



# Renewable Energy Initiatives by Infrastructure Development Company Ltd. (IDCOL)



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## IDCOL – At a Glance



- IDCOL is a Government-owned financial institution dedicated to promote private sector financing in infrastructure and renewable energy sector.
- Products and Services of IDCOL:
  - Arrangement of debt and equity for infrastructure projects
  - Financing in both local and foreign currency
  - Senior and subordinated loans with flexible rates, tenor and grace period as required by the project
  - Advisory services to borrowers regarding the structure of financing
  - Credit, grant and technical assistance for the promotion of renewable energy
  - Training courses on project finance, financial modeling and renewable energy



# IDCOL Solar Home System Program



- IDCOL SHS Program – at a glance
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- System Samples
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  - Financing Structure of a 50 Wp SHS
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- Prerequisites to Develop Similar Program

# IDCOL SHS Program – at a Glance

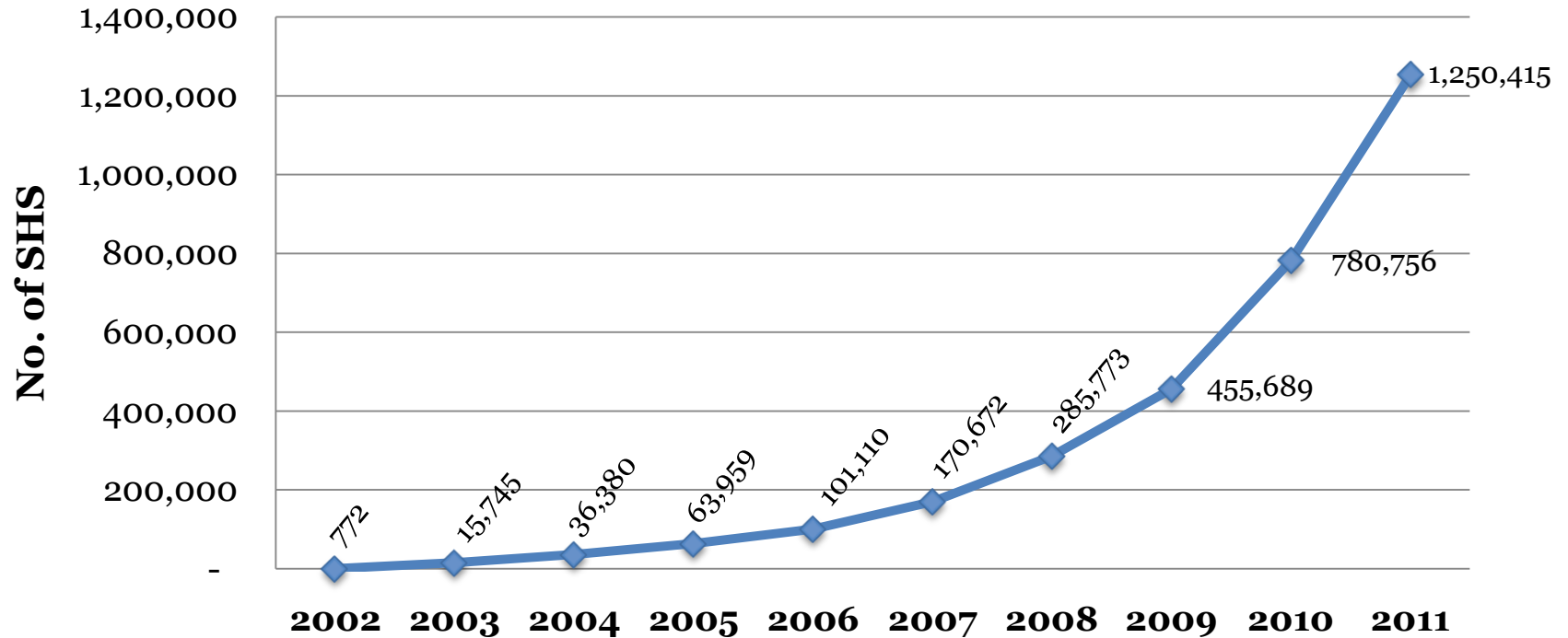


- With the help of IDA, GEF, the Program started as a key component of the Rural Electrification and Renewable Energy Development Project (REREDP) of The World Bank;
- The initial target of installing 50,000 Solar Home Systems (SHSs) was achieved thorough 15 Partner Organizations in August 2005, 3 years ahead of completion date and US\$ 2 million below the estimated cost.
- Following the success, IDA, GTZ, KfW, ADB and IDB have extended support.
- IDCOL has revised its target to 2.5 million SHS by 2014.
- SHS installation up to December 2011 is 1,254,923 (65 MW)
- It is one of the fastest growing renewable energy programs in the world.

