

# SCALING SOLAR:

## *Making the Sun Work for Africa*



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Jamie is a Principal Investment Officer and IFC's global sector lead for renewable energy. Jamie joined IFC in 2005 and has extensive experience in a wide range of environmental finance and climate related sectors.

His renewable energy experience includes corporate and project debt, equity and mezzanine investments in hydro, wind, solar PV, solar CSP, geothermal and biomass in Latin America, Africa, South and East Asia and the Middle East. During his time with IFC, Jamie has also structured investments and advisory services in carbon, water, recycling, energy efficiency and forestry.

Jamie has a BA and MA in Zoology from Cambridge University, UK, and both a Masters in Environmental Economics and Policy and an MBA from Yale University, USA.



**Dan Croft,** Senior  
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Dan Croft is a Senior Investment Officer in IFC's PPP Advisory Services department. Based in Johannesburg, he advises governments and other public authorities on the development, structuring, tendering and execution of public-private partnerships, focusing primarily on the energy sector across sub-Saharan Africa.

Mr. Croft originally trained and worked as a lawyer in the Energy & Infrastructure team at Clifford Chance, working in London, Singapore and Moscow. He subsequently spent six years at Globeleq and Empower, working on a wide range of greenfield, brownfield and operating IPP projects in Africa.

He has an LLB from Durham University, an LLM from University College London and an Executive MBA from London Business School.



**Yasser Charafi,**  
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Yasser Charafi is a Principal Investment Officer with IFC's Infrastructure Department in the Africa region in charge of investments in power and transport infrastructure. Yasser specializes in thermal and renewable energy generation, transmission and distribution in the power sector as well as fixed transportation infrastructure (ports, airports and toll roads) with a focus on large project finance projects.

Yasser's work experience with IFC includes multiple countries across the Africa and MENA regions. Prior to joining IFC, he worked as finance professional and management consultant based in Paris and London, advising and mobilizing financing for a variety of clients from the US to Western Europe through Latin America. Yasser holds a Masters' degree in business and development economics from Harvard University.

*Despite the obvious potential for solar power in Africa, very little real investment is happening in most countries on the continent. A new approach is needed to unlock the unique benefits of this technology – speed to build, long-term stable tariffs, energy diversification, neat matching of air-conditioning loads – and to drive a massive and rapid scale up in private solar power investment. IFC thinks it might have the answer with Scaling Solar, a holistic, one-stop-shop solution for African Governments that are committed to catalyzing private sector investment in solar power in the fastest and lowest cost manner possible....*

### JUST ANOTHER HOT DAY IN AFRICA....

Dakar, Senegal, July 2014. A typical summer day: 35 degrees, 90% humidity, blue skies, and blinding sunlight. As the audience sat in an air-conditioned hotel attending a conference on the potential of renewable energy in Western Africa, the lights (and AC) suddenly went off. Most of the attendees remained quietly seated and a minute later, the characteristic humming sound of a diesel generator filled the room as power was restored. Just another summer power cut:

the country's oil-fired power stations simply could not cope with demand and a customary round of load shedding was just beginning...and it was only 11.00 AM.

Power cuts and load shedding are a fact of daily life for most Sub-Saharan Africa citizens from Mauritania to Madagascar. And that's for the fortunate few that are connected to the grid: 70% of Sub-Saharan Africa citizens still don't even have access to electricity – no matter how expensive or unreliable.

## PLENTY OF SUN BUT NO SOLAR POWER

Everyone knows Africa has plenty of sunshine. Pretty much everyone knows that lack of access to affordable, reliable power is one of the major bottlenecks holding back growth on the continent. And anyone who's been paying some attention knows that the cost of photovoltaic equipment has declined dramatically over the past 10 years and that some countries can now generate solar power at a cost below US\$10 cents/kWh (an IFC client recently won a tender in Dubai with a tariff of US\$5.8 cents/kWh).

Leveraging the continent's vast resources to generate electricity should be a no-brainer: African countries could generate clean, renewable, affordable power, lessen their reliance on imported fossil fuel, attract foreign investment, and generate much-needed jobs. PV is the quickest power generation technology to install and could rapidly respond to the urgent need for more daytime power in many markets. Solar developers, investors and financiers could tap into a massive new market where solar penetration is still very low and economic growth is high.

This compelling story is attracting a lot of attention from developers, suppliers, donors and governments. But despite the bluster, very little investment is taking place, except in South Africa where the hugely successful renewable energy procurement program has attracted more than US\$3 billion of investments and made it, quite literally, the shining beacon of the region. Elsewhere? Nothing. Literally nothing. Probably less than 50 MW in Sub-Saharan Africa, mostly demonstration plants or 'pet projects' heavily subsidized by donors.

