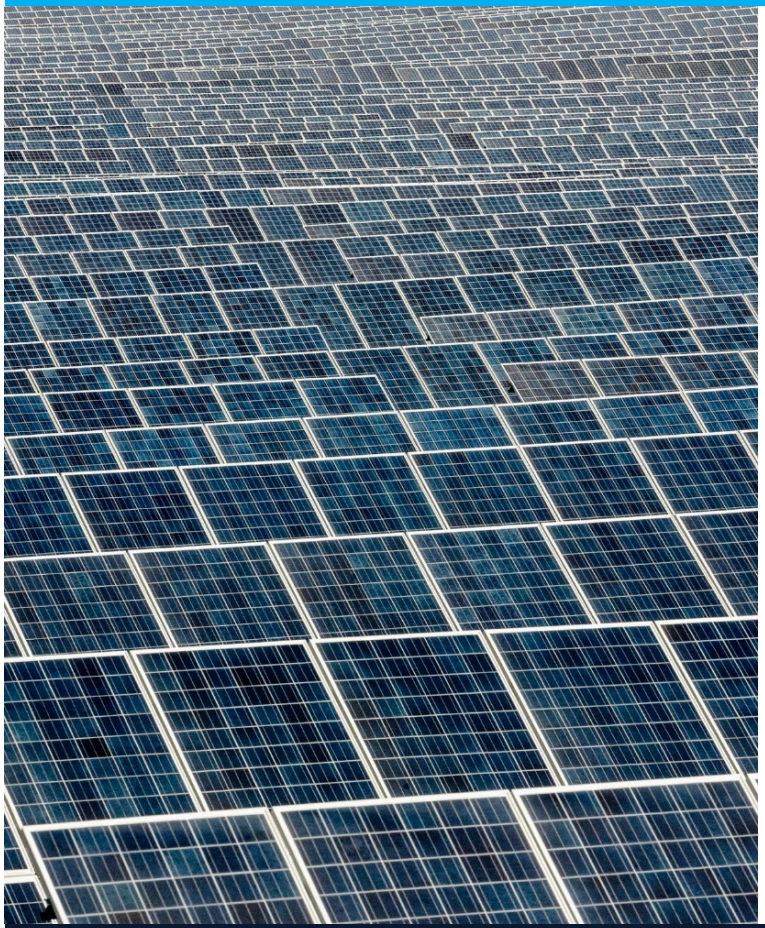
Scaling Solar | AN INNOVATION OF WORLD BANK GROUP



Scaling Solar:

A World Bank Group solution to accelerate private investment in utility-scale solar PV

Solar PV – a Great Solution for Emerging Markets

- Prices of crystalline silicon PV cells have dropped below $0.35/W* (from 76.67 $/W in 1977)
- Many developing countries benefit from excellent irradiation levels
- Short construction periods of 3-9 months vs. 2-10 years for thermal, hydro & geothermal
- There is a need for diversification of electricity generation source in many countries to avoid fuel price/ hydrology volatility

*As per BNEF market outlook of November, 2017

A Challenge for Developing Countries to Benefit

- Limited institutional capacity
- Lack of market scale
- Lack of competition
- High transaction costs
- High perceived risks and cost of capital

The Solution: Scaling Solar

Scaling Solar is a "one stop shop" program for governments to rapidly mobilize privately funded grid connected solar projects at competitive tariffs. The program brings together a suite of World Bank Group services under a single engagement based on a templated approach to create viable markets for solar power in each client country.

What Scaling Solar Delivers

A "One-Stop-Shop" Approach

- Whole WBG in one packaged solution:
  - Advice
  - Tendering expertise
  - Documentation
  - Competitive financing and insurance
  - Risk management and credit enhancement
- Designed with both government and developers in mind
- WBG expertise and lessons learned worldwide embedded

A Focus on Standardization

- Fully developed documentation quickly tailored to local needs drives speed
- Consistency across countries creates a single, 'virtual', large scale market to attract the largest and best global bidders

De-risking to lower tariffs and ensure success

- Coordinated delivery to address both public and private sector constraints
- Projects substantially developed to lower risk for developers and government
- WB debt, insurance and guarantee products to lower investor risk and required returns

