

# Energy for Public Spaces and Humanitarian Operations

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## Introduction to Energy in Public and Operational Spaces

During my visits to refugee camps I was often surprised to see schools and hospitals without energy. Community centres and spaces such as churches and mosques experienced frequent power outages or could only access power at certain times of the day. It was often shocking to hear stories from teachers, doctors and refugee leaders about how they managed without electricity in public spaces – many describing how they would ‘borrow’ power from people with diesel generators, or ask their students to study at night next to the compounds of humanitarian staff as these spaces had streetlighting. The lanes and streets between refugee homes were dark at night, and even wash stations and toilet blocks were without lighting.

As well as dark schools and hospitals without power, I also sometimes witnessed operational spaces that were ‘over-powered’. For example, in one of the UNHCR offices I visited the doors and windows were left open despite the air-conditioning being on. When I questioned why this was, as it represented an inefficient use of energy, the office manager responded that they didn’t know how to turn off the cooling system and so left the door open to the outside so the room didn’t get too cold. Humanitarian offices and compounds would buzz with electricity and the hum of electrical devices. Staff accommodation had Wi-Fi and charging points in every room, and advanced technologies such as fingerprint scanners and biometric testing devices were used to support the administrative processes of humanitarianism.

The contrast between these two pictures was extreme: public spaces without any access to energy while humanitarian operations were frequently fully electrified. This difference reflects the confusion and chaos of humanitarian response, as systematic energy planning did not seem to be taking place. During interviews energy divides in refugee camps were frequently dismissed as the result of limited budgets and the challenges humanitarians face on a day-to-day basis. However, you would be unlikely

to find a set of government offices with power in a city in the global north only for the hospital next door to be without power – both as this would be seen as unacceptable and also because planning processes would have considered the energy needs of all users in a location and not developed arbitrary boundaries based on the status of energy users, as is common in refugee camps.

Refugee communities expressed their anger and frustration that basic services – such as public streetlighting, and power in refugee centres – were not provided. Interviewees would often take me to spaces without power and offer a guided tour of locations in the camps that had either no power or very limited access to it. I was also stunned by the lack of knowledge and engagement with public energy systems by humanitarian staff members. Many humanitarians interviewed dismissed the topic as ‘just the lights’, questioning why a researcher would be interested in the electricity and cooking systems within the camps. In fact many staff members and practitioners did not seem to have considered the importance of energy access at all. Energy access for humanitarian operations and public spaces faced a number of additional challenges. Remote camps in the desert of north-west Kenya and on the hilltops of Rwanda are far from capital cities, and the infrastructure of the national grid often did not reach them. As a result many of the camps relied on off-grid and micro-grid infrastructures. Standalone systems that were locally owned and operated were often powered by diesel and had limited repair and maintenance plans. These systems often functioned independently of national or formal energy systems, which contributed to additional complexity as each system was unique and it was difficult to establish how energy was supplied overall.

The previous chapters considered energy for homes and refugee businesses, but we now turn to the energy needed in public spaces – schools, hospitals, refugee community spaces – and the energy required for humanitarian operations – for the offices, compounds and spaces of humanitarian response. Within these descriptions, the lack of knowledge of humanitarian staff on energy is described in order to critique and reflect on the literal darkness and lack of power in public spaces.

## **Community Facilities and Operational Spaces of Energy**

### *Public Users of Energy in Refugee Camps*

Within refugee camps there are multiple users of energy in operational and community facility spaces. Energy for operational uses such as water pumping, offices and compounds was viewed as ‘essential’ within refugee camps. In fact, in terms of the amount of energy used – including

both consumption of kilowatt hours and the high consumption of fuels – humanitarian institutions and organisations currently use more energy than refugee households and businesses (GPA 2022; Tunge and Whitehouse 2020).”publisher”.”Global Platform for Action (GPA. This is in part because limited energy is provided for households and businesses, and so these spaces are underserved, but also because of the scale of energy needs in public spaces. For example, hospitals, schools and offices are substantial consumers of energy. Within large-scale users of energy two main energy uses were identified:

- *Energy for community facilities*, which provides the energy needed to meet the community needs of refugees and host communities – including power for health clinics, schools, playgrounds, public spaces, refugee community halls, churches and religious buildings.
- *Energy for humanitarian operations*, which provides the energy needed for humanitarian services, covering energy use in humanitarian offices, living spaces, NGO offices and implementing organisations, as well as electricity use at food and water distribution points and in refugee-registration or administration spaces.

In both types of spaces fossil fuels and diesel generators were commonly used. To some extent, new investments in Kakuma and the Rwandan camps have used solar and hybrid technologies (Practical Action 2021; Renewvia 2021)2021; Renewvia, 2021. While some public space lighting used solar streetlighting the majority of community facilities that were electrified accessed power using a grid or micro-grid connection, and in recent years some of the camps have started to move to solar-powered generation. Table 3.1 summarises the different public users of energy, the common technologies observed in refugee camps in Rwanda and Kenya and who provides energy. Critically, the table highlights that humanitarian organisations are responsible for securing their own energy, and in many cases also provide access to NGOs and community facilities.

Often sector specialists used the two terms ‘community facilities’ and ‘operational uses’ interchangeably, and in terms of the practicalities of use in these spaces energy flows between and across users. However, the reality of humanitarian systems means that energy for humanitarian operations (the homes and offices of UN staff, for example) is prioritised over energy for refugee community needs. In practice this division also leads to the energy needs of community facilities being neglected and ‘playing second fiddle’ to those of operational users. This is reflected in the evidence presented in this chapter as many community facilities were unelectrified while operational users were almost always connected to some form

**Table 3.1.** Operational and public energy users and provision mechanisms commonly observed in refugee camps in Kenya and Rwanda. © Sarah Rosenberg-Jansen.

