



# Scaling Solar: The Complete Package

In the last few years, IFC has prioritized an approach to creating bankable private sector infrastructure opportunities that we call “Scaling”—focusing not on single asset development, but on a holistic approach that creates a pipeline of infrastructure projects.

The essence of the Scaling approach is to develop a robust public-private partnership (PPP) model for a single deal and then replicate it. This spreads costs, enhances impact, and encourages programmatic, competitive tendering, with faster delivery and lower prices—genuinely creating new markets.

In some countries, this approach involved working with governments to design a process. In others, IFC has worked with investors and bankers, corralling views and facilitating dialogue. In each case, the ideas at the heart of Scaling—focusing on aggregation and investing upstream to achieve credibility downstream—were adapted to specific country circumstances. In all cases, the Scaling effort in process design and organization had a meaningful and long-lasting impact.

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Here we consider one of these experiences—Scaling Solar—in more detail. This case study accompanies four other case studies and an Executive Summary, and provides insights and key takeaways that are directly applicable to other countries.

When IFC's Scaling Solar program was launched, many projects under development in Africa were struggling to reach financial close. An IFC study found that governments had limited capacity to prepare, structure and manage Independent Power Producer (IPP) projects, and they relied on unsolicited proposals and bilateral negotiations to implement power projects. It was difficult to attract the interest of larger, more experienced developers, with lower costs of capital, and existing political and credit risk was driving up prices. The program changed the game by putting together mechanisms—a transparent, competitive bid process combined with de-risking, both inside and outside of the project documents, and a financing offer—to shorten the time-span from project development phase to financial close, and to attract larger developers and international banks.



# I The Program

IFC's Scaling Solar Program is a "one-stop-shop" offering relevant World Bank Group services with the aim of delivering competitively priced solar energy from private IPPs in a period of as little as two years from project launch. To achieve this objective, the program provides participating governments with thorough project preparation and structuring support, and developers with certainty of process, low transaction costs, robust and bankable project documentation and de-risking solutions.

Under Scaling Solar, multiple World Bank Group investment and advisory services are offered under a single package that includes technical advice to identify and define projects, assessing the right size and location and preparing the selected sites; simple and rapid tender management; fully developed templates of bankable project documents designed to eliminate negotiation and speed up financing; stapled financing with competitive terms; risk management products; blended finance; credit enhancement in the form of partial guarantees (World Bank); and political risk insurance (MIGA).

## How Does it Work?

The Scaling Solar process begins with a client government signing a formal advisory mandate with IFC's Corporate Transaction Advisory Department. Project preparation and structuring follows using a set of previously developed template documents, including: terms of reference for the hiring of consultants, the Power Purchase Agreement (PPA), Government Support Agreement (GSA) and financing documents. Although some degree of template customization to accommodate project and country specific requirements is expected, it is critical for this set of documents to be utilized in their template forms across countries. This makes it possible to reach a certain level of standardization and reduce project preparation and transaction costs required to achieve competitive solar power within two years.

Once engaged, IFC mobilizes a World Bank Group team and hires external consultants. Following project preparation, IFC assists the client with procurement using tendering documents designed to attract top-tier developers and investors. Bidders have access to indicative terms for debt financing, political risk insurance and Partial Risk Guarantees that have gone through preliminary internal approvals.

