

Energy that transforms for a
BETTER WORLD

Energy
Capability Statement

Practical
ACTION
CONSULTING



We are Practical Action

An innovative international development group putting ingenious ideas to work so people in poverty can change their world.

We're a global change-making organisation comprised of three specialist groups with unique expertise:

- **Practical Action Consulting (PAC)** provides specialist technical expertise to our own projects, to other development organisations, government bodies and the private sector.
- **Practical Action** is a development NGO that works alongside communities to trial and perfect creative solutions to problems that keep people poor.
- **Practical Action Publishing** takes our learnings, and those of other practitioners, and disseminates them worldwide through books, journals and open knowledge platforms.

We work in more than 20 countries and operate from 11 regional offices across Asia, Africa, Latin America and the UK.

In recent years, we have focused on four inter-related sectors and, importantly, on the nexus between them. These include access to renewable energy, agriculture and food security, urban water, sanitation, hygiene and waste management, and disaster risk reduction.

Together, we are committed to helping people tackle some of the world's toughest challenges – made worse by catastrophic climate change and persistent gender inequality.

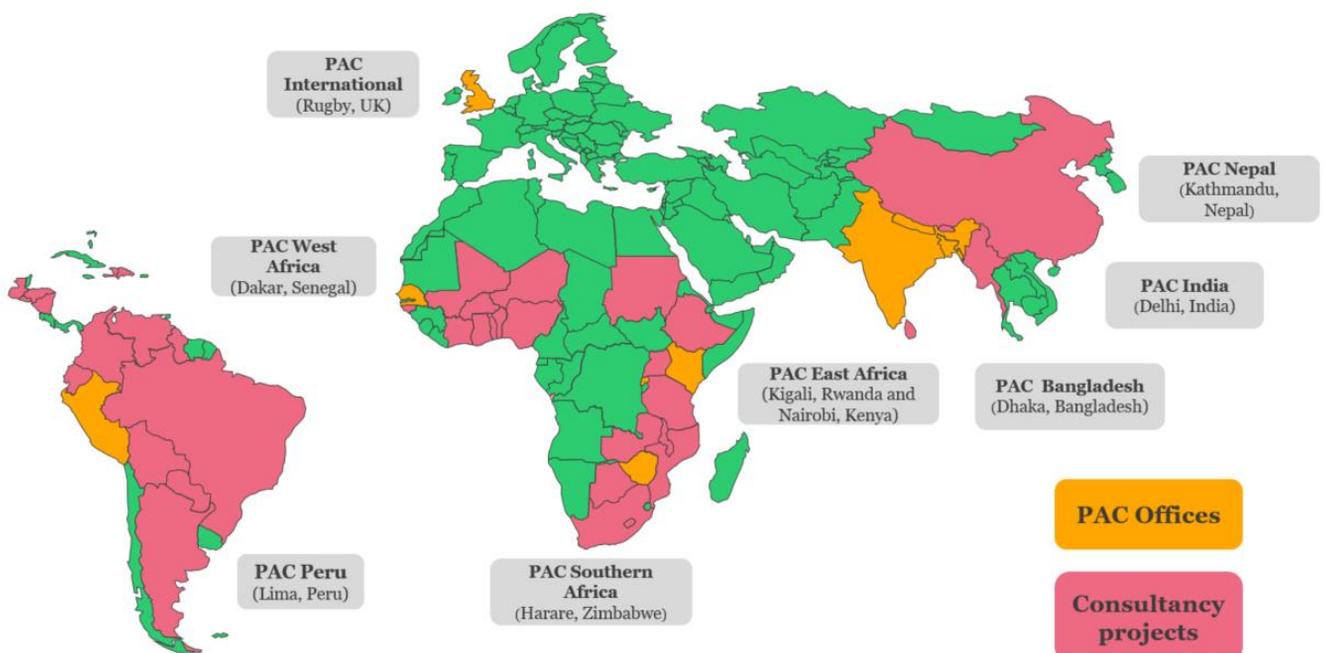
Our global renewable energy portfolio

Over the past five years, our energy portfolio and expertise has steadily grown to be our largest theme, combining direct implementation of renewable energy solutions with partners and communities, technical expertise in renewable energy solutions delivered to external partners, policy/advocacy work and knowledge and learning.