# Achievements



## Solar Home System Installation (up to 2011)



# Achievements



- Number of SHS : 1.25 million
- Number of beneficiaries : 6 million
- Electricity generation : 65 MW
- Fuel saving : 100,000 ton/year
- Job creation : 70,000



# Achievements



Women are getting extra time for income generating activity like sewing, poultry farming etc.



Shops operating at night

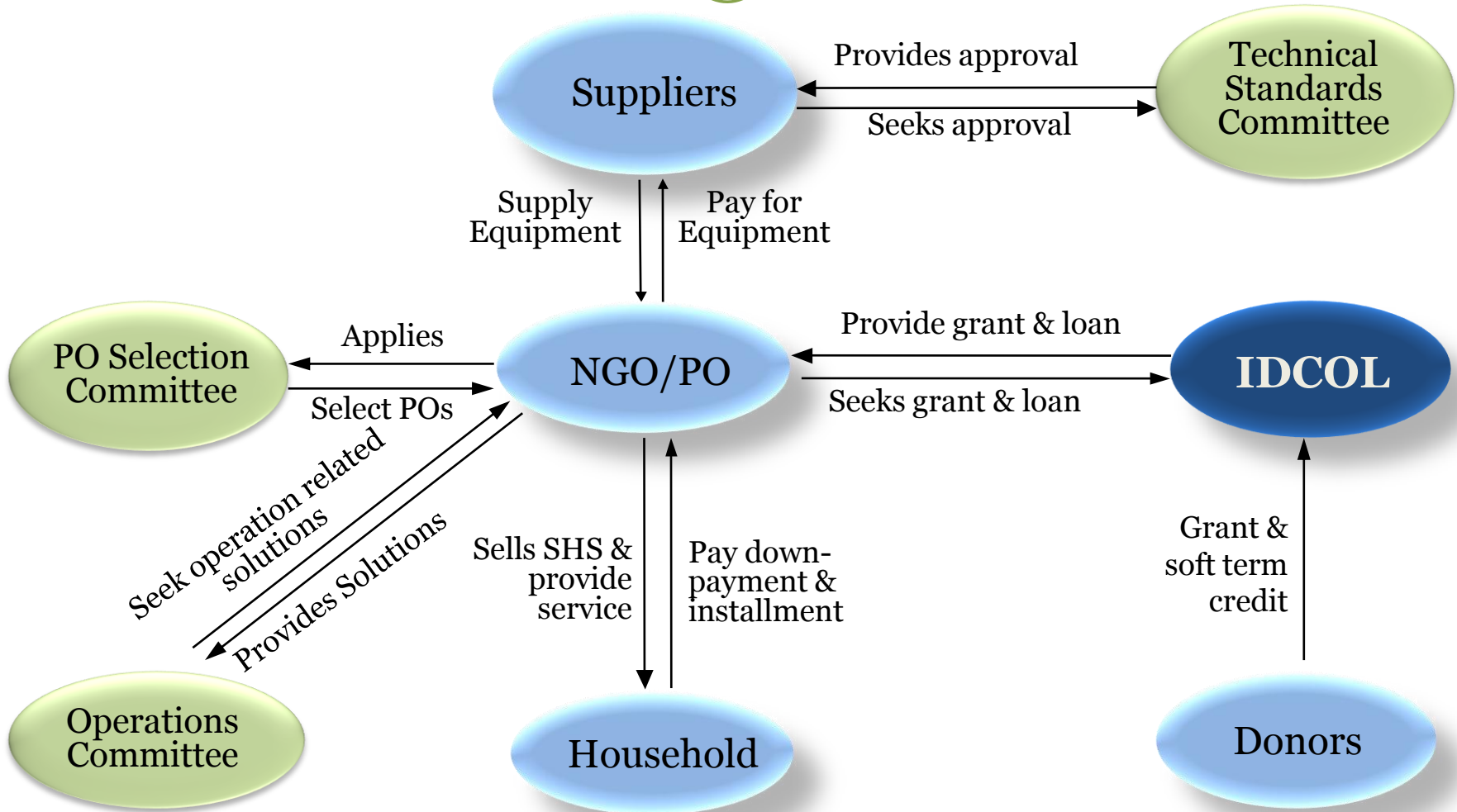


Better environment for studying



Starting of new business such as – mini cinema hall

# Program Structure





# Fund Flow and Role of Partners



Loan & Grant



Loan & Grant



Loan & Grant



Loan & Grant

Donor

- Provides grant and soft loans through IDCOL
- Provides technical assistance to the program