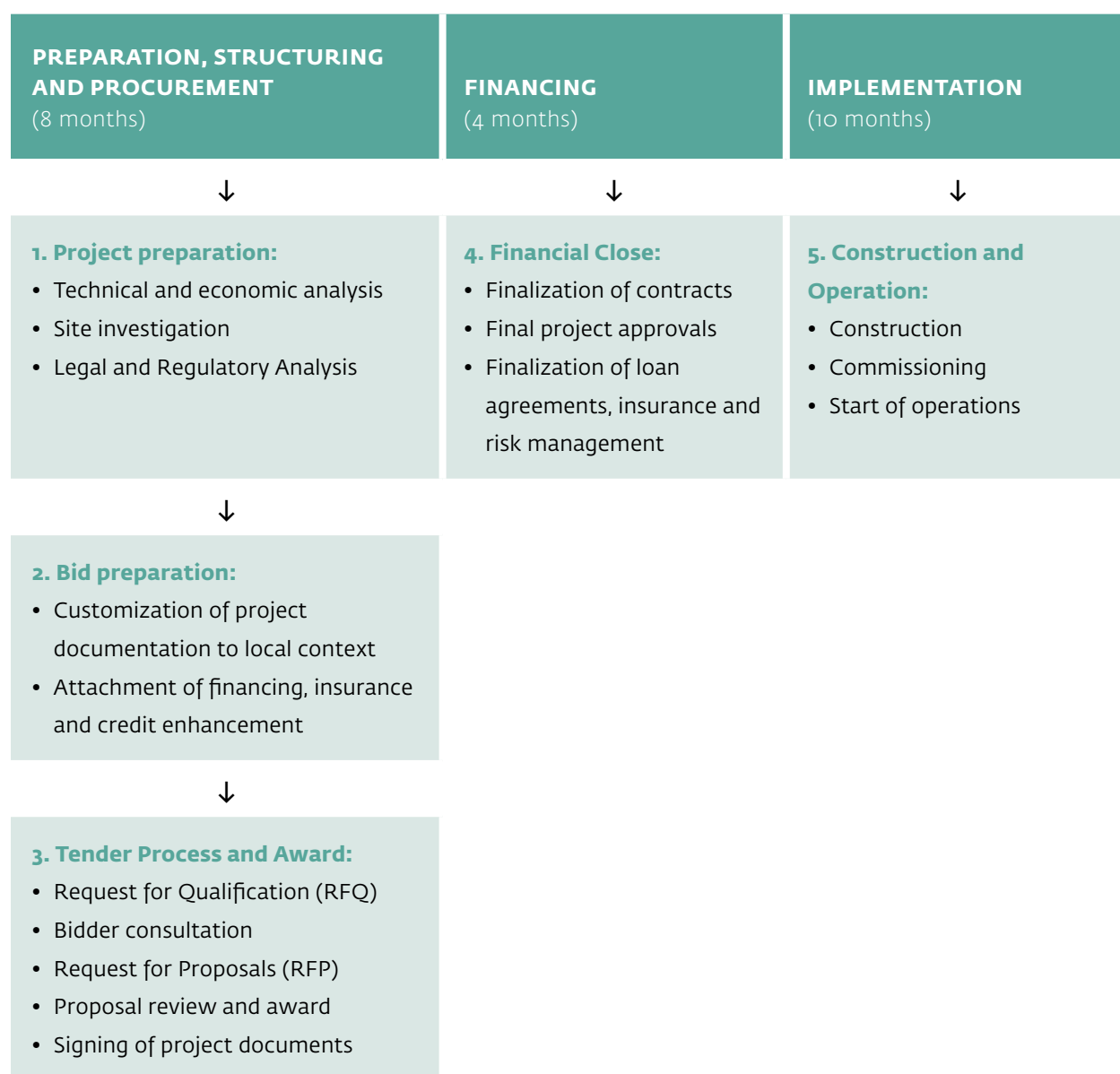
The Program is designed to offer important benefits to governments and utilities in the form of rapid delivery (target of 2-years development timeframe for committed partners), certainty (use of standard and bankable project documents to increase financing prospects) and low costs (tenders designed to maximize competition and minimize resulting tariffs). The Program also benefits project developers and sponsors

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by generating a pipeline of investible projects, reducing development time and costs, and establishing a clear and transparent procurement process.

Within 18 months of the formal launch of Scaling Solar as a business line in June 2015, four nations in sub-Saharan Africa (SSA) had signed up for the program (Zambia, Senegal, Madagascar and Ethiopia), with many other countries expressing strong interest within and outside the region. Scaling Solar has produced five mandates for the development of projects with an aggregate capacity of more than 1,200 MW and two