The Process: Potential for Generation in 2 Years

STEPS 1 - 3
8 months

STEP 4
6 months

STEP 5
10 months

1. Project Preparation

- Technical and economic analysis
- Site investigation
- Legal & regulatory analysis

2. Bid Preparation

- Template tender and project documents
- Attachment of financing, insurance, and credit enhancement

3. Tender Process & Award

- Request for qualification
- Bidder consultation
- Request for proposals
- Proposal review and award
- Signing of project documents

4. Financial Close

- Finalization of contracts
- Final project approvals
- Finalization of loan agreements, insurance, and risk management

5. Construction & Operation

- Construction
- Commissioning
- Operations

The Benefits of Scaling Solar

Governments and Utilities

- Speed
- Customized process
- Certainty
- Competitive fixed-rate tariffs

Project Developers and Investors

- Market creation
- Reduced development time
- Level playing field
- Regional scale

International Donors & Development Partners*

- Reach
- Leverage
- Transparency
- Impact

*Opportunities for donors include: funding transaction advisory (steps 1-3) or provision of capital grants to all bidders to lower tariffs and improve affordability

Scaling Solar Mandates

Zambia

Round 1

- Project size: 2 projects for a total of 75.7 MWac
- Bids: 48 applicants at qualification, 11 prequalified
- Tariff: Record-low 6USct/kWh achieved
- Status: First project under construction

Senegal

- Project size: 100 MWac under procurement
- Bids: 28 applicants at qualification, 12 prequalified
- Tariff: 4.7USct/kWh
- Status: Awaiting financial close

Ethiopia

- Project size: Round 1 of 250MWac under procurement
- Status: Pre-qualified bidders selected

Madagascar

- Project size: 25 MWac under procurement
- Status: Pre-qualified bidders selected

Round 2

- Project size: 300 MW under procurement
- Bids: 21 applicants at qualification, 12 prequalified
- Status: In preparation for request for proposal

5 active mandates

in **4** African countries

Scaling Solar Tender Results in Zambia

9 months: Project preparation, tender delivery and award

Top 6 bids for the West Lunga Site | Mosi-oa Tunya Site

- Neoen | First Solar: **6.015USc/kWh*** | 6.135USc/kWh
- ENEL Green Power: 7.799USc/kWh | **7.839USc/kWh***
- Access | EREN Zambia 1: 8.288USc/kWh | 8.951USc/kWh
- MULILO Zambia PV1 Consortium: 8.400USc/Kwh | 8.400USc/kWh
- EDF Energies Nouvelles: 10.040USc/kWh | 9.985USc/kWh
- SEP | AVIC Intl: 10.600USc/kWh | 10.600USc/kWh

6.0USc/kWh non-indexed is equivalent to an average in current dollars over contract life of **4.8USc/kWh**

*Winning bids

Scaling Solar Tender Results in Senegal

60% tariff reduction achieved in Senegal.[1]

Top 6 bids for the Kahone| Touba Site

- ENGIE | MERIDIAM: **3.802€c/kWh*** | **3.983€c/kWh***
- Nareva Holding | Abu Dhabi Future Energy Company PJSC "Masdar": 3.890€c/kWh | 3.990€c/kWh
- Access Infra Africa | Total Eren S.A. 4.390€c/kWh | 4.390€c/kWh
- Actis Energy 4 | Mulilo Group Holdings Proprietary Limited: 4.504€c/Kwh | 4.889€c/kWh
- Scatec Solar: 4.600€c/kWh | 4.630€c/kWh
- Acciona Energia S.A.: 5.793€c/kWh | 5.164€c/kWh

3.8€c/kWh (4.7USc/kWh) indexed at 1.2% is equivalent to an average in current dollars over contract life of **4.3USc/kWh**

