



A report for the
Office of Energy and
Information Technology

**Addressing the Social
Dimensions of Power
Sector Reform in
Developing Countries and
Economies in Transition**

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November 2002

USAID

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Version: 1.0

FOREWARD

Dear Colleague:

Power sector reform packages may include privatization, restructuring, and the introduction of competition and independent regulation. A primary rationale for implementing these reforms is to improve the quality and availability of energy services, thereby promoting national economic development. At the same time, these reforms have both environmental and social implications that are often not recognized during the reform process.

To improve the consideration of these issues, the U.S. Agency for International Development, Office of Energy, has sponsored several reports examining the social and economic implications of energy sector reforms. This report, *Addressing the Social Dimensions of Energy Sector Reform in Developing Countries and Economies in Transition*, is the latest in this series.

The study aims to improve understanding of the impacts of reform on energy service affordability, access, and quality, as well as on employment in the energy sector. Besides their positive impacts on these dimensions, reforms may result in poor people paying more for energy, eliminating universal service mandates, and large-scale layoffs of public employees. By reviewing the lessons learned to date, the report offers suggestions on how to anticipate, avoid, and mitigate adverse social impacts during and after the reform process.

Additional copies of this report can be obtained by contacting the USAID Office of Energy and Information Technology. We hope it will be useful. Please contact me if you have any questions or comments on it.

Sincerely,

Griffin Thompson,

Energy Team Leader
USAID Office of Energy and Information Technology

ACKNOWLEDGEMENTS

This report was prepared by PA Government Services (formerly Hagler Bailly Services, Inc.) under the Energy IQC, a contract for the Office of Energy, Environment, and Technology, US Agency for International Development. The director of the Office is Dr. Griffin Thompson. The authors gratefully acknowledge the support and guidance of Gordon Weynand and Christine Wegman of USAID.

Several PA staff contributed to this report. The project was managed by Keith Kozloff, who also drafted sections of the report. Jeanne Clinton conducted interviews with several stakeholders. Karl Hausker, Christina Mudd, and Wynne Cougill provided valuable assistance in writing and editing. John Armstrong and Mark Oven provided suggestions on the project's overall design.

Outside consultants also made important contributions to the report. Connie Smyser conducted interviews with stakeholders, reviewed relevant literature, and drafted sections of the report. The developing country case studies were prepared by Winrock International staff in Brazil (Osvaldo Soliano Pereira), India (Venkata Ramana), and Guatemala (Oscar Coto). Peter Bradford and Dean White of PA prepared the U.S. and Georgian case studies, respectively.

A draft of the report was reviewed by Mary Louise Vitelli (Applied Engineering Associates International), Nancy Kete (World Resources Institute), and Robert Bacon (World Bank).

Finally, the authors wish to express their appreciation to the many individuals who consented to be interviewed for this project. Their names and affiliations are listed in Appendix H.

The contributions of various other individuals notwithstanding, the authors remain wholly responsible for any errors, omissions, and misrepresentations.

EXECUTIVE SUMMARY

The power sectors of many developing and emerging economies are undergoing fundamental changes. These changes, which are often part of a broad economic reform package, may include privatization, restructuring, and the introduction of competition and independent regulation. Although a country may gain as a whole from sectoral reforms, not everyone gains equally and some people are made worse off. For example:

There may be massive layoffs at bloated publicly-owned companies in anticipation of privatization.

Privatized and newly competitive service providers are apt to charge higher tariffs that recover the cost of service, increasing prices beyond poor households' ability to pay for services.

Pre-reform policy mandates to extend services to rural areas may be eliminated.

When large or vocal constituencies perceive themselves to be adversely affected, controversies over social impacts may delay the reform process itself.

The objective of this study is to raise social issues that should be considered by policy-makers in the process of sector reform, and to provide guidance to decision-makers regarding how development assistance could address these issues. The study defines the power sector to include the generation, transmission, distribution, and retailing of electricity. In addition, the report devotes some attention to fossil fuels (gas, oil, and coal products and services).

The social dimensions are organized according to four categories:

Changes in access to services – where access is defined as the availability of service and the consumer's ability to pay for initial hook-up.

Changes in the price of services – in terms of price per unit of the service.

Changes in the quality of services – where quality includes reliability, responsiveness to service requests, and choice of supplier.

Changes in sector employment conditions – which may include layoffs, changes in employee compensation or benefits, the type of jobs created from shifts in demand for service, and loss of the economic base in communities and regions dependent on state energy enterprises.

With respect to these dimensions, the following questions were addressed in conducting the study:

What were the pre-reform conditions with respect to the various social dimensions?

How did the reforms affect (or how are they expected to affect) these conditions?

What was (or is) the government response (if any) to the social dimensions of reform?

Several sources of information were used to address these questions. Interviews were conducted with a wide range of stakeholders, relevant literature was reviewed, country case

studies were commissioned (for the United States, Guatemala, Brazil, India, and Georgia), and experts were consulted at a one-day workshop. Of course, answers to these questions are limited by the inability to observe what would have happened without reforms and by the short period of post-reform experience.

The study's main conclusions and recommendations are as follows.

Access

Without access to service, other social implications of reform are largely irrelevant. For most classes of customers, reform generally improves access. Where it does not, the options for improving access include:

- Add provisions in privatization agreements that require some level of service extension.

- Adopt a concessions model that allows private entities to supply services in territories not served by the primary supplier.

- Establish a trust fund (for example, through the use of privatization proceeds) for extending service.

- Implement pilot projects that integrate multi-sector infrastructure improvements in low-income areas, including electricity distribution.

Affordability

Reforms have generally brought price increases for some consumer classes, especially those enjoying higher subsidies under pre-reform conditions. Options to preserve affordability include:

- Enact subsidies or price caps for purchasing subsistence amounts of energy for the poorest households.

- Encourage companies to offer service options, such as interruptible and time-of-day rates, to help poor customers afford subsistence amounts of energy.

- Provide energy efficiency services, such as through energy service companies (ESCOs), to reduce energy use in space heating, appliances, and lighting.

Quality

For most consumers, the quality of service has generally improved after privatization. Still, some countries are concerned that new supply investment by private developers will not keep pace with growing demand. Options for maintaining or improving service quality are:

- Use local intermediaries to address the service needs of low-use customers.

- Use competition to expand the range of services offered.

- Ensure that privatization and competition do not result in layoffs that jeopardize the quality of service.

- Establish national and international standards for interconnected regional grids and isolated communities to improve reliability.

Labor

Employment reductions have been significant under reforms in several countries, and the conditions of employment have also been affected. Options to address labor issues include:

Implement reforms in labor conditions in anticipation of energy sector restructuring to ease subsequent privatization.

Incorporate employee protections into the terms of sale, such as the transfer of jobs to the new owner.

Offer voluntary retirement programs to minimize forced layoffs or severance packages when layoffs are unavoidable and the pay-outs are affordable.

Reduce the need for severance and retirement payments by offering service contracts to companies consisting of former employees.

Involve labor representatives in the restructuring process and conduct public information programs to address labor questions.

Conduct retraining, job creation, job search assistance, and on-the-job training programs for displaced workers if training is adequately targeted to the needs of the job market.

General Recommendations

In addition to the above options for addressing specific social impacts, policy-makers and development assistance organizations should consider other recommendations for integrating social dimensions into planning for the reform process:

Improve public education and involvement in the reform process, including new roles for local government.

Evaluate alternative sources of funding for mitigation measures.

Develop a strategy for reforming and phasing out subsidies.

Adopt an integrated approach to broadening the benefits of reform.

Conduct a pre-reform and periodic post-reform social assessments.

Disseminate lessons learned about addressing social impacts.

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1. INTRODUCTION

The power sectors in many developing countries and economies in transition (EITs) are undergoing fundamental changes. Often part of a broad reform package, these changes may include privatization, restructuring, and the introduction of competition and independent regulation. A primary rationale for implementing these reforms is to improve the quality and availability of service, thereby promoting development for the country as a whole. At the same time, however, some social groups may be excluded from the benefits of reform or be adversely affected, due to such actions as:

- elimination of universal service mandates
- price hikes or improved revenue collection
- layoffs of civil service employees.

This study was undertaken at the request of USAID's Global Bureau to provide guidance for future development assistance to address these and other social implications of reform.

Chapter 2 describes the key social dimensions of power sector reforms, while Chapter 3 presents initiatives that have been implemented by developing country and EIT governments to mitigate adverse social effects. Chapter 4 draws overall conclusions and makes recommendations to developing country and EIT governments and international development assistance organizations. The appendices contain five country case studies, a literature review, and lists of workshop participants and experts who were interviewed.

1.1 STUDY OBJECTIVE

This study is intended to improve understanding of the extent and nature of the social impacts of power sector reform, and the means by which these impacts are being anticipated, avoided, and mitigated during and after the reform process. Social impacts include changes in the access to energy services, cost and/or quality of energy, employment-related impacts, etc.

Several salient issues provide the context for this study:

- Because economic concerns are a primary driver for reform, the reform process often does not incorporate social concerns.

- Although a country as a whole may gain from reforms, not everyone gains equally and some people are made worse off. Developing country governments are starting to realize that "whole segments of the population may have been left behind in the rush to restructure."¹

¹ Jechoutek, Karl. 1999. "The Second Wave: Transforming the Energy Industry in Emerging Economies." In the Petroleum Economist publication, *The Fundamentals of the Global Power Industry, 2000 Edition*.

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Controversies over social impacts often delay the reforms themselves, and thus their benefits to society as a whole. By anticipating social disruptions and dislocations, developing country decision-makers can manage the reform process in a manner that minimizes the adverse impacts.

Globally, the reform process is at a relatively early stage. Thus, mid-course corrections to address these issues are still possible.

Many of the development assistance organizations that have been supporting reforms are getting feedback from their clients that social impacts should be addressed.

Even when donors have addressed the social impacts, they may have overestimated the fiscal or institutional ability of the government to make good on social promises.

1.2 STUDY SCOPE

This report defines the power sector to include the generation, transmission, distribution, and retail marketing of electricity. The terms “restructuring” and “reform” are used somewhat interchangeably, with both including a range of actions taken in combination to improve the economic and technical performance of the energy sector. This range includes the establishment of independent regulation, privatization and/or corporatization of government-owned energy operations, fundamental structural modifications of the framework in which the energy industry operates, and the introduction of competition at the wholesale and sometimes retail levels. Table 1 shows a taxonomy of these reforms.

Major Reform	Implementation Options
Legal/regulatory reforms	Establishment of independent regulatory body at the federal or state level Liberalization of asset ownership
Commercialization	Private management contract Retain public managers
Privatization	New capital assets (e.g., generation equipment) Existing assets Form of economic regulation
Unbundling	Generation Transmission and distribution Horizontal unbundling Retail services
Competition	Wholesale power Partial retail (some captive customers) Full retail
Related reforms	Upstream (fuel) sectors Downstream (end-user) sectors

A regulatory framework that guides the post-reform market’s operation usually accompanies the sector reform and privatization of energy services. This framework generally includes a regulatory function (e.g., through an energy office with jurisdiction over electricity and gas, as in the case of Hungary, or separate regulators over different fuels, as in the case of

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Argentina). Usually legislation enacts the new framework. The legislation codifies but also structures the market's operation, reducing regulatory risk for investors.

Although this report focuses on the social dimensions of power sector reform, there are similar social issues associated with the reform of gas, oil, and coal products and services. Reforms in fuel sectors may affect the electricity sector because they change the cost of thermal generation. In some regions, the social costs of reform (such as downsizing in the former Soviet Union) have been felt more strongly in the fuel sector than in the electricity sector. Moreover, electricity and fuels can be substituted in some uses (such as cooking and heating). The social dimensions of reform in fuels sectors are discussed in this report where doing so adds to the overall findings.

In this report, the social dimensions of reform are organized according to four categories: access to service, cost of service, quality of service, and labor.

Changes in access to energy services, where access is defined as the availability of service or some other comparable service, and the consumer's ability to pay for initial hook-up or the equipment needed to provide service.

Changes in the price of energy services, in terms of price per unit of energy service provided (kWh, liter kerosene, etc.).

Changes in quality of energy services, where quality is defined in terms of responsiveness to service requests, choice of fuel, choice of supplier, or reliability of service (such as the number of unplanned outages or interruptions in fuel supply, number of hours per day service is available, and line voltage or gas pressure fluctuations).

Changes in energy sector employment conditions, which may include layoffs, changes in levels of compensation or benefits (such as health or child care) for retained employees, or changes in the type of jobs available or created as a result of shifts in demand or type of service activity performed.

The first three are of concern primarily to energy consumers, while the changes in employment affect service providers. Although this is a useful taxonomy, the individual dimensions are often linked. For example:

Without access to service, quality and affordability concerns are irrelevant.

Higher prices make it possible to offer better service. Conversely, price controls may discourage investment in infrastructure, reducing service reliability (as happened in California).

Changes in the number of people employed by an energy supplier can affect both price and quality of service.

Sometimes an energy consumer is also a "micro-enterprise service provider." In India, for example, food vendors cook and sell food. These joint household and commercial activities require both cooking fuel and lighting.

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This study does not address the environmental impacts of energy sector reform, or the effects of reform on markets for energy efficiency or specific energy technologies. These topics are important, but have been addressed in previous studies by PA.²

Neither does this report address the social effects of related economic reforms, although power sector reform is often accomplished within a framework of overall economic reform. Policies and changes in other public services, the financial/credit system and industrial sector may have important interactions, create related issues, and require related policy and framework “fixes.” The success that power reforms have in achieving their goals may depend on these other reforms.

Finally, the study does not question the overall goals of power sector reform, which measures are most appropriate to achieve those goals, or whether the benefits of reform are great enough to offset whatever costs it imposes. One potential benefit of reform is to relieve the burden on state treasuries from money-losing public enterprises, thereby freeing up fiscal resources to address other social needs. Some reform processes are more successful than others, however, at shifting the financial burden of inefficient public enterprises to the private sector. Hoped-for fiscal windfalls from privatization, for example, may not materialize if the government continues to subsidize service to some low-income or remote rural customers.

1.3 CONCEPTUAL FRAMEWORK AND INFORMATION INPUTS

This study addresses the following sequence of questions:

What are typical pre-reform conditions with respect to salient social dimensions?

How do reforms affect these conditions?

What, if any, initiatives have governments taken to improve or offset the effects of reforms and do they seem effective?

To what extent are these measures transferable to other countries experiencing or expected to experience similar effects from reforms?

The approach used in developing this report was to integrate inputs from diverse sources to derive a balanced perspective on the issues addressed. These inputs included a literature review, a series of structured telephone interviews, five background papers, and an experts' workshop.³ In each, an effort was made to solicit a range of perspectives on specific issues.

² USAID. 1998. *The Environmental Implications of Power Sector Reform in Developing Countries*. Office of Energy, Environment, and Technology, Report No. 98-05, March.

USAID. 1998. *Promoting Energy Efficiency in Reforming Electricity Markets: A Guidebook for Stakeholders*. Office of Energy, Environment, and Technology, Report No. 98-04, March.

³ The background papers (Appendices A-E) provide perspectives from in-country observers of the reforms to date in the United States, Brazil, Guatemala, India, and Georgia.

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The relatively recent status of energy sector reforms globally affects the approach used in this study. That is, few countries have a sufficiently long post-reform history from which to glean empirical data. Among those countries, there are even fewer with characteristics and issues relevant to USAID client countries. Thus, although a retrospective analysis was possible in some cases, the primary inputs to this report were based on expert opinions on the effects of recent, ongoing, or planned reforms.

1.4 GLOBAL STATUS OF ENERGY SECTOR REFORMS

Figures 1 through 5 provide the context for the effects of reform by showing a snapshot of the status of reforms globally for the power sector and four other energy subsectors. The values in each chart indicate the percentage of countries in the region that have taken specific reform actions. These actions include corporatization, establishing a legal framework, establishing an independent regulator, restructuring, private investment in new assets, and privatizing existing assets.⁴

Within these general categories, specific reforms in the various energy subsectors may be quite different. For example, reform in downstream hydrocarbons is largely dependent on whether a country refines its own product or imports it. Reforms may affect the ownership of fuel storage and distribution, and whether retail prices are regulated.⁵

Figure 1. Power

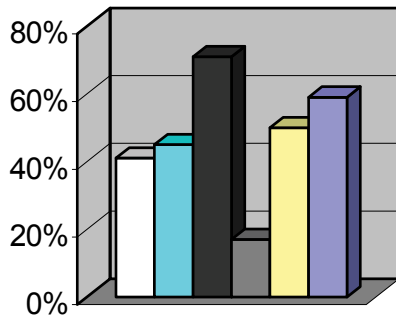
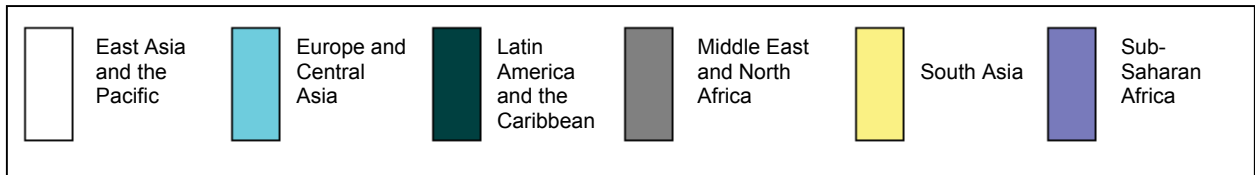
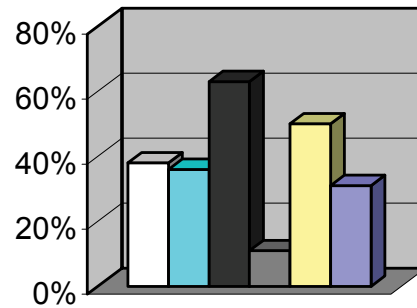


Figure 2. Downstream Gas



⁴ Bacon, Robert. 1999. *Global Energy Sector Scorecard*, World Bank. April.

⁵ Bacon, Robert. 2001. Personal communication, February.

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Figure 3. Downstream Oil (Refining)

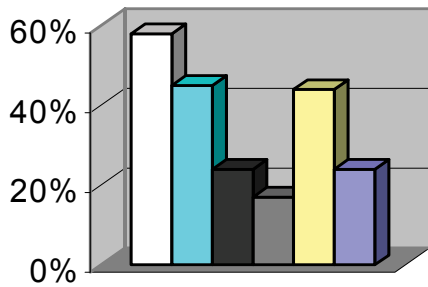


Figure 4. Downstream Oil (Wholesale and Retail)

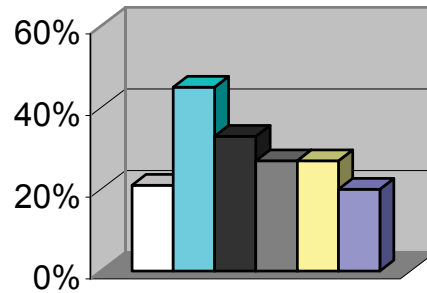
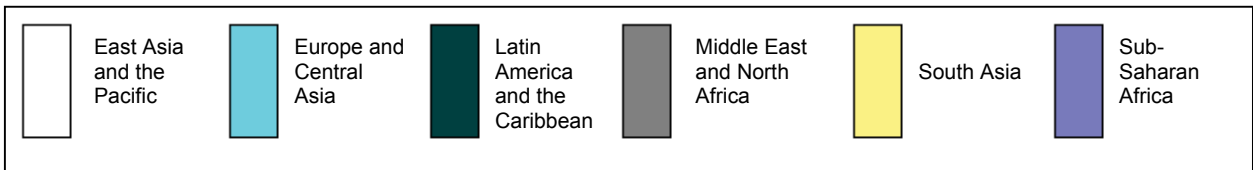
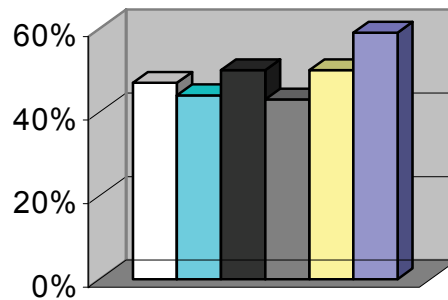


Figure 5. Upstream Oil and Gas



Looking across the subsectors and regions, some regions have gone further in reforming some energy subsectors than others, but no one region is most advanced in reforming all energy subsectors. For example, Latin America leads in power and downstream gas reforms, but not in the oil subsector. Sub-Saharan Africa leads in upstream oil and gas reforms.

Of course, countries began with different pre-reform conditions, and will undoubtedly end up implementing different sets of reforms. At the risk of oversimplification, Latin America, for example, is likely to go further towards privatization and competition than Asia and Africa. This means that the social implications of reform will vary both because of different starting conditions and end goals.

Still, the figures suggest that the reform process is at a relatively early stage globally, that the percentage of countries implementing reforms in the various regions is likely to increase significantly in the next 5-10 years, and that efforts to address the social implications of reform in the pioneer countries may provide lessons for others. The likelihood of such future reforms suggests that greater consideration of the issues raised in this report would have an impact across world regions and sectors.

2. KEY SOCIAL DIMENSIONS OF ENERGY SECTOR REFORMS

This chapter elaborates on the linkages between various reforms and the four social dimensions listed above. In order to present these linkages in a systematic manner, the discussion below follows a general format of summarizing typical pre-reform conditions, types of reforms, and ways they are expected to affect the pre-reform conditions.

2.1 ACCESS TO SERVICE

Lack of access to modern energy services is a major concern among developing countries and a somewhat lesser concern in EITs. The figure of two billion people currently without electricity (and growing) is commonly cited. This statistic, however, does not tell the whole story. Among developing countries and EITs, access to electricity varies widely, even when aggregated to major world regions. In some regions, access is keeping up with population growth; in others it is not.

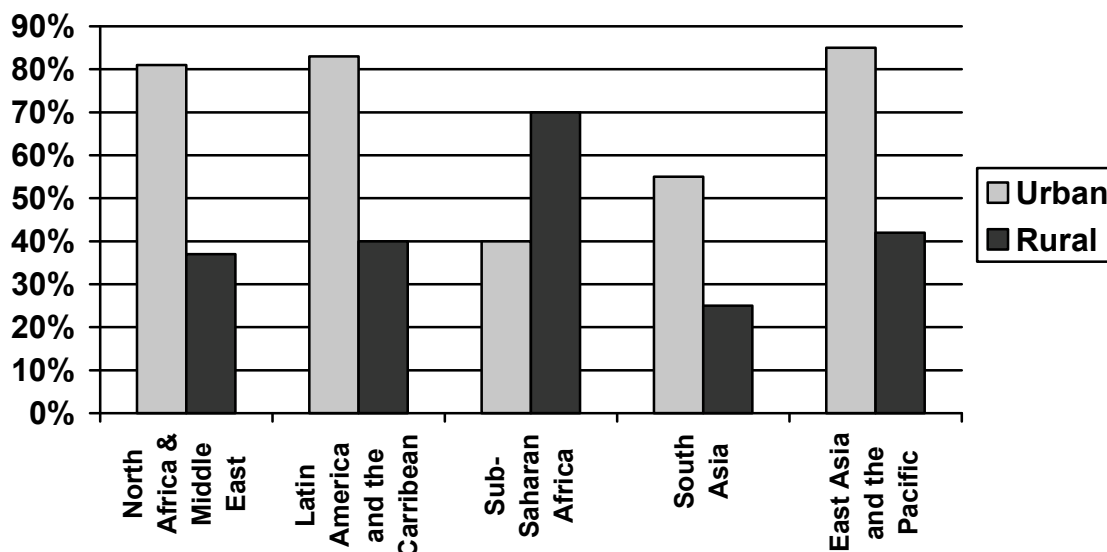
Although the lack of access is a much more serious problem in rural areas, urban areas in many countries also have pockets of the population with inadequate access (see Figure 6). In some cases, up to 50% of a city's population may be in "informal settlements." For them, a whole range of services is lacking. Generally, urban households and communities without access to power also have limited or no access to other infrastructure services: water, other fuels, sanitation, and refuse removal. Usually these consumers will have access to and rely heavily on a variety of non-grid based fuels and non-conventional means to supply energy (i.e., kerosene, batteries, candles, small generators, and illegal connections) for a few end-uses (lighting, cooking, TV and possibly refrigeration). These sources tend to be dirty, dangerous, or difficult to procure.

Although access is more problematic with electricity than with fuels such as kerosene and LPG, in EITs consumers in some urban areas (particularly those served by district heating) have limited access to different energy sources. In some EITs, the state has pre-determined the mix of energy sources to be supplied, especially district heating vs. natural gas.

Most governments in countries with energy access problems have stated policy goals to improve access that are manifested through state-owned and operated utility companies. The generally poor results in achieving these goals stem from limited financial resources and political considerations. Stories abound about consumers sometimes having to wait years before finally receiving service, due to rigid planning schedules or installation backlogs of service hookups (i.e., the meters, wires and/or pipes to extend service from the distribution grid to the point of end-use). These problems are not confined to one class of customer.

Governments may claim progress toward universal service by failing to distinguish between access and coverage. Access refers to the physical availability of service, such as a line connecting a village to the grid. Most households in the village, however, may not be covered because they cannot afford to pay for the wires and meters.

Figure 6
Percentage of Population in Developing Countries Served by Power in 1990



In countries where electricity distribution is state-owned and operated, selecting unserved communities for new connections is often based more on political favors and vote-seeking than on technical or economic criteria.

Similarly, political considerations may lead governments to give preferential access to some customer classes over others when demand exceeds supply under a state-run system. For example, some states in India give priority to landed farmers for electricity, which leaves such a shortage that some industrial customers must generate their own power.

In countries with large rural population without service, governments and international organizations have mounted significant and varied efforts to help these populations gain access. Where communities are too far from the grid to justify grid extension, off-grid electricity sources are used such as diesel generators. These generators require substantial maintenance, not to mention fuel to be transported. Other off-grid alternatives, such as renewable energy sources, have also been tried.

Few such public sector efforts can be characterized as successful in terms of economic sustainability. The subsidies required were very large, the systems installed were few (and often ceased working after a short period of time), and the targeted service providers (usually the government-owned electricity companies) were generally unenthusiastic or unsuccessful in making such services viable for the company. Donors and national governments often focused on demonstrating the technologies without adapting them to local conditions and community capabilities. Moreover, the tendency for donors to “gold plate” the installations led to the conclusion that they would be unaffordable without continued heavy support by outside interests.

Rural households often secure fuelwood and informal energy services (e.g., informal mini-grids, battery charging or kerosene, LPG, charcoal supply.) In many cases, the non-grid,

2. Key Social Dimensions of Energy Sector Reforms....

commercial fuels are not subsidized whereas electricity is, with the consequence that the rural poor pay much more for much lower-quality energy service.

2.1.1 Impacts of Reform on Rural Access

The evidence on the impact of reform varies by the type of access problem encountered. Rural consumers who are isolated from the grid by distance from the nearest transmission line (the bulk of those lacking access) are affected differently than urban consumers. There has been very little change after reforms in the access to electricity services for rural consumers. When electricity distribution companies are privatized, customers who have limited ability to pay for receiving a new connection or who are located in remote areas with a high cost of service extension often remain under-served. The new owners often cannot justify the costs associated with extending lines to most of these under-served households or communities. In countries where renewably-based power generation was donor-driven in the pre-reform era, private agents may be leery about entering the off-grid market.

When government-owned and managed enterprises (that had not yet served certain customer classes or geographic regions) are privatized, the new owners may still be subject to mandates to improve access to energy services. Usually, however, the mandate is limited by cost recovery and the necessity of maintaining the economic viability of the now-private and regulated enterprise (see the Brazil case study in Appendix B). In such cases, the trade-off between profit and achieving access goals becomes an issue in the negotiations with the purchasers. At the same time, decisions regarding service extension to specific communities become less subject to political influence and more to economic criteria.

Reforms (such as price decontrol) in the fuels sector can affect the access of rural households to informal sources of energy. The change can be beneficial or negative depending on the starting condition (e.g., existence of subsidies). In India, liberalizing access to LPG reduced its price and increased the use of LPG by upper and middle class consumers, relieving demand for wood fuels so that they can be reserved as fuels of last resort.⁶

2.1.2 Urban Access Impacts

Among urban customers, changes in access vary according to those within a distribution system but not connected versus those in areas isolated from the grid, versus those that are "captive" to a single energy source. Still, overall access to energy services has improved for most urban consumers after privatization.

In the short run, access can be improved in urban areas by reducing line losses, which makes more power and distribution infrastructure available to customers. Privatized companies thus focus initially on reducing technical and nontechnical losses, including means for reducing power theft. In Argentina, one company was losing about \$10 million a month until it dealt with non-technical losses (and profits turned around to be about \$5 million a

⁶ Albouy, Yves. 1999. World Bank, Staff Note, "Impact of Power Sector Reforms."

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month). Presumably, many nonpaying customers became paying customers. By improving its revenue stream, a company can better afford to extend access.

