HOW IDCOL ADDRESSED AFFORDABILITY: LESSONS FROM BANGLADESH’S SOLAR HOME SYSTEM PROGRAM

End-User Subsidy Lab Webinar
Monday 25th October at 9am EST / 3pm CET / 4pm EAT / 7pm Bangladesh
AGENDA

• Welcoming Remarks (Pauline Githugu - 5 mins)
• Introduction to the End User Subsidy Lab (Dana Rysankova - 5 mins)
• How IDCOL Addressed Affordability (Pavel Karim - 30 mins)
• Q&A (up to 20 mins)
• What other countries can learn from how IDCOL addressed affordability (Anil Cabraal – 10 mins)
• Q&A (up to 15 mins)
• Closing Remarks (Pauline Githugu – 5 mins)
THE END USER SUBSIDY LAB

Dana Rysankova, Global Lead Energy Access, World Bank
Significant progress has been made towards SDG7, but large portions of the population will remain unserved in 2030.

The End User Subsidy Lab seeks to promote the uptake of carefully and well-informed end user subsidies:

- Crowding in knowledge, resources and expertise from all stakeholders interested in participating
- Offering a platform for exchange, dialogue and extensive consultation among different stakeholders
- Sharing lessons learned, tools, and information broadly
- Testing prototype end user subsidy designs

The lab is coordinated by ESMAP, GOGLA, and ACE TAF but welcomes the participation of all stakeholders.
END USER SUBSIDIES LAB

Both demand and supply levers are needed to increase affordability & willingness to pay.

- **Initial Market Price**
  - Technology and Design Innovation
  - Production Scale and Distribution Efficiency
  - Increased Competition among companies
  - Lower cost of doing business and improved enabling environment

- **Initial Willingness to Pay**
  - Increased Awareness and Demand
  - Aspirational Product and Consumer Value
  - Savings or income generating potential
  - Consumer Financing

- **Reduced Gap**
  - Early adopters & first movers
  - Growing customer base
  - Mass Market

- **End User Subsidies to Bridge Remaining Affordability Gap**
  - Vulnerable households
**Adding End User Subsidies to the Toolbox**

**End User Subsidies Cannot Replace Ongoing Support But Complements It**

**Enabling Policy Environment**
Quality standards, clear tax regulations, OGS embedded into access planning etc..

**Access to Finance**
Credit lines, dedicated debt funds, availability of equity.

**End User Subsidies**
Providing support to low-income households in accessing products.

**Grant Funding**
Promote R&D, market entry, market research, results-based financing.
THE IDEA

- Build expertise and knowledge in the sector
- Promote exchange and facilitate learnings
- Develop effective subsidy projects
- Mainstream end user subsidies into energy access programs
## ACTIVITIES

### Go to knowledge hub (2021)
- Insights from sector specific or adjacent sectors will be collected, curated, and made available via an easily searchable online platform.
  - Resource Hub online: [https://www.gogla.org/off-grid-solar-smart-subsidies/reports-and-resources](https://www.gogla.org/off-grid-solar-smart-subsidies/reports-and-resources)
  - Webinar series profiling learnings from end user subsidy pilots or projects: Rwanda, Bangladesh, Togo, Kenya

### Create a Pipeline of 'ready to fund and roll out' country specific designs (2022)
- Support country teams with guidance and expertise in developing and testing end user subsidy designs: the lab will partner with up to three countries.
  - Support development of prototype design, incl. additional research or analytics work required
  - Help to fundraise to implement the pilot
  - Accompany pilot with monitoring & evaluation
  - Inform potential scale-up of a successful pilot

### Enabling Transformative Thought Leadership (Ongoing)
- To further stimulate the development of innovative and impactful designs, the lab will act as a thought leader and ideate new frameworks and approaches that can help to reduce the affordability gap and promote inclusive and holistic market development.

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To implement all foreseen activities, more funding is needed -> ESMAP and GOGLA continue to fundraise
The Lab seeks to leverage network effects. If you have interest in the work or would like to contribute to its success, please be in touch with:

- ACE TAF,
- GOGLA,
- or ESMAP/Lighting Global

To stay up to date with our activities and learn more, please visit our website:

https://www.gogla.org/end-user-subsidies-lab

Thank you.
Please share comments and feedback!

drysankova@worldbank.org
How IDCOL Addressed Affordability: Lessons from Bangladesh’s SHS Program

Presentation from Pavel Karim, IDCOL
BACKGROUND

In 2003:

- Electricity access was 37%
- 15 million rural HH lacking access
- Universal access estimated to take another 30 years

Government commitment to universal access by 2021

Alternative technology and delivery model needed to meet universal access commitment
IMPLEMENTATION STRATEGY