<b>Energy Users</b>	<b>Examples of Spaces</b>	<b>Common Technologies</b>	<b>Typical Energy Options for Provision</b>
<i>Community Facilities</i>	<p>Health clinics and centres. Playgrounds and nurseries. Educational spaces and schools. Public spaces – streets, open spaces, walkways. Refugee community spaces – halls, churches, other buildings. Market high streets.</p>	<ul style="list-style-type: none"> <li>• Diesel power and generators.</li> <li>• Mini-grid systems or grid connections.</li> <li>• Occasional solar panels for building lighting or power.</li> <li>• Solar or hybrid mini-grids for some clinics and public spaces.</li> <li>• Limited energy technologies present, or technologies broken or damaged.</li> </ul>	<ul style="list-style-type: none"> <li>• NGO or humanitarian organisation buys diesel generator.</li> <li>• NGO pays humanitarian organisation energy bill for diesel or electricity.</li> <li>• Development or humanitarian programme installs solar or sustainable energy, and often provides energy for free or at a subsidised rate.</li> <li>• Informal acquisition or connection to humanitarian agency power sources.</li> <li>• Refugee community or committees buy independent technology for power.</li> <li>• Very limited energy provided.</li> </ul>
<i>Humanitarian Operations</i>	<p>UNHCR offices and living spaces. NGO or implementing partner office spaces. Registration or refugee administration spaces. Food and water distribution points.</p>	<ul style="list-style-type: none"> <li>• Diesel power and generators.</li> <li>• Mini-grid systems or grid connections.</li> <li>• Some new solar or hybrid mini-grids proposed in Rwanda and Kenya.</li> <li>• Some examples of technologies not working or temporarily out of fuel.</li> </ul>	<ul style="list-style-type: none"> <li>• Humanitarian organisation buys diesel generator.</li> <li>• Humanitarian organisation pays energy bill for grid energy.</li> <li>• Development or humanitarian programme installs new solar or sustainable energy, and often provides energy for free or at a subsidised rate.</li> </ul>
<i>Mixed Users</i>	<p>Water pumping. NGO offices. Public space used by refugee committees.</p>	<ul style="list-style-type: none"> <li>• Diesel power.</li> <li>• Occasional solar panels for building lighting or power.</li> <li>• Limited energy technologies present.</li> </ul>	<ul style="list-style-type: none"> <li>• Sometimes generator owned by humanitarian agency but fuel paid for by NGO.</li> <li>• Sometimes classed as operational energy but paid for from community facilities – for example, refugee committee spaces.</li> <li>• Often not clear who owns, pays for or maintains energy.</li> </ul>

of electricity, even when access was intermittent or technologies were in need of repair.

The range of electricity sources, from both renewables and fossil fuels, was similar in both Kenya and Rwanda – with a strong prevalence in both countries of solar technologies as the predominant form of renewables visible. To some extent new technologies have been installed recently by the Renewable Energy for Refugees (RE4R) programme in Rwandan camps, with 185 streetlights installed across three of the camps between 2019 and 2021 (Practical Action 2021)2021. However, only time will tell if these will be maintained and continue to provide services for the camp communities. Within public spaces in the camps there was a focus on electrical technologies for power rather than cooking. This is in part because many of the uses of energy – public space lighting, power for offices, connections for Wi-Fi, etc – are electrical. But it is also a function of the fact that relatively little cooking was done within community facilities and operational spaces. An exception to this was community cooking done within schools, which often used firewood and charcoal, and cooking within office kitchens, which relied on either LPG canisters or electrical cooking appliances such as microwaves, kettles or electric hobs.

### *Physical Spaces of Public and Organisational Energy in Refugee Camps*

A diverse picture emerges from fieldwork in Kenya and Rwanda, with examples of some community facilities being completely electrified, others exhibiting an absence of energy and a third category of energy access whereby facilities were connected but power was highly intermittent due to a lack of repair or power rationing. Spaces of energy use in community facilities across the camps were varied, although in all the camps I visited there were sites for schools, playgrounds, community centres, health clinics and water-pumping stations. In some cases these spaces were electrified. For example, most of the health centres in Kenya and Rwanda had access to electricity – but this supply was often intermittent.

Without regular power refugee community members felt let down by humanitarian organisations. Interviewees commented that the lack of lighting and power in public spaces was one of their top requests during discussions with aid agencies, but little was being done to meet this need. Some refugees mentioned accidents that happened in the dark because of a lack of public lighting, especially for women who needed to go to the hospital in the night to give birth and accidents where people would fall on the way to the toilet blocks in the dark. While several previous projects to install public lighting and power to community facilities had taken place, these projects were dependent on donor funding and, as one

interviewee – a refugee living in Kenya – commented, ‘when the money ended, so did the lights’. A lack of reliable power, especially in health clinics, caused a great deal of anger in the camps.

Community facilities were often reliant on energy provided for humanitarian operations – for example, through informal connections to UNHCR and NGO generators. While in some spaces energy would be provided and an organisation would take the lead on energising a space, there was little systematic provision of energy – which left many spaces in the dark. For example, clinics and offices were often powered whereas playgrounds and community centres were not. In contrast, by and large all operational institutional spaces in the camps visited in Rwanda and Kenya had access to electricity. This included power for the offices for agencies, NGOs and implementing partners, as well as food and water distribution points, registration and administration spaces, and staff living quarters and compounds. A couple of examples are presented below to provide a snapshot of operational energy sources in the camps.

We are big energy users ... Mission-critical situations, so key support people within the camp – the community leaders, the staff from Save the Children, or the staff from [the] Red Cross, whoever are out there, who really need to have energy and mobile communications and to be able to keep systems going, that’s kind of the target that we are looking at ... when you have this mission-critical concept. (Humanitarian energy practitioner living in Kenya)

In Kenya energy technologies and appliances within operations were prominent in institutional spaces. Similar spaces were found in WFP compounds and the office spaces of NGOs and implementing partners working in the camps. As Kakuma is far from other national supply routes much of the power for these sites was supplied by diesel generation, with a few examples of small-scale solar panels observed on individual buildings. The Kenyan national authorities were planning to connect Kakuma town, the humanitarian operations and the organisations within the camps to the national grid via a locally placed, nationally owned mini-grid. Even with these promised connections, the national electricity network was not intended to power households: grid-equivalent power was planned only for the camp operations, some market spaces, hospitals and clinics. While refugees living in the camps may in the future be able to benefit from the electricity by using the electrified services in the schools, hospitals and camp administration facilities, they may not receive direct connection in their homes via these systems and so would still be reliant on smaller and independently owned energy technologies.

