Energy and Economic Growth
Applied Research Programme

Thinking differently about energy access in displacement situations

Energy Insight

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1. Introduction

People forcibly displaced from their homes – especially by conflict – are 'left behind' in many ways. People in transit and in camps are often vulnerable to physical attacks, accidents, and fires. Children are more likely to miss years of proper schooling and adults can fall into poverty when unable to work due to legal status or lack of opportunity. Nutrition often suffers, while exposure to the elements, unclean water, and dangerous levels of indoor smoke may also damage health.

Energy services are essential to improving displaced people's life-chances, whether through powering clinics, pumping and treating water, enabling clean cooking, lighting public spaces, or facilitating educational and productive activities. Yet displaced people were until recently largely absent from the global energy access agenda.[1] Only recently has energy come to the fore of discussions in the humanitarian sphere.[2]

Energy is also important in the bigger picture of climate change and migration, issues which are likely to grow in impact and mutual reinforcement in the coming decades. Conflict and natural disasters have caused a sharp rise in human displacement globally over the last 15 years, putting more pressure on the services, infrastructure, and resources of often already stressed national systems with fragile environments. From a humanitarian perspective, energy investments – like those in water, sanitation, and other vital services – can be used creatively to help achieve greater security for refugees and displaced people and reduce tensions with the host community.[3] These goals are directly aligned with the Global Compact on Refugees, affirmed by the UN in December 2018.

This Energy Insight examines the issue of energy access in displacement settings, drawing on the work of the Moving Energy Initiative (MEI). MEI is a practical research programme that began in 2015, led by Chatham House, Energy4Impact, and Practical Action in partnership with the UN High Commissioner for Refugees (UNHCR) and Norwegian Refugee Council (NRC), and funded by the UK Department of International Development.[4]

Sections 2 and 3 of this Energy Insight introduce displaced populations and their challenges. Section 4 considers the diversity of displacement contexts, as well as the factors that affect efforts to improve energy access among displaced populations. Sections 5 and 6 present possible approaches to improving energy access among displaced populations and challenges that must be overcome, and Section 7 concludes by summing up key areas for attention.

2. Who are the displaced?

Human displacement refers to a situation where people have been forced to leave their homes as a result of an environmental disaster, conflict, or state 'development' projects involving land-use change. In 2017, it was estimated that 134 million people were displaced; 68.5 million by conflict. Of those seeking refuge from conflict, which usually entails years of displacement, 40 million were internally displaced people (IDPs) taking refuge within the borders of their own countries, 25.4 million were refugees,[5] and 3.1 million were asylum seekers. 2017 marked a record year for displacement, with an estimated average of 44,400 people a day forced from their homes (UNHCR, 2018a). The drivers of conflict show no sign of abating and the World Bank estimates that 'the share of the extreme poor living

[1] Displaced people and refugees were mentioned for the first time in the literature and discussions of the United Nations Sustainable Energy Access for All (SEforAll) agenda in 2017, but are not a specified group for focus or monitoring to date..

[2] In July 2018, several UN agencies including UNHCR, partner countries, and NGOs gathered to launch the Global Plan of Action for Sustainable Energy Solutions in Displacement Situations, an ongoing collective attempt to address this neglected area.

[3] There is of course a strong overlap between internal displacement and state 'fragility' so it is useful to read this paper alongside the earlier EEG publication by Morris (2017), which examines the potential for investments in energy to help kick-start virtuous circles and the numerous risks of working in unregulated, conflict-prone areas.

[4] Information and resources can all be found online at www.mei.chathamhouse.org.

[5] Including 5.4 million Palestinians both in the Palestinian Territories and abroad, resulting from their displacement in 1948.

in conflict-affected situations is expected to rise to nearly 50% by 2030' (World Bank, 2018).

Around 95% of forcibly displaced people are living in developing countries (ibid.), each with their own poverty and environmental fragility problems (see Box 1). Sub-Saharan Africa, the most challenged region in the world in terms of energy access, hosts over a quarter of the world's forcibly displaced people – 18.4 million in 2017, two-thirds of whom are displaced within their own countries (Connor and Krogstad, 2018). Democratic Republic of Congo, Sudan, South Sudan, and Nigeria are in the top 10 countries with the biggest displaced populations (predominantly IDPs). Uganda is the top refugee-hosting country with over 1.4 million refugees, closely followed by Sudan, Kenya, and Ethiopia. In contrast to the displacement in Middle East and North Africa, the majority of refugees and displaced people in Africa live in camps or settlements outside of urban areas, although this is changing. Globally, 58% of refugees and 80% of IDPs find refuge among the host population, largely in urban areas (Muggah and Erthal Abdenur, 2018).

