

# Chatham House Report for the Moving Energy Initiative

Executive Summary | November 2015

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Foreword by Kofi Annan

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# Heat, Light and Power for Refugees Saving Lives, Reducing Costs



# Foreword

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There are now 60 million forcibly displaced people on our planet – more than the population of Australia and Canada combined. They include refugees, asylum-seekers and internally displaced persons (IDPs).

This numbing figure is likely to increase further unless concerted action is taken to address the root causes of violent conflict. At a time when the humanitarian system is overstretched and underfunded, nothing could be more urgent.

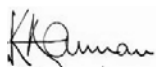
In the meantime, the imperative is to find humane, creative and cost-effective ways to respond to the needs of so many individuals, most of whom are women and children.

Improving access to clean, safe and sustainable energy offers a promising way forward.

Everybody needs energy services for light, heat, cooling, communication and mobility. However, as the MEI highlights, the costs of energy access and provision are unnecessarily high, whether measured in terms of finance, the environment, health or security.

Entrepreneurship and amazing advances in technology are not being used systematically to respond to the needs of uprooted people or the communities that host them.

Getting this right could yield significant benefits for humanitarian organizations, host authorities and governments and above all for the livelihoods and dignity of the forcibly displaced.



**Kofi Annan**

# Executive Summary

Displacement of people as a result of conflict is not a new phenomenon – but today it represents an unprecedented global challenge. The gap between the needs of growing numbers of displaced people and the resources and political will to meet their needs is widening. For example, voluntary contributions met less than half the \$3.05 billion increase in the UNHCR’s funding requirement between 2009 and 2013.

Energy is one critical area which illustrates this problem but also offers potential for practical redress. Energy services are essential for basic human protection and dignity, two of the core ethical aims of humanitarian assistance. Energy services provide cooking, lighting, heating and clean water, and underpin all but the most rudimentary income-earning activities. Yet millions of displaced people lack access to clean, safe and secure energy services, in part because funding for such services is inadequate. The lack of reliable data on energy use in the humanitarian field shows that it is a neglected area. But the evidence amassed in the course of this project reveals a huge opportunity to provide better and more sustainable energy services.

Drawing on open-source data, interviews and field surveys, this report offers the first global overview of the state of energy use among almost 60 million people forcibly displaced by conflict.<sup>1</sup> It considers the

mounting financial and human costs of their current methods of obtaining energy, and assesses the economic, environmental and human case for change.

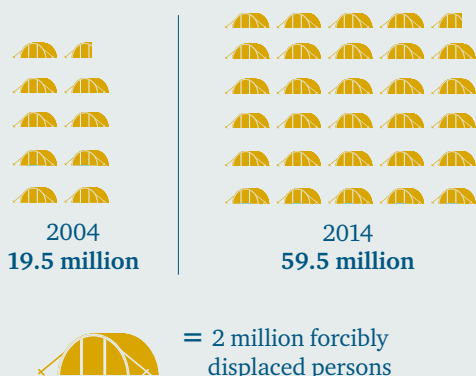
## Key findings

**1. Energy use by displaced people is economically, environmentally and socially unsustainable. Children and women bear the greatest costs.**

**Few forcibly displaced people have access to modern forms of energy, yet this group is not represented in international initiatives to improve energy access.** Preliminary calculations indicate that 80 per cent of the 8.7 million refugees and displaced people in camps have absolutely minimal access to energy, with high dependence on traditional biomass for cooking and no access to electricity. This state corresponds with ‘Tier 0’ in the Sustainable Energy for All (SE4All) initiative’s Global Tracking Framework (GTF) for improving energy access worldwide. All SE4All’s partner countries and organizations support wider access to energy, and this is now enshrined in Goal 7 of the Sustainable Development Goals (SDGs). However, there is as yet no explicit consideration of displaced people in SE4All’s agenda, the SDGs or most countries’ energy access targets.