In Kakuma most of the public community facilities within the camps had power and lighting. For example, schools and clinics were electrified and some NGO spaces contained cooking facilities for students. One of

the key examples of energy at the community level was the provision streetlighting (EDP 2018). There were also some examples of public lighting in Kakuma and Kalobeyei settlements from lights powered by mini-grids outside the market shops, community spaces such as schools and clinics, or from the power from the institutional spaces such as offices and securitised food-distribution points. Within public spaces in the camps less energy (for example, for playgrounds or refugee community spaces) was observed, but many market spaces were electrified through informal diesel generators or streetlights.

In Rwanda public power connection was different in each of the three camps. Kigeme camp, in the south of the country, was connected to the national grid. This power was only used by humanitarian operations, healthcare providers and a few NGOs within the camp. Gihembe in the north, close to the town of Gicumbi, was partially connected to the grid for some host community services, but the majority of humanitarian users had diesel generators for their operations. Nyabiheke was the most remote camp, being over an hour's drive from the local host town and field office, located up a particularly steep hill and in difficult terrain. While the Rwandan national offices at the bottom of this hill were connected to the national grid, the camp operations relied on diesel generators for their power needs.

Public space lighting in the Rwandan camps was highlighted by many community members as a particular problem: the camps were very dark after sunset, and many people reported accidents and problems because of this. In general safety – both physical safety from accidents and reducing the risk of thefts or damage – was highlighted by interviewees as being linked to energy. In Rwanda some streetlighting was present in Mahama camp, but lights that had been installed in Gihembe some time ago had been vandalised and were no longer working. Very few of the community facilities visited in the Rwandan camps had reliable energy access. Some spaces were unelectrified while some were connected to generators, but not ones that were working. Broken or faulty technologies seemed to be common – such as the broken streetlamp in Figure 3.1. There appeared to be fewer examples of energy public services in the Rwandan camps, but the desired level of energy access is very similar to that in Kakuma.

In all spaces in both camps examples of energy technologies that had been installed and then fallen into disrepair were common. A pattern began to emerge of temporary solutions, which failed after a short period and a lack of follow-up or substantive investment over time – such as streetlighting, which lasted a couple of years after being installed but, when damaged or broken, was not repaired, replaced or even removed. For example, disused streetlights remained in place in Gihembe long after they had stopped working and even newer solutions, such as those in

Mahama, were often damaged or faulty. Overall the repeated instances of such failures gave the camps a feeling of neglect and forgotten technologies. This became a bone of contention with refugee communities – who rightly complained that such technologies became an afterthought once a project had been completed, with little thought given to longer-term needs.

As the following sections will describe, while there was considerable evidence of energy needs and uses in both community facilities and



**Figure 3.1.** Solar streetlight in Mahama, Rwanda. © Sarah Rosenberg-Jansen.



humanitarian operations there was a limited amount of energy actually available. Particularly in the case of refugee community spaces, unmet electricity needs and dark spaces were common – while even for humanitarian operations, power was often intermittent or lacking.

## **Institutional Energy Users: Refugee Communities and Humanitarian Organisations**

### *Energy for Schools, Hospitals and Community Uses*

A key use of energy within refugee camps is for schools and training spaces. For example, lighting for classrooms, power for computers and school offices, and fuel for cooking school lunches. Training centres – such as colleges, where students can learn specialist electrical or mechanical skills – also require electricity for tutoring in IT skills, hairdressing, motorcycle repair, electrician-training programmes and business-development courses. Despite these substantial energy needs many refugee school spaces were not electrified or had only minimal lighting.

Some schools used to have power – in Gihembe with the religious group, they used to have a generator there. It was used for laptops and lights and plugging in things. And printing. But now because of the lack of electricity the students drop out. They can still go to the committee [the camp refugee committee] to type reports and print them, but they have to pay for this. This is not good for the students. But worse for the teachers – sometimes they cannot type their report there because they must put in confidential things in the reports that no-one should see, so they cannot type and print them there. They are not allowed to be seen by anyone. Without the electricity, these issues go unreported – they can't do the report, so they don't tell anyone. (Refugee living in Rwanda)

As this interviewee reflected, the limited energy within schools was a source of low morale within the camps. Teachers and students I spoke to were frustrated with the lack of energy, and found it challenging to do basic tasks without electricity. Several teachers mentioned that they were reliant on energy services in the local markets to be able to type and print resources for their students. They also reported that many students would cluster in spaces with public lighting – such as toilet blocks and outside NGO offices – to do their homework at night. In some cases interviewees mentioned that girls in their class were falling behind as they could not visit these spaces at night and therefore could not do their homework. The impact of a lack of electricity in primary schools, and many secondary schools, was significant and limited the possibilities for many students and their teachers to enjoy school and learn productively.

For senior students and adult learners some NGOs provide electrical-training courses for refugees in Kakuma on solar energy – for example, a Norwegian Refugee Council (NRC) programme offering the opportunity for older students to learn about solar technologies, including how to carry out electrical repairs and the installation of technologies for various purposes (Crown Agents 2017). These training spaces require electricity to power appliances and enable students to learn about electricity installation, repair and maintenance. Many of the students I spoke to during the course of my research highlighted that a lack of energy at home and at school limited their learning.

Now is the summer and we only have a couple of summer classes, but in the rest of the year we have many many classes a day and need probably twice as much power. But now we are building another NRC site, another set of classrooms to share with other teaching skills organisations. We loaned the panels and the other generator to them. They are using the power for building, not teaching. For constructions of the classrooms and the offices, so they need a lot more power for all that than us at the moment. We lend them the panels and the power. It is good to share here, then we can do more, have more students, and more progress. (Refugee living in Kenya)



**Figure 3.2.** Norwegian Refugee Council electrical-training centre: practice board in electrical class in Kakuma, Kenya. © Sarah Rosenberg-Jansen.