Within our renewable energy portfolio, our work includes demonstrating, learning and inspiring others. Our portfolio focuses on the following five pillars:

- Support for **refugees** to have sustainable energy access in humanitarian settings
- Clean fuels and cost-effective stoves for household **cooking**
- Facilitating **productive use** from energy access (linking clean energy with agriculture, WASH and waste management)
- Support for **last-mile distribution**, including the Global Distributors Collective
- **Green Mini-Grid solutions** based on lasting business models

These key pillars are supported by the integration of essential cross-sector factors such as the **energy/health nexus**, and the **gender/energy nexus** (including support for women energy entrepreneurs). We also address the appropriate and participatory **governance** of renewable energy systems (bringing together communities, government authorities and the private sector), and the need to implement relevant **finance mechanisms** (that address the needs of suppliers and users of relevant energy sources).



Our approach to energy

PAC promotes a **Sustainable Energy Access approach** with our experience across a range of renewable energy sources (solar, hydro, wind, biomass and biofuels), applications of energy (off-grid electricity; cooking; productive uses of energy; energy for forcibly displaced people; energy for community facilities) and energy business models (for distribution, manufacturing and service provision).

We provide independent and professional evidence and knowledge to governments, NGOs, aid agencies and the private sector concerning the effective use of technology under local conditions for poverty reduction.

We take lessons from the work of our implementation programmes and technical in-country research projects, and push them to a broader geographic horizon to enhance development outcomes, scale-up impact, inform national and international policy, and provide evidence for international actors.

We are able to draw upon the unique expertise of over 800 Practical Action programme staff in offices around the globe, as well as a global network of over 2,000 consultants and academic contacts.

We add value from our expertise in national and international advocacy and communications, using evidence generated internally to influence stakeholders and the international energy access agenda.



Our skills in energy access

We have expertise in a wide range of energy access issues, including:

- **Productive uses of energy** – value chain analyses and demonstration to ascertain the viability of new business, and business plan development for micro-enterprises.
- Catalysing **market activation** and development of both national scale market spaces and the last-mile delivery sector. Using economies of scale and technology to reduce distribution costs and improve product selection.
- **Research** into aspects of energy access to inform policy decision-making, covering energy needs, strategic planning, finance, and technologies.
- **Survey development and deployment**, especially in remote settings.
- Local **community selection and mobilisation** to support energy access projects, in particular with research institutions and other international organisations needing a strong local partner
- Working with mini-grid developers to help build **sustainable mini-grid models** under local conditions, underpinned by community engagement
- **Analysis of energy market systems**, to identify communities' barriers to energy access and developing strategies for how these can be overcome.
- Designing and developing **inclusive business models** that aim to scale-up energy access and/or increase productive uses of energy

Collaborating to achieve change

We work with partners from across the energy access sector to adopt a collaborative approach, pilot new innovations and business models, undertake research, and share knowledge and experience. We work with:

- **Private businesses** operating in the energy space, ranging from multi-national corporations to small & medium-sized enterprises to social enterprises, from distributors to technology developers to service providers.
- International, national and local **NGOs**.
- **Researchers** and **academics** who can provide much-needed evidence.
- **Governments** and international development **donors**.
- UK and international **research organisations**, such as universities and colleges.
- **Local communities** and actors on-the-ground.
- **Emergency relief agencies**, medium-term development actors, first-on-the-scene **responders**, and the wider **humanitarian community**.

Our experience covers two key areas of activity to motivate new approaches, based on the fact that **‘big change starts small’**:

Learning, Sharing and Using Knowledge:

- Working with global, national and regional partners to facilitate effective renewable energy solutions, including research and technical assistance on a wide range of renewable energy issues
- Increasing renewable energy access within humanitarian contexts, including our membership of the previous UK DFID (now FCDO) - sponsored Moving Energy Initiative, and current co-Chair of the global Safe Access to Fuels and Energy (SAFE) working group
- Developing models and tools for total community energy planning processes based on research and testing
- Supporting behaviour-change communication that addresses barriers to the take-up of renewable energy sources by people living in poverty
- Maintaining knowledge portals that provide easy access to independent information

Inspiring Others to Adopt Effective Models:

- Policy, finance and business-related advocacy on renewable energy access, including as founding partners in the global “Power 4 All” campaign
- Thought leadership through our widely-recognised flagship energy publication, the Poor People’s Energy Outlook
- Last year alone, our work has enabled people living in off-grid communities in 11 countries to access modern, sustainable energy services, improving their health, education, wellbeing and income-generating opportunities.



