than decision-makers: a change in language is needed to support systemic reform of the humanitarian system to work ‘with’ displaced people, not ‘for’ them.

Overall recommendations to support practical inclusive delivery within the sector⁵⁷⁴:

- Build a bottom-up inclusive sustainable energy system to ensure access for all displaced people: Ensure priority involvement of displaced people, host communities and host governments from planning to implementation of sustainable energy interventions. Hire displaced people and host community members within humanitarian energy programming and policymaking.
- Be site-specific in response planning: Practical solutions and expert energy partners are available to support the humanitarian sector in delivering sustainable energy access and decarbonising energy infrastructure. Develop context-appropriate solutions, no one-size-fits-all approaches, as energy is not an end in itself, but a means to enable human development. Promote recovery, self-reliance and livelihood opportunities.
- Align progressive inclusive approaches on energy with key response issues: Progressive action must be inclusive, working with displaced people at every stage of response: facilitating jobs and livelihoods for refugees, internally displaced people, migrants and host communities. Learning on how to develop

inclusive interventions and delivery models is still at an early stage and investment will be needed to develop more research and successful case study examples of such approaches. In developing inclusive delivery, it is important to: integrate gender-sensitive approaches and work directly with displaced people, focus on local solutions and financial sustainability, adhere to the ‘do no harm’ principle, and ensure consumer protection measures are in place if using market-based approaches.

- Promote the adoption of inclusive policies: At the state and organisational levels, do not discriminate against displaced people. Leverage awareness and scholarship efforts for displaced people to address their isolation and marginalisation in the energy sector. Facilitate the integration of the displaced population in their host community as full members so they can meaningfully participate and contribute to reforms and innovations in the energy sector.

09

CONCLUSIONS: DRIVING FORWARD ACTION IN HUMANITARIAN ENERGY

Chapter contributing co-authors: Thomas Fohgrub and Sadiq Zafrullah at UNITAR GPA, and Ziad Ayad at UNHCR.

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Concluding Thoughts: Sustainable Energy to Deliver Climate Action in Displacement Settings

The Scale of the Challenge

The world faces a growing humanitarian challenge: UNHCR's 2022 Global Appeal highlights that there are now over 102 million persons of concern who are forcibly displaced from their homes by multiple emergencies and protracted conflicts.⁵⁷⁵ This is a growing crisis, with currently over 21.7 million people forced over borders as refugees, 52.1 million people internally displaced within their own countries, 4.7 million asylum seekers, 4.7 million returnees, 4.6 million stateless people, and another 14.4 million persons of concern. The current Russia–Ukraine crisis and ongoing conflicts in countries such as Yemen and Syria drive these figures up daily.⁵⁷⁶ The majority of displaced people lack access to clean cooking solutions and adequate modern electricity to meet their daily needs.

The scale of the energy challenge facing the humanitarian system is considerable and the realities of living without energy access are extreme.⁵⁷⁷ Many people in displacement contexts still cook over three-stone fires and live in darkness at night. Enterprises run by displaced people are often unable to access the energy they need to run their businesses. Community facilities such as schools, hospitals, WASH facilities, and refugee community spaces are without reliable power. Humanitarian facilities such as offices, compounds and registration spaces in off-grid areas are powered by expensive and polluting diesel and other fossil fuel-based systems. These factors pose substantial protection risks to displaced people globally, cause additional financial and environmental pressures on humanitarian agencies and host communities, and contribute to global climate emissions.⁵⁷⁸ COVID-19 has worsened pressures on

humanitarian energy provision, both in the short term, as electricity for health clinics and cooling technologies for vaccine refrigeration have largely been unavailable, and in the long term, as displaced communities may face a harder journey for recovery without access to energy.⁵⁷⁹

The scale of the humanitarian challenge is also a geographic one as energy access levels and costs differ considerably between regions. Some displaced communities in Iraq and Jordan have enough energy to power household needs for at least 16 hours a day.⁵⁸⁰ While in Rwanda and Kenya, the majority of refugee homes and businesses access only Tier 0 or 1 energy provision – enough to power a few light bulbs and maybe charge a mobile phone once a day.⁵⁸¹ Ensuring access to clean cooking has proven even more complex, with the majority of displaced people without access to affordable, sustainable solutions.⁵⁸² Though the energy picture for displacement contexts is a highly varied one, the pattern throughout is clear: the majority of displaced people do not have access to affordable, reliable or sustainable modern energy.

