



# INNOVATION PRIZES FOR ENERGY ACCESS

## LEARNING BRIEF

The UK Aid-funded Ideas to Impact programme is testing whether prizes can be designed to achieve significant benefits for marginalised and impoverished communities. It is doing so through the design and launch of five innovation prizes, intended to stimulate and incentivise scalable solutions for longstanding challenges in three thematic areas: water and sanitation, energy access and climate change adaptation. The programme defines an innovation prize as a financial incentive that induces change through competition.

This learning brief summarises the process and findings of our initial research phase and early prize design for energy access. It sets out the problems we identified as major barriers to scaling up access to clean energy; the specific factors within these problem areas blocking access to technology and fuel – identified using the Technology Innovations System (TIS) model; and the potential for using innovation prizes to overcome each of these challenges.

In sum, from this first phase of research we believe that innovation prizes may be a useful tool to use alongside other types of intervention in specific contexts. Prizes linked to increased access to liquefied petroleum gas (LPG) as a cooking fuel in Ghana will be run as a way of testing the usefulness of innovation prizes as a development tool.

## PROBLEM IDENTIFICATION

In order to generate a long-list of potential problems, conversations were conducted initially with 70 actors in the energy access space either through one-on-one interviews or through round-table

meetings. These actors were drawn from a cross section of the energy access community – entrepreneurs, investors, NGOs, academics, policy makers and government officials. The key problem areas or challenges identified by those interviewed were:

- **CLEAN COOKING.** Cooking with biomass is now known to have major health implications, directly contributing to four million deaths per year (WHO). Globally, 2.8 billion people still cook with biomass but there are a number of clean fuel alternatives at different stages of development.
- **MICRO-GRIDS.** Technology and business models have been demonstrated. The main challenges in reaching scale are the policy environment and subsidies.
- **ACCESS TO FINANCE.** This is probably the number one challenge voiced by our interviewees. It includes early stage equity, working capital and funding for consumer credit.
- **GOVERNANCE/POLICY ENVIRONMENT.** Widely seen as a major challenge. Comments ranged

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from lack of appropriate policies in specific areas of the energy field to broader concerns about ease of doing business, political risk and corruption.

- **AWARENESS.** Low levels of consumer awareness of the products and services on offer is seen by many innovators as a barrier.
- **SKILLS DEFICITS.** Challenges in recruiting and retaining reliable sales people, weak technical skills hamper effective after sales support for a range of products.
- **LACK OF INVOLVEMENT OF THE GRASSROOTS.** Failure to involve end users in solution design.
- **DISTRIBUTION.** The costs of moving goods around a country are high. Last mile distribution is equally a challenge – recruiting and motivating local sales agents can be very difficult.
- **AFTER SALES SUPPORT.** Challenges navigating the reverse supply chain, and lack of availability of technically skilled staff.
- **LACK OF MARKET INFORMATION.** Limited availability of information which enables a business to identify suitable locations to target, e.g. for a micro-grid developer.

## TECHNOLOGY INNOVATION AS A SYSTEM

The model we used in conceptualising these energy access problems was the ‘technology innovation system’ (TIS) (Bergek et al.). Over the life of an innovation, various processes operate and evolve in parallel, linked by a series of complex feedback loops – the TIS – the entire process may take place over decades. Within the energy access world, a large number of interlinked technology innovation systems can be identified which are at varying stages in their evolution. Understanding the current challenges faced by actors within these systems may point to interventions which could be made through a ‘prize’, helping to strengthen the innovation system and increase the chances of the technology moving to scale.

Our analysis revealed that, in almost every instance, the problems identified by our experts relate not to technical innovations but to other aspects of the TIS, especially building markets, securing financial and human resources, and legitimation. To be useful in unblocking some of the obstacles to universal energy access, innovation prizes would have to be capable of assisting with these kinds of challenges.

## APPLICABILITY OF A PRIZE APPROACH

The Ideas to Impact programme has developed a four-stage guide to assessing whether and how prizes will be effective in particular contexts. The guide sets out the following questions:

- Is there a good understanding of the wider context of the problem, such that they are confident that resolving the identified problem will lead to development benefits?
- Are there sufficient time and resources available, considering all relevant sources, to resolve the problem?
- Is the desire to overcome the problem shared (or at least not actively contradicted) by host governments, the sponsor and expected beneficiary?
- Is it unlikely that the problem will be solved without intervention?

We applied this guide to each of the barriers identified above and concluded that a ‘prizeable’ problem where large impact might be achieved, and therefore the one we will use to test the innovation prize model in the context of energy access, is clean cooking. More specifically, our analysis suggests that stimulating wider and safer use of liquid petroleum gas (LPG) would make a significant contribution to the clean cooking space. Specific innovation prizes will be tested in Ghana – chosen because the government is engaged in a major policy reform, with support from the LPG industry and multilateral funders. Ghana has its own gas reserves and a developed LPG infrastructure, and various market studies have been carried out as part of the policy reform process. The government has ambitions to increase the proportion of households using LPG from the current 20% to 50% by 2030.

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