IDCOL Renewable Energy Activities

Md. Enamul Karim Pavel
Head of Renewable Energy

19 April 2016
Overview of IDCOL

- A fully Government owned development financial institution
- Started operation in 1997
- Mission: to catalyze and promote private sector participation in infrastructure, renewable energy, and energy efficient projects
- Largest financier in private sector infrastructure projects
- Market leader in renewable energy sector
- Funded by the government and multiple development partners i.e. the World Bank, ADB, IDB, KfW, GIZ, GEF, GPOBA, USAID, DFID, JICA and SNV
What We Offer

- Infrastructure Sector
  - Long-term local and foreign currency loans
  - Debt and equity arrangement
  - Corporate and financial advisory services

- Renewable Energy & Energy Efficiency Initiatives
  - Concessionary financing and grant supports
  - Technical assistance and quality assurance
  - Capacity development of stakeholders
  - Arranger of Carbon Credits

- Training Programs*
  - Project Finance
  - Financial Modeling
  - Renewable Energy

*Trained about 1,500 professionals so far
Major Infrastructure Projects of IDCOL

- IDCOL financed power plants of 1,538 MW capacity in total.
- Invested USD 43 ml in telecommunication and IT projects e.g. cellular network expansion, IGW, BWA, NTTN, etc.
- IDCOL financed small and medium infrastructure projects e.g. effluent treatment plant, land port, automatic brick manufacturing projects, etc.
IDC COL Renewable Energy Activities

- IDCOL Solar Home System (SHS) Program
- IDCOL Biogas Program
- Improved cook-stoves (ICS) Program
- Renewable Energy Projects
  - Solar Irrigation Pumps
  - Solar Mini-grid Projects
  - Biogas Based Power Plant
Solar Home System (SHS) Program

- Program started in Jan 2003.
- **Program Target:** 6 million SHS by 2018
- **Program Achievement:** 3.96 million up to Nov’15
- **Power generation:** 151 MW
- **Beneficiaries:** 18.2 million, 12% of the population.
- **Fossil Fuel Savings:** 242,000 tons of kerosene
- **Job creation:** 35,000 direct and 40,000 indirect.
- **IDCOL Investment:** USD 600 million
What is a Solar Home System (SHS)?

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Appliances</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>20Wp</td>
<td>3 W LED Lamp: 2 Mobile Charger: 1</td>
<td>4-5 hours</td>
</tr>
<tr>
<td>50Wp</td>
<td>3 W LED Lamp: 5 LED Color TV: 1 Mobile Charger: 1</td>
<td>4-5 hours</td>
</tr>
<tr>
<td>85Wp</td>
<td>3 W LED Lamp: 7 LED Color TV: 1 Mobile Charger: 1</td>
<td>4-5 hours</td>
</tr>
</tbody>
</table>

- Lead Acid Battery
- DC-DC Converter to run color television, fan etc.
Program Structure

**Suppliers**
- Supplies Equipment
- Pay for Equipment

**Technical Standards Committee**
- Seeks approval
- Provides approval

**IDCOL**
- Seeks grant & loan
- Provides grant & loan
- Grant & soft term credit

**PO Selection Committee**
- Applies
- Select POs
- Seek operation related solutions
- Provides Solutions

**Operations Committee**
- Selects POs
- Provides Solutions

**NGO/PO**
- Sells SHS & provide service
- Pay down-payment & installment
- Provides approval
- Seeks grant & loan

**Household**
- Pays for Equipment
- Pay down-payment & installment

**Donors**
- Applies
- Grant & soft term credit
## Mode of Financing: an Example

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Market Price of 20 Wp SHS</td>
<td>USD 138</td>
</tr>
<tr>
<td>(b) Buy-down Grant (Grant A)</td>
<td>USD 20</td>
</tr>
<tr>
<td>(c) System Price for Household [(b)-(a)]</td>
<td>USD 118</td>
</tr>
<tr>
<td>(d) Down Payment from Household to PO [15% of (c)]</td>
<td>USD 17.7</td>
</tr>
<tr>
<td>(e) Loan Payable from Household to PO [(c)-(d)]</td>
<td>USD 100.3</td>
</tr>
</tbody>
</table>