To change this picture, the humanitarian system has made international commitments to improve the lives of displaced people, through the Grand Bargain and the Global Compacts for Migration and Refugees.⁵⁸³ The landscape of humanitarian energy has evolved rapidly over the past ten years with a proliferation of institutions and organisations working on sustainable energy for displaced people.⁵⁸⁴ A considerable number of new policies and projects have been created since 2015 which provide hope that progress will be made.⁵⁸⁵ As the landscape of humanitarian energy swirls and simmers, five core issues have risen to the top of the agenda.

Five Core Sustainable Energy and Climate Action Issues

- 1. Climate Action and Sustainable Energy are Interdependent:** Urgent action to address the climate crisis is needed within humanitarian settings. Sustainable energy is a key part of this picture. The International Energy Agency estimates that two-thirds of all emissions come from the energy sector:⁵⁸⁶ emissions from fossil fuel-based energy supply drive both local pollution and the global climate crisis.⁵⁸⁷ Recent political action, such as the UNHCR and GPA Clean Energy Challenge, demonstrates momentum on sustainable energy issues.⁵⁸⁸ The creation of the UN-led Global Platform for Action on Sustainable Energy in Displacement Settings (GPA) has made collective action possible since 2018, highlighting the need for coordination and global policy action on this topic.⁵⁸⁹ In addition, many leading humanitarian organisations have issued strategies on how to react on the climate crisis and how to green their own infrastructure, such as UNHCR with its Strategic Framework for Climate Action.⁵⁹⁰ The rapid evolution of humanitarian energy policy demonstrates the increasing demand for sustainable energy access in displacement settings. But much more must be done if the sector is to meet global climate goals and deliver SDG 7 on sustainable energy in displacement settings.
- 2. Funding for Coordinated Action and Long-Term Planning is Essential:** Despite the achievements of a few humanitarian energy projects in providing energy access to some refugee communities, by and large the systemic challenges remain. Donor investments and funding for individual energy projects have increased access to energy in some locations, but have not fundamentally changed the situation, as most refugees and displaced people still lack access to modern

energy and the demand is growing. Learning from these experiences, it is now important to recognise the need to change and challenge the humanitarian system to provide sustainable access to energy for displaced people. Donors have a critical role to play in the humanitarian energy system, not only in providing funding, but by advocating for systemic change within aid and development priorities and, for example, through opening existing energy programmes to displaced populations. Funding coordinated action for long-term sustainable investments will be essential to address the scale of the humanitarian energy issue.

- 3. Data and Expertise are Critically Under-Resourced:** There is a considerable shortage of technical advice and experts, limited knowledge or data to measure progress, and analysis to support the development of sustainable humanitarian energy projects is severely lacking.⁵⁹¹ Still in 2022, the sector is lacking the empirical quantitative data to know how many displaced people have access to energy, what level of energy access they have if they do, and how much that access costs at the individual and institutional levels.⁵⁹² Without this data, the achievements of implementation projects and overall global progress⁵⁹³ cannot be evaluated, nor can investment plans be adequately developed. Lack of data is one critical element of this problem, but it is matched by a shortage of energy expertise within the sector. There is not just a lack of technical expertise, but, equally important, expertise to design market-based delivery models is lacking. Many humanitarian organisations do not have dedicated energy staff, and capacity within HQ operations is often very limited. There is an urgent need to fund data collection and analysis, and simultaneously undertake long-term fundraising for technical capacity building

within the sector.