<sup>1</sup> This report considers the energy situation for all people displaced by conflict, estimated at 59.5 million for 2014. However, for statistical purposes, it draws on a data model custom-built by Chatham House which is based on 49.05 million of the ‘persons of concern to the UNHCR’, as listed in the statistical annexes to the *UNHCR Global Trends 2014: World at War*, Annexes, <http://www.unhcr.org/pages/49c3646c4d6.html>.

## A deepening crisis



Number of forcibly displaced persons requiring UNHCR help.

## Very limited access to modern forms of energy

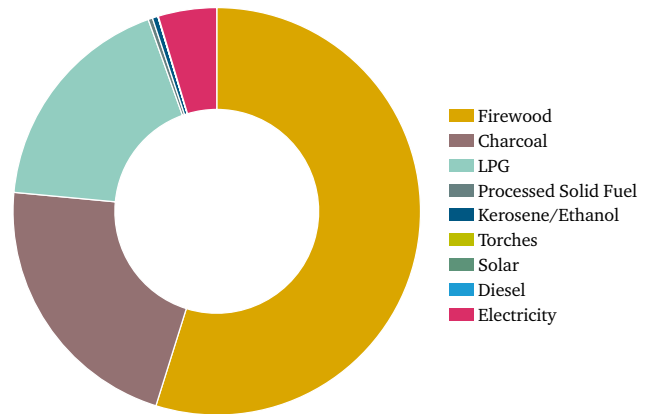


Out of 8.7 million refugees and displaced people in camps, only 11% have access to reliable energy sources for lighting (estimate: Moving Energy Initiative).

In 2014 household energy use among forcibly displaced people amounted to around 3.5 million tonnes of oil equivalent, predominantly in the form of firewood and charcoal (see Figure 1). The cost of this fuel is not easy to estimate: sometimes biomass will be collected for ‘free’; in other cases fuel prices are much higher in remote camps than for the general population. Conservative estimates suggest expenditure would be at least \$200 per year per family of five, which works out at a global total of \$2.1 billion per year. That cost is paid chiefly by displaced people, with some of the expense supplemented (often at a much higher cost per unit) by humanitarian agencies and host governments.

**Minimal energy use generates disproportionate emissions.** At around 13 million tonnes of carbon dioxide (tCO<sub>2</sub>) a year, estimated emissions from displaced households’ energy use represent a small proportion of global emissions. However, inefficient burning of biomass means that such emissions are high relative to the energy consumed. Firewood consumption emits 4.54 tCO<sub>2</sub> per tonne of oil equivalent, compared with 2.79 tCO<sub>2</sub> from burning an equivalent amount of liquefied petroleum gas (LPG).

Figure 1: Fuel use by type for displaced households of concern to UNHCR, 2014 (tonnes of oil equivalent)



Source: Chatham House Model.

### Major toll on human lives



An estimated 20,000 forcibly displaced people die prematurely every year as a result of pollution from indoor fires (based on WHO global estimates). Open fires, kerosene lamps and candles all frequently cause accidents.

### Women bear the greatest costs



Women and girls frequently experience intimidation and violence when collecting firewood. Some 500 displaced Darfuri women and girls were raped while collecting firewood and water within a five-month period in Sudan (Médecins Sans Frontières, 2005).

**Human health suffers as a result of inadequate energy services.** This report estimates, based on World Health Organization (WHO) data, that dependency on primitive fuels is a cause of premature death for some 20,000 displaced people each year as well as respiratory and heart conditions affecting children and the elderly.<sup>2</sup> Open fires, kerosene lamps and candles are all common causes of fires, especially in dry climates or where shelters are made of wood and textile. Women and girls frequently experience intimidation and sexual violence when leaving camps to collect firewood. Children are sometimes poisoned by accidentally drinking kerosene from plastic bottles.

**An estimated 64,700 acres of forest (equivalent to 49,000 football pitches) are burned each year by forcibly displaced families living in camps.** Deforestation is a common problem around refugee camps. Costs and security risks increase as families are forced ever further afield in search of firewood in the absence of alternative sources of fuel.

