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Who Benefits from Water Utility Subsidies?

Messages from *Water, Electricity, and the Poor: Who Benefits from Utility Subsidies?* (Washington, DC: World Bank, 2005). The publication is available in PDF format from <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTWSS/0,,contentMDK:20723886~pagePK:210058~piPK:210062~theSitePK:337302,00.html>

Subsidies for utility customers are popular among policy makers and the general public. Despite persistent belief that subsidies favor the poor, a new Bank study shows that they actually tend to benefit the middle class and well-to-do.

Over one billion people lack safe water. In many countries where utility networks have been installed, the quality of service is poor. Many utility customers often have no water in the pipe, and when water is available, it is often unsafe to drink. Lowering barriers to access and improving service to the poor is central to efforts to reduce poverty.

Affordability vs. cost recovery: the debate over utility subsidies

Utility subsidies are often promoted as a mechanism for expanding coverage and making services affordable for the poor. But critics object that they can work against improving the quality of service to existing consumers and extending access to unconnected households.

During the 1990s, many experts urged that water services should charge enough to fully cover their costs. There are good reasons for this position. Financially strapped utilities tend to be inefficient, provide low-quality services, and lag behind in expanding networks. When weak utilities are unable to expand access to the network, poor, unconnected households are left to rely on alternative sources of water that often are expensive and unsafe.

In practice, full cost recovery has proved elusive, even in countries that have demonstrated the political will to pursue it. Although even poor households may be able to afford today's prices, a substantial proportion of the population of lower-income countries may find it difficult to pay the full cost of services. Households could spend 10–50 percent more on water without major effects on poverty incidence, but in some countries much larger price increases would be needed to fully recover costs. In some countries, raising prices 2-3 times existing tariffs would, on average, increase the poverty headcount by 2-3 percent.

It appears, therefore, that utility subsidies will be a feature of the policy environment for the foreseeable future. But how widespread are they, and how well do they accomplish their aims?

How prevalent are utility subsidies?

Consumer utility subsidies are a ubiquitous feature of water services in the developing world—and even in many industrialized countries. Global surveys indicate that the vast majority water utilities charge tariffs substantially below levels required for full cost recovery (table 1). Many do not even cover operating and maintenance costs. Average water tariffs in low-income countries stand at about a tenth of the level applied in high-income countries.

Table 1 Probable degree of cost recovery by water utilities, by country income level and region

<i>Grouping of water utilities</i>	<i>Percentage of utilities whose average tariffs appear to be ...^a</i>		
	<i>Too low to cover basic O&M</i>	<i>Enough to cover most O&M</i>	<i>Enough OEM and partial capital</i>
Global	39	30	30
By country income level			
High-income	8	42	50
Upper-middle-income	39	22	39
Lower-middle-income	37	41	22
Low-income	89	9	3
By region			
OECD	6	43	51
Latin America and Caribbean	13	39	48
Middle East and North Africa	58	25	17
East Asia and Pacific	53	32	16
Europe and Central Asia	100	0	0
South Asia	100	0	0

Subsidies provided to utility customers can be a significant drain on the public treasury. The most striking examples come from the countries of the former Soviet Union. But water subsidies remain an important drain elsewhere. In India, drinking water subsidies have been estimated at 0.5 percent of GDP. Part of the drain is caused by implicit subsidization due to generalized underpricing of the service and asset mining.

There are two broad categories of explicit utility subsidies—consumption subsidies and connection subsidies. Consumption subsidies reduce the charge for consuming water service, while connection subsidies are a one-time reduction in connection charges. A survey of tariff structures in Latin America, Africa, and Asia found that roughly three-quarters of utilities include some form of quantity-based consumption subsidy. Consumption subsidies are available only to

those households connected to the network. This means that many poor households are often excluded from subsidy programs.

