

THE ROLE OF SUBSIDY IN PRIVATE SECTOR LED RURAL ENERGY SERVICE INITIATIVES

Regional Conference on Enabling Environment for Private Participation in Rural Energy Service Delivery and Financing in the SADC Countries

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1. Subsidy Issues for Rural Electrification

The key issues explored in this paper are the following ones:

1. Establishing an effective and transparent system of Rural Electrification (RE) subsidies
2. Creating performance indicators to monitor programs
3. Regulating and adjusting subsidies

2. Subsidies for RE are Commonplace Throughout the World

Subsidies are believed to be needed for RE systems for the following reasons:

- Costs of providing electric service to rural areas is high because of low density
- Low purchasing power of rural population, makes the provision of electric service to rural areas generally not commercially viable
- Lack of industry causes demand to sparse and concentrated around peak hours
- Collections from rural consumers may be difficult

Subsidies can take many forms, both rural electricity Utilities (REUs) and consumers may receive subventions. The following are a few of the most common forms of subsidy that most governments provide to promote and accelerate RE:

For the REU, subsidies take a variety of forms:

- Corporate tax holiday for a pre-defined period;
- Other tax benefits such as sales tax relief on imported equipment used for providing electric service;
- One-time grant based on the number of consumers served
- One-time grant based on equipment purchased
- One-time grant for setting up the utility
- Electricity generation tax;

For consumers, RE subsidies are usually limited to three main forms:

- Ongoing subsidy to RE consumers
- Subsidies for the capital component of either a grid connection or for the purchase of distributed generation equipment; and

- Low interest and/or moratorium on interest for some period by domestic development banks on loans to rural electricity providers under a government scheme for rural electric service companies.

Sources of funds for RE will vary a great deal by country and even program, but normally include one or more of the following:

- Subsidy by multilateral and bilateral donors in the form of grant and low interest loans;
- Suppliers credits at low or no interest for equipment and engineering;
- Taxes on generation or transmission to provide for RE fund.

3. Evaluating Subsidies

Eventually, a government that wishes to both provide RE services and remain financially solvent will need to assess its RE subsidy programs. There are three essential criteria for the financial and technical efficacy and sustainability of such programs:

1. Is the subsidy affordable?
2. Is the subsidy sustainable - i.e., can you keep meeting the subsidy requirements if demand rises over time?
3. What type of behavior does the subsidy promote - constructive or destructive?

In assessing whether the subsidy is affordable, government and regulators usually need to look at the following issues:

- Subsidy as a proportion of value of REU sales
- Sources of funds for subsidy

Affordable in the context of a RE subsidy usually means at least two criteria are met:

1. Subsidy is strictly less than annual debt service on sunk costs; and
2. There are no operating cost subsidies

Important here are the trends – are demands for RE subsidies rising or falling as a proportion of total costs? Are sources for subsidies broadening or becoming more narrow? Is the Ministry of Finance concerned about RE subsidies? The IMF? Is there a path for consumers to gradually convert to a commercial tariff basis?

Closely related to affordability is sustainability. A system of RE subsidies can be sustainable only if certain traits characterize such subsidies. These traits include the following ones:

- Can the subsidy demand be met now and in the future?
- Are the funding sources, known and secure?
- Does the balance of internal and external funding for RE subsidies move away from external/donor sources over time?
- If operating costs are now subsidized, what is the plan for eliminating this over the next 5 years?

Unfortunately, most current subsidy programs have trouble with one or more of these questions. In particular, the operating cost subsidies and the sources of funds, whether they are domestic RE levies or

external financing, are usually not sufficient to provide for a large scale program over a period of many years.

Governments are loath to tax electricity heavily, for fear that a program of sufficient size to truly benefit RE consumers will raise electricity prices enough to make the economy uncompetitive. This fear is well-founded, and thus, even domestic sources for RE subsidies cannot be considered reliable over the long term.

Operating cost subsidies are both pernicious in their effects on utility performance and on the customers that are supposed to benefit from the subsidized electricity. Where electricity tariffs do not cover the cost of fuel or other variable elements, the REU will have a strong incentive to minimize its supply to such customers. As demand by such customers grows, the financial position of the REU will tend to worsen. Eventually, either the subsidies will bankrupt the REU, service will be cut back or dramatic tariff increases will loom.