- Build on institutional strengths in Bangladesh
- Considered public-private partnership models
- Pilots demonstrated effectiveness of public-private partnership
- Implement through an agency with experience in public-private investment in infrastructure
Year-wise Installation of SHS

- 4.1 million SHS installed 2003-2018, but only 50,000 SHS in first 4 years
- By 2016, 14% population got electricity from SHS
- 57 POs selling, servicing & financing SHS
- At its peak 29,000 people employed in SHS business
Funds Mobilized

International development partners - 2002-2014
- Loans: US$602 million
- Grants: US$81 million

Domestic
- Down payment – US$160 million
- POs equity – US$219 million
- Manufacturers – US$32 million

Total US$1.1 billion
RESPONDING TO CONSUMER DEMAND

- Customers demanded **mainly 30-65 Wp SHS initially.**

- With **advent of LED lighting**, and smaller SHS approved, demand for 10-25 Wp rose.

- As **costs dropped, in later years**, demand for larger SHS rose.
### Mode of Financing: An Example

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Market Price of a 20 Wp SHS</td>
<td>USD 140</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 120</td>
</tr>
<tr>
<td>(d) Down Payment from Household to PO [15% of (c)]</td>
<td>USD 18</td>
</tr>
<tr>
<td>(e) Loan Payable from Household to PO [(c)-(d)]</td>
<td>USD 102</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Loan Tenor</th>
<th>2 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest Rate</td>
<td>16% p.a.</td>
</tr>
<tr>
<td>Monthly Installment Amount</td>
<td>USD 5</td>
</tr>
</tbody>
</table>

| (f) IDCOL Refinance [80% of (e)]                                           | USD 82  |
| Loan Tenor | 5~7 years |
| Interest Rate | 6~7% p.a. |
**Fund Flow and Role of Partners**

**Multilateral Agencies**
- Provides grant and soft loans
- Provides technical assistance

**GoB**
- Provides grant and soft loans to IDCOL
- Provides policy support

**IDCOL**
- Provides grants to reduce cost
- Provides soft loans
- Provides training, promo support

**PO**
- Identifies potential customers
- Installs SHS
- Extends credit
- Provides after sales services

**Household**
- Maintains system
- Repays loan in monthly installment

**Debt Service**
FUND DISBURSEMENT PROCESS

1. Submission of disbursement request by PO to IDCOL
2. Adding info into IDCOL database - Initial screening
3. Inspection by SHS Inspectors and reporting
4. Adjustment of discrepant SHSs and fund disbursement
5. Rectification of problems and resubmission by POs
DETERMINANTS OF SUBSIDY

• No increase in HH monthly expenditure for kerosene lamps
  – loan installment size is less than the expense
• Sales price of SHS without subsidy
  • Cost of SHS equipment
  • Marketing, after sales service, collection expenses of POs
  • Mark-up of PO sales
• Economies of scale - SHS price is expected to reduce gradually
• Reduction of panel price over time
• Introduction of CFL then LED – reduced SHS size with same benefits
• Competition in the market – selection of more POs
Trend in SHS Cost and Subsidy

[Diagram showing cost and subsidy trends from 2004 to 2018.]

- Grant (% of Cost)
- Average SHS Cost w/o grant ($)
SHS Costs Declined

21% cost decline in real terms for every doubling of SHS sales

Example: 50 Wp SHS
- 2004: US$11.30/Wp

Declining subsidy support
- 2003: US$2.72/Wp (19.2% of SHS cost)
- 2017: US$0.24/Wp (5.6% of SHS cost)

Positive and negative consequences
- Increased affordability
- Cut-throat competition
SHS Price for Households

- Installation of first 50,000 SHS
  - some control on sales price
  - PO cannot go 10% above of its proposed price

- Subsequent Price was determined by the market
  - More POs recruited – competition in the market
  - Local capacity development - more suppliers
  - Control on price was lifted
  - Customers had options to buy
A SUSTAINABLE FINANCING STRUCTURE

Phased-out Subsidy

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<tr>
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</thead>
<tbody>
<tr>
<td>Capital Buy down Grant</td>
<td>$70</td>
<td>$55</td>
<td>$40</td>
<td>$40</td>
<td>$25</td>
<td>$25</td>
<td>$20*</td>
</tr>
<tr>
<td>Institutional Development Grant</td>
<td>$20</td>
<td>$15</td>
<td>$10</td>
<td>$5</td>
<td>$3</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

*only for smaller SHS

Concessional to Semi-Commercial Credit

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</tr>
</thead>
<tbody>
<tr>
<td>Loan Tenor</td>
<td>10 yrs</td>
<td>6-8 yrs</td>
<td>5-7 yrs</td>
<td>5-7 yrs</td>
</tr>
<tr>
<td>Interest Rate</td>
<td>6%</td>
<td>6%-8%</td>
<td>6%-9%</td>
<td>6%-7%</td>
</tr>
<tr>
<td>% of Loan Refinanced</td>
<td>80%</td>
<td>80%</td>
<td>70%-80%</td>
<td>70%-80%</td>
</tr>
</tbody>
</table>
### Year-wise PO Selection

