Tackling Energy Poverty in Bangladesh through Rural Electrification

The Challenges of Rapid Growth and Viability

Presented at USAID’s Infrastructure Workshop
Module 15: Energy Poverty
December 16, 2010
Outline of Presentation

- Brief Background on Rural Electrification Program
- Impact and Keys to Success
- Current Program Performance
- Challenges to Maintain Pace and Viability
- Recommendations
Conceived in 1977 to promote rural economic development

GOB sought to model on the US rural electric program

- Centralized standard-setting, financing and monitoring agency (Rural Utilities Service-RUS within USDA)
- Implemented by community owned cooperatives as private businesses
- Cooperatives have to be financially viable on their own

REB established as central agency - adapted to local environment

- Greater centralized control
  - REB registers and regulates PBS (rural electric societies/cooperatives)
  - REB procures materials, constructs system and turns system to PBS to operate
  - Exerts approval authority over almost all PBS decisions
- Eventually move PBSs toward “accreditation” & greater independence
Rural Electrification Program Development

- **Investment from donor partnership with GOB**
  - USAID support for first 17 PBSs (energized in early 1980s) included commodities & TA – with TA continuing
  - $1.5 billion invested over 30 years by 18 donors (85%) and GOB (15%)

- **Now reached national coverage by rural utilities:**
  - 70 PBSs serve 8.0+ million connections – 48,000+ villages
  - Distribution System – 226,000 km line, 450 sub-stations
  - Total System Loss: 12-14% (2010)
  - Collection Efficiency 96-98%

- **Approximately 35% of rural households have electric service**
- **Widely viewed as VERY successful RE program**
National Coverage
70 PBS service territories
Evaluations Document Positive Socio-Economic Impacts

- **Industrial** - 63,220 industries operate in PBS areas (67 at time of study) and employ 983,829 – 5 yr growth = 52.8%

- **Agriculture** – Avg. yield/acre w/Electric Powered irrigation is 24% higher than with diesel

- **Households** - Expenditures on food, health care, education higher in electrified HHs

- **Education** - Quality of education is better in electrified HH – more time to study, parent involvement, TV adds to knowledge base in Bangladesh.
Keys to RE Program’s Success

- Objective expansion process has yielded low cost per consumer
- Payment discipline and low losses in utility operations
- Emphasis on cost recovery for sustainability
- Adherence to established, systematic procedures and practices
- Community participation – members and elected Boards
- Effective checks & balances – management audits, Performance Target Agreements
- Minimal political interference, control of corruption
- RESULT: Donor confidence has meant continued investment, national prestige
Financial Sustainability?

- Deteriorating financial performance of program
- Disparity in financial performance between PBSs

<table>
<thead>
<tr>
<th>Total Margins of PBSs--USD</th>
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<tr>
<td>Year</td>
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<tr>
<td>All PBSs</td>
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<tr>
<td>Return on Investment</td>
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<td>Margin for all Except Top 3</td>
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Reasons for Declining Performance - 1 of 2

- Power shortages = national crisis
  - Can’t sell what you don’t have – investments but no revenue
  - Many high-margin industrial consumers self-generate – lost revenue
  - In spite of payment record, load shedding not always equitable across all PBSs and other distribution utilities – PBSs tend to get shed

- PBS construction/connection program stalled
  - Recent periods of discriminatory connection moratorium
  - Delays in material procurements reduced line construction 80% in 2008

- Performance disparity between PBSs is due to lack of emphasis on cost recovery by individual PBSs
  - PBSs without industrial base non-viable
  - Results in “shadow subsidy” by REB – loans not fully serviced
Reasons for Declining Performance – 2 of 2

- Tariff and revenue issues reduce viability
  - Tariffs not based on revenue requirements but on comparison with neighboring PBSs – effort to keep general uniformity
  - No tariff adjustments over 7 years (2002-2009), despite increased cost
  - One-year gap between bulk power supply tariff increase and distribution tariff increase (which was insufficient)

- Actions for political reasons – long term impact on all PBSs
  - “Minimum bill” level reduced, adjustments made for load shedding
  - Social enforcement against theft removed – financial impacts
  - Political allocation for lines construction (40km per MP per year) undermines utilities’ viability

- REB generation investments – a burden for healthiest PBSs
- REB operational role inhibits PBS responsiveness
The Challenge & Scope of Task Ahead – 1 of 2

- Managing the sheer size of the Program
  - One of largest RE Programs - #s of connections & people served
  - REB currently not well equipped institutionally to handle growth

- Maintaining Program viability
  - Serving increasing load requires generation and network investments
  - Costs will increase; tariff issues will remain

- Power sector restructuring in Bangladesh
  - New regulatory body (BERC) formed to supervise concession agreements, set tariffs, & ensure distribution utilities follow quality of service standards.
  - REB & PBSs will need to proactively engage with new regulatory process

- Governance concerns increase donor caution
Further expansion requirements are enormous
- GOB target of full electrification by 2020; current coverage 35%
- Only keeping up with population growth rate will require 200,000 connections per year
- Achieving even 70% national coverage requires connections to 9+ million additional HHs
- Expansion costs could reach as high as $4 B at present costs

Conclusion: Donor support continues to be essential to increase coverage
Recommendations 1 of 3

- Refocus program on financial viability of individual PBSs
  - Address revenue disparities either through “cost-based” tariffs or “bulk-supply tariff adjustments” to allow all PBSs to earn modest margins
  - Reemphasize PBS system planning process; invest in improved planning tools (GIS) and oversight; validate current plans through more extensive third party audits
  - Emphasize backfill as an inexpensive means of system expansion and improving revenue (new connections on the basis of low-voltage investments rather than on the basis of medium-voltage investments).
Recommendations 2 of 3

- Engage in proactive measures to improve institutional capacity
  - Move REB from PBS operations role towards oversight with fewer approvals and more audit/monitoring activity
  - Review and revise REB policies for this transition to new role
  - Invest in professional development for REB, PBS and consulting engineering staffs
  - Actively participate in ongoing REB restructuring debate
Recommendations 3 of 3

- Take proactive steps to restore donor confidence
  - Reduce political interference on REB within new regulatory framework
  - Transition REB from government agency to government corporation
  - Affirm focus of REB/PBS on investment in distribution, basing resolution of power supply shortage on private capital and PPAs.