Humanitarian Energy

PAC has significant expertise in **humanitarian energy** (including forcibly-displaced populations or FDP). We provide advice and expertise on the effective use of energy solutions across the humanitarian system, through:

- Knowledge of refugee and FDP communities in remote settings; including understanding the barriers to delivering decentralised clean energy services at scale and how information, business models and innovative financing can address such energy access gaps in developing countries.
- Specialist energy sector knowledge of cost effective, off-grid energy technologies for low income households, communities and enterprises; and practical in-country experience across Africa and Asia.
- Commissioning of research and building evidence for implementation; including in-house expertise covering energy, innovation, markets, climate change, research uptake and knowledge management.
- Working with the private sector, especially those in local markets, to provide clean energy technologies through innovation and sustainable business models that can serve low-income households in refugee settings.

Examples of our humanitarian energy work

Humanitarian Engineering and Energy for Displacement (HEED), 2017 – 2020

University of Coventry / Engineering and Physical Sciences Research Centre (ESPRC)

The HEED project was an innovative response to growing recognition of the need to improve access to renewable energy for populations displaced by conflict and natural hazards. HEED focussed on the experiences of Congolese refugees living for protracted periods of time in three refugee camps in Rwanda, and FDPs forced to leave their homes after the 2015 earthquake in Nepal. These two countries provide very different environmental, policy and social contexts within which to research energy uses, needs and aspirations. The project draws upon social science and engineering expertise to better understand energy needs, identifying and implementing solutions to produce socio-technical systems that encourage community resilience and capacity building.

Moving Energy Initiative (MEI) on sustainable energy and the needs of displaced people: Burkino Faso, 2019 FCDO (previously DFID)

In partnership with UNHCR, MEI sought to meet the energy needs of displaced people in a safe, sustainable manner by developing solutions for heating and cooling, cooking, lighting, electrification, and water and sanitation. The project emphasised the relevance of local realities and integrated them with global technological advancements, through the development of research, evidence-building and pilot projects relating to sustainable energy solutions. To this end, MEI worked to reform the relevant humanitarian policies and practices that affect energy provision and engage and enable the private sector in this area. The work also gave special attention to the needs of women and girls in terms of health, safety and empowerment.

Renewable Energy for Refugees (RE4R), Rwanda and Jordan, 2017 – present

IKEA Foundation

Practical Action is partnered with UNHCR on this IKEA Foundation funded £7.25m project. The project aims to deliver renewable energy investments through innovative approaches in humanitarian settings, working directly with refugees and host communities in Gihembe, Kigeme, and Nyabiheke refugee camps in Rwanda and with urban refugees in Irbid in Jordan. The project provides access to affordable and sustainable sources of renewable energy, and aims to improve the health, wellbeing and security of refugee and host communities. It draws on Practical Action's considerable existing experience in renewable energy programmes in developing countries, working directly with communities to deliver the best energy services and products possible for local people.

Refugees in Rwanda and Jordan rarely have access to sufficient energy to meet their basic needs or to live fulfilling, safe and productive lives. The RE4R project aims to address this need by providing renewable energy solutions in camps in Rwanda and urban settings in Jordan by approaching related issues in a sustainable, appropriate, and inclusive way. It is doing this by:

- Undertaking comprehensive needs assessments and detailed investigations of solutions
- Implementing a range of appropriate renewable energy interventions
- Involving refugee and host communities, private sector, national governments and humanitarian partners, leading to holistic energy programming, capacity building and longer term transformative change
- Incorporating delivery models with a strong focus on community-driven approaches with high levels of private sector engagement and innovative business models to promote sustainability and resilience