GoB

- **Provides soft loan and grant to IDCOL**
- **Provides policy support**

IDCOL

- Provides grants to POs to reduce SHS cost and capacity building
- Provides soft loan to POs
- Provides technical assistance (training, logistic and promotional supports)
- Monitors implementation of the program

PO

- Selects areas and customers
- Installs SHS
- Extends micro-credit to customers
- Provides after sales services

Household

- **Maintain system**
- **Repay loan in monthly installments to PO**

Debt Service



Debt Service



Debt Service



Debt Service

# Committees and their Responsibilities



## PO Selection Committee

- Consists of the representatives from IDCOL and relevant government ministry & organizations.
- Selects POs to implement the program on the basis of micro-finance experience and financial strength

## Technical Standards Committee

- Consists of technical experts from university, some engineering departments of govt. and IDCOL
- determines technical standards, reviews product credentials of dealers, and approves the eligible equipment

## Operations Committee

- Consists of program-in-charges from all POs and representatives from IDCOL
- looks after the operational aspects of the program

# System Samples



Capacity	Total Load	Operating Hour	Cost (in USD)
20Wp	Lamp: 2 (5W each) Mobile Charger: 1	4-5 hours	180
50Wp	Lamp: 4 (7W each) Black & White TV: 1 Mobile Charger: 1	4-5 hours	400
85Wp	Lamp: 9 (7W each) Black & White TV: 1 Mobile Charger: 1	4-5 hours	600

# Financing Structure of a 50 Wp SHS



(a) Market Price of 50 Wp SHS	USD 400
(b) Buy-down Grant (Grant A)	USD 25
(c) System Price for Household [(b)-(a)]	USD 375
(d) Down Payment from Household to PO [15% of (c)]	USD 56
(e) Loan Payable from Household to PO [(c)-(d)]	USD 319
Loan Tenor	3 years
Interest Rate	12% p.a.
Monthly Installment Amount	USD 8.5
(f) IDCOL Refinance [80% of (e)]	USD 255
(g) PO Contribution [20% of (e)]	USD 64

# Refinancing Support



- Refinance amount : 80% of loan amount
- Interest grace : 6 months
- Payment frequency : Semi-annually
- Repayment date : 15 March and 15 September
- POs have to maintain a balance equal to one installment payment in the Debt Service Reserve Account (DSRA) from the date preceding repayment date by 2 months.

<b>Total Refinance Amount (BDT)</b>	<b>Interest Rate</b>	<b>Loan Tenor (including Grace)</b>	<b>Grace Period</b>
Up to 50 crore	6% p.a.	Up to 8 years	2 years
From 50 crore to 100 crore	7% p.a.	Up to 7 years	1 year
More than 100 crore	8% p.a.	Up to 6 years	1 year

# Grant Support



- Buy-down Grant (Grant A): EUR 20/USD 25
- Institutional Development Grant (Grant B):
  - First 2,000 SHS – EUR 8
  - Next 2,000 SHS – EUR 6
- One household gets grant once
- Grant B is not provided for cash sale
- Supplier POs do not receive Grant B

# Quality Control Mechanisms



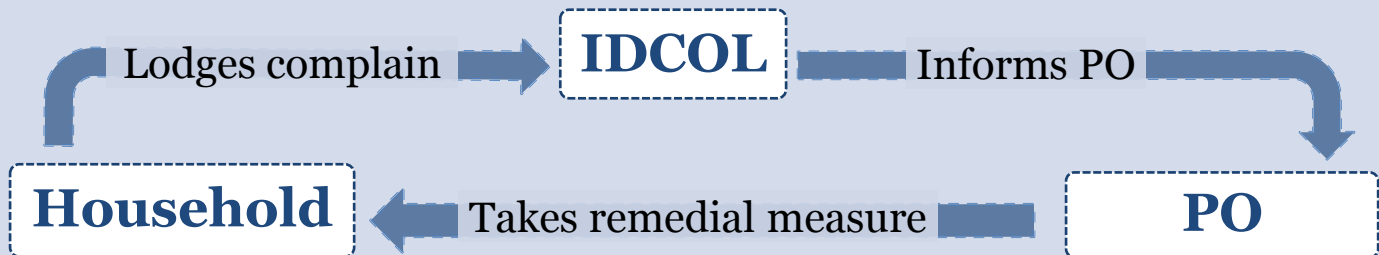
## SHS Inspection

- Technical inspection by technical inspectors
- Verification of collection efficiency by collection efficiency inspectors
- Re-inspection by IDCOL officials

