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PIDG Development Impact 2018

Series note: Affordability and Pro-poor Access to Infrastructure

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"Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all."

Access and affordability

Improved access to infrastructure has, to date, been PIDG's most important indicator of positive impact. PIDG Companies collect data on the expected number of people gaining access to new or improved infrastructure before a deal is closed, after a deal is closed and once the infrastructure becomes operational. These figures often rely on estimates and conversion methodologies where it is unrealistic to track end-users of services directly. Within the energy sector, for example, we calculate the number of people served based on the proportion of grid capacity delivered by a project.

Infrastructure typically serves a very wide range of people and businesses. However, poor and low-income households are less likely to be able to cover the costs of electricity or be in a position to take full advantage of free to use infrastructure such as roads. This represents a particularly important challenge for PIDG.

In 2017, PIDG commissioned an independent review of our approach to measuring and supporting affordable, pro-poor infrastructure. The review identified four strategies that can increase the affordability of infrastructure services to poor and low-income populations.

Strategies to improve the affordability of infrastructure

Strategy	Required conditions	Potential PIDG roles
Ensure type of service matches poor people's needs and ability to pay	Participation in early stages of project design	DevCo - Project identification InfraCo Africa and InfraCo Asia - Project identification and project design TAF - Provide technical assistance grants (feasibility studies)
Minimise cost of service	Tariffs are cost-reflective	DevCo - Run competitive procurement processes InfraCo Africa and InfraCo Asia - Develop projects that seek to minimise cost of service GuarantCo - Provide guarantees to lower cost of capital and mitigate currency risk EAIF - Reduce cost of capital
Inclusive pricing structures e.g. finance up-front costs of connection	Project direct engagement with end-users as customers	InfraCo Africa and InfraCo Asia - Influence project design TAF – subsidise connection costs

Mobilise government and donor resources to reduce charges to poor people	Information about total cost of service and how much poor customers are able to pay	TAF - Provide capital grants InfraCo Africa and InfraCo Asia - Mobilise donor money into infrastructure projects

The review also provided recommendations to better assess the pro-poor credentials and outcomes of infrastructure projects.

Financing up-front costs to ensure access for poor people: Kalangala

Bugala Island in Uganda lacked much of the basic infrastructure required to facilitate economic growth. InfraCo Africa, along with other PIDG facilities, designed and financed multisector infrastructure projects known as Kalangala Infrastructure Services (KIS) and Kalangala Renewables (KR). KIS and KR improved transportation infrastructure and provided much needed water and energy to the island. TAF provided output-based aid (OBA) grants worth $5m that directly subsidised power and water connections to 2,000 poor households on the island. This subsidy ensured that poor people had access to the new infrastructure services and could afford to use them.

Reaching poor and low-income households

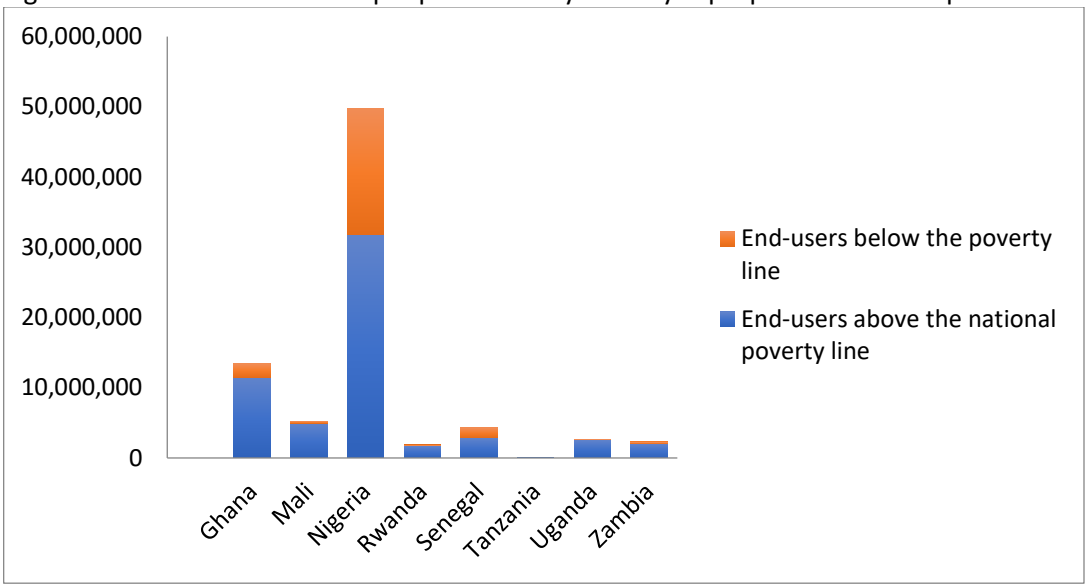
At present, we have data on the rates of access for poor people to electricity for grid tied energy projects in eight countries in sub-Saharan Africa[1]. PIDG has supported projects improving electricity access for 126m people since 2002, including 80m in countries where we currently have reliable estimates of income distribution[2]. Of these 80m, over a quarter (28%), or roughly 22m people are below the national poverty line.