Extreme weather events and desertification are also increasingly driving displacement – as witnessed through drought in the Horn of Africa, desertification in Nigeria, and the cyclone in Mozambique. Disaster-related displacement is the result of a combination of factors that include poor environmental governance, over-exploitation of resources, and climate change. Weather-related disasters were responsible for 18 million new displaced people globally in 2017 (Internal Displacement Monitoring Centre, 2018). Disasters usually lead to more temporary, less politically sensitive displacement than heavy conflict. However, disasters tend to impair infrastructure, including that for supplying energy and delivering clean water.

3. What are the energy challenges facing displaced populations?

The energy issues that are thrown into sharp relief during a migration crisis are often long-running systemic problems in a country or region that pre-date the crisis. Such problems include deforestation and wood burning, lack of energy access in rural areas, debilitating power outages in cities, the proliferation of high-priced diesel power, lack of street lighting, and widespread reliance on kerosene lighting or candles. A population influx can serve to exacerbate these challenges.

For displaced populations living in camps, the energy challenges can be unique. It would be incorrect to assume refugee camps are temporary. The average life of existing humanitarian camps is about 18 years and growing.[6] For example, the sprawling Dadaab camps in Kenya, Mae Lae camp in Thailand, and Nakivale settlement in Uganda are 27, 35, and 60 years old respectively. Such settlements, initially set up as areas of temporary refuge, grow into towns, slums, and small cities, often with tenuous political status and rights for inhabitants and dilapidated living conditions.[7]

Energy provision in refugee camps is rarely planned (Lahn and Grafham, 2015).[8] More commonly, humanitarian agencies or authorities in charge of camps deploy diesel generators intended for temporary use but these become long-standing features, poorly maintained and inefficiently loaded. *Ad hoc* handouts of clean cookstoves and solar lights have occurred in numerous locations. Nevertheless, there remains a predominant reliance on traditional three-stone fires for cooking and kerosene, candles, or torches for lighting. MEI estimated that, in 2017, 88% of camp dwellers were reliant on such rudimentary means and had scant if any access to electricity.[9] Box 1 highlights the value that camp inhabitants in Burkina Faso and Kenya place on modern energy services.

[6] This is a Chatham House estimate; see Grafham and Lahn (2018), p. 64.
[7] See, for example, Finch (2015).
[8] Until recently, humanitarian agencies have tended to deal with the energy needs of households mainly in terms of provision of 'non-food items' such as blankets, and sometimes cooking equipment and individual lights.
[9] See Lahn and Grafham (2015). The numbers have been updated via UNOCHA (2018).

Box 1: An example of energy use in two African refugee camps

A recent MEI study found that 99% of the 10,000 refugees in Burkina Faso's Goudoubo camp and 86% of the 187,000 refugees in Kenya's Kakuma I camp depend on traditional biomass for cooking and have little lighting at night. However, they pay out a high proportion of their insecure incomes for these rudimentary energy services. MEI camp surveys showed that refugee households in Goudoubo and Kakuma 1 spend 15% and 31% of median income, respectively, on lighting, phone charging, and cooking. Families in Goudoubo using battery-powered torches spend six times more on lighting than those families with a solar light.

Source: Corbyn and Vianello, 2018

Refugee settlements often spring up or are sited in remote areas, poorly served by state infrastructure – usually with no connection to the national grid or safe water and sanitation systems. For example, at Malakal and Bentiu – two humanitarian hubs in South Sudan – agencies pay between US$1.7 and 2.6 per litre for diesel when the Sudd floods for around half of each year or the security situation worsens, which means the energy costs for humanitarian operations reach between US$73,000 and US$80,300 each month (Grafham and Lahn, 2018: 10).