**Figure 1: Scaling Solar Process and Target Timeline**



Source: Scaling Solar, May 2018



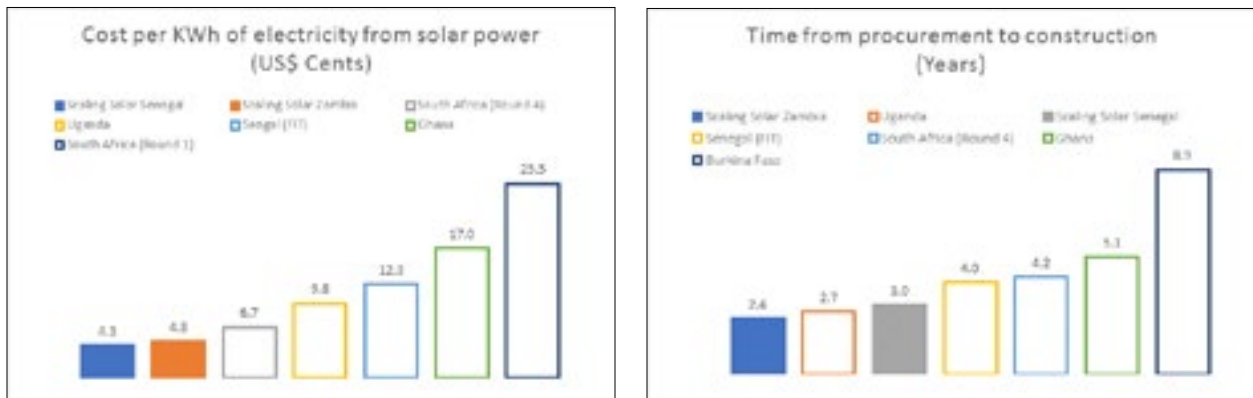
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financing mandates for projects in Zambia involving a total investment amount of over US\$100 million and the addition of new generation capacity of 88 MW. IFC mobilized financing of more than \$50 million, including concessional loans from the Canada Climate Change Program (CCCP).

Scaling Solar has achieved important reductions in the tariffs and timelines of solar projects and mobilized new investors into the African market (See Figure 2). It has also had an important effect in encouraging African governments to organize tenders and add solar to their energy mix.

While Scaling Solar is a World Bank Group product, it works in partnership with a number of other entities, bringing additional financing support from the Private Infrastructure Development Group, the UK's Department for International Development, USAID's Power Africa, the Ministry of Foreign Affairs of the Netherlands, and the Ministry of Foreign Affairs of Denmark.

**Figure 2: Timeline and tariff results**



Note: Cost per Kwh figures are based on publicly available information and adjusted for inflation and indexation to allow for comparison.

Source: Scaling Solar, May 2018

# II The Context: Making the Market

## Solar power in Africa: a missed opportunity

Countries in Sub-Saharan Africa are plagued by significant energy deficits, burdened by high energy prices and vulnerable to external commodity shocks and climate events. As a quick-to-build and affordable solution, solar power generation is high on the agenda, but many countries struggle to capitalize on their solar resources and the marked decline in solar power technology prices. Prior to the first Scaling Solar projects, the region was settling for tariffs around US¢ 20 per kilowatt-hour (kWh)—high by comparison to global benchmarks. Procurement frameworks were inconsistent, often involving protracted negotiations and unstructured processes driven by last-minute decisions.

At the same time, many of the factors that would go into making the Scaling Solar approach possible were already in place. There was strong local and global interest in all segments of the industry, even if this had not yet translated into investment at scale. In addition, there were many available products from Multilateral Development Banks and Development Finance Institutions that had already been used to improve the terms of financings and mitigate political, credit and foreign exchange risks. There was also experience with private power transactions, as evidenced by the more than 70 projects financed in Sub-Saharan Africa (excluding South Africa) since the first IPP in the region in 1994.

Furthermore, South Africa's Renewable Energy Independent Power Project Procurement Program (REIPPPP) had shown that large scale private solar investment was possible. This program attracted more than US\$3 billion in investments and achieved radical tariff reductions (a nearly 70 percent decline between rounds 1 and 3) and an impressive financing and installation speed. Market players recognized that the scale of the program, transparent competition and bankable project documentation were at the heart of South Africa's success story.

### III Transaction Evolution

#### Tailored solutions require going upstream and trying new approaches

Scaling Solar originated from a detailed study of high-potential solar markets in Sub-Saharan Africa carried out by IFC, which found that only South Africa had been truly successful in developing solar IPPs and that several factors still constrained private investment in other countries. The study, coupled with the lessons learned from IFC's involvement in many solar programs worldwide, led to the conclusion that the practices that had guided the development of thermal and hydro power in the region were not suitable for solar and that a different approach was needed.