Energy and Forced Displacement, Burkina Faso and Kenya, 2016 - 2018

ESRC

Practical Action and the University of Edinburgh carried out a research project exploring 'Energy and Forced Displacement: a qualitative approach to light, heat and power in refugee camps' in camps in Burkina Faso and Kenya. Delivered with the MEI and UNHCR, the project developed an international partnership focussing on how to deploy and implement appropriate sustainable energy solutions for heating, cooking, lighting, water and sanitation, in refugee camps. Its aim was improved access to sustainable energy for displaced persons' domestic and commercial purposes, and safe, reliable, secure and more efficient energy solutions for the administrative and public service facilities. Effective communication of the project outputs has aimed to inform and influence sustainable energy policies, priorities and operations of donors, host governments, and national and international organisations. Link to publication:

https://www.research.ed.ac.uk/portal/files/74749908/JO3_Exec_Summary_The_Lived_Experience_of_Energy_and_Forced_Displacement_4_.pdf



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Clean Cooking

Examples of our clean cooking work

Scaling-up Briquette Commercialisation in Kenya: Turning Waste to Energy, Kenya, 2013 – 2015

Energy & Environment Partnership of Eastern and Southern Africa (EEP)

The Briquette Commercialization Project (BCP) was an influential project that generated significant interest among peer organisations including Hivos, the Global Alliance of Clean Cookstoves and the Kenya Ministry of Finance. BCP was a pilot project that aimed to increase access to sustainable, affordable and clean cooking energy services to the men and women in informal settlements in Nairobi and Nakuru county. The project demonstrated scaling-up of production, and marketing of waste briquettes as a viable and affordable alternative energy source for cooking. The project aimed to create jobs and enterprises by providing access to briquettes as an alternative source of energy for 10,000 end-users, institutions and cooking establishments in four major towns in Nairobi and Nakuru, resulting in increased incomes, job creation, improved hygiene condition, and over 2,000 tonnes of CO₂ emissions avoided.

Low Smoke Stove in Darfur, Sudan, 2018

Carbon Clear

The key project objectives of the Carbon Clear programme were to improve the livelihoods of poor families in Darfur and reduce energy poverty by facilitating a switch from wood and charcoal to a cleaner and more cost-effective energy source, LPG, for cooking purposes; and to reduce indoor air pollution caused by smoke from burning firewood. This would thereby improve the health and quality of life for women and for children below five years of age. The project achieved these objectives by providing relevant communications and technical assistance to local organisations and individual households, and by establishing a revolving fund with a target to finance the purchase of 10,000 LPG stoves and fuel canisters by households throughout the funding period and beyond. As a result, an estimated 1,358 LPG sets were distributed to poor households for cooking purposes.



Productive Uses of Energy

Examples of our PUE work

Women in Energy Enterprises in Kenya (WEEK), 2014 – 2017 ETC Foundation and ENERGIA International

The WEEK project supported Women Energy Entrepreneurs in three value chains (improved cook stoves, solar products and biomass briquettes/pellets) by strengthening innovative and women-friendly distribution models to promote and benefit from productive uses of clean energy. We established the enabling environment for value chain development and market access for PUE operators. The WEEK project contributed significantly to addressing gender issues in the provision of energy services. By its completion in June 2017, the WEEK project had worked with 811 women entrepreneurs in the three value chains, who in turn were able to reach 1,399,538 beneficiaries.

Comprehensive Green Lending Support to GCPF Partner Financial Institution in Senegal, 2019 Global Climate Partnership Fund/responsibility

In Senegal, we supported the Green Climate Partnership Fund (GCPF) and the GCPF partner financial institution in developing eligible green leasing products that target the agriculture market. Practical Action's role focused on the assessment of the market of RE products for agriculture in Senegal and the needs across different agriculture value chains.

Sustainable Electricity for Rural Communities (SE4RC), Malawi and Zimbabwe, 2015 - 2018 European Union

The objective of SE4RC was to create an enabling environment that allowed public and private sector energy actors to engage in the rural electrification market. The overarching ambition was to improve access to modern energy services that contribute to better well-being (economic and social) of rural men and women in both countries. SE4RC now provides renewable energy for households, businesses and community services, reduces manual pumping of water for irrigation and has replaced firewood, candles or paraffin with solar-powered lighting, thereby achieving increased energy efficiency, and enabling more reliable energy services to clinics and schools.