Energy and water are usually tightly interconnected. Many camps rely on a large amount of diesel for groundwater pumping. In the Nyarugusu refugee camp in Tanzania, for example, a United Nations Institute for Training and Research (UNITAR) study shows that 60% of the diesel was put to this use (Fohgrub, 2018). Where groundwater availability and potability is a concern, as it is in most arid regions hosting large refugee camps,[10] energy could be used in the treatment of grey water for reuse or diversion to small agricultural plots. The treatment of waste – particularly human waste – is also a key challenge for camp authorities, and one that is linked to water safety and could benefit from innovation in energy. There have been several attempts to convert waste in refugee camps to energy (usually biogas but, in a recent case, pellets for cooking fuel).[11]

4. A diverse context for energy access

Displacement crises take a wide variety of forms, with varying degrees of local and political acceptance. This section outlines a series of factors that differ from context to context and will affect efforts to improve energy access among displaced populations.

4.1 Political economy and legal status of displaced populations

A popular narrative against displaced populations is that they are worsening an already negative situation, putting pressure on or causing inflation in the cost of resources such as food and energy, undercutting wages for local jobs, or overstretching municipal services such as healthcare and waste management. Host governments are often reluctant or opposed to services or infrastructure provision that imply permanence or could result in perceptions of better conditions for displaced communities than the local population.

Refugees, in most cases, lack the same rights as citizens, exacerbating the political problem host governments face in serving them. For IDPs, the politicisation of their length of stay will vary depending on the reason for displacement. Some are classed as 'stateless' or from ethnic groups that lack access to the same rights as the majority population. These people can often fall through the cracks of international aid and protection[12] and, as with refugees, tensions may arise between locals and the new group of inhabitants with regard to resources such as wood, charcoal, and electricity. In some cases, a host government may treat a refugee camp as a security risk. Proposed energy projects must be aware of these political economy factors.

4.2 An unstable existence

[10] For example, MEI had to adapt a solar irrigation project in Goudoubo Camp Burkina Faso due to concerns about groundwater depletion; in Zaatari, the citing of the camp over a groundwater aquifer remains a contentious issue.

[11] See, for example, the waste-to-biogas pilots in Cox's Bazaar in Bangladesh (Eyard *et al.*, 2015) and the case of the Sanivation in Kakuma refugee camp (Hakspiel *et al.*, 2018).

Displacement crises will require different approaches at different levels, depending on their nature and age. The situation may be subject to change at short notice, for example through the sudden closure of a camp due to security concerns, a humanitarian operator running out of funds, or a government decision to stop the cutting of trees in the area. This uncertainty presents many challenges to financiers and investors interested in supporting energy access for displaced people.

4.3 Proximity to urban services

The proximity of camps to urban centres, villages, and the grid will shape the services that camp inhabitants can access, as well as their relative cost and affordability, thereby presenting different contexts for energy access interventions – for example, whether it would make sense to establish a solar home systems business or wait for the government to extend the grid as part of an existing national energy access plan.

With IDPs and refugees increasingly choosing – when they can – to live in cities, the urban landscape is very much a consideration for energy in displacement contexts. Energy services are likely to be under pressure alongside other municipal services (water, waste, health, education, policing, etc.). Where IDPs and refugees are living in rented accommodation, utilities bill payment may be an issue of tension between tenants and landlords. These hard-to-reach groups are likely to be some of the most vulnerable and, despite living in cities, there may be even less clear entry points than in camps for improving energy access for urban tenants, given the difficulty of targeting families (Dodman, 2016). Here, approaches to energy need to be focused on strengthening the resilience of local services, infrastructure, and supply chains.

4.4 Level of government acceptance and resilience coordination

In the last few years, a 'response and resilience' agenda has emerged in efforts to address large-scale mass migration crises such as those affecting Syria, South Sudan, and Myanmar. Response plans jointly drawn up by a mix of UN, government, and NGO bodies look to channel aid to meet both refugee needs and longer-term development. While energy did not used to be a key feature of humanitarian relief, response and resilience plans in Uganda, Jordan, Lebanon, and Bangladesh define energy as a priority. Governments identify energy as an area of stress, for which aid can help them to better cope with the new influx of people.

Whether a country has such a plan – and therefore a level of acceptance around the length of refugee stay – will influence what kind of energy projects are possible. When energy is demarcated as a government priority, it opens the door to investment in energy provision as a way to secure longer-term security for refugees. The UNHCR-led Global Compact on Refugees encapsulates this new overarching approach to refugee crises. It has four key objectives, the first two of which are:

- Ease the pressures on host countries; and
- Enhance refugee self-reliance.

Both speak strongly to the potential for sustainable energy access as an enabler, and call for support from the international community to 'invest in closing the technology gap and scaling-up capacity development for smart, affordable and appropriate technologies and renewable energy in developing and least developed refugee hosting countries' (UNHCR, 2018b).