4. New Forms of Delivery and Alternative Partnership are Essential: there is a critical need to do things differently within the humanitarian sector. The climate crisis requires urgent and immediate action to reduce greenhouse gas emissions, and providing energy access for displaced people requires a much longer perspective beyond short-term-emergency response. Working in innovative partnerships with specialist energy organisations can support such change.⁵⁹⁴ Many agencies have adopted such an approach and have outlined their plans to work through partnerships and alternative delivery models. For example, UNHCR developed its dedicated Global Strategy for Sustainable Energy in 2019, highlighting that the agency has a “catalytic role within the energy sector, advocating for, and where possible facilitating, sustainable access to energy in displacement settings”.⁵⁹⁵ Despite some progress across agencies on new modes of delivery, there remains a systemic challenge in providing energy for displaced people by humanitarian agencies and host governments when working through traditional humanitarian systems.

5. Implementation at Scale will Require Additional Funding: There are signs of hope for larger scale-up and implementation projects. The Energy Solutions for Displacement Settings (ESDS) programme run by GIZ and UNHCR in Uganda, Ethiopia and Kenya is making real and long-term progress, with the first country-wide energy plan in Uganda.⁵⁹⁶ Similarly, in Bangladesh, UNHCR has implemented a large-scale clean cooking programme using LPG for Rohingya refugees.⁵⁹⁷ These projects provide examples of how it is possible to link energy access needs with climate change debates, plans for greening humanitarian infrastructure, and

national development planning. Currently the ongoing costs of these programmes are high, and sustainability planning is very difficult. As a result, much more investment is needed to demonstrate how sustainable energy programming can transform local communities and suggest alternative delivery models across the sector. To support systemic change on supplying sustainable energy solutions, considerable donor funding could be available. For example, the IKEA Foundation has committed to providing €700 million between 2015–2023 for projects that focus on climate change and the reduction of carbon emissions.⁵⁹⁸ There is vast potential within such funding to support refugees and IDPs alongside host communities and national development mechanisms, to ensure that displaced people are not left behind in the global sustainable energy transition.

Recommendations to Support Climate Action and Sustainable Energy Delivery in Displacement Settings

This report has outlined a number of recommendations and actions to drive forward change on sustainable energy programming, policy, and practice in humanitarian settings. From increasing coordinated action on energy needs, to developing progressive policies and supporting national host country governments, to securing innovative funding and developing new delivery models, to increasing the data and evidence available, urgent action is needed across many issues. As Andrew Harper, Special Advisor to the High Commissioner for Refugees on Climate Action, commented: “we have to be bold. We have to not just focus on workshops and seminars or pilots but look at scaling best practices from around the world” (Harper 2019, p1)⁵⁹⁹. Global advocacy and practical recommendations are now required to drive

forward climate action and to deliver sustainable energy access for displaced people.

Topic	Advocacy Issue	Recommendations
Coordination and Governance	<ul style="list-style-type: none"> • Substantial investment is required to embed sustainable energy within humanitarian response, dedicated support is needed for coordination and advocacy for policy change and increased resources. • Collaborative working is essential to deliver sustainable and long-term change. Individual actions and stand-alone programmes by agencies will not deliver change at scale. • Alternative partnerships that collaborate beyond the traditional humanitarian mechanisms are required to deliver energy access. 	<ul style="list-style-type: none"> • Dedicate funding for coordination: Donors to invest in long-term, multi-year, adaptable funding with resourcing for core coordination functions. • Work in partnership: Develop and deliver programmes and investments using substantive co-design with partners and displaced people. • Actively coordinate and share learning: Donors and programmes to openly and publicly share knowledge, data, evidence and reflections from their programming. • Mainstream sustainable energy response: Cluster leads should mainstream transformation on sustainable energy solutions within their activities.
Policy and Advocacy	<ul style="list-style-type: none"> • There has been some progress on policy at the global, national and local levels and within some humanitarian partners. • Progress on delivering access to sustainable energy and transitioning to cleaner energy sources in infrastructure is still highly limited. • The majority of the world’s displaced population still live without access to sustainable, reliable, affordable or modern sources of energy. • Sustainable Development Goal 7 is highly unlikely to be achieved in displacement contexts by 2030. 	<ul style="list-style-type: none"> • Support progressive national and global policy-making: Host countries to be supported to include displaced populations in national and regional energy planning, in line with the Global Compacts on Migration and Refugees. • Reduce emissions levels: Organisations should commit to a clear timeline and investment plan to reduce greenhouse gas emissions related to the use of diesel generators. • Set measurable targets to measure progress: Setting short-term targets for 2025, medium-term targets for 2030, and long-term targets for 2050 can provide accountability and demonstrate progress. • Advocate for inclusive change: Donors and other energy stakeholders to firmly include displaced people in the ‘leave no one behind’ agenda.