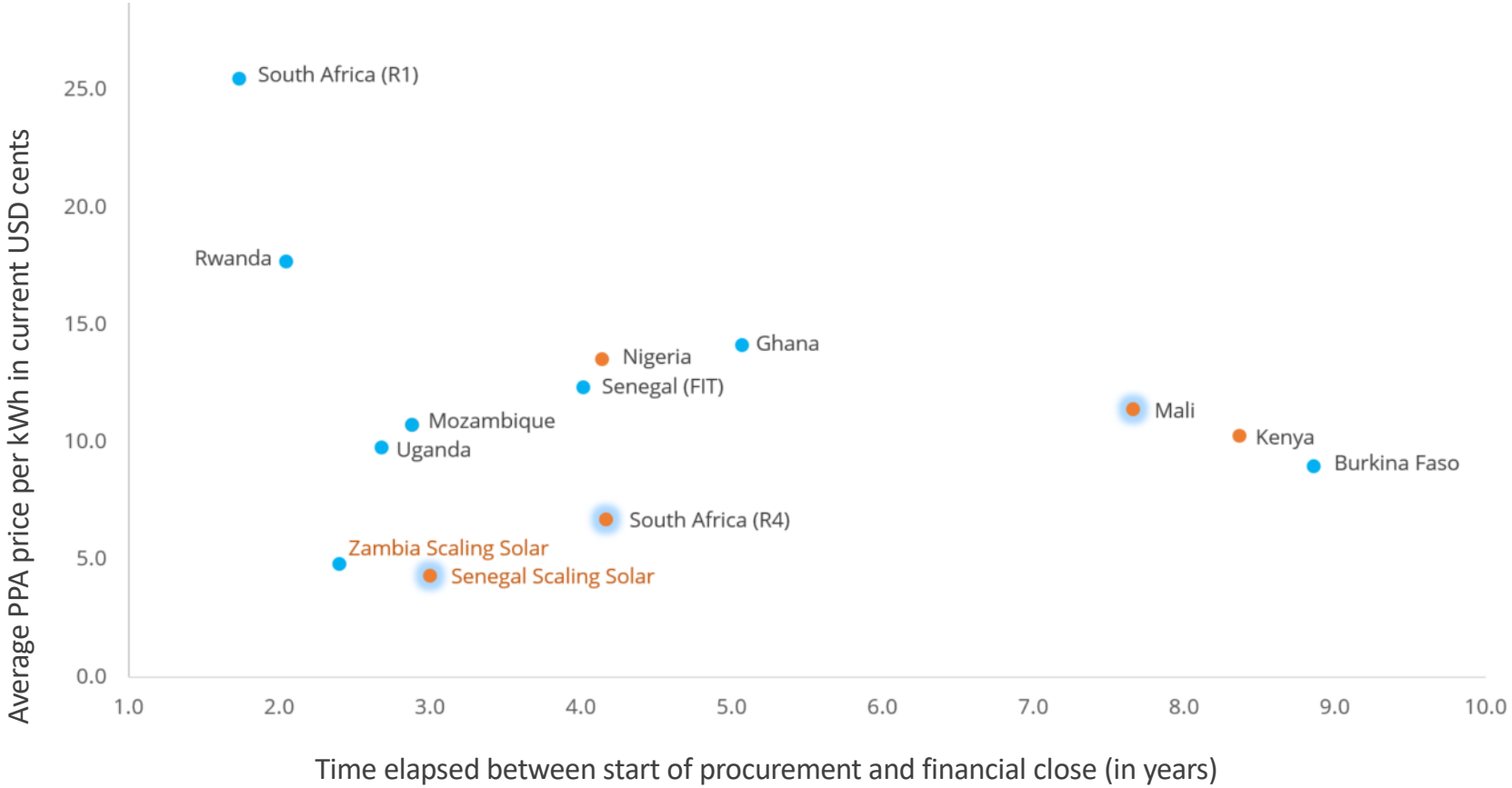
[1]Based on previous solar PPAs.

*Winning bids

Participating Developers Included:

Scaling Solar vs. Regional Benchmarks

Sub-Saharan Solar PV: Comparison of Tariff and Time to Market



Projects past financial close Ongoing projects as of May, 2018 Expe time to financial close

Note: Anonymous projects x, y and z are in different countries throughout sub-Saharan Africa

Next steps for interested governments

- Receipt of an Expression of Interest from Government
- Discussions to confirm and agree:
  - Suitability of Scaling Solar in country context
  - Sufficiency of stakeholder support (MoE, MoF, Utility, Regulator)
  - Identification of a government champion to drive the project
  - A timeline from mandate to selection of a Preferred Bidder
- Signing of a mandate with the World Bank Group to:
  - Conduct technical studies
  - Run a competitive tendering process complete with standardized documents and stapled financing
- Make initial payment for advisory services as per the engagement letter
- WBG team to run due diligence process and, after consultation and agreement from Government, tendering process