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of New POs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>5</td>
</tr>
<tr>
<td>2003</td>
<td>4</td>
</tr>
<tr>
<td>2005</td>
<td>5</td>
</tr>
<tr>
<td>2009</td>
<td>7</td>
</tr>
<tr>
<td>2010</td>
<td>9</td>
</tr>
<tr>
<td>2013</td>
<td>17</td>
</tr>
<tr>
<td>2015</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>58</strong></td>
</tr>
</tbody>
</table>

### Equipment Suppliers

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Number of Suppliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar Panel</td>
<td>46</td>
</tr>
<tr>
<td>Battery</td>
<td>17</td>
</tr>
<tr>
<td>Charge Controller</td>
<td>53</td>
</tr>
<tr>
<td>LED Lamp</td>
<td>44</td>
</tr>
<tr>
<td>DC-DC convertor</td>
<td>13</td>
</tr>
</tbody>
</table>
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
Lodges complaint ➔ IDCOL ➔ Informs PO ➔ Household ➔ Takes remedial measure ➔ PO
**IDCOL Monitoring System**

- **Monitoring by IDCOL:**
  - 3 Divisional and 12 regional inspection offices
  - 103 technical inspectors, monthly inspection - 350 SHS per inspector
  - Total inspection - 51% of total financed SHS
  - Re-inspection by Regional and Divisional Managers and IDCOL Officials

- **Technical audit:** by independent technical auditors in every two years

- **Evaluation by Development Partners** by engaging third parties
# Training and Capacity Development

<table>
<thead>
<tr>
<th>Type of Training</th>
<th>Arranged by</th>
<th>Participants</th>
<th>Trained so far</th>
</tr>
</thead>
<tbody>
<tr>
<td>ToT Training</td>
<td>IDCOL</td>
<td>PO Officials</td>
<td>496</td>
</tr>
<tr>
<td>Management Training</td>
<td>PKSF</td>
<td>PO Officials at Head Office</td>
<td>202</td>
</tr>
<tr>
<td>Staff Training</td>
<td>PO</td>
<td>PO Field Staffs</td>
<td>30,197</td>
</tr>
<tr>
<td>Customer Training</td>
<td>PO</td>
<td>Customers</td>
<td>1.57 million</td>
</tr>
<tr>
<td>Technician Training</td>
<td>Technical Institutes</td>
<td>Local people</td>
<td>1,894</td>
</tr>
</tbody>
</table>
THANK YOU
IDCOL SOLAR MIS

Database Management Flow

- IDCOL receives installation reports from POs, checks and updates database
- POs install SHS & collect household details
- POs check with households and fix discrepancy
- Households / SHS units
- IDCOL inspectors inspect SHS units and generate inspection / discrepancy report
WHAT OTHER COUNTRIES CAN LEARN FROM HOW IDCOL ADDRESSED AFFORDABILITY

REMARKS FROM ANIL CABRAAL
Household Income & Expenditure Survey Monthly Fuel & Lighting Expenditure in 2010 Among Rural Households in Bangladesh

Cumulative Household Percentile

Fuel & Lighting Expenses for Rural Household (BDT per Month)

Rural Household Income Group (BDT per Month)

Monthly Fuel & Lighting Exp  HH Percentile
Comparison of Monthly Fuel & Lighting Expenditure in 2010 of Rural Households and Monthly SHS Loan Payment by SHS Size in Bangladesh

- 20 Wp – 393 BDT/month
- 40 Wp – 710 BDT/month
- 50 Wp – 980 BDT/month
- 75 Wp – 1264 BDT/month

Rural Household Income Group (BDT per Month)

- Monthly Fuel & Lighting Exp
- 20 Wp (20% of sales)
- 40 Wp (20% of Sales)
- 50 Wp (43% of Sales)
- 75 Wp (17% of Sales)
STAKEHOLDER IMPACTS: WINNERS & LOSERS

Present Value of Benefits from SHS Program

- **Households**: $745 million
- **GOB - SHS Taxes Earned**: $384 million
- **GOB - Kerosene Subsidy Avoided**: $90 million
- **GOB - Interest earned from Development Partner Loans**: $180 million
- **Subsidy from Development Partners**: $379 million
- **IDCOL**: $310 million
- **Partner Organizations**: $100 million
- **Kerosene Dealers**: $56 million

Millions of 2018 USD Discounted at 10% to 2018
Q&A
THANKYOU!


Please share comments and feedback!

drysankova@worldbank.org