In 2021 UNHCR released a report on sustainable energy investments in community facilities. In Kenya UNHCR reported that ‘15 social institutions have access to electricity from the mini-grid operated in the Kalobeyei settlement’ (UNHCR 2021c: 7) and that ‘a renewable energy system scale-up programme has started with the potential to provide 31 schools and 7 health facilities with improved access to electricity for the benefit of up to 69,000 students and 150,000 patients’ (Ibid.: 9). Despite this progress many community spaces and schools remain without reliable or sustainable energy. The need for sustainable energy was highlighted by interviewees, suggesting that while some new installations had occurred these were not necessarily meeting the energy needs of refugees in community spaces such as schools and training centres.

The schools have neither electricity nor lights, or solar systems. This is a big challenge for them – it stops them using technologies like TVs, printers, barriers, and phones. They don’t even have a scanner, they have to walk to the village [local town] with the documents and scan them there. It is a big problem for the students – students at this school will soon be doing exams on laptops and not on printed paper. It needs to change because in the other national schools, they have this, and it will affect the students in the national exams – where they have to do it on a computer. They need more solar energy for this. They can put those big panels on the school roofs – it would be perfect – it would be right there on the school. Then one wire from the panel on the roof to the laptop and poof!! The laptop will turn on. That would be excellent. There is an initiative of the government to have one laptop per child in schools, so it would work. But here it is not yet possible because of the lack of electricity – from solar or other sources. (Refugee living in Rwanda)

Another key need for energy in community spaces is energy for health clinics and hospitals. Hospitals, particularly, use a considerable amount of energy – for appliances to take measurements and sterilise equipment, and to power machines during surgeries and healthcare appointments as well as lighting for clinics and hot water for cleaning. Most health spaces I visited in the camps had some form of electricity connection – often from a diesel generator. For example, in Kigeme the clinic had a grid connection as well as its own back-up generator and was run jointly by UNHCR and the American Refugee Council (ARC) within the camp. Power was viewed as important for hospitals as it had a clear use: electricity to allow machines to run medical tests, and keeping vaccines cool.

Power is very important here; we have the wires [points overhead to national grid connection] and our own generator. The power must not go off, or not for very long. We have a lot of patients here and a lot of equipment for tests. And the fridges for keeping things cool, some things must be kept cold like

the vaccines. It is very important and we pay for it [the power and the generator]. (Refugee living in Rwanda)

While the importance of power for health spaces was almost universally recognised, many of the clinics and hospitals I visited struggled with issues of reliable or affordable power. In some cases this was because the diesel generator would break down, in others it was that diesel was so expensive the clinic could not always afford to buy it. As one doctor I interviewed said: 'it is a disgrace, when the power goes off. I had to buy a headlamp to use for examinations at these moments. Every time I am forced to use it, I think: these are dark times' (Medical professional living in Kigeme camp in Rwanda).

As there is a clear link between electricity and human life, responsibility for power was often prioritised by either NGOs or humanitarian agencies. However, as a result some uses of power and appliances were judged 'more important' than others. For example – energy for health centres was prioritised over energy for household or businesses users.

It was always going on and off [the electricity], so I made them [the camp managers] buy me another one [generator]. A separate one, just for us in



**Figure 3.3.** Appliances and medical equipment using power in the health centre in Kigeme, Rwanda. © Sarah Rosenberg-Jansen.

the distribution point. We share it with the clinic now, but I was asking for a long time for one. In the office we are supporting the young mothers, with the very small babies, we must weigh them and record the baby's weight. We must have electricity to do this – for the scales and the computer, and the warmth for the small babies. We need it here, electricity, as a priority. There must be enough power for the heating – the babies must be warm. For everything else it is easy. When I asked them for power [the camp managers] they could have brought me some solar panels, I do not care, I only need the electricity for the spaces. (Refugee health worker living in Rwanda)

In this example energy was needed for heating to keep babies and their mothers warm during treatment. As this is deemed an essential service and the link between energy and preserving life is clear, the health worker faced relatively few problems in accessing energy. Even despite this the NGO still had to secure and buy its own generator and fuel independently from humanitarian agencies. This was a common pattern during my research – especially in the case of local and international NGOs – when smaller organisations in the camps were seen to act independently and source their own energy supplies.

This is my generator. But it is worth it, now we have power all the time and can run the computers, the printer, the registrations in the office [NRC training centre administration block]. And the students also use the power from it [the generator]– for lighting in the classroom and for their computer lessons. It is a very good generator, it didn't break yet and I have had [it] for a long time. I have a technician friend who is working for NRC as well, and he comes sometimes to fix it. Well not fix it, as it has not broken yet, but look at it – check it is working well. I think he cleans parts ... I don't know – it is a magic machine! A machine that I don't know how it works, but when it is humming and making noise it is on and working and then we have all the electricity we want. [laughs] I will introduce you to my technician friend, I think he would know everything and like to meet a lady who wants to know everything about electricity. (NGO humanitarian worker living in Kenya)

Meanwhile, many NGOs and community facilities within the Rwandan camps experienced a lack of power and relied on diesel generators. In general there has been a recent movement in some camps to develop sustainable-energy business models and move towards renewable technologies where possible (UNITAR 2019). In many cases these initiatives have focused on energy for community facilities: solar streetlighting for public spaces; the solarisation of health clinics; and small mini-grid solutions for community halls, churches and refugee spaces. For example, the company Renewvia now operates the largest mini-grid in East Africa, based in Kalobeyei refugee camp in Kenya (Renewvia 2023). The solar solution provides considerable energy for community facilities, operations and



**Figure 3.4.** Generator providing power for community centre in Kakuma, Kenya. © Sarah Rosenberg-Jansen.

some refugee businesses, and has enabled substantive and reliable electricity access for the first time. Interviewees described the benefits they saw in solar solutions – as can be seen from the quotes from interviews highlighted below.

