



**energy**  
for all

**Subregional Conference - Going Beyond the Meter**  
**Inclusive Energy Solutions in South Asia**  
11-12 April 2016 • Hotel Jai Mahal Palace, Jaipur, Rajasthan

# IDCOL Solar Programs



## **Sustainable Business Models for Rural Electrification in Bangladesh**

### **Session 6: Alternative Financing Schemes and Business Models**

**Farzana Rahman**  
**Unit Head (Investment), Renewable Energy**

This is not an ADB material. The views expressed in this document are the views of the author/s and/or their organizations and do not necessarily reflect the views or policies of the Asian Development Bank, or its Board of Governors, or the governments they represent. ADB does not guarantee the accuracy and/or completeness of the material's contents, and accepts no responsibility for any direct or indirect consequence of their use or reliance, whether wholly or partially. Please feel free to contact the authors directly should you have queries.

## IDCOL Solar Programs

- ❖ Solar Home System (SHS) Program
  - Basic electricity services



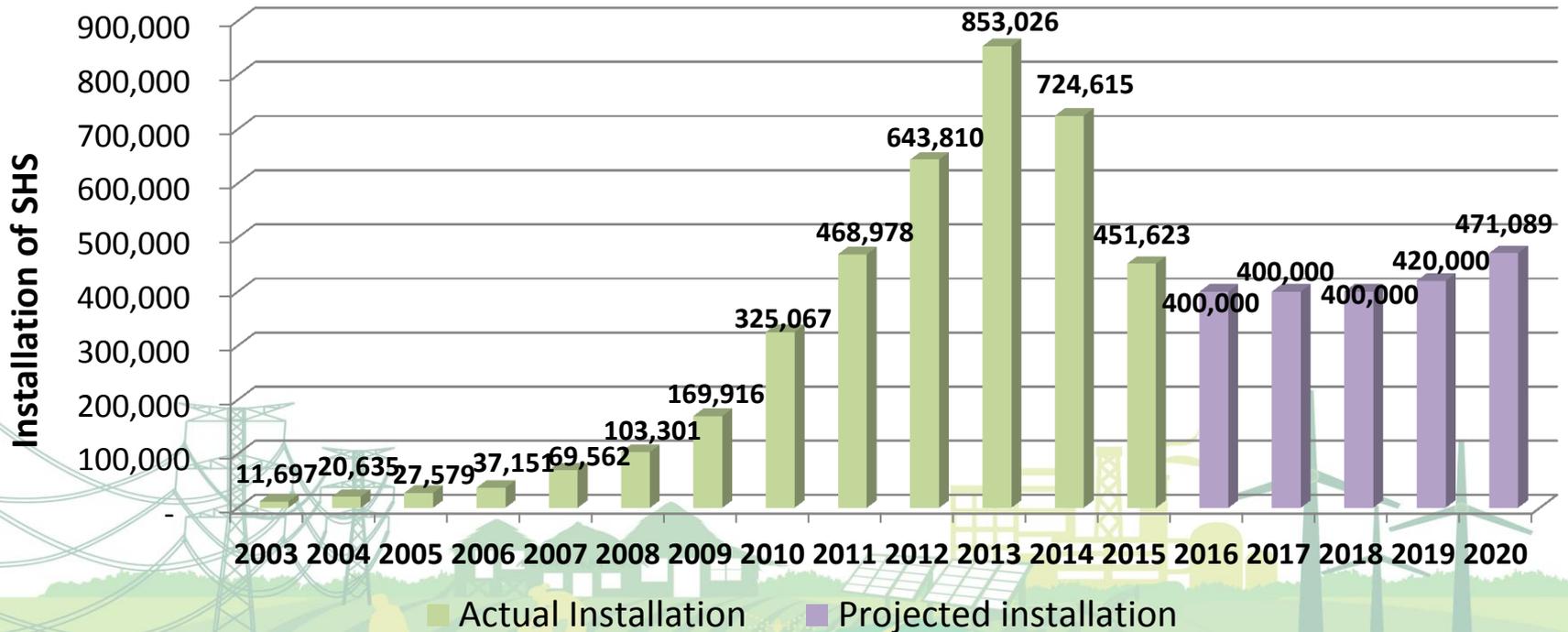
- ❖ Solar Mini-grid Project
  - Grid quality electricity