Funding and Financing

- Alternative forms of funding are needed to finance the supply of sustainable and renewable energy in displacement contexts.
- Innovative financing mechanisms and collaboration with the private sector can enable new ways of working, but institutional changes within agencies and collaboration with local markets are necessary to support such progress.
- Free distribution of energy products in protracted situations can damage local markets and reduces self-reliance opportunities for displaced

- **Increase of donor funding:** Donors should consider cross-sectoral funding of energy programmes and include displaced people in existing broader energy programmes.
- **Make use of new financial mechanisms:** Organisations should collaborate and learn about new innovative financing and alternative funding structures, such as blended finance, cash-based transfers and vouchers for energy.
- **Use market-based approaches:** Organisations should align with local markets and in protracted situations support private-sector provision of energy services for long-term sustainability, for example, potential carbon financing support for clean cooking solutions.
- **Use holistic approaches:** Organisations should identify financial synergies in the decarbonisation of existing energy infrastructure and electricity provision for displaced people.

Delivery and Capacity

- There is a critical deficit for funding of energy delivery staff and expert technical capacity on energy within the humanitarian sector.
- Urgent resources are needed at the local, national and global levels to ensure low-carbon delivery is possible.
- There are many complex delivery models and implementation mechanisms which require new research to facilitate more effective implementation.

- **Collaborate with expert energy partners:** While core staffing is needed within agencies, humanitarians cannot deliver sustainable energy approaches alone – working with expert NGOs and energy suppliers is essential. Organisations should invest in energy expertise providers, such as NORCAP or GIZ, to support capacity.
- **Develop new sustainable delivery models:** The GPA and World Food Programme delivery models training is available to kickstart innovative delivery processes.

Evidence and Data	<ul style="list-style-type: none"> • There is limited reliable data within the sector. New data and analysis can guide sustainable programming with clear evidence. • Practical progress and systemic reform of humanitarian energy cannot take place without high-quality data. • Inclusive and targeted research is necessary to work with displaced communities and their hosts and generate evidence to inform systemic change. 	<ul style="list-style-type: none"> • Develop a global baseline for energy access: Core funding for data collection and analysis on most of the world's displacement sites is needed to measure progress towards delivering SDG 7 by 2030. • Invest in new research and evidence: Organisations should support the development of new data on humanitarian energy needs and programming. • Utilise and build inclusive evidence structures: New evidence on humanitarian energy must be developed with displaced people.
Climate Action and Decarbonisation	<ul style="list-style-type: none"> • The effects of climate change are already being felt in displacement contexts and all stakeholders must act immediately to reduce their greenhouse gas (GHG) emissions. • In order to reduce its contribution to the global climate crisis, the humanitarian sector must invest in energy efficiency as well as renewable and low-carbon sources of energy. • Efforts to achieve SDG 13 on climate action can spur direct action towards SDG 7 on sustainable energy as a means to reduce emissions, and unlock climate financing to make these a reality. • Policy action and international commitments can motivate local and national change. 	<ul style="list-style-type: none"> • Action to address climate change must happen now: A rapid and sector-wide scale-up of sustainability interventions is necessary to stand a chance of meeting organisational or national GHG reduction targets by 2030. • Leverage sustainability targets to catalyse large-scale implementation: Organisations could capitalise on political and organisational commitments to reduce emissions by identifying the ways in which energy efficiency and sustainable energy can support GHG reductions. • Link sustainability with operations: Organisations should support the alignment of decarbonisation of energy infrastructure with the provision of energy for displaced households and businesses. • Raise political ambitions on supporting climate action: For example, by adopting the Climate and Environment Charter for Humanitarian Organizations.