Foreign donor sources are even more problematic. Where funds are tied to commodity purchases, the cost of the commodities, their suitability (or not) and their economic lifetimes may be insufficient to outweigh increases in operating costs, additional spares and maintenance and fuel savings, if any. Grant funding is at best an episodic measure, incapable of providing long-term sustainable funding for the RE sector.

It is no wonder that eventually governments look to the reduction, withdrawal or modification of RE subsidies as the only viable long-term alternative

Finally, many RE subsidy schemes are initiated without significant thought to the incentive structure that they promote. If subsidies are to be eliminated or reduced, then performance by all of the parties must follow a path of increased productivity, efficiency and financial sustainability. Designing and enforcing such behaviors will probably fall to the regulator. This subject is addressed in greater detail toward the end of this paper.

The next section shows how better program design and performance monitoring can allow a greater impact from a given subsidy budget.

4. Methods of gradual withdrawal of Subsidy

The problem with government subsidies is that no one usually plans an exit strategy. Once the subsidy is put in place, it typically remains there and the governments find it politically very difficult to remove the subsidies. No matter how the subsidy is designed and targeted it does have an impact on the performance of the market. Governments, therefore, find themselves in a dilemma -- how to design subsidies without affecting the market. The World Bank has done considerable work in this area and offers approaches for subsidy design without distorting the market. The grid or off-grid electricity providers cannot remain commercially viable if they provide subsidized power and the electric service would deteriorate over a period. Some of the findings of the Bank's work should be considered by developing countries in designing their RE subsidies. Indeed, several of these measures have already been adopted in one or more of the SADC participants. The following offer a few options for consideration:

- Initiate other rural development programs for poverty alleviation of rural population
- Train and employ rural populations in the activities of rural electricity providers
- Create an environment for rural industries that can employ rural populations and encourage rural cottage industries
- Improve educational and health facilities in rural areas
- Involve local NGOs in all aspects and activities for poverty alleviation programs
- Involve local rural populations in decision making in developing and implementing rural development programs
- Develop a targeted Rural Consumer Education Strategy to emphasize that (i) electricity cannot be provided to them on subsidized rates forever, (ii) the subsidy would be withdrawn

- over a period in a gradual manner, and (iii) they have to increase their economic condition to afford electricity after the subsidy is completely withdrawn
- Initiate a pricing policy that allows the regulator to set the tariff at a level that protects consumer interests while simultaneously protecting the utility/provider's financial viability

Revenue Collections
<p>One factor not mentioned in the overall issue of subsidies is revenue collection. Without an ongoing commitment to reducing commercial losses, any subsidy program, no matter how well thought out, will fail. The governments can initiate a number of rules and actions to affect adequate levels of revenue collection from the rural consumer. Some of the mechanisms could include the following:</p> <ul style="list-style-type: none"> • Develop and implement a mechanism for consumer participation, disclosure and procedures for addressing consumer complaints regarding metering and billing • Provide a meter reading and billing frequency that suits the consumer and the electricity provider (preferably monthly or bi-monthly) • Change the working route of meter reading and bill serving regularly • Tie the sale of technology such as solar home systems (SHSs) to a maintenance contract, which stipulates inspection of the system at a regular interval. The maintenance crew may tie up the collection of the due payments during the inspection visit • Tie loan collections to the income cycle of the communities (e.g. Bi-monthly, quarterly, or six-monthly)

5. Transparency, Subsidies and Regulation – Elements of Improved Performance

There are many elements involved in improving the performance of REUs. As regards the role of subsidies, the key elements include the following ones:

1. The subsidy is applied in a well-understood and publicly acceptable manner, and
2. The desired changes in both REU and consumer performance can be quantified, measured over time and included in tariff and subsidy decisions.

In order for these two elements to be effective, the design and implementation of subsidies should follow the general path listed below:

1. The amount is known in advance and is budgeted
2. The mechanism for obtaining the funds is understood
3. A phase-out plan is included in the program design
4. Regulators understand the subsidy and its application

A key element is transparency. Both consumers and the REUs should understand both the financial and performance issues inherent in a particular subsidy program. In particular, there should be clearly defined financial and technical indicators, along with timetables for implementation or achievement of certain targets, to trigger further subsidy and tariff program elements. Some examples include the following ones:

- Cost targets
- Service extension
- Reliability and safety
- Investment by new participants

Approvals for new subsidy schemes should be keyed to meeting targets. Such a regulatory approach, now known as “Performance Based Regulation” has been implemented around the world. In this region, PBR has even been adopted as a part of one country’s new transmission tariff approach. That is, the tariff moves the transmission system from one with numerous implicit and explicit subsidies to one that is characterized as follows:

- Unbundled costs
- Clear performance targets
- Timetables for achieving these targets
- Incentives for good performance, penalties for missing targets or dates
- System of shared savings for system owners, users of system and customers.