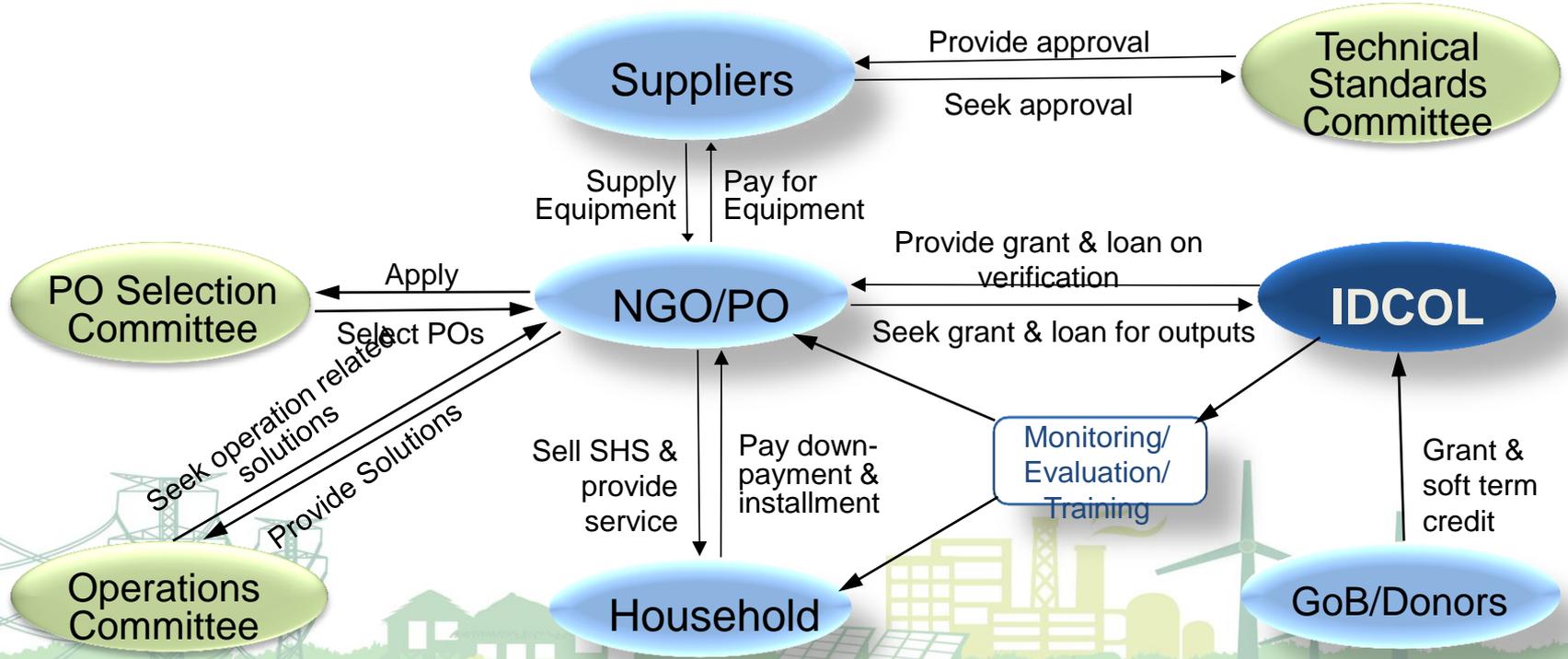
# IDCOL SHS Program – at a Glance

Program Target	: 6 million SHS by 2020
Program Achievement	: 4 million SHS by Feb'2016
No. of Beneficiaries	: 18 million people (11% population)
Power Generation	: About 145 MW
Fossil Fuel Saving	: 242,100 ton/year
Job Creation	: 75,000 people
IDCOL Investment	: USD 625 million

# SHS Installation – Actual and Projection



# Program Structure: Result based Financing



PO = Participating Organization; GoB = Government of Bangladesh

# Quality Control Mechanisms

## Physical inspection

- Physical inspection by technical inspectors of IDCOL
- Verification of collection efficiency by collection efficiency inspectors
- Independent technical and financial audit

## Training Programs

- Training for trainers
- PO Staff / customer training
- Supplier consultation

## Call Centre



# Mode of SHS Financing: an Example

(a) Market Price of 20 Wp SHS	USD 138
(b) Buy-down Grant (Grant A)	USD 20
(c) System Price for Household [(b)-(a)]	USD 118
(d) Down Payment from Household to PO [15% of (c)]	USD 17.7
(e) Loan Payable from Household to PO [(c)-(d)]	USD 100.3
<i>Loan Tenor</i>	<i>3 years</i>
<i>Interest Rate</i>	<i>16% p.a.</i>
<i>Monthly Installment Amount</i>	<i>USD 4.4</i>
(f) IDCOL Refinance [70%~80% of (e)]	USD 70~80
<i>Loan Tenor</i>	<i>5~7 years</i>
<i>Interest Rate</i>	<i>6~9% p.a.</i>