4.5 Willingness and ability to pay

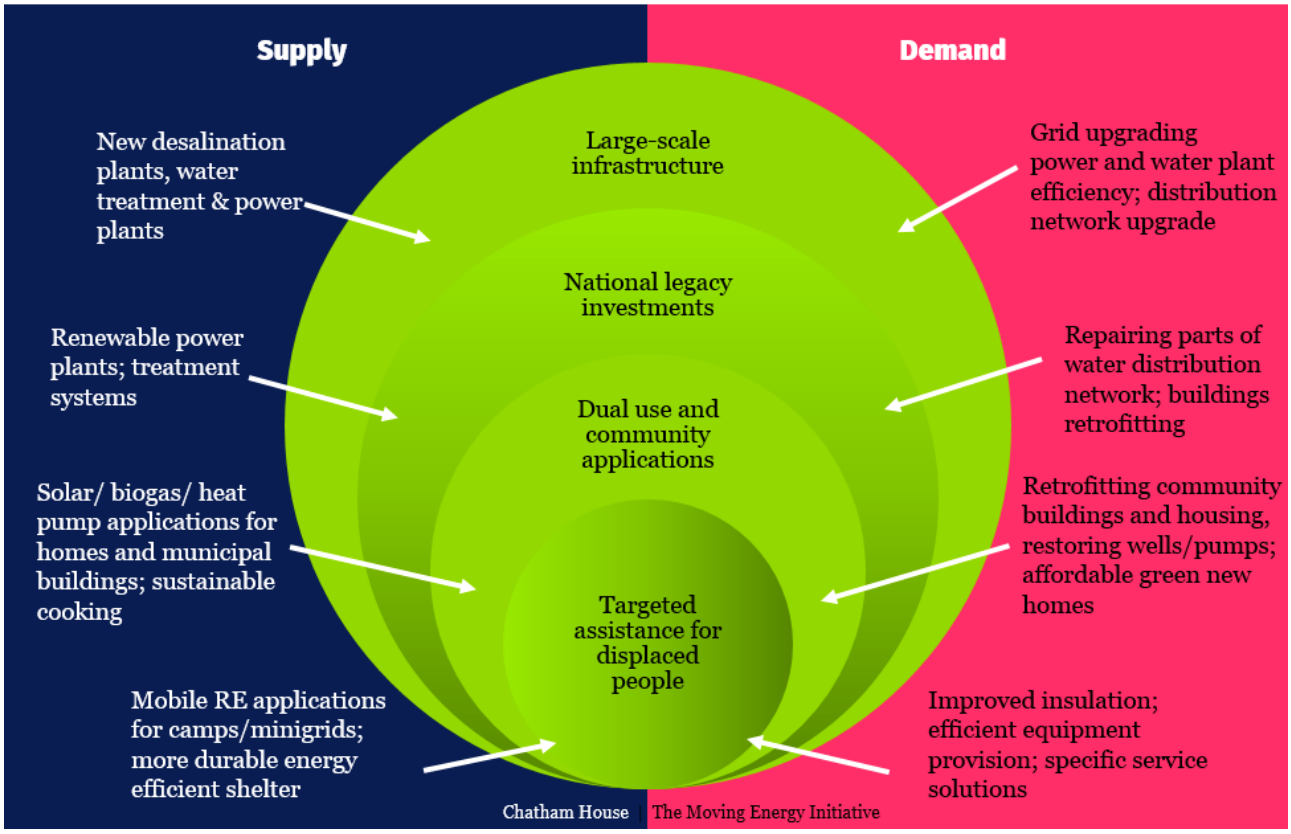
People's desire for energy services – lighting, cool water, phone charging, and power for equipment that can help people to earn a living – is strong. In most cases, refugees are already paying something for energy and, as mentioned above, often at a high price relative to the quality of access they receive. In Kakuma 1, 'more than one-third expressed a willingness to pay for quality household solar products, indicating a potential customer base of 5,000 families and a market worth some $300,000' (Corbyn and Vianello, 2018: 6).

The first World Humanitarian Summit in 2016 emphasised that enabling displaced people's self-reliance is a major issue. Cash-based assistance has since been expanded in many humanitarian programmes, providing more opportunities for choices over energy services. However, the ability of displaced populations to pay varies widely from place to place and from household to household, and these variations need careful consideration when planning a market-based approach to energy services.