Alongside the development and construction of solar-powered mini-grid schemes, the project included:

- Capacity building for partners and communities to promote productive uses of electricity, helping businesses and agricultural enterprises to extend their energy-enabled activities and thereby improve livelihoods and energy project economic viability
- Engagement with government, policy makers, civil society to build awareness and influence policy formation to incorporate renewable off-grid energy options.

Last Mile Distribution

Effective last mile distribution (LMD) plays a critical role in accelerating the adoption of clean, affordable energy solutions and other beneficial products in developing countries. It also plays an important role in creating jobs, empowering women, and building markets through raising awareness of unfamiliar products and generating demand. But those who work to distribute these products face a range of challenges: they operate within high-risk/low-infrastructure markets, with little capacity and limited access to finance; instead of learning from and leveraging one another, they are continuously reinventing the wheel. They need support, and more work needs to be done to prove and innovate last mile distribution business models.

The Global Distributors Collective (GDC), 2018 – present

FCDO, Partnering for Green Growth (P4G) and Inclusive Business Action Network (IBAN)

Practical Action spearheaded the establishment of the Global Distributors Collective in 2018 and today it is the world's leading entity dedicated to supporting and representing LMDs across sectors and geographies. The GDC is a collective of LMD companies around the world and currently has 200 members, who are present in more than 50 countries and have cumulatively reached over 33 million people at the last mile (to previously unserved communities). The GDC works to help its members improve business performance and grow, and seeks to build a collective voice for the last mile distribution sector as a whole. The GDC drives research and innovation across the sector; facilitates the exchange of information, insight and expertise; and provides critical services to last mile distributors that leverage economies of scale. Some examples of services that we provide to members include:

- **Product Procurement Service:** Piloting a centralised purchasing platform to help distributors to procure quality products more quickly, efficiently and at lower cost.
- **Learning & Collaboration Events:** Convening distributors and sector experts to facilitate knowledge exchange, provide training and learning opportunities, match-making and networking, as well as providing access to product and service information.
- **Training Facility:** Delivering a series of training programs, co-designed with GDC members, to support distributors to overcome key challenges and facilitate peer-to-peer learning.
- **Mentoring:** Providing mentoring for LMDs so that they can learn from peers and sector experts
- **Running Innovation Challenges:** Crowdsourcing discrete business model innovations from distributors and providing support to pilot these innovations with financial and technical assistance. We actively support other members to replicate these innovations and make learnings open source.
- **Generating and sharing data, case studies and market intelligence:** Producing a ground breaking State of Sector report, which maps the last mile distribution sector and includes guidance to governments, aid agencies and investors how they can best support the sector.

You can learn more about the GDC at www.globaldistributorscollective.org

Green mini-grids

Examples of our green mini-grids work

Green Mini-Grid Facility Kenya, 2018 - 2021

The Green Mini Grid Facility Kenya (GMG Facility) was initially conceived and funded by FCDO. The programme provides grants and technical assistance for promoting private sector mini grid development in Kenya. The GMG Facility secured additional funding from the [European Union](#) – Africa Infrastructure Trust Fund in 2018. The [Agence Française de Développement](#) (AFD) is the implementing partner of the Facility. [Innovation Energie Development](#) (IED) is the managing entity and in partnership with [I-DEV](#) and [Practical Action Consulting](#) (PAC), responsible for the implementation of the Facility.

PAC has provided support to the Facility with day-to-day operations, as well as undertaking due diligence on grant applications from the social and inclusion perspective. PAC has also delivered a number of specific projects supported by the Facility, such as the development of gender and social inclusion guidelines for developers as well as practitioner guides that help developers build appropriate business models for specific productive use applications.