Once losses are under control, the privatized companies generally turn to increasing the number and level of services offered, and eliminating any backlog in requests for service still outstanding. Urban consumers on established distribution lines generally have experienced far less delay than those off the system, as long as they could pay the hook-up fee.

Urban customers who formerly had but a single source of energy (e.g., only electricity available for cooking) are also experiencing better access. In several Central and Eastern European nations (cold-climate countries with outmoded and inefficient district heating systems), the district heating companies have been privatized and natural gas distribution systems have been extended. Where the privatization process has been completed, the district heating companies are installing meters on individual residences and apartments to improve revenue collection and the efficiency of their operations. Natural gas has begun to penetrate and compete directly with district heating for space heating and with electricity for cooking.

For urban consumers who are isolated from a distribution system, such as those in urban slum areas in cities, energy sector reform has provided little improvement in access. Millions of people in Latin American cities remain in this situation. Most slum dwellings are substandard, illegal, and vulnerable to removal. The connection cost of serving a new area is so high (compared to the likely revenue stream from very modest levels of use) that private grid-based companies are reluctant to extend their grids into the area. They may even be precluded from doing so by regulations requiring that hookups can only be made to legal dwellings or dwellings built to certain standards.

Even where distribution systems now reach urban consumers, hook-up costs may be outside the financial means of people. Others already connected were formerly not paying for the electricity they used. The privatized power company faces the dilemma of how to move toward profitability without incurring a political backlash from cutting off service to poor people.

Table 2 summarizes several relationships between reform and access to service.

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Table 2 Relationship between Types of Reforms and Access to Energy Services			
Access Issue	Typical Pre-Reform Condition	Category of Reform	Implications
Extension of electricity grid to rural and poor urban communities and households	Universal access mandates often expressed through national grid extension plans, but investment often lags behind plans	Privatization of electricity distribution companies	Little change in access when privatized distribution companies have limited mandatory responsibilities for service extension and when new markets are not profitable
Cost of new hook-ups	The charge for new hook-ups to urban and rural consumers may be prohibitive; alternatively, they may be subsidized	Privatization of electricity distribution companies	Elimination of subsidies for hook-ups would reduce the ability of low-income households to be connected, but informal customers may become paying customers.
Availability of fuel supplies to rural areas	Limited availability of kerosene, diesel, propane, and other fuels; often not delivered to the point of use	Liberalization of access, reduction of subsidies	Improved access to fuel suppliers
Legacy systems (e.g., district heating)	Monopoly excluding other options by government mandate	Privatization, competition	Improved access to service options

2.2 AFFORDABILITY OF SERVICE

In general, electricity and other energy services are less affordable in developing countries and EITs than in industrialized countries because the cost of providing the services is almost as high, but average income is much lower. To enhance affordability, the price of energy services to consumers has a long history of subsidization. The form of subsidy varies widely. Governments may set prices for energy goods and services directly through public enterprises, or indirectly through regulation. In many developing countries, the energy supply chain is owned and managed in whole or in part by the government. When it controls prices, it does so most often on behalf of residential, rural, and low-income customers but also to stimulate economic development. Countries with extensive energy resources may cap domestic energy prices or impose export restrictions, thus keeping domestic prices artificially low.

At the same time, poor people may not be the primary beneficiaries of energy subsidies. Although the subsidies themselves may have been implemented in the name of ensuring

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ability to pay for energy services, their benefits and costs are often skewed such that they are regressive in their distributional effects.⁷ According to one study, for example, the distribution of electricity subsidies for irrigation pumps in India is regressive in that more well-to-do farmers receive a disproportionate share of the benefits.⁸ In Guatemala, high-income households benefit the most from subsidies to electricity consumption.

Energy subsidies drain resources from other uses. A recent IEA report analyzed energy subsidies and their economic and fiscal impacts in eight countries. The findings indicate an enormous potential windfall to the governments were these subsidies to be discontinued – the over \$100 billion totaled among these countries that could be reallocated to other social purposes (see Table 3).⁹

Besides price controls, other measures that affect the price of energy include direct financial support to fuel production and supply and electricity services, direct support for energy consumers, deviations from the level of taxation applied to other production or consumption activities, trade policies, and policies that improve investment conditions for the energy sector. For example, grants, loans, and tax breaks may be offered to energy producers and distributors.

In addition to measures that lower the overall cost of energy, cross-subsidies exist when tariffs that are below the cost of production are charged to one group of customers, and the revenue shortfall is made up by charging above-cost tariffs to another group of customers. Cross-subsidies from industrial users to residential users are common in many developing countries. When cross-subsidies contribute to a gap between supply and demand (as in India), they affect the prices paid by unsubsidized customer classes, which must compete for a diminished supply of energy. Other types of cross-subsidies occur when:

- a single tariff structure is applied to customers with a wide diversity of supply costs, such as urban and rural customers or industrial vs. residential consumers

- power companies raise tariffs to cover losses from non-paying customers or

- district heating companies undercharge for heat and overcharge for electricity.

In 1990 many developing countries were subsidizing various fuels, especially those used by households. In a study of 20 countries that account for 77% of the developing world's energy consumption, fossil fuel subsidies were about \$119 billion in 1990-91 (defined as the difference between border and domestic prices). By this measure, electricity price subsidies alone are estimated to have totaled about \$54 billion, for an average of 3.6% of GNP for these countries.¹⁰

⁷ International Energy Agency. 1999. *World Energy Outlook 1999 Insights, Looking at Energy Subsidies: Getting Prices Right*. Paris, France, pp. 49-50.

⁸ Sant, Girish and Shantanu Dixit. 1996. "Beneficiaries of the IPS Subsidy and the Impact of Tariff-Hike." PRAYAS, Pune, India, unpublished.

⁹ International Energy Agency. *Looking at Energy Subsidies*, op. cit.

¹⁰ World Bank. 1997. *Expanding the Measure of Wealth: Indicators of Environmentally Sustainable Development*. Environmentally Sustainable Development Studies and Monographs Series. No. 17. Washington, DC.

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	Subsidy Rate (% of Reference Price)	Efficiency Cost of Subsidies (US\$ billion)	Indicative Budget Costs (US\$ billion)
China	10.9	3.6	29.1
Russia	32.5	6.5	31.2
India	14.2	1.6	9.2
Indonesia	27.5	0.2	1.2
Iran	80.4	3.6	13.2
South Africa	6.4	.01	12.9
Venezuela	57.6	1.2	4.9
Kazakhstan	18.2	.03	1.4

2.2.1 Effects of Reform on Affordability: Subsidies

Sectoral reforms affect the price of energy services in two countervailing ways. On the one hand, to the extent that the prices of some energy services were subsidized in the pre-reformed sector, the reduction or elimination of subsidies (combined with more effective revenue collection) will increase the amount of money consumers pay for a unit of energy. On the other, to the extent that reforms result in more efficient operation of the sector and the emergence of competition, the unit cost of energy production may decrease or at least be less than it would have been without reforms. In the power sector, reforms may result in improved efficiencies, and thus cost savings, in generation, transmission, and distribution.

To the extent that there are savings, they may or may not be passed on to consumers. How much is passed on can depend significantly on the degree of choice of suppliers that consumers have after reform.

Since 1990-91, many developing countries have substantially reduced their energy subsidies (see, for example, Figure 7). Moreover, in a survey of 72 countries, the World Bank found that by mid-1998, 25% had eliminated government controls over retail oil product prices.¹²

Still, energy subsidies are far from eliminated in many countries. Although India has proposed to recover at least 50% of the cost of electricity production through tariffs, prices remain very low and revenue collection poor.

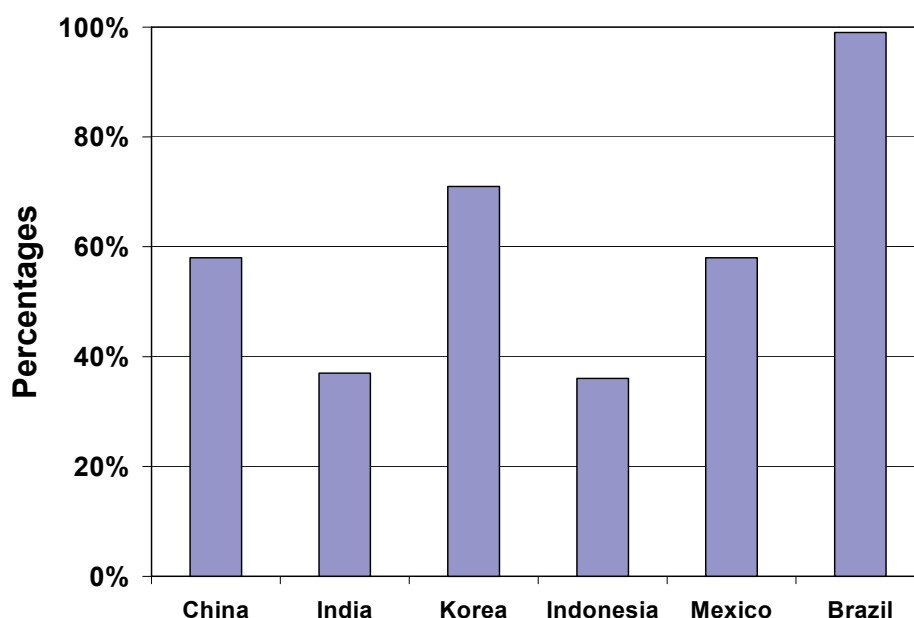
¹¹ International Energy Agency. *World Energy Outlook 1999*, op. cit.

¹² Bacon, Robert. 1998. "A Scorecard for Energy Reform in Developing Countries." *Private Sector Note*, No. 175, World Bank, April.

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Reductions in energy subsidies cause energy prices for consumers to increase. When energy prices increase, poor people and those on fixed incomes may simply use less energy, substitute other forms of energy (such as wood for kerosene as a cooking fuel), or decrease other household expenditures to pay for energy. Compared to consumers in industrialized countries, energy constitutes a larger share of total household expenditures, and more energy efficient end-use equipment is often less available or less affordable. Depending on price elasticity, demand will fall, which mitigates the long-term price impact of subsidy removal.

Figure 7
Percentage Energy Subsidy Reduction in Six Countries from 1991 to 1996



Source: World Bank. 1997. *Expanding the Measure of Wealth*, op. cit.

Depending on how the subsidies are reformed, the energy price structure could become more progressive. For example, a government may retain some degree of cross-subsidies or subsidies that are well-targeted to those who really need them.

2.2.2 Effects of Reform on Affordability: Costs and Prices

An important rationale for energy sector reforms is that they will stimulate managerial and other efficiency improvements that will lower the cost of energy relative to what it would have been without the reforms. Indeed, almost without exception, privatization or corporatization has resulted in large cost savings. As noted in the section below on labor, a significant portion of the cost savings accrues from reducing the size of the workforce. Reducing non-technical and technical losses are two other primary means of reducing costs. However, the extent to which these reductions in the cost of service are passed on to customers or alternatively

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captured by the energy supplier (and its shareholders) depends on the competitiveness of the market and, if regulated, on the form of regulation.

Most governments have retained control over prices in some way, even after reform. This control is embodied in the final review and approval of retail prices, a role that is assigned to the regulator and may also be linked to the degree of competition allowed in a particular customer segment. Price cap-type regulation is particularly favored for its incentive effect.

In Brazil, price cap-type regulation allows privatized electric distribution companies to appropriate productivity gains. This gives utilities an incentive to improve internal productivity. At the same time, the concession contracts provide for full pass-through to customers of inflation, fuel costs, and any new taxes for up to eight years. Thus, rates might increase in the short term, but decrease in the long term, at least relative to what would have prevailed in the absence of reform.

In Argentina, prices were decontrolled for “free” customers (having access to the spot market); a framework for controlling retail prices was established for customers not having access to different suppliers; and a timetable for providing access to smaller classes of consumers was established. Prices have generally been lower, except in costly service territories in the provinces. In Hungary, where the regulators approve retail prices of electricity and natural gas, pressure by new (foreign) owners appears to have limited the pricing options available to consumers.¹³

Reforms affect the affordability of electricity services in at least one other way. In countries where subsidy reduction causes significant price increases, using energy more efficiently can soften the blow to consumers. Since many consumers lack the capital to install energy-saving measures, either they need access to financing or another actor needs to finance and install the measures. From the utility’s perspective, where prices are subject to a cap, there is little incentive to provide financing or other energy efficiency services. Since prices are fixed, the only way to maximize profits is to sell as much electricity as possible. In contrast, revenue cap-type regulation could potentially allow the same level of profit if rate increases made up for decreases in sales.

Table 4 below summarizes several relationships between affordability and energy sector reforms.

¹³ Amon, Ada. 1997. “Energy Regulation and Privatization – A Hungarian Case Study,” Energy Club paper presented at the World Bank – NGO Dialogue, Washington, DC.

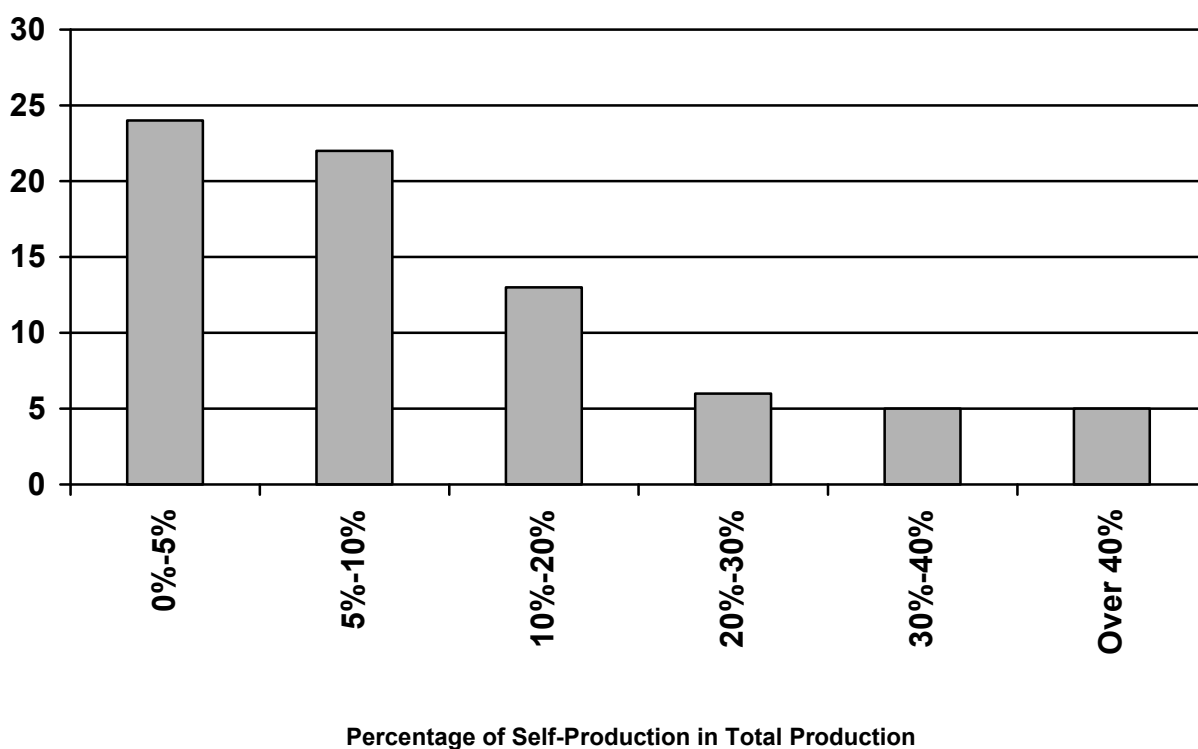
2. Key Social Dimensions of Energy Sector Reforms....

Table 4 Relationships between Energy Reforms and Affordability			
Affordability Issue	Typical Pre-Reform Condition	Category of Reform	Implications
Fossil fuel prices	Public enterprises that extract, transport, or sell indigenous fossil fuels are often subsidized; consumer prices are controlled; revenues subsidize other government services	Commercialization, privatization, introduction of competition; prices allowed to rise to market levels and price increases passed on to electricity generators	Affordability is diminished to the extent that fuel price increases are passed through to consumers
Wholesale electricity prices	Public enterprises that generate electricity are often subsidized	Commercialization, privatization, introduction of competition; prices allowed to respond to the market	Affordability is diminished to the extent that generation price increases are passed through to consumers To the extent that generation efficiencies from competition are passed through, affordability may be enhanced
Retail electricity prices	Below-cost rates for low-income and rural customers; proceeds diverted to other government services	Commercialization, privatization, introduction of competition often with price caps and customer choice of supplier Form of regulation affects utility incentive regarding end-use efficiency	Retail prices increase for previously subsidized customer classes costs Competition/choice of supplier may hold down rates and narrow margins
Revenue collection	In some countries, customers tap into lines illegally or do not pay for electricity used	Privatization	Improved revenue collection and reduced losses
District heating service	Subsidized, monopoly	Commercialization or privatization Competition with other fuels (e.g., gas)	Prices move towards real costs; metering added; variety of fuels introduced

2.3 QUALITY OF ENERGY SERVICES

The quality of energy services before and after reform can be compared with respect to reliability, choice of supplier, choice in the type of services offered, responsiveness of suppliers, and fuel quality. Of these, poor service reliability has been a major rationale for energy sector reform, especially privatization. The cost of unreliable service is felt in reduced quality of life and economic productivity, and the need to invest in back-up generation. In many developing countries, the high cost of outages has led some industrial customers to provide their own generation or back-up units as illustrated in Figure 8.

Figure 8
Number of Countries with Different Levels of Reliance on Self-Generation



Source: Heidarian, Jamshid and W. Gary. 1996. *Power Statistics for Developing Countries, 1987-1991*. Washington, DC: The World Bank.

There are other quality issues for hydrocarbon fuels, including regularity of service (how often fuel cylinders are refilled), adulteration of fuels, short weighting, and monitoring the grade of fuels. Poor fuel quality is a major health and comfort concern for consumers who cannot afford or do not have access to higher-quality fuels.

In terms of service reliability issues, many state-owned enterprises have a poor track record on scheduled and unscheduled blackouts. Local distribution system outages (caused by lack of maintenance or investment in the distribution infrastructure) have very different social implications than major system-wide outages (caused by insufficient transmission capacity, inadequate interconnection procedures, etc.).

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Of the various dimensions of service quality, the effects of privatization on service reliability have been generally, but not uniformly, positive. In Brazil, local service quality improved following some privatizations, but deteriorated following others (as measured by length and frequency of interruptions per customer). According to one observer, variables that explain these differences among companies include the preservation of institutional memory in the company as a function of the method of personnel reductions, and the level of capital investment versus dividend distribution following privatization. Opponents of privatization in Brazil point to major outages as direct effects of privatization.

Besides reliability, opening up the energy sector to competition may expand the choice of service offerings available to consumers. This is a major positive impact in the EITs, where increased responsiveness, choice of fuel, and choice of supplier are most relevant. These consumers have a range of preferences that involve the trade-offs between reliability and cost, in which some may prefer to pay a lower rate in exchange for being cut off when demand peaks. In developing countries, expanded service choices must be meaningful to consumers; otherwise, they will be seen as increased complexity without a real benefit. For example, demand limitations via a prepaid "credit card" may allow them to pay as they go when they can afford to, whereas more sophisticated time-of-use pricing may be of less interest to these consumers.

The liberalization of energy prices or reform of state controls, such as the rationing of certain fuels, can have the effect of moving those consumers who can afford it to higher-quality fuels and energy sources (natural gas, electricity or LPG). These consumers are willing to pay more for the convenience or cleanliness of these fuels than their previous alternatives. This move can in turn relieve demand for lower-quality fuels and help lower-income consumers to be able to afford more fuel or better fuel than they previously could. They too are willing to switch to, and in some cases to pay more for, the benefits associated with higher-quality fuels. In Hyderabad, India, a combination of price liberalization and the elimination of rationing controls changed the fuel use of all segments of society.

To date, the introduction of retail competition has had little effect on the range of services offered to lower-income consumers. Most observers feel it is too early to expect significant expansion in the types of services offered, and service providers still hold out the possibility of instituting value-added services in the near future. There is an expectation that thin margins, coupled with the ability of a customer to choose another supplier, will motivate retail suppliers to expand the range of service offerings.

Table 5 summarizes several relationships between energy sector reforms and service quality.

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Table 5 Relationship between Energy Reforms and Quality of Energy Services			
Quality of Energy Services	Typical Pre-Reform Condition	Category of Reform	Implications
Availability of parts for equipment and maintenance expertise for supplying rural energy services	Equipment in rural areas provided by the government is often malfunctioning due to lack of parts or servicing	Introduction of competition for the provision of rural energy services	New entrants in the rural market only if business appears attractive
Hours per day of electricity flowing in the wires	Electricity may flow through the wires only intermittently	Privatization, commercialization	Improvement in the amount of time that electricity is available Improved productivity, greater economic investment
Voltage fluctuations	Extent of voltage fluctuations ranges widely by country	Privatization, commercialization, unbundling	Reduced equipment damage as a result of voltage fluctuations
Unscheduled and scheduled service interruptions	Frequency of service interruptions varies widely by country	Privatization, commercialization	Efforts to reduce technical and non-technical losses improve service Improved productivity
Choice and responsiveness in service options	Monopoly providers offer little choice in services	Privatization and competition	Greater range of choice offered Greater consumer satisfaction

2.4 LABOR ISSUES

Most EITs and developing countries enter into restructuring with a public sector labor force that has surplus employees (i.e., their marginal contribution to the services provided is relatively low). This force operates in energy utilities such as electricity and gas services and other public energy sector enterprises such as fuel production (not to mention telecommunications, sewage and sanitation services, and some forms of public transportation).

The pre-reform labor force may be redundant for several reasons. Public sector employment has been used to increase employment in difficult economic periods. Turnover is slow because some state-owned enterprises are required to make lifetime hires (as in Egypt). The jobs provide a safety net, including such benefits as health and child care, education, provision of energy and municipal services, operation of stores, and the bulk procurement of foodstuffs. Such services fulfill some of the benefits that social programs provide in industrialized countries. Also, public enterprises in the energy sector have typically been operated according to civil service rules and contracts. These may be interpreted as

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“acquired rights.” In EU countries or countries attempting to join the EU, these acquired rights must be carried over to the new owner according to the Acquired Rights Directive (EC 77/187).

In addition to public enterprises, some governments support employment in communities dependent on fuel production enterprises (such as coal mining) by providing subsidies to these enterprises. The subsidies may be in the form of mandatory purchases of domestic fuel or high tariffs imposed on imported fuel. For these “company towns,” dependence on the state enterprises extends beyond the direct employees and their families to include establishments that provide other goods and services.

Reforms affect labor conditions in several ways. The reduction of subsidies to an energy industry may reduce demand for the service it provides, which may reduce the number of personnel needed to operate the enterprise. Once the decision is made to privatize, many public enterprises seek to shed employees to make themselves more attractive to investors. When the privatized sector becomes subject to price competition, there will be further pressure to reduce labor in an effort to minimize costs. The decreased employment may or may not be offset by increased employment in more competitive fuel industries or as the sector expands overall.

Governments face several choices on how to downsize. Retrenchment options include reducing the labor force *before* privatization to make the enterprise more attractive to private investors, reducing it *afterwards* given that the new owner may be more adept at reducing labor, or a hybrid of the two. Methods to reduce employees include natural attrition, early retirement, and voluntary or mandatory departure programs.

The process is not easy, since the benefits associated with civil service may make it unattractive for surplus employees to seek other jobs, and their union contracts may make it difficult to lay them off. So-called voluntary retirements may have coercive aspects or may involve high costs. Moreover, unlike low-income and rural people whose access to policy-makers does not reflect their numbers, public service employees are often represented by unions with substantial political clout. The privatization process has been accompanied by labor strikes and demonstrations in several countries. “Unions and state enterprise workers are among the most vocal and organized opponents of privatization, often taking actions that threaten or delay reform.”¹⁴

In the Indian state of Uttar Pradesh, 89,000 power workers went on strike for 11 days in early 2000 out of justified concern that the proposed reforms would threaten their jobs as well as the bribes some receive for providing service. In this case, the government sent 1,100 replacement workers to keep the power flowing.¹⁵

¹⁴ Kikeri, Sunita. 1998. *Privatization and Labor, What Happens to Workers when Governments Divest?* World Bank Technical Paper #396, Washington, DC.

¹⁵ Dugger, Celia. 2000. “India Tries to Plug a Cash Drain: Its Power System.” *New York Times*. February 6, p. 4.

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Among four privatized electric distribution companies in Brazil, the average number of employees per customer dropped by more than 50% over the privatization period.¹⁶ Similar or greater percentage reductions in the number of employees have occurred elsewhere. The more workers were protected, the more are likely to be laid off. In the Czech Republic, the electricity sector experienced a 20% reduction in its labor force in one year and in Hungary a 33% reduction in four years. Higher job losses have been associated with electricity than with gas company privatizations.¹⁷

The impact of reforms on public employees who kept their jobs is mixed. In Argentina and Chile, privatized electricity companies increased wages and introduced profit-sharing schemes. However, modifications to work rules were sometimes extracted by the new owners as part of the incentive package for employees. These included increasing the work week, linking wages to productivity, eliminating certain types of overtime and leave (as in the case of an electricity company serving Buenos Aires), and consolidating labor contracts to allow managers to reallocate labor.

For laid-off employees, the impact has also been mixed. On the one hand, public sector labor forces have traditionally been accustomed to civil service careers and an employment safety net. Once released from their employment in the energy enterprise, they may have difficulty in finding jobs outside the enterprise or adjusting to the conditions in the labor market outside public service.

At the same time, the increased investment and improved efficiency associated with privatization result in substantial job creation, which is especially prominent where there is pent-up demand for services such as new gas or electric service hook-ups. The level of employment cuts experienced in most privatization schemes is “absorbable” within the economy, except where the privatization occurred simultaneously with economic downturn, such as in several EITs. In countries without unemployment and social welfare benefits, the effects of privatization are particularly difficult to offset.

Reform can also have regional effects. When public sector enterprises in company towns are privatized, shut down, or experience down-sizing due to loss of subsidized sales, the economic effects can be far-reaching. This has been a critical issue in the FSU/ECE.

Table 6 summarizes several relationships between energy sector reforms and labor issues.

¹⁶ Schmid, Aloisio Leoni, Marcelo Oliveira Mota, and Osvaldo Soliano Pereira. 2000. “Social Impacts of the Energy Sector Reforms in Brazil.” Winrock International. Unpublished background paper submitted to PA, January.

¹⁷ Hall, David. 1998. “Restructuring and Privatization in the Public Utilities – Europe.” *Labour and Social Dimensions of Privatization and Restructuring – Public Utilities* (water, gas, electricity), Geneva: ILO.

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Table 6 Relationships between Energy Sector Reforms and Labor Conditions			
Energy Sector Employers	Typical Pre-Reform Conditions	Type of Reform	Implications
Public fuel sector enterprises	Surplus labor	Privatization	Employment reduction; loss of community viability
Government energy ministries	Surplus civil service personnel	Reduction of government role in the energy sector except for regulation	Re-assignment to other ministries
Public energy services enterprises	Surplus labor, bundled services and benefits (e.g., canteens, child care), community dependency on public enterprise	Privatization	Employment reduction and loss of ancillary services and benefits, loss of community employment and vitality
Private sector fuel suppliers	Subsidized fuel prices or requirements to use indigenous fuels artificially prop up the suppliers	Remove subsidies and import restrictions	Mine closures, resettlement of populations

3. POLICY INITIATIVES TO ADDRESS SOCIAL IMPACTS

Several countries have implemented initiatives to mitigate the adverse social consequences of energy sector reforms and more broadly spread the benefits. This chapter summarizes and evaluates several initiatives that address the four social issues discussed in Chapter 3.

3.1 ACCESS TO SERVICE

Rural and urban access problems have some similarities, but there are also important differences in the range of policy initiatives implemented to improve access to energy services.

3.1.1 Provisions in Privatization Agreements

One common initiative is a provision written into privatization agreements that requires some level of service extension as a condition of acquisition. The provision may also provide incentives such as subsidies for grid extension or off-grid electrification. Such provisions are generally in the form of performance goals for customers or communities served. They are often accompanied by subsidies to make up the difference between the relatively high costs (of installation, and operation and maintenance) and low revenues from serving isolated, often low-income consumers.

Chile and Argentina both established such goals and incorporated them into the privatization agreements with the affected companies (some of which do not have unserved rural consumers in their territories). Only a small percentage of Chile's population was not connected, so it could impose access requirements in the privatization without killing the deal. But in Argentina, the higher degree of subsidization needed has led to the federal and state governments taking on some of the financial burden by including specific compensation mechanisms for increasing access to isolated consumers. Yet, these compensation mechanisms have not been particularly effective to date in increasing the numbers of people served, primarily due to the time that it takes to get such operations up and running and the lack of ready service providers.