Practical Tools and Inclusive Action

- Practical solutions and expert energy partners are available to support the humanitarian sector in delivering sustainable energy access and decarbonising energy infrastructure, for example, through resources developed by the GPA and partners.
- Progressive action must be inclusive, working with displaced people at every stage of response, facilitating jobs and livelihoods for refugees, internally displaced people, migrants and host communities.
- Without such approaches, displaced people will always be viewed as beneficiaries rather than decision-makers or customers. A change in language is needed to support systemic reform of the humanitarian system to work with displaced people as partners.
- **Open-source collaboration:** Continue and expand the use of open-source-platforms, such as Energypedia to distribute results and offer training for interested stakeholders.
- **Build a bottom-up inclusive sustainable energy system:** Ensure priority involvement of displaced people, host communities and host governments from planning to implementation of sustainable energy interventions. Hire displaced people and host community members within humanitarian energy programming and policy-making.
- **Be site-specific in response planning:** Develop context appropriate solutions, not one-size-fits-all approaches, as energy is not an end in itself, but a means to enable human development. Promote recovery, self-reliance and livelihood opportunities.
- **Align progressive inclusive approaches on energy with key response issues:** Integrate gender-sensitive approaches and work directly with displaced people. Focus on local solutions and financial sustainability. Adhere to the 'do no harm' principles and ensure consumer protection measures are in place if using market-based approaches.

<p>Energy for Households</p>	<ul style="list-style-type: none"> • 94% of displaced people in camps do not have access to electricity and 81% rely on firewood and charcoal for cooking. • A step-up in investment is needed to move to cleaner cooking options to meet World Health Organization guidelines: Tier 4 for indoor emissions from stoves is a minimum for improving health outcomes. • Basic solar lantern provision only provides Tier 0 or 1 lighting solutions, which often do not align with national energy provision standards. • Free distribution of products can damage livelihoods in protracted situations where existing local energy markets already exist. Extremely poor people within displaced communities may need additional cash-based support. • Power demand will grow once electricity is available; designing scalable solutions is necessary, which may also include displaced people paying for additional services. 	<ul style="list-style-type: none"> • Conduct a full needs assessment before designing solutions. • Develop market-based solutions for electricity and cooking interventions, where possible. • Cash-based assistance can also be used to support the extremely poor and most vulnerable displaced people, who may be unable to access markets without support. • Design interventions to include electricity as well as lighting provision. Solar lanterns should also include mobile phone charging capacity. • Design of household electricity solutions should be market-based and align with existing local markets. • For cooking needs in households: Tier 4 solutions to reduce indoor pollution should be provided, using clean technologies and fuels. • For electricity in households: Tier 3 or above access to electricity should be provided and should be powered by renewable technologies.
<p>Energy for Enterprises</p>	<ul style="list-style-type: none"> • Energy for refugees' and internally displaced people's (IDP) livelihoods is often a neglected topic in humanitarian actions. • Local businesses in refugee and IDP settings do not currently have enough energy to support their livelihoods or to develop self-sufficient communities. This includes the energy needs for small-scale agriculture and productive uses. • Informal refugee and IDP-led businesses can provide considerable access to energy in protracted camp settings. 	<ul style="list-style-type: none"> • Include energy planning for livelihoods in response planning. • Local informal businesses should be supported and engaged throughout design of interventions. Conduct a market assessment before designing solutions. • For energy for enterprises: Tier 3 or above access to electricity should be provided for displaced businesses and should be powered by renewable technologies.