5. Approaches and possible options for providing modern energy services for displaced populations

The diagram below, prepared as a result of consultations with stakeholders in Jordan, indicates different areas of the energy system that may benefit from assistance in a mass displacement situation. These range from the traditional supply-side interventions of upgrading and extending the grid and providing utility-scale generation plants to micro and off-grid solutions for camp dwellers. This is not exhaustive but gives an idea of the solutions being discussed globally in the nascent fields of 'humanitarian energy' and 'crisis response and resilience'.

Figure 1: Areas of potential support for energy in a displacement crisis



Source: Lahn *et al.* (2016), with the author's amendments

In countries that already have 'response' or 'resilience' plans in place, the areas of need may be well worked out. In others, the initiative may need to come from donors or humanitarian actors. In both cases, understanding of what is already happening and who is planning to do what will be vital. Inclusion of those who understand the energy access situation and history of this in the country will save time and duplication in making plans.

Authority over areas of displacement will also play a major role in the way that energy projects could take shape. Outside of camps, responsibility for services and infrastructure, and approval for their provision, is likely to fall to local and national government bodies. For camps, humanitarian agencies – and in some cases the army – may have greater agency, with government approval needed for major projects. However, in practice, there may be other parties to consider and decide how to interact with, including local cartels, militias, and informal providers of energy.

As Figure 1 suggests, the technical options available to improve energy access for displaced populations differ between camps and urban areas. This section will examine each of these contexts separately.

5.1 Improving energy access for displaced populations in camps or settlements

Where displaced people or refugees are housed in camps, what is possible will depend on a range of factors – possibly factors that are subject to change. These include who has authority over camp infrastructure and operations, the age and size of the camp, distance from the national grid, proximity to host communities, the level of security, the political acceptance of the camp, what is already in place, and the legal rights and willingness to pay of inhabitants.

The following options are not the only ones, nor are they mutually exclusive. In several camps, more than one of the following is being planned or trialled. However, coordination between various relevant authorities and actors in planning and gaining approvals is key; otherwise, one intervention may override or undermine the market for another.

5.1.1 Grid connections and improvements

Where there is a sizeable community, potentially situated quite close to host communities, and there is government acceptance of long-term stay, an area may merit grid extension. Where grid extension for rural areas is planned in any case, the additional population may justify the cost. The question will be how the electricity is paid for and whether refugees are legally allowed to sign up for a connection. In Ethiopia, for example, UNHCR and NRC are collaborating with the Spanish utilities company Iberdrola as part of the 'Allianza Shire' initiative to improve and extend the grid for four refugee camps. In 2017, this initiative had completed grid extension and improvement of medium and low voltage lines to Adi-Harush camp, connecting community services – including markets, school, communal kitchens, and a wellness centre for women and girls – and added 4 km of LED public lighting (Allianza Shire, 2017; 2018).

5.1.2 Power plants

In some cases, it will make sense to construct a power plant near to the camp to provide a new, local source of power. The plant can either provide power exclusively to the camp or, where infrastructure and regulations permit, sell excess power back to the national grid. In Jordan, two refugee camps run by UNHCR that house some 120,000 Syrian refugees (Arcidiacono, 2018) in total, Azraq and Zaatari, have become the first in the world to benefit from specially commissioned solar power plants. Through Jordan's net metering regulation, these power plants are reported to be saving UNHCR over US$7 million each year and enabling the agency to sustainably connect households to the grid power system.

According to its own mandate, UNHCR is not allowed to take money from refugees and refugees cannot sign up to a formal connection, so a quota system is in force that limits the amount of electricity that each family can consume. To maximise the benefit, refugees would be allowed to pay for additional electricity, as increased levels of consumption would enable livelihood activities and encourage existing businesses in Zaatari to let go of their diesel generators, which are both more expensive than grid electricity and polluting.

5.1.3 Specific camp facilities

A range of off-grid generation technologies are available that can power the water pumps, schools, clinics, offices, and training centres that serve displaced people. Solar water pumping, solar thermal applications to heat or boil water, biogas from waste for heating and community cooking, and solar PV for power are increasingly prevalent in camps. Frequently, these options are more cost-effective than diesel generators. The Global Solar and Water Initiative, a multi-agency partnership coordinated by the International Organization for Migration in Nairobi, estimated in 2017 that the lifetime cost of solar water pumps for 23 currently unequipped boreholes in 12 refugee settlements in Northern Uganda would be just one-third of equivalent diesel-fuelled ones (Grafham and Lahn, 2018: 47 and 49).