Brazil faces a similar challenge: one privatized electric distribution company has met its target rates of connection by developing agreements with the local community for collecting payments.

3.1.2 Concessions Models

A few governments have adopted a concession model that allows for private sector entities (businesses, cooperatives, non-government organizations) to bid for concessions to supply services in a territory not served by the primary monopoly service provider. The Government of Argentina has pioneered an approach to rural access that requires privatized distribution companies to make investments in least-cost extension of services to rural communities.

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Argentina's Approach to Rural Electricity Services

To promote the extension of electricity services into rural areas, the Argentinean Government has initiated the Electricity Supply Program for the Rural Dispersed Population in cooperation with participating provincial regulatory authorities. Under this program, priority is given to photovoltaic panels, small windmills, micro-hydro turbines, and diesel-driven generators. The total estimated investment of US \$314 million would be shared, with 45% paid by users, 25% from provincial subsidies, and 30% from national subsidies.

Concessions are being competitively granted to one or more private enterprise in each province on the basis of lowest subsidy required per supplied user, as well as technical and financial qualifications. The concession will run for 45 years, divided into periods of 15 years, at which points the regulatory authority will call for a new bidding process with the prevailing concessionaire having priority. Rates are negotiated between the concessionaire and regulatory authority for five-year periods. The concession will be exclusive for users up to 90 kWh/month.

It is too early to determine the effectiveness of this approach. Two concessions had been awarded as of 1998. For each, there were four or five bidders, with a wide range in the bid values offered for combined rural and urban concessions. The winning concessionaires, who are established utilities in other countries, are beginning with community applications to gain experience in their markets. The next stage will tender separate offers for the urban and rural markets, although the same bidder may bid for both.

3.1.3 Trust Funds

Several countries have adopted some form of trust funds, such as using privatization proceeds to address access or other social issues. The experience to date is mixed, and the allocation of financial resources from these funds is not typically driven by explicit policy mandates. Chile created such a fund to be used by rural cooperatives to expand service, and Argentina also created such a fund. Guatemala created a Trust Fund for Rural Electrification with part of the proceeds from the sale of generating and distribution companies, but the Trust Fund has received only about half of the maximum amount allowed (see Appendix C).

The Government of Brazil has earmarked a portion of a national fund (RGR) for low-income programs, rural electrification, and energy efficiency, especially in the poorer regions of the country. This fund, however, will expire in a few years.

3.1.4 Integrated Infrastructure Initiatives

A set of pilot projects in Brazil is using an integrated approach to the problem of urban infrastructure. In the Guarapiranga project in Sao Paulo, a range of actions is being taken to improve infrastructure in slum areas. It includes the removal of structures from risk areas, the opening up of new access roads, the building of stormwater drainage, water supply and sewerage, power and public lighting infrastructure, household hook-ups to the new infrastructure, and the paving of roads and sidewalks. The results to date have been promising.

3.2 AFFORDABILITY OF SERVICE

Because poorer consumers have generally experienced higher prices after reform, a number of policy initiatives have been developed to offset these negative effects. These generally fall into one of three categories: retaining but reformulating subsidies for the poorest consumers, devising tariff structures that differentiate prices by the cost of service, and providing direct assistance to help them to reduce their consumption. The timing of these different approaches' application is important and is discussed below.

3.2.1 Subsidies for Purchasing Subsistence Amounts of Energy for the Poorest

There are several options for providing subsistence amounts of energy to poor people, sometimes provided for in the legislation accompanying sector reforms. One option is a cross-subsidy in which rates to low-income customer classes are kept low, while rates to other classes are raised in order to make up the difference in revenues to the investor. Another option is a fund established by the government to assist low-income customers in paying energy bills. Another is a rate structure whose lowest usage block is at a low rate (sometimes referred to as a "lifeline" rate). Although in use in the United States (see Appendix A), this option has not been too widely adopted in developing countries (see Appendix B).

There are difficulties inherent with subsidies to low-income customers for subsistence amounts of energy, including the challenge of effectively isolating and targeting the subsidy to low-income consumers. Also, the number or proportion of poor consumers in the service territory of one distribution company relative to another may be quite different. In service territories with a high proportion of poor consumers, the economic impact on other consumers who are funding the cross-subsidy could become unacceptable.

3.2.2 Tariff and Payment Options

Governments may encourage, and companies themselves may offer, other options to help poor consumers afford at least subsistence amounts of energy. One promising mechanism is an energy credit card that the consumer purchases up-front and can insert in a "meter" to turn on service to the residence. The meter debits the card as power is used until no credit is left; at this point, the consumer "recharges" it. This option fits the consumption habits of poorer consumers better than a monthly bill that could easily exceed the funds available to the consumer.

This approach is being used in South Africa, where the national utility (Eskom) and a rural energy service company (Shell Solar Home System Ltd.) have formed a joint venture to provide electricity services to rural communities. The venture installs and maintains ownership of solar home systems and is responsible for their maintenance. Magnetic cards are used to store the pre-paid power credit, which is drawn down as it is used. The customer can "refill" the card at local vendors. This is the first time that a magnetic card-based payment has been used for a solar home system. The scheme provides people with the opportunity to

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use solar power without having to make a large up-front investment in equipment that they might not otherwise have been able to afford. The fee the customer is paying for service covers amortized capital costs, as well as the unit's installation and maintenance.

Prices or tariffs that allow consumers to use electricity at lower-cost periods or to be interrupted in return for lower prices may also be attractive to lower-income consumers. The first option requires sophisticated metering and may not be cost-effective for companies to offer to low-use consumers. The second could be handled with existing meters but frankly is a "hard sell" in many countries where interruptions were a normal part of service prior to reform. Most consumers find it very inconvenient to be interrupted without notice and would be willing to pay more to have reliable service, if it were available (see the India case study in Appendix D).

3.2.3 Energy Efficiency Services

In part because of the pressure to keep rates low in a competitive market, retail electricity suppliers have little incentive to provide energy efficiency services that might help poor consumers reduce their consumption through more efficient lighting, appliances or building envelopes. A few programs launched by multilateral banks offer promise in increasing efficiency services or promotions, but they are so immature as to have little or no track record. Indeed, there is more progress on this front in unreformed energy sectors than in reformed ones. One exception to this, however, is the success of the EBRD and other donor programs in launching ESCOs in economies in transition, where energy companies are now actively addressing energy efficiency and fuel conversions in areas with antiquated district heating systems.

3.3 QUALITY OF SERVICE

Several countries have adopted measures to promote incentives in the reformed energy sector for improved service quality. Some policy-makers have written performance measures into the regulatory code, such as providing for customer rebates if blackouts occur or if the utility does not repair faults and reconnect customers within a specified time period. Other countries are maintaining and disseminating to the public statistics on the number and duration of blackouts. In the wake of well-publicized power outages, Brazil's national electric regulatory agency (ANEEL) established service quality standards and required utilities to post their performance in customer bills.

The interconnection of electric systems also improves reliability (and can reduce costs). Countries and regions are actively working to solve the many problems associated with creating interconnected regional grids, for example, bringing differing standards for operation into conformance with one agreed standard. Some problems related to transmission bottlenecks remain to be solved. These problems concern the very large size of the investment vs. uncertain returns. Innovative ownership and investment arrangements, such as joint government and private sector investments, are being explored.

With respect to expanding the choice of service options, the slow rate of trickle down to the smallest consumers could argue for intervention on the part of social programs or

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intermediaries to help the companies tailor services to this untapped group of consumers. In Brazil electricity companies are using a private company to act as a social intermediary in informal settlements to regularize customers. It would be a small stretch to use the same intermediaries to provide a wider range of services to these consumers.

Another service offering would allow electricity users to trade off between service quality, access, and price. Households and businesses in rural and urban areas that do not expect to be connected to the grid for many years may be willing to accept lower-quality service in lieu of no access at all, or a lower-quality service for a lower rate. In order to gain access, users might accept service supplied by “substandard” distribution infrastructure or by a renewable energy system whose output is intermittent or requires more user vigilance and intervention.

Finally, demand management programs and services have been introduced to enhance service quality. Where system capacity is being strained by demand growth, programs to promote end-use efficiency and manage load can improve service reliability.

3.4 LABOR ISSUES

Developing and EIT countries have tried different approaches to minimize labor disruption in the restructuring process. According to a World Bank paper:

To enable privatization, governments need to deal with the issue of labor adjustments early in the reform process. Faced with varying initial conditions--in economic and political environments, legal and institutional frameworks, and enterprise and sector conditions--the ways in which the issues are dealt with are bound to vary from one country and enterprise to the next. *Where few layoffs are involved and labor markets function well, relatively simple measures such as employment guarantees, severance pay, contracting arrangements, and other incentives (such as employee share ownership schemes) suffice. In cases where large-scale layoffs are involved, unions are strong, labor market weaknesses are especially severe, or social safety nets are lacking, additional measures are needed to minimize the social and political costs.* Among the issues for consideration: decision on timing and sequencing, choice of downsizing methods, management of the process, and labor market support for laid off workers. [Italics added for emphasis]¹⁸

A range of mitigating measures can accompany these reductions to assist the departing employees (direct means include employment guarantees, retirement packages, severance pay for layoffs, contracting arrangements, retraining, resettlement assistance, etc.). Some countries have offered worker compensation other than cash payments such as shares in the privatized company.¹⁹ These can be negotiated as part of a privatization package or be left to

¹⁸ The World Bank. 1995. *Private Sector Development in Low-Income Countries*. Washington, DC, p. 121. However, Kiker, op. cit., says that private companies are more “thorough” in their force reduction actions.

¹⁹ Ibid.

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the new owners to decide. The actions that countries have taken to address labor issues fall into six categories: labor reforms implemented prior to restructuring; employment guarantees; severance packages; service contracts; labor participation in the reform process; and retraining and job creation. Each of these is explored in detail in the subsections below.

3.4.1 Labor Reforms Implemented Prior to Restructuring

A few countries have implemented labor reforms independently or in anticipation of sectoral restructuring. Starting early to implement labor market reforms can ease a later move to privatize public services. (Indeed, labor organizations would argue that the “commercialization” of these enterprises could obviate the need to privatize, but industry observers say that the resulting employment reductions would never be extensive enough.) Chile’s early labor reforms (which significantly reduced employment) meant that the privatization of energy services could be accomplished without reductions in the labor force, and in fact increased overall employment due to increased investment. Argentina likewise began employment reductions in sectors that would be privatized in the future (ranging from -2% in telecommunications to -72% in the state oil company), again with the result that further reductions were unnecessary or minimal post-privatization. Clearly these two cases represent labor markets that were functioning well at the time of the changes.

The speed of privatization may make labor dislocations more or less severe. Some governments have prohibited layoffs immediately following the sale of public companies. Policy-makers in Bangladesh, Tunisia, Malaysia, Venezuela and elsewhere have instructed selling agents and buyers that no layoffs would be allowed for a certain period after a sale.

3.4.2 Employment Guarantees

Although not common, some countries have committed to maintain workforce levels.²⁰ Employment guarantees have been negotiated as part of the privatization package with varying success, depending on the degree of redundancy associated with the company to be privatized. In Europe most employees were transferred to the new employer with protections for them written into the conditions of sale.

Employment guarantees ease labor tensions, but can set a dangerous precedent for future privatizations elsewhere. Also, imposing such conditions on the sale becomes reflected in a lower price offered by the prospective purchaser. In some cases, the requirement of employment guarantees has actually stopped the privatization sale from going through because the prospective owner felt the enterprise would become unprofitable under the conditions imposed.

²⁰ International Labour Organization. 1999. *Labor and Social Dimensions of Privatization and Restructuring (Two parts: I – Africa and Asia Pacific; II – Europe/Latin America)*.

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3.4.3 Severance Packages

In some countries where layoffs have been sizable, they have been “sweetened” with generous severance packages. Worker compensation may include lump sum payments, being sent home at half pay, and benefits other than cash payments, such as shares or stock options in the privatized company.²¹ Some countries offered voluntary retirement programs to reduce the workforce as much as possible without resorting to forced layoffs. Governments may choose to handle severance obligations themselves or develop other social safety net measures to ensure that labor concerns are properly addressed.

These measures presume the adequacy of enforceable legal frameworks to support government commitments. In some FSU countries, adequate legal channels do not exist for getting severance payments to recipients.

3.4.4 Service Contracts

Contracting arrangements have been used to ease the need for severance and retirement payments. These are essentially contracts to perform services formerly done by the enterprise. The Argentine national oil company entered into service contracts with over 200 companies formed by over 5,000 former employees. Experience to date with this approach is insufficient to gauge its effectiveness.

3.4.5 Labor Participation in the Reform Process

Increasingly, employees or their representatives (e.g., trade unions) are involved from the start in decisions on how to accomplish the restructuring. In the Czech Republic, a formal consultative process binds all parties (government, employees and employers) in developing legislation and in negotiations with contentious issues handled by the Czech parliament. The Hungarian consultation process has resulted in a fund (5% of monies received for shares) to be used for retraining and redeployment.

According to some observers, it is important to have a regulatory framework or safeguard in place to ensure that employees retain bargaining rights after transfer and that existing collective agreements also migrate to the new employer.²² Agreements with purchasers should include framework agreements on procedures to be followed in the case of necessary force reductions. Hungary is an example of where labor protections were achieved in the process of privatization. Labor organizations favor the EC Acquired Rights Directive mentioned earlier and suggest its more universal application in privatizations worldwide. The European Works Council, which applies to multinationals of a certain size, expresses a firm joint commitment to the fundamental rights set out by the ILO.

²¹ The World Bank. 1995. *Private Sector Development in Low-Income Countries*. Washington, DC, p. 121.

²² International Labour Organization. 1999. *Managing the Privatization and Restructuring of Public Utilities (Water, Gas, Electricity)*.

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In Cape Verde, the national privatization agency has sought to address labor concerns through a public information campaign, involvement of the persons most affected by privatization (workers and managers) in discussing divestiture options, design and use of management-employee buyouts, and proactive support to privatized enterprises that identified sources of technical assistance and financing. The technical assistance helped match retrenched labor with demand in the private sector.²³

3.4.6 Retraining and Job Creation

Some governments have undertaken efforts to mitigate employment impacts by retraining or job creation, with mixed results. Studies show that retraining costs often exceed the benefits to those retrained unless the training is highly targeted. If the only retraining available is through government auspices, the training might not be too effective. If the training is not targeted to the specific sector and the employment opportunities available, its effectiveness is further reduced. The best results have been obtained by on-the-job training. Agreements with the new employers can include vouchers to them to provide the training or reimbursement of part of the employees' salaries. Counseling and job search assistance appear to be more promising than training in terms of benefits and costs.

In designing and implementing measures to mitigate adverse labor impacts, it is important to include local government, which may have new social obligations. Also, the implementation of training and job assistance requires adequate local allocation, distribution, and oversight of funding for these purposes.

²³ The World Bank. 1995. *Private Sector Development in Low-Income Countries*. Washington, DC, p. 95.

4. CONCLUSIONS AND RECOMMENDATIONS

This chapter draws conclusions from the preceding discussion and offers recommendations to developing country policymakers and international development assistance organizations.

4.1 CONCLUSIONS

The social implications of energy sector reform defy easy generalizations. As is the case with other effects of reform (i.e., effects on the environment and markets for clean energy technologies), the social implications depend on which social dimensions are of concern, the pre-reform (starting) conditions, the process used to accomplish the reform, and the specific type of reform chosen. At any stage in the reform process, the terms may be changed with implications for the social effects. For example, when electricity rates spiked in California in 2000-01, local politicians responded to their constituents by re-regulating aspects of the market.

Still, several conclusions can be drawn. Of those offered below, conclusions 4.1.1 to 4.1.4 address respectively the four social dimensions of energy sector reforms that were the focus of Chapter 2; while conclusions 4.1.5 to 4.1.8 are crosscutting and apply to all of them.

4.1.1 Access to Service

Without access to service, the other social implications on the consumer side (price, quality) are largely irrelevant. Large populations in developing countries lacked access to energy services prior to reform. With reform, the driver for expanding access shifts away from government mandates (typically under-funded) and toward market forces and the ability to pay of potential new customers.

For most classes of consumers, access has generally improved in terms of the number of consumers having access to at least one source of modern grid-based energy. In terms of fuel, reforms have enabled natural gas to penetrate markets in some countries. Those who have received the major benefits of improved access can be served profitably, i.e., industrial and commercial consumers and middle and upper class residential consumers. Two main groups representing large blocks of the population, however, have been left out. These are poor rural residents and communities in areas isolated from grid-based energy services, and poor urban residents living in “informal” settlements. Thus energy sector reform has been no panacea for improving access for the poor.

Isolated rural consumers often lack service providers interested in serving them because of perceived questionable economics. Service providers may not offer low-cost alternatives, nor the financing for such alternatives where they are available. The urban poor in informal settlements lack all of the above as well as legal standing, permanence, and adequate physical structures into which to bring the services.

Some government efforts to overcome the problems inherent in serving these poor consumers are bearing fruit. Of particular note are those that were embedded in the

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privatization agreements with the new service providers, sometimes coupled with effective means of providing just enough subsidy to make the service viable. There is more evidence of this for isolated rural communities than the urban poor. For the urban poor, incipient efforts to provide energy services along with a full set of solutions to the problems listed above are showing promise, but need to be scaled up before they could be said to be making an impact.

Additionally, poor urban customers who are not isolated from the grid but cannot afford to hook up need means of financing the hookup. Lower-cost hookups would also help. Given the small amount to be financed, micro-finance would be in order, assuming that availability and access to micro-finance can be addressed.

A special case exists in urban areas of EITs, where some consumers were formerly served by district heating and natural gas was prohibited from areas with district heating. Changes in policies during reform to allow the penetration of natural gas have made access possible. Yet, these consumers may lack the resources to fund the conversion and hook up to natural gas. Programs using energy service companies to convert to gas and assist with energy efficiency upgrades are starting to help these consumers.

4.1.2 Affordability of Service

Most developing countries and EITs began energy sector reform with a history of heavily subsidized energy prices. Because of this, and even though governments have generally retained oversight over retail prices, reforms have generally brought an increase in prices at least for some consumer classes. Poorer consumers were affected the most, unless specific provisions were included in the reform package to provide subsidies to them.

Price effects have also differed depending on geographical conditions. Rural consumers generally cost more to serve than urban consumers because of more extensive and vulnerable distribution systems. These cost differentials have generally been recognized in privatization agreements. Thus, different customer classes have experienced greater increases or less price reduction depending on their respective starting conditions.

In recognition of price impacts on the poor, some governments have built special price caps (for subsistence amounts of energy service) into the privatization agreement or in price regulation. There have been few cases to date in which governments have helped the poor manage their energy costs through efficiency improvement programs.

4.1.3 Quality of Service

Poor quality of service was a major starting point of most reforming energy sectors. The quality of service has generally improved after privatization for most consumers. This includes better response time, better quality of power supplied, and fewer scheduled or unscheduled interruptions due to gaps between supply and demand. Significant new investments in generation capacity and natural gas distribution systems have decreased supply disruptions. Still, some countries are concerned that new capacity investment by private developers will not keep pace with growing demand.

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Some notable power outages (of many days) have occurred soon after privatization (both in developing countries and some developed countries). The reasons include loss of employees familiar with the system and the inheritance of neglected and degraded infrastructure. Such occurrences are not expected to continue once the causes are addressed. Most agreements for privatization or regulatory frameworks include provisions for penalties for companies that fail to provide power reliably. Power quality has improved as companies have invested in capacitors and other related equipment.

Some problems related to transmission bottlenecks remain to be solved. Maintenance of regional system reliability in the future is a concern even in the United States. The interconnection of electric systems also improves reliability (and can reduce costs). Countries and regions are actively working to solve the many problems associated with creating interconnected regional grids, for example, bringing differing standards for operation into conformance with one agreed standard.

To date, retail competition has had little effect on quality of service. Thin margins, coupled with the ability of a customer to choose another supplier, are expected to motivate retail suppliers to expand the range of service offerings.

4.1.4 Labor Issues

Bloated labor forces with generous employment conditions were standard in pre-reform situations. Employment reductions have been significant in most cases, either prior to or after privatization, except where governments negotiated a continuation at the same levels for at least a period of time, post-reform. Increases in employment have even been observed where new investment and increased service levels have required increased labor forces (albeit with different skill sets).

Labor is well-organized and vocal in having its concerns heard during the privatization process. There are cases where reform was stopped because of labor opposition.

Post-reform employment conditions for those employees retained have in most cases improved markedly. Employment reductions have mostly been absorbed over time, although short-term impacts can be quite severe. Privatization agreements usually include aspects of severance packages, retraining for laid off workers, and job counseling. The best results have been achieved where on-the-job training can be provided for displaced workers, and some governments have found ways to provide incentives to employers to provide such training.

4.1.5 Lack of Policy Guidance

This conclusion and those that follow cut across specific social dimensions. Energy sector reforms are often precipitated by a perceived crisis. The political demand is to solve it quickly. As a result, energy sector restructuring is not adequately informed and guided by public policy. In this vacuum, reformers sometimes conflate means and ends. Thus, restructuring itself becomes the policy goal. Alternatively, improved economic efficiency becomes the implicit and sole policy objective.

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Once the decision is taken to move ahead with reforms, the pressures of managing a technically, politically, and institutionally complex process over a short time period has necessarily meant that most developing country governments have not been proactive in addressing all of the associated social impacts or those social impacts that affect only certain consumer groups such as the poor. Rather, they have sought to implement the major reforms first and then address the side effects. Evidence to date shows, however, that it is quite hard to change the conditions agreed upon during reform in the post-reform period. Recognizing the social implications a priori and addressing them during reform would make their resolution more likely.

4.1.6 Uneven Stakeholder Participation in the Reform Process

Public understanding of and meaningful participation in the reform process has been uneven at best. Stakeholder groups that are better organized, have stronger political influence, and have more to lose have had a disproportionate influence on the process. These groups include public employee unions, large energy consumers, and energy suppliers. Rural and low-income stakeholders tend to be less well organized, influential, and knowledgeable about the technical details of the contemplated reforms. The uneven participation by different stakeholder groups has tended to skew consideration of various social impacts.

For their part, most developing country and EIT governments have only limited experience with actively soliciting stakeholder input in a transparent manner. There have been few formal mechanisms designed to elicit the views of smaller energy users and other stakeholders regarding the reform process. As a result, stakeholders have either not been heard or have expressed their views through vehicles outside the reform process, such as labor strikes. The lack of transparency has led to concern that stakeholders with informal access to decision-makers have exercised a disproportionate influence on the outcome.

The social outcomes of energy sector reform appear to be improved where the process is transparent, efforts are made to educate stakeholders about it, and there have been vehicles for input into the process. When energy consumers, labor, and other stakeholders have been involved, the process has been improved. Similarly, where there have been serious efforts to educate the public about the process, opposition in the face of dislocations has been lessened.

4.1.7 Inadequate Funding to Mitigate Adverse Effects

To broaden the benefits of energy sector reforms, governments have established various mechanisms such as lifeline rates, severance packages, retraining for workers, support for off-grid energy systems, etc. All such mechanisms require a source of financing for their implementation. The challenge is to fund these mechanisms without jeopardizing the other benefits of reform. In countries where reforms are generally expected to hold down energy costs through competition (e.g., the United States) and that have a history of social programs and safety nets, it is relatively easy to fund such mechanisms. This is not the case, however, in countries where energy prices are expected to increase due to reforms and the public purse is empty.

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There are several options for the source of funding – taxpayers, ratepayers, energy sector investor/owners, and international development organizations. To date, these have all been used in various countries. For example, non-bypassable charges imposed on energy service providers are essentially a tax on energy use, and creating a dedicated trust fund from privatization proceeds means that tax revenues must be used to fund other social programs. The distributional implications of alternative funding sources depend on the tax structure of the country.

When government-owned assets are sold, the windfall proceeds are allocated among competing public needs. There are many competing policy objectives for how these proceeds are allocated. In Brazil, the national government decided to earmark money exclusively to pay for internal and external debts, while state governments have used the windfalls to bolster public employee pension funds and invest in education and public health infrastructure.

To the extent that laws and policies govern the disposition of these proceeds, they do not typically earmark the funds for specific purposes. It is thus difficult to determine whether the proceeds are used in a manner that promotes sustainable development or redresses the social impacts of privatization. Moreover, the process for allocating the windfalls is not usually participatory or transparent.

4.1.8 Inadequate Attention Paid to Basic Energy Needs that are Outside the Reformed Market

When reforms occur outside of an explicit energy policy framework, they are likely to exclude considerations of how informal energy markets are affected. Where a large informal energy market exists (e.g., India, Africa, parts of Brazil), however, the social impacts of energy sector reform may spill over into the informal market. For example, changes in the price of petroleum-based cooking fuels could affect the demand for fuel wood. Given the large numbers of people still relying on traditional fuels, the interactions between these two “markets” should become an explicit consideration in the analysis of the likely impacts and a subject of efforts to mitigate expected adverse impacts.

4.2 RECOMMENDATIONS

The recommendations presented below generally cut across the four social dimensions. Recommendations 4.2.1 through 4.2.6 are aimed directly at national policy-makers. Recommendations 4.2.7 and 4.2.8 are directed at international assistance organizations. However, this distinction is somewhat artificial in that international assistance organizations, especially MDBs, are often involved in promoting reforms, designing them, and financing the process. Moreover, they are more insulated from the political pressures surrounding the reforms than in-country policy-makers. This position enables them to identify and promote measures that ensure desirable social outcomes and minimize adverse social impacts.

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4.2.1 Integrate Social Dimensions into Planning the Reform Process

National policy-makers should clarify the goals of the proposed energy sector reforms to identify areas of overlap or conflict with social dimensions. Incorporating social implications early into the reform process would help ensure that the social objectives of reform (such as improved service quality and access) are met by the specific reforms chosen.

As part of the planning for reform, reformers should explicitly identify whether and when mitigating measures are to be taken. Depending on local conditions and constraints, the initiatives may fall under one of three approaches: *integral*, *parallel* and *external*. Under the *integral* approach, the government would establish explicit goals for the reforms that address social issues and integrate these goals into the reform process itself. An example would be the establishment of electricity rate structures that provide for a modest level of consumption at low rates. Under the *parallel* approach, the government would establish initiatives within the energy sector that would mitigate the adverse social effects of the reform. An example might be a system benefits charge imposed on electricity distributors to pay for the extension of service to rural or low-income customers. Under the *external* approach, government targets and programs, such as small and medium enterprise development, poverty reduction, women, and training can be applied to this sector.

4.2.2 Improve Public Education and Involvement in the Reform Process

When given the opportunity for open discussion, stakeholders identify multiple goals for restructuring, with varying social implications. Thus, policy-makers should expand opportunities for consumer representation/input in the energy sector reform process as well as in regulatory proceedings addressing access, price, and quality of service issues. The experience of industrialized countries with various forms of stakeholder involvement in the reform process should be examined for adaptation to local conditions.

4.2.3 Evaluate Alternative Sources for Funding Mitigation Measures

Most of the mitigation measures that ameliorate social impacts (lifeline rates, retraining, support for off-grid energy systems, etc.) require a source of funding. Sources of funding include cross-subsidies, privatization proceeds, revenues from taxes on energy use, other tax revenues, and nonbypassable charges collected from energy suppliers (that are generally passed through to energy users) and tapping other related government programs. Policy-makers should select funding sources based on an evaluation of the economic efficiency, equity, administrative and other implications of each alternative source of funding.

4.2.4 Develop a Subsidy Strategy

Policy-makers should develop a step-by-step strategy for reforming and phasing out energy subsidies. The steps might look as follows:

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- 1) Improve transparency and ensure public knowledge of the full range of direct and indirect subsidies.
- 2) Encourage stakeholder and public debate regarding the purpose, effectiveness, and level of the subsidies.
- 3) Identify the energy policy goals most strongly supported by society that are associated with some form of subsidization.
- 4) Convert indirect supports and tax expenditures to direct financial aid to further clarify what is being paid in support of different policy objectives. Estimate the economic benefits from reducing subsidies due to reduced budget costs and recycling revenues (from former subsidies) in the economy.
- 5) For those subsidies to be eliminated, announce the phase-out schedule in advance to allow time for adjustments.

Identify win-win packages for phasing out energy subsidies. One approach would be to assist consumers facing higher energy costs to reduce their consumption through energy efficiency improvements. This could be done through providing loans and grants for energy efficiency investments, or support for ESCOs to offer shared savings-type performance contracts.

4.2.5 Structure Residual Subsidies to Minimize Economic Distortions

For those subsidies to be retained, several criteria should guide their structure:

Limit subsidies to basic energy needs such as cooking, lighting, and heating in cold countries in order to minimize competition with other social needs.

Subsidize access to energy services rather than consumption, such as by providing below-market financing for rural energy entrepreneurs.

Identify opportunities to help subsidy recipients.

Effectively target beneficiaries to minimize free riders.