Energy for Community Facilities	<ul style="list-style-type: none"> • Electricity for public spaces such as community halls, playgrounds and refugee governance spaces is often a forgotten investment area: many of these spaces are without electricity access. • Water, sanitation and hygiene and health posts are a key electricity need in displacement settings. • In most cases, electricity production through solar or renewable solutions is significantly cheaper over their lifetime than through traditional fossil fuel generators. • Systems can be aligned with national and institutional power provision to decarbonise electricity supply effectively. 	<ul style="list-style-type: none"> • Conduct a co-design and needs assessment before developing solutions. • Include energy planning for public spaces in response planning. • Align provision of power for water pumping, other water, sanitation and hygiene facilities and other community services, to reach economies of scale. • Support energy service models through local partners through grant-based energy products. • For community facilities: Tier 4 or above access to electricity should be provided for community facilities in displacement settings and should be powered by renewable technologies.
Energy for Institutions	<ul style="list-style-type: none"> • Slow progress is being made to decarbonise humanitarian operations. The sector is not on track to meet SDG 7 by 2030, emissions from the humanitarian sector are driven by energy use and continue to rise. • Renewable and mini-grid energy can support low-carbon, reliable, lower-cost solutions in humanitarian settings. Payback rates for solarisation projects are usually between three to five years, for energy-efficiency projects even lower. • Grant subsidies can support alternative parts of the energy delivery chain, but need to be market-based and planned. Purely grant-based models without long-term operation and maintenance support, including finance for spare parts, are not recommended. 	<ul style="list-style-type: none"> • Conduct a co-design and needs assessment before developing solutions. • Include energy planning for public spaces in response planning. • Align provision of power for water pumping, other water, sanitation and hygiene facilities and other community services, to reach economies of scale. • Support energy service models through local partners through grant-based energy products. • For institutions: Tier 4 or above access to electricity should be provided for community facilities in displacement settings and should be powered by renewable technologies.

Table: Advocacy Issues and Recommendations for Energy in Displacement Settings.

Leaving No-One Behind: Ensuring Sustainable Energy Access for All Displaced People

Any investment in humanitarian energy should aim to provide access to a range of sustainable energy services and products to serve communities in the long-term, not just in the short-term response to an emergency. It should support the reform of humanitarian systems by shining a light on how energy access improves the lives of displaced communities over a longer period.

The task of achieving the objective to leave no one behind change is shared by donors, humanitarian and development organisations, governments, NGO partners, and with displaced people themselves. No one set of actors will be able to achieve SDG 7 independently, therefore it is essential for actors to work in partnership and develop inclusive approaches to ensure displaced people are placed at the heart of energy responses. Without substantive action, refugees and displaced people will continue to live without access to clean energy, and global emissions from humanitarian agencies will continue to rise. Millions of displaced people will continue to live in the dark, crouched over smoky fires to cook their food, and without the hope of a modern, “high-energy and low-carbon future”.⁶⁰⁰ Truly leaving no one behind will require considerable investment in evidence and capacity, alongside global governance and accountability for sustainable energy solutions that will benefit displaced people, their host communities and will have a positive impact on the planet.





Acronym List and Glossary Summary

BMZ	German Federal Ministry of Economic Cooperation and Development
CEC	Clean Energy Challenge
Climate and Environment Charter for Humanitarian Organizations	A document for and by humanitarian organisations, intended to help them play their part and highlight their relevance in responding to the climate and environmental crises
CRRF	Comprehensive Refugee Response Framework
Decarbonisation	The process of reducing carbon dioxide emissions through the use of low carbon or renewable power sources
DG ECHO	Directorate-General for European Civil Protection and Humanitarian Aid Operations
EDM	Energy Delivery Model
EDP	Energias de Portugal
EEMRG	Energy in Emergencies: Reducing Risks of Gender-based Violence
EEP	The World Food Programme's Energy Efficiency Programme
EnDev	Energising Development
Energy Access Tiers	The World Bank's Multi-tier Framework (MTF) measures access to energy on a scale (Tier 0 being very little or none and Tier 5 being equivalent to grid-level in the global North).
ESDS	Energy Solutions for Displacement Settings
ESMAP	Energy Sector Management Assistance Program
EU	European Union
E-waste	Electronic waste
FAO	Food and Agriculture Organisation
FFS	Food Security Sector (Nigeria)
GCR	Global Compact for Refugees
GFF	UNHCR Green Finance Facility
GHG	Greenhouse Gas(es)
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GOGLA	Global Off-Grid Lighting Association
GPA	Global Platform for Action on Sustainable Energy in Displacement Settings
Greening the Blue Initiative	A UNEP initiative to engage and support the UN system in the transition towards greater environmental sustainability in the management of its facilities and operations.
HEED	Humanitarian Engineering and Energy for Displacement
HEEN	Humanitarian Energy Exchange Network
HLDE	High-level Dialogue on Energy