Most countries attempt to target subsidies based on the volume of water consumed. The most common form is an increased block tariff (IBT) in which the price charged per unit increases at higher volumes of consumption. Some utilities apply another form of quantity-based subsidy, which we call a volume-differentiated tariff (VDT). VDTs are composed of two or more different tariffs, the first highly subsidized and the second less or not at all, to which consumers are assigned based on their total volume of consumption.

Another form of targeting involves the use of administrative decisions to determine subsidy eligibility. The decision could be to subsidize all customers in a particular demographic or employment category (for example, pensioners or war veterans), those living in a particular neighborhood or region (geographical targeting), or those whose means are determined to fall below a certain level.

How well do subsidies perform?

Given their high cost and their potential for undermining the capacity of utilities to improve and expand service, it is important to assess how well subsidies perform. Do they benefit the poor, as they are typically intended to do? To what extent could they do so if changes were made?

Recent case studies have questioned the common belief that subsidies benefit mostly poor households. This study goes beyond individual cases to systematically examining the targeting performance of consumer utility subsidies across a wide range of developing countries. The sample includes 32 programs from 13 water utilities as well as a similar sample of electricity utilities. Most of the programs involve quantity-based subsidies, which are equally common in the water and electricity sectors.

The results are sobering. The quantity-based subsidies practiced by about 80 percent of water and electricity utilities surveyed are starkly regressive. In fact, poor households capture only half as much of the value of the subsidy as they would if the subsidies were distributed randomly across the entire population. Many poor households are excluded from subsidy programs altogether, because they are not connected to the network.

Methodology

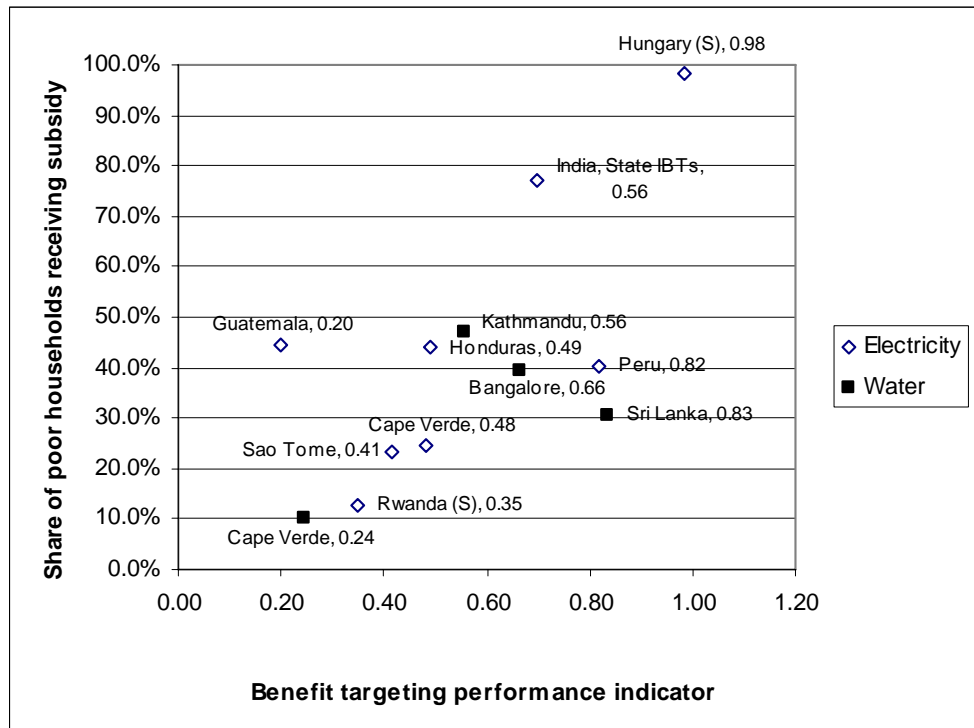
To measure subsidy performance, we devised a targeting performance indicator (Ω) representing the share of subsidy benefits received by the poor divided by the proportion of the population in poverty. A value of 1.00 for Ω implies that the distribution of the subsidy across income classes is neutral, with the share of benefits going to poor households equal to their share of the population. Neutral targeting means that the subsidy performs no better than a universal subsidy that delivers equal benefits to all. A value greater than 1 implies that the subsidy distribution is progressive, because the poor receive a larger share of the total benefits than their share of the population. A Ω value below 1 indicates a regressive subsidy. The “poor” in this study are defined as the poorest 40 percent of households.

