



## Better energy services for the poor

Penelope J. Brook and Warrick P. Smith

Governments around the world—rich and poor alike—confront the challenge of ensuring that their people have access to clean, efficient, reliable, and affordable energy services. This challenge is particularly acute for developing countries and for low-income households and communities where density, distance, and resource availability raise costs above local ability or willingness to pay.

There is a rich body of experience with different policy responses to this problem. But do current approaches take sufficient account of the new opportunities arising from rapid changes in technology and economic thinking? This chapter outlines those opportunities, explores some of the new directions open to policymakers, and considers some of the implementation challenges.

### New opportunities

Energy policies and projects have traditionally focused on large capital investments in the generation and transmission of electricity, gas, and petroleum products, often through monolithic state-owned enterprises. Improving the welfare of the poor was rarely an explicit objective. To the extent that it was explicit, two outcomes were expected:

- Higher productivity and growth—as a result of increased access to modern, reliable energy sources by cities, towns, and businesses. This benefit was expected to trickle down to the poor through better earnings prospects.
- Improved community and household access to reliable energy services (particularly electricity and gas) through grid extension and expanded generation capacity.

Results were often disappointing. Repeated investments in poorly operated systems, perennially short of cash because of below-cost tariffs and chronic inefficiencies and system losses, often failed to increase access or productivity in developing countries. And the poor typically bore the brunt of these failures—suffering unreliable access when connected to energy networks and often facing high costs for alternative energy sources while waiting for access, whether to gas or electricity networks or to improved distribution

systems for kerosene, liquefied petroleum gas (LPG), or other petroleum-based fuels.

Much has changed as policymakers have learned more about the causes of these failures and pushed for more effective and sustainable energy policies. Recent experience—initially in industrial countries but increasingly in developing countries—shows that energy supply through networks can be made competitive. This creates opportunities for expanding services and cutting costs both on and off networks. In addition, new technologies have created opportunities for lower-cost, smaller-scale generation that lends itself to more competition in networks (see chapter 5) and to a broader range of supply options off-grid (see chapter 6). Technology has also profoundly changed the options for managing the transmission of power and gas across grids, increasing consumers' chances of accessing cheaper, more reliable energy. And the pace of technological progress shows no signs of abating.

For most goods and services it is now accepted that the best way to respond to consumer needs and preferences, and to spur innovation, is to allow provision by a range of service providers that compete in terms of price and quality. For much of the 20th century energy services were believed to be an exception to this proposition because they were viewed as a natural monopoly and because governments relied on monopolistic provision (whether state owned or private) to deliver cross-subsidies between users and to pursue other social objectives. But reinforced by technological developments, economic thinking on energy policy is changing fast. Ideas on managing monopolies have shifted to options for facilitating competition and mobilizing the private sector to develop, finance, and implement new and better ways of meeting consumer needs. This evolution has big implications for policymakers.

### New directions

Policymakers have promising new options for meeting the energy needs of the poor. Attention should focus on four areas of policy action.

### Rethinking monopoly

The past preoccupation with monopolies needs to shift to take advantage of opportunities for competition in energy provision. This has two major implications:

## The best way to respond to consumer needs is to allow a range of providers that compete on price and quality.

- Exclusivity arrangements traditionally granted to energy providers need to be scrutinized with increasing caution. For example, distribution networks for power, gas, and other fuels might be privatized without exclusive service areas (especially in service areas that include unconnected households). And off-grid solutions—such as contracts for rural electrification through solar, wind-powered, or micro-hydropower schemes—can be designed to allow entry by providers offering alternative technologies, lower prices, or both.
- Energy markets should be restructured to facilitate entry and competition, including in the distribution and retailing of services. Options to be considered include:
  - Separating distribution functions from transmission and generation functions in electricity and gas, to facilitate competitive entry and service expansion by local distributors.
  - Separating retailing from distribution functions to facilitate price and service competition in low-income communities.
  - Allowing multiple players, small and large, in the construction and operation of secondary and tertiary networks (for grid-based services).
  - Allowing multiple players in projects to expand services to rural areas.

### Getting prices right

Traditional approaches to energy pricing often involve deep distortions. For example, uniform national electricity and gas tariffs that are set below the full costs of supply make these sectors dependent on public subsidies that are rarely sustainable. But even in sectors that are financially self-

sufficient, cross-subsidies between categories of users rarely help the poor (who lack access to network services) and in fact create financial disincentives to serve low-income households. In addition, cross-subsidies rest on monopolistic supply arrangements and so preclude more dynamic, competitive approaches.