4.2.6 Adopt an Integrated Approach to Broadening the Benefits of Reform

Social groups initially left out of the benefits of energy sector reforms have development priorities that may or may not coincide with measures that remediate the narrow impacts of reform. For example, some rural communities may need cooking fuel more than they need electricity. Thus, using the proceeds of privatization to extend the grid to these communities would be misplaced.

An integrated and step-wise approach should also be used to address urban access problems. Grid-based energy services cannot be expected to penetrate into unserved urban areas unless they are part of such an integrated approach. Mandates to serve these areas

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must recognize their unique character and be realistic about the service levels that might be achieved.

Integrated approaches, whether for urban or rural communities, require a process of relationship-building and dialogue with the community. They are therefore relatively long-term in nature. In the interim, incremental upgrades in access should be explored. Examples include:

Small-scale, removable photovoltaic systems for minimal lighting and TV or radio

Extension of an electric distribution line to a central point (a sort of micro substation/transformer with a meter with "micro-distribution" by a "concessionaire" within the community).

Improved availability of LPG. All might require innovative financing in order to achieve critical mass.

To stimulate investment and competition, constraints on community-based and small enterprise-based provision of infrastructure services (such as the exclusivity rights granted to public and private sector operators) need to be lifted by legal recognition of the right of small operators to exist.

4.2.7 Conduct Pre- and Post-Reform Social Assessments

International assistance organizations should fund efforts to improve the state of knowledge regarding the social dimensions of energy sector reform. In the process of conducting this research project, it became apparent that there is a dearth of systematic pre- and post-assessments of the social impacts of reform. Much of the available information is anecdotal and qualitative. Pre-reform assessments and periodic post-reform monitoring of social impacts can build on existing data collection efforts being conducted by local institutes.

4.2.8 Disseminate Lessons about Addressing Social Impacts

The above recommendation notwithstanding, there is a small but growing body of international experience that offers lessons for energy sector reformers. For example, methodologies have been developed to determine the right package of incentives to provide to induce voluntary departures by those workers with the greatest redundancy without inducing valued employees to leave. However, information about past lessons and new innovations has yet to be organized and disseminated in a manner that is readily available. International development assistance organizations could help by digesting these lessons, collecting success stories, preparing best practices guidebooks, and disseminating them electronically.

APPENDIX A: THE SOCIAL IMPACTS OF POWER SECTOR REFORM IN THE UNITED STATES

The changes taking place in electric utility systems throughout the world have a common underlying motive: a quest for greater economic efficiency. Whether through privatization, competition, or the reform of pricing and collection, most countries are seeking to reduce costs and match prices and payments more accurately with the costs that remain.

For many of these systems, the changes are very large, and they “strand” the expectations that have been built through many years of experience with the existing electricity system. Those who have benefited from the inefficiencies of the existing system have a strong and understandable reason to claim that fairness requires that their accustomed benefits be protected during any transition, and perhaps beyond. In this regard, the similarities between investors faced with stranded investment, municipalities faced with declining property taxes, workers faced with the prospect of job losses, and customers faced with substantial rate increases and unprecedented disconnection for nonpayment are much greater than the differences. Indeed, workers in some countries have had something approaching an entitlement to a lifetime job in the energy sector.

Every country experiences such impacts and has such claimants.²⁴ To say that the U.S. experience with potential stranded investment is irrelevant to, for example, the Indian experience with discontinuing free electricity for farming, is to misunderstand the fact that investors and farmers are asking for the same thing for the same reasons. Neither claim is supportable in the context of economic efficiency, but both press claims based on their long reliance on the benefits and on other social considerations. Because most countries have long believed that considerations other than pure economic efficiency are important in this

²⁴ Consider the applicability of the following, written about the U.S. experience, to restructuring in other countries:

Any major change in regulatory policy... requires some market participants to incur stranded costs, i.e. one time changes in wealth attributable to the change in regulatory policy. Stranded costs are inevitable when a change in regulatory policy increases the efficiency of a previously regulated market. The prior regulatory system inevitably induced the firm to have to hire too many employees, to pay excessive wages, to make excessive investments in capital assets, to invest in the wrong mix of capital assets.....Elimination or relaxation of regulatory constraints and introduction of competition forces many market participants to restructure their operations to eliminate excessive costs.

Stranded costs can take the form of layoffs and salary reductions (the primary consequences of deregulation of air transportation and financial services); the bankruptcy of many firms (one of the primary consequences of deregulation of trucking)

No market participant willingly bears large stranded costs. Participants in a regulated market that expect to absorb large stranded costs as a result of a proposed regulatory reform engage in a series of actions designed to avoid incurrence of these costs or to reduce the magnitude of the costs each must absorb. These actions include: attempts to block regulatory reform, attempts to delay regulatory reform, and attempts to convince legislatures, agencies and courts to reallocate stranded costs to other market participants. Proponents of regulatory reform often must devote more time and energy to disputes concerning allocation of stranded costs than to all other aspects of the process of regulatory reform.

Pierce, Richard Jr. and Walter Gellhorn. 1999. *Regulated Industries*, St. Paul, Minn: West Group, 4th ed., pp. 399-401.

vital industry, such claims must be carefully heard and wisely resolved.²⁵

Furthermore, claimants have the potential to slow and stymie the restructuring process to such an extent that their societies may find it easier to buy them out than to insist that they accept the necessary changes regardless of the disadvantage to them. This paper examines the techniques for identifying, considering, and resolving these impacts.

Restructuring in the United States, with its emphasis on retail customer choice, entails impacts quite different from those to be expected in developing countries and EITs. Nevertheless, there are techniques for identifying, negotiating and mitigating those impacts that may be useful in other countries as well. This paper sets forth the impacts that states (and some of the draft federal bills) have sought to mitigate. It also discusses the substantive and procedural mitigation techniques that have been employed and offers some observations on their possible applicability in other countries.

A.1 THE SCOPE OF U.S. RESTRUCTURING

The United States opened its electric generating market to competition with the passage of the Public Utility Regulatory Policies Act in 1978. The wholesale power market opened to competition with the passage of the Energy Policy Act of 1992 and the Federal Energy Regulatory Commission's subsequent adoption of rules requiring that transmission access be opened to transactions between all generators and all wholesale purchasers, regardless of franchise territories.

The United States has not adopted retail customer choice as a national policy, although bills to that effect are being considered in Congress. Where retail customer choice has been adopted, it has usually been in the states with the highest electricity rates.

The number of states with electricity sector restructuring initiatives underway has more than doubled during the past two years, with most of the restructuring momentum continuing to

²⁵ For example,

The people we (public officials) serve are citizens as well as consumers, and they are entitled to public utility services that address their needs and concerns as citizens, not just their pocketbook concerns as ratepayers. As citizens, we share common concerns about the health of the environment, the well-being of our neighbors, the security of the nation, and the needs of future generations.

Cowart, Richard. 1997. "Restructuring and the Public Good," *The Electricity Journal*, April, p. 53.

The economic tests are eminently measurable....The second set of tests cannot be expressed in figures, but it is no less powerful. It goes to the basic values by which people judge the world, the system in which they live, and their own lot....How widely shared is the success? Is the system fair and just? Or does it disproportionately benefit the rich and the avaricious at the expense of the hardworking of more modest circumstances? Does it treat people decently, and does it include the disenfranchised and the disadvantaged? Are there equity, fair play and opportunity?

Yergin, Daniel, and Joseph Stanislaw. 1998. *The Commanding Heights, The Battle between Government and the Marketplace that is Remaking the World*. New York: Simon and Schuster, p. 383.

come from states with relatively high electricity rates.²⁶

Twenty-four states have enacted legislation or issued regulatory orders on electric industry restructuring, up from 10 states in 1997. The 24 states represent more than 73 million consumers and account for 60% of electricity customers in the United States. In 1999, nine states adopted retail choice plans compared to two new states in 1998.

Some 10 of the 24 states with restructuring initiatives now allow customers to choose their electricity suppliers. None of these offered retail customer choice in 1997. Only a small number of consumers have switched to another electricity supplier in the states with retail competition. Some energy service providers have charged that it is difficult to compete in those states because of market constraints, imposed to keep rates artificially low for political reasons. Other service providers have little incentive to serve small customers, especially in residential markets, and instead offer services only to customers with large, stable loads.

Jurisdictional disagreements have begun to mount among the legislative, judicial and executive branches of governments. Prolonged disputes could postpone restructuring benefits or lead to judicial intervention. Transition processes adopted by the states are also likely to face court challenges from one or more major stakeholders.

Twenty of the states that have deregulated their electricity industries have opted to fund public benefit programs, with all states supporting low-income assistance. Funding for renewable energy programs is popular, while energy efficiency activities have support in most states. The least-supported program seems to be research and development.

In at least five of the states that have not adopted electric restructuring plans (Colorado, Idaho, Louisiana, Kentucky, and Alabama), there is substantial concern that restructuring will increase electricity prices in their states.

A.2 RESTRUCTURING BY COLLABORATION

The "collaborative process" that many states have used to formulate their restructuring plans is a unique outgrowth of the long U.S. tradition of extensive public participation in the regulatory process. As many parties wearied of the sterile interactions that occurred during formal litigation, in the late 1980s and early 1990s, a number of states began to experiment with alternative dispute resolution procedures, public outreach programs and mediated forums of several sorts.

With the onset of electricity restructuring, with its myriad issues and affected parties, these various techniques for enhanced public participation were applied to amalgams of "stakeholders" that were larger and more diverse than had previously taken part in utility proceedings. As a result of these processes, the potential claims of many affected parties were identified earlier and became part of the grand restructuring bazaar that displaced formal adjudication as the preferred means of assembling the restructuring package in most

²⁶ Gas Research Institute. 1999. *Update -- Summary of Electric Utility Regulatory Developments through October 1999* (GRI-99/0240).

states. These procedures tended to place more of a premium of successful coalition building than on building a case through formal litigation.

Because restructuring touched so many interests, many state legislatures concluded that they - and not the regulators - should set the underlying policies. Indeed, in some states courts held that existing law did not give the regulators the power needed to adopt retail competition. Consequently, the collaborative processes often ran ahead of, in parallel with, and after, the overtly political legislative process. As a result, solutions that could command broad political support had an inherent advantage, a factor that helps to account for the predominance of solutions based on paying off the claims of many stakeholders, usually through "nonbypassable" charges (systems benefits charges or taxes) as discussed below.

As a rule, these "collaboratives" were overseen by regulators and resulted in recommendations to the executive and legislative branches. The resulting legislation then provided the general restructuring framework, while leaving the specific implementation to the regulatory agency. In a few cases (notably New York) the collaborative process led directly to regulatory decisions implemented without separate action by the legislature.

In general, other countries undertaking electric restructuring lack the U.S. traditions of public interaction, consumer activism and regulatory forums. This is beginning to change, at least in Georgia and perhaps Armenia, where economic reform efforts have recently included a public interaction component involving surveys, focus groups and training for government officials. However, in most of the world, restructuring proceeds without a systematic process through which the stakeholders have a meaningful opportunity to be heard and to work together to craft solutions that a majority of them would find acceptable.

A.3 SOCIAL IMPACTS OF RESTRUCTURING IN THE UNITED STATES

State restructuring proceedings commenced with the April 1994 California announcement of an intention to establish retail choice for the state's electric customers within three years. Because competition would inevitably drive prices toward the marginal costs of serving different groups of customers, any costs that were not essential to the production of future kilowatt hours faced elimination, whether those costs stemmed from investment in plant that could be inexpensively replaced or from social programs that were unrelated to the actual production of electricity. A summary of these social impacts follows.²⁷

A.3.1 Stranded Power Supply Costs

By 1995, many power plants and contracts to buy power had been undertaken during an era when the price of fossil fuels had been expected to reflect oil prices in the range of \$150 per barrel. The actual 1995 oil price was under \$20 per barrel. Furthermore, new power plants (particularly combined-cycle gas plants) cost far less than had been forecast a few years

²⁷ Impacts on energy efficiency, renewable resources and the environment are the subject of a separate paper, USAID. 1998. *The Environmental Implications of Power Sector Reform in Developing Countries*. Office of Energy, Environment and Technology, Report No. 98-05, March.

earlier, as did long-term gas contracts. The result was billions of dollars committed to power plants (mostly nuclear) and power-purchase contracts whose costs could not be recovered in competitive markets. By far the largest potential social impact of U.S. restructuring, measured in terms of dollar volume or level of regulatory attention, has been the possible losses to investors arising from permitting customers not to buy the uncompetitive power.

Potential losses to investors were estimated at between \$100 billion and \$200 billion in 1995 and 1996. The stock prices of utilities seen to be particularly vulnerable were cut in half. The issue, usually termed "stranded costs" or "stranded investment," caused widespread investor unrest and threatened to mire restructuring in the high-cost states in lengthy litigation. It was ultimately resolved in several ways, sometimes legislatively and sometimes by regulatory decisions. In a few cases, the courts became involved:

Mitigation - As part of the restructuring "bargain" utilities were required to offset assets with market values above book values against those with market values below book.

Mitigation also included issuing bonds to cover many of these costs, thereby reducing the cost of the capital required to pay them off. This approach, often called "securitization," shifted costs into the future and shifted risk to customers and sometimes taxpayers. Consequently, the mitigation was somewhat illusory. However, securitization did produce rate freezes and often rate decreases at the time the restructuring packages were implemented. This averted any possible rate increase-induced backlash against restructuring.

Paid off by the customers - Many states agreed to mandate the recovery of the unmitigated stranded costs from customers. This was largely achieved through a nonbypassable charge for the use of the remaining monopoly facilities, namely the transmission and distribution wires. This charge is not small. In some states it is approximately one-third of the total bill. The merits of such charges are discussed in Section A-4, but it is worth stating here that they are by far the dominant vehicle (at least in dollar terms) for mitigating the social impacts of restructuring in the United States.

Paid off by the taxpayer - As noted above, the concept of securitization as employed in some states implicated the state's credit, thereby having the taxpayers as well as the customers involved in avoiding the social impact on the investors.

Charged to the utility - Some states have set rate targets or stranded cost recovery deadlines such that full recovery from customers is unlikely. In these situations, some of the societal burden will fall on investors.²⁸

²⁸ The discussion over the reasonableness of this result is voluminous. Those opposing it assert that it breaks a "regulatory compact," or at least fundamental concepts of fairness, in denying utilities expenditure recovery made under a system that assured recovery of prudent expenditures. Those on the other side assert that the regulatory compact is a *post hoc* fiction and that utilities have been compensated for the risk of such losses, in whole or in part, through their returns on equity.

A.3.2 Assistance to Low-Income Consumers

Like investors in utilities with expensive power plants, low-income customers (usually defined in terms of eligibility for other assistance programs) have for many years benefited from assistance rolled into traditionally-set U.S. utility rates. These "lifeline rates" took the form of rates below the full imbedded cost (though usually above the marginal cost) of serving those customers. Other forms of assistance included targeted energy efficiency measures, particularly weatherization, limitations on the utility right to disconnect for nonpayment, and outright financial assistance from the state and federal governments.²⁹

To the extent that these measures require a regulated supplier to charge some customers prices that are higher than the costs of serving them, they are incompatible with retail competition. However, a clear precedent for allocating the cost of such programs across all suppliers was set in the federal Telecommunications Policy Act of 1996. This law required the use of a nonbypassable fee to create a universal service fund of several billion dollars (designed by the Federal Communications Commission).³⁰ This fund is to provide support for universal service, lifeline, rural areas, and handicapped users, as well as discounts for schools, hospitals and rural health facilities. Some states also provided further incentives in rate-making policies to the telephone utilities to provide high-speed data services to schools and libraries.

Most of the states that have enacted electricity restructuring legislation have required that the assistance available to low-income customers not be diminished. They have also mandated that a supplier of last resort be available to serve customers who are unable to qualify for service in the unregulated market. Several state electricity restructuring laws have included provisions similar to the federal telecommunications legislation for the protection of low-income electricity service.³¹ In short, the measures used to maintain the historic commitment to electricity service for low-income people have included:

*Payment by other customers, both in the form of the nonbypassable charge and the voluntary contributions that some utilities provide through a checked box on the bill. In addition, subsidies - such as the general subsidy that once went to the basic monthly rate of all residential telephone users - have been retargeted to apply only to low-income customers.*³²

²⁹ Much of the information in this section is from Oppenheim, Jerrold and Theo MacGregor. 1999. *Low Income Consumer Utility Issues*, a report to the Utah Low-Income Task Force, October. The authors observe that low-income assistance programs are likely to be cost-beneficial for all customers when full account is taken of the impact of uncollectibles on the utility bills of other customers as well as reduced collection costs and reduced taxpayer costs as a result of such impacts as homelessness.

³⁰ The Telecommunications Act sets forth a number of principles to guide the Commission and the states, including the requirement that "quality service should be available at just, reasonable and affordable rates." The Act also provides that the Commission and the states must devise methods to ensure that consumers "in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas ... have access to telecommunications and information services...at rates that are reasonably comparable to rates charged for similar services in urban areas."

³¹ California and Pennsylvania enacted such provisions. Maryland recently set up a \$34 million annual low-income assistance program, mostly for direct assistance and with some 10% for weatherization.

³² Because the entitlement to such assistance has been based on enrollment in other assistance programs, the use of the databases from those programs has substantially reduced record-keeping and verification expense.

Taxpayer funding in the form of direct grants from federal and state governments.

However, the federal program reached its peak in 1986 at some \$2.1 billion and has since declined to about half of that amount.³³

Mitigation in the form of weatherization assistance. Special energy efficiency assistance has amounted to 10-15% of the assistance available to low-income people. Especially when accompanied by a sufficient public education effort, such assistance produces benefits that can last for many years.

The introduction of loadlimiting or prepayment meters. This more controversial mitigation undertaking has met with considerable resistance in the United States (Duke Power and Peco most recently). Low-income advocates have argued that they are discriminatory and are not cost-justified under the conditions that exists in the U.S. system, where widespread nonpayment is neither an impediment to utility financial integrity nor a deterrent to extending service to unserved areas.

Customer education. This option has been important to many aspects of electricity restructuring, but particularly with regard to the impacts on low-income people. All other assistance programs are enhanced by a significant public education effort. Energy efficiency achievements increase, disconnections and late payments decrease, and low-income customers are less vulnerable to unscrupulous marketing. Utilities have begun in recent years to recognize that disconnection - however necessary as an occasional tool to discourage nonpayment - is not a collection success but a collection failure in that a disconnected customer is less likely to pay than one who is able to remain on the system under a restructured payment obligation.

Letting economic forces take their course. In at least one area -- line extension tariffs -- restructuring has had the effect of causing substantial price increases. Utility willingness to extend wires or mains substantial distances in the name of universal service has come to an end, and line extension fees have risen dramatically. This has significant local land use planning impacts in the United States. In countries with substantial areas that do not yet have service, the implications are more substantial.

A.3.3 Labor Impacts

With the onset of competition, utility managements had to examine their payrolls aggressively for the first time. In theory, regulation should have assured that the staffing and salary levels in the U.S. utility industry were no higher than necessary. In fact, regulators rarely had the resources or the information to perform this task well. When they sought to do so, the political repercussions were likely to be formidable. Consequently, staffing and pay levels in all of the U.S. regulated monopoly industries came under downward pressure once competition displaced regulation.

³³ Brockway, Nancy. Commissioner, New Hampshire Public Utilities Commission. 1999. "Support for Low Income Access to Energy in the United States," Presentation to the World Bank Energy Unit, April.

The International Brotherhood of Electrical Workers estimates that jobs in the electricity sector have declined by 27% in the years since California announced its decision to establish retail choice. In the face of this pressure, utility workers and investors became allied in a formidable coalition opposed to retail choice unless their interests first were safeguarded.

Mitigation - Very few of the lost jobs in the electricity industry have been to layoffs. The workforce reductions have largely been achieved through attrition, early retirements and buyouts. Retraining agreements and agreements limiting the pace of workforce reduction have also been commonplace. In addition, increased use of bonuses and other forms of incentive compensation have enhanced management's ability to control its labor costs.

Payments from the customers - Here again, the nonbypassable charge has been a favored vehicle for financing transition costs. The California Competitive Transition Charge, for example, includes the retraining and severance costs incurred in the first four years of retail competition. The Connecticut restructuring law also provides explicitly that such costs are to be included in the transition charge.

Symbiosis - The collaborative nature of the restructuring process assisted consumer groups and labor unions in discovering their common interest in maintaining high service quality standards. For customers, the reasons were self-evident; for workers such standards were a safeguard against rapid downsizing with its potential for reduced reliability and increased customer complaints. This linkage was driven home to regulators when several telephone companies experienced substantial delays in key customer service indexes as a result of excessive workforce reductions in the mid-1990s.

A.3.4 Service Quality and Reliability Impacts

The responsibility of U.S. regulators to set service quality standards is as old as regulation itself. Together with the establishment of franchise boundaries and the setting of prices, it is among the most fundamental duties of a regulatory commission. However, with customer choice and deregulation, the regulator loses jurisdiction over some of the entities essential to the provision of reliable service.

Of course, a state commission's duty and ability to set standards for the distribution network is not fundamentally changed by restructuring. The state legislation that has passed to date is either silent on this topic or contains a mandate that service quality must not decline. However, such mandates do little to address the difficult issues of changing institutional responsibility presented by restructuring in the United States or elsewhere.

At the transmission level, the National Electric Reliability Council (NERC) recently sent a letter to Congress expressing extraordinary concern about the impacts of restructuring on reliability and the need for federal legislation. NERC told House Commerce Committee Chairman Thomas Bliley "Without the ability to enforce compliance with mandatory reliability rules, fairly applied to all participants, we may not be able much longer to keep the interstate electric grids operating reliably."

In a reference to recent violations of NERC regional reliability rules, the letter went on: "This

past summer, the actions of certain control areas in the Eastern Interconnection clearly demonstrated that we are facing a real and immediate crisis.

The users and operators of the system, who used to cooperate voluntarily under the regulated model, are now competitors without the same incentives to cooperate with each other or comply with voluntary reliability rules."

"The bottom line," NERC said, "is that not a single bulk power system reliability standard can be enforced effectively today, by NERC or the Commission. The rules must be made mandatory and enforceable, and fairly applied to all participants in the electricity market."

Also at the distribution level, the last two summers have seen lapses from accustomed levels of service quality in California, Chicago and New York City. Whether these problems are aberrations or symptoms of the pressures of restructuring, they raise questions about service standards and responsibilities under restructuring.

While general legislative and regulatory mandates to avoid service quality degradation have been part of the window dressing of restructuring in every state legislature, financial support has not. Specifically, the competitive transition charges discussed above do not apply to the costs of maintaining service quality. These costs remain within the state's ratemaking framework.

Some commissions have sought to deal with these impacts by adopting enforceable service quality standards. In order to be sure that utilities under cost pressure do not defer necessary maintenance, some commissions have linked service standards to ratesetting in a way that rarely existed under traditional ratesetting.³⁴ This linkage is characterized by penalties - much larger than ordinary fines - in the event of a substantial utility failure to meet its customer service obligations in such areas as service restoration times, complaints to the commission or response times to customer requests. The penalties may also include direct payments to aggrieved customers for such offenses as failure to appear for service connection appointments.

A.3.5 Safety Impacts

Particularly in the context of nuclear power, the concern is often voiced that pressure to cut costs or to boost output could compromise safe operations. In essence, reduced levels of safety are also asserted to be potential social impacts of restructuring. Indeed, the problems at the Millstone nuclear plants in Connecticut seem to have originated in just such pressure from top management. The same seems true overseas in the tragedy at the uranium test facility of Sumitomo Metal Mining Company in Tokai Mura Ibaraki Prefecture, Japan, and in the falsified quality assurance documents of the British Nuclear Fuel Ltd. reprocessing plant.

At the same time, other nuclear plants have shown a high correlation between practices that improve safety and practices that increase plant output. The U.S. Nuclear Regulatory

³⁴ Alexander, Barbara. 1996. "How to Construct a Service Quality Index in Performance-based Ratemaking," *Electricity Journal*, April, p. 46.

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Commission has sought to upgrade its own capability to function in an atmosphere of heightened economic pressure.

This is not a problem that can be solved through a transition charge or other protected revenue stream. As in the airline industry, the need to avoid unlikely but catastrophic accidents is universally accepted, and the safety margins are large. Whether economic pressure compromises them at some sites is unknowable in the short run, although one would eventually expect to see an increase in what the NRC terms "precursor" events if safety were being compromised.

While restructuring is likely to increase the economic pressures on safe operation in U.S. nuclear facilities, it will have the opposite effect in countries where the energy sector now lacks the money to pay its nuclear plant workers or to undertake other safety measures considered essential in the United States.

A.3.6 Rate Shock Impacts

As noted earlier, both legislatures and regulators implementing restructuring have generally sought to avoid rate increases to any class of customers and have tended to endorse equal distribution of the savings among customer classes. This concern has less to do with universal service than with public acceptance of restructuring. Because U.S. restructuring has come during a time of declining costs, most utilities have been able to commit to long-term freezes, often coupled with substantial reductions. The rate reductions have tended to go more heavily to large users, but this is less controversial when all customers are receiving rate reductions.

Since most restructuring laws require freezes for all classes of customers (or that no class receive an increase), rate shock of the sort being experienced in other parts of the world has not been experienced in the United States. Some cross-subsidy may be occurring in order to make the overall restructuring politically acceptable, but this effect is not large, if it exists at all.

The combination of the capped overall rate and substantial stranded cost recovery has created situations where there is too little room under the rate cap for a true energy price to allow competition to develop. Consequently, the decision to emphasize rate stability has been a decision to defer customer choice, especially for residential customers.

A.3.7 Other Social Impacts

A number of other social impacts have accompanied the introduction of retail competition in the U.S. electricity sector. They fit the general pattern of expenditures that competitive conditions will not support. As such, they have had to be supported or mandated in other ways. This section treats them together because they are less significant for other countries than those discussed above.

In dollar terms, the largest of these items by far is the impact on tax collections. When the taxable value of a power plant is determined by the market value of its output rather than the

amount spent to build it, dramatic local revenue shifts occur. In one instance in New York, a 1000 megawatt nuclear plant built some time ago by a utility pays a property tax bill 1000 times higher than that of a 1000 megawatt gas-fired plant built recently by an independent power producer. Such a discrepancy between plants making equal quantities of the same product is not sustainable if the two plants are to compete. However, the impact on local schools and services of cutting the taxes of the nuclear plant by a factor of 1000 would be immense.

The device of a nonbypassable charge has been used to create a fund to permit gradual transitions in some states. In other states, where no such provision was made, substantial litigation has arisen as costly plants, some of them actually closed, demand that communities reduce their taxes to reflect market realities. Some communities with closed nuclear plants have negotiated phase downs of these taxes. Of course, in the case of inexpensive or fully depreciated plants, the property's value may be much higher in a competitive market than under regulation, producing a windfall for the local taxing jurisdiction.

Other social costs that have been counted as transition costs and been reimbursed from nonbypassable charges in some states (or from federal agencies) include gas industry research expenditures and, implausibly, future nuclear capital expenditures (in California and Michigan). Some utilities have announced that restructuring will compel them to reevaluate their charitable donation policy, but overall charitable donations as a percentage of total revenue have not declined.

Most of the research done at the Electric Power Research Institute is not funded out of nonbypassable charges, and utility contributions to EPRI have declined. As a result, EPRI has had to become more market oriented in its research and in selling itself to potential donors. Direct federal and state research grants in the energy area remain a separate source of revenue.

A.3.8 Corruption

The relative absence of direct corruption in the context of U.S. restructuring might not be worth mentioning in a paper aimed solely at a U.S. audience. However, given the extent to which real and perceived corruption haunts restructuring in some nations, the techniques by which it has been minimized in U.S. regulatory proceedings are worth noting.

Nothing contributes more rapidly to public disillusion with reform than a sense that decisions are being influenced illegitimately, through the paying of bribes or by less direct methods. Restructuring in the United States has not been significantly affected by allegations of specific corruption, although more general allegations about the influence of campaign contributions and the need for campaign reform have accompanied both Congressional and state legislative electricity and telecommunication restructuring debates.

The United States learned its lessons about the harm that can accompany corrupt and inadequate regulatory processes many years ago, in the utility holding company scandals of the 1920s. As a result of these lessons, reinforced by one or two distasteful episodes per year, usually at the state level, most U.S. regulatory jurisdictions employ an array of measures to prevent illegitimate influence.

These protections include not only the encouragement of public involvement but also measures to assure transparency, measures to assure independence, rules against *ex parte* contact and codes of ethics. At times regulators and participants chafe at the delay and awkwardness imposed by these procedures and at times they violate them. Nevertheless, U.S. regulators have made decisions in the last five years reallocating the flow of tens of billions of dollars in annual revenues with only minor instances of scandal. To those who have worked on restructuring in many nations, this is not a small achievement.

A.4 CONCLUSIONS

This section discusses the pros and cons of the mitigation techniques set forth above, including conclusions available from other industries that have been through comparable restructurings.