6-12 months: Expected timeline from mandate to selection of preferred bidder

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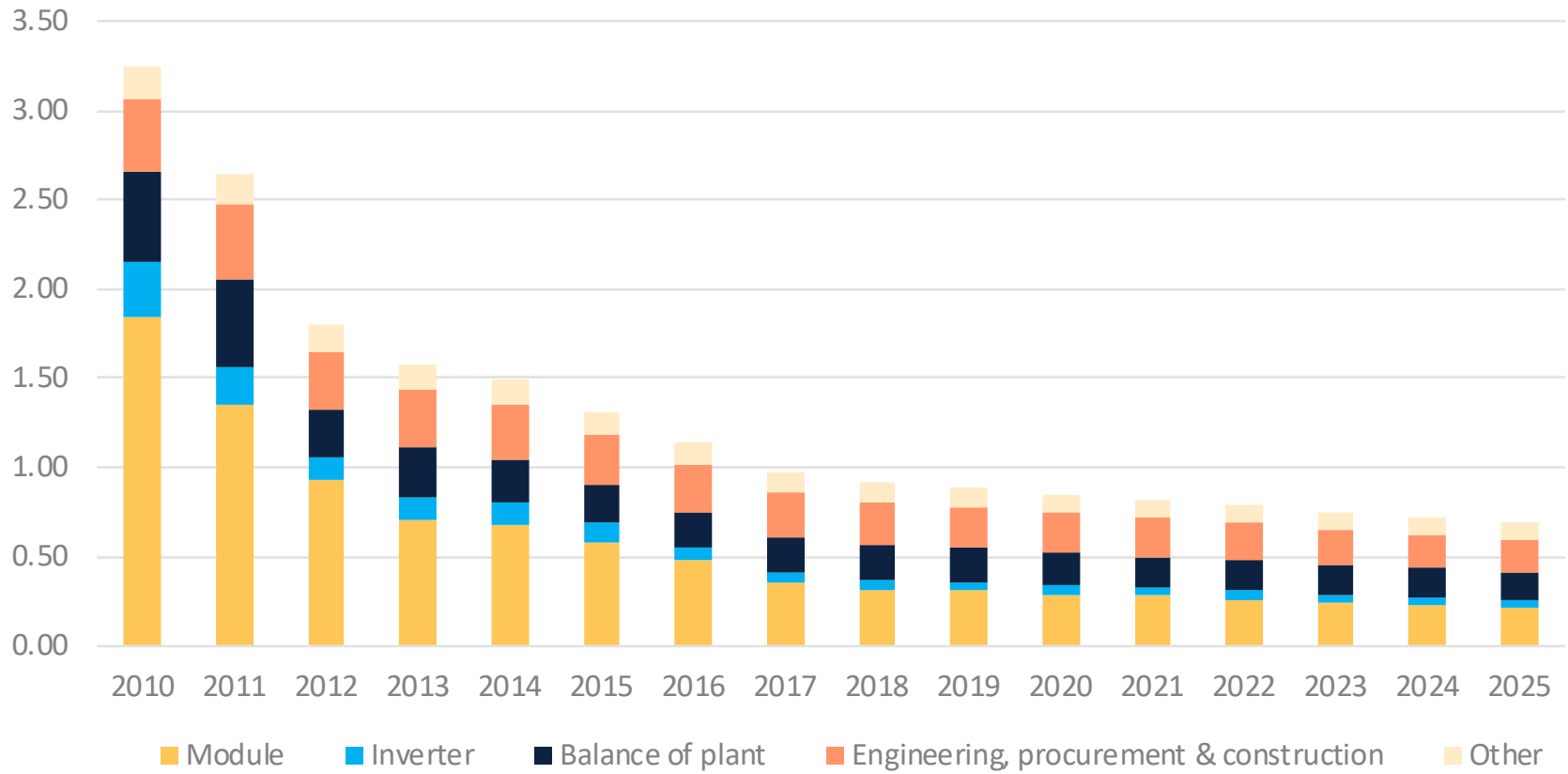
ANNEX