**Most refugee camps are reliant on poorly planned, inefficient diesel solutions to power offices, schools, hospitals and community facilities.** A lack of reliable data and major differences between camp operations make estimating diesel costs difficult. However, case studies show that, for

example, approximately \$2.3 million a year is spent on diesel in the Dadaab refugee camps (established in 1992) in Kenya. If a similar amount of fuel were spent relative to the number of camp inhabitants worldwide, it would cost the UNHCR around \$56 million a year. Transport costs for staff and equipment are additional to this and largely unaccounted for by humanitarian agencies.

## 2. Improving access to cleaner and more modern energy solutions would reduce costs, cut emissions and save lives.

The widespread introduction of improved cookstoves and basic solar lanterns could save \$323 million a year in fuel costs in return for a one-time capital investment of \$335 million for the equipment (see Figure 2). In each case, substantial maintenance, training and support costs would be necessary to make such an intervention effective and durable. The annual fuel saving would mainly accrue to displaced people, who currently spend substantial proportions of meagre household incomes on energy. Such an intervention could also result in emissions savings of around 6.85 million tCO<sub>2</sub> per year.

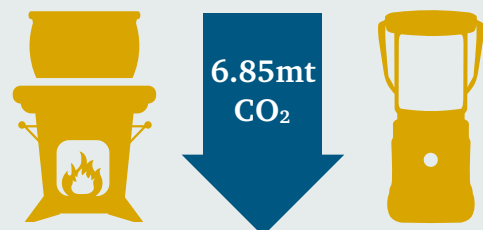
<sup>2</sup> This back-of-the-envelope calculation first took the ratio of deaths as a result of indoor air pollution – 4.3 million people annually as estimated by the WHO – to the total number of people dependent on solid biomass globally – 2.9 billion as estimated by the World Bank. This ratio was then applied to the number of displaced people we estimate to be reliant on solid biomass. Better studies of pollution-related health issues in situations of displacement would be needed to gain a more accurate estimate.

### Cut costs



Widespread introduction of improved cookstoves and basic solar lanterns could save \$323 million a year in fuel costs.

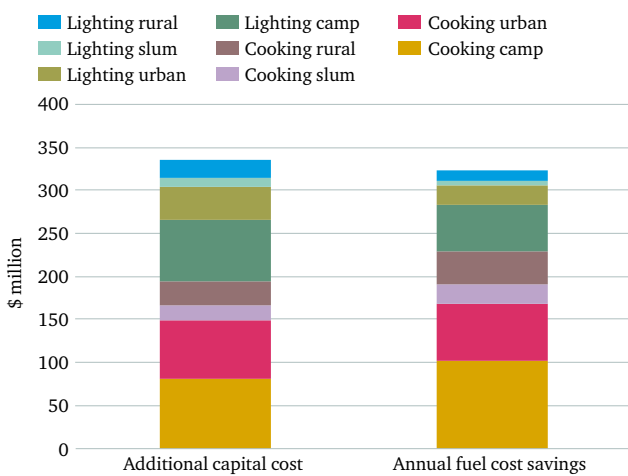
### Reduce emissions



Widespread introduction of improved cookstoves and basic solar lanterns would reduce emissions by an estimated 6.85 million tCO<sub>2</sub> a year.

Use of the best available technologies for household energy services could save 11.38 million tCO<sub>2</sub> in emissions each year and bring greater human and environmental benefits. Widespread introduction of LPG or biogas cookstoves and solar photovoltaic (PV) mini-grids could transform the lives of displaced people and help reduce deforestation.

**Figure 2: Potential savings and capital cost – widespread introduction of clean cookstoves and basic solar lanterns**



Source: Chatham House Model.

**3. The barriers to a sustainable, healthier, more cost-effective system are not technological but institutional, operational and political.**

**There is a severe shortage of energy expertise in the humanitarian system and no systematic approach to planning for and managing energy provision.** The design of energy solutions is technical, complex and highly dependent on context. The humanitarian system lacks dedicated energy experts with the requisite skills and knowledge.