A.4.1 A Nonbypassable Charge

By far the most widely used measure for mitigating social impacts in the United States has been a charge imposed for the use of the remaining monopoly point in the electricity system: the wires. Such a charge has been used in some states to address all of the impacts discussed above. In addition, funds raised in this manner have been the cornerstones of efforts to maintain or increase expenditure levels for energy efficiency and renewable resources. Indeed, the same principle has been applied in the telephone, gas, and airline industries.³⁵

Such charges are capable of raising very large sums, even when they are very small in relation to gross revenues. They can be imposed in a manner that is neutral among competitors, not burdensome to customers, and accountable to rate setting authorities. Although they are in essence a sales tax on an essential commodity and therefore regressive, the bargaining process through which they have been created seems to command broad political support, even when the major component (stranded cost recovery) does not.³⁶

The principal drawback to such a surcharge or tax approach is that it diminishes the incentive to mitigate these impacts in other ways. Because funding is assured, cost reduction is not. Regulatory oversight is a weak substitute for potential loss in spurring more creative market solutions, such as the renegotiations that occurred between pipelines and gas producers when FERC declined to assure full stranded cost recovery when it required pipelines to carry gas for all who would pay the transport costs.

³⁵ Actually, the funds used for airport capital projects such as safety, expansion and noise control come from an explicit tax on ticket sales, not on a bottleneck monopoly point. Otherwise, the principle is the same in that projects that would not be supported by market participants acting alone in the deregulated airline industry are instead funded by a competitively neutral and nonbypassable charge on all customers.

³⁶ In the two instances in which such measures have been challenged through initiated referenda (California and Massachusetts, both in 1998), they have been sustained by significant majorities.

A.4.2 Letting the Impacts Fall Where they May

The noted utility economist James Bonbright wrote, "Investors in utility securities, notably in common stocks, must take their chances as to the effect of future amendments to regulatory law on the earning power of the companies in which they invest".³⁷ His point was that the investor's compensation for risk should come from the rate of return on their investment, not from the right to be protected from changes in regulatory law or policy. Bonbright's view is not the one that has controlled U.S. electric restructuring policy. Rather than insisting that each stakeholder must live with his losses (or gains), most states have used the transition charge mechanism to cushion losses substantially.

There is no way to be certain that this course has been cheaper for U.S. society than litigation would have been. However, it does seem plausible that, in societies where legal processes are highly uncertain and a resort to street violence is not unlikely, solutions that cushion social impacts are to be preferred over those that expect everyone to bear his own losses.

A.4.3 Techniques of Public Interaction

At least four procedural aspects of the U.S. restructuring experience merit comment. First, there is a relatively high degree of public willingness to accept the outcome as legitimate. Second, the process is collaborative and has the capability to encourage parties to work toward comprehensive and acceptable solutions. Third, very substantial public education expenditures have been a staple of the U.S. restructuring process. Fourth, the states have made substantial use of "pilot" projects, both to introduce the public to forthcoming changes and to study and mitigate the impacts of those changes.

As to public education, almost every state that has undertaken electricity restructuring has required that millions of dollars be spent to inform the public of its likely impacts: the nature of the changes, the possibilities for energy efficiency, the opportunities to choose, and the nature of the customers' rights. These education campaigns have usually been designed collaboratively and overseen by the commission or by its designee. They have been particularly effective in reaching individuals facing adverse impacts from restructuring. The costs of such education campaigns have been recoverable from customers, either through the nonbypassable charge or rates.

The pilot projects have had a public education component, but they are usually also intended to inform the government and the utility of the impacts of the proposed course of action. Retail competition pilots have been used frequently in the United States, but pilots designed around different types of rates, energy efficiency or metering approaches could be designed for other countries. Such undertakings could well draw on U.S. experience in pilot project design, even when the subject matter is quite different.³⁸

³⁷ Bonbright, James, Albert K. Danielson, and David R. Kamerschen. 1988. *Principles of Public Utility Rates*, Arlington, VA: Public Utility Reports, p. 208.

³⁸ Schuler, Joseph. 1997. "Residential Pilot Programs: Who's Doing, Who's Dealing?" *Public Utilities Fortnightly*, January 1, p. 46. Spratley, William A. 1997. "Pilot Projects Around the Nation: Lessons to be Learned."

A.5 THE APPLICABILITY OF THE U.S. EXPERIENCE FOR DEVELOPING COUNTRIES AND EITS

The U.S. restructuring experience differs from those in most other countries in one fundamental respect: the premise of the U.S. shift to retail competition is that customer choice will lower the national electric bill and will move money from the utility sector to the customers. The premise for most restructuring in Asia, Africa, Latin America, Eastern Europe and the NIS is that more money needs to flow from the customers into the energy sector.

The techniques for coping with a change that freezes and lowers rates must inevitably be different from the techniques for coping with changes that raise rates and increase disconnections. The imposition of nonbypassable charges to mitigate job loss and assure universal service is not so promising when existing tariffs do not recover the basic costs of the system and many customers do not even pay their bills. There is likely to be a continuing need for outside assistance in coping with the impacts that the United States has dealt with through the nonbypassable charge.

Procedurally, the applicability of U.S. experience seems more promising. Whatever one makes of the U.S. restructuring outcomes, they have clearly been the product of procedures that have enabled all parties to be heard and many to find solutions for the impacts that concerned them. The many safeguards against illegitimate influence, the extensive opportunities for public interaction, and the universal commitment to public education have all paid substantial dividends in legitimizing the restructuring process.

Other nations have varying degrees of experience with each of these techniques, and some of them have next to no experience with any of them. Regulators in the United States did not relish their public proceedings in the late 1970s, when rates were rising 10% annually and power supply controversies abounded. It is not to be expected that regulators with far less experience with public interaction will be enthusiastic about meeting a much less predictable public, under today's even more difficult circumstances.

Nevertheless, the lack of a commonly held understanding of the fundamental ingredients of a successful electric energy sector is a major barrier to progress with regard to tariffs that recover costs, disconnection for nonpayment, or privatization. It is in the building of such a shared understanding that the U.S. system has distinguished itself. When it comes to coping with such very different but very urgent social impacts, the creation of a shared understanding provides a promising arena for donor agency attention.

APPENDIX B: THE SOCIAL IMPACTS OF POWER SECTOR REFORM IN BRAZIL

Brazil began a restructuring process for its energy, transportation, and telecommunications industries in 1988. By the mid-1990s, the stage had been set to allow for the privatization of state- and federally-owned energy companies. At the end of the decade, the national oil market was open to new entrants, both Brazilian and foreign, as the 46-year monopoly enjoyed by Petrobrás was broken up. In the electricity sector, 18 companies had been privatized by October 1998, adding nearly \$21 billion in income to government coffers, with an additional \$4 billion in debt being transferred to the private sector.

The country's reforms have not been limited to restructuring; they have also been felt in national energy policy. For example, the Brazilian Government has established guidelines for the rational use of energy throughout the country. It has also made a more concerted effort to develop the natural gas industry, planning to increase the share of gas in energy supply from 2.7% to 12% within 10 years. At the same time, the government is working to increase the use of renewable energy and establish programs to provide universal access to energy in rural areas.

However, the development of a legal/institutional framework capable of coping with all of the peculiarities that characterize Brazil's energy sector has lagged behind the privatization process. The country's electrical system is based primarily on hydropower, and its vast size, regional discrepancies, and power trades with neighboring countries have had a considerable influence on the pace of restructuring.

Today, Brazil's reform process is neither complete nor mature enough to allow a conclusive diagnosis of the social impacts of the reforms as a whole. Passionate debate on the process is still raging and reliable data are still lacking. Nonetheless, several impacts have been identified regarding access to service, price and quality, particularly in the power sector.

B.1 ACCESS TO ENERGY SERVICES

The privatization of the distribution utilities has not yet provided benefits in terms of universal access to energy services. It can even be argued that privatization contributed to the reduced pace of rural electrification, to the increased cost of grid extension due to the new standards introduced, and to the freeze of incipient off-grid renewable energy projects.

B.1.1 Access Provisions in Concession Contracts

Compared to the telecommunications industry, where universal access was mandated for the privatized companies, the access requirements adopted for the power sector are still extremely weak.

Before privatization, there was no strict legal definition of access, and little has changed since the process began. However, the Concessions Law of 1995 contains a provision for "adequate service" by the concession holder. Because only the concession contracts can be

used to define targets for expansion plans, the law appears to expect more specific treatment in each region served by a concession contract.

Power utility concession contracts have not established access targets to date. They have only stated an intention to do so, without quantities being specified in the contracts. However, the concession contracts state that the service expansion is conditioned on the observance of an economic and financial balance of the companies' contracts. It thus appears that private companies are "obliged" to provide universal access only to the extent that their profitability is not jeopardized. Because a substantial number of rural consumers are among low-income consumers and the operational costs of extending the grid to rural areas are high, the company's profitability considerations frequently do not dispose them favorably to the expansion of the existing system.

Adding to the concessionaire's reluctance to extend service are the removal of the subsidies formerly extended to those with low electricity consumption and the establishment of more stringent rules on the definition of "low-income consumer."

B.1.2 The Government's Role

The Government of Brazil has realized the need for a state role in the sector's expansion, particularly where such undertakings are not in the private sector's best economic interest. So far, most of the public monies devoted to the power sector have gone to concluding the construction of priority generation and transmission projects.

The regulations of ANEEL (the national regulatory agency), which have changed little since privatization, state that anyone wishing to obtain electricity service must make a financial contribution to the necessary works. This represents a constraint to new connections, particularly in rural areas. There has been debate on the legality of such mandatory collections; opponents state that the utilities should absorb the costs of new connections and be reimbursed through tariffs.

State governments share much of the blame for the sector's failure to achieve universal access. As their electricity companies were being sold, their owners (with the concurrence of ANEEL) chose to maximize the companies' sales prices by reducing their future obligations, including increased customer access. Thus, the state governments maximized the sale proceeds at the expense of addressing the access problem.

To enhance the rate of grid extension, the government has proposed two measures to allow greater access: a recently launched large-scale rural electrification program and proposed legislation on permissionaires (which are bound by a less formal license to provide service than the concession contract).

The "Luz no Campo" Program. This program will make massive investments in extending the current grid. Here, the resources of a national fund (RGR) will be lent to utilities on very favorable terms (an interest rate of 6%, a grace period of 2 years, and a total loan period of 12 years). The state government would assume around 75% of the debts, including funds for the creation of databases of non-electrified areas/consumers. Final users would pay 10% of the investment and utilities only 15%.

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Permissionaires. The opening of the market came with the establishment of the permissionaire and authorization holders, creating competition inside the service territories of the concessionaires.

Another issue under discussion is the establishment of goals for the concessionaires. The geographic areas included in the medium- and long-term goals would be bid to permissionaires or other energy providers. Another issue that has not yet been explored but is constantly raised by some policy makers is transferring the efficiency gains of the utilities (which should result in tariff reductions) to investment in the expansion of service.

B.1.3 Customer Cutoff

Many of Brazil's new private utilities have focused on solving the problem of illegal customers connecting into their grids and reducing energy theft in urban and peri-urban areas in order to reduce their commercial losses. ANEEL's Regulation 466/99 states that a utility may cut off a customer who has either committed fraud or failed to pay his electricity bill, provided that a warning letter is issued 15 days in advance.

B.2 PRICE

Since the privatization process began in 1995, the only company that submitted to a process of tariff revision was ESCELSA, in mid-1999. According to the concession agreement signed between the private utility and ANEEL, the revision of tariffs to incorporate efficiency gains would take at least four years (the case of ESCELSA) and up to eight (the second round of privatization). The final period defined for the most recent contracts was five years.

ESCELSA's revision resulted in an average tariff reduction of 3%. However, this reduction was perceived as negligible by consumers, since tariffs were substantially increased before the privatization when they were compressed to help control inflation. Since privatization, tariffs have been adjusted annually to incorporate such issues as inflation, currency devaluation, tax increases, etc.

As Table B-1 shows, Brazil's utilities have enjoyed some efficiency gains in the short period since privatization. However, it is too soon to determine the extent to which long-term efficiency improvements will become translated into lower rates than would otherwise be the case.

In Brazil, the captive market operates under the price cap concept:

...once an average tariff is established, the companies are free to manage cost reductions and appropriate productivity gains. Despite the recognized profitability of most Brazilian distributors, the Government...has not introduced any mechanism of tariff reduction in order to transfer part of those gains to the consumers. The Government did it in order not to discourage investors from participation in the auctioning process.³⁹

³⁹ Rosa, Luiz Pinguelli, Mauricio Tiomno Tolmasquin, and José Cláudio Linhares Pires. 1998. *A Reforma do Setor Elétrico no Brasil e no Mundo – Uma Visão Crítica*, Ed. Relume Dumará. Rio de Janeiro. pg. 212.

Table B-1 Losses among the First Power Utilities to be Privatized in Brazil							
Utilities	Year Privatized	Losses (%)					
		1993	1994	1995	1996	1997	1998
ESCELSA	1995	11.4	11.6	10.2	9.3	9.3	-
LIGHT	1996	14.4	15.5	15.9	18.7	16.1	-
CERJ	1996	18.6	20.8	22.9	29.4	25.3	-
COELBA	1997	14.2	12.9	14.3	16.1	16.5	15.5
Average of distribution utilities		13.2	13.8	13.6	14.2	13.2	-

Source: BNDES. 1999. *Cadernos de Infra-estrutura – Setor Elétrico Desempenho 1993 – 1997*, Rio de Janeiro.

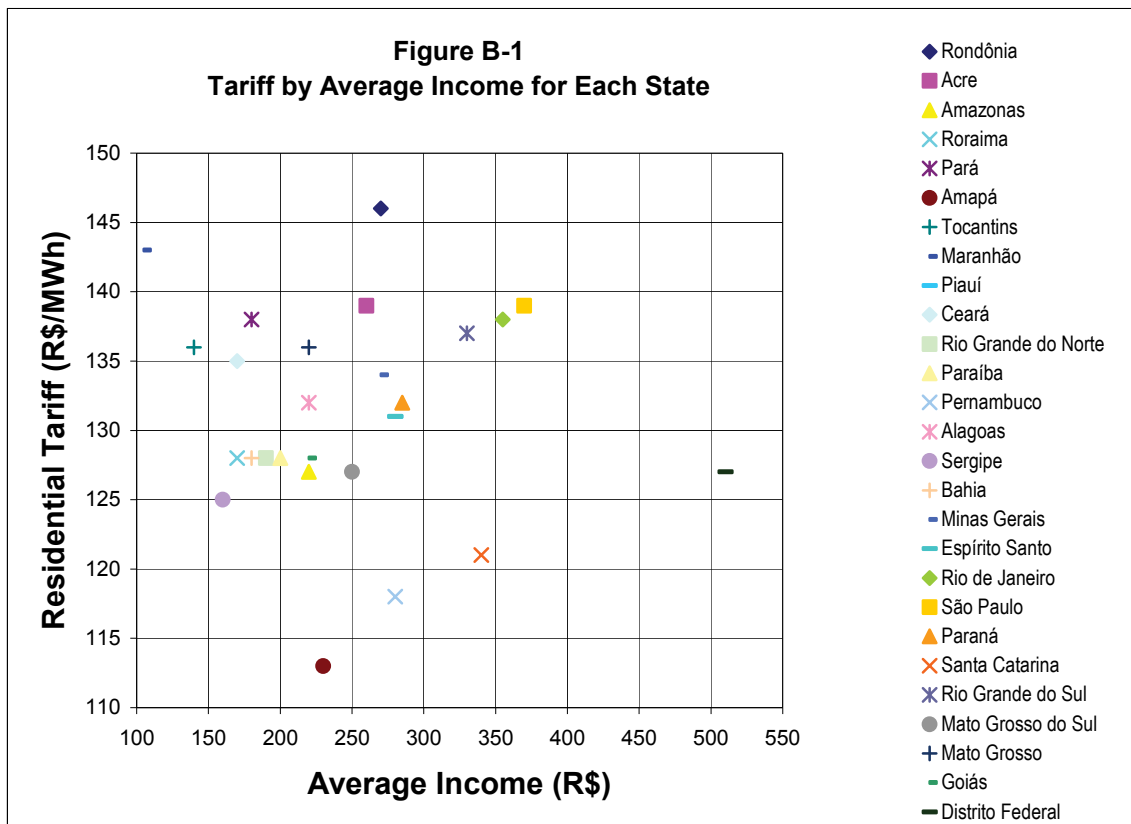
Under Brazil's implementation of the price cap, consumers have an apparent protection against abusive prices (caps are set by the regulator), but no protection in terms of minimum quality standards. Under price capping, tariffs will be always be readjusted when there is an increase in related cost factors. However, lower prices for purchased power will not have the effect of lowering tariffs.

Figure B-1 shows the 1999 residential tariffs in each of the Brazilian states vs. that state's average income. The average tariff nationwide is R\$ 131/MWh. Higher than average tariffs can be identified in regions where the share of low-income customers is also high, such as in the states of Rondônia, Acre and Pará (Northern Region), Maranhão and Ceará (Northeast Region).

Since 1995, average tariffs have increased in Brazil, reflecting the economic costs of generation, transmission and distribution. However, as shown in Table B-2, average tariffs have risen much more dramatically for residential consumers.

Table B-2 Electric Energy Average Prices (1998 US\$/barrels of oil equivalent)					
	1994	1995	1996	1997	1998
Industrial tariff	109.7	92.0	97.3	97.7	100.6
Residential tariff	178.5	165.2	211.1	220.3	232.0

Source: MME. 1999. *Brazilian Energy Balance*. Brasília.



Prior to 1996, tariffs for residential consumers were progressive according to the level of consumption, with the first 30 kWh heavily subsidized. These progressive tariffs have been eliminated and only consumers classified as low income now receive subsidized tariffs.

The difference between the policies adopted for industrial and residential tariffs is noticeable. Although industrial customers are by far the largest consumers of energy, their share in the total sales of the utility companies is smaller than that of the residential sector. An example is Electropaulo Metropolitana, which has Brazil's largest market share at 12.4%. In 1997, the residential sector consumed nearly 30% of the energy Electropaulo produced and the industrial sector 47%. However, the residential and industrial shares of sales were 37% and 35%, respectively.

Between June 1994 and August 1999, those in the first consumption block of Electro (up to 30 kWh/month) saw large increases in their electric bills: 321% for those designated as residential consumers and 64% for low-income consumers. In the same period, residential consumers in the block up to 1100 kWh/month had their electric bills reduced by 16.5%. The 1994-1999 inflation rate was 69%.

On a more positive note, greater cost reductions are expected in the future when efficiency gains can be effectively transferred to tariffs and when full retail competition is implemented.

B.3 QUALITY OF ENERGY SERVICES

The data do not show a consistent improvement in quality after privatization. ANEEL's report on the quality of service in 1998 shows that the five best performers in terms of outage frequency were two state-owned companies, one that was recently privatized, and two that were privatized later. The best performers in terms of outage duration were three state-owned companies and two privatized companies.

Tables B-3 and B-4 show how service quality has been affected by privatization in terms of two parameters: length and frequency of interruption.

Table B-3 Length of Interruption per Consumer (Hours per year)						
	1993	1994	1995	1996	1997	1998
ESCELSA	28.7	29.6	33.9	30.2	22.1	22.1
LIGHT	13.2	10.2	10.8	14.5	16.6	16.6
CERJ	34.1	33.3	32.3	40.9	47.9	47.9
COELBA	27.6	26.55	30.7	25.0	31.5	-
Average, distribution utilities in Brazil	26.4	25.37	27.4	26.0	24.5	24.0*

*national average of all power utilities (including generating utilities)

Source: *Gazeta Mercantil*. 2000. "ANEEL Fixa Limites para Quedas no Fornecimento de Energia," January 28.

Table B-4 Interruption Frequency Per Consumer						
	1993	1994	1995	1996	1997	1998
ESCELSA	22.4	26.5	25.8	20.3	18.1	15.3
LIGHT	11.3	9.9	9.0	10.2	14.7	14.4
CERJ	24.0	30.3	31.2	35.8	40.9	29.9
COELBA	12.9	12.3	14.3	12.6	14.7	18.0
Average, distribution utilities in Brazil	23.2	24.4	27.7	27.0	23.6	19.9*

*national average of all power utilities (including generating utilities)

Source: *Gazeta Mercantil*. 2000. "ANEEL Fixa Limites para Quedas no Fornecimento de Energia," January 28.

Only one of these utilities, ESCELSA, has shown improvement since its privatization. (ENERSUL, a utility not shown in these tables, which is controlled by the same economic group as ESCELSA, also showed an improvement in service quality after privatization.)

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Personnel statistics suggest a correlation between the employee/consumer ratio and the outage index. LIGHT and CERJ, whose outage indexes rose over the 1994-1998 period, experienced sudden employee reductions, thus elevating the consumer/employee ratio, and the worsening of the outage index. The effect was the opposite with ESCELSA, which both promoted a more progressive reduction in its workforce and improved its supply quality. The destruction of corporate spirit and the loss of technical memory within companies are cited as causes of the reduced quality associated with massive reductions in personnel.⁴⁰

Following technical audits on all of Brazil's power utilities in 1998-1999, new legislation on quality was prepared. Under a resolution issued on January 28, 2000, from January 1, 2001 a company's energy bills are required to display current quality indicators and the quality goals as stated in its concession contract. When such goals are not met, the utilities will be fined and the consumers will be compensated with a credit. Table B-5 shows the quality goals for São Paulo.

Table B-5 New Limits for Power Supply Quality	
São Paulo's Zones	Equivalent Length of Interruption per Consumer
Urban, central	6 hours/year
Urban	13 hours/year
Industrial	3 hours/year
Rural	12 hours/year

ANEEL has established special requirements for power supplies to hospitals, clinics and residences where vital equipment operates. Such requirements include an emergency telephone number, priority assistance and a five-day notification of interruption for maintenance. It has also installed over 1,000 units of an electronic device developed in Brazil called *Argos*, which automatically reports any outage over the telephone line.

The main policy implemented by ANEEL to assure an increasing quality of energy is a resolution that establishes limits on the frequency and duration of outages, by class of consumer. The measure is not limited to the company's averages, but defines the maximum number of hours that each individual user can be out of service. However, ANEEL's policy does not cover such issues as wave form or customer service quality or dissatisfaction. Goals must be established by the companies, and violations of defined limits would imply fines to the company and credits to the consumer.

⁴⁰ Rosa, Luiz Pinguelli, Mauricio Tiomno Tolmasquin, and José Cláudio Linhares Pires. 1998. *A Reforma do Setor Elétrico no Brasil e no Mundo – Uma Visão Crítica*, Ed. Relume Dumará. Rio de Janeiro. pg. 212.

B.4 OTHER SOCIAL IMPACTS

Changes in the Labor Force. Employee layoffs are characteristic of Brazil's reform process. However, it must be mentioned that labor force reductions were taking place before privatization began. Since privatization, there has been a trend toward contracting out labor, and in some cases, third-party companies have absorbed laid-off personnel. Table B-6 shows the change over time in the number of employees and number of customers per employee in Brazil's privatized distribution companies.

Table B-6 Evolution in the Number of Employees and Customers per Employee in Privatized Distribution Companies						
	1993	1994	1995	1996	1997	1998
Number of employees						
ESCELSA	2,695	2,607	1,827	1,770	1,592	n.a.
CERJ	5,812	5,758	4,806	4,364	2,288	n.a.
LIGHT	12,655	12,728	10,618	6,541	6,363	n.a.
COELBA	7,045	7,025	6,494	5,425	3,999	3,514
Total, distribution utilities in Brazil	83,784	86,073	74,955	65,795	59,348	n.a.
Consumers per employee						
ESCELSA	230	250	376	408	472	n.a.
CERJ	197	206	251	279	586	n.a.
LIGHT	210	238	269	422	442	n.a.
COELBA	296	316	345	423	593	711
Average, distribution utilities in Brazil	234	247	283	326	510	n.a.

Changes in Benefits. No specific research was conducted on this topic. However, it should be mentioned that ENERSUL, a newly privatized company that was bought by the same group that controls ESCELSA, already claims that its profit-sharing scheme is an extra benefit to its employees.

B.5 POLICIES FOR MITIGATING ADVERSE SOCIAL IMPACTS

B.5.1 Replacing Universal Service Mandates

Law 4.427 of 26/12/96 mandates that 25% of the resources raised by the Global Reserve for Reversion (RGR) be applied to programs in low-income areas, rural electrification and energy efficiency, specifically in the North, Northeast and Center–West regions of Brazil. However, Law 9.648 of 27/5/1998 has RGR scheduled to end in 2002.

B: The Social Impacts of Power Sector Reform in Brazil

A R\$ 2.8 billion National Rural Electrification Program aimed at reaching 1 million of the 4.1 million households that are not connected to the grid was launched in December 2000 by President Fernando Henrique Cardoso. Resources from the RGR are made available for financing at 6.5% yearly interest rates. Each household is electrified at an average cost of R\$ 3,200. The financing term is 10 years with a 2-year grace period.

Under this program, several states should reach their target of total coverage in rural areas: Ceará, Pernambuco, Distrito Federal, Goiás, Espírito Santo, São Paulo, Paraná and Santa Catarina. Electrification coverage in Brazil will thus rise from its current 57% to 67.5%.

To establish another agent capable of extending service to rural areas, the concept of permissionaire is under study by ANEEL. Legislation should be issued soon. ANEEL is working on ways to avoid possible conflicts between permissionaires and concessionaires.

State governments are still investing substantial amounts in grid expansion to cover the gap left by the private companies. An example is the National Rural Electrification Plan, where 75% of the costs are allocated by the state governments, using the financing mechanism of the RGR.

In October 2000, ANEEL conducted a public hearing to discuss a regulation obliging public utilities to establish goals for full electrification for the next five years. Those companies that cannot achieve their goals will lose portions of their concession areas to permissionaires through a bidding process.

B.5.2 Ensuring a Basic Level of Services to the Poor

In Minas Gerais, the state-controlled utility CEMIG issued a tariff readjustment of 197% for 845,000 consumers who could no longer be considered low income. Its classification relied on evaluation criteria for dwellings as defined by the local building industries association, Sinduscon. However, the state government suspended that decision. CEMIG's concession contract has incorporated a policy to allocate 5% of its net profit to social projects in poor areas.

The protection of the lowest-income consumer classes is an important regulatory question. While the criteria for defining low-income consumers are different in each state, there has been no significant development in terms of new federal regulation on the subject.

B.5.3 Ensuring Reasonable Prices in High-Cost Areas

Regardless of the price paid by the distribution utility, the generation and transmission costs of energy bought in retail operations can be transferred to consumers up to a limit set by ANEEL. For hydro energy, it is set at R\$ 57.2/MWh, for wind energy, at R\$ 100.9/MWh, and for photovoltaic solar energy, at R\$ 237.5/MWh.

There has been a collective effort by the state governors to allot part of the funds of the National Rural Electrification Plan to photovoltaic solar systems in order to ensure electricity services to the poor. However, private utilities are very reluctant to either continue or implement new electrification programs based on photovoltaic systems.

Biomass development is recognized as a potential means of reducing energy supply costs in the Amazon. ANEEL recently signed an agreement with the Universidade do Amazonas to support research on vegetable oils. However, the question of how to effectively substitute the diesel subsidy remains open, despite the recent extension of this benefit to any renewable energy source. Diesel and renewable sources and energy for stand-alone applications are currently subsidized by the national fund for electricity (CCC).

B.6 CONCLUSIONS

There is no doubt that the privatization process of the Brazilian electricity sector has substantially contributed to the national economy as a whole. From the macro-economic viewpoint, the initial expectations of privatization were fulfilled in terms of its:

- contributing to the economic stabilization process
- minimizing the state's financial crisis
- expanding the energy supply
- introducing new managerial capabilities in the sector with incentives for productivity and efficiency
- introducing technical criteria for management action
- reducing the state resources being drained to the infrastructure sector.

However, many of these benefits will not trickle down to consumers for several years and the general population's perception of these benefits is much less positive. Restructuring has not been able to increase access without the continued investment by state governments and the federal program Luz no Campo, tariffs to the residential sector have been substantially increased, and quality of service does not show consistent improvement. Also, the impact on incipient renewable energy programs, despite the recent incentives provided by ANEEL, was clearly a reduction of their importance.

The longer-term impacts of the privatization remain to be seen, and will depend critically on the regulatory measures taken by ANEEL, such as mitigating actions to address the lack of commitment of the new private companies. Those companies will try to recover revenues in as short a time as possible, sometimes with very high premiums over the minimum prices established, particularly after the devaluation of Brazil's currency in early 1999.

Last, it is important to stress that the impact on rural electrification to date has been negative. Both the federal and state governments have recognized that they will need to continue to provide capital investment in rural electrification if they want to expand power services to rural areas.