Meanwhile, Germany's global lead - with an installed base of 35GW - is about to be blown away by China, whereas Italy, Japan and the United States each have over 12 GW of PV capacity. Even notoriously rainy Great Britain now has over 3 GW installed.

## SO WHAT'S THE PROBLEM?

### IS THERE A LACK OF INVESTOR INTEREST?

Unequivocally... no! On any given week, IFC is approached on average by 2-3 solar investors seeking equity, debt or guarantees for projects they are attempting to develop in Africa. Furthermore, these investors cover the entire spectrum of the industry: world-class leading utilities, established African power developers, smaller European and North American developers branching out into new territories, private equity funds and their newly established platform companies, and local investors.

Buoyed by the continent's increasingly publicized growth story ("Africa Rising") and the slow-down in some traditional PV markets, there is significant investor and

developer interest in Africa. So this is certainly not the main bottleneck.

Are structural issues with African power markets the main bottleneck?

Less unequivocally, but still no. Indeed, there is no question that private investment in African power remains challenging on many counts – multiple, small and unique markets; insufficient end user tariffs; nascent and inconsistent regulation; off-taker credit risk; political risk; limited utility and government capacity; and long negotiated concession agreements.

But these challenges are completely natural at this stage of market development and over the years, solutions have been devised to many of the challenges: from affordable political risk insurance to foreign currency risk management to off-taker credit guarantees (just as examples, though not the only ones by far, the World Bank Group can arrange political risk insurance cover through MIGA, partial off taker credit guarantees through the World Bank, and foreign currency hedging through IFC).

And the market is growing: since the first African IPP in 1994, over 70 IPP projects have been financed in Sub-Saharan Africa (excluding South Africa) and the track record remains reasonably good - all considered.

### WHAT'S MISSING THEN?

IFC has participated in many of the world's most successful solar programs, from Chile to South Africa to India and Thailand. To try and understand why Africa wasn't seeing such success, we performed an in-depth analysis of over 20 promising potential solar markets in Sub-Saharan Africa (i.e., those where solar irradiation is good, and where the electricity system's economics are favorable to solar – for example, when diesel or HFO is dispatched throughout the day or solar can allow hydro to be stored for use in evening peak loads), and came to the conclusion that African countries need to take a different approach to the ones they have used historically for thermal and hydro projects.

With small and unstable grids, a Feed-In Tariff free-for-all will not deliver the right amounts of solar in the right locations. With so many vertically integrated industry players (i.e., acting as investor, equipment supplier, contractor and operator), dynamic equipment pricing and the relatively small scale of solar projects, direct negotiations are unlikely to deliver the most competitive tariffs. With the structuring challenges of African markets, a tender without agreed project documents does not get the winner very far. African countries – and all the stakeholders within their power sectors - need to give much clearer and consistent procurement signals to create a vibrant market for willing developers and to reap the potential benefits of quickly installed, low cost solar.

Indeed, in most countries, even those where solar makes sense, it's actually very difficult and very risky for a developer to figure out where to invest time and resources. In many cases (Senegal, Mali, Burkina, Kenya...etc.), developers have been hard at work attempting to develop projects. But the combination of public procurement rules, lack of a clear contractual framework, absence of clear processes and rules for project awards, and industry stakeholders (utilities, regulators and ministries) pulling in different directions, has proved, in most cases, to be a significant bottleneck.

In this context, the larger developers who have the greatest potential to lower tariffs by driving down installation costs and accessing lower costs of capital, are staying out of African markets (it's hardly worth a significant investment in time and resources to develop the 1st solar IPP if it's for 10 MW or 15 MW only).

### SCALING SOLAR: A NOVEL APPROACH

Seeking to address these challenges, a new WBG solution has been designed by an integrated team of IFC, World Bank, and MIGA staff with support from Linklaters, Norton Rose, Mott McDonald and with the precious feedback of a select group of IFC clients interested in the solar market in Africa.

In seeking to devise this new approach, we drew on IFC's PV investment experience globally and also from Africa's home grown success story. Reflecting back on what made South Africa and other programs a success, we identified the key ingredients of scale, transparent competition, a bankable contractual framework, repetition. Together these delivered radical tariff reductions (in the case of South Africa, nearly 70% between rounds 1 and 3) and remarkable speed of financing and installation. But in each case, success relied on an approach that reflected the idiosyncrasies of the country's power sector, regulations, financial markets and legal systems.