Despite the potential for solarisation of camp facilities to reduce operation costs, successful examples remain singular cases. Organisation-wide energy strategies and incentives from camp management (e.g. UNHCR) for implementing partners to account for and rationalise diesel use would help scale up applications of off-grid solar or encourage more systemic approaches, such as shared mini-grids.

5.1.4 Market-based solutions

Where connection to the national grid or local power facilities are not imminent, improving energy access is likely to entail considering the services

and systems available to households and businesses in a camp. As in low-income rural areas, solar home systems often offer the most cost-effective option. These systems generally provide enough electricity to power lighting, a radio, or television, charge mobile phones, and perhaps allow for a fan or sewing machine to run. Business models for solar home systems have a history in many parts of rural South Asia and Sub-Saharan Africa and, in the last decade, mobile phone and remote-sensing technology have increased the possibilities for deployment in difficult-to-reach areas.

Where there is willingness to pay, existing operators may want to extend their businesses into camps and surrounding areas. This was the case with British solar company BBOXX in Kenya, which MEI seed funded to establish its business selling solar home systems serving Kakuma town and refugee camp. The demand was clear, with 75 solar PV systems sold within six months of 2018 – 66 to refugee households. No families defaulted on their payments during the project assessment period. BBOXX then self-financed the delivery of 40 more systems, all of which were sold within a month. For continued commercial operations, further donor support would likely be needed to expand the customer base – to about 750 households – given the long and sometimes impassable distance for transportation of equipment. The camp is approximately 570 km away from BBOXX's main distribution outlet in Kisumu and rains can inhibit the five-hour drive from the nearest airport in Lodwar (Patel, 2018). Findings from the promotion of clean energy solutions in Goudoubo similarly found high demand, and a potentially greater need for support for the solar distributor, given the lower and more insecure incomes of households there.

5.1.6 Better shelter

Where possible, energy access plans should include programmes to upgrade camp shelters (when this is allowed by the authorities) in order to enable greater use of daylight lighting, window shading, insulation, and heat deflection. All these measures reduce the amount of energy supply needed for basic comfort. A good example is the use of the 'superadobe' technique to build a school in Zaatari camp, where, although temperatures can reach 44°C, the school building can provide an indoor temperature 7°C cooler than outside in summer and 5°C warmer in winter (Townsend, 2018). In places where deforestation, soil erosion, and desertification are issues, tree planting and management can play a valuable role linked to energy services. The right kind of trees offer a number of environmental services – including energy services such as shading, groundwater recharge, and cooking fuel, all of which can be vital in improving camp conditions. [13]

5.2 Improving energy access for urban and non-camp displaced populations

Where the majority of IDPs or refugees are living among the host population, energy access issues for persons of concern cannot necessarily be separated from the local and national ones. This means that efforts to improve energy access should include and not necessarily discriminate between locals and displaced people. Where there is some government acceptance of refugees or a mass internal displacement challenge for urban centres, sustainable energy provision might be considered one of the ways to assist countries in managing social stability. Upgrading municipal infrastructure, housing, and water systems can be ways to help hosting countries cope with a large population increase and encourage integration (World Bank, 2017).

5.2.1 Better, more efficient housing

Housing is often a fraught issue for displaced populations, especially where refugees are seen to be renting accommodation and pushing up rental prices. Homelessness among displaced people may also be a problem. Shelter and energy are natural

[13] See, for example, the work of the World Agroforestry Centre in Rhino Camp and Imvepi refugee settlement in Uganda (Watson, 2018).

partners and there is much potential for using energy services to help secure refugee tenancy. For example, in 2015–2017 NRC in Jordan worked with the private sector and the Jordanian Ministry of Energy and Mineral Resources to fit solar water heaters to 160 homes in return for an agreed period of secure tenancy and reduced rents for vulnerable families.[14] Where long-term integration of the displaced population is a shared objective, improving the local housing stock and building new affordable, sustainable, and efficient homes could be an option in some places, to help create mixed communities of locals and IDPs/refugees.