Each stage of the tariff is explicitly described, along with the regulatory, technical and financial elements of meeting the approved targets. Such a system, which will eliminate subsidies in the transmission system within 3 years, exhibits transparency, fairness and rule of law. Similar approaches in RE will bring great benefits to the countries of the region.



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RE seldom pays for itself, so critical initial tasks for the REU are:

1. Establishing Transparent Subsidies, Tariff Setting and Monitoring
2. Establishing REU Performance Criteria, Criteria Monitoring and Provision for Performance Incentives



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Establishing Transparent Subsidies, Tariff Setting and Monitoring

- Need for Transparent Subsidies
- Need for effective and efficient Tariff setting
- Monitoring



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Need for Subsidies

- High cost of providing electric service to rural areas because of low density
- Low purchasing power of rural population
- Little industry or other “economic” uses of electricity
- Providing electric service to rural areas is not often commercially viable



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Types of Subsidies

- For the REU:
 - Corporate Tax holiday for a pre-defined period
 - Customs Duty relief on imported equipment



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Types of Subsidies (Contd.)

- One-time grant based on the number of consumers served
- One-time grant based on equipment purchased
- One-time grant for setting up the utility
- Ongoing subsidy to RE consumers



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Sources of Funds for Subsidies

1. Taxes on private generating equipment sales
2. Taxes or levies on non-REU electricity generation or transmission
3. Foreign donors



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Subsidy Experience with RE in Other Countries

Benefits

- RE increases production and induces small local industries adding value in incomes and growth
- Experience in Asia shows that RE economic benefits are visible and plausible

Costs

- Tariffs set well below cost result in service quality deterioration, which decreases RE economic benefits
- Experience in Asia shows that only 10-50% of the economic cost is generally recovered
- Subsidies usually paid directly by the government or indirectly by urban industrial users.



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Evaluating Subsidies

- Is the subsidy affordable?
- Is the subsidy sustainable - i.e., can you keep meeting the subsidy requirements if demand rises over time?
- What type of behavior does the subsidy promote - constructive or destructive?



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Evaluating Subsidies

- Is the subsidy affordable?
 - Proportion of value of REU sales
 - Source of funds for subsidy
- Affordable usually means at least two criteria are met:
 1. Subsidy is strictly less than annual debt service on sunk costs; and
 2. There are no operating cost subsidies



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Evaluating Subsidies

- Is the subsidy sustainable?
- Match sources and uses of funds
- Project demand for REU services over next 10-15 years -
 - Does the projected subsidy grow or shrink?
 - Can the subsidy demand be met from current sources of funds?
 - What are the funding sources?
 - Are new sources of funding required to meet future demands?



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Evaluating Subsidies

Sustainability

- Project demand for REU services over next 10-15 years -
 - Does the balance of internal and external funding for RE subsidies move away from external/donor sources over time?
 - If operating costs are now subsidized, what is the plan for eliminating this over the next 5 years?



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Evaluating Subsidies

- What type of behavior does the subsidy promote?
 - Constructive behavior
 - More investment from internal sources
 - Reduction/elimination of demand for operating cost subsidies
 - More investment from private bidders for franchises
 - Unproductive behavior
 - Increases peakiness of demand
 - Increases reliance on one-time financing gimmicks



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Transparent Subsidies

- The amount is known in advance and is budgeted
- The mechanism for obtaining the funds is understood
- A phase-out plan is included in the program design
- Regulators understand the subsidy and its application



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Need for Transparent Tariff Setting

- Protect consumers
- Protect the utility's financial viability
- Provide ability to compare REU's performance with other companies



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Need for Transparent Tariff Setting

- Protect consumers
 - Make sure REU can justify its claims for subsidy
 - Provide open & transparent mechanism for adjustment of tariff and subsidy levels
 - Provide open means for phasing out certain types of tariffs
 - Provide mechanism for redressing past program errors



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Need for Transparent Tariff Setting

- Protect the utility's financial viability
 - Provide clear criteria for subsidizing the REU
 - Provide financial and performance standards for subsidies and tariff levels/adjustments
 - Provide clear indication of sources and uses of funds for subsidies & system expansion



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Monitoring

The Regulator needs to make sure that:

- Subsidy is passed on to consumer
- REU has incentives for cost control
- REU is covering its operating costs
- REU is providing safe and reliable service
- Customer and system expansion is proceeding according to a filed plan



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Monitoring (Contd.)