Smart Monitoring, Billing and Control for Pro-Poor Access to Energy Services, 2013 - 2016

The goal of this project was to contribute to the development of the mini-grid sector serving poor communities in developing countries, while employing systems thinking and market development approaches to encourage broader impact. The project aimed to deliver a market-ready open-source technology for monitoring, control and billing of mini-grid systems, called ESCo Box. Specifically, the research aimed to better understand the types of technologies and approaches currently in use for monitoring, control and billing, the level of functionality, market penetration and cost, and potential uses of the technology for the different actors in the value chain. As part of the EscoBox project Practical Action produced a valuable series of technical notes on management and payment methods for mini-grids:

- [Introduction for Practitioners: Real-time Monitoring, Control and Payment Technologys for Mini-grids](#)
- [Real-time Monitoring, Control and Payment Technology: Rwanda Field Test Evaluation Report](#)
- [Metering and Payment Technologies for Mini-grids: An Analysis of the Market in Zimbabwe](#)
- [Market Analysis: Real-time Monitoring, Control and Payment Technologies for Mini-grids in Kenya and Rwanda](#)
- [Opportunities for Real-time Monitoring, Control and Payment Technologies for Mini-grids: A Case Study of Operation Systems in Nepal](#)

We also facilitated field testing of two ESCo Box systems in community-based renewable mini-grids in Kenya and Nepal.

Cross-cutting work

Poor People's Energy Outlook 2010 - 2020 UK FCDO

The PPEO is a series of high-profile international publications that report unique perspectives of energy access in developing countries. By drawing on the realities of energy-poor people on the ground, the PPEO series has been hugely influential in re-framing the narrative around energy access. As a result of the PPEO, Practical Action became a co-designer of the SEforAll Global Tracking Framework which is now the global standard in measuring levels of energy access.

To date, the publications have covered:

- 2019 – Enabling Energy Access
- 2018 – Inclusive Energy Access
- 2017 – Financing National Energy Access
- 2016 – Integrating Community Energy Access Priorities into National Plans
- 2014 – Energy for Poverty Alleviation
- 2013 – Energy for Community Services
- 2012 - Energy for Earning a Living
- 2010 – Total Energy Access

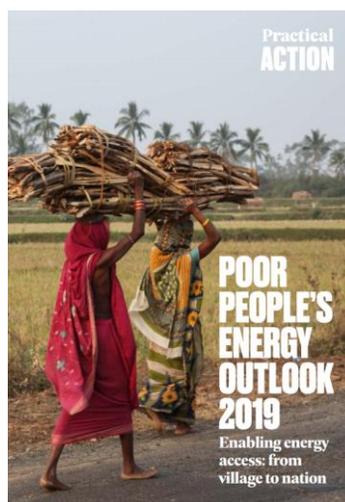
PAC's responsibility for the PPEO highlights our capability to manage large, complex projects and deliver quality results. It also underscores our level of knowledge and influence in the area of energy access, particularly in regard to the on-the-ground realities for energy-poor populations and their needs. We were also responsible for:

- Designing the research methodology; questionnaires for households, enterprises & community facilities
- Pre-testing and training of enumerators in off-grid communities
- Data collation and analysis, including the calculation of the energy access tier for electricity, cooking and productive

- applications of energy for each respondent, in order to better report the current energy access situation in each community
- Calculation of least-cost options for energy supply to meet different requirements and scenarios, based on people's expressed needs, minimum standards approaches and willingness to pay.

BRILHO – Energy Africa Mozambique, 2019 - 2021 UKAid

The aim of BRILHO is to improve and increase clean energy access to 1.5 million people and 15,000 businesses in Mozambique. BRILHO is a five year programme to catalyse the development of off-grid energy access markets in Mozambique. It comprises a grant facility for energy businesses, together with technical assistance, demand activation, research and dissemination and support to policy and regulation development. We are responsible for the initial research and dissemination component, which aims to help improve the availability of relevant information to the private and public sector decision-makers on the supply and demand of off-grid energy for productive use in Mozambique.





**Together we can create a world
that works better for everyone.**

Contact us

PAC Energy Team

consulting@practicalaction.org.uk

Practical Action Consulting

The Robbins Building
25 Albert Street, Rugby
CV21 2SD, United Kingdom

www.practicalaction.org/consulting

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