## Training Programs

- Staff Training
- Customer Training

## IDCOL Call Centre





# Challenges & Mitigations



Challenges	Mitigation
Lack of a business model	<ul style="list-style-type: none"><li>▪ A social enterprise model with an ultimate goal of commercialization;</li><li>▪ Presence of multiple POs which ensures healthy competition</li><li>▪ Phase-reduction nature of grant</li></ul>
Lack of institutional capacity	<ul style="list-style-type: none"><li>▪ Institutional development grant (Grant-B)</li><li>▪ Long-term concessionary credit facility</li><li>▪ Staff training provided by IDCOL</li></ul>
High cost of SHS equipments	<ul style="list-style-type: none"><li>▪ Capital buy-down grant (Grant-A)</li><li>▪ Concessionary credit facility</li></ul>
Lack of awareness among	<ul style="list-style-type: none"><li>▪ The extensive network of the POs</li><li>▪ Customer training provided by Pos</li></ul>
Lack of quality assurance	<ul style="list-style-type: none"><li>▪ Technical Standard Committee</li><li>▪ After sales services are provided by the POs</li><li>▪ Quality control mechanisms by IDCOL</li></ul>
Absence of local support industries	<ul style="list-style-type: none"><li>▪ IDCOL has financed two solar PV assembling plants in Bangladesh</li><li>▪ IDCOL provides support for developing other SHS components</li></ul>

# Prerequisites to Develop Similar Programs



- Root level access of private sector agencies i.e. MFI, NGOs
- Micro-credit outreach experience of the private sector agencies
- Adequate financial support from the donor agencies
- Availability of concessionary credit facility to the executing agencies
- An agency to monitor quality of products and services
- Development of local support industry
- Active support from the government



## IDCOL Biogas Program



- With support from SNV and KfW, IDCOL has undertaken the National Domestic Biogas and Manure Program (NDBMP) in 2006.
- The objective of NDBMP is to develop and disseminate domestic biogas plants in rural areas in Bangladesh.
- IDCOL provides grant & refinancing facility to its POs.
- IDCOL also extends technical assistance to its POs.
- 38 NGOs/MFIs/private firms (PO) are working under the program.
- A total of 37,269 domestic sized biogas plants are planned to be constructed during 2006 to 2012.
- Up to December 2011, about 22,000 biogas plants have been constructed.

# Other Renewable Energy Projects Initiatives by IDCOL

- Solar Mini Grid Projects
- Solar Irrigation Pumps
- Bio Electricity Plants
- Biomass Gasification based Electricity Generation Plants
- Solar-Diesel Hybrid Solution for Telecom Base Transceiver Stations