More electricity means that I think, more progress. We liked the panels here, not just for the electricity, but because then visitors would come and see the big NRC sign [points to sign and flag] and see the panels either side, and they would say ‘this is a good amount of progress, probably you have a good operation here, we will provide more money and resources’. Not for the electricity of course, they are not paying for that, but for the computers and welding equipment, and for the books, the things the students need. [sighs] Now I wish the panels were here, but I can take you after lunch, to the new site and you will see them there. You can imagine I think, the nice panels here, and feel that is good. (NGO humanitarian worker living in Kenya)

The examples above provide a description of some of the public and community spaces that had access to energy in the camps. However, far more often it was the case that refugee community spaces were unelectrified

or relied on informal methods of connection, such as temporary lighting or light from solar lanterns. Energy needs in community facilities across the refugee camps were considerable, and many refugees reported that they felt abandoned and excluded from accessing power in public spaces. One interviewee, a refugee living in Rwanda, commented, ‘It is like we are not allowed to use it, the public electricity, it is only for humanitarians, not for us refugees’. Such sentiments highlight the division many refugees felt between the energy provided for community facilities and the electricity available for humanitarians in their offices and spaces.

### *Energy for Humanitarian Operations*

While the situations in Kenya and Rwanda were different, similar patterns of operational energy use were observed in both countries. In food-distribution centres, administrative spaces and the premises of humanitarian organisations, energy was everywhere. As Figures 3.5, 3.6 and 3.7 highlight, computers, phone chargers, printers and scanners, and other electrical equipment was everywhere. In office kitchens kettles boiled and fridges purred, stove tops and microwaves sat waiting for food preparation and fluorescent lighting buzzed overhead. In both countries, camp operations were reliant on diesel power for operations and many operational spaces were fully electrified.

However, humanitarian staff working within the camps were often not aware of the different energy connections or possibilities within their spaces. Despite having considerable electricity access, including Kigeme being connected to the national grid, many humanitarian staff within the camps referred to the camps as ‘un electrified’. As one interviewee, a humanitarian energy practitioner living in Rwanda, commented, ‘No, we cannot have good energy here, it [the national grid] is too far away’. However, the reality is quite different: Figure 3.5 highlights national-grid wires running overhead, for instance. When I suggested the grid was close by and that the camp was connected to the grid, pointing overhead to this view, he responded, ‘Oh. I never looked up and saw that before’.

This lack of knowledge about energy was a common experience during my discussions with humanitarians. For example, on my way to interview a representative of one of the main humanitarian agencies in Kakuma – a manager living and working there – I walked through her office compound and observed the vast amounts of electricity available: lights on in the middle of the day; air conditioning bellowing out cold air; chilled water from coolers; computers, printers, desk phones, TVs, cameras, DVD players and speakers – all using electricity within offices. Outside the office door fairy lights were hung around the compound gardens, there was streetlighting and the hum of a nearby generator, electricity was used



**Figure 3.5.** Electricity connections overhead in Kigeme, Rwanda. © Sarah Rosenberg-Jansen.

to pump water to irrigate the gardens of the compound and mobile phones were charging in many sockets. Electricity was very visible within the camps. Despite this, during our discussion the interviewee commented: ‘We don’t use energy [for ourselves in the operations]. We have some lights and that is it ... That energy surrounding our office is all provided by someone else, we don’t do anything about it. It is not ours and we are only switching on the lights and the computers’.

After a few weeks in Kakuma I understood that while this interviewee officially had a job working on energy and environment issues, and was involved in firewood distribution and the planting centres, she did not have a role in regard to electricity. I was interested as to whether this was because she did not personally consider it important or whether the institution did not work on electricity. Therefore, I asked for another interview. This time I explained my position as a researcher who was interested in learning about all the different types of energy across the camps. I started by showing her my photos of the energy uses I had seen in operation and offices. During the discussion the interviewee responded: ‘So, electricity is all the things that turn on and off? So ... all these things are using electricity and it is costing us money?’ I confirmed that it was costing someone money and she responded in wonder and shock: ‘Who does it? How are they paying for it? I don’t even know who [the] person would be to ask!’





**Figure 3.6.** Energy appliances in an office in Kakuma, Kenya. © Sarah Rosenberg-Jansen.

After this interview I regularly ran into this manager during my field-work, and she often asked, ‘Did you find any new energy today?’ and ‘Is this energy?’ and pointed at things. The things she pointed out were always electrical, and yet she was often surprised when the answer was yes. At the

end of my last trip in Kakuma, I went to show her a final selection of all the photos of spaces I had taken.

This is incredible, all these things, they are all electrical? And they are everywhere in the camp? On the streets, and in the compounds, and in my office! I have been asking and asking, who knows about this in [her institution]? And no-one knows, it is like a mystery – where does it all [the electricity] come from? I am thinking UNHCR, because they are doing a lot of odd things. But who knows, it could be the Kenyans [national government], or anyone. I am looking every day now at the centre [distribution point] and I am seeing people using their phones, and computers, and the scanners, and wondering, ‘Why did I not think of this before?’. One day I sat by the generator and I asked the sweeping man, ‘Where does this [the generator] come from?’ He did not know and he said a man comes sometimes to look at it, but it always works. I was very excited and asked him, ‘Which man? Is he wearing blue [UNHCR colour], orange [NRC colour], or another – has he another name?’ He said he didn’t know and the man was tall, with a hat on. This did not help me solve the mystery of the generator. But at least now I know what is in the box, and that it is a generator [grinned and hugged me]. (Humanitarian agency working living and working in Kakuma Kenya)

Figures 3.6 and 3.7 highlight some of the spaces the interviewee talked about and are examples of the photos I shared with her, including energy sources and technologies. Overall in operational spaces, a huge number of electrical technologies were visible – including diesel generator sets, lights, computers, sockets, wires, fans, plug sockets, phones, chargers, screens for displaying information, virtual eye scanners and fingerprinting machines. After some time in Kakuma conducting discussions with humanitarian agencies and NGOs, it became clear that there were often designated people for energy (‘energy focal points’) within the camps. The fact that it was not easy to find these coordinators, and that they themselves were often not clear about their role regarding energy, was very revealing. Overall within the camps in Kenya and Rwanda there was a considerable lack of engagement with energy sources within institutions.