Why Solar Is a Great Solution for IFC Markets

Cost: Price benchmark for fixed-axis, utility scale PV systems

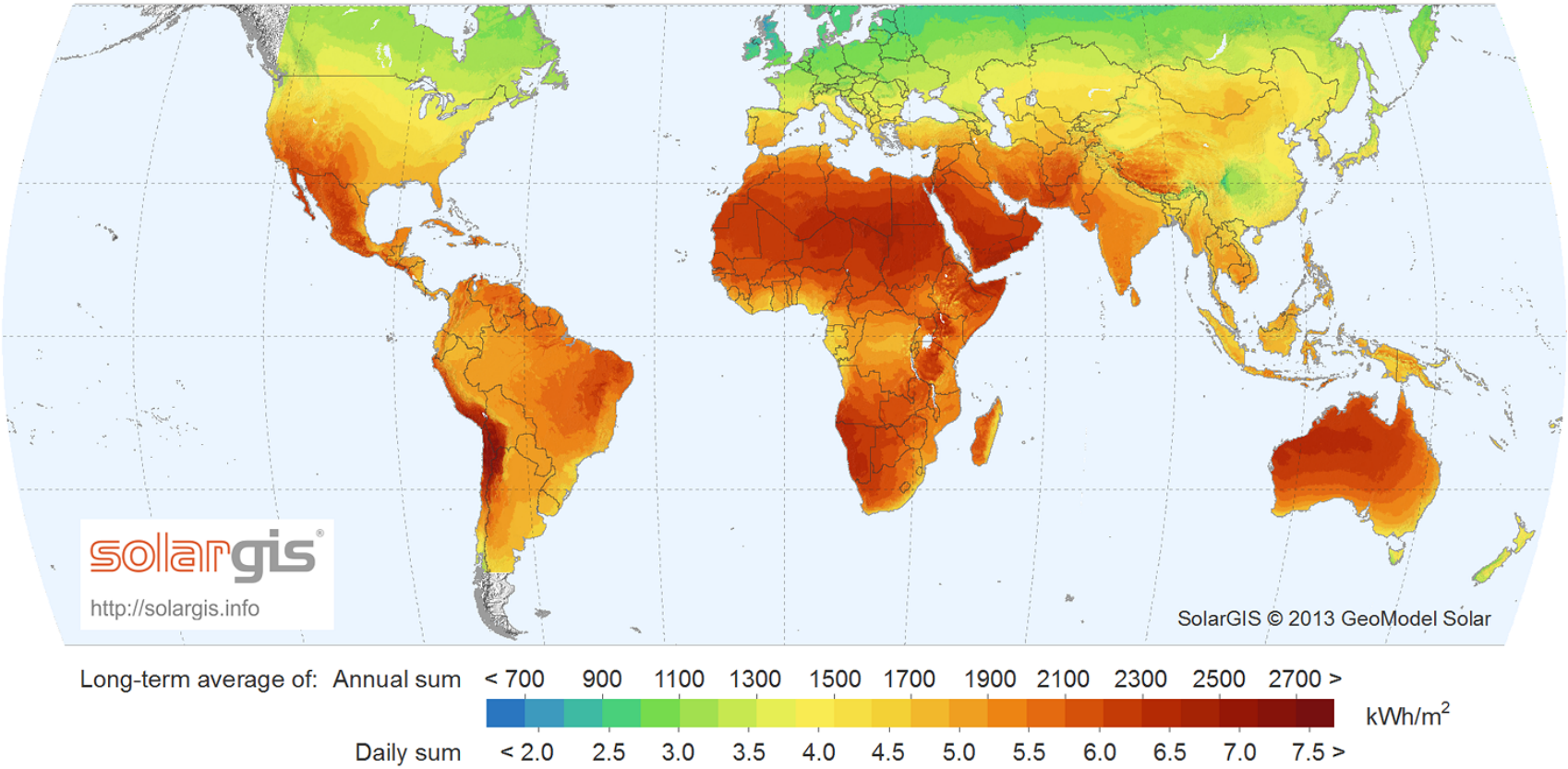
(2016 $/W, DC)