Any solution for Sub-Saharan single-buyer markets with limited IPP track record needs to retain these core ingredients but be tailored in a way that recognizes the realities of these markets:

1. **Acknowledging that not all Governments in Sub-Saharan Africa are willing (or have the capacity) to dedicate as much resources to a renewable energy program** that high middle income countries and BRICs can afford. Smaller procurement needs may never justify the time and cost of developing a program from scratch.
2. **Catering for the fact that many countries in Sub-Saharan Africa do not have the deep financial markets** and strong banks that bigger economies do, limiting access to long-tenor debt and creating significant uncertainty on available financing terms and structures.
3. **Managing issues arising from smaller size grids.** Indeed, in South Africa, India and Brazil, developers were free to select and develop the sites they chose. This can work

easily in a large system where the success or failure of one given project bears little consequences. But in smaller grids, where available interconnection points are few, grids are unstable and the medium term new capacity needs don't justify multiple developments when only one can be supported...much riskier.

4. **Mitigating risk perception by investors and financiers.** Larger, investment grade countries with more credit worthy off-takers, and more liberalized markets with alternative buyers and markets for power, serve to significantly de-risk investment in long-term capital intensive assets. In most Sub-Saharan African countries, the credit quality of the one and only off-taker and political risk are valid concerns which feed directly into higher tariffs via higher capital costs.

### A ONE-STOP-SHOP SOLUTION FOR AFRICAN POWER MARKETS

Put simply, *Scaling Solar* is a **holistic, one-stop-shop solution for African Governments that are committed to catalyzing private sector investment in solar power in the fastest and lowest cost manner possible.**

It aims to provide Governments with speed of delivery (24 months from start of World Bank Group engagement to first electrons delivered to the grid), the most competitive tariffs, reputable developers and contractors, high quality installations and certainty on delivery by a set date. In parallel, it aims to provide investors and developers with certainty of process, low transaction costs, a robust and bankable contractual package and a de-risking of their African investments. Once delivered across multiple markets it will give both procuring governments and market participants (investors, advisors, suppliers) the benefits and economies of scale of a larger regional market.

### HOW DOES SCALING SOLAR ACHIEVE THESE OBJECTIVES?

- a) **Initial feasibility studies, site selection and legal due diligence 'fronted' by the WBG (IFC, IDA) and other development partners as may be the case.** This first phase would typically aim at identifying the desirable solar capacity to put on the grid, suitable sites (available land, no environmental or social issues, proximity to a suitable interconnection points, irradiation and geotechnical studies ...etc.), and conduct a detailed legal and technical due diligence as required. Speed is achieved with template terms of reference and a bench of high quality advisors.

➡ **Everything a private investor needs to know to refine his financial model and submit a competitive bid would be clear: how many MW, where, what are the existing conditions at the sites, what is the fiscal regime...etc. – no surprises.**



**Gorge Edozie** | Four faces of Agbogho Mmuo 2, 1  
For price contact Aabru Art / art@aabru.co.uk/  
+44 7847 244 217

- b) **A streamlined but robust competitive process led by IFC acting as Transaction Advisor:** a well-managed, streamlined and robust competitive process is key to any successful delivery. IFC's Advisory unit, with its unparalleled track record as Transaction Advisor in challenging markets would perform this role and guarantee the integrity of the competitive process as well as its timeline. Time is saved with template financial models and forms of tender documents.
- ➡ **A robust competitive tendering process implemented on schedule – no surprises.**
- c) **A bankable, fair and balanced contractual set of documents:** a template PPA and Government Support Agreement has been developed from scratch, with support from Linklaters in London, benchmarking all relevant PPAs in similar markets. The overall risk allocation has been designed and stress tested by Norton Rose, with a keen sense of balance while ensuring bankability. Templates can be rapidly tailored to local regulatory and legal specifics.
- ➡ A fair, balanced and bankable set of documents that, once versioned to the local market, can be offered to bidders on a non-negotiable basis ensuring rapid financial completion and construction post tender award. No lengthy months and years of further contract negotiation – **no surprises.**
- d) **An offer of stapled financing:** IFC (through its Investment Services division) will provide a detailed project finance term sheet to be offered to all pre-qualified bidders. Bidders don't have to take it (they are free to seek financing elsewhere) but have the comfort and transparency of financing terms in a market that is likely to have few precedents. The procuring government, meanwhile, has the comfort and certainty of knowing that the project is bankable and can be tendered on a non-negotiable basis.
- ➡ No lengthy months arranging the financing: clear terms and a guaranteed financing is available, based on the tendered project and documents. So no further PPA and Government Support Agreement negotiations, lender comments or negotiations – **no surprises.**
- e) **Additional risk mitigation instruments:** as needed, an IDA Partial Risk Guarantee would be included in the bidding package – typically to reduce off taker credit risk, with a terms sheet attached to the tender. Similarly, an offer of Political Risk Insurance by MIGA for investors seeking such protection would be attached to the tender as a term sheet.
- ➡ Bidders can further de-risk their bids and focus only on submitting the best technical and commercial offer – **no surprises.**