Quantity-based subsidies: nearly always regressive

Quantity-based subsidy programs are not effective in targeting the poor, especially where access to the network is less than universal. Almost invariably, the nonpoor benefit disproportionately from such programs. Only 2 of 26 quantity-based subsidy cases come close to achieving even a *neutral* subsidy distribution; the rest are all regressive or highly regressive (figure 1). In other words, most subsidies do not effectively target the poor. In most water programs studied, the poorest 40 percent of the population receive 5-20percent of the subsidy benefits.

Figure 1. Quantity-based subsidies are not effective in targeting the poor

A targeting performance indicator of 1.0 indicates an income-neutral subsidy



Why do quantity-targeted utility subsidies perform so poorly?

The most fundamental reason is that in most areas studied poor households are much less likely than nonpoor households to be connected to the network. Households that lack access to utility service are obviously unable to benefit from any consumption subsidy, and that lack creates an automatic handicap that subsidy design cannot fully overcome. Moreover, the effective application of IBTs and VDTs requires households to have functioning meters to measure water use. Poor households are often less likely than non-poor households to have meters. In cases where connections are not universal (as in most of the cases, except in Eastern Europe), the prospects for producing a progressive subsidy distribution with a subsidy program based purely on the quantity consumed are slim. In countries with very low coverage rates, as in Africa, the subsidies may even be highly regressive, benefiting the non-poor much more than the poor.

But, even where coverage is universal, the distribution of subsidy benefits may still be regressive and is never likely to do much better than achieve a neutral distribution.

The second reason is that the differences in consumption between the poor and the nonpoor are less than they are often assumed to be. The lack of strong, consistent correlation between consumption and household income, particularly for water supply, severely restricts the scope for quantity targeting.

The third reason is that—even when the poor do consume less than the nonpoor—various common features of tariff structures often fall heaviest on those who consume the least. Fixed charges mean that households that consume very small quantities may face a much higher unit price than larger consumers. Moreover, failure to apply full cost recovery tariffs to households consuming at higher levels means that even large consumers benefit from subsidization to a substantial degree.

An intuitively appealing solution to this problem is to modify the tariff structure in such a way that nonpoor households are transformed from subsidy recipients into net cross-subsidizers. This could be done by reducing the size of the subsidized first block of an IBT or reducing the subsidy threshold of a VDT, while raising the rate charged in the unsubsidized portions of the tariff to more than average cost.

However, even with these modifications, the prospects for significantly improving the distribution of the benefits from quantity-based subsidies are slim. Revising the block sizes of the tariff structure would subsidize the poor at a greater rate than the rich only if there were significant differences in the consumption patterns of rich and poor. Moreover, tariff modifications cannot change the conditions that accentuate the regressivity of consumption subsidies: they have no direct effect on access, uptake rates, or meter coverage. More fundamental changes—such as the elimination of general (implicit) subsidies for all residential customers and the expansion of coverage and metering—would be needed in most cases for quantity-based subsidies to begin to achieve a neutral or slightly progressive distribution of subsidy benefits.

Other consumption subsidies: less regressive

Quantity targeting is not the only way to deliver consumption subsidies. Geographic targeting and means testing can bring a significant improvement in targeting performance, whether used alone or in combination with quantity targeting.

Geographical targeting is a substantial improvement over quantity-based targeting but still no better than a random distribution of subsidies.