5.2.2 Tying energy to development outcomes

In slums – which share many characteristics with some of the long-established refugee camps – there may be lessons to apply from the successes of introducing billed electricity supplies in the Delhi and Mumbai slums in India in which private power company Tata Power and NGO Dhanpatmal Virmani Education Trust worked together to improve literacy while training women to connect, maintain, and collect payments in their neighbourhoods (Bloomberg, 2017). There will certainly be cross-cutting lessons to be shared between slums and established camps in cleaner cooking, shelter upgrading, and clean water provision.

Likewise, there are opportunities for the savings from energy investments in community-use facilities to improve services provided by those buildings. For example, the Renewable Energy for Refugees (RE4R) initiative is currently building on work carried out by both NRC and MEI regarding energy efficiency and renewable energy to state schools and hospitals that have had to expand their intake due to displacement crises.[15] This considers how the diesel and electricity bill savings could be transparently reinvested to better serve the needs of the users of those facilities – both nationals and refugees – thus also having a health or educational benefit.

5.2.3 Working with what is going well already

While 'innovation' is currently a buzzword in donor circles, there may be less need for innovation and more need for cooperation. This means understanding who is already doing what and where. In some countries – especially those that have become humanitarian and development 'hubs' for their regions such as Jordan and Kenya – there are multiple foreign agencies, each pursuing their own projects but not necessarily preparing for sustainable continuation when they exit. The Agenda for Humanity, a UN-led platform for the international community to address and reduce humanitarian need, risk, and vulnerability, puts emphasis on working with or through local agencies and NGOs where there is local capacity and on investing in local capacities.[16]

In the case of energy, it may be that energy access for refugees or energy resilience support for a hosting country can be most effectively added onto an ongoing government, local NGO, or UN programme, for example, with some additional resources, at lower cost and with more long-term sustainability, than 'starting from scratch'.

6. Challenges that need to be overcome

6.1 Lack of data and information

When MEI began researching the first ever global assessment of the energy access situation for displaced people in 2015, the data available was so poor that the researchers had to rely on interviews with humanitarian staff on the ground and a lot of proxies based on country energy access estimates. Today, the data is beginning to improve but there are many unknowns regarding what forms of energy people use, pay for, and would most value in their daily lives in displacement settings.

Given that the trend is toward settlement in urban and peri-urban areas, different kinds of information will be needed, including that related to how energy plays into other development needs and where the most pressure or conflict over resources is being felt.

[14] This project was initially funded by a European Union renewable energy fund, and at the time of writing is being extended and expanded alongside efficiency retrofitting as part of the Renewable Energy for Refugees initiative, funded by the IKEA Foundation (Masri, 2016).

[15] RE4R is led by Practical Action and UNHCR and is funded by the IKEA Foundation. It is working in Jordan and Rwanda.

[16] The Agenda for Humanity (see particularly Core Responsibilities 4 and 5) https://agendaforhumanity.org

Other information that will be vital for transformative interventions involves knowledge of the local political economy, including, for example, the reach and power of current informal providers of energy whose interests might be affected by new systems or businesses.

6.2 Humanitarian agency limitations

The humanitarian system is geared to respond to emergencies, not deliver long-term development. Yet agencies including UNHCR, the World Food Programme, the International Committee of the Red Cross, and CARE International are often in charge of providing for basic needs over many years.

Humanitarian agencies should have a strong financial incentive to build energy infrastructure for camps, but most are restricted by one-year budgets that do not allow long-term capital investments. They also lack experience in humanitarian agency–private sector partnerships. Further, most humanitarian agencies lack the capacity to design and tender energy service contracts, and to manage implementation (see also 4.3).

This means that basic and *ad hoc* provision and dangerous household coping mechanisms can become the norm for displaced people living in camps. To plan more systematically the most effective way to provide for energy needs means that agencies need to integrate energy strategy and priorities through their current departments and operations.

6.3 Business risk

Since MEI began there has been a surge in interest from companies (from large power companies to small solar start-ups) in supplying refugee camps. The challenge is to translate interest into tangible projects.

The high risk presented by a remote or politically sensitive camp context and a partner whose budget may vary wildly from year to year would not be attractive to a commercial provider without some kind of guarantee. Insecurity remains a major challenge in some of the camps that have the lowest levels of energy access. The difficulty in putting people on the ground due to security threats would be the main barrier to energy interventions in, for example, the Dadaab complex of camps in Kenya, which the Government of Kenya has sometimes threatened to close.

