

# HOW TO SCALE SOLAR POWER GENERATION IN EMERGING MARKETS

*Solar power is an increasingly affordable, quick-to-build solution for countries in need of additional electricity generation. Yet many emerging markets face challenges to developing photovoltaic projects, as small project sizes and lengthy negotiations increase costs and timelines. Scaling Solar, launched by the World Bank Group in 2015, addresses these issues by providing an easy-to-follow process to plan, procure, and launch grid-connected solar projects using private sector financing within two years of engagement. It offers governments the tools to quickly increase energy generation at stable low tariffs and allows developers to bid on well-structured, standardized projects through a competitive, transparent process that reduces risk and costs—making new markets easier to navigate.*

Solar energy is ideally positioned to address the energy needs of countries with strong demand, high irradiation levels, and political commitment. Solar power plants can be constructed more quickly than alternative renewables and can deliver electricity with lower long-term tariffs relative to diesel fired power plants. In Sub-Saharan Africa, with high irradiation levels continent-wide, most countries can accommodate utility-scale solar solutions and diversify their energy production towards renewables.

Nevertheless, the region has not seen meaningful, privately-funded commercial solar development outside of South Africa. As with emerging and frontier market infrastructure more broadly, solar development in the region suffers from a lack of bankable projects as potential investors confront a series of small, idiosyncratic markets with higher perceived risks that work in tandem to increase development costs and deter financing.

At the same time, investment and financing flows—in the context of low long-term interest rates in much of the OECD—are searching globally for the types of returns that bankable solar projects in Sub-Saharan African can provide. The key to unlocking this financing is to standardize projects and markets and eliminate avoidable layers of risk, thereby allowing investors to assess projects by their core financial and economic

merits. These are the conditions that Scaling Solar seeks to create.

Partnerships begin with an expression of interest and a commitment by the government through the identification of a champion to lead the engagement, as well as a positive assessment of stakeholders in the ministries of energy and finance, in regulators, and in an off-taker. Most prospective countries have small, unstable grids that cannot simply absorb new generating capacity. A technical and economic analysis is therefore carried out by Scaling Solar to determine the optimal size and location for development. This is complemented by a legal and regulatory analysis and environmental, social, and governance assessments. These free prospective investors from costly exploratory work and allow them to focus on optimizing their financing structure and bid preparation.

## Standardized Bidding and Tailored Solutions

At the same time, Scaling Solar works closely with the host government to prepare the bidding process. This involves the use of standardized tender and project documents with a degree of localization for the country context. Project and bid preparation set the stage for a competitive, transparent tender and awarding process that is overseen by Scaling Solar and the government.

As developers prepare their bids they now encounter a dramatically different process. Engagement with Scaling Solar provides them with a tailored solution, with much of the background analysis and necessary due diligence already completed, all of which reduces development time and costs. And as the program grows, the consistent use of templates and standardized documents and processes also creates opportunities for investors to scale across markets. This in turn can make such projects more attractive to larger developers who can access capital more cheaply but are less interested in small-scale projects.

Advisory work is only part of a Scaling Solar engagement. Once bidders are pre-qualified they can draw upon an array of World Bank Group financing and de-risking instruments to address remaining uncertainty and speed up bid preparation. These instruments include risk guarantees against off-taker credit risk, political risk insurance, and foreign currency hedging. As with project and bid preparation, bidders need only focus on preparing their tenders.

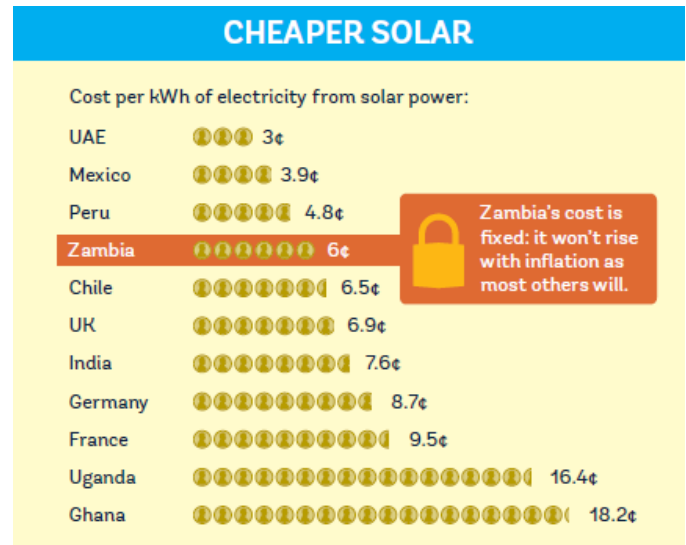
Scaling Solar sets ambitious targets for each phase of engagement to ensure that a country’s needs are met in the near-term. From expression of interest to winning proposal to financial close, the time frame is expected to be 12-14 months. As a result, in little over a year ground is broken on construction of a new solar power plant. For governments and developers this is a tangible win.

### From Drought to Cheap Power

Zambia was wracked by daily blackouts stemming from drought that had crippled its hydroelectric capacity when it became the first country to sign up for Scaling Solar in 2015. The government is seeking to build two large solar plants as part of its long-term strategy to generate 600 megawatts of capacity from solar. In May 2016, the program completed its first auction, choosing from seven pre-qualified bids. The lowest arrived at 6.02 cents per kilowatt hour (kWh, US Dollars), which is fixed for 25 years, roughly equivalent to around 4.70 cents per kWh if the tariff were subject to partial indexation over the life of the project, as is the case in some other independent power project markets. This would be the cheapest solar power to date in Sub-Saharan Africa and among the lowest tariffs worldwide. By comparison, diesel fired power can cost upwards of 20 cents per kWh and is subject to price volatility stemming from global oil prices.

For Zambia, success came in the context of a difficult macroeconomic situation, weak institutional capacity in the

energy sector, underdeveloped capital markets, and little experience in solar. While a partial risk guarantee helped mitigate off-taker risk, Zambia’s example demonstrates that market solutions and private sector financing for low-cost renewables in low-income countries are not only theoretically possible but actually feasible.



Zambia’s auction results compared to other results worldwide – IFC

Zambia’s first engagement is expected to reach commercial close in the fall of 2016 and, from there, to progress rapidly to financial close within three months. Every expectation is that Scaling Solar’s debut will meet its targets and deliver 73 megawatts of solar power capacity to Zambia within two years. This powerful demonstration is all the more exciting as it is the region’s first utility-scale solar project outside of South Africa.

### New Markets

Senegal and Madagascar signed up for engagement in early 2016 and are expected to launch tenders by the end of the year to develop 100 and 40 megawatts of solar capacity, respectively. Meanwhile, Zambia has already committed to a second tender through the program. As Scaling Solar grows and strengthens cooperation between governments and private sector developers, it will look to harness economies of scale, continue to drive down costs, and expand beyond Sub-Saharan Africa. ■

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