Similar opinions were repeated in many interviews conducted with practitioners; in general, very few humanitarians I spoke to understood the basics of energy or knew how their offices were powered. Part of the reason for this may be that until recently energy for operational users in refugee camps was not readily considered by the humanitarian or development communities. The majority of field operations use diesel generators or in some cases are connected to the national grid, and have considerable levels of power available within office and living quarters. This is usually sourced by an operational specialist and procured from a private-sector supplier or national energy grid, and therefore requires very little engagement by the end users of the electricity – the humanitarians themselves.



**Figure 3.7.** Laptops in use at a food-distribution site in Kakuma, Kenya.  
© Sarah Rosenberg-Jansen.

This lack of engagement on energy was common within the camps, with many interviewees commenting that energy was for ‘technical specialists’ and that they didn’t know anything about it. One interviewee, a humanitarian worker in Rwanda, even remarked, ‘Who cares, some old diesel generator in a shed somewhere, why would anyone care about this?’ This detachment from and disparagement of energy meant that it was often

difficult to talk to humanitarians about energy technologies. Interestingly this pattern did not seem to be repeated for other technologies. For example, when I asked similar questions about shelter or WASH technologies, most humanitarians could offer an opinion on what they were, how they came to be in the camps and which organisations were responsible for them. Badging all energy as ‘technical’, even when the basic technologies are lanterns and firewood and require very little technical engagement, represented repeated problems in energy discussions in camps – as the below example demonstrates.

In operational and community spaces it was often unclear who to talk to, and considered action on public energy was sporadic. As an example of this, on arriving in Kigeme camp in Rwanda one of the first sites I tried to visit and interview people at was a water-pumping station. The space contained the water-pumping infrastructure, the diesel generators supplying the power and a number of disused manual technologies for water pumping. This space was interesting for a number of reasons: it spanned across large areas of the camp, with the pumping station at the bottom of a hill, running up to the water storage tank. There were also several water-collection sites across the camp supplied by this water. Despite water distribution being one of the core humanitarian life-preserving activities of the camp, I was unable to find anyone within the camp to have detailed conversations about the water pumping with. Many of the people shrugged when I asked who to talk to, and said that maybe UNHCR would know.

I informally interviewed as many people as possible within the camp on the water-pumping facilities but there did not appear to be one core organisation or individual to discuss the technology or process with. While having informal conversations with people using water-distribution points and those managing the water-pumping system, it became clear that few people understood energy had anything to do with the way water or energy was being used across the space. In the end the people who seemed to know most about the system behind the water pumping were the refugee security guards – humanitarian WASH workers – who were guarding the diesel generators. Two young men in their thirties, they guarded the space and ensured that no one interfered with the equipment and that children did not play next to the generators. They thought that UNHCR paid for the diesel and the generators but did not know how much this cost or the options for switching to solar or other solutions. Interestingly, the main topic the guards were keen to talk about was the ‘broken’ water pumps – manual foot-powered water pumps that can be used once water has been pumped to a particular site to extract water from larger containers. These foot pumps are not electrical but can be useful to move water into smaller, handheld jerry cans or containers for household use. When I asked about these pumps they laughed and said, ‘They are never working:

children play on them, break them; the rich people keep giving them, and we keep all the broken ones hiding here behind the power house, where no-one goes'.

When I arrived back at the regional field office I continued my questions, but even the camp managers who ran the system were uncertain how the water-pumping bills were paid. While at the household level I witnessed how well informed refugee communities were about energy and its sources, for access to energy in public spaces the picture was quite different – very few humanitarians were engaged with or informed on the topic of energy for use in public spaces.

The story above highlights one of the key problems in researching energy in the camps: it was very rarely clear whom to speak to about energy or which institution was responsible for power. This story also highlights that many technologies – such as diesel generators and foot-operated water pumps – are often 'hidden' out of sight behind structures and in buildings 'where no-one goes'. The fact that entrance to these spaces was restricted by security guards and that I – as a White, international woman – could easily gain entrance but that the refugee children and mothers I had been speaking to outside the space could not, also demonstrates the way in which many energy spaces within the camps were controlled.

Particularly, it was often difficult to establish how energy was paid for by operations. Initial questioning, such as that conducted in the story above, revealed that misinformation on energy was common, and interviewees were generally unsure about payment modes or how technologies were purchased. This became a pattern and I could rarely establish actual payment levels. There seemed to be a number of truths, but few facts, regarding the operational installation and payment for energy within refugee settings. Importing expensive diesel to remote locations in Rwanda and Kenya is expensive. To highlight the scale and costs of operational energy a recent report suggested that 'around 5 per cent of humanitarian agencies' expenditure goes on diesel, petrol and associated costs such as fixing generators. That would mean that the sector spent some \$1.2 billion on polluting fuel in 2017', and that using renewable and energy-efficiency measures 'could mean operational savings of over \$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: 4). This is obviously an incredible rate of spending, suggesting that the costs of power for operations in humanitarian settings are similar to or even above those required in other developing countries or even European contexts.

In some cases humanitarian organisations also faced problems with energy for their own operations. While Mahama and Kigeme in Rwanda are grid connected, they also have back-up and supplementary diesel generators. The other camps all rely on off-grid diesel generation for

their power. The case of Nyabiheke camp in Rwanda is particularly challenging: the camp is quite remote, and during most of my visits there no power for the operations was available. Figures 3.8 and 3.9 capture some of the offices and facility buildings without power.

In summary, for public spaces there was limited and intermittent access to energy technologies and energy services in general. Schools and community spaces were often completely unelectrified, and power in health clinics and for water pumping was intermittent. For humanitarian operations, however, many spaces were electrified. While some interviewees were able to talk about energy there was a general feeling of lack of engagement. There was a grey area over whose responsibility it is to power community facilities and some NGO operations, which is part of the problem underpinning reliable energy access in the camps and, as is discussed in the sections below, was contributing to an absence of energy and of energy ownership in these spaces.

### *Public Energy Absences and Absent Knowledge*

The cases cited throughout this chapter have highlighted examples of refugee camps being underserved in terms of energy, illustrating how many spaces were unelectrified or faced limited access to cooking fuels and technologies. The absence of energy had a considerable impact on public spaces in refugee camps. For example, community centres and churches could not be used after dark, schools had no access to electricity or appliances and spaces of productive uses could not be used due to a lack of power. This pattern was more common in the Rwandan camps than in Kenya, perhaps due to the higher levels of NGO and agency investment in Kakuma in the former country. The example below highlights a typical experience of the lack of energy in public spaces: it documents a lack of energy in a community hall that hosted a carpentry workshop and a women's cooperative.