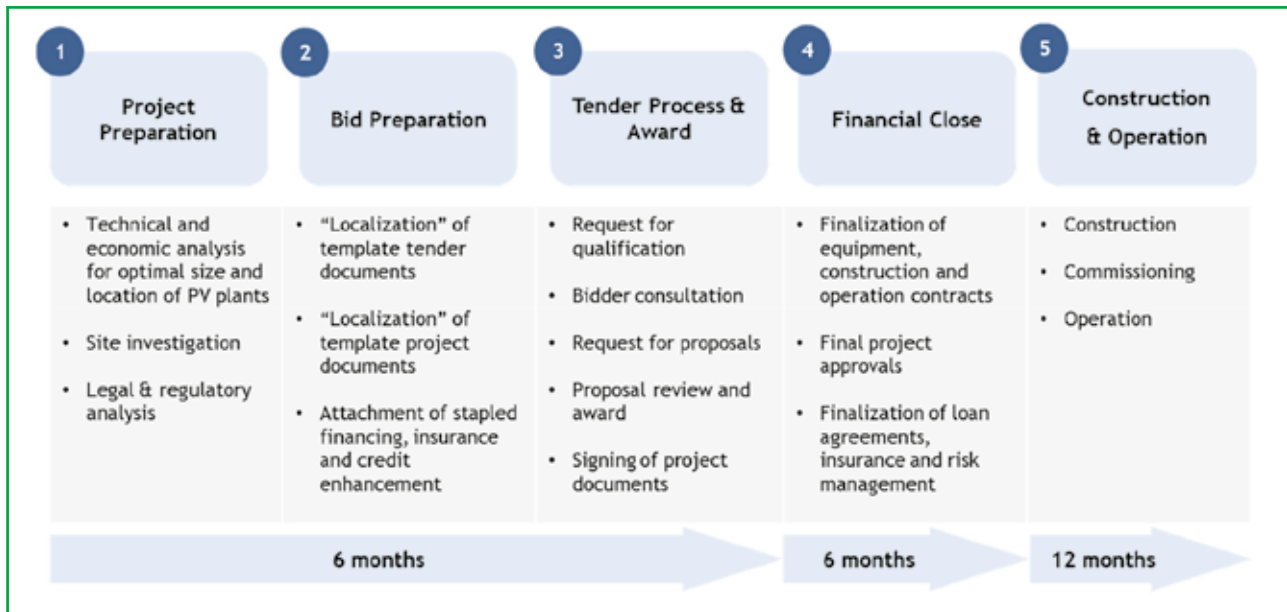


Figure 1: Scaling Solar - In One Picture



*Scaling Solar has been precisely designed by IFC and the World Bank Group."*

How would it work in practice? First IFC would seek to get mandated formally by a Government to roll-out this initiative in the host country, and from there, the process would work as follows – in 24 months from beginning to end:

### A NEW ERA FOR SOLAR PV IN SUB-SAHARAN AFRICA?

The renewable energy revolution is happening and is reshaping electricity markets worldwide: the pace of change, the consequential impacts of such momentous transformation or the end state(s) may be a matter of debate. But no one is disputing the fact that climate change and renewables' continuously improving economics are two major driving changes that will continue to transform the electricity landscape across the world.

Can Sub-Saharan Africa, with its heartbreaking 30% electrification rate but some of the world's best solar resources, afford to stay behind? We think not.

Across the continent, IFC infrastructure specialists engage in daily dialogue with committed African energy policy makers that have increasingly become convinced that solar PV can fast track their access to electricity programs, lower system costs and reduce reliance on imported (and often expensive) fossil fuels.

But until now, they had no (ready) answer to the following: "How do we get 50+ MW, at the best cost and in 24 months, on our grid?"

But that was until now: Scaling Solar has been precisely designed by IFC and the World Bank Group to offer a ready-made solution to this conundrum.

For Governments, policy makers and their partners, the advantages are clear: a holistic, integrated solution, low transaction costs, the support of IFC and the World Bank Group, fast delivery and the certainty that the outcome will be quality projects, led by reputable investors and at the lowest cost.

For private investors and financiers, the advantages are equally clear: drastically lower transaction costs, a transparent, robust award process with clear rules of the game and a bankable contractual framework with a comprehensive financing and risk mitigation package attached.

Can we hope to see the dawn of a new era for renewable energy in Sub-Saharan Africa, particularly solar PV, for the benefit of all stakeholders?

Time will tell: the road to travel is still long, but at least, Scaling Solar opens a path to get there. And as anyone who's travelled in Africa knows, clearing a path may well be the most arduous part of the journey... ■