HLPF	High-level Political Forum on Sustainable Development
Humanitarian agencies	Organisations who support the protection of vulnerable and displaced populations.
IASC	Inter-Agency Standing Committee
ICRC	International Committee of the Red Cross
IDP	Internally Displaced People
IFRC	International Federation of Red Cross and Red Crescent Societies
IIED	International Institute for Environment and Development
ILF	International Lifeline Fund
Implementing partners and NGOs	These partners are usually the organisations directly responsible for delivering energy solutions in the field, often working with private-sector suppliers and local communities.
IOC	International Olympic Committee
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
LPG	Liquified Petroleum Gas
MEI	Moving Energy Initiative
MSF	Médecins Sans Frontières
MTF	Multi-tier Framework
NCRRF	National Comprehensive Refugee Response Framework
NGO	Non-governmental Organisation
NORAD	The Norwegian Agency for Development Cooperation
NORCAP	Norwegian Technical Capacity Programme
NRC	Norwegian Refugee Council
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
OECD	Organisation for Economic Co-operation and Development
P-REC	Peace Renewable Energy Credit
PPA	Power Purchase Agreements
Private-sector and funders	This group includes suppliers of energy products or services that provide energy technologies and fuels, as well as finance institutions such as banks.
Productive Energy Use	Agricultural, commercial and industrial activities involving energy services as a direct input to the production of goods or provision of services
Protracted Conflict	A complex and enduring conflict
RBF	Results-based Financing
RE4R	Renewable Energy for Refugees

SAFE	Safe Access to Fuel and Energy
SCC	Smart Communities Coalition
SDG	Sustainable Development Goal
SDG 7	Sustainable Development Goal 7, to Ensure access to Affordable, Reliable, Sustainable and Modern Energy for All
SEforALL	Sustainable Energy for All
SERP	Sustainable Energy Response Plan
SHS	Solar Home System
Sida	Swedish International Development Cooperation Agency
SMEs	Small and medium-sized enterprises
SNV	Netherlands Development Organisation
Sustainable Energy	Sustainable energy technologies include renewable technologies such as solar, wind, geothermal, water, and renewable biomass, but also include ‘cleaner’ fuels and technologies that do not pollute as much carbon as coal. For example, liquefied petroleum gas (LPG), biogas, and biomass are frequently said to be clean fuels. Generally sustainable energy is energy that can be said to be produced without jeopardising the energy needs or climate of the future.
UN	United Nations
UN DESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations High Commissioner for Refugees
UNHCR Persons of Concern	Refugees, returnees, stateless people, the internally displaced and asylum-seekers
UNICEF	United Nations International Children’s Emergency Fund
UNIDO	United Nations Industrial Development Organisation
UNITAR	United Nations Institute for Training and Research
WASH	Water, Sanitation and Hygiene
WFP	World Food Programme
Wh	watt-hour (a unit of energy equivalent to one watt of power expended for one hour of time)

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Contributing authors: Joelle Hangi, Thomas Fohgrub, Elif Demir, Owen Grafham, Eva Mach, Luc Severi, Mark Gibson, Mattia Vianello, Laura Clarke, Cathleen Seeger, Aimee Jenks, Lama Gharaibeh, Cecilia Ragazzi, Iwona Bisaga, Jonathan Archimi, Philip Sandwell, Stephen Gitonga, David Kinzuzi, Arielle Ben-Hur, Vahid Jahangiri, Surabhi Rajagopal, Ziad Ayad, and Sadiq Zafrullah.

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7 bis, Avenue de la Paix
CH-1202 Geneva 2
Switzerland
T +41 22 917 8400
energy@unitar.org
www.unitar.org