250 KW biomass gasification based power plant



11.2 KW solar irrigation pump project at Sapahar, Naogaon



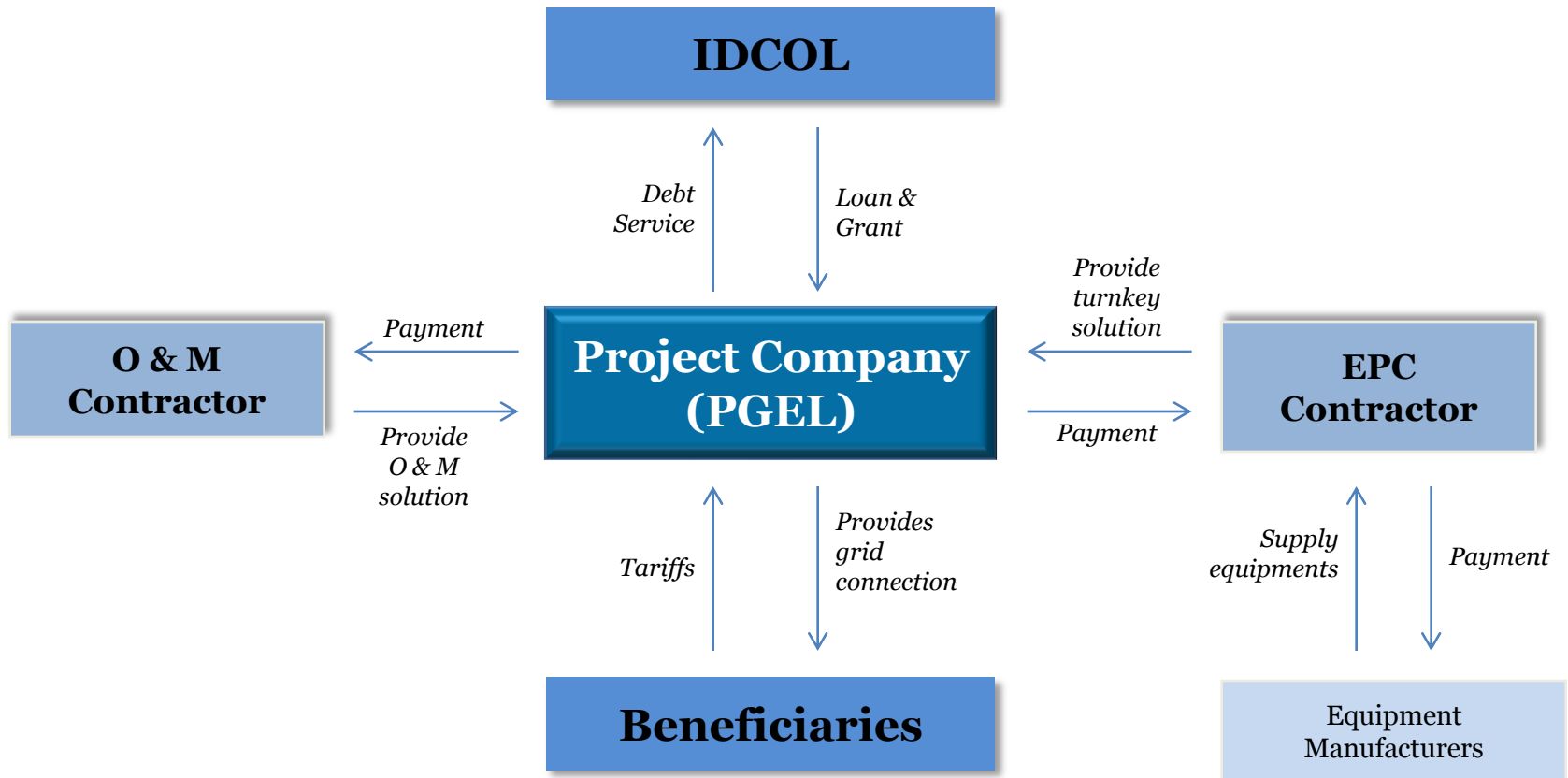
100 KW solar mini grid project at Sandwip

# Mini Grid Project – at a Glance



- Project Company : PUROBI Green Energy Limited (PGEL)
- Location : Sandwip, Chittagong
- Land Area : 8,700 sq. ft.
- Project Capacity : 100 kW (40 kW back-up diesel generator)
- Project Cost : USD 0.721 million
- Effective Tariff Rate : USC 38.163 per kwh
- EPC Contractor : Asantys Systems, Germany
- O & M Contractor : Prokousoli Sangshad Limited (PSL)
- Equipment Manufacturers
  - PV Module : Kyocera, Japan
  - Battery : Hoppecke, Germany
  - Inverter : SMA Technology AG, Germany
  - Communication Web Box : SMA Technology AG, Germany

# Project Structure



# Financing Structure



Percentage	
Debt	30%
Grant	50%
Equity	20%
<b>Total</b>	<b>100%</b>

- Interest rate : 6%
- Loan tenor : 10 years
- Grace period (principal) : 2 years
- Repayment frequency : Semi-annually



# Appliances used by the Beneficiaries



## Small Shops

### Basic

- CFL Lamp
- Ceiling Fan
- Black & White TV
- Refrigerator

### Equipments

- Computer
- Scanner
- Laser Printer
- Color Printer
- Laminating Machine
- Soldering Iron

