Solar Irrigation in Bangladesh:

Opportunities & Challenges

Nazmul Haque
Director (Investment) & Head of Advisory

31 October 2018

Present Irrigation Scenario in Bangladesh

- **Irrigation pumps run on grid electricity**
  - Number : 0.33 million pumps
  - Area coverage : 2.27 million hectares of land
  - Grid Load : 1500 MW

- **Irrigation pumps run on diesel**
  - Number : 1.28 million pumps
  - Area coverage : 3.06 million hectares of land
  - Fuel Consumption : 1 million tons of diesel per year (worth USD 900 million)
  - Subsidy from GoB : USD 280 million

IDCOL
TOGETHER FOR TOMORROW

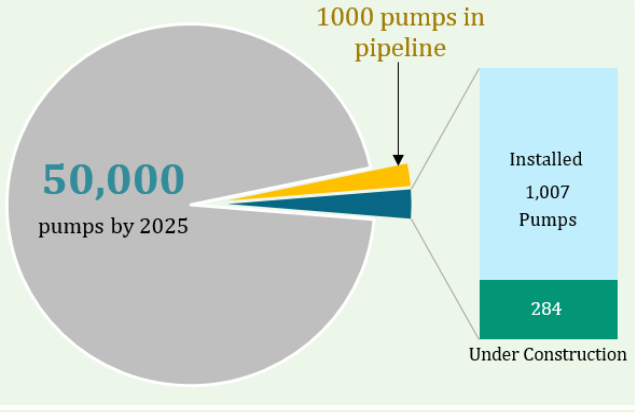
Solar Irrigation: The New Prospect

Organizations	No. of pumps installed	Implementation modalities	Financing type
Mutual Trust Bank	53	Community ownership	100% loan financing
Rural Development Authority	10	Subsidized lease arrangement with the community	100% grant financing
Bangladesh Agricultural Development Corporation	37		
Barind Multipurpose Development Authority	267		
Bangladesh Rural Electricity Board (BREB)*	60	Community ownership	100% grant financing
Infrastructure Development Company Limited (IDCOL)	1,007	Private sector led business model	Grant 50%, loan 35% & Equity 15%
Total	**1,434**		

* BREB is currently planning to follow the IDCOL program structure with funding support from ADB

IDCOL
TOGETHER FOR TOMORROW

Overview of IDCOL Solar Irrigation Program



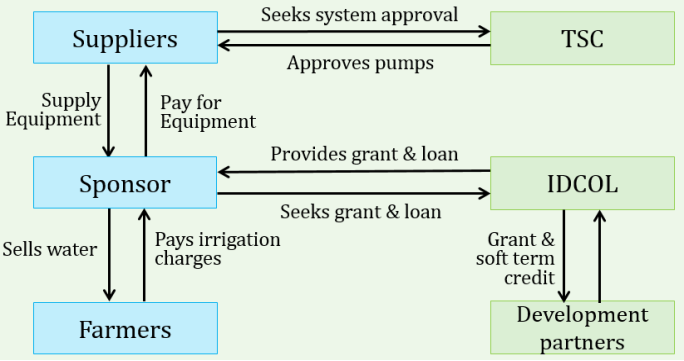
Funding sources:

- Grant : BCCRF, KfW, GPOBA, USAID, ADB
- Loan : IDA, JICA

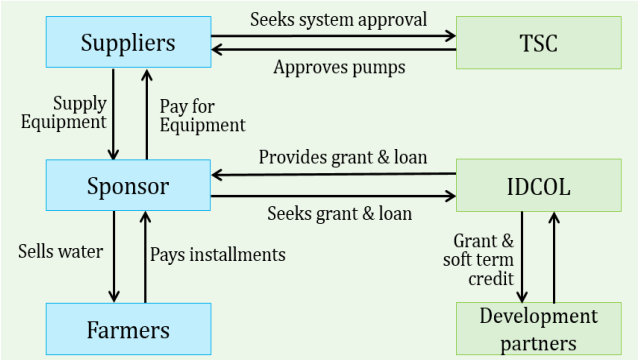
Key Features	
Major equipment	Pump, PV panel, buried pipeline
PV capacity	25~40 kWp
Pump capacity	15~18.5 kW
Total dynamic head	12~16 meters
Water supply	1.5~2 million liters/day
Major crops	Paddy, maze, wheat, jute, potato, mustard and vegetables
Irrigation charges	USD 240-300/Hectare for paddy USD 50-80/Hectare for others
Financing terms	6% interest rate, 10-year with 2-year grace period

IDCOL
TOGETHER FOR TOMORROW

Business Models



Fee for Service Model



Ownership Model

Opportunities & Challenges

Opportunities

- 1.28m diesel pumps that can potentially be replaced
- Proven technology with low maintenance cost, long life and long-term warranty
- Decreasing price of pumps and solar PV modules
- Adequate local capacity and quality control measures
- Availability of grant and low cost capital ensuring affordable water for farmers and acceptable return to private investors
- Grid integration policy for utilizing excess energy and ensuring better return is under process
- Policy discouragement for new grid-connected electrical pumps

Challenges

- Subsidized fossil fuel price
- Risk of penetration of low quality equipment in absence of a national quality standard
- Reduced demand during non-irrigation seasons resulting limited usage of generated energy
- Extensive grid expansion by BREB
- Lack of interest from large creditworthy investors
- Lack of in-house technical capacity of project sponsors
- Lack of collateral available for potential lenders
- Tall dynamic head and timely replenishment of water table
- High exit cost for project sponsors

Nazmul Haque
Director (Investment) & Head of Advisory
Email: nhaque@idcol.org
www.idcol.org

IDCOL
TOGETHER FOR TOMORROW