




Best Practices and Grid Rural Electrification

Preliminary Evidence from Selected Case Studies


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Reason for Examining RE

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- Failures have been highly publicized
 - Successful programs provide lessons that often are not replicated by new programs
 - Pace of reaching 2 billion people remains painfully slow
 - Presentation: Focus on dealing with problems faced in expanding service, not on benefits
 - Renewables face many of same problems

RE Problems To Be Solved

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- Rural areas involve dispersed populations and difficult terrain
 - High capital costs (requires capital subsidy/cross subsidy?)
 - High operating costs (bill collection, line maintenance, etc.)
 - Customers are often poor
 - Customers cannot afford full upfront lump sum connection costs
 - Low load and poor load profiles (evening only, low load)
 - Political interference in operation of rural distribution company
 - Distortion of electrification extension plan
 - Interference with pricing, bill collection, disconnection policy

RE Problems To Be Solved


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- Main power companies have institutional difficulty meeting special demands of rural distribution
 - Local community level problems often are not addressed (right of way problems, potential theft, lack of bill payment, lack of knowledge of potential uses, etc.)
 - Power sector reform poses unique problems for rural electrification--potential for skimming the cream and leaving rural people without service

Draft Case Studies Completed




- Thailand--Gov initiated. WB Supported
 - 80-85% of rural HH have electricity
 - Regional distribution company financially viable
- Costa Rica--USAID/NRECA assistance
 - 85% of rural HH have electricity
 - Coops developed when private sector would not enter.
- Ireland--Some of same problems as Dev. C.
- Philippines--Initial USAID assistance
 - Successful cooperatives out of 119 cooperatives

High Capital Cost of RE

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- Costa Rica--Concessional borrowing, low cost system design (single phase), and consumer connection fees
 - Ireland--Capital grants, fixed charged on bill rather than connection charge, low cost design (three Phase backbone with single phase distribution)
 - Thailand--Concessional borrowing, cross-subsidies from bulk power rate, standardized procurement

High Operating Cost of RE

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- Philippines--actively minimize losses, high tariff, barangay bill collection (meter banks), urban areas are in service territory, cross bulk power subsidy for isolated island systems
 - Thailand--actively minimize losses (especially theft), high bill collection rate through village leaders, cross subsidy from urban to rural due to nationwide tariff, also bulk tariff cross subsidy
 - Ireland--After initial capital grant subsidy for system expansion, system required to be financially viable

Customers Are Poor

■ Rural people cannot pay full upfront costs

- Ireland--No upfront costs for rural customers but fixed charge on regular bill (interest on capital, loan repayments, depreciation and administrative costs)
- Costa Rica--Require up-front payments for service drops, but charge was same for group; tariffs contain capital charges
- People can afford greater upfront costs than normally assumed

■ Low load and poor load profiles

- Thailand--careful system extension planning prioritized high consumption areas, encouraged productive loads, load promotion, lifeline rates based on load profile (ie less than 25 kWh)
- Philippines--Accepted low load and charged high tariff

Political Interference

Distortion of electricity connection plan

- Thailand--Developed objective selection criteria to rank villages, allowed communities to jump to higher rank if they paid for part of village connection charges, village selection plan was included in national economic development plan
- Costa Rica--Standard procedures for least cost expansion overseen by regulatory agency, customers have to pay for extension cost if too far away from system
- Ireland--Prioritized the parishes based on system proximity and the proportion of households willing to take a connection, little political interference

Institutional Issues: Focus on Solving Problems

- Main power companies have difficulty with special demands of RE: Special institutions focused on problem solving
- All case studies countries had special institution for RE
 - Thailand--Office of Rural Electrification in PEA which dealt only with distribution. It also had its own budget and could raise grants and loans for distribution
 - Costa Rica--Development of rural cooperatives specializing in distribution. They could raise their own funds through loans and grants.
 - Ireland--Rural Electrification Office for implementation with separate accounts budget (including 50 percent capital subsidy). There was a career structure for RE Office. Once system was built Rural Electrification Office turn the system over to ESB for serving the customers

Community Level Problems

Local community ownership to avoid right of way problems, theft, vandalism, low load development, etc.

- Thailand--Community meetings concerning electricity plan well before electricity came to community, local leaders to collect bills and report problems, had community agree to provide right of way and settle disputes internally
- Ireland--Rural electrification committee formed in advance of electricity (Parish priest, school teachers, etc.) to do preparatory work and problem resolution.
- Costa Rica--Cooperatives used rural electrification committees for community liaison. People are automatically members of the cooperative when they pay for their service initiation. Programs to explain service options, meeting on time schedule, construction issues, etc.

Power Sector Reform and RE



- No experience yet from case studies
- Eliminates the possibility of cross-subsidies unless service territories contain both urban and rural areas
- Limits coverage to regions that will be profitable?
- Protection needed for poorest households? (low access charges, lifeline rates, low cost wiring, etc.)

Conclusion



■ ???????