The poverty lines in these countries are often very low, representing those living in extreme or chronic poverty. A much larger proportion of the populations in PIDG's focus countries are poor by international standards (living below $3.20 per day at 2011 PPP) or low-income (below $5.50 per day). In 2019 we intend to expand our analysis of access to electricity to cover more PIDG priority countries and provide estimates for those below international poverty and low-income lines. We will also measure the pro-poor performance of PIDG's growing off-grid energy infrastructure portfolio, looking both at who gains access to electricity, and how livelihoods change as a result.

[1] Kojima, Masami; Zhou, Xin; Han, Jace Jeesun; de Wit, Joeri; Bacon, Robert; Trimble, Chris. (2016). *Who Uses Electricity in Sub-Saharan Africa? : Findings from Household Surveys. Policy Research Working Paper; No. 7789.* World Bank, Washington, D.C.

[2] For more information on access and other impact figures please refer to the PIDG Annual Review 2017 https://www.pidg.org/resource-library/annual-reports

Figure 1: Estimated number of people served by country & proportion that are poor



Ensuring best value solutions

While many poor and low-income households are connected to grids and other essential infrastructure, a large proportion are unable to pay for a basic service without financial hardship, even with heavily subsidised tariffs. Much of PIDG's development impact rests on delivering cost-effective infrastructure that reduces the need for subsidies, and/or lowers prices for end-users.

The following ten criteria for ensuring best value solutions were identified through our affordability review for consideration in PIDG project design and selection. These criteria may apply to varying degrees depending on the stage of PIDG involvement in a project and the type of infrastructure service.

I. Carry out demand and willingness to pay studies for low-income target markets;
II. Develop a range of service delivery options that meet the demands of the low-income community;
III. Review service standards to ensure they are relevant to providing services to low-income communities; and revise them if they are not. (Formal technical and service standards are often designed for middle and high-income areas, and may not be appropriate for servicing the needs of low-income communities);
IV. Consider activities of informal or alternative service providers that already deliver services to the poor; this could lead to previously unconsidered infrastructure solutions that poor people are actually willing and able to buy;
V. Use competitive bidding to ensure that the project developer and/or equipment and service providers for the project company are the best value option;
VI. Establish bidding parameters to ensure that potential project developers are competent and experienced, thereby reducing the chances of development delays and cost overruns (which ultimately raise the cost of service);
VII. Put incentives in place to reduce operating expenses;
VIII. Limit the amount of operating expenses that can be passed-on through higher prices to end-users;
IX. Compare cost of capital to that of similar projects; and
X. Where costs of capital are not comparable, explore alternative financing methods that bring down the cost of capital.

Conducting economic appraisals

PIDG projects may also benefit poor people through the provision of infrastructure that stimulates inclusive economic growth and job creation. The affordability review provided recommendations to increase the use of economic cost benefit analysis of projects. Following the review, PIDG will use in-depth economic appraisals when screening projects that do not serve poor people directly and/or do not meet the relevant criteria for ensuring best value solutions listed in the section above.

Raising incomes and ability to pay

Affordability is dependent both on the cost of service and the incomes of service users. Infrastructure services that help improve productivity therefore also have the potential to improve the affordability of services in the long term.

Supporting productive uses of renewable energy in Myanmar

InfraCo Asia's work in Myanmar includes support for renewable energy mini-grids in rural areas, where over 80% do not have access to grid electricity.

These mini-grids can serve households, small businesses and local institutions such as schools and health clinics. Very little is known, however, about current and future levels of demand for electricity in rural Myanmar. PIDG partnered with PACT Myanmar to commission a study on demand scenarios for mini-grids, and current uses of electricity. A survey of 50 villages found that 62% of households had access to light-load electricity, sufficient for basic lighting and phone charging. However only a quarter of the population had access to high-load electricity needed to power appliances and machinery for businesses and economic activity. Non-grid connected villages were also found to spend more of their incomes on electricity but consume only 5% of the amount of energy used in grid connected villages. The study also assessed the inclusive growth potential for mini-grids, and mapped out additional interventions, including microfinance and investment in agri-processing and irrigation facilities, that could stimulate productive uses of energy in each village.

This research functions as a baseline for PIDG's mini-grid projects currently under development in Myanmar, as well as a resource for funders and energy service companies to expand the mini-grid market in the country.[3]

PIDG will be exploring options for supporting infrastructure projects that are linked directly to areas of economic activity: these provide a baseload for energy generation but also employment opportunities which may result in higher incomes. These higher incomes in turn can then create a greater demand for energy and potentially a reduced cost per kWh, due to overheads being spread across the output, and a wider user-base which guarantees increased revenue to the off-taker.

[3]TFE Consulting (2018) *Bridging the energy gap: Demand scenarios for mini-grids in Myanmar*, Pact Myanmar https://www.pactworld.org/library/bridging-energy-gap-demand-scenarios-mini-grids-myanmar