



Financing Climate Futures

RETHINKING INFRASTRUCTURE

OECD Case Study
KEY FINDINGS

Achieving clean energy access in sub-Saharan Africa

A case study for the OECD, UN Environment, World Bank project:

“Financing Climate Futures: Rethinking Infrastructure”

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A clean energy revolution in sub-Saharan Africa is urgently needed to win the fight against energy poverty. Clean energy provides a golden thread to deliver on the promise of Agenda 2030 Sustainable Development Goals (SDGs) and the Paris Agreement. It can unlock sustainable economic growth, improve human health and well-being and enable women and children to lead more productive lives (UN, 2018; NCE, 2018). Beyond direct economic and social benefits, clean energy access will raise human security and build resilience in states and communities to help limit the risk of large scale migration across the African continent (Rigaud et al., 2018).



Photo: ImpactAlpha, <https://impactalpha.com/solar-mini-grid-project-pipeline-comes-into-focus-in-africa-asia-and-latin-america/>

What is the nature of the challenge?

Sub-Saharan Africa (SSA) has the lowest energy access rates in the world. Electricity reaches only about half of its people, while clean cooking only one-third; roughly 600 million people lack electricity and 890 million cook with traditional fuels (IEA, 2018). Thirteen countries in SSA have less than 25% access, compared to only one in developing Asia (World Bank, 2018.) Economic growth in the region is also relatively low at an estimated an 2.8% percent in 2018, compared to 7.1% in South Asia (IMF, 2018). This dramatic lack of energy access stifles economic growth and sustainable development (World Bank, 2017).

Despite promising technology and market trends, today's policies and patterns of finance and investment are off-track. They do not recognise the transformative potential of solar off-grid and mini-grid solutions to deliver clean energy access, nor do they incorporate the potentially huge social and economic benefits of electricity access and clean cooking.

What needs to be done?

Solutions exist in the form of decentralised solar (among other renewables) for electricity, and for clean cooking options range from improved biomass to LPG. Yet, to reach the level of implementation needed for universal energy access in SSA, policies and financing requires a major step-up – both in money and domestic capacity.

Stepped up policies and financing from the public and the private sectors, and new business models, can work in tandem with official development finance (ODF), which in turn can play a catalytic role. Domestic leadership, policy reforms and capacity must lay the foundation for more effective public investment and to facilitate private investment. Mobilising the needed investment, and scaling the domestic capacity, to manage these changes will require massive political efforts from both domestic actors and the international community. Better planning and collaboration in-country will also be required to shift available public and private resources into new technologies and new markets.

DIAGNOSTICS

Understanding new clean energy pathways

Access to electricity via national grids will continue to play a key part in energy access solutions, yet technological advances in renewable energy, especially solar, can dramatically expand options for increasing access to those not served or underserved by grids. Recent progress in solar and wind technologies provides the means to leapfrog the traditional fossil-fuel dependent and centralised power system model (World Bank, 2018). The cost-effective development of individual and household solar devices is already providing access to millions. Decentralised solar options, including mini-grids, are expanding rapidly in East Africa, and are now also spreading in West Africa - reaching rural unconnected and urban underserved populations.

An important takeaway from renewable technologies and emerging markets is that an increasing number of new options exist to improve access, and in many cases, can reach people faster and in a more targeted way than grid-expansion alone. While cost per kWh for these options is often higher than grid connections, they can avoid long-range transmission costs and provide access at lower cost than diesel generators for local use. They also benefit from individual and modular designs that allow for rapid implementation, independent of the



Photo: John Devegip / World Bank

grid. Other important benefits include improved supply reliability and reduced local pollution from diesel usage. The concept of electricity access being solely grid based is changing to one of a “lego” design, where different and varied options each have a part to play.

Financing electricity access

The level of investment required to achieve universal access in SSA is estimated by the IEA (2018) to be USD 27 billion per year (2018-30), which is at least double current levels of financing – highlighting the need for major increases from domestic sources and international sources.