Across the cases studied, means testing has the greatest effect on improving targeting performance. Means tested subsidies were strongly progressive. The Chilean water subsidy is perhaps the most widely cited example of a means-tested consumer utility subsidy. It was introduced in 1990 to mitigate the effect of increases in water prices on poor households. The program subsidizes between 40 and 70 percent of up to 15 cubic meters of water for poor households. Utilities apply this discount to the water bills of eligible households and are then reimbursed by the government. However, this greater targeting accuracy comes at the cost of

excluding a high percentage of otherwise eligible beneficiaries. Furthermore, unless means-testing systems are already in use in the locality in question, they can be very costly to implement and administer.

Another alternative to quantity-based targeting is service-level targeting. The sample of subsidy cases includes two examples of service-level targeting in the water sector — public tap subsidies in Bangalore and in Kathmandu. In Bangalore, for example, 24 percent of the population obtains water from public taps: 44 percent of the poor households and 10 percent of the nonpoor. However, the value of the subsidy is relatively small. Moreover, errors of exclusion of the subsidies are high, because more poor households (in cities) have private taps than use public taps.

These alternatives to quantity-based subsidies work by improving subsidy design, but they do nothing to address the gap in access between the poor and nonpoor. Hence the degree to which targeting performance can be improved through such approaches is limited, particularly in countries where a sizable portion of the population does not have access to the service.

Connection subsidies: a better way to reach the poor?

The major access differential between poor and nonpoor suggests that connection subsidies may be a more effective way to reach the poor. If one assumes that all unconnected households were both offered and accepted subsidized connections, the distribution of benefits from connection subsidies is nearly always progressive. If connection subsidies are combined with geographic targeting or means testing, they are even more progressive.

However, this is based on the bold assumption that, in introducing connection subsidies, unconnected households at each income level will connect at the same rate. In practice, that assumption is unlikely to hold, because utilities often face constraints in expanding their networks into all geographic areas and, even where networks are already present, many poor households face nonfinancial obstacles to connecting (such as not having legal title to the property they occupy).

When only 50 percent of the unconnected poor households are able or choose to connect, the benefit targeting performance becomes regressive in many cases. Even so, the targeting performance of the simulated connection subsidies is better than that of many of the consumption subsidies described above.

It is notable that despite sizable consumption subsidies only 20–30 percent of poor households in the four African case studies in the sample connect to utility networks even when networks are available. Unless those rates can be substantially improved, connection subsidies will continue to disproportionately benefit the non-poor in Sub-Saharan Africa.

The political economy of reforming subsidies

Reforming subsidies faces several challenges: ensuring that increased revenue translates into improved service, especially for vulnerable groups, and supporting governments to convince the general public that this works.

Most households would see their bills rise if subsidies were eliminated. The bulk of price increases would be paid by more affluent households. Resistance to tariff increases often comes from groups with access to decision makers, so it is not surprising that moving towards greater cost recovery has proven to be politically difficult. Understanding and addressing the political dimension of tariff policies is essential.

The available evidence strongly brings into question the presumption that the most prevalent subsidy instruments are, by definition, the way to ensure services for the poor. The cross country evidence shows that utility subsidies are not necessarily a cost-effective instrument for increasing service access and service quality.

Overcoming the limits of subsidies: an action agenda

Utility subsidies are best seen as one part of a package of measures to ensure access to utility services for the poor. Other measures may be more promising, either in combination with or instead of current subsidies.

- Reducing the costs of service, through efficiencies in operating and capital expenditures or by improving revenue collection, would benefit all consumers.
- More frequent billing and elimination of minimum consumption requirements and fixed charges could ease cash-flow problems faced by low-income households. Other options include prepayment, financing connection costs, and providing devices that help households control their consumption.
- Legal restrictions often work against the expansion of services to the poor. These restrictions include technical norms that oblige utilities to use inappropriate high-cost technologies, legal-tenure requirements that prevent services from being extended to periurban neighborhoods, and regulations restricting the services provided by small-scale providers. Relieving these restrictions would widen service access by the poor.
- To the extent they can be more accurately targeted to the poor, other measures of social protection may achieve redistributive goals better than utility subsidies.