APPENDIX C: THE SOCIAL IMPACTS OF POWER SECTOR REFORM IN GUATEMALA

Guatemala's electricity sector reform process began in 1996 utilizing the principles of subsidies as a key to participation and service access, the de-monopolization and privatization of the sector, and the creation of competition among parties.

Among the government's plans for reforming the electricity sector was the National Plan for Rural Electrification, which was published in 1998. The plan contains project portfolios for grid extension that would provide electricity coverage to an additional 280,000 new customers located within the territory of the distribution utility INDE (now held by Union Fenosa). By 2004, electricity extensions are slated to reach an additional 1,610,000 people.

Part of the funds received from the \$520 million, 1998 sale of the Government of Guatemala's 92% share in EEGSA (a generating utility) and the \$110 million sale of the INDE distribution companies are to be placed in the Trust Fund for Rural Electrification. The fund is managed by representatives of the Ministry of Mines and Energy, INDE, and Union Fenosa. While this fund has a \$250 million ceiling, only about 50% is available at present because the government has not allocated all of the monies to the fund. About 50 rural villages have been connected to the grid using monies from the fund. In addition, as part of the Peace Process Accords signed by Guatemala in 1996, three funds were established that have invested nearly \$30 million in rural electrification.

Three government bodies that have direct effects on the socio-economic consequences of reform are:

The National Electrical Energy Commission (CNEE), whose role includes the resolution of conflicts among the sector's stakeholders

The Ministry of Mines and Energy (MME), whose role includes conducting socio-economic evaluations of communities involved in rural electrification and partial management of the Rural Electrification Fund

The Department of Rural Electrification, which is responsible for conducting base studies for target communities under the Rural Electrification Plan, and contracting out and supervising infrastructure development.

C.1 THE SOCIAL IMPLICATIONS OF REFORM

C.1.1 Access

A recent independent analysis by CIEN, a private research body on national economics and funding, found that the government's goal of electricity reaching most of Guatemala's people by 2004 will be difficult.⁴¹ CIEN predicts a coverage rate of 75-80%, which is still a substantial increase in electrification.

⁴¹ CIEN. 1999. *Infraestructura para el Tercer Milenio; Electricidad*. CIEN, USAID, BID. Guatemala.

C: The Social Impacts of Power Sector Reform in Guatemala

Table C-1 presents a comparison of Guatemala's pre- and post-reform conditions for sectors, geographic regions, and income levels.

Table C-1 Access under Pre-Reform and Post-Reform Conditions	
Pre-Reform	Post-Reform
Residential Sector	
<p>In the early 1990s, average electricity tariffs were less than 4 cents/kWh</p> <p>Fuelwood was the predominant cooking fuel in electrified rural and peri-urban households</p> <p>Overall, subsidies on energy consumption tended to benefit the rich more than the poor (high-income households benefited disproportionately because they used more energy).</p> <p>There was a quota for rural electrification by vertically integrated utilities, which was generally driven by an international donor "equity" agenda.</p>	<p>In early 2000, the "real" cost of generation ranged from 7-10 cents/kWh. However, residential consumers do not pay the full cost because subsidies have remained due to political pressure.</p> <p>Despite an increase in new connections and an established electricity market, fuelwood remains the primary source of energy for cooking.</p> <p>High-income households are still the largest beneficiaries of consumption subsidies.</p> <p>A fund of over \$200 million was set up to provide expanded rural electrification. The fund would be administered solely by the new private distribution company and oriented toward expansion of the electrical grid, as opposed to addressing the social and economic priorities of the communities, including the isolated off-grid areas.</p>
Commercial Sector	
<p>Guatemala has never implemented a program to stimulate productive uses of electricity in order to pay for electricity services in more socially vulnerable segments of the economy. Entry credit conditions were critical for the informal sector.</p>	<p>There is still no plan to implement a micro-enterprise development project based on productive uses of electricity. Private utilities view job creation as a government responsibility, which has resulted in a lack of motivation to integrate more vulnerable segments of the population.</p>
Industrial Sector	
<p>Medium-size industries did not know the best technical choices for energy efficiency.</p> <p>Tariff subsidies deterred large energy consumers from making technical innovations or implementing energy efficiency.</p>	<p>Lack of information continues to be a strong barrier for DSM and energy efficiency programs. However, the industrial sector is beginning to view energy efficiency as an issue.</p> <p>With reform, large customers have more supply options, although on the demand side, many of the challenges with respect to financial and technology constraints still exist.</p>
Government Sector	
<p>In general, the government was an inefficient consumer of electricity and delinquent in paying the utilities (the country still has extensive accounts payable for its energy bills).</p>	<p>There is improved transparency on government electricity consumption and billing.</p> <p>Municipal enterprises are facing major challenges in continuing their operations.</p>

Table C-1 Access under Pre-Reform and Post-Reform Conditions	
Pre-Reform	Post-Reform
	<p>There is no strategy to ensure the participation of small power systems (mainly owned by municipalities or co-ops) in the restructuring of the power sector. Instead, these small systems simply integrate as best they could with the larger and new private and competitive infrastructure. Some efforts were made by the Government in addressing their concerns but no significant result was achieved, partly due to the large number of small systems (more than 25), their very small size, their low level of knowledge and sophistication, and the local political environment.</p>
Income Level	
<p>Those below the poverty line usually lived in rural areas and had very limited access to electricity.</p> <p>Most service extensions were made under international donor, NGO, and church relief programs.</p>	<p>Despite the progress made in encouraging private investment in the electricity industry since 1992, private companies have shown limited interest in extending electricity to rural areas.</p> <p>Most investment for expanding service to rural areas off-grid still comes from donors. The Trust Fund needs to be implemented to see if its rate of connections is as effective as donors'.</p>
Geographic Regions, Urban vs. Rural	
<p>Electricity service was largely urban and highly centralized.</p> <p>Decision-making was top-down.</p> <p>Political considerations were stronger than technical or economic criteria when selecting rural communities for electrification.</p> <p>About 40% of rural communities had electrification coverage.</p>	<p>Privatization has not altered the pre-reform focus on urban consumers.</p> <p>While there has been an improvement in the service coverage to the population near the grid (mostly urban), expansion to rural outlying communities remains problematic.</p> <p>There is no strategy for isolated, dispersed rural communities.</p> <p>Electrification coverage has increased to over 60%.</p>

C.1.2 Price

Residential rate increases were only modestly higher than inflation. Residential tariffs increased by 63% between 1993 and 1998, while the consumer price index rose by 55% over this period.

In 2000, subsidies were still a major issue; residential users up to 500 kWh receive subsidies, even though the new Energy Law specifies that only those who consume up to 100 kWh

should receive subsidies. At present, there are no cross-sector subsidies, except on the industrial tariff for large users.

Given that a considerable amount of generation is still governed by “take-or-pay” contracts, the beneficial impact on tariffs is not expected to be significant until those contracts expire. Many of the contracts were signed in the early to mid 1990’s, a period of severe deficits in power generation and blackouts. To bring on new power supplies, the Government had no other option but take-or-pay contracts. These contracts often have periods of 10 or more years at fixed prices, and those prices flow through to consumers thus delaying the benefits of a truly competitive wholesale electricity market.

C.1.3 Quality of Service

Table C-2 presents a comparison of quality of service indicators pre- and post-reform.

Table C-2	
Quality of Service under Pre-Reform and Post-Reform Conditions	
Pre-Reform	Post-Reform
Choice of Supply	
<p>Until the 1980s, Guatemala’s energy mix was dominated by hydro (80%).</p> <p>There was little to no contribution by other renewable energy technologies.</p> <p>Few firms offered bulk power to the market.</p>	<p>By 2000, up to 70% of generation capacity was fossil fuel-based.</p> <p>Even though the reforms do not rule out renewable energy, legislation does not provide incentives for renewables.</p> <p>A significant number of firms participating in the bulk supply market have “take-or-pay” contracts, diminishing the full impact of a competitive market.</p>
Choice of Supplier	
<p>Choice was restricted to the government monopolies (INDE and EEGSA).</p>	<p>Distribution is now owned by two companies operated by a Spanish consortium.</p>
Service Reliability	
<p>National blackouts were frequent.</p>	<p>Blackouts have been reduced in urban areas. Poor service continues in rural areas.</p>

C.1.4 Other Social Impacts

Table C-3 presents other social impacts that have occurred or are expected to occur.

Table C-3 Other Social Impacts of Energy Sector Reforms	
Occurred	Expected to Occur
Privatization of Government-Owned Utilities	
Voluntary and forced layoffs at utilities. Lack of interest in the “social” commitment to rural electrification.	New ancillary services will appear, with former employees organized to provide billing and collection, grid construction, and other services.
Business Conditions	
Several rural electrification service providers have ceased operations as a result of the new criteria adopted by the distribution companies, thus creating unemployment in the ancillary services industry.	Only those entering into ventures with the new owners of the distribution system will be able to sustain operations in providing rural energy services at the grid level.

C.1.5 Stakeholder Participation

In the policy discussions on power sector reform, the Government included to a limited extent potential investors, large consumers, NGOs, and representatives of the renewable energy industry. However, it did not include the rest of the population (especially small electricity consumers) and others in civil society that could have helped build a wider consensus for the privatization and restructuring. Broader stakeholder participation could have provided greater support and sustainability for the early years of the reform effort. As a result, the goals and objectives of the restructuring and privatization are not clear to society as a whole. Nevertheless, as is common in many countries, the political context and the “window of opportunity” in the timing were critical to moving the process forward in Guatemala. In retrospect, the Government should have disseminated information and built awareness more broadly to promote a wider and more diverse societal support for reforms.

To its credit, Guatemala did have a draft renewable energy law under consideration during the restructuring and privatization period, and assigned a significant portion of the proceeds of the privatization for rural electrification through the contract of the new private distribution company.

C.2 POLICY EFFORTS TO MITIGATE ADVERSE SOCIAL IMPACTS

Table C-4 examines the existence of a number of policies to reach social equity and if they are present in Guatemala, their effectiveness.

Table C-4 Social Impact Mitigation Policy	
Status in Guatemala	Effectiveness
Universal Service Mandate	
<p>There is no explicit policy to ensure or promote universal service; however, there are some initiatives that relate to service expansion:</p> <p style="padding-left: 40px;">The Rural Electrification Trust Fund financed by asset sales.</p> <p style="padding-left: 40px;">Social investment funds run by the government that include electricity service as part of social investment in the country.</p>	<p>A target was set by the previous government in the National Electrification Plan to reach about 2,000 villages by 2004; however, another 2,000 will remain without electricity service.</p> <p>While the effort is oriented to the population near the electrical grid, there is no well defined plan in place with financing for those in the more isolated communities.</p>
Access to Basic Energy Services by Poor People	
<p>Under the current tariff structure, there is a subsidy on consumption for those who consume below 500 kWh/month.</p> <p>There is a supply-side subsidy for rural electrification under the National Electrification Plan.</p>	<p>Most of the benefits of the subsidy go to higher-income residential users.</p> <p>The supply-side subsidy is well targeted because it reduces barriers to connection. However, this subsidy does not create a mechanism for providing sustainable financial delivery to poor rural and peri-urban areas.</p>
Access to “Reasonable” Energy Pricing in Remote Areas	
<p>There is none. Neither are there explicit policies pertaining to energy pricing for poor people living in remote areas.</p>	<p>Same as pre-reform.</p>
Windfall Allocations	
<p>An explicit policy in this regard is the creation of the Rural Electrification Trust Fund; however, it is not clear how this fund will be capitalized.</p> <p>The continuation of the tariff subsidy represents an implicit policy of using windfall funds as a way to retain subsidies.</p>	<p>The subsidies might drain resources, hampering the ability to help the poor access services over the long term.</p>

C.3 RECOMMENDATIONS

C.3.1 Energy Policy

There is a need for greater participation by civil society participation in the policy formulation process. This will permit stakeholders to define and voice their concerns more clearly. In relation to social impacts, the policy agenda should incorporate the following at a minimum:

Guatemala needs an integrated energy strategy which takes into consideration the new Energy Law, the benefits obtained, and a defined approach for also addressing social aspects.

The social impacts of the Trust Fund's establishment and use should be included in the reform process by allowing more transparency and accountability.

C.3.2 The Role of National Government

National by-laws should be created for the Rural Electrification Trust Fund to allow it to expend its assets in a way that allows for cost recovery based not only on willingness to pay but also on productive uses of electricity. This should also foster micro and small business operations.

MME should pursue a policy framework that is responsive to national economic, social, and environmental objectives in the context of restructuring the power sector.

The National Energy Commission should work to gain greater autonomy from the political arena. It should also increase its capacity to resolve conflicts among the sector's stakeholders.

Actions should be taken on the following policy issues:

- Disseminating information and building awareness to promote stakeholder participation

- Increasing competitive supply

- Improving energy efficiency through the removal of price, information, and financial barriers

- Promoting rational energy pricing, especially in relation to the poor

- Expanding access by removing barriers to more efficient fuels and technologies

- Coordinating energy sector policy with those of other sectors of the economy.

C.3.3 The Role of International Aid

International agency assistance should focus on assisting with policy formulation and specific projects. These would relate to broadly-based growth policies and specific actions and programs to streamline the energy sector, and work to alleviate the negative social implications of reform.

Broad-based policies should focus on:

- Assistance strategies to reduce poverty

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Protecting the poor in structural and sectoral adjustment programs

Participation and decentralization in investment lending.

Specific actions and program would include:

Pricing energy so that it is affordable to the poor (avoid fuel subsidies, avoid universal pricing, etc.)

Expanding credit to the poor

Encouraging greater diversity in energy investment for rural and poor people

Encouraging local participation.

APPENDIX D: THE SOCIAL IMPACTS OF POWER SECTOR REFORM IN INDIA

One of the factors driving the development of India is its economic liberalization process, which began in the early 1990s. Given the size and diversity of the country, however, the effects of liberalization have been uneven across geographic regions, economic sectors, and sections of the population. Within the energy sector, electricity has been the most prominent sub-sector to be subjected to reform and regulation. This appendix examines the progress of these reforms and their likely impacts on India's economy and society.

India's 93 GW power sector is dominated by coal (which accounts for 72% of its capacity), followed by hydropower (24%), nuclear, and wind power. About 5,000 MW are supplied by private power producers and several thousand more MW are in the pipeline. Some characteristics of the sector that give rise to socio-economic impacts and negatively affect the industry's efficiency are:

High power losses. Average transmission and distribution losses are 21%, but losses can be as high as 47% in poor, predominantly rural states like Orissa.

Heavy subsidization. The agriculture and residential sectors are heavily subsidized (\$4.65 billion and \$1.4 billion, respectively), while the industrial and commercial sectors are heavily taxed. About \$1.5 billion in cross-subsidies are made each year, representing a severe drain on the exchequer and these highly productive sectors.

Low rural access. Over 14,000,000 irrigation pumpsets are operating in rural areas, and nearly 87% of the country's villages have been electrified. However, only about 30% of rural households are connected to the grid. Of the nearly 90,000 villages that are not connected, it is not technically viable to electrify an estimated 18,000. However, supply quality and reliability are low among the connected villages, largely due to the over-extension of grid lines and weak local infrastructure.

Five Indian states have implemented market reform. Orissa's privatization process was completed in August 1999 and Andhra Pradesh began its restructuring efforts in that same year. Reforms have stalled in Haryana, Rajasthan, and Uttar Pradesh. The restructuring process in this last state was thwarted as soon as it began as a result of a strike by UP State Electricity Board (SEB) employees. With reforms underway for such a short time, it is too early for definitive assessments of social impacts, therefore potential impacts are discussed below.

D.1 POTENTIAL SOCIAL BENEFITS OF POWER SECTOR REFORM

India's electricity sector reforms are expected to result in several benefits:

Improved access. It is too early to assess the improvements to electricity access, even for those segments of the economy with the greatest willingness to pay. International experience suggests that benefits cannot be assessed until the institutional framework is developed, tariffs are revised, and companies acquire the requisite operational experience, which will not occur for another four years.

Increased utility revenues. The average tariff from electricity sales has increased from 2.2 U.S. cents in 1992/93 (when the liberalization process began) to 4.5 cents in 1998/99 (large differences exist among the states and sectors). In some sectors (e.g., agriculture, residential), the tariff is still much less than the average cost of production. One of the major reforms undertaken was the institution of a 1 cent charge per kWh in the agriculture sectors of Haryana, Himachal Pradesh, Orissa, Uttar Pradesh, and Meghalaya, but there have been difficulties in implementing the charge. Lastly, the cross-subsidies from the industrial and commercial sectors have hovered between 40 and 50% for several years. The Central Electricity Regulatory Commission has recommended that this cross-subsidy not exceed 50% so as not to affect the viability of these sectors.

Quality and reliability of service. There is no evidence that service quality has improved in any way. In fact, the situation in Delhi and other neighboring states in the Northern grid has worsened. This is also true in rural areas, where grid lines are extended even to villages with little or no demand. The World Bank and other donors have added programs to promote demand-side management, energy efficiency and other measures to their portfolios to help alleviate this problem, but these efforts are too recent to have had significant effects.

Increased public revenues from asset sales. The proceeds from asset sales in each of India's reform states are channeled into state coffers. It is not known whether these revenues have gone into meeting any of the states' social needs.

D.2 POTENTIAL ADVERSE IMPACTS OF POWER SECTOR REFORM

India's electricity sector reforms are also expected to result in several disbenefits:

Access for the rural poor. One of the major criticisms of the reform process is that it can deprive access by the poor. However, two-thirds of Indian households already lack access and it is doubtful that power sector reform would worsen this situation. But progress toward greater access by the poor might be affected if the government no longer takes responsibility for increased access, using a rationale that the process is now wholly private.

Access for the urban poor. Many of India's urban poor, who mostly live in slum dwellings and under bad environmental conditions, still often have regular jobs and some disposable income, and thus may have a higher willingness to pay than their rural counterparts. However, the urban poor are often the victims of vested interests (SEB employees, local politicians, and extortion gangs) who may subvert the reform process, because it could negatively affect their interests. This situation is exacerbated because consumer groups, which could act as counter-pressure groups, are weak or non-existent.

Tariff reform impacts. The greatest impact here is on members of the middle and upper middle classes, who are adversely affected in the short run because they must pay higher prices for electricity. However, improvements in power access, reliability and quality will offset this impact over time.

Social disruption. Faced with the loss of employment as a result of reforms, the immediate reaction of power sector employees is to resort to disruptive activities. The recent strike

by Uttar Pradesh SEB employees is a good example of this. After the strike, the government took a hard stance, removing people from jobs and attempting to recruit new employees, which resulted in further disturbances. Unprepared for dealing with this situation, the government compromised with employees, guaranteeing them that privatization would be put on hold for one year and that no jobs would be lost.

In other reform states, employees were absorbed into the new organizations as a condition for allowing the privatization process to proceed. This, however, would continue the inefficiencies and organizational cultures of the old system. One method that will likely be adopted to deal with this is to have no new recruitment for some period and allow the number of employees to decrease through natural attrition.

Disposition of income from asset sales and subsidy reductions. The income generated from asset sales and subsidy reductions goes to the state budget, but there is no evidence that it is being used to meet a universal service mandate, as is the case in other developing countries. Indeed, no decision seems to have been made on how this income would be linked to social development activities in a tangible way.

D.3 CONCLUSIONS

Despite minor setbacks, the reform process in India is making progress with multilateral assistance. While reforms are still in an early stage and their impacts are not yet clearly discernable, several conclusions can be drawn:

There has been no attempt at any level of government to address the likely social impacts of reform, and no evidence that the government is correlating the reform process with its social obligations and universal service mandate.

CERC and SERCs have mainly focused on tariff reform and institutional legislation, and have no mandate to address social impacts. Their credibility as independent regulators has yet to be established, and they are not in a position to advise or influence the government on these impacts. For example, although the Orissa ERC was formed five years ago, it was not able to influence its state's rural electrification process in any way, which remains dismal.

Governments and regulatory agencies have no human resource development policies in place to involve employees in the reform dialogue or to train and reorient them to work in the new institutional structures.

No significant attempt has been made to link the reform process to providing alternative energy services to under-served populations.

D.4 RECOMMENDATIONS

A number of policy interventions are recommended:

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The central government or multilateral development banks should provide funds to implement the universal service mandate. These funds should have conditionalities and strictly verifiable indicators to ensure their proper utilization. These funds could also be used to create “subsidy baskets” to allow the poor to access energy services.

The needs of the poor, who are outside the reform framework, should be met with integrated approaches (rather than trying to supply them with electricity). Their first priorities may be access to health care, greater income, etc.

Mechanisms to channel income from the reform process (asset sales, saved subsidies) toward integrated activities for the poor should be developed. However, care should be taken to ensure that any such funds are not tapped by vested interests. Having NGOs administer such funds is one option (World Bank DSM programs in Andhra Pradesh and Haryana are considering using NGOs to manage their activities).

Regulatory agencies should be held more accountable. In a recent report, an Indian NGO made three suggestions in this regard: 1) design and implement rigorous selection policies to make these agencies as transparent and objective as possible, 2) create a venue for public participation in decision making, and 3) use civil society institutions (NGOs, consumer groups, etc.) to act as watchdogs.⁴²

In states contemplating reforms, employees should be part of the dialogue from the beginning so that confrontations can be avoided later.

A rigorous training and reorientation program should be developed for unbundled companies that absorb former SEB employees to effect change in the culture and employee mindsets.

Renewable energy technologies (either specific end-use combinations or as part of distributed utilities' energy efficiency measures) should be promoted as alternatives to remote or low-income populations that are unlikely to be touched by the reform process. India has one of the largest and most active renewable programs in the world, which has no links to energy sector reforms. It is possible to develop programs and institutions (e.g., ESCOs) that can promote alternative energy service supply programs that complement the power sector reforms.

⁴² Prayas. 1999. *Regaining Rationality through Democratisation – A Critical Review of MDBs Power Sector Activities in India*. Pune.

APPENDIX E: THE SOCIAL IMPACTS OF POWER SECTOR REFORM IN GEORGIA

This appendix first describes the ongoing energy sector reform activities in Georgia. It then presents information on the access to, and prices and quality of, electricity service within the country. Next, it describes the government's current policy efforts to mitigate the adverse social impacts of energy sector reform. This is followed by a number of policy recommendations to help improve the sector's financial condition and alleviate adverse social impacts.

E.1 AN OVERVIEW OF GEORGIA'S POWER SECTOR

After the collapse of the Soviet Union in 1991, the traditional economic relations among the former republics disintegrated, leaving gaps in Georgia's economy. Growth also deteriorated owing to such events as the 1992 civil war, the hyper-inflation of 1993-94, and conflicts in Abkhazia and South Ossetia, which resulted in the displacement of thousands of refugees.

While the economic reforms and stabilization programs implemented since 1994 have significantly enhanced Georgia's economic and civil development, its energy sector remains in an extremely difficult situation. The lack of external support and the government's inability to subsidize electricity production, coupled with the facts that tariffs are far lower than operating costs and collections are under 20%, have left utilities with little money to buy fuel or invest in critical facilities. The country still struggles with frequent power supply disruptions that have hindered its economic development and diminished the living conditions of its people.

Energy sector reform, which was designed to attract strategic foreign investors to the sector as a result of privatization, is a critical element in the economic restructuring efforts underway in Georgia. Since restructuring began, commercial activities have been separated to some extent from the government's policy functions, and an independent regulatory agency has been established. Tariff procedures were reformed and rates raised to more closely approach the cost of operations.

However, while Georgia has put in place most of the institutional components required for reform, the initiatives' results are not yet readily apparent to the public, which has seen energy prices increase, but has experienced little improvement in services.

E.1.1 The Electricity Sector

Generation. Georgia's nameplate generation capacity is about 4,800 MW:

1,938 MW in three thermal plants – Tbilresi (Gardabani), Tkvarcheli, and Tbiltsi (combined heat and power). The Tbilresi plant accounts for 1,700 MW of nameplate generation, but not all of its units are currently operational.

2,700 MW in 103 hydro plants: 6 large storage plants, and 17 large and some 80 small run-of-river plants. The largest of these, Enguri, has an installed capacity of 1,300 MW, but only four of its five units are currently operational.

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160 MW in industrial cogeneration plants and diesel units.

For the past ten years, the country's generating capacity has been less than its installed capacity, as a result of deteriorating generation equipment, lack of funds for fuel purchases, and the politically sensitive locations of three plants, which are situated in or close to the breakaway Abkhazia region.

Several World Bank, EBRD, OECR, and KfW-funded rehabilitation projects are underway. Once complete, these projects will slightly increase Georgia's generating capacity and help ensure that the country does not lose capacity due to lack of investment and further infrastructure deterioration. It is important to note, however, that if Georgia could enforce its collections effectively, the system's supply and demand could be brought into balance without the need for additional generating capacity.

Transmission and Dispatch. The state-owned transmission enterprise Electrogadatsema operates, maintains, and develops Georgia's high-voltage transmission network. This network consists of 576 km of 500 kV lines, 1,690 km of 220 kV lines, and 3,911 km of 110 kV lines. In addition, the interconnection with Azerbaijan includes 21 km of 330 kV lines.

The Georgian power system is interconnected with the neighboring systems of Russia, Turkey, Armenia and Azerbaijan through seven tie lines:

- 500 kV Georgia-Russia (in the southern region of Russia)
- 220 kV Georgia-Russia (in the Black Sea region of Russia)
- 220 kV Georgia-Turkey
- 330 kV Georgia-Azerbaijan
- 500 kV Georgia-Azerbaijan
- 220 kV Georgia-Armenia
- 110 kV Georgia-Russia.

The 550 kV east-west backbone line of Georgia and all of the above lines except for the last two are owned by Sakrusenergo, a company that is 50% owned by RAO United Energy Systems of Russia and 50% by the State of Georgia. The lines are operated by Electrogadatsema (which owns over 9,800 km of transmission lines and 19 substations) under contract with Sakrusenergo.

Two of the lines (the 220 kV Georgia-Russia and the 500 kV Georgia-Azerbaijan lines) are not operational. The remaining lines are often operated in an "open" position, isolating the Georgian system. Dozens of other transmission lines and portions of substation equipment are non-operational or function poorly due to the lack of maintenance or rehabilitation on the 35-110 kV networks. Although Electrogadatsema has developed a priority program for repair and rehabilitation, the financing to implement it is lacking.

Network reliability is also hampered by theft and vandalism, and by daily load shedding to cope with winter supply shortages. This has damaged substation batteries and switches. Electrogadatsema estimates that technical losses on the high-voltage system have reached 5-6%, while Dispatcherizatsia (the state-owned enterprise responsible for system dispatch) estimates these losses at 12-15%.

Distribution. At present, an effort is underway to consolidate electricity distribution. The International Finance Corporation (IFC) has been retained by the Government of Georgia to

prepare a privatization offering for the state-owned distribution utilities and five hydropower stations. The IFC is encouraging the consolidation of the state-owned utilities in to a single distribution utility to create a utility of sufficient size to be attractive to potential investors.

There is widespread recognition throughout the power system that much of the sector's financial crisis stems from the poor performance of the distribution utilities. Collections are poor for the state-owned utilities, officially averaging 20% or less (although there are some exceptions, such as in Adjara, where reported collections exceed 50%). Electricity supply to the utilities is especially poor during the winter, when it is not uncommon for households to receive no power for days or even weeks on end.

E.1.2 Natural Gas

For the most part, Georgia is highly dependant on imported natural gas. Domestic production is only about 50 million cubic meters, against the country's current annual consumption of about 1.2 billion cubic meters. However, additional exploration is underway in Eastern Georgia, making it likely that domestic production will increase in the next few years.

Georgia's transmission subsector is dominated by the Georgian Gas International Corporation (GIC), a 100% state-owned enterprise formed by presidential decree in 1997 for the purpose of managing Georgia's main natural gas pipeline, and to represent the state in contracting and negotiating gas imports with foreign suppliers.⁴³ GIC is now responsible for bringing natural gas to Georgia and for providing limited direct sales to some larger customers and distribution utilities.

There are 32 natural gas distribution companies in the distribution subsector. In 1996, management of the local gas distribution companies was transferred to municipal governments in each locality. The state retained ownership of the distribution systems. In January 1998, the privatization process began and resulted in the sale of several of the larger municipal gas distribution companies in Georgia to Sakgazi, a Georgian subsidiary of Interpak. This effort resulted in the Interpak's (now Sakgazi) purchase of seven distribution companies: Rustavgazi, Kaspigazi, Gorigazi, Bolnispigazi, Kutaisgazi, Marneuligazi, and Tetriskarogazi.

E.2 ENERGY SECTOR REFORMS

E.2.1 Regulatory Reform

As Georgia continues to move toward a market economy, it is clear that the formation of an economically and technically viable power sector is fundamental to the country's economic growth.⁴⁴

⁴³ GIC's responsibilities for handling gas transit pipeline negotiations with foreign parties was reassigned, by presidential decree, to the Georgia International Oil Corporation in 2001.