## Health Centers

### Basic

- CFL Lamp
- Ceiling Fan

### Equipments

- X-Ray Machine
- ECG Machine

## Schools

### Basic

- CFL Lamp
- Ceiling Fan

### Equipments

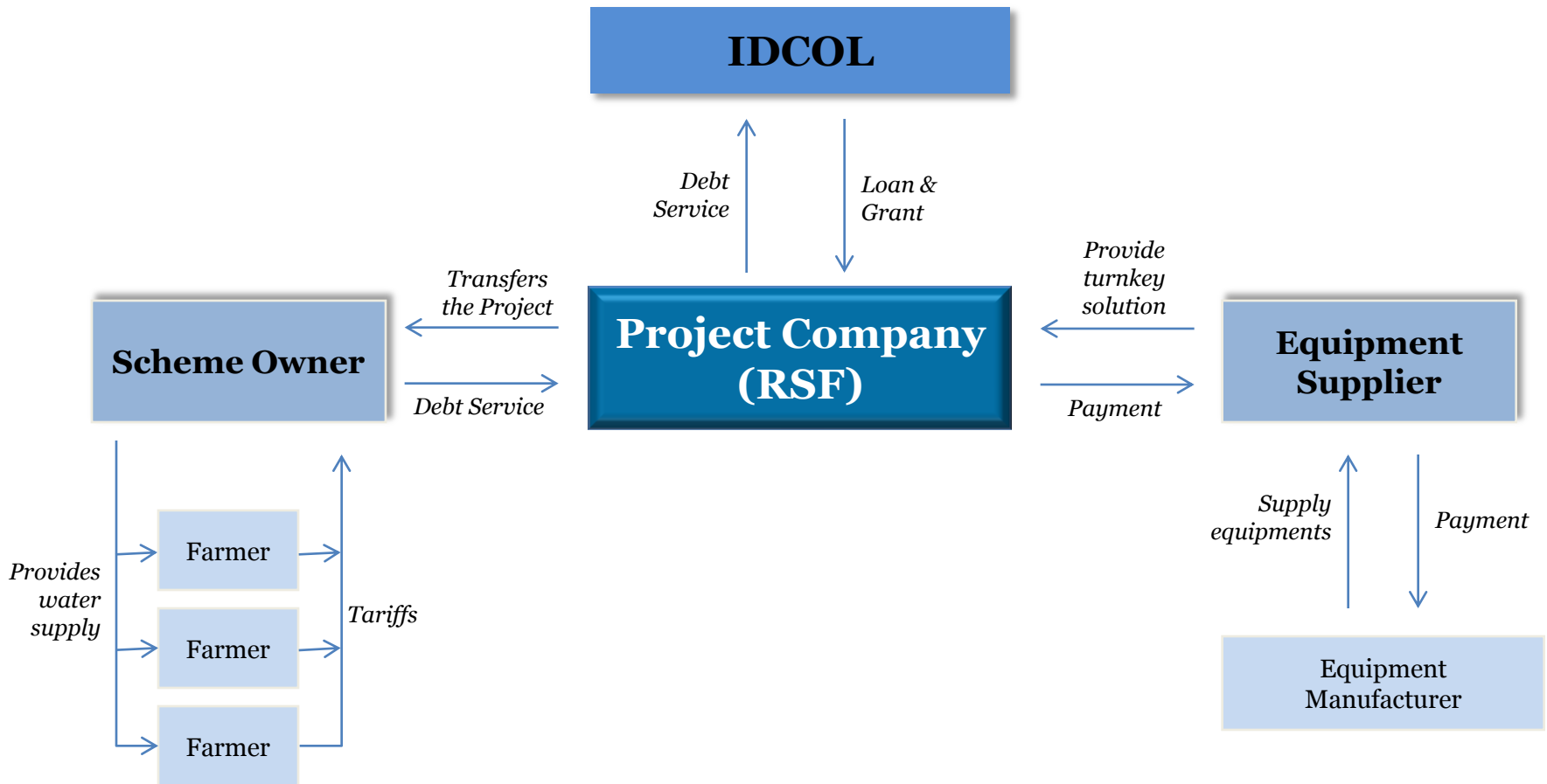
- Computer
- Printer

# Solar Irrigation Project – at a Glance



- **Project Company** : Rural Services Foundation
- **Services** : Irrigation facility for paddy cultivation to 5.62 hectares and vegetable cultivation to 148 hectares of land
- **Location** : Jessore, Bangladesh
- **Cultivated Crops** : Paddy & Vegetable
- **Solar PV Capacity** : 8.4 kWp
- **Water Pump Capacity** : 500,000 litres/day
- **Total Pump Head** : 22 meter
- **Major Equipments** : Submersible solar water pump and solar PV modules
- **Equipment Manufacturer** : LORENTZ, Germany
- **Project Cost** : USD 42,288

# Project Structure



# Financing Structure



Percentage	
Debt	20%
Grant	40%
Equity	40%
<b>Total</b>	<b>100%</b>

- Interest rate : 6%
- Loan tenor : 8 years
- Grace period (principal) : 1 year
- Repayment frequency : Semi-annually



Thank You

Q & A

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