Source: BNEF Global PV Market Outlook Q4, 2017

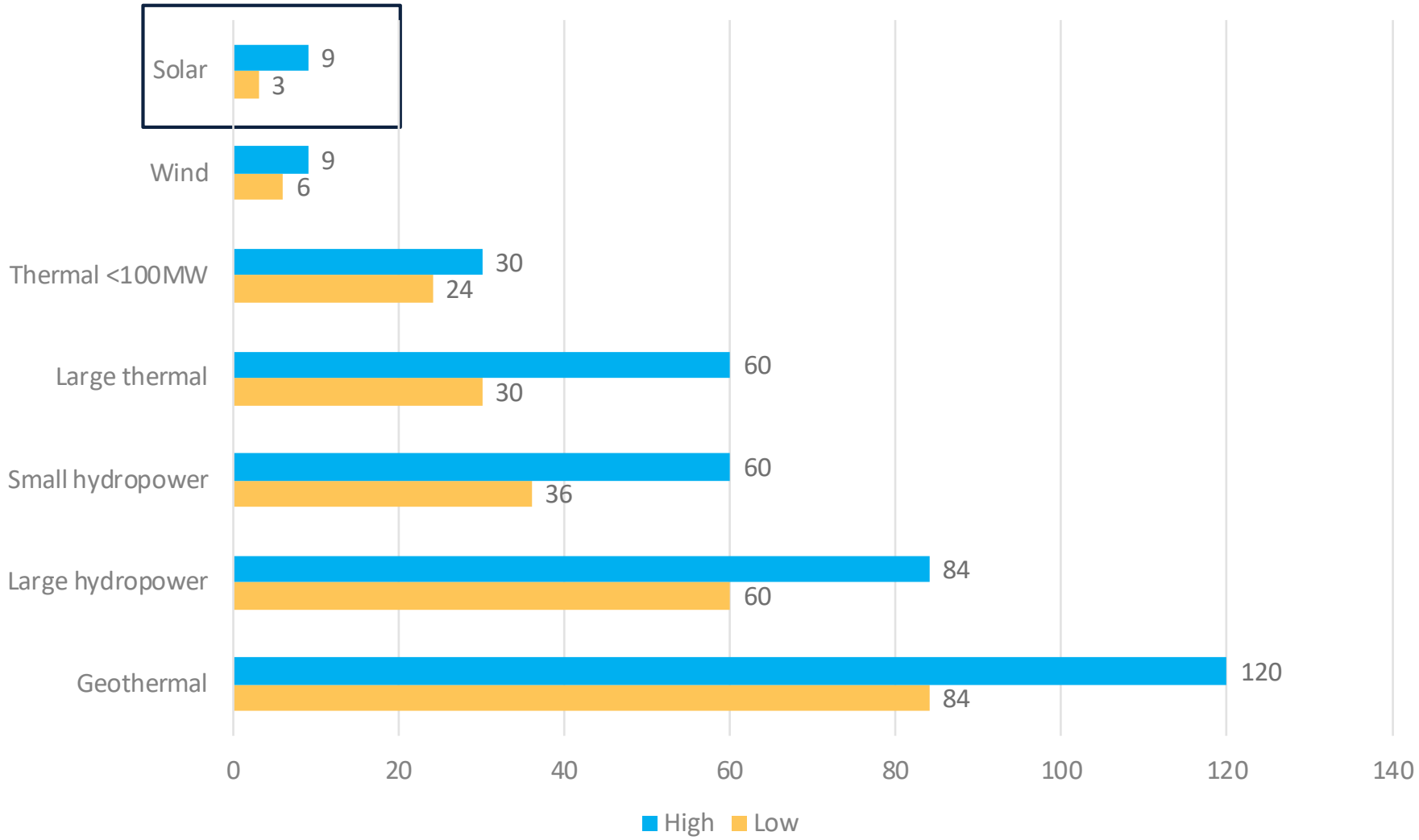
Why Solar Is a Great Solution for IFC Markets

