

Promoting FDI in Solar Energy

Yongfu Ouyang
Economic Affairs Officer
UNCTAD

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PART I

Why Should Governments Get Involved?

Challenges to promoting FDI in the solar energy sector

Market:

- A nascent market for most developing countries
- Inadequate risk-return ratios

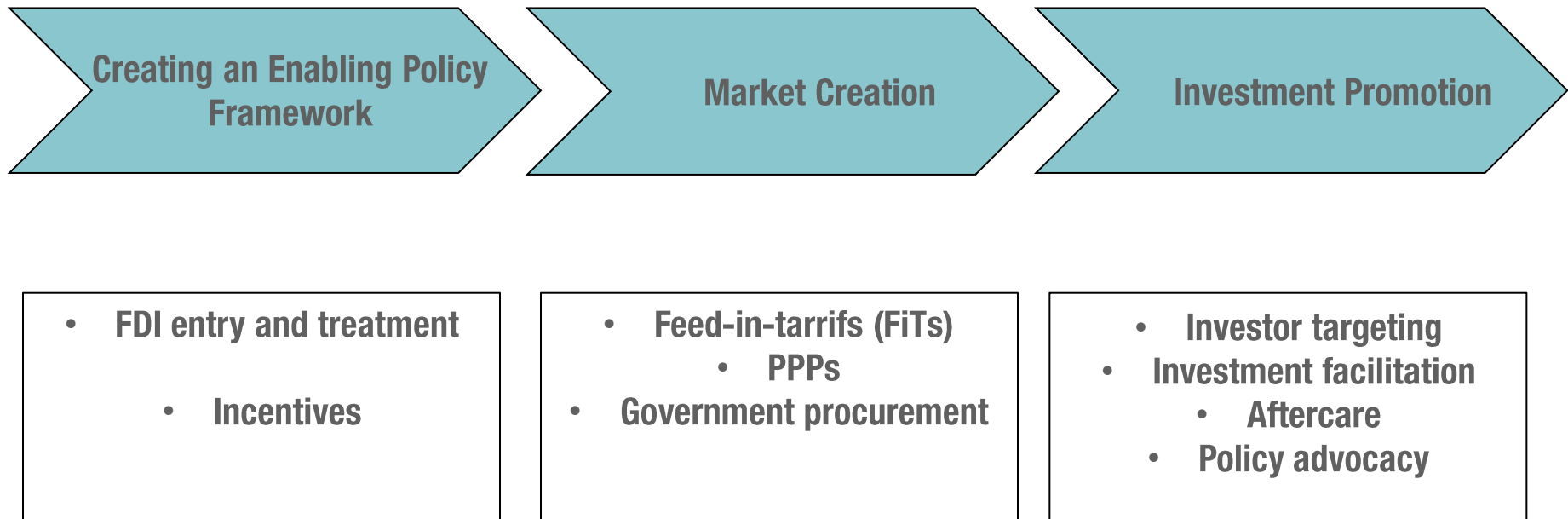
Policy:

- Missing market creation mechanisms to kick off the market
- Over regulations

Project:

- Lack of packaging and promotion of bankable projects
- Low visibility

Government: a key player in kicking-off the market



Government leadership in early stage project development

**Policy
Preparation**

**Opportunity
Identification**

**Pre-
Development**

**Project
Development**

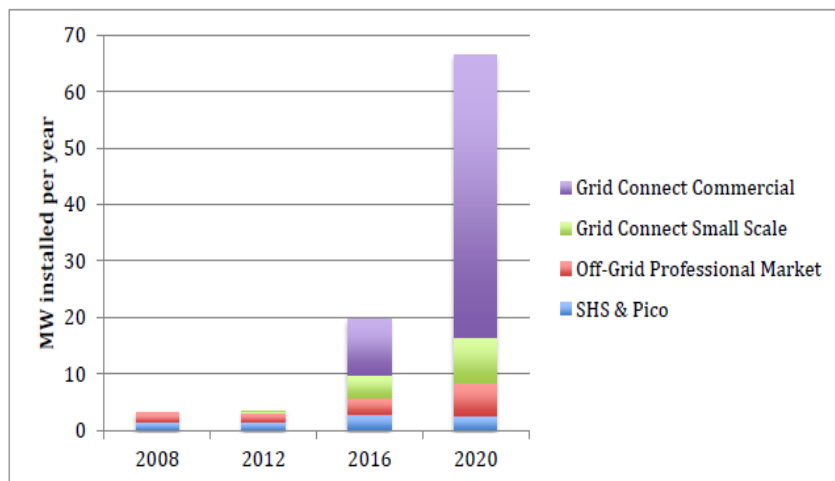
**Project
Implementation**

Commissioning

Early stages where government can take a lead

- Alleviating entry barriers and formulating a national strategy
- Market creation
- Project preparation and packaging
- Improving risk-return ratios for investment

The case of Kenya



- **A feed-in-tariff scheme incorporated in 2012**
- **Standardized Power Purchase Agreement (PPA) developed**
- **Strong investment interest expressed, but very few materialized**



The 1st grid-connected solar energy plant, a 600 kW roof-top system at the Strathmore University, was commissioned in June 2015.

The UNCTAD solar energy investment promotion programme

The objective of the project is to strengthen the capacity of national IPAs in preparing FDI projects in the solar energy sector and bringing them to the market.