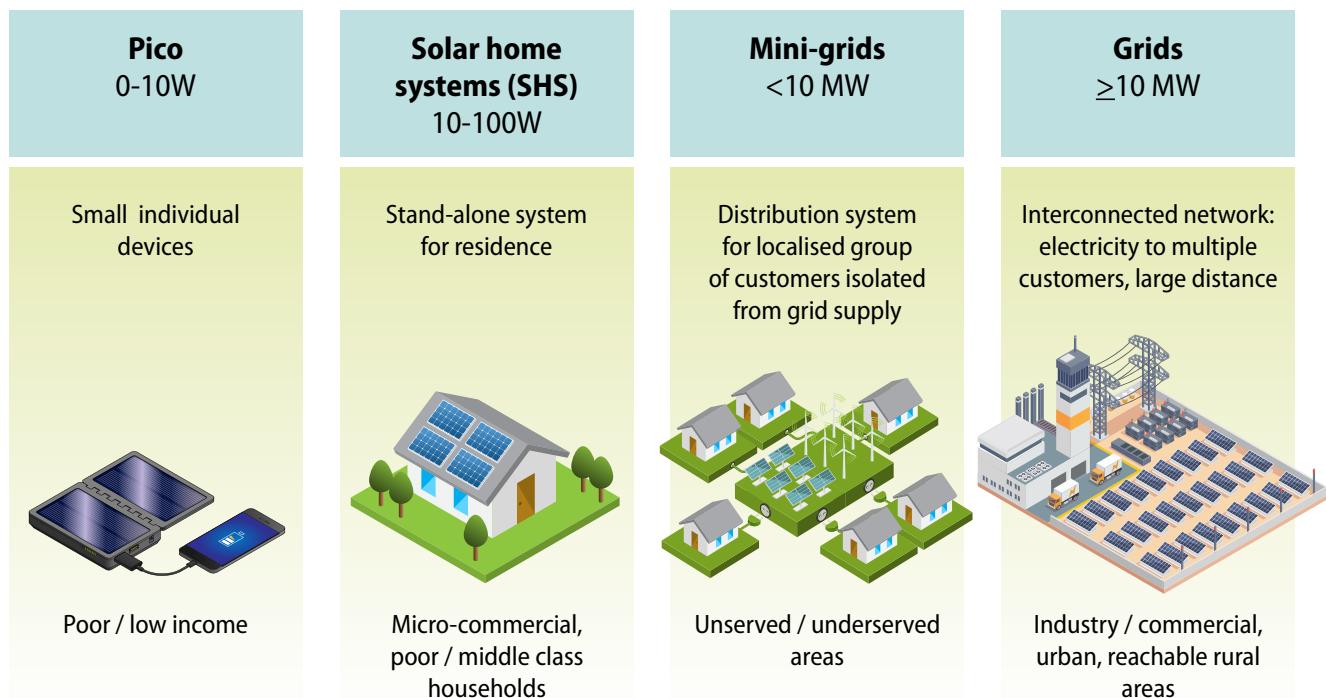
An urgent, near-term priority is to reform subsidies from public and parastatal entities away from fossil fuels (OECD 2018). Direct and indirect subsidies for fossil fuel production and power generation are estimated to be on the order of USD 26 billion per year in 2015 (Whitley and van der Berg, 2015).¹ Shifting domestic public finance away from these subsidies towards clean energy access could make a significant contribution to filling the financing gap.

ODF is also a major contributor to financing of electricity access in the sub-Saharan region: recent analysis suggests it is the largest single source of finance today, yet the vast majority of this is going to the grid

(SEforAll 2018, 2017a). The report provides an updated review of annual commitments of ODF for electricity, identifying about USD 5.6 billion per year (2014-16) in SSA; the largest share of this finance supports the grid with transmission and distribution (T&D, 42%) and a growing share of renewables generation (35%).² A closer look at investment needs versus ODF flows in three countries – Ethiopia, Kenya and Nigeria - shows that only Kenya is receiving major flows at about one-third of the estimated need with Ethiopia and Nigeria lagging far behind. Overall, countries in SSA, which have the greatest share of global population without access, do not receive a proportionate share of international ODF for electricity (SEforAll, 2017a).

Private financing is also crucial to deliver decentralised renewable options. In Pico solar and Solar Home System markets, tailored consumer finance business models (e.g. via pay-as-you-go and mobile money) and private investment are enabling markets to grow rapidly in some countries and importantly, to reach the poor. Impact investment appears to be a small but growing as a force however domestic investment is the most essential piece; better access to local debt capital could further serve to expand operations (SEforAll, 2017b, 2018). By contrast, renewable mini-grids currently require capital subsidies to be economic, but they will become more commercially viable with declines in technology costs and as supportive policy frameworks

Figure 1: Renewable Technologies Dramatically Expand Electricity Access Options



emerge to attract investors. Importantly, they do not require the on-going operating cost subsidies common in many grid systems.

Development finance can play a role to attract and blend with private finance for decentralised renewable options. Notably, there is an uptick in the level and number of dedicated funds and facilities supporting blended finance for decentralised renewables in SSA, however available financing remains a fraction of what is needed to support countries to achieve the 2030 SDGs.

The clean cooking imperative: challenges and opportunities

The chronic failure to deal with the widespread lack of clean cooking burdens economies and limits human productivity for the region's population. This welfare cost is born largely by women and children through premature death and sickness. Yet, most countries in SSA lack comprehensive clean-cooking strategies. Even where clean cooking strategies exist, implementation is weak and provided with little finance such that even modest gains are hard to obtain (SEforAll, 2017a and Hosier et al. 2017).

Raising the priority, profile and ambition of clean cooking goals will help governments to attract development financing to support implementation. Policies and financing for clean cooking should be integrated into poverty alleviation and health strategies at the national level. The gender element is crucial, ranging from awareness-raising campaigns to directly engaging women as champions and as entrepreneurs. Engaging women in clean cooking businesses and distribution will boost results and make them more lasting (Shankar et al., 2015).

With respect to financing, the absolute gap is much lower than for electricity, with an estimated need of USD 1.8 billion (IEA, 2018). But the required scale up is more challenging than for electricity, partly since it lacks the benefit of institutions and infrastructure that exist in the electricity sector. Significant progress requires both greater financing and perhaps more importantly the building of domestic outreach and capacity.

1. This figure includes externalities following an approach developed by IMF; see details of the methodology in paper by Whitley and van der Berg, 2015.

2. It is unknown exactly what share of this targets off-grid or mini-grid supply. However, drawing on SEforAll 2018 suggests that it could be less than a few percent of the total.

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