# A Sustainable Financing Structure

## Phased-out Subsidy:

	2003	2004~5	2006~7	2008~9	2010~11	2012	2013~20
Capital Buy down Grant	\$70	\$55	\$40	\$40	\$25	\$25	\$20*
Institutional Development Grant	\$20	\$15	\$10	\$5	\$3	\$3~\$0	\$0

*\*for small SHS (30 wp and below) only*

## Concessionary to Semi-Commercial Credit:

	2003~8	2009	2010	2011	2012	2013	2013~20
Loan Tenor	10 yrs	6-10 yrs	6-8 yrs	6-8 yrs	5-7 yrs	5-7 yrs	5-7 yrs
Interest Rate	6%	6%-8%	6%-8%	6%-8%	6%-9%	6%-9%	6%-9%
% of Loan Refinanced	80%	80%	80%	80%	70%-80%	70%-80%	70%-80%

# Success Factors

Innovative financing structure - results based financing

Financial contribution of all parties – Ownership model

Sustainable business model – phased out subsidy scheme toward commercialization

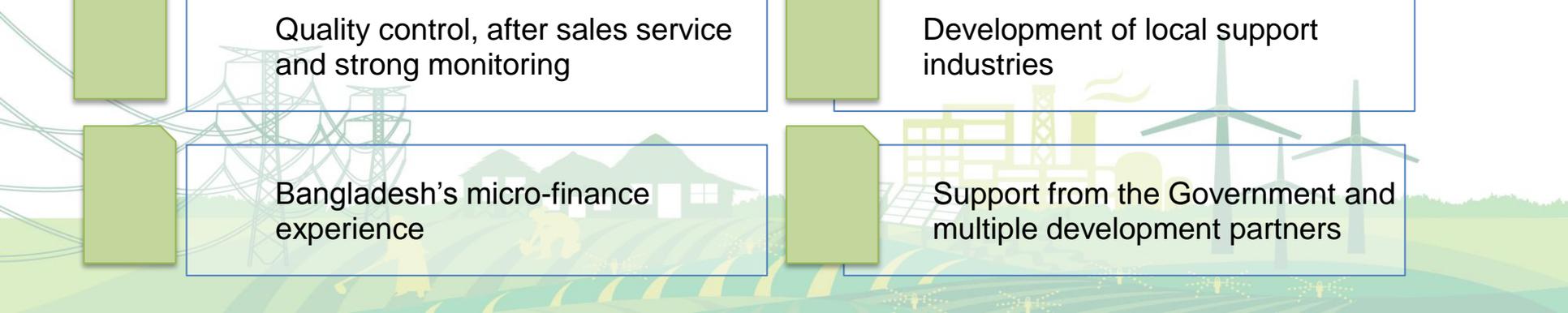
Cost-efficient standardized technical design