**Short-term, politically oriented humanitarian funding is poorly suited to financing longer-term energy solutions in protracted crises and recovery situations.** Humanitarian agency planning and budgets are generally annual, with few incentives to make longer-term investments. No formal cluster of agencies is responsible for energy provision in emergencies, in contrast to other basic needs such as food, water, shelter and health. As a result, donors are not presented with energy as a strategic priority. This restricts funding opportunities, and impairs energy programme prioritization and coordination.

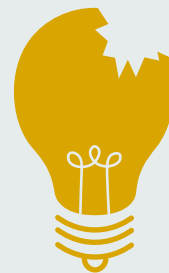
**Political sensitivities prevent rational approaches.** According to the UNHCR, the average amount of time spent as a refugee is 17 years. This can be an uncomfortable truth for host governments dealing with local resentment towards refugees. It

### Short-term policies impede long-term solutions

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The average length of time as a refugee is 17 years (UNHCR, 2004). In many cases camps' temporary status, maintained for political reasons, inhibits more efficient energy solutions.

### A shortage of data and energy expertise hinders effective interventions



There is a lack of reliable data on energy costs and use in displacement contexts. To drive reforms, the humanitarian sector needs more dedicated energy experts.

may make politicians reluctant to endorse medium- to long-term energy investments that imply some degree of permanence for refugee populations. Yet these are the very investments that provide optimal energy solutions.

**The humanitarian sector's 'procure and provide' model precludes opportunities for better energy services.** The skills shortage among implementing agencies and a tendency for short-termism among donors and host governments perpetuate a 'procure and provide' model for energy equipment distribution among displaced populations. For cleaner energy options, agencies frequently rely on equipment donations with little consideration of local context or end user preferences. Too often, success has been measured by the number of products distributed, such as solar lamps or efficient cookstoves, rather than by their impact. Attempts to increase cleaner energy access frequently stop at the pilot stage, missing opportunities both to bring down costs through scaling up demand and to develop appropriate household payment models.

#### 4. Doing things differently can bring significant benefits for host countries.

**Sustainable energy solutions reduce environmental and social pressures and create opportunities for local businesses.** By curbing firewood demand, clean cooking technologies can reduce environmental degradation and related resource tensions with local communities. In some cases, there may be opportunities for local energy service companies to help meet the needs of displaced populations.

**Energy investments help integrate displaced populations and provide a legacy asset for local communities.** Relevant approaches are being piloted in Jordan. For example, the Norwegian Refugee Council is installing solar panels in schools receiving Syrian children, as well as solar water heaters in residential buildings in return for guaranteed periods of accommodation at reduced rents for refugees. The UNHCR is funding a solar farm with several partners outside the camp of Azraq as a legacy for the country after the refugees leave.

**Sustainable energy solutions can contribute to national and local sustainable development objectives.** Governments of countries hosting displaced people will have policies or ambitions to reduce carbon emissions and scale up efficiency and renewable energy. Many governments want to tackle deforestation. This presents opportunities to collaborate with donors and

### Engaging private-sector expertise



A growing number of private-sector companies have developed sustainable energy services appropriate for low-income households. This expertise could be harnessed to benefit displaced communities.

### Extending solutions to local populations



Energy solutions for refugee camps could be shared with host countries to boost energy access and security for all.



implementing agencies on energy solutions that both meet the needs of displaced persons and respond to national sustainable development priorities.

## Six imperatives for change

Changing approaches to energy supply for forcibly displaced populations can cut costs, reduce environmental impacts and save lives. It can also bring important benefits to local communities and national populations in host countries. This report identifies six imperatives for change:

### 1. Incorporate sustainable energy access for displaced people into international, national and agency agendas.

At multilateral and national government levels, this means integrating the issue of sustainable energy for the forcibly displaced into the UN-led SE4All agenda, and developing an action agenda specifically for displaced people within the post-2015 SDGs. At agency level, it means incorporating energy considerations into 'core programming' – that is to say, the basic operations and procedures of humanitarian agencies – at each stage of the humanitarian response. Creating regular positions for renewable energy experts would make this task easier.

