

Achieving inclusive energy access at scale



Key messages

Scale and inclusivity: striking the balance

The global community has pledged to achieve universal energy access, leaving no one behind. We have seen progress on electricity access, largely through grid extension programmes, but the quality of service is frequently poor and the hardest to reach are still often last in the queue. Finance for and attention to clean cooking remains pitiful and the huge potential for off-grid, market-based electricity solutions is only beginning to be achieved in a few places.

Poor people's energy outlook (PPEO) 2018 explores delivery at scale from a bottom-up perspective, developing metrics to assess inclusion, scale, and the context for progress. We analyse six core case studies from diverse contexts across the energy access sector, which focus on striking a balance between the race for scale and the

need to reach 'last mile' communities. To achieve this balance, our analysis suggests we must:

- Integrate planning and action for grid and off-grid electricity, giving as much attention to clean cooking as electricity.
- Tackle key aspects of inclusivity head-on with sufficient, targeted finance, dedicated staff, and tailored processes.
- Address gender inequality to empower women and meet their energy access needs, which will also help to boost businesses.
- Address barriers to scale holistically, focusing more attention on aspects beyond supply, and committing public funds to addressing these goals.

Approaches to achieving scale

Efforts to deliver energy access at scale have evolved from the government-led approaches of the 1970s to energy sector liberalization in the 1980s and, more recently, private-sector and market-based interventions. Today we increasingly recognize that the market alone will not reach areas and communities considered unprofitable. Some reasons for this include:

- a focus on counting numbers of connections, rather than *who* is being reached or excluded;
- a lack of attention to the quality and affordability of energy solutions;
- significant challenges in delivering clean cooking for rural wood-burning households;
- subsidy programmes which fail to reach their intended beneficiaries.

Learning from experience

To explore how best to achieve scale while leaving no one behind, we developed a three-stage methodology through which to compare a set of case studies. The first stage considers the context and how this has changed over time. This ‘situation analysis’ covers a range of factors from the national level to those specific to a particular energy access sector. The second stage considers programme design, reviewing the actions planned and implemented across dimensions of supply, demand, policy, and finance. The third reviews programme results against the objectives of scale and inclusivity, focusing on aspects of gender, poverty, and the remoteness of communities reached.

We selected two case studies in each of three sectors: clean cooking fuels and technologies, decentralized household electricity, and grid extension. These cover a variety of contexts in terms of national economy and energy resources available, and a range of mechanisms and approaches. The six case studies are:

- Ghana clean cookstoves programme, rolling out improved charcoal stoves (2002–2007);
- Kenya Biogas Program under the wider Africa Biogas Partnership Programme (2009–2018);
- Nepal Rural Energy Development Programme, implementing micro-hydro mini-grids (1996–2011);
- South Africa solar home systems programme (1999–2018), under the wider Integrated National Electrification Programme;
- India Rajiv Gandhi Grameen Vidyutikaran Yojana programme (2005–2015), bringing grid electricity to rural villages and households;
- Peru Rural Grid Electrification Project (2006–2013).

In addition to these six, we highlight recent programmes with innovative approaches to particular challenges.

Findings and implications for achieving inclusive energy access at scale

Comparing these case studies provided new insights into different routes to inclusivity and scale, and how to combine the two.

Routes to inclusivity

Every case study had at least some inclusivity objectives, with varying outcomes. Overall, the public sector-led grid extension programmes performed less well on inclusivity and needed greater focus on remote areas, improved action to address gender issues, and carefully designed mechanisms to target lower income groups.

- Four of the six case studies **struggled to reach remote areas**. Although programmes were designed for areas with low energy access, they tended to focus on places with a sufficient number and density of households. The programmes in India and Peru both planned off-grid components, but these were poorly designed and unsuccessful. Only the Nepal programme, using micro-hydro mini-grids and decentralized decision-making to select target communities, was able to successfully reach remote areas.
- The two grid extension programmes and the solar home systems programme in South Africa had **no or limited attention to gender issues**. These programmes failed to recognize that women might face particular barriers in accessing or benefiting from the schemes. Two programmes did not collect gender-disaggregated data or consider gender in evaluations.
- By contrast, in Nepal community mobilizers sought to ensure women played an active role in the programme: the Ghana programme empowered retailers (mostly women) and recognized that the majority of customers were likely to be women; and in Kenya the programme developed specific gender action plans, making progress despite a challenging starting point.
- The case studies used a **range of approaches for targeting poor households** including the use of citizen registers (in India and South Africa), and varying tariffs and connection fees, or not charging a connection fee at all. In our clean cooking and fuels examples, carbon finance was part of a package of measures to reduce the stoves’ costs, and in Kenya households were enabled to access credit and spread payments over time.

Routes to scale

We reviewed the actions the programmes took to achieve scale as they addressed various market dimensions of

Scale of the challenge



Remote communities are harder and more expensive to reach.



Communities may not be aware of energy products and services, or how they would work for them.



Affordability of technologies can be a significant barrier to uptake.



A lack of recognition of differing gender needs for energy and the barriers women face in accessing energy services reduces programme reach and equitable uptake.