Elsewhere in the energy sector, taxes on fuels such as petroleum, kerosene, and LPG often limit the extension of markets for these fuels to low-income communities, or distort incentives for their use. In addressing these shortcomings, policymakers should focus on three issues:

- To the maximum extent possible, energy prices should reflect the full costs of supply. In addition to promoting the efficient use of a scarce resource, this approach gives service providers an incentive to respond to all categories of consumers—including those in remote or difficult to serve areas.
- Where subsidies are considered necessary or desirable, there is a need to rethink their structure, financing, and delivery. Traditional cross-subsidies that depend on monopolistic provision will be difficult to reconcile with market liberalization. Subsidies should be clearly targeted to the intended beneficiaries and delivered in a manner consistent with competitive provision. For example, budget-funded subsidies might be delivered to targeted households through a welfare-type system, as in many sectors in Chile. In societies with less developed social safety nets, it should be possible to award subsidies to suppliers based on the number of new households they connect and serve, creating strong incentives for service expansion without erecting or sustaining monopolies—subsidizing connections, not consumption.
- Tax arrangements need to take into account their impact on energy markets. For example, fuel taxes often distort the relative prices of alternative energy sources or remove certain fuels from markets accessible to low-income households or communities.

### Adapting regulatory approaches

Power and gas regulation has traditionally focused on closely supervising monopolistic suppliers, including through detailed price and quality rules. This function has been seen as the preserve of central regulatory bodies, whether housed in a ministry or operating independently. This approach needs to be reconsidered in three important respects:

- Intensive regulation needs to be limited to residual elements of monopoly power—for example, in network distribution systems and possibly at the interface between trunk transmission networks and distributors or retailers. Much less control should be exercised over interactions between essentially competitive market players—including

new local providers active in small-scale retailing of electricity, gas, and other fuels and in the installation and maintenance of diesel generators, LPG distribution points, micro-hydropower systems, or photovoltaic cells.

- Regulations on service quality standards need to be scrutinized. While there may be an ongoing need to address public safety and other concerns, standards are often set at levels that unnecessarily increase costs and so block expansion of services to low-income households. For example, technical standards for system construction (such as standards for the construction of transmission lines) are often set at industrial country levels, leading to high startup costs and creating a disincentive to expand both network and off-grid services. At the household level, simplifying wiring codes and using load limiters rather than consumption-based meters for low levels of consumption could reduce installation, billing, and collection costs.
- Regulatory processes need to change. Reflecting the changes in energy markets, more efforts need to be made to facilitate participation by low-income consumers and their representatives. There are also opportunities to mobilize communities (and nongovernmental organizations) in monitoring small-scale energy retailers and service providers in periurban slums and small rural towns.

### Looking beyond the energy sector

Energy policymakers have tended to stay within their bailiwick, rarely venturing into broader policy issues that affect the affordability of energy services. The new approach requires policymakers to take a more holistic view of the factors affecting energy supply to low-income households and communities. For example:

- Low-income households often have trouble accessing credit to finance new connections and equipment. Recent decades have seen the emergence of promising private solutions to this problem—including term payment arrangements extended by service providers, finance extended by local microcredit agencies, and community savings schemes. While there is debate on the scope and nature of government action appropriate to support such schemes, finance and banking laws should not erect unnecessary barriers to the development of financing arrangements targeted at the poor.
- Many regulations make it more difficult for suppliers to offer a service or for households to sign up for it, or otherwise increase the costs of energy services. These include building codes that define construction standards for electricity or gas connections, land use and physical planning laws and regulations that prohibit the extension of services into informal neighborhoods, rules and processes for clarifying land tenure and ensuring land security, and

prerequisites for legal recognition of community-based organizations that could intermediate between service providers and local households. Taxes, import restrictions, and other interventions may also increase the costs of equipment used in serving low-income households and communities. Just as sound energy policies contribute broadly to most other productive activities in the economy, sound microeconomic policies are vital for sustainable improvements in energy services.