- **Loan Tenor**: 3 years
- **Interest Rate**: 16% p.a.
- **Monthly Installment Amount**: USD 4

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>(f) IDCOL Refinance [70%~80% of (e)]</td>
<td>USD 80~70</td>
</tr>
</tbody>
</table>

- **Loan Tenor**: 5~7 years
- **Interest Rate**: 6~9% p.a.
IDCOL Biogas Program

- **Start of Operation**: 2006
- **Program Target**: 60,000 Biogas Plants by 2018
- **Installation**: 40,750 plants up to Mar 2016
- **Beneficiaries**: 183,375 beneficiaries

**Yearly Savings:**
- 39,120 tons of firewood worth USD 3.4 million and
- 15,375 tons of chemical fertilizer worth USD 4.7 million

- **Job creation**: 2,000 direct and 5,000 indirect jobs.
- Recently, registered as CDM project under UNFCCC
- **Funding sources**:
  - Grant: KfW, IDA and SNV
  - Loan: KfW, IDCOL’s own fund
Program Structure

- **PO Selection Committee**
  - Seeks operation-related solutions
  - Provides Solutions

- **NGO/PO**
  - Applies
  - Select POs
  - Construction Biogas plant and provide service
  - Pay down-payment & installment

- **IDCOL**
  - Provides grant & loan
  - Seeks grant & loan
  - Grant & soft term credit

- **Operations Committee**
  - Seeks operation-related solutions

- **Household**

- **Donors**
Program Brief:
- Start of Operation: August, 2014
- Target: 1 million stoves by 2018
- No. of Installation: 440,172 up to Feb 2016

Program Objective:
- To increase energy efficiency while reducing exposure to indoor air pollution
- Strengthening supply of acceptable stoves
- Establishing supply chain of alternative fuels
- Establishing a strong base for achieving 100% clean cooking solutions by 2030

Financing Support: The World Bank
Solar Irrigation Pumps

- **Approved**: 449 pumps
- **Installed**: 314 pumps
- **Under installation**: 235 pumps
- **Pipeline projects**: 400 pumps
- **Target**: 50,000 by 2025 (Pilot: 1,500 up to 2018)

**Financing Structure**: Equity – 15%, Grant – 50%, Loan – 35%

**Funding sources**: 
- **Grant**: BCCRF, KfW, GPOBA, USAID, ADB
- **Loan**: IDA, JICA
# Key Features of typical SIPS

<table>
<thead>
<tr>
<th>Particulars</th>
<th>11 kWp Pump</th>
<th>4 kWp Pump</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV capacity</td>
<td>11.0 kWp</td>
<td>4 kWp</td>
</tr>
<tr>
<td>Flow rate</td>
<td>900,000 liter/day</td>
<td>250,000 liter/day</td>
</tr>
<tr>
<td>Total head</td>
<td>14 meter</td>
<td></td>
</tr>
<tr>
<td>Major equipment</td>
<td>Pump and PV panel</td>
<td></td>
</tr>
<tr>
<td>Project cost</td>
<td>USD 32,000</td>
<td>USD 8,500</td>
</tr>
<tr>
<td>Grant</td>
<td>USD 12,800</td>
<td>USD 3,400</td>
</tr>
<tr>
<td>Land coverage</td>
<td>Paddy: 5.4 hectare;</td>
<td>Paddy: 2.2 hectare;</td>
</tr>
<tr>
<td></td>
<td>Others: 8~9 hectare</td>
<td>Others: 4~5 hectare</td>
</tr>
<tr>
<td>Irrigation charges</td>
<td>USD 260~300/hectare</td>
<td></td>
</tr>
</tbody>
</table>
Program Structure