Regulatory proceedings are transparent and open

- There exist mechanisms for consumer participation and disclosure and
- REU provides procedures for addressing consumer complaints regarding metering and billing



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Establishing REU Performance Criteria and
Criteria Monitoring and Provision for
Performance Incentives



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Establishing REU Performance Criteria

- Regulator must make clear statements of measurable objectives and its components
 - Cost targets
 - Service extension
 - Reliability and safety
 - Investment by new participants



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Establishing REU Performance Criteria (Contd.)

- Objectives should be set and indicators selected in consultation with stakeholders (regulator, REUs, and consumers), so that objectives and targets are jointly "owned".
- Ultimately, the regulator is responsible for enforcing the monitoring of objectives, targets and timetables
- Goals and timetables should be specific and quantitative wherever possible



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Regulating REU Performance Through Incentives

- Goals and timetables are essential to incentive-based regulation
 - Certain approvals must be keyed to achievement of specified targets on a given schedule
 - Both penalties (denial of tariff increases) and inducements (system expansion, importation of new equipment), should be keyed to goals and timetables
- Incentive-based regulation will force REUs to set priorities, make public their plans and communicate about both successes and failures



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Regulating REU Performance Through Incentives

- Examples of incentive-based regulation:
 - Customer service costs
 - Line losses
 - Generation efficiency
 - Acquisition costs for consumables (fuel, spares)

Incentives are especially important where competition has little role now or in future



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Regulating REU Performance Through Incentives

- How do you know where you stand?
- Conduct benchmark studies
 - Comparisons with other similar situations in other countries
 - Requires a tariff that is defined by its functional components
 - Generation
 - Power purchase
 - Customer service
 - Transmission & distribution
 - System management & dispatch



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Regulating REU Performance Through Incentives

Example of incentive-based regulation - Line losses are "too high"

1. How to set an appropriate target?
2. How to determine the value of compliance?



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Regulating REU Performance Through Incentives

Example of incentive-based regulation - Line losses are "too high"

1. How to set an appropriate target?

Look at results from other utilities with similar service area profiles

- a) Compare your utility with others in top decile, top quarter, top half
- b) Set performance targets so that a different (higher) goal is just achievable each year for the next 2-4 years
- c) Make sure that your engineers or consultants have verified that the target levels of performance are achievable.
- d) Establish a line loss reduction schedule over the target period



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Regulating REU Performance Through Incentives

Example of incentive-based regulation - Line losses are "too high"

2. How to set a value on compliance?

Calculate kWh needed to meet demand at target level of loss

- a) Establish appropriate fuel consumption level or electricity purchase level based on line losses and final consumption
- b) Allow company to recover costs associated with generation up to amount needed to meet line loss target, remainder is "excess"
- c) Permit supplier to recover only variable O&M associated with excess kWh supply
- d) Permit company to keep 40-50% of savings if line loss target is exceeded, with the remainder to be rebated to consumers



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Regulating REU Performance Through Incentives

Other potential uses for incentive-based regulation

1. Generation efficiency (heat rates)
2. Generation technology (useful in distributed generation systems) - prime mover types & efficiencies
3. Customer service charges - metering, billing, etc.
4. Service quality - outages, voltage & frequency

You need to think about incentives as the tariff is constructed or modified - functional separation, promoting comparability (benchmarking) is a key characteristic



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REU Performance Criteria Monitoring and Provision for Performance Incentives

- Performance monitoring should be as per pre-established criteria
- Independent committee or commission must monitor the performance of REUs - if an independent regulator exists, this is an appropriate responsibility



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Monitoring REU Pricing and Performance - Conclusions

- Performance criteria should be clearly defined and adjusted as monitoring dictates.
- Regulators, REUs and consumers should be involved at an early stage.
- Monitoring should be continuous and should lead to both mid-course corrections and accountability.



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Monitoring REU Pricing and Performance - Conclusions

- Both the performance criteria and the actual performance levels should be published.
- Regulators and consumers have a right to ensure that REUs provide electric service in a sound manner and that the consumer is served well.
- Regulator has the obligation to hold the REUs to performance standards and protect the consumers' right to reliable and safe electricity.



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THANK YOU!