Creating this market required strong, consistent and clear procurement guidelines and processes that provided positive and reliable signals to developers, as opposed to ad hoc messages and policies. By awarding projects via auctions in which competition could be maximized, it would be possible to reap the advantages of rapidly declining equipment prices. This competition would require project documentation (project and financing agreements) to be pre-prepared and thoroughly tested in the market prior to auction



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launch.

The team also expanded the scale of procurement, aiming for several rounds and developing multiple auctions across countries and building up a regional market with the scale required to get the attention of the largest and most experienced developers. Finally, the team realized that any successful engagement would require heavy investment in project preparation and structuring support in the form of comprehensive advisory services.

### Turning an idea into a program

Realization of the Scaling Solar offering across multiple World Bank Group institutions—with their own approval processes, and the need for coordination across related but separately drafted documentation—posed a significant challenge, especially at a time when the close intra-World Bank Group collaboration we see today was in its infancy. The Scaling Solar idea was first developed in 2013, among a small group of IFC staff, but quickly evolved into a collaborative effort involving more than 200 people across IFC, MIGA, and the World Bank.

After IFC senior management gave the green light to develop the Scaling Solar concept in 2014, project documentation templates were drafted and shared across IFC, the World Bank and MIGA, with inputs from independent legal and technical advisors, as well as feedback from selected clients active in the solar space.

To facilitate the offer of stapled financing, the IFC investment team first obtained approval for generic programmatic Scaling Solar template documents that could then be used in subsequent country programs. Similarly, the World Bank and MIGA held concept review meetings and developed draft term sheets for their Partial Risk Guarantee and Political Risk Insurance (PRI) products. After this World Bank Group-wide approval process was concluded, the team could offer a pre-baked integrated solution, combining all the relevant products of the World Bank Group and providing certainty to both government and private sector bidders.

### First client: Zambia

In August 2015, Zambia's Industrial Development Corporation (IDC) signed an agreement with IFC to develop and tender up to 100 MW of capacity at the Lusaka South Multi Facility Economic Zone (LSMEFZ). To promote competition in the sector and to diversify the risk of non-performance by a single developer, IDC decided to split the developments into two grid-connected solar PV plants of up to 50 MW, situated on adjacent sites and



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developed by different private sector sponsors.

IFC worked closely with IDC to carry out site selection, including all necessary studies to ascertain grid capacity, full due diligence on legal, regulatory, environmental and social, tax and accounting, and insurance matters with external advisors (hired using template terms of reference); country-based adaptation of the four key template documents including changes requested by the client: drafting of a Shareholder's Agreement for IDC's minority stake in the projects.<sup>1</sup>

The tender was launched in October 2015. In November 2015, 11 bidders were successfully pre-qualified out of the 48 that submitted applications. In February 2016, IDC issued a Request for Proposals to the pre-qualified bidders who started their own due diligence process. In May 2016, 7 bids per project were received. In June 2016, the two bidders with the lowest tariffs—Neoen/First Solar and Enel Green Power were awarded the projects. The Neoen / First Solar bid the lowest non-indexed tariff in sub-Saharan Africa of just US ¢ 6.015 / kWh for a 54MWp solar plant using fixed-tilt panels (Bangweulu Project). Enel

<sup>1</sup> The tender was for an 80% stake in the projects, while IDC would partner with the private sector and retain the remaining 20%.

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offered US¢ 7.84 / kWh, winning the second project, a 34MWp solar plant using single-axis tracking panels (Ngonye Project).

IFC signed an Investment Services mandate for the financing of the Neoen project in August 2016. The deal proceeded to investment review in February 2017, but only reached financial close in December 2017. The financing package included senior loans of up to \$13.3 million from IFC, up to \$13.3 million from the IFC-Canada Climate Change Program (CCCP), and up to \$13.3 million from the Overseas Private Investment Corporation (OPIC), along with an interest rate swap from IFC and a Partial Risk Guarantee from the International Development Agency (IDA).