In the case of household products that might be introduced for sale to displaced people – such as solar home systems, clean cookstoves, or lighting – companies fear having their market undermined by future handouts of competing equipment from the agencies. The move away from handouts and toward cash-based assistance from the humanitarian sector that has grown since 2015 is providing greater opportunity to both meet the needs of the most vulnerable and allow market activity. In addition, MEI has found that many businesses and social enterprises that have already successfully developed markets in rural or peri-urban areas are willing to engage if they could be assisted with information on consumption and willingness to pay, clarity on access and approvals, and support to offset some initially higher costs and risks.[17]

6.4 Financing

The MEI report on *Innovative Financing for Humanitarian Energy Interventions* outlines the difficulty in securing funding to improve energy access for displaced populations. From the donor perspective, the challenge falls somewhere between energy access, humanitarian and possibly climate resilience priorities. Humanitarian agencies fear a focus on this risks diverting potential funding from other critical humanitarian priorities. The report argues that instead 'financing will need to be driven by a desire to reduce operational costs and improve services, which will bring benefits in areas such as healthcare, education and livelihoods' (Cohen and Patel, 2019:5).

Different financing instruments are likely to apply in different circumstances and should be tailored to the situation, alongside the appropriate technical assistance. These may include types of public–private partnership and energy service contracts for the larger-scale national or camp-wide investments, impact bonds where risks are clearly apportioned between parties (Cohen and Patel, 2019:29), and aligned mechanisms such as cash-based assistance programmes and livelihood programmes that will increase the purchasing power of consumers to

[17] See Van Landeghem (2016) on how to overcome these and other challenges relating to business risk.

encourage the development of local markets for energy.[18] Ideally, energy projects in humanitarian settings would be aggregated to more easily allow the potentially significant flows of investment.

6.5 Effective ecosystems for implementation

Energy projects in humanitarian settings frequently require coordination and engagement between several parties. For example, in the case of MEI's market development activities in Burkina Faso, facilitating coordination between a range of actors through a trade fair and meetings paid off in getting renewable energy projects underway in Goudoubo camp. One solar product company felt that the relationship with the Mayor of Dori's office was crucial in negotiating logistics and the location of the marketing activities and with the national commission for refugees (CONAREF) to facilitate promotional activities. Another company is developing a partnership with a local credit union that is planning to become a resale agent for products.

In Turkana County, Kenya, one long-term approach to improving infrastructure and living conditions is taking place at the Kalobeyei Integrated Settlement in Kenya. This settlement, which houses both Kenyans and refugees, is the focus of a 'socio-economic development plan' which includes sustainable energy access plans. The plan, led by UNHCR, envisions a comprehensive approach working with local and central Kenyan governments departments and development and humanitarian partners as essential to enable a longer-term "sustainable growth path" (UNHCR, 2018c).

Good communication with national and local government can help ensure clarity on grid extension plans, speed up approvals for infrastructure, and avoid duplication. Where there is capacity, it may be better to work through the relevant government authority than through a humanitarian agency; this is something that needs careful consideration depending on the case.

7. Conclusion and areas for further attention

Human displacement – particularly that which is protracted – requires new approaches that cross the line between emergency relief and long-term development. The international architecture is in the process of adjusting to this. Energy is critical to key humanitarian as well as development priorities, including health, education, and livelihoods, and investments in improving energy services can play an important role in both bolstering the humanitarian sector's ability to manage crises and assisting hosting countries with the wider resource, infrastructure, and service pressures that migration has caused. Yet, as this Energy Insight has shown, energy access approaches will need to take into account the range of additional factors that could affect these groups – including lack of citizenship rights, political sensitivity around their length of stay, and transitory arrangements.

Barriers to change include lack of data, the capacity and financial limitations that restrict the humanitarian sector, the business and investment risks involved in operating in displacement situations, and the often multiple layers of authority that any project will need to negotiate. To overcome these issues, it is important that stakeholders work together to:

- build the data to accurately inform energy interventions;
- integrate energy planning and good practice throughout humanitarian operations;
- foster partnerships between donors and development actors, humanitarian, government, local NGOs, and business expertise to find workable financing models that manageably apportion risk in energy investments and operations; and
- build local ecosystems for integrating new energy systems and technologies sustainably.

[18] See, for example, the case of low levels of income among refugees in Rwanda leading the company Inyenyeri, which had begun selling cookstoves and pellets there, to work with UNHCR gaining grant-funding from the Belgium government to institute a cash transfer programme to enable access to clean fuel alternatives without subsidizing the fuel directly (Cohen and Patel, 2019: 27).

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