Key outputs of the project:

- *A Guide to Preparing and Promoting Solar Energy FDI Projects*
- *A template solar energy project proposal for foreign investors*
- *A stakeholder workshop to present the key findings*

PART II

What should an IPA do to prepare and promote a solar energy project

Understanding the key pre-feasibility indicators

PV plant development steps	Key indicators to assess at pre-feasibility level
Understanding the regulatory framework	<ul style="list-style-type: none"> • Present and future power sector policies for solar generation • Regulated tariffs for electricity sale to the grid • Administrative procedures • Definition of operational regime, including: capacity and electricity selling terms, possible changes in policies
Site assessment	<ul style="list-style-type: none"> • Solar resource assessment • Site area conditions (space availability & accessibility): • Grid interconnection conditions
Definition of the business model	<ul style="list-style-type: none"> • Nature of potential investor, expectations on returns • Financing options (e.g. access to soft loans) • Potential business models (incorporation of ad-hoc companies, joint ventures , PPPs, etc.)
Project configuration at conceptualization stage	<ul style="list-style-type: none"> • Main technical considerations • Key financial indicators: CapEx, OpEx and life cycle cost breakdown

Understanding possible business models

Business Models for FDI:	1. DIRECT INVESTMENT IN A SINGLE PPA or FIT PROJECT	2. INVESTING IN A PORTFOLIO OF PROJECTS	3. INVESTING IN A SOLAR ESCO COMPANY	4. INVESTING IN AN UPSTREAM COMPANY
<i>EXPOSURE TO LEGAL FRAMEWORK</i>	Highly vulnerable to regulation changes	Less vulnerable than single project, especially if the portfolio covers different countries	Generally not vulnerable to regulation changes	Vulnerable through tax and importation regulations
<i>INVESTOR PROFITABILITY</i>	Highly profitability	Overall profitability high-medium, diversified investment	Moderate profitability - typically 5 to 15%	Medium-high
<i>REPLICATION POTENTIAL</i>	Easily replicable if regulation in place	Replicable in mature markets	Replicable if successful and high final user electricity prices	Least replicable
<i>SIZE</i>	MW	kW to MW	kW to MW	

Understanding the key financial indicator - CapEx

- **CAPEX – International references** (US\$ million per MW)

	Year 2011	Year 2014
Small Utility-Scale (1-5 MW)	3.2-7.6	1.3-6.8
Large-Scale (>5MW)	2.2-7.0	1.3-5.4

- **CAPEX – Africa:** US\$1.82 - 4.88 million per MW

UNCTAD's template project proposal: a tool to prepare solar energy projects for foreign investors

I. Project General Information:		Remarks
Project Title:		
Project Description:		
Plant/System Capacity:		
Projected Investment:		
Location:		
<ul style="list-style-type: none"> City/Town, Region: Latitude: Longitude: Elevation: 		
Project Developers (if relevant):		If project developer(s) already selected before approaching foreign investors as can be the case for utility-scale PV plants
Project Partners (if relevant):		Such as lead government agencies in PPP projects and secured financing facilities
Expected Year & Month for the Start of Project Development:		
Expected Timeframe for Implementation:		
<ul style="list-style-type: none"> Site lease Permitting Supply chain setup Construction Commissioning 		
Permitting Government Agency & Point of Contact:		
II. Site:		
Location:		
Land/Site Ownership:		
Size:		
Costs:		Rates for lease or use of land.
Accessibility:		Road accesses and suitability for heavy equipment; right of way (potential 3 rd party rights)
Terrain Description:		
Distance to and Capacity of the Nearest Transformer (in km)? Is it MV or HV?		
Grid Owner and Operator (if relevant):		
Solar Radiation (GHI in kWh/m ² /day and DNI in kWh/m ² /year):		
III. Target Market		
Off-Takers Potential Customers:		Depending on the applications, PV project customers can be a wholesale off-taker (e.g. the national utility) or end

	users (e.g. commercial or residential end users) in an off-grid application for self-consumption or partial self-consumption	
Power Price Setting Mechanism (PPA, EITs or others):		
Other Terms of Purchase Agreement:	Such as length of the contract	
Total Estimated Demand (if relevant):	Such as power consumption of end users in PV system for self-consumption	
Other Market Information:		
<ul style="list-style-type: none"> Other energy generation sources in the vicinity (50-100km) Current average price per kWh of alternative energy sources 		
IV. Policy and Permitting Pre-Clearance:		
Has a pre-feasibility study been carried out?		
Has an Expression of Interest been submitted to the Ministry of Energy and Petroleum?		
Has an Environmental Impact Assessment (EIA) been carried out?		
Has any other policy and permitting pre-clearance been done?		
V. Government Support or Incentives:		
<i>Fiscal or Financial Support:</i>		
<ul style="list-style-type: none"> EIT (if relevant): Import duty exemption: Other national fiscal or financial support or incentives: County government support or incentives: 		Such as tax exemptions, accelerated depreciation of equipment, etc.
<i>Capital Support:</i>		
<ul style="list-style-type: none"> Committed capital participation by government or state-owned entities: Potential debt funding: Other potential sources of capital: 		Such as loan provided by national or regional development banks Such as ODA in project development
<i>Services or Support Provided by KenInvest:</i>		
<ul style="list-style-type: none"> Site acquisition: Licensing: Negotiation of PPAs: Securing government incentives: Import assistance: Trouble shooting: Other pre- and post-establishment services or support: 		
VI. IPA Point of Contact		
Contact Person at the IPA:	Name, email, telephone number	

Key messages for an IPA

- **Set up a dedicated task force**
- **Select the target segments through consultation with key stakeholders**
- **Prepare a pipeline of bankable projects**
- **Develop project proposals for each project in the pipeline**
- **Target the right investors**

Some feedback on the project

“The Guide is practical, and the template project proposal is doable and relevant for our work.”

- Project managers from KenInvest

“The proposal indicates the basic relevant PV project data which can be well used to step into detailed discussions with potential foreign investors.”

- Anette Bossler, Managing Director,
Maine International Consulting, USA

“The template is a good starting point for solar power projects.”

- Shirang Chandekar, Managing Director,
Lean Way Energy, India

Thank you!