IFC signed a second investment mandate for the financing of the Enel project in December 2016. The deal proceeded to investment review in November 2017 and reached financial close in June 2018. The financing package arranged by IFC included senior loans of up to \$10 million from IFC and up to \$12 million from the IFC's CCCP, plus \$2.5 million in interest-rate swaps from IFC and a \$2.8 million partial risk guarantee from IDA. The European Investment Bank (EIB) was also providing financing of \$11.75 million to the project.

Although the engagements proceeded rapidly from mandate signature to project award in May 2016 (9 months from mandate), there were extensive delays to commercial close (signature of all key commercial contracts) in March 2017 (19 months from mandate ) and financial close, which took place in December 2017 (28 months from mandate) for the Neoen project and June 2018 (34 months from mandate) for the Enel project. This timeline exceeded the Program's targets for financial close (14 months) and the overall target for construction start (24 months). These delays were mainly caused by changes that required unexpected modifications to the Scaling Solar project document templates and unforeseen issues related to land availability and quality—in particular, accommodation of a government request to have a minority stake in the project; additional negotiations with winning bidders on differences on interpretation of government incentives, delays in land clearances and unexpected soil conditions.<sup>2</sup>

2 For detailed lessons learned from the implementation of the first Scaling Solar in Zambia see: Learning by Doing, Scaling Solar Zambia 1, IFC PPP Advisory Services, June 2018

# IV Creating the Conditions for Scaling

## From a startup to an established program

After the first Zambia mandate, Scaling Solar quickly expanded to other markets in Sub-Saharan Africa and generated another mandate in Zambia.

**Zambia 2:** In February 2017, IFC signed a second AS mandate with IDC for up to 500 MW of generation capacity, over several rounds, starting with up to 300 MW. In May 2017 IDC prequalified 12 bidders for the tender. The procurement process was then put on hold due to issues relating to the financial standing of the national power utility and offtaker: ZESCO.

**Senegal:** In February 2016, IFC signed an AS mandate with the Country's Electricity Sector Regulation Commission (CRSE) for a target capacity of up to 200 MW. CRSE launched the program with a tender for 60 MW of capacity split in two projects. Eventually, CRSE received 14 bids from 8 of the 13 qualified bidders for two projects located at Kahone and Touba. In April 2018, CRSE announced the results of the tender, awarding both projects to French utility Engie and asset manager Meridiam, who bid 3.80 Euro cents per kilowatt hour for the solar plant located in Kahone and 3.98 Euro cents per kilowatt hour for the solar plant located in Touba. This was another breakthrough for the program as these prices are approximately 60 percent lower than the solar contracts previously agreed in Senegal, providing one of the cheapest sources of electricity in Sub-Saharan Africa. The project documents have been signed and financing has been arranged and is pending closing.

**Madagascar:** In March 2016, IFC signed an AS mandate with Madagascar's Ministry of Water, Energy and Hydrocarbons (MEEH) for a target capacity of up to 40 MW. Madagascar is the first Scaling Solar that includes the procurement of battery storage in addition to solar PV generation. In October 2017, Madagascar issued a Request for Qualification (RFQ) for 25 MW of solar capacity with associated battery storage, using additional documentation specifically designed by the Program for this purpose. At the end of February 2018, MEEH announced the list of 6 pre-qualified bidders and the tender process is now under preparation.

**Ethiopia 1:** In October 2016, IFC signed an AS mandate with Ethiopian Electric Power (EEP) for up to 500 MW. EEP and IFC selected three potential sites: two for the first round (250 MW each). The team engaged in due diligence, carrying out extensive community outreach, given sensitivity over land issues, and extensive stakeholder consultation of document structure and risk allocation. EEP issued the RFQ in October



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2017 and announced the prequalified bidders in April 2018, selecting 12 of the 28 developers that submitted a bid. Following delays caused by the introduction of a new PPP legal and regulatory framework and extended consultations with the Government, the RFP process has been launched.

**Ethiopia 2:** Following the successful issuance of the RFP for Ethiopia Round 1, PPP-DG and EEP announced that it would be procuring up to an additional 750MW under the Scaling Solar initiative and formally requested IFC support to implement Ethiopia Scaling Solar Round 2. The RFQ process is ongoing.