⁴⁴ PA Government Services. *Information Memorandum on the Generation and Distribution Assets in Georgia*. Prepared for USAID, 1999.

The sector's regulatory authority, the Georgian Energy Regulatory Commission (GNERC), began functioning in June 1997. The GNERC is an independent regulatory agency with jurisdiction over the rates, terms and conditions of service for electricity and natural gas sector enterprises. GNERC is authorized to establish a system of licenses and tariffs to regulate the country's energy enterprises, with different requirements for electricity generation, transmission, dispatch, and distribution licensees, and natural gas supply, transportation and distribution licensees.

E.2.2 Restructuring

The Government of Georgia adopted a functional unbundling model for both the electricity and natural gas sectors, dissolving the former vertically integrated utilities and creating a number of enterprises in electricity distribution and generation and natural gas distribution. The government did make some missteps, however, when it transferred operational responsibility for the distribution utilities to the municipal governments and also created far more distribution utilities than economic efficiency would dictate. The result was that the distribution utilities' operational performance remained very low and the cash collected was often diverted to meet the needs of the municipality rather than remaining in the electricity or natural gas sectors.

In 1999, as part of the Law on Electricity and Natural Gas, the government also implemented the centralized funds administration/settlements organization known as the Georgia Wholesale Electricity Market (GWEM). However, this organization's performance has not met the expectations of either outside observers or inside participants. Corruption within the organization is also alleged.

Georgia's current method of organizing the power system is quite varied. It includes a number of direct bilateral contracts between suppliers and wholesale customers, and also has much of the power moving through the GWEM, which serves as a wholesale contractor for supply on behalf of its customers.

E.2.3 Asset Privatization

The privatization of Georgia's energy sector became possible when parliament amended the law on Privatization and the State Property in 1998 to create the conditions for the private ownership of larger companies.

Georgia has made important progress in power sector privatization through the successful sale of Telasi (the country's largest distribution system) in December 1998. It also sold Units 9 and 10 (representing 600 MW of installed capacity) of Georgia's largest thermal plant Tbilisi, to AES Silk Road Holdings (an affiliate of the US-based AES Corporation) in April 2000. The privatization established Tbilisi as the first capital city in the former Soviet Union to be served by a private investor-owned distribution company through an open, international competitive tender.

The government is now working to privatize additional electricity distribution and generation companies. The Ministry of State Property Management, the Ministry of Fuel and Energy and other related bodies have considered consolidating existing state-owned electricity distribution companies into four utilities: Telasi, eastern Georgia, western Georgia and Adjara.

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Due to political considerations, the privatization of utilities in the autonomous region of Adjara will likely be delayed.

The government is also undertaking an initiative to award five-year private management contracts for electricity transmission (Electrogadatsema), dispatch (Dispatcherizatsia) and the GWEM to qualified foreign operators. A Spanish consortium led by Iberdrola won the tender for the GWEM. Two bidders remain for the electricity and dispatch contract, and awards are expected later this year.

The government has also sold seven of the largest gas distribution companies to Sakgazi, a joint stock company with 50% Georgian participation and 50% participation of ITERA International, a large gas producer and trader believed to have close ties to Russia's Gazprom. On June 16, 2001, the Municipality of Tbilisi announced the tender of Tbilgazi, the capital's gas distribution company, via a competitive direct sale offering to qualified foreign investors.

E.2.4 Tariff Reform

The Georgian Government is committed to gradually bring electricity tariffs in line with costs. The GNERC adopted a full cost recovery principle for electricity tariffs, and has raised electricity tariffs three times since 1997. Table E-1 shows the current energy tariffs by consumer category.

Table E-1 Current Retail Tariffs in Georgia (tetri/kWh)			
Consumers	380/220 Volts Residential	6,000 to 10,000 Volts	35,000 to 110,000 Volts
1. Distribution Companies			
- AES Telasi (Tbilisi)	9.8 (\$0.05)	8.6 (\$0.04)	-
- Adjara	8.5 (\$0.04)	6.6 (\$0.03)	-
- Other regions	8.4 (\$0.04)	6.3 (\$0.03)	-
2. Electricity Wholesale Market (for direct consumers)	-	6.1 (\$0.03)	5.7 (\$0.02)

*100 tetri = 1 lari (equivalent to about 0.50 USD).

Tariffs for residential customers in Tbilisi now stand at 9.8 tetri/kWh, the highest in the former Soviet Union. Despite the steep increases of recent years, it is widely acknowledged that the current tariffs are still not sufficient to fully recover operating expenses. AES Telasi informed the GNERC through a tariff modification notice that tariffs should be increased to 17 tetri per kWh to reflect full cost recovery. Considering that electricity consumption now accounts for 21.5% of a household's average monthly salary, the public outrage that followed this request was predictable.

The IMF has also issued a special requirement to the Government of Georgia regarding the imposition of higher electricity tariffs. The IMF insists on adding the foreign debt service component to the existing tariff. If approved, the tariff increase will result in the IMF offering a new assistance program to the country.

Increasing tariffs will do little to improve the sector's financial performance without also improving the collection rate, which is currently below 20%. Bad debt and commercial losses are creating serious problems for the sector. The GNERC considers a tariff increase very difficult in the current situation and would rather support alternative measures to incorporate the debt service component into the existing tariff. It is now reviewing the tariff approaches used in other countries and considering various options to reduce commercial losses and eliminate bad debt.

E.3 THE SOCIAL IMPLICATIONS OF REFORM

Before independence, virtually all of the former Soviet Union was electrified, and access to energy services was nearly 100%. The FSU's energy prices were not cost-based; they were more of an allocation mechanism and had little relation to the actual costs of production, transmission and distribution. Because tariffs were kept artificially low, consumers had very little practical difficulties in paying them. Supply reliability was reasonably good and the system operated in accordance with a set of sound technical measures.

With the collapse of the Soviet Union, the relationships that kept this system functioning were broken, causing various dislocations. Supply reliability was compromised and the economic collapse prevented the new republics that were dependent on fuel imports from purchasing enough fuel to maintain their energy systems. Prices throughout the economy escalated rapidly, placing hardships on an increasingly economically disadvantaged populace.

Thus, the energy reform process in Georgia and other former Soviet states faces a considerable challenge. Unlike the situation seen in a developing country context, these transitional economies are pressed with the need to restore service and access levels to those previously witnessed by consumers. Thus, the reform effort must rebuild the systems, under market conditions, to reach the same technical performance level seen earlier.

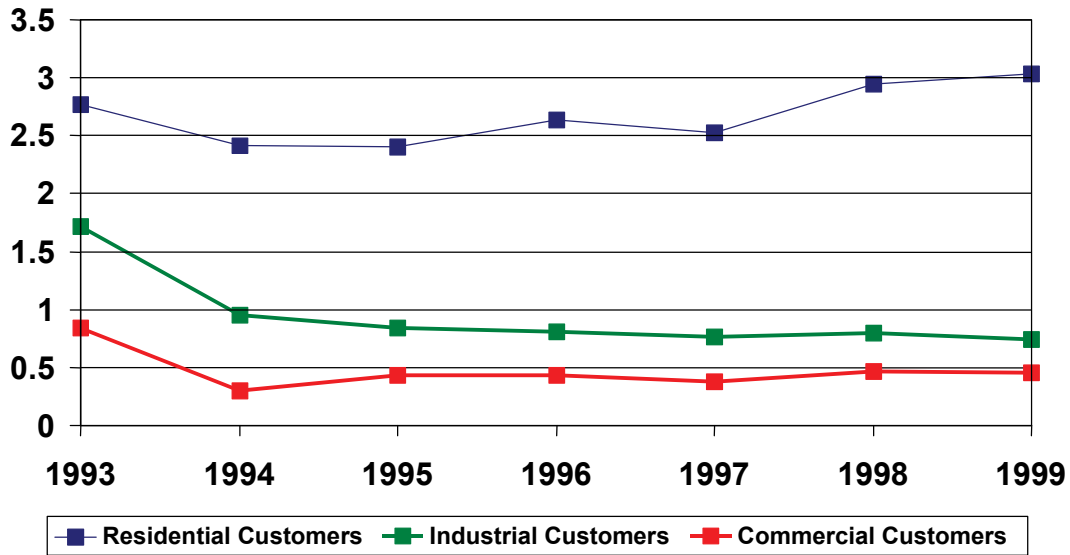
E.3.1 Access to Energy Services

Since 1991, Georgia's energy resources, including electricity supply, have gradually decreased. Electricity consumption was lowest in 1994-95 at 5.3–5.4 billion kWh/year, which was only 38% of the average annual consumption (14.2 billion kWh) during the 1980-1990 time period.

The populace and public utilities have suffered considerably during the past decade. Due to the economy's poor financial condition, central heating and hot water supply decreased almost by half in 1992. Natural gas supply to residential customers was stopped. Electricity became the main energy resource because of the lack of other fuels (e.g., coal, oil). For the same reasons, thermal power plant electricity generation also decreased. Electricity supply fell from 14.2 billion kWh in 1990 to 5.3 billion kWh in 1995.

Figure E-1 shows the trend in electricity consumption among Georgia’s major consumers from 1993-1998. It demonstrates the continued decline of the industrial electricity use, and a rising share on the part of residential consumers, due in large part to the lack of access to other energy supplies that were formerly available (e.g., natural gas, district heating). Thus, even though the graph shows that total residential consumption has climbed during this period, there is still unmet demand.

Figure E-1
Electricity Consumption in Georgia (1993-1999) in Billion kWh



Access by Income Level. Table E-2 shows the number of households and the percentage distribution by income category for 2000. The figures include non-cash income.

Table E-2 Distribution of Households by Monthly Income			
Monthly Income In Lari	Decile (Income Level)	Number of Households (Thousands)	Cumulative Number of Households (Thousands)
0-10	1	39	39
10-20	2	49	88
20-30	3	49	137
30-40	4	47	184
40-50	5	53	237
50-100	6	236	473
100-150	7	180	653
150-200	8	127	780
200-250	9	99	879
Above 250	10	227	1,106
Total		1,106	

Source: Georgian State Department for Statistics. 2000 Household Survey.

Based on the expenditure levels shown above, Table E-3 shows the amount of electricity that could be affordably purchased by income level (decile) as estimated by the Georgian State Department of Statistics.

Table E-3 The Amount of Electricity that Could Be Purchased at Specified Expenditure Levels (in Tbilisi) by Decile ⁴⁵											
Expenditure Item	1	2	3	4	5	6	7	8	9	10	Avg.
Electricity Lari/month	1.5	2.6	3.0	3.6	4.1	4.2	4.4	4.4	4.5	6.4	3.9
Electricity kWh/month	17	29	33	40	46	47	49	49	50	71	43

Source: Georgian State Department for Statistics. 2000 Household Survey.

The table shows that most households can afford only relatively modest amounts of electricity. Current electricity consumption may be higher, however, due to both: 1) the lack of commercial discipline in the electricity sector, which permits widespread nonpayment without fear of disconnection and 2) consumers choosing to spend more on electricity than they can afford by reducing consumption on other necessary goods and services.

At the same time, it is important not to overstate the affordability problem in Georgia. For instance, Georgia's neighbor – Armenia – has shown that the nonpayment problem can be addressed through effective commercial management. Armenia has achieved cash collections of close to 95% of its residential households. Although there is still theft of electricity, by enforcing disconnection for nonpayment, the results in Armenia have shown that most consumers have the means to pay. Tariffs in Armenia are slight lower, but roughly

⁴⁵ Note: this table uses a tariff level of 9.0 tetri/kWh. On September 1, 2000, the tariff in Tbilisi increased to 9.8 tetri/kWh.

comparable to those in Georgia, and certainly the economic climate in Armenia is poorer than that found in Georgia at present.

Access by Region. Access in most regions of Georgia has decreased significantly, with a few exceptions in areas with larger cities such as Tbilisi, Adjara and Imereti. Because of the internal displacement of individuals, most of these areas experienced large population growth. The government was thus forced to take drastic measures to satisfy demand in the cities and significantly reduce power supply to the rural regions.

In the rural regions electricity was supplied only to those establishments of critical importance (e.g., hospitals, military/police, communications). The level of electricity consumption in Tbilisi (17% in the past) increased to 39%(by reducing power supply to rural regions). Notwithstanding such an increase, the power supply to Tbilisi did not exceed 70% of its demand. The depletion of the natural gas supply and the breakdown of the central heating system resulted in electricity being used as a heating source, thus increasing the level of electricity consumption in Tbilisi. Table E-4 presents data on the average percentage of energy supplied pre- and post-reform in various geographic regions of Georgia.

Table E-4 Average % of Energy Supplied by Region, Pre- and Post-Reform		
Geographic Regions	Period	
	Pre-Reform (1980-1990)	Post-Reform (1991 to 2001)
Kakheti	3.6	1.8
Tbilisi	17.3	39
Shida Kartli	4.1	3.6
Kvemo Kartli	10.1	9.2
Oseti	0.88	1.6
Adjara	3.4	5.4
Guria	1.6	0.8
Samgrelo	4.5	5.5
Imereti	10.4	15.5
Other	44.2	17.6

E.3.2 Price of Energy Services

As described earlier, while energy prices in Georgia have risen considerably, they have yet to reach a level that provides full cost recovery. In addition, Georgia's fuel prices are still below world prices, which means that they will likely escalate as the country becomes further integrated into European markets.

The main factors that will determine the social impacts of energy price increases are the extent to which the economy and individual consumers can support such prices as well as the distribution of wealth within the economy. These are discussed below.

Income Levels. Table E-5 presents total household expenditures in Georgia by quintile (each

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quintile represents about 221,000 households).⁴⁶ Heating and electricity costs comprise 5.8% to 6.7% of total household expenditures. For the lowest quintile of consumers, the average estimated expenditures on electricity and heating provide for only about 50 kWh of electricity, ignoring any discounts that may apply. Table E-6 provides the composition of household income by decile.

The numbers in these tables raise concern about the targeting of social assistance and foreign aid in Georgia. Although pensions, social assistance and foreign aid account for 38% of the income of the extremely poor in the first decile, this income source equals only 4.8 lari per month. This compares to the richest decile, where this assistance accounts for 5% of total income, equaling 31.6 lari per month. This result may arise from a variety of factors, including age of beneficiary, outreach efforts and reporting accuracy, but nonetheless point to the need for improved targeting of social assistance and foreign aid.

Table E-5 Total Household Expenditures by Quintile (Lari/Month)					
Expenditure Item	1	2	3	4	5
Food	30.9	62.0	89.0	115.4	179.2
Drink	0.2	0.5	0.9	1.5	5.0
Tobacco	0.8	2.2	3.4	5.3	8.9
Clothing	2.0	5.7	10.	14.6	31.1
Family consumption goods	5.6	11.7	16.2	23.2	78.9
Health care	2.8	5.8	6.9	12.1	23.4
Heating and electricity	4.7	9.5	13.3	18.4	33.0
Transport	1.5	4.6	8.2	13.3	40.5
Education, culture, other	0.5	1.8	4.1	6.6	21.8
Other consumption expenditures	1.1	2.7	3.8	5.3	11.3
Total consumption expenditures	51.2	109.1	159.5	221.0	444.5
Transfers (informal)	0.2	0.1	0.1	0.5	1.3
Savings and lending	9.8	15.1	16.3	16.0	38.0
Total cash expenditures	61.2	124.3	175.9	237.5	483.8
Non cash expenditures	9.5	18.0	32.0	51.2	88.3
Total expenditures (excl. agricultural investment expenditures)	70.7	142.3	207.9	288.7	572.1
Percentage spent on heating and electricity	6.6%	6.7%	6.4%	6.4%	5.8%

⁴⁶ Tanos, Elliot, PA Government Services. *Energy Subsidy Report*. Draft report, prepared for USAID and GNERC, May 2001. Statistical data from the Georgian State Department for Statistics.

One recent development may affect the energy prices for consumers in Tbilisi. AES Telasi and the GNERC are discussing the possibility of implementing a three-tier lifeline tariff for electricity in the capital. This type of tariff offers a lower price for the first tier of consumption, compensated by higher prices in the second and third tiers of the tariff. This development would likely be viewed positively by the public, even though the international experience with using such tariff approaches for responding to the needs of low-income consumers has been mixed.⁴⁷

Income Source	1	2	3	4	5	6	7	8	9	10	Avg.
Paid wages	1.4	6.0	12.6	22.9	31.2	40.1	50.9	66.7	66.2	141.7	43.9
Self employment	0.3	1.6	4.1	8.5	10.8	16.7	22.3	27.6	43.1	80.8	21.6
Selling village products (crops)	0.6	2.4	5.3	7.9	10.2	15.0	18.6	23.6	42.1	83.3	20.9
Earnings from property	0.0	0.1	0.1	0.5	0.2	0.6	0.8	0.9	1.8	7.6	1.3
Pensions, social assistance	4.8	8.7	8.7	7.9	8.1	8.7	8.5	8.9	9.0	11.8	8.5
Foreign aid	0.0	0.3	0.5	1.7	1.3	1.9	3.0	4.3	4.4	19.8	3.8
Cash from family	0.6	2.3	4.3	4.5	6.9	6.6	7.0	9.1	11.3	28.9	8.2
Total cash incomes & transfers	7.7	21.3	35.6	54	68.9	89.7	111.0	141	177.9	373.9	108.1
Sale of Property	0.3	0.9	1.2	1.5	2.1	1.8	3.7	4.1	8.8	44.4	6.9
Borrowed money	1.9	5.4	7.3	8.6	10.1	12.6	15.3	16.8	28.8	91.8	20.0
Total other sources	2.1	6.3	8.5	10.	12.2	14.4	19.0	20.9	37.6	136.2	26.9
Total cash sources	9.9	27.6	44.2	64.0	81.1	104.2	130.0	162.0	215.5	510.2	135.6
Non-cash incomes	2.7	9.1	14.2	17.2	24.7	32.5	44.7	59.4	79.2	114.3	39.7
Cash and non-cash incomes	12.5	36.7	58.4	81.2	105.9	136.6	174.7	221.4	294.7	624.5	174.8

E.3.3 Quality of Energy Services

The quality of energy services encompasses factors such as the reliability of supply, the

⁴⁷ For instance, the implicit assumption in such a rate design is that low-income consumers will for the most part meet their energy needs by consuming in the first block and that increasingly higher-income consumers will consume at the higher levels. However, the situation is not so simple. Low-income consumers often have higher levels of consumption than expected.

safety of such supply, and the extent to which the consumer's energy needs are being satisfied in the most cost-effective fashion.

Since Georgia gained independence, the quality of its energy services has certainly declined. District heating has, for the most part, collapsed. Natural gas has not been fully restored to those consumers that historically had access to gas. Electricity supply is prone to disruption, especially during the winter season. When electricity is provided, the quality of supply is often problematic, with large voltage swings that damage appliances.

In the power sector, it is likely that even greater differences in the quality of energy services will be experienced in Tbilisi than in regions outside of the city due to AES Telasi's ability to purchase power supplies and control consumption in the capital through the enforcement of collections. Recent studies sponsored by USAID have developed a scenario under which Tbilisi could receive virtually 24-hour a day supply with the outlying regions receiving about 8 hours per day on average; which would be a dramatic improvement for both regions. What remains to be seen is whether the rest of the power system will be willing to make the changes required (including limited summer season rationing) to allow this scenario to become reality.

In the natural gas sector, consumer service should improve if Tbilgazi is successfully privatized to a strategic investor. The privatization of Tbilgazi is tied to an investment commitment required of the foreign strategic investor to restore gas supply within several years to 290,000 households in the capital. Although the cost of such supply may be higher than seen historically, this will still improve the quality of energy services by providing consumers with access to a lower-cost energy source.

E.4 POLICY EFFORTS TO MITIGATE ADVERSE SOCIAL IMPACTS

This section describes the effectiveness of current energy policies in protecting the rights of customers, ensuring that the poor can afford a basic level of energy service, and subsidizing energy services for the vulnerable population. Elements of the proposed AES Telasi Service Agreement are described to illustrate that policies have not yet been implemented to protect the rights of consumers. Although the privatization of the Tbilisi utility was completed more than two years ago, an agreement protecting the rights of consumers has not yet been completed.⁴⁸

E.4.1 The Establishment of Service Mandates

The draft AES Telasi Service Agreement, if implemented, will be the first of its kind to protect

⁴⁸ This delay is understandable given that AES Telasi has spent the last two years working on re-metering the nation's distribution system, which will give it the ability to enforce disconnection for non-payment, a key principle included in the proposed agreement.

consumer rights in Tbilisi.⁴⁹ This agreement is expected to be finalized by the GNERC and AES by the end of summer 2001,⁵⁰ and will likely be used as a model for other privatization endeavors in the energy sector (including the privatization of Tbilgazi). Under the terms and conditions of energy delivery services and consumption, AES Telasi is obligated to:

Deliver electric energy to customers at a tariff set solely by the GNERC.

Deliver electricity to customers in an uninterrupted manner and maintain quality parameters to the best of the company's ability, except in emergency conditions and under force majeure

Not interrupt the delivery of energy to customers:
for non-payment without prior notification,
at night and on official holidays, or
in such cases when the interruption of energy supply may cause danger to human health.

Resume energy delivery to a customer no later than 8 hours after the payment is made.

Indemnify customers for losses incurred and directly caused by AES Telasi.

E.4.2 Ensuring a Basic Level of Energy Service to the Poor

The energy sector's inefficient operation, which is manifested in an unreliable energy supply, has had a significant impact on Georgia's economic growth and has exacerbated poverty.⁵¹ The IMF reported⁵² that during 1998 and 1999, the number of poor increased the poor became poorer. Three factors are believed to contribute to the observed worsening of Georgia's poverty indicators:

the rapid accumulation of wage and social transfer arrears

a decline in private incomes, possibly caused by the decline in the agricultural sector and the onset of the Russian economic crisis in 1998

a worsening of income distribution.

⁴⁹ Georgia National Energy Regulatory Commission. *AES Telasi Draft Service Agreement to Consumers, Temporary Terms and Conditions of Energy Delivery (Service) and Consumption*, April 2001.

⁵⁰ International Energy Agency in Co-Operation with the Energy Charter Secretariat, *Privatization and Restructuring in Georgia, Black Sea Energy Survey*, OECD/IEA 2000.

⁵¹ The World Bank, *Georgian Power Sector Deficit, Eka Vashakmadze and Vakhtang Kvekvetsia*, August 1999.

⁵² International Monetary Fund, Georgia. *Recent Economic Developments and Selected Issues: Chapter IV – "Poverty,"* April 6, 2000. The State Department of Statistics provided data to IMF for developments in 1998-1999.

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Figure E-2 plots household consumption levels in each decile, against an average poverty line of 119.5 lari (\$60) per month, and a more severe poverty level of 40% on the average, or 47.8 lari (\$23.90) per month.⁵³ This figure shows the cumulative number of households at each level.

Well over half of the households in Georgia have consumption levels below the higher poverty line (\$60 per month), and over 200,000 households fall below the severe poverty line. Severe poverty levels have contributed significantly to non-payments in the energy system (an estimated \$78 million in non-payments due to bad debt and uncollectible costs).⁵⁴ For Georgia to pay off its debt and attract investments, tariffs must increase (and collections must be enforced). The issues of the socially vulnerable will need to be dealt with through other policy mechanisms.

According to the National Association of Regulatory Utility Commissioners (NARUC),⁵⁵ perhaps the three most effective actions a utility can take to achieve greater universality of service are:

- create collection procedures that work with low-income customers to keep them as paying customers

- establish low-income discounts and effective outreach so low-income customers learn about and take advantage of reduced rates

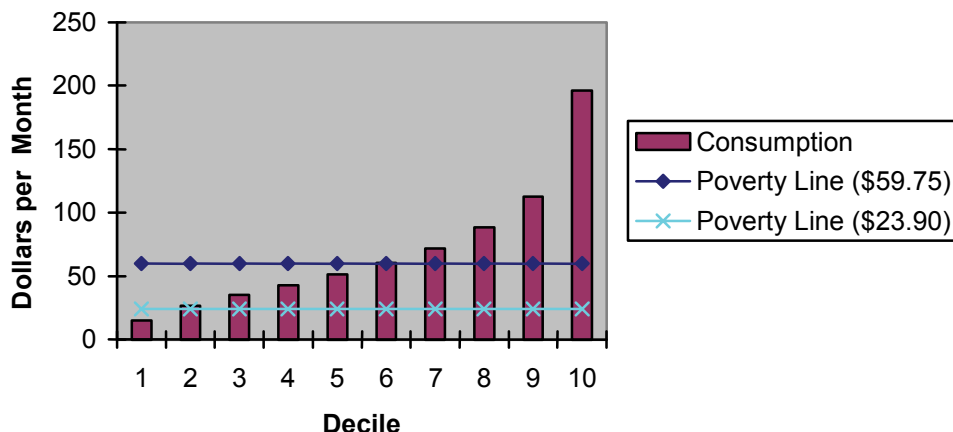
- create broad low-income efficiency programs that are delivered through community agencies to reduce utility bills.

⁵³ Total consumption per equivalent adult with scale effects. The level of the actual poverty lines changes throughout the year. We have used a simple average. State Department of Statistics.

⁵⁴ Tanos, Elliot, op. cit. These figures are based upon limited distribution company data, extrapolated to the industry.

⁵⁵ NARUC. *Performance Based Regulation in a Restructured Electricity Industry*. Prepared by Synapse Energy Economics, Inc., November 8, 1997.

Figure E-2
Monthly Consumption vs. Poverty Lines by Decile



Collection Procedures. Special payment arrangements and moratoria on shut-offs during extreme weather could be considered to assist members of the vulnerable population. With no other measures in place, the vulnerable population will suffer the most during the harsh winter months when their power is terminated for non-payment. This will place greater pressure on the state for assistance, and a greater burden on the informal safety net, which is already under-funded.

According to its proposed service agreement, AES Telasi can extend the payment term for insolvent customers with seriously ill family members whose lives could be endangered should their energy be disconnected.⁵⁶ In this case, the customer would submit a relevant medical certificate and conclude an agreement with AES Telasi on restructuring their debt.

Another program suggested to encourage payment is to introduce a rate that ties the energy payment to a specific income level. Under this approach, a household would pay a percentage (such as 5%) of its monthly income for energy use. Of course, this sort of approach could lead to large administrative costs, is prone to corruption, and does not send proper price signals to deter consumption (i.e., a participating household's use of energy does not affect its bill). Further, it does not address the underlying problem of how the funding gap resulting from such a tariff will be closed; that is, whether it would be subsidized by other consumers or the state.

Discounts and Outreach to the Poor. The Soviet Union operated a system of merit-based utility price discounts. The purpose of these privileges was not to reduce poverty, but to reward service and to compensate for injuries or human suffering. These types of privileges are widespread and pervasive. In Georgia, for a time, over half of the population qualified for at least one discount. The government has narrowed the list of privileges considerably, but not to the same extent as some republics, such as Armenia (Armenia legislated such

⁵⁶ AES Telasi Draft Service Agreement to Consumers, *Temporary Terms and Conditions of Energy Delivery (Service) and Consumption*, Georgia National Energy Regulatory Commission, April 2001.

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privileges out of existence and instead provided direct subsidies to cover the costs of the first 100 kWh of monthly consumption for vulnerable households).

Privileges, unless compensated through tariffs or funded by the state, place a large burden on the utility's finances. A cap placed on the volume of privileged consumption reduces the financial burden, and also makes the financial cost of the subsidy more predictable. This type of system should be eliminated and replaced with a program to alleviate poverty.

Additional tariff increases for households at or near the poverty line will place a considerable burden on household expenditures. Special rates or discount programs could be considered in future tariff restructuring efforts, similar to the three-tiered lifeline rate now under discussion.

Another alternative is to offer customers a differentiated tariff based on time of use, although the experience with this approach is limited. Although the GNERC has not considered such an approach, the Armenian Energy Commission introduced a residential time-of-use tariff that provided a 40% discount for electricity used between 11pm and 7am. The expectation was that consumers would switch some portion of their consumption to these late night/early morning hours. An evaluation of the tariff, however, has demonstrated that it lacks cost-effectiveness.

Efficiency Programs. The energy services industry in Georgia is in a nascent state. Although progress has been made to implement and promote some energy efficiency measures, the social impact of these has been constrained by the amount of funding available. Many of the more notable projects have been funded by donor agencies, not by consumers themselves. Nonetheless, as the utility sector becomes increasingly privatized and commercialized, it is reasonable to expect that greater emphasis will be placed on energy efficiency. There may be a role for the utilities to play in promoting energy efficiency for vulnerable consumers. The issue will, of course, be how to fund such activities (e.g., through state funding, through tariffs on all consumers).

Teaching the public to conserve energy, especially in a country such as Georgia where there are large informational barriers to energy efficiency, can be an effective way to reduce energy consumption. In recent meetings of the Working Group to prepare energy safety, energy conservation and energy efficiency programs (part of the Special Intergovernmental Commission for Development Georgia's Electricity Sector Rehabilitation and Development Program) it was determined that a country-wide public awareness campaign to promote energy conservation would be implemented by July 2001. Part of the program includes training in apartment buildings to teach consumers how to implement energy-efficient practices in their homes.