During one of my visits to Nyabiheke in Rwanda I met with a refugee man who had heard I was interested in energy. He took me to see his workshop, which was in part of the public buildings and facilities set aside for community activities. Initially I had understood that his workshop and the hall were electrified as he talked a lot about solar panels and how useful they were. But on arriving it became clear that he wanted panels rather than had them, and was keen to tell me about all the things he would make once he had power back. He started by giving me a tour of the space, showing me his workshop, the wood and sanding tools, and then we began to discuss the importance of power for his trade. He said: 'We need it, the power, always. It must be on. Else this does not work [points to the sanding machine in the picture below] or this [the drill]. Energy is important for all of us. We must work often by torches for light'.

The interviewee then took me into the building next door where the women's cooperative and meeting space was. He discussed with the women there, who happened to be having a finance meeting about the funds available in the cooperative, and asked them if they would pay for energy. He then led me to a small table that contained electric torches and showed me the light switches next to it, which were not working due to the lack of power, and confirmed that they used to get electricity from an informal connection with the UNHCR generators. But now the generators were not working most of the time, and even when they were the centre would not get electricity that way.

The community centre and carpentry workshop were connected to power in theory, but had had no access to electricity for some time. This was because the space used to be connected to UNHCR generators, but more recently the workshop had not been allowed access to this power. In any case the generators were not working during the visit. The community was annoyed about this because, as further interviewees also commented, if they had control over the system they would be able to secure electricity and pay for it. However, they were not even given this option by the camp authorities. In this case the interviewee remarked that the community would find power themselves and pay for it, if the NGOs and agencies in the camp helped them to contact some energy suppliers.

This story highlights an important point: that many refugees in community spaces seemed willing and able to pay for energy access, but in many cases felt restricted in their ability to do so. During a number of interviews refugees stressed that this was because they felt the humanitarian agencies and NGOs were responsible while they (refugees) were not allowed to install infrastructure or energy technologies. As this interviewee commented, 'We will find it ourselves'. He was keen to develop solutions within his community. In this case the hall was not electrified, and this seemed to be due to both a lack of knowledge on how and where to find energy technologies and a lack of permission from the agencies controlling the camp. This was more often the case in the Rwandan camps than in Kakuma – where NGOs, especially, were more active in installing energy – but was a common pattern across community facilities.

While some humanitarian practitioners within the refugee camps were able to talk about the community uses of energy, there was a general feeling of lack of engagement about how this could be done. Interviewees gave the impression that energy access in public spaces was out of their control and was managed by other people – for example, the institutions in the camps, the refugee committees, the national government agencies and NGOs working within the camps. However, many agencies and NGOs did not feel responsible for electrifying these spaces. For example, one interviewee, a humanitarian worker in Kakuma, commented, 'The energy for

refugees is not our concern'. This gap in responsibilities, between refugees who felt they were not allowed to install energy solutions and institutions who felt it was not their responsibility, was common within the camps and is demonstrated by some of the stories in this chapter.

As the example below highlights, in many cases a lack of knowledge within the refugee community on energy was not the problem. The interviewee discussed many technical elements including how renewable sources of power might be useful, the problems caused by lack of energy and the level of knowledge held by community members. One of my first introductions in Nyabiheke was to one of the senior refugee committee members. He highlighted all the 'things that don't work' due to a lack of power. I asked him about energy and how he thought it was in the camps. He responded: 'Nothing here works, there are so many things here that don't work. We will go and I will show you some of them, all around the camp. This is why I am one of the leaders here because I am promising to fix these things that don't work'.

We spent the day together walked around Nyabiheke with him pointing out things that 'don't work', starting at the health centre. There were many things at the health centre that were broken, including phones, computers, lighting and all the electrical appliances in the lab that required power. I asked the centre staff and the committee member whether the 'things that don't work' are broken or is it because of lack of electricity and he answered: 'It is the power – it is supposed to be on and they [the camp institutions and managers] are saying they have no money for other things like firewood because they have to pay for this. If they are paying for it, why is it not working?!'

Next we walked across to the camp administration spaces where the UNHCR and NGO offices are. Here the committee member stopped for a long conversation with a UNHCR staff member and explained that he was telling me about the power. When he came back to me, he remarked:

He doesn't know anything about the power. I asked him about the power here, in the offices, and he tells me the lights are off and his computer will not charge. So he is going home early to charge it in his home. I am asking him, 'Why can you go home?' I cannot get power in my home, or there [gestures to clinic behind us, where we have just been], or anywhere, so nothing is working'. (Refugee living in Rwanda)

The refugee community member highlighted that the humanitarian agencies within the camps were in fact responsible for ensuring power was available in the clinics, and that they had acknowledged this during other conversations with the refugee committee by stating they could not afford to increase the firewood rations because they had to pay other costs, such as the electricity bills for the clinics. He also drew attention to the fact that





**Figure 3.8.** Health centre: appliances that were not working, chest fridge for vaccines with temperature monitor to show the range within which vaccines should be kept, Nyabiheke, Rwanda. © Sarah Rosenberg-Jansen.

refugees within the camps were not allowed to fix the generators and it was a technology that was inaccessible to him. In this case it was unreachable both in terms of location, as the generators were kept off-site in a guarded space outside the camp, and inaccessible as he was not allowed to fix the power and the distribution connections. The level of knowledge on energy within this community was high, and the interviewee highlighted the difference between this and the knowledge of the UNHCR staff member on the issue: ‘He doesn’t know anything about the power’. Here it became



**Figure 3.9.** Generator equipment in Nyabiheke, Rwanda. © Sarah Rosenberg-Jansen.

evident that while humanitarian agency staff were perceived to have control over energy resources, they often did not have the knowledge or skills to develop solutions or manage existing resources.