Ubication: Favorable irradiation levels in many IFC Markets

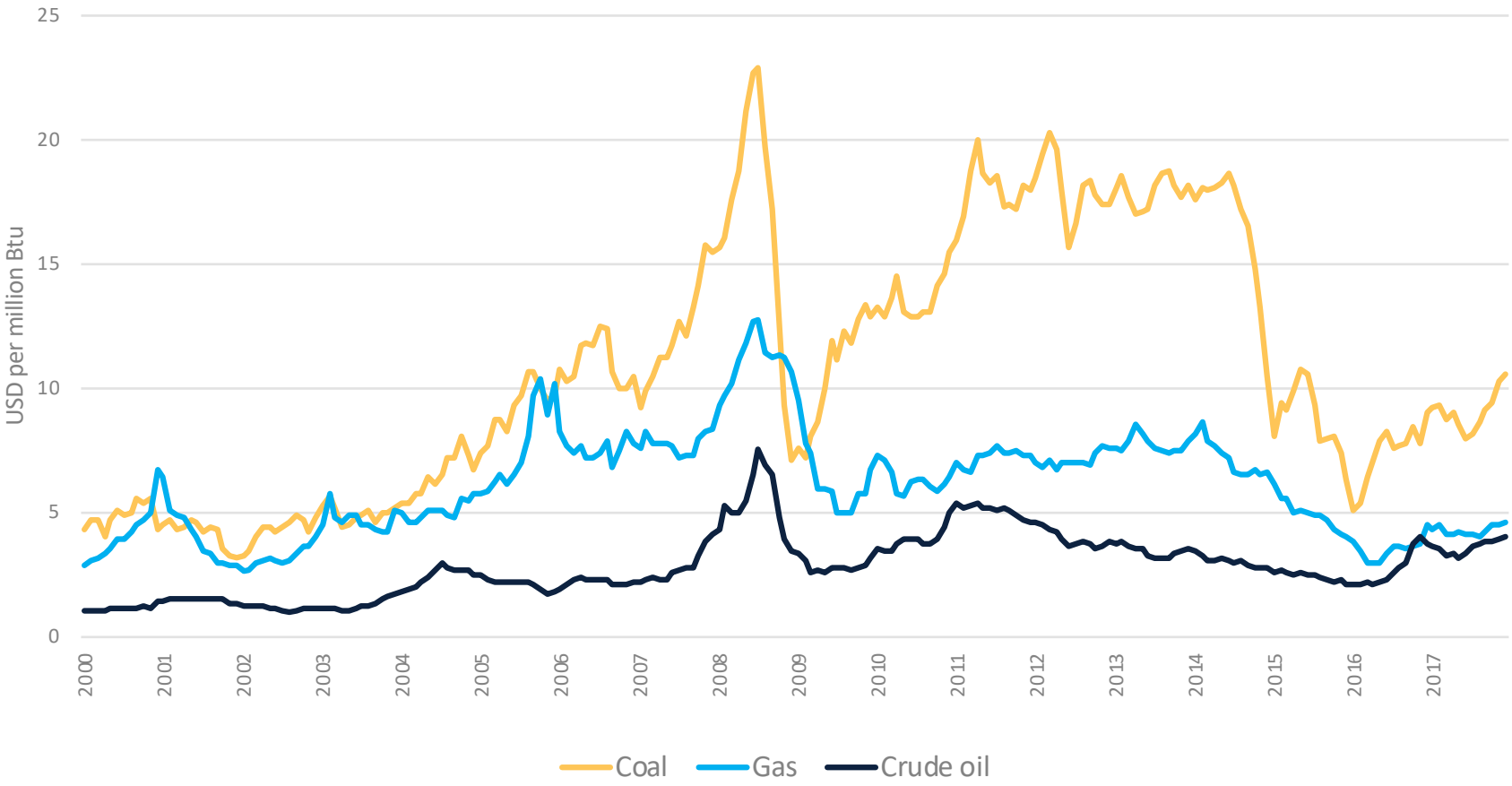


Typical Construction Periods for Energy Sources

(in months)



Global Average Fossil Fuel Prices since 2000



Source: World Bank Commodity Price Data

South Africa Case Study

Dramatic Tariff Reductions achieved through:

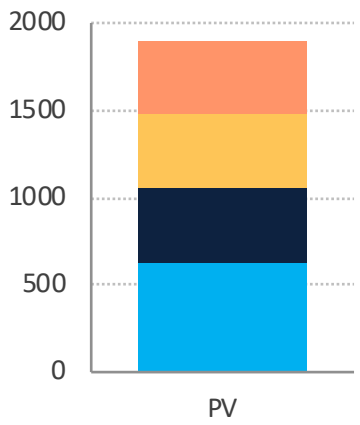
Large, repeat allocation
Capacity build-up