E.4.3 State Funding

State Energy Subsidy Program. The state currently provides energy subsidies to approximately 116,000 "privileged" consumers, together with direct funding from the budget for additional benefits for 124,000 internally displaced persons (IDPs) living in hotels or refugee centers.

The cost for these programs at current tariff levels is \$4.7 million, excluding administrative costs. The Georgian Government has made significant progress in streamlining its energy

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subsidy program, by eliminating several very large categories of privileged consumers, and by replacing tariff discounts for unlimited consumption with fixed amounts of free consumption. Table E-7 presents detailed information on these multiple categories of subsidies.

Table E-7 Current State Subsidies					
Category	Estimated No. of Recipients	Amount of Subsidized Electricity (kWh/month)	Total Annual Subsidized Electricity (kWh)	Average Retail Electricity Tariff (tetri/kWh)	Estimated Discount (in Lari)
Handicapped veterans of World War II					
@ 50 kWh/month	13,900	62.5	10,425,000	9.1	948,675
@ 75 kWh/month					
Handicapped veterans of wars for the territorial integrity of Georgia, and wars in other countries, and pensioners and/or handicapped individuals living with them					
@ 50 kWh/month	967	62.5	725,250	9.1	65,998
@ 75 kWh/month					
Veterans of World War II, who are 70 years old					
@ 50 kWh/month	24,735	62.5	18,551,250	9.1	1,688,164
@ 75 kWh/month					
Population of Mestia (Svaneti)	12,000	62.5	9,000,000	9.1	819,000
Handicapped veterans of wars for the territorial integrity of Georgia, and wars in other countries, and pensioners and/or handicapped individuals living with them					
@ 30 kWh/month	3,106	37.5	1,397,700	9.1	127,191
@ 45 kWh/month					
People with the same privileges as WW II participants	11,528	30	4,150,080	9.1	377,657
Veterans of the military forces	3,930	30	1,414,800	9.1	128,747
Families receiving pensions for those lost in war					
@ 50 kWh/month	27,140	62.5	20,355,000	9.1	1,852,305
@ 75 kWh/month					
Family members of people who died or were lost in the war, and the invalids and/or pensioners living with them					
@ 50 kWh/month	3,000	62.5	2,250,000	9.1	204,750

Table E-7 Current State Subsidies					
Category	Estimated No. of Recipients	Amount of Subsidized Electricity (kWh/month)	Total Annual Subsidized Electricity (kWh)	Average Retail Electricity Tariff (tetri/kWh)	Estimated Discount (in Lari)
@ 75 kWh/month					
People (families of people) who became invalids or died as a result of their participation in the Chernobyl emergency					
@ 30 kWh/month	3,000	37.5	1,350,000	9.1	122,850
@ 45 kWh/month					
Families of people died on April 9	300	30	108,000	9.1	9,828
Distinguished pensioners	9,000	30	3,240,000	9.1	294,840
Victims of political repression, or in the case of death, their spouses, who reached pension age, parents and children (adopted)					
@ 30 kWh/month	3,000	37.5	1,350,000	9.1	122,850
@ 45 kWh/month					
Total energy subsidy beneficiaries	115,606				6,762,854
Direct payment of pension or humanitarian Aid to energy sector:					
Refugees					
In hotels or refugee centers	124,000	1.8	Lari/month		2,678,400
Resettled on their own	160,000	0	Lari/month		
	284,000				2,678,400
Total direct pay	124,000				2,678,400
Grand total	239,606				9,441,254

Source: Ministry of Health and Social Welfare

State Safety Net Programs. Social policy reform is among Georgia's top priorities, as it is becoming apparent that the existing system is unsustainable. The current social safety net system is largely a legacy of the Soviet system and appears to be ineffective at alleviating poverty in a transition economy. The pay-as-you-go pension system is not able to ensure even the extremely low benefits paid to pensioners.

The government, in its interim Poverty Reduction Strategy paper, laid out structural reforms in five main areas to reduce poverty and stimulate economic growth:

social sector reforms to improve the allocation of benefits to better target the poor

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supportive macroeconomic policies, such as tax and customs administration, to raise fiscal revenues while reducing the budget deficit

public administration reform based on recommendations of the anti-corruption commission

private sector development to foster investment in infrastructure as well as other areas

agricultural reform.

The state also maintains several safety net programs: 1) the pension system provides benefits to approximately 890,000 pensioners (providing between 14 to 46 lari per month) although the Government is behind on payments, 2) a State Social Allowance targeted exclusively to single pensioners without a legal breadwinner and orphans (20 to 29 lari per month), 3) a program for Internally Displaced Persons providing cash and in-kind benefits to over 280,000 IDPs (1997 statistic). Not including benefits in kind, an IDP family of four would receive a monthly cash benefit of 38.8 lari per month (in 1998), and 4) unemployment benefits for up to twelve months at a rate of 13 lari per month.

State Funding Capability. The government has undertaken numerous reform initiatives to improve its fiscal position. However, these efforts have been hampered by the acute problem of tax collections. As reported in a recent IMF publication, tax collection is estimated to be about 50% of its potential. For excise taxes alone (on such items as cigarettes and petroleum products), the tax potential is estimated to be around 200 million lari (\$100 million) per year. However, less than half of this amount is being collected, thus critically dampening the state's ability to fund energy subsidies and other social safety net programs.

For example, the pay-as-you-go pension system is financed through a 27% payroll tax and a 1% employee contribution levied on wages and salaries. This source of revenue for the system, however, covers only about 60% of the Pension Fund outlays. The rest is, in principle, covered by transfers from the central government, although in practice these transfers have generally not been made on time, resulting in an accumulation of pension arrears.

The Poverty Reduction and Economic Growth Program of Georgia reports that the constant inability to execute the State Budget since 1998 has caused delays in paying salaries, pensions and IDP allowances, resulting in the accumulation of significant arrears within the state budget. According to the August 2000 data, this debt constitutes 3.25% of the GDP.

In some countries, proceeds from privatizations have been used for social programs. In Georgia, such proceeds have generally gone to the state budget or to repay debt. There are few additional funds available for social welfare programs.

Subsidy programs remain dependent on outside support from private donors. An example of such a donation is the BP donation of \$500,000 to USAID's Georgia Winter Heating Assistance Program (GWHAP) program. USAID has financed the GWHAP for the last three years, helping between 100,000 and 210,000 vulnerable households and critically important social institutions to pay their electricity bills to avoid disconnection for nonpayment during winter months. The year 2000-2001 program provided subsidy payments of \$5.5 million.

E.5 CONCLUSIONS AND NEXT STEPS

E.5.1 The Challenges Facing the Reform Process

As mentioned earlier, Georgia – as one of the republics of the former Soviet Union – is going through a transition to a market economy and in this regard is not facing some of the same challenges encountered in a developing country context (e.g., rural electrification). It is a situation where a society that was, by many economic standards, first-world has fallen dramatically and is now being rebuilt according to new economic and democratic principles in an effort to restore, rebuild and ultimately advance the economy and society beyond the point where it had been in the failed Soviet system.

Ten years have now passed since the break-up; this is an obvious milestone for the Georgian citizenry. Unfortunately, if a large part of the population were asked the question as to whether they are better off now than they were ten year's ago, the answer would likely be negative. Although it is unlikely the society would attempt to reverse market reform efforts to restore earlier economic conditions associated with a planned economy, it is important that the reform process recognize the need to demonstrate results readily apparent to the population. It is highly distressing for any society, especially a close-knit family-oriented society such as Georgia's, to witness suicides of pensioners unable to cope with the current economic hardships.

The energy sector is but one of the sectors undergoing reform in Georgia. However, its importance cannot be underestimated. Public outrage over energy shortages led the population to protest, occasionally violently, in the streets of the capital. If there is not a clear improvement in the situation next winter, especially in Tbilisi, the social situation could easily become uncontrollable.

E.5.2 Suggested Reform Steps

The obvious question is what steps should be taken now to advance the reform effort and achieve results apparent to the public at large. Although the results of the AES Telasi privatization have been mixed in the view of many, privatization must remain one of the main priorities. At present, about 75% of the revenues that the sector should collect are not collected or are misappropriated. Although some portion of the population may not be able to pay due to economic hardship, that portion does not represent the majority. The state-owned utilities have simply demonstrated no ability to enforce collections at any level of energy prices. And until this situation turns around, the sector will not be able to purchase sufficient fuel supplies and maintain facilities to improve the energy supply, as well as, the quality of energy provided.

Thus, the steps outlined below, many of which the government has already initiated, should be followed through to implementation.

Privatization

Complete the award of the private management contracts to Electrogadatsema, Dispatcherizatsia and the Georgian Wholesale Electricity Market. With private operators of these enterprises, the market rules for wholesale curtailment and disconnection should create a stronger incentive for the distribution utilities to improve collections.

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Complete the effort to privatize the remaining state-owned electricity distribution and five mid-sized hydropower plants. Ultimately, it appears that the only way to restore access and quality of energy supplies outside of Tbilisi will be through the privatization of the utilities. The Government would like this effort to be completed this year; high priority should be placed on doing so. The Government must recognize that through effective collections, the current mismatch between electricity supply and demand can be brought into balance. The current estimated mismatch is 30%; with effective collections, the price response could bring supply and demand into balance. Similar collection improvements in nearby Armenia resulted in reduction of 50% or more in electricity consumption in some areas.

In Tbilisi, the privatization of Tbilgazi is desperately needed and should be a high priority for the Government. The Municipal budget can ill afford to be providing budget support for an enterprise that cannot account for 60% of the gas it receives from its supplier. Further, with the present power supply problems in Tbilisi, it is critically important that gas be promoted wherever feasible. Even in the case of disadvantaged consumers, it is less expensive for the Government of Georgia to subsidize gas use than winter electricity usage, given the cost advantage enjoyed by natural gas.

Ongoing privatizations in the energy sector should also explicitly focus on the social impact problem through performance requirements for the privatization. For instance, with about 100,000 consumers having access to natural gas supply in Tbilisi, the terms of the Tbilgazi privatization offering include the requirement that the number of consumers with access to gas supply should increase to from the current estimated 100,000 to 290,000 within several years. Rather than simply specifying investment requirement thresholds, by specifying specific consumer related targets, it should prove easier to also build public support for the privatization process.

Tariffs

The current discussions between the GNERC and AES Telasi regarding the implementation of a three-tiered lifeline tariff should be successfully concluded. Although a lifeline tariff is not necessarily ideally suited to address the needs of the most disadvantaged, it can at least play a part in mitigating the social impact of the reform process. At the same time, unless collections are enforced, the actual tariff design and tariff level matters little.

Taxation

The ability of the Government of Georgia to support those most vulnerable through the reform process is also hindered by the Government's inability to adequately administer and enforce taxation, and the obvious budgetary impact this has. Although it is beyond the scope of this case study to examine the tax code and tax administration, the current system is failing to collect and is ill-regarded among the populace and Georgian businesses. One could argue for tax simplification focused on taxes that are more easy to administer and collect, such as point-of-sale taxes.

New sources of revenue must be found so that the Government can implement and expand upon its poverty reduction strategy. In fact, many believe such potential sources already exist. For instance, in the oil sector alone, some have estimated that well over a million dollars a year of oil-related revenue is squandered.

Targeting of Social Support

The Government should consider removing the privileged list and replacing it with direct payments for those identified as truly disadvantaged. The list of privileged consumers is difficult to maintain and a direct payment approach sufficient to compensate for a certain amount of electricity usage (similar to the method used in Armenia) should be considered.

Georgia is also fortunate to benefit from substantial foreign assistance. For instance, an example is the USAID Georgia Winter Heating Assistance Project. One area for potential improvement in the program, if it should be offered in the future, is to consider expanding the program to provide support for natural gas usage as well as electricity given that natural gas is more cost-effective (and thus, its use especially among low income consumers should be encouraged).

APPENDIX F: LITERATURE REVIEW

Amon, Ada. 1997. "Energy Regulation and Privatization: A Hungarian Case Study." The Energy Club. Paper presented at the World Bank-NGO Dialogue. Washington, DC.

This paper reviews some of the aspects of the privatization of Hungary's energy sector. It points out deficiencies, particularly in the lack of preparation of the regulatory body, the fits and starts that characterized the process leading to a too-hasty process in the end, and problems with the tariff structures that have resulted since privatization.

Bacon, Robert. 1999. "A Scorecard for Energy Reform in Developing Countries." Private Sector Note No. 175, The World Bank. April.

Bacon, Robert. 1999. "Global Energy Sector Reform in Developing Countries: A Scorecard." The World Bank, ESMAP. May.

These reports review the state of energy sector reform in 115 countries, covering power, upstream and downstream oil and gas, and the overall energy sector. They describe a scoring system developed and used to gauge the extent of reform and compare the results globally. The author finds that the most common reform is corporatization and commercialization (rather than privatization), and that bringing in private investment in greenfield sites is not necessarily a direct stepping stone to wider reform within a country. The reports conclude that there is a tremendous amount of reform left undone.

Brook Cohen, Penelope and Nicola Tynan. 1999. "Reaching the Urban Poor with Private Infrastructure. Private Sector Notes. The World Bank. September.

This note raises doubts about the efficacy of achieving goals via setting up monopolies, adhering to excessively high standards for service provision, and providing subsidies via below-cost tariffs. The alternative approach it suggests includes allowing varied methods of service delivery, avoiding subsidies to one service provider, and service provisions that skeptics might view as providing insufficient incentives to expand access. It also suggests easing technical provisions for services and interconnection between suppliers or for bulk supply. Such actions could succeed in serving a higher proportion of the population at higher quality. Processes for determining services to the poor should be redesigned to take into account how they traditionally obtain infrastructure services, the scope and nature of non-traditional supply arrangements, the willingness of low-income people to pay for improved access to and quality of services, and the institutional barriers to improving service. Regulators will have to contend with more complex supplier/customer relationships that would pertain to a single-supplier model, but the gain would be worth the complexity.

Chisari, Omar, Antonio Estache, and Carlos Romero. 1997. *Winners and Losers from Utility Privatization in Argentina: Lessons from a General Equilibrium Model*. The World Bank. WPS 1824.

This paper assesses both the macroeconomic and distributional impacts of privatizing electricity, gas, water and sanitation, and telecommunications services. It compares the economy in 1995 and 1993, during which all major privatizations took place.

ELAC. n.d. *Energía y Desarrollo Sustentable en América Latina y El Caribe: Enfoques para la Política Energética*.

This is an overview of a major joint effort by ELAC, OLADE, and GTZ to look at trends in energy and development in Latin America. It includes in-depth studies of Chile, Colombia, El Salvador, Bolivia, and Brazil. It summarizes and provides conclusions on the social impacts of energy sector restructuring, and provides solutions for specific rural and urban effects. The main conclusions regarding social effects are:

Prices have risen in countries where market pricing was employed and have not risen where subsidies continued.

There were redistributive effects (from consumers to owners), especially for small consumers in captive markets.

Energy services for rural populations have declined with restructuring because of reduced rural electrification.

The power of public sector trade unions has been reduced.

Impacts have doubled where the public sector has been used to absorb people who have become unemployed as a result of restructuring: reduced employment without a social safety net, but improved productivity.

These effects were stronger when there was a simultaneous reform of other public sector services.

Factors that are important in designing solutions for rural impacts include:

Decentralized systems fail because of a lack of training and economic sustainability, leading to the need to improve the capacity of local institutions.

Photovoltaic technology is appropriate and adequate, but government financial support is needed.

Biomass will continue to be an important fuel, but work is needed to ensure its sustainability.

Ensuring the availability of LPG and kerosene could ease the pressure on biomass collection.

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Factors that are important in designing solutions for urban impacts include:

A key factor impeding rural access is security.

Requiring companies to provide universal coverage in privatization agreements has been quite effective.

Subsidies will be needed for urban populations, and better targeting will be required to make them more effective in reaching poorer populations.

It is difficult to target subsidies for LPG and kerosene.

Natural gas is out of the reach of the urban poor, and is thus not perceived as a solution.

Hagler Bailly Services, Inc. 1997. *A Comparative View of Governmental Planning in a Restructured Electricity Market*. Prepared for USAID and the Department of Energy. Manila, Philippines.

This report reviews the experience of three industrialized nations (New Zealand, United Kingdom/Wales, and United States/California) and one developing country (Argentina) with energy sector restructuring, with an emphasis on the government's role in the new structure.

Hagler Bailly Services, Inc. 1997. *Deploying Renewable Energy Systems in Rural Brazil*. Prepared for USAID in support of the World Bank. Arlington, VA.

This is a follow-up report to the one cited above. It provides additional contextual information the World Bank needed to evaluate a loan package it was considering in order to stimulate the expansion of renewable-based electricity service in Brazil's rural areas. The report covers such topics as the role of national power sector regulation and policy, the characterization of off-grid electrification, and how current tax structures affect electricity tariffs and provide indirect subsidies for on-grid usage.

Hagler Bailly Services, Inc. 1997. *Deploying Renewable Energy Systems for Rural Electrification in Brazil: An Evaluation of Alternative Mechanisms*. Prepared for USAID in support of the World Bank. Arlington, VA.

This is one of four reports summarizing reconnaissance done for the World Bank in support of its proposed loan package for stimulating the expansion of renewable energy-based electricity services in Brazil's rural areas. It analyzes mechanisms that could accelerate the pace of rural electrification using renewable energy sources and proposes several for implementation in the context of ongoing reforms in Brazil's power sector.

Hagler Bailly Services, Inc. 1998. *The Environmental Implications of Power Sector Reform in Developing Countries*. Prepared for US Agency for International Development, Office of Energy, Environment, and Technology. Report No. 98-05. March.

This report examines the relationship between specific reforms and decisions (commercialization, privatization, restructuring, and the introduction of competition)

that affect the environment (largely, these impacts were related local air pollutants and carbon dioxide). For power generation, the choice of fuel and technology was determined to have the largest impact, while energy losses from T&D systems and load curves were found to have the greatest impacts in the areas of supply-side efficiency and end-use efficiency. Electricity price signals (which influence customers' use of electricity) and power plant emissions standards/enforcement also had a major environmental influence. The report contains evaluations of three countries at various stages of reform (India, Argentina, and the United Kingdom) and presents lessons learned for developing countries.

Hagler Bailly Services, Inc. 1999. "Lecciones Aprendidas de las Reformas del Sector Eléctrico en Latinoamérica." Prepared for USAID. Arlington, VA. December.

This report presents the results of case studies on Argentina, Chile, Peru and Colombia on the lessons learned from the electricity sector reform programs. Section 6.2 briefly addresses some of the difficulties encountered, such as displacing workers in Argentina, weak regulatory oversight in Chile, and difficulties in making the subsidy system simple but targeted enough to be effective in Colombia. The best practices it recommends include: more investment in training displaced workers and assistance in forming businesses designed to provide services needed in the new market structure, the inclusion of trade unions in the process to improve their acceptance, and dealing decisively with and giving adequate funding to rural access issues as part of the restructuring process.

Hall, David. 1998. "Restructuring and Privatization in the Public Utilities: Europe." *Labor and Social Dimensions of Privatization and Restructuring – Public Utilities* [water, gas, electricity]. Geneva: ILO.

This paper presents data on the extensive privatization activity that took place in Europe in the early 1990s, including the Czech Republic and Hungary. The data cover employment statistics, ownership patterns, the handling of redundancies, pay and working time, participatory processes (highlighting Hungary as an excellent example), and price effects on consumers.

Hall, David and Jan Willem Goudriaan. 1999. "Privatization and Democracy." *Working Papers in Local Governance and Democracy*. PSIRU Reports.

This paper examines the impacts of privatization on democracy and concludes that local governments and citizens' groups are bypassed in privatization decisions. The authors cite evidence of reduced local decision-making (e.g., on goods and services purchased because tied development aid is involved). They argue for maximizing democratic accountability through framework agreements that lay down procedures that must be followed before privatizations can take place and strong regulatory functions to oversee the post-privatization phase.

Hall, David. 1999. "Electricity Restructuring, Privatization, and Liberalization: Some International Experiences." For Public Services International. Presented at the Energy Conference in Romania organized by Unifers and PSI. October.

This paper summarizes much that is in the above papers.

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International Labour Organization. 1999. *Labor and Social Dimensions of Privatization and Restructuring (Part I: Africa and Asia Pacific, Part II: Europe/Latin America)*.

These two volumes cover a range of topics relevant to social impacts. These include labor effects, a comparison of the production costs in public vs. private operations (the authors found no difference), and the effects of privatization and restructuring on household energy prices (the authors found that these generally rose). It also contains many details on the timing and process of privatizations in water, electricity and gas in several countries (e.g., Hungary, Argentina). Labor “fixes” in Hungary included involving the social partners and setting up a fund for retraining workers using 5% of the proceeds of sale shares. A trend noted in restructuring in Central and Eastern Europe was that of decentralizing distribution to local authorities.

Imparato, Ivo. 2000. “Projeto o Trio da Economia.” Presentation to researchers. Sao Paulo, Brazil. February.

This presentation describes the joint project of Procel (the Brazilian energy efficiency promotion agency), Eletrobras (the former federal government electricity company that supplied energy to the state distribution companies), and Diagona (a private company providing social intermediation services). The project works (via pilot projects) in poor urban communities to improve the energy efficiency of homes in return for the regularization of their electricity service. The project has been very successful in reducing the losses of the electricity distributors and improving the efficiency of homes. If extrapolated to the general poor population in Salvador, for example, the potential for annual savings would be on the order of R\$ 15 million. The presentation offers suggestions for general application to help poor populations, including education on energy efficiency, instituting flexibility in the date of bill payment, and differentiated service and subsidies (e.g., exemption from taxes) adjusted for regional differences for the lowest-income population.

International Labour Organization. 1999. *Managing the Privatization and Restructuring of Public Utilities (Water, Gas, Electricity)*.

This report was prepared for a 1999 meeting of the ILO and provides an overview of privatization and restructuring. The impacts it examines include employment and human resource development, remuneration and other working conditions, labor relations, prices, changes in quality, and the role of the ILO and other international organizations. The chapter on labor relations provides a number of lessons learned in countries where restructuring is advanced (e.g., Hungary, Czech Republic, India, South Africa, Guatemala, Colombia). Some of the solutions identified include the Hungarian Fund for relief for redundant employees, the Czech formal consultative process, and the Indian pay commission awards at the state and municipal levels. The trends it identifies include the trend toward the decentralization of bargaining following the move toward the decentralization and restructuring of energy services, the downward trend in the degree of unionization and consolidated unions (especially in Central and Eastern Europe), and an improvement in the degree of inclusion of labor representatives and decreasing (but not eliminated) opposition to restructuring. Another interesting trend is the growing use of the Internet to share information on privatization and union responses. Another issue discussed is that of limitations on the right to strike because utilities are considered essential services and the mechanisms for compensating labor for this lack of an outlet to express dissatisfaction. The chapter

on international organizations describes the activities of the European Commission, European Works Council, and OECD, among others. It points to a potential for the European Energy Charter to pick up the social impacts of energy restructuring within its cooperative activities.

Kikeri., Sunita. 1998. *Privatization and Labor: What Happens to Workers when Governments Divest?* World Bank Technical Paper 396. Washington, DC.

This report reviews global experience on the effects of privatization on labor, with an eye to providing recommendations on how governments can avoid the pitfalls encountered and incorporate lessons learned from past privatization actions. It reviews the main elements of programs to deal with unemployment and labor unrest: severance and retirement benefits, retraining and redeployment support, employee share ownership schemes, and mechanisms to ensure labor consultation and participation in the planning and implementation of privatization actions.

NRECA. 1999. *Central America: Power Sector Reform and Access to Electricity by Rural and Poor People*. Prepared for ESMAP. Arlington, VA.

This report evaluates the electrification projects of three countries from the perspective of opportunities for rural electrification. It includes a review of the results of the very recent sector restructuring programs' effects on rural electrification. The report finds that little effect has been observed to date as a result of restructuring. This is primarily due to either a lack of inclusion in the process or a lack of funding mechanisms created in the restructuring's framework. In the case of Guatemala, a fund formed from the proceeds of the sale of its distribution company is not being implemented. In all three countries, some form of subsidies is expected to accompany rural electrification. Complicated roles have been proposed for (or are already extended to) entities tied to the government rather than for the private sector. This seems incompatible with the market-oriented structure that has been adopted by these governments. Thus, the various remedies proposed are limited and confined to the bureaucracy.

Powell, Stephen and Mary Starks. 2000. "Does Reform of Energy Sector Networks Improve Access for the Poor?" World Bank Private Sector Note No. 209.

This paper addresses the question in its title by focusing on the cost of extending the network to the user, as well as the unit costs of energy. Although new technologies stimulated by reform are reducing the cost of producing energy, transmission costs remain a hurdle to reaching the poor in isolated or lightly populated areas. Thus, the urban poor are more likely to gain from reform than the rural poor.

Ruster, Jeff. 2000. "Scaling Up: The Policy Level." World Bank. unpublished.

This document promotes the concept of "participatory urban upgrading" as a means for dealing with the provision of basic services to "informal settlements" in Latin American countries. It provides a range of policy options for scaling up the successful examples that have emerged from scattered efforts to upgrade these areas. Necessary conditions cited are political will, an adequate policy environment, a national legal and regulatory framework, area-based needs assessments, planning and implementation, better targeting of subsidies in ways that tap a community's

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willingness to pay for services, and land release mechanisms and shelter alliances among key stakeholders. They also include choosing supply mechanisms commensurate with an integrated set of services to be provided on a cost recovery basis and the development of a critical mass of local capabilities.

Sant, Girish. n.d. *Beneficiaries of the IPS Subsidy and the Impact of Tariff-Hikes*. PRAYAS.

This report provides a detailed analysis of the subsidies and benefits of charging tariffs for irrigation pumpsets and metering consumers to improve the equity of the subsidies.

United Nations Economic Commission for Latin America and the Caribbean. n.d. *Establecimiento de una Política Energética Basada en el Funcionamiento de Mercados Competitivos y en la Participación Privada, La Experiencia de Chile*.

This report is part of a major joint effort by ELAC, OLADE, and GTZ to look at trends in energy and development in Latin America. It includes in-depth studies of Chile, Colombia, El Salvador, Bolivia, and Brazil. The report covers the restructuring and reform carried out in Chile's electricity, oil, and coal sectors. Social impacts are not an emphasis of this report. Nevertheless, there is a discussion of the impacts of restructuring on the electricity sector's performance and quality, which the report concludes have improved. It also discusses market power problems created by the small number of companies (e.g., tariff manipulation) and recommends effective oversight and penalties for monopolistic practices.

The World Bank. 1999. *Institutional Development of Off-Grid Electrification: Lao PDR*. ESMAP Report 215/99. June.

This report addresses solutions to rural access problems that have resulted from restructuring, even though the Lao PDR has not undertaken restructuring. It covers the experience to date in developing off-grid services, the results of studies of willingness and ability to pay for various forms of energy services in rural areas, and the roles of various institutions (financial, national electricity company, government, entrepreneurs) in significantly increasing off-grid rural electrification coverage. It includes discussions of how to introduce adequate but lower-cost standards for electricity service, and provides guidance on preparing business plans for entrepreneurs who are starting business in off-grid electrification. The study also includes survey samples to gauge the willingness and ability to pay for such services.

The World Bank. n.d.. *Rural Energy and Development: Improving Energy Supplies for Two Billion People*.

This report reviews the status of rural electrification. It retraces the status of rural energy in developing countries, emphasizing the Bank's role and the emerging practices and policies implemented to offer alternatives to consumers for sources of energy. It also addresses the issues of market failure, high start-up costs and risks, external costs and benefits, subsidies vs. price liberalization, inefficiencies from subsidies, and the importance of improving access to kerosene and gas to ensure a sustainable supply and use of cooking fuels.

World Energy Council. 1998. *The Benefits and Deficiencies of Energy Sector Liberalisation*. 3 volumes. London.

While the full text of this document was not obtained, the overview of this study found on the Council's Web pages provided enough information for a synopsis. The report finds that only tentative conclusions about the effects of liberalization can be drawn. This is because only 16 countries have substantially liberalized their electricity sectors, and only 5 have liberalized their downstream gas markets. Also, the pre-existing situation (and intervening economic and technological changes) varied so greatly that the particular effects of liberalization are blurred. Nonetheless, the study found "spectacular" productivity increases, more varied and innovative service, large amounts of capital mobilized, and mixed effect on prices (depending on the purpose for liberalization, such as bringing prices in line with costs). Possible deficiencies found included: regulatory complexity and reduced energy security (e.g., blackouts, less diverse energy mix). The report found that the effects on R&D and the environment were not conclusive.

APPENDIX G: WORKSHOP PARTICIPANTS

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Rolf Anderson	USAID
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H: Experts Interviewed

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