## Regulatory processes need to change—with more participation by low-income consumers.

A more holistic approach to policymaking would create the potential for technological and commercial innovations that bring better services within the reach of the poor—and for removing or reducing barriers to service for low-income households and communities. Some new policies would require new interventions—such as revised regulatory and subsidy arrangements. Others would require reforming interventions that inadvertently impede the improvement of services for the poor. Most focus on reshaping the institutions that determine the nature and cost of energy services delivered—rather than on adjusting the actual delivery of these services.

The new policy approaches do not mean that the government has no role to play in financing energy investments. But they do mean that public investments need to be much more carefully designed, and made in a way that facilitates rather than crowds out or restricts private competitive responses. In many cases public resources may be best channeled through transparent subsidies rather than through existing monopolies.

### From theory to practice

Change is always difficult—whether on the relatively modest scale of making poor communities more active players in decisions on how to improve their energy services, or on the grander political scale of reformulating energy policies to enable competition and entry. Very often, those who stand to gain from such changes—and this applies above all to the poor—have less political voice, or a less concentrated political voice, than those who risk losses.

The policy approaches outlined above are no exception to this rule. In particular, they threaten the loss or erosion of various kinds of monopoly power (and accompanying opportunities for corruption)—by removing or reducing exclusive service prerogatives, by trimming back regulatory prerogatives, by reforming standards to increase the range of acceptable technologies, and by reforming and simplifying fuel taxes.

To weather the inevitable resistance, governments need a strong commitment to improving outcomes for the poor. In this context, the quality of the reform process is likely to be critical to the dividends of reform. Processes must focus on stakeholder consultation and consensus building—with particular attention to mobilizing stakeholder groups that stand to gain from reform. These groups include, most notably, the poor. But they also include small businesses (which could take a more active role in serving the poor) and nongovernmental organizations (which could take a more active role in facilitating and monitoring service delivery in rural towns and periurban slums).

Beyond politics, the policy directions described above suggest critical changes in the design of energy projects (particularly reform projects) and in the process by which these projects are developed. For example, they suggest more, and early, emphasis on distribution issues—in particular, restructuring and regulatory reform to facilitate entry prior to engaging in large-scale privatization. They imply more attention to gathering data on such matters as the nature of current energy use and demand for energy by low-income communities (see chapters 2 and 6), and more attention to identifying potential players in energy markets (for example, small businesses with the potential to become energy suppliers). And, in the context of designing regulatory regimes, they suggest more attention to identifying nongovernmental and community organizations that could play a role in monitoring service provision.

As in any area of policy innovation, much can be gained from a concerted effort to monitor and draw lessons from reform experiences in other countries. But the success of any policy will ultimately depend on careful adaptation to local conditions and priorities.

### The promise

The policy approaches discussed in this chapter focus on access—on improving the service options available to low-income households and communities. As discussed elsewhere in this report, improving access to better, cheaper energy services contributes directly to the welfare of the poor in a variety of ways—by freeing cash and human resources for more productive uses, by improving access to health care and education, by broadening opportunities for the development of household businesses, and by improving local and household environmental quality.

But the ways in which energy policies are set and energy services are delivered can also have important indirect benefits for the poor. A more efficient, financially sustainable energy sector contributes to national economic productivity and employment and earnings prospects. A more competitive and transparent energy sector provides fewer opportunities and incentives for corruption, which tends to affect the poor disproportionately (see chapter 8). A sector that is less reliant on government subsidies can free fiscal resources for beneficial social purposes—and a sector that is a net contributor to the tax base can boost those resources (see chapter 3).

## Entry and competition are the key tools in pushing for growth and attacking poverty.

Would a focus on enhancing these less direct benefits fundamentally change the policy prescriptions set out here? Most likely, the emphasis would differ somewhat—for example, with more emphasis placed on market structure and regulatory reforms aimed at increasing the efficiency of gas and electricity services delivered through networks, and perhaps less on facilitating micro-solutions for small rural towns. But in essence the prescriptions are common ones, with entry and competition serving as key tools both in the push for growth and in the battle against poverty.

Penelope J. Brook (pbrook@worldbank.org) and Warrick P. Smith (wsmith3@worldbank.org), World Bank, Private Participation in Infrastructure Group

### References

Brook Cowen, Penelope, and Nicola Tynan. 1999. "Reaching the Urban Poor with Private Infrastructure." *Viewpoint 188*. World Bank, Finance, Private Sector, and Infrastructure Network, Washington, D.C.

Morduch, Jonathan. 1999. "The Microfinance Promise." *Journal of Economic Literature* 37: 1569–614.