### 2. Build the data.

All relevant agencies should collect detailed energy-related data for refugee camps and other displacement contexts, and use standardized methods for data reporting. The data should cover energy use, costs, supply and transportation fees, and equipment efficiencies involved in both (a) energy use by displaced populations; and (b) energy provision for camp facilities and humanitarian operations. Assessments of local entrepreneurship models, as well as of displaced households' income and spending, should be included. Such a process will help to inform the cost-benefit evaluations needed for capital investment in energy, and provide a basis for competitive tendering.

### 3. Coordinate national ambitions and humanitarian aims for mutual benefit.

If forcibly displaced people are unlikely to return to their country of origin within a short time frame, energy interventions should be coordinated with local and national government authorities. Countries hosting refugees have ambitions to increase the sustainability of their energy systems and often to increase energy access for their own populations. Energy interventions will have

the greatest chance of being accepted and supported if they aim to support these national goals. As part of this conversation, host governments and agencies may need to discuss the lifting of restrictions on displaced people's rights to work and access to land, as these may inhibit their ability to pay for and access energy services.

### 4. Embed energy projects and accountability at the local level.

Longer-term solutions are viable only if host populations and governments support them. This requires understanding of the needs of local communities, and of the economic linkages between such communities and displaced populations. A good understanding is also needed of local laws and regulations, the capacities of local energy service providers, the nature of local energy markets, and geographic and climatic factors affecting technology choice. Accountability for the performance of energy projects must lie with stakeholders on the ground, and must be long-term. Energy providers and appointed camp regulators are examples of the types of body that might have such a remit.

### 5. Explore new delivery models.

Initial emergency relief should move towards more sustainable energy provision based on the self-reliance of refugees and internally displaced persons (IDPs). This means working out how displaced people can access and pay for energy services, and how private-sector expertise can be leveraged through innovative tendering and private-public partnerships. An overhaul of energy service procurement policy and standards is required to engage a wider cast of private-sector actors in energy service delivery and equipment sales. Contracts should be carefully designed to incentivize efficiency and sustainability while ensuring humanitarian aims are met.

### 6. Explore innovative funding models.

Donors should allow their funding to be deployed in forms that can 'de-risk' private-sector investment and kick-start local markets and supply chains. Solutions based on local markets can create opportunities for income generation by drawing on the entrepreneurial talent of displaced people and host communities. Cash transfers to vulnerable households may prove more effective than fuel handouts, by allowing choice over energy services. Energy service contracts for camp facilities may include 'bolt-on' obligations to expand electricity access to households.



These reforms will not be straightforward. They require investment, a long-term perspective and a willingness to innovate and experiment, all of which may be absent when money is short and the immediate priority is to save lives. The burden of change falls not only on humanitarian agencies, but also on donors to encourage reform and on host governments to back new approaches.

Yet the conditions for reform have never been better. Change is already under way in the humanitarian sector. This report shows how agencies are experimenting with new technologies and delivery models. Some larger agencies have established the SAFE ('Safe Access to Fuel and Energy') Humanitarian Working Group, which acts as an international coordination mechanism for humanitarian energy response and works to improve energy delivery to crisis-hit populations. The forthcoming World Humanitarian Summit in 2016 provides a historic opportunity to galvanize the international community into action and scale up existing efforts.







Rapid change is also taking place outside the humanitarian system. Technological advances offer continual opportunity for improvement. Falling prices for technologies like solar PV and light-emitting diodes mean sustainable energy solutions are now more cost-effective than traditional technologies in many countries. This is particularly relevant to off-grid rural areas, where it can be prohibitively expensive to extend the electricity grid and where transportation adds to fuel costs. Meanwhile pay-as-you go financing models using mobile phones and smart metering are proving successful in enabling electricity access in many parts of Africa and Asia.

Across the planet, wider access to clean energy is a rising priority. This is crystallized in the new SDGs, the seventh of which commits the world to 'affordable, reliable, sustainable and modern energy for all' by 2030. With new technologies and delivery methods, the humanitarian agencies can assist in meeting this target while also saving lives and offering livelihood and development opportunities. Given the current state of energy provision, doing nothing is a betrayal of humanitarian principles.