During interviews on energy for public spaces, interviewees often commented on the issue of whether they were allowed to undertake certain activities. This highlighted the issue of control in the camps: many refugees felt that they did not have the authority to develop energy solutions for community facilities and that this authority belonged to UNHCR, the camp managers or NGOs. In many cases this issue was not about capacity: refugee communities knew a lot about energy and were able to secure and develop solutions themselves, as they often did in their homes and businesses. Rather, it focused on the fact that they did not feel they were allowed to provide energy in public spaces, especially in terms of larger-scale infrastructure such as churches and community halls. There was a key difference here between the communities in Kakuma and the Rwandan camps: in Kakuma this issue was not so prominent and I observed some communities taking the initiative and electrifying their spaces; however, in Rwanda this was not the case. This may have been due to the different institutional arrangements between the two countries – for example, the fact that the Rwandan government are more involved in the camps and in the past have been quite strict about the construction of physical infrastructure such as buildings. But in both cases refugees felt it was outside their remit to install substantial electricity solutions on community infrastructure.

One of the most notable things about this set of interviews was the lack of responsibility for power in public spaces. In the different camps many different agencies and actors were suggested as being responsible for energy in these community areas. For example, UNHCR would often suggest that power for health clinics was managed by the NGO running the clinic, whereas in reality the NGO used electricity from UNHCR generators. For community halls and playgrounds NGOs expected the refugee communities to provide power in these spaces, and, while refugees were often keen to do so, they were often stopped by national actors or humanitarian agencies who claimed they were the only ones allowed to provide space and public lighting. This created a feeling of overlapping or competing responsibilities for energy in communities' spaces, which often led to a lack of provision as roles and responsibilities were not clear. The impacts of this were considerable: the majority of community facilities were left unelectrified due to a lack of defined institutional responsibilities.

Institutions can be said to control access and solutions in the camps, but do not necessarily take ownership of the provision of energy services. These restrictions are often political, and are determined by institutional remits and perceived roles and responsibilities within the camps. Restrictions were not just about logistics or the formal process of permissions to build structures within the camps, but rather were dictated by views about who should do what within the camps. These decisions were guided by the perceptions of agency staff about who is able to act in humanitarian settings, and a general feeling I got from many practitioner interviewees was that if humanitarian agencies could not install energy, then why would refugees be able to do it? This culture of control was often disempowering for refugee communities who were keen to build and install their own energy technologies, but who felt restricted by the humanitarian system designed to support them. We will return to this theme in the following chapter on energy provision to open up discussions on who is responsible for supplying energy and making decisions about access.

This section has summarised evidence to suggest that community facilities in refugee camps do not have adequate electricity provision, that many refugee spaces remain in the dark. The absence of energy seems to stem from a number of factors, the most prominent being that there were no clear roles and responsibilities for who should be providing energy for community facilities. In some situations, in Kenya, refugee communities and NGOs had found space and funding to develop energy projects themselves. In Rwanda, however, access seemed to be much more restricted and many still viewed it as the responsibility of agencies to provide electricity to community facilities. In general more energy was available in humanitarian operations than community facilities, but there were still a number of difficult connections within these spaces. Energy absences

were often not just about a physical lack of power but also about a lack of knowledge and a lack of responsibility for energy access.

## **Chapter Conclusion: Disconnects and Energy Choices**

A series of fundamental disconnects and absences have been presented within refugee camps and global narratives on energy. Physical gaps are visible in connections in community facilities, knowledge gaps remain between refugee and operational knowledge on energy and institutional intermittency creates gaps in responsibilities for energy provision. Within refugee camps inequality is extremely visible in energy access: there are large differences between energy provided for operations and for community facilities, there are variations between energy used by refugees and agencies, and there are clear inequalities on who is able to take responsibility for these issues.

Lack of experience with energy brought a number of issues and benefits during my fieldwork. Initially access to camps and to people to talk about energy was easy, as people did not think the issue was important so were happy to let me ask questions and move about the camps. However, as I got further into fieldwork I realised that there was a structural absence of knowledge on energy present within the camp administration organisations and humanitarian staff, which meant collecting data on this topic was challenging. It was clear that for organisations across all the camps there was little understanding of sustainable energy access, and that energy access for operations was diesel-generation-led. For example, many humanitarian agency field professionals were unaware that generators powered their offices and homes, and were open about their lack of knowledge on how these systems worked. There was also a disjuncture with many of the interviewees – who often gave the impression that energy was the responsibility and remit of ‘someone else’, but who that was often did not become clear. The result of this lack of engagement was both literal and institutional darkness. In some camps this had the effect of generators being off for months at a time (such as Nyabiheke), and in others large spaces of the camp were unelectrified (for example, in Kigeme). Institutional darkness has a number of causes, but two central ones were a lack of knowledge and a lack of ownership. Institutional ignorance and inaction is, in my view, political, as it represents a series of choices about what is important (food, water, shelter, protection needs) and what is not (energy).

The politics of humanitarianism matters here (Fassin 2007). Operational energy needs are valued and important, as was evidenced by the fact that generators were present in the camps and that some uses of energy, such as

power for health clinics, were seen as important. However, there are still institutional failings within the humanitarian system in terms of the provision of energy. Energy may be valued in terms of some users (humanitarians) but, overall, the humanitarian system still did not appear to value energy as a critical resource for refugee users. As a result, training to maintain and repair technologies is not invested in and many humanitarian field operations are without power. This suggests a difference within humanitarian users themselves: international and headquarters staff are seen as essential, whereas field staff and NGO workers in the camps have to experience long delays and often go without electricity for weeks and months. Therefore, the politics of energy can be understood to differentiate between humanitarian users as well as between humanitarian staff and refugees.

In summary, this chapter has put forward the idea that for operational power use in the Rwandan and Kenyan camps knowledge and ownership were limited. Additionally, interactions on energy with humanitarian organisations, by both myself as a researcher and with refugees themselves, can be characterised as difficult. Perceptions about how energy should be provided, both for refugee communities and for humanitarian operations, were mixed and institutional engagement on energy was largely intermittent. Energy choices in this context are political: value judgements are being made about how energy should be provided, and who it should be provided for. The following chapter considers the implications of these challenges, considering what these issues mean in terms of who provides and supplies energy.