*So far, 17 organizations have implemented projects under the program.
Solar Mini Grid Projects

- **Area Selection**
  - Isolated off-grid areas
  - Concentration of customers
  - Willingness and capability to pay
  - Consult with Power Division on possibility of grid extension in next 5-10 yrs

- **Target**: Install 50 solar mini-grid by 2018.
- **Progress**: 7 in operation, 11 under construction, 21 in pipeline

- **Financing structure**: Equity, Loan and Grant: 20%: 30%:50%
- **Financing terms**: Interest rate: 6%; tenor: 10 yrs; grace period: 2 yr

- **Funding sources**: Grant: KfW, DFID, GPOBA, USAID, ADB
  
  : Loan: IDA, JICA
Sector Outlook: Country has 1.5 lac poultry farms which can generate 800 MW electricity

Area Selection

- Poultry or dairy firms
- May be within grid/off-grid areas
- May only be used for captive consumption

Target: Install 130 plants by 2018.

Progress: 5 in operation, 3 under construction, 8 in pipeline

Financing structure: Equity: Loan: 20%: 80%
Grant: 20% up to 100 kW plant capacity

Financing terms: Interest rate: 6%; tenor: 8 yrs; grace period: 1 yr

Funding sources: Grant: KfW, GPOBA, USAID
Loan: IDA, JICA
IDCOL Corporate Advisory Services

**Scopes:**
- Training on IDCOL Renewable Energy Projects & Programs
- Attachment with IDCOL Office, and POs to gain hands-on experience
- Meeting with several stakeholders
- Field and factory visits

**Experience sharing with African Countries:**
- Mali
- Gambia
- Niger
- Senegal
- Mauritania
- Uganda
- Guinea
- Sudan
- Ethiopia
THANK YOU
# Challenges & Mitigations

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of awareness</td>
<td>– Promotional campaigns&lt;br&gt;– Training programs</td>
</tr>
<tr>
<td>Untested business model</td>
<td>– Social enterprise model with an ultimate goal of commercialization&lt;br&gt;– Presence of multiple POs ensures healthy competition&lt;br&gt;– Phased reduction nature of grant</td>
</tr>
<tr>
<td>Lack of institutional capacity</td>
<td>– Institutional development grant / Long-term concessionary credit&lt;br&gt;– Staff training program</td>
</tr>
<tr>
<td>High cost of SHS equipment</td>
<td>– Capital buy-down grant / Concessionary credit facility&lt;br&gt;– Local support industry development</td>
</tr>
<tr>
<td>Lack of quality assurance</td>
<td>– Technical standard committee&lt;br&gt;– Quality control mechanisms by IDCOL</td>
</tr>
<tr>
<td>Lack of fiscal support</td>
<td>– Tax holiday&lt;br&gt;– Duty free import</td>
</tr>
</tbody>
</table>
Battery Recycling

- Battery recycling policy was adopted in 2006.
- Customers will receive 24% of new battery price as salvage value of warranty expired batteries.
- IDCOL inspected 65,652 warranty expired batteries since Nov’12.
- 91% of these batteries are functioning well, 5% has been replaced by PO.
- POs are collecting old batteries while selling new batteries.
- IDCOL provides USD 5 each to PO and battery recycler for collection and recycling of battery.
- POs receive up to USD 100 as refinance for selling of each new battery
- There are 4 ISO certified battery recyclers in Bangladesh
Clean Development Mechanism Fund

- IDCOL signed agreement with the World Bank, the trustee of Community Development Carbon Fund for SHS program.
- 393,203 Certified Emission Reductions (CER) generated from IDCOL SHS program has been contracted to the Fund.
- Selling rate is EUR 9 per CER.
- UNFCCC have issued 230,855 CERs for IDCOL SHS Program for reporting year July 1, 2012 to April 30, 2014.
- CDM benefits will be passed through to the POs. IDCOL will retain 25% as administration cost.