### Practical ways forward

- Establish a Moving Energy Initiative (MEI) advisory panel of humanitarian agency leaders, political leaders, and technical and financial experts to steer and promote implementation of the MEI's recommendations. The aim would be to build support and funding for scaling up successful energy delivery solutions worldwide.
- Create a revolving fund that can lend to agencies proposing to invest in energy service projects. An inter-agency trust will be needed to manage this central pool of resources. This should have the expertise to advise on the contracting and regulatory frameworks required to deploy funds effectively and accountably.
- Revise models for camp planning with sustainable energy objectives in mind. These models should be widely shared among government, humanitarian and other relevant partners to assist with energy and related decision-making. The aim would be to set up camps in such a way as to avoid locking them into inefficient and inappropriate energy models.
- Establish an energy dialogue between the private sector and humanitarian organizations to develop and harmonize comprehensive and progressive technology standards.
- Pilot site-specific integrated energy plans in several large displacement zones, with monitoring and evaluation over several years.
- Explore and pilot the implementation of concessions for meeting cooking needs at scale without wood or charcoal. These need to both bring down overall costs and significantly reduce or eliminate wood reliance in each camp/area over a period of years.

Figure 3: Benefits from sustainable energy provision to displaced people

<p><b>Environmental benefits</b></p> 	<i>Avoidance of deforestation and environmental degradation</i>	<i>Preservation of biodiversity</i>	<i>Reduced CO<sub>2</sub> emissions</i>	<i>Reduced risk of contamination and local pollution</i>	
<p><b>Security and protection</b></p> 	<i>Lower risk of gender-based violence outside camp</i>	<i>Reduction of night-time violence in camp</i>	<i>Lower risk of fire-related accidents</i>		
<p><b>Health</b></p> 	<i>Reduction in indoor pollution</i>	<i>Reduction in risk of burns</i>	<i>Improved nutrition</i>	<i>Improved availability of clinical services</i>	
<p><b>Livelihoods and resilience</b></p> 	<i>Time saved and longer hours available for other activities</i>	<i>Less reliance on diminishing local resources</i>	<i>Diversification of activities</i>	<i>Money saved</i>	<i>Improved education opportunities</i>
<p><b>Benefits for host populations</b></p> 	<i>Less competition for similar services</i>	<i>Reduction in reliance on limited natural resources</i>	<i>Improved livelihoods</i>		
<p><b>Economic and energy security benefits</b></p> 	<i>Cost savings</i>	<i>Improved energy security</i>	<i>Better reliability</i>	<i>Reduced fuel price exposure</i>	<i>Increased operational lifetime</i>

### The Moving Energy Initiative

The Moving Energy Initiative (MEI) is a collaboration between GVEP International, Chatham House, Practical Action Consulting, the Norwegian Refugee Council (NRC) and the United Nations High Commissioner for Refugees (UNHCR). The initiative began in January 2015, supported by the UK Department for International Development. The MEI aims to offer solutions to deliver energy in situations of forced displacement in a manner that reduces costs, is safe, healthy and respectful, and also benefits host countries and communities. Where possible it aims to create opportunities for income generation and knowledge transfer to tackle energy poverty and improve energy sustainability.

The first phase set out to raise the level of knowledge about the current energy situation in situations of displacement globally through desk and field research and canvass a wide range of stakeholder views in order to assess the extent of the problem and identify challenges and potential approaches. Over the coming phases of the project, the MEI plans to continue generating momentum for change on a global level and promote a 'learning by doing' approach through pilot projects in Jordan, Kenya and Burkina Faso. These local activities will aim to demonstrate new approaches on the ground, and will be geared towards delivering practical improvements in sustainable energy access for refugee and host communities.

**#MovingEnergy**

Further information and references are available at  
<https://www.chathamhouse.org/movingenergy>

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Cover image: A migrant girl looks at a light illuminating the camp site of refugees and migrants who spend the night on the street after their arrival at the Greek island of Lesbos after crossing the Aegean Sea from Turkey on 4 October 2015. Europe is grappling with its biggest migration challenge since the Second World War, with the main surge coming from civil war-torn Syria.  
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