# V Lessons learned

In the four years after the Program was launched, IFC learned important lessons that have been gradually incorporated in the roll-out of new mandates outside Zambia. The main lessons learned are the following:

**World Bank-led Scaling Approaches still rely on public sector consensus:** Scaling Solar requires full buy-in across the public sector (Ministries of Finance and Energy, Utility, Sector Regulator) to avoid significant delays. In the case of Scaling Solar, “analysis-paralysis” caused indecision from government officials and affected timelines. Public sector stakeholders must be willing to take the necessary policy decisions in a timely manner and engage on all issues raised by bidders and lenders. Although IFC is there to help, governments must lead the process for projects to succeed.

**Building up institutional capacity is fundamental for the success of these initiatives:** Intensive World Bank Group engagement is not a substitute for domestic institutional capacity. In the case of Zambia, the Government developed important skills and institutional capacity, as well as experience in dealing with private sector sponsors and lenders through the execution of the first round of the Program. This is valuable for further rounds and other privately financed projects. Some countries might need additional support and one potential way to do this is to build into the program World Bank-led public-sector projects that focus on institution building that are deployed prior to or in parallel with implementation of the Program.

**Scaling approaches are still resource intensive:** Scaling aims to deliver a pipeline of transactions, rather than a single transaction. But the scaling of outputs also requires a significant scale up of inputs—i.e. internal institutional resources. In the case of Scaling Solar, teams brought the project through concept design, implementation planning, mandate, fund-raising, consultant procurement, structuring, negotiation and actual implementation to commercial close. This role is extremely labor-intensive.

**Coordination comes at a cost:** One of the main selling points of Scaling Solar—multiple World Bank Group service offerings packaged into a single mandate—also gives rise to one of its biggest challenges: coordinating across multiple World Bank Group teams. A lesson learned early on in Zambia<sup>1</sup> and Senegal is that any minor “localization” amendment made to one of the template documents requires the simultaneous sign-off by multiple teams—complex in terms of managing conflict of interest and costly in terms of legal fees.

**There is a limit to standardization:** Although IFC always understood that standard documents would need to be adjusted to reflect country specific conditions (procurement laws, land ownership, grid connections regimes), the extent of the adjustments and need for customization was underestimated. In practice, the number of areas where

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the documents have had to be adjusted has been much higher: underlying legal system (common law vs. civil law), language (English vs. French—an issue extending beyond ‘mere’ translation), grid stability, number of competing renewable energy projects and land availability, condition and title. In addition, customization has been required to adapt to the experience and conditions of clients. Countries with significant prior IPP experience may seek to have that experience reflected in the standard documents (e.g. Senegal, where various public sector stakeholders provided more than 100 comments on the template PPA), while countries with very weak grids may not be able to accommodate Scaling Solar without significant amendment of the standard documents (Madagascar, where the need to incorporate a storage component to help stabilize the grid suggests that a detailed grid study should be carried out on grids known to be weak before starting work on the transaction itself). Additionally, it proved easier said than done that finance documents would be non-negotiable, as lenders, sponsors and even governments have requested changes to standard documentation to address unforeseen situations.

**Land availability has proven to be more of an issue than expected:** Scaling Solar assumes the Government will provide the project site(s) free of encumbrances. Land availability challenges have arisen in all mandates to date, including: a shortage of suitable sites (Senegal, Madagascar, Zambia 2); unclear title (Madagascar); challenging geotechnical conditions (Zambia 1); social issues related to sensitivity over land expropriation by the government (Zambia 1, Ethiopia). The main lesson learned is that land is a very complex and sensitive issue and that its importance should be highlighted in initial conversations with government clients and in program marketing materials and documentation.

**All stakeholders involved should have realistic expectations:** Governments and other relevant public-sector stakeholders should have realistic expectations in terms of outcomes and acknowledge that every country is different and that Program results may differ. In addition to requiring more extensive contractual customization than expected, significant variation across countries means that the timeline and tariffs achieved in one country may not be replicable in the next country. In practice, every project will differ in multiple ways, including: site location and condition, solar resource, proximity to grid, complexity of grid interconnection, tax regime, perceived country risk, structuring costs and availability of government resources to cover these costs. The team needs to bear this in mind in its communication with clients and management.



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2121 Pennsylvania Ave., N.W.

Washington, DC 20433

+1 (202) 473-3800

[www.ifc.org/infrastructure](http://www.ifc.org/infrastructure)