

Rooftop PV in India – large OPEX models

An investor's perspective



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Our solar expertise

BRIDGE TO INDIA is a leading brand in the Indian solar market and has three business units

BRIDGE TO INDIA

- Founded in 2008
- Based in New Delhi, Hamburg and Munich
- International competency, local expertise
- We develop commercially viable, bankable business models for solar in India

BRIDGE TO INDIA's key fields of expertise are:



MARKET INTELLIGENCE

Policy
Projects
Financing
Industry



STRATEGIC CONSULTING

Market Entry
Market Potential
Competitor Landscape
Market Strategy



PROJECT DEVELOPMENT

Capital Investments
Remittance Project
Development
Due Diligence



Drivers for rooftop
generation

Distributed PV power generation makes sense in India

Key Facts

- India has very high T&D with around 25% (and a large programme to improve distribution grids (R-APDRP) is not yielding the results)
- India has vast diesel back-up capacities for power outages and captive use
- Solar energy is already cost competitive with commercial consumers of power in certain states of India

Key Drivers

Benefits for consumers

Local, available power
(higher supply security)

Hedge against rising
power prices

Reduced LCOE
(in some places)

Green power
(marketing value)

Benefits for India

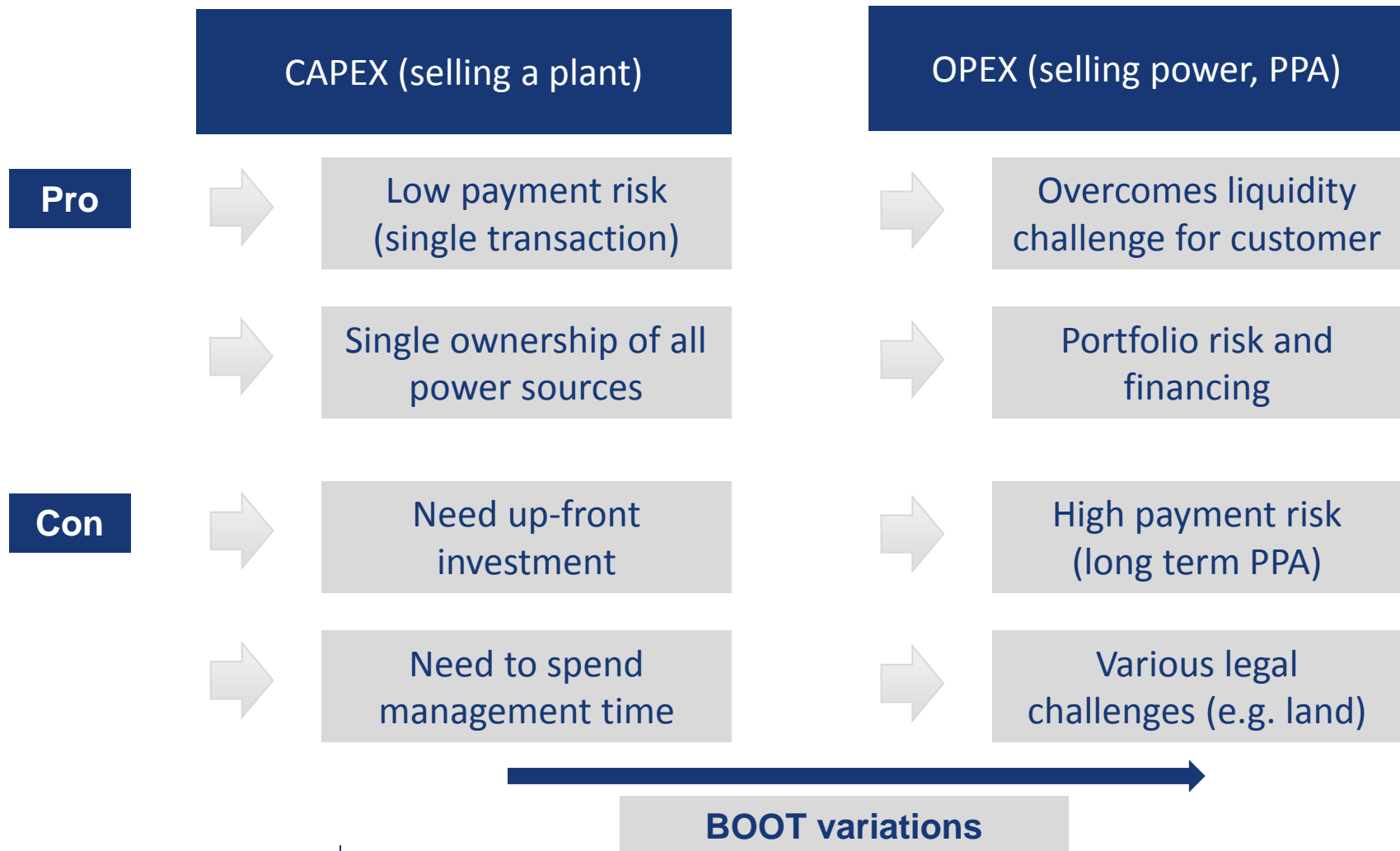
Pressure off
distribution grids

Reduced diesel subsidy
burden

Increased energy
independence

Reduced air pollution
and CO2 emissions

OPEX vs. CAPEX models **Opex vs. Capex models**





Reducing risk for OPEX
model

Main challenge – bringing down the (cost of) risk!

The future?

- India could see a de-central energy revolution
- New mini-utilities could develop
- Private- Public partnerships can help accelerate distributed energy generation in rural areas

Reducing risks is key to growing the model

I. Legal risk: enforceability of contracts (debt recovery) – strong PPAs

II. Off-taker risk: Alternative off-take (regulatory challenge)

III. (Power pricing risk: transparent, market-based or long term power pricing)

Lower risk →

Lower cost of financing (debt and equity) →

Significantly lower cost of solar power →

Faster adaptation

Will the grid be a bottleneck?

Key facts

- India's grid is the key challenge
 - It is also the key opportunity
- I. **No grid connection (only captive): solar will reduce the load requirement from the grid – but is it firm enough to really stabilize the grid?**
 - II. **Feeding into the grid (e.g. net-metering): a challenge for plant owners due to outage times**
 - III. **Feeding into the grid: a technical challenge for utility companies (smart grids). But:**
 - I. What % of infirm power is innocuous (NREL 20% in US)
 - II. How infirm is solar really?
 - III. Tail end grid stabilization?
 - I. **Reviewing and implementation of 'Islanding' operation of micro-grids in case of grid failure**

What would be game changers?

What we don't believe in

- Capital subsidies
- Preferential FiTs
- RECs

What we would like to see: a level playing field

- I. **Allowing third party sale of power within 'Captive Generation'**
- II. **Net-metering**
- III. **Allow RECs and make metering easy**
- IV. **Create a clear regulatory framework for mixed grid – off-grid consumers**



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Questions?

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