Too great a focus on boosting supply can overshadow other barriers to scale in terms of demand, finance or policy.

supply, demand, the policy environment, and access to finance. These actions were affected by contextual differences in the energy access environment, which also changed over time in each country. The two programmes that achieved the greatest scale were very different: India, with a public sector-led programme, and Ghana, with a market-based approach. Our key insights were:

- Supply was low at the outset in all cases except Peru, and **increasing supply capacity was a major programme focus everywhere**. This probably diverted attention from other dimensions.
- There is a **growing recognition of the importance of boosting demand**. In the South Africa case, negative perceptions of off-grid products suppressed demand. The case studies in Peru, Nepal, and Kenya offer examples of how links with productive uses can help boost demand.
- **A supportive policy environment can be essential to programme success**, for example policies around tariffs and connection charges in Peru. At other times, administrative and bureaucratic hurdles can stifle scale. In Nepal, the programme's experience helped shape future policies for further roll-out. Clear, stable policy and regulatory environments are important for all energy access sectors.
- **Finance remains a key barrier to both scale and inclusion**. As we highlighted in *PPEO 2017*, the right types of finance, equally accessible to men and women as suppliers and end-users, are critical. All six case studies involved some form of subsidy, at least in the initial stages.

To achieve scale, these four aspects to be combined in ways that are tailored to the local market, context, and needs of end-users. Generally it was the off-grid and clean cooking programmes that aimed for sustained growth after the end of the programme; but, even where the objective is limited to an individual programme's delivery, these dimensions are important for sustaining achievements.

Inclusivity at scale: consensus and debate

To achieve scale and reach the last mile, we must hasten the transition from grid-centric approaches towards integrated plans combining grid, mini-grid, off-grid, and clean cooking solutions. By redirecting resources from grid extension towards other solutions, governments can accelerate energy access progress, attract higher levels of private investment, and reach more people at lower cost.

However, simply promoting off-grid solutions does not guarantee we reach the 'last mile'. Inclusivity should be actively pursued and supported in the off-grid and clean cooking sectors, just as for on-grid. A number of businesses are also leading the way in showing how women's empowerment can be a key part of the route to scale.

Debate continues on how best to use public funding to grow markets sustainably and reach the 'last mile', and how tariffs should be set to be equitable, affordable, and ensure more remote, poor communities can be viably served.

There is no blueprint for success in terms of the best use of finite resources to serve large numbers of people and those living in poor, remote communities. However, our case studies illustrate the importance of thoughtful decision-making processes in achieving inclusive outcomes on a budget. Planning should address questions of inclusivity from the outset, with the right stakeholders around the table.

Priorities and solutions



Addressing gender inequalities is good for businesses and people.



Analysing the context and community needs is crucial for strong programme design.



Smart use of public funds will be critical to closing the affordability gap.



Embracing multi-stakeholder processes at decentralized levels, combined with a strong policy steer, promotes inclusion.



Adapting to changing contexts and market opportunities is key to achieving scale and sustainability over time.

Recommendations

Early signs of progress are apparent in terms of electricity access for all. However, the pace is not currently sufficient, the hardest to reach are still left behind, and there are serious challenges in terms of affordability and quality of supplies. Without tackling these head-on, people will continue to live in energy poverty, unable to benefit from the transformational potential of energy access. Our key recommendations for addressing challenges of scale and inclusion in tandem, and in ways that bring sustained benefits are:

Deliver a mix of programmes integrating grid, off-grid, and clean cooking

Given finite resources, governments can face a trade-off between reaching greater numbers with large-scale programmes, and delivering for those who are harder and more expensive to reach. A mix of approaches is required to achieve both these outcomes simultaneously, based on holistic, integrated planning. Off-grid components, either as part of grid extension work or as separate programmes, require dedicated, skilled staffing and resourcing. Clean cooking fuels and technologies require as much, if not more, high-profile commitment in order to be seen as central to our pursuit of Sustainable Development Goal 7.

Tackling key aspects of inclusion head-on

If we are to truly ensure that no one is left behind, we must plan and deliver for those currently least able to afford energy solutions, and those living in remote areas. All programmes would benefit from mainstreaming gender across every energy access sub-sector including

grid extension where this aspect is often overlooked. Achieving inclusivity requires proactive and deliberate consideration from the beginning, with indicators for and outcomes of inclusivity included in the metrics of success.

Aiming for scale, while recognizing who is left behind

Achieving scale requires a balanced approach that works holistically, not only on the volume and quality of supply, but on blockages in finance, weak demand, and policy shortcomings. This should be based on a clear understanding of the context, and the needs and priorities of rural communities. It will require a flexible approach ready to take advantage of new opportunities and adapt to changing environments. By bringing relevant stakeholders together, market activation can be key to addressing barriers to scale; along with the smart use of public finance for well-designed subsidies and regulations.

Future editions

Poor people's energy outlook 2018 is the third volume of a three-part guide to transforming the way the world must think about, and act on, energy service delivery if we are to eradicate energy poverty by 2030 in line with global goals. The 2016 edition focused on robust energy planning and policy-making for universal access. The 2017 edition focused on financing national energy access plans; and this 2018 edition shows how to deliver universal access in inclusive ways. Future editions will build on aspects of this analysis and report back on how the world is progressing on delivering against these recommendations.

The *PPEO* series draws on Practical Action's 30 years of experience working with communities in Africa, Asia, and Latin America to improve their access to energy. It highlights what it means to live in energy poverty, the expressed needs and priorities of the energy poor, and how the global community can make energy access more affordable, appropriate, and sustainable. Practical Action has documented its experience in numerous publications and technical advice, through our Consulting, Publishing, and Practical Answers enquiries service.

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