Quality control, after sales service and strong monitoring

Development of local support industries

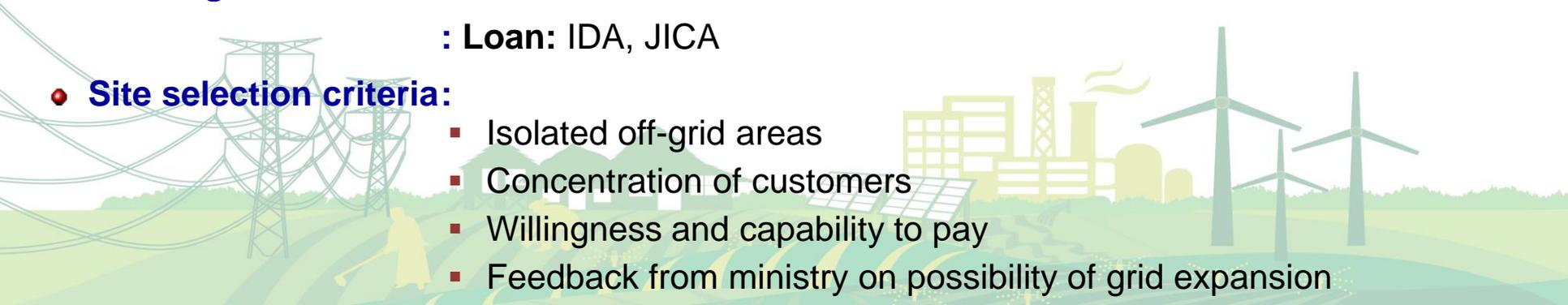
Bangladesh's micro-finance experience

Support from the Government and multiple development partners

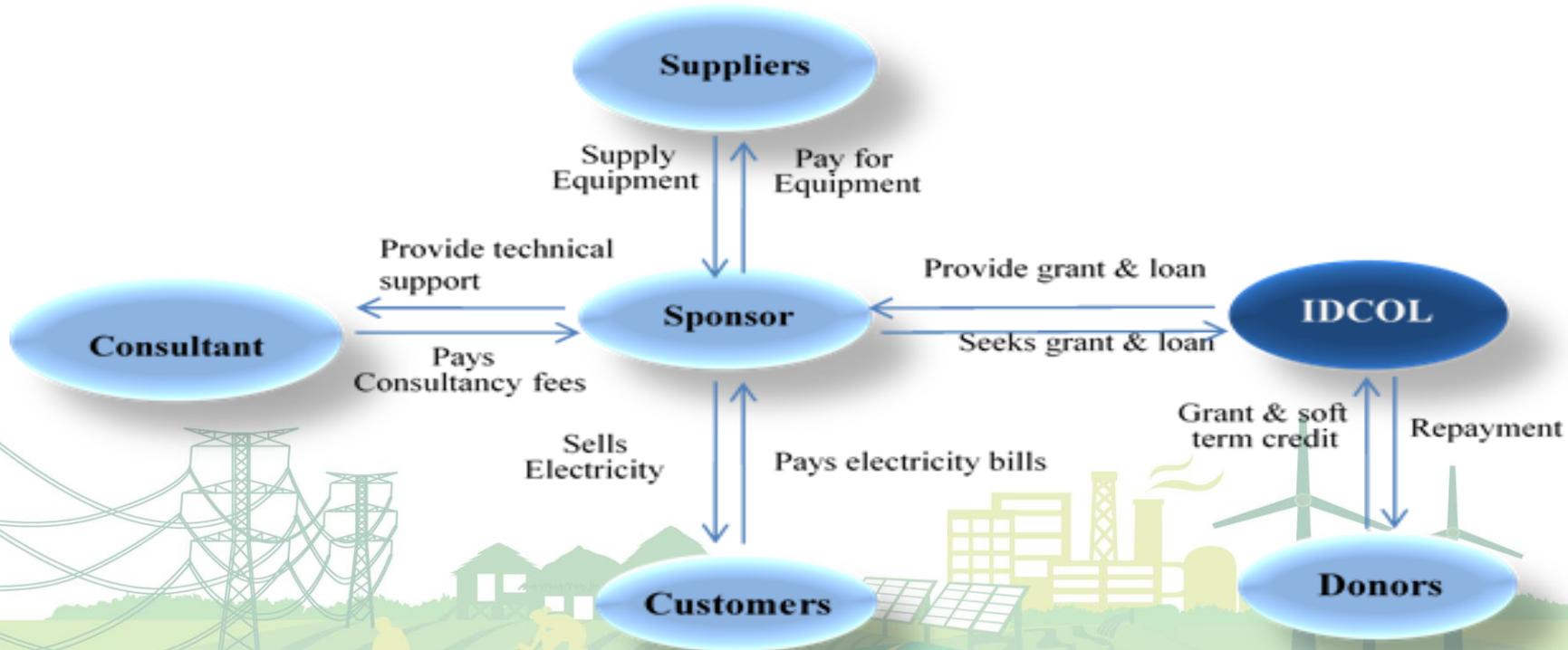


# Overview of Solar Mini-grid Projects

- ◆ **Target** : 50 by 2018
- ◆ **Status** : **Approved: 18; Installed : 7; Pipeline projects : 20**
- ◆ **Capacity** : 2,403 kWp;
- ◆ **No. of connections** : 11,263
  
- ◆ **Financing structure** : Equity – 20%, Grant – 50%, Loan – 30%
- ◆ **Financing terms** : Interest rate: 6% p.a.; tenor: 10 yrs; grace period: 2 yrs
- ◆ **Funding sources** : **Grant:** BCCRF, KfW, GPOBA, USAID, ADB  
: **Loan:** IDA, JICA
- ◆ **Site selection criteria:**
  - Isolated off-grid areas
  - Concentration of customers
  - Willingness and capability to pay
  - Feedback from ministry on possibility of grid expansion



# Program Structure of Solar Mini-grid Projects



## Challenges & Mitigation

Challenges	Mitigation
<p>Lack of adequate technical supports in the private sector</p> <p>(A handful of technical experts are providing services.)</p>	<ul style="list-style-type: none"> <li>• Other engineering institutions are being encouraged.</li> </ul>
<p>Possibility of grid extension</p>	<ul style="list-style-type: none"> <li>• Relevant ministry is consulted beforehand</li> <li>• Policy available for government buying power from project if grid reaches the site after 5 years</li> </ul>
<p>Lack of local capacity in installation and O &amp; M</p>	<ul style="list-style-type: none"> <li>• IDCOL is undertaking training and capacity development activities in this regard.</li> </ul>