Strong competition
Tariff decrease

Inclusive Framework
Proven bankable

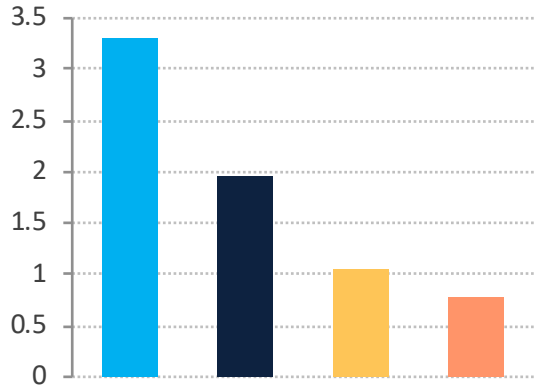
Program expansion
High investor interest

Capacity per round (MW)



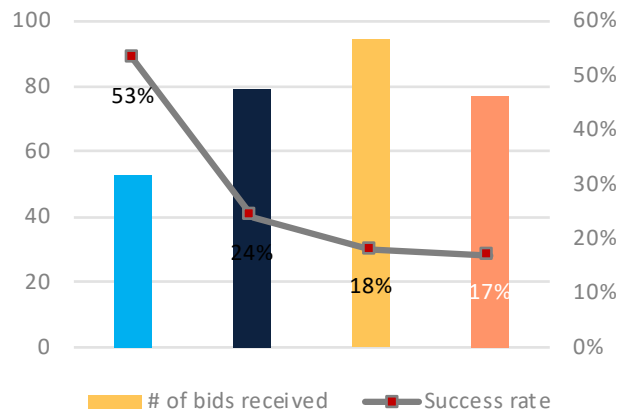
✓ **+1,900 MW of solar PV power**

Tariffs per round (ZAR/kWh)



✓ **Tariff drop of -76% over 4 rounds**

# of bids received and success rate (includes wind)



✓ **Surge in investor interest and increasing selectivity in bidders afforded**

Round 1 Round 2 Round 3 Round 4

Scaling Solar "Template" Documents

Engagement Letter & ToRs for specialized Consultants

- Government signs a Letter of Engagement with IFC's Advisory Services
- A World Bank Group team is put in place
- Specialized consultants are hired based on existing Terms of References

Power Purchase Agreement & Government Support Agreement

- Documents designed as fair, balanced & bankable
- Prepared by World Bank Group with support of Linklaters & Norton Rose independent review

Pre-Qualification Document & Request for Proposals

- Tendering documents are ready and have been designed to attract top tier developers and investors

Letter of Interest and Indicative financing terms

- Letter of Interest and Indicative financing terms

It is critical for this set of documents to be utilized in their template forms to achieve scaled, competitive solar power within 2 years.

The World Bank Group is uniquely positioned to deliver

WORLD BANK GROUP

THE WORLD BANK IBRD • IDA | IFC International Finance Corporation | MIGA Multilateral Investment Guarantee Agency

The World Bank Group has a long track record working across power sectors, key stakeholders and unique challenges. IDA and IBRD support client country governments with financing and advice to extend access to electricity, expand least-cost generation, create sustainable regulation and leverage the private sector. IFC is experienced in developing bankable private power projects and has a substantial track record in both tendering and financing solar power plants. MIGA provides a range of political risk insurance products to attract private capital into emerging markets.

Regulatory reform

- Working to introduce sector reform and achieve sector sustainability
- Strengthening utilities' performance

Project structuring

- Setting the conditions to attract private investment
- Advising governments on PPPs
- Negotiating key contracts

Project Development

- The $150m IFC InfraVentures fund helps cover essential early-stage costs of frontier market projects
- IFC's Advisory Services advise Governments in Project structuring and helps balanced deals to be struck

Investment

- Financing projects through debt, equity and mobilization of resources from other sources
- Obtaining concessional financing from multi-donor sources

Monitoring

- Assessing projects' consistency with IFC's Performance Standards on environmental and social issues
- Tracking projects' results and sharing the lessons for wider replication and impact