

ACCESS TO ELECTRICITY IN AFGHANISTAN: A REVIEW OF RECENT DATA AND RECOMMENDATIONS TO IMPROVE UTILITY OPERATIONS

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Introduction

It is generally believed that Afghanistan has one of the lowest levels of access to electricity in the world; the figure of 6% access on the national level is often cited. While it is certainly true that overall access to electricity is low in this overwhelmingly rural and poor country, a review of recent household survey data and updated national utility data suggests that the access to electricity is somewhat higher than has generally been supposed, particularly in urban Afghanistan.

This note presents the new data and examines the implications of higher levels of access for policy makers and the managers of the power system in Afghanistan, particularly in Kabul. Recommendations to improve the quality of the utility's knowledge of the power system in Kabul follow the analysis of the survey data.

Recent Household Surveys and Updated Utility Data

Table 1 presents data on access to electricity in Afghanistan from the National Risk and Vulnerability Assessment (NRVA), a household survey, and from Da Afghanistan Breshna Moassese (Breshna), the national utility. The NRVA, a large nationwide survey carried out in 2005, showed access to electricity through the public grid (Breshna) of about 16%.

In contrast, the estimate based on the most current Breshna data on residential consumers suggests an access level of about only 11% on the national level. Of the urban households that participated in the survey, about 64% reported access to electricity through Breshna.

Access to electricity in Kabul alone is presented in Table 2. In addition to the NRVA 2005 data and the Breshna utility data, the table shows data from a survey commissioned by the World Bank and carried out by the Central Statistics Office and Kabul University in August 2006 called the Kabul Household Energy and Water Survey (KHEWS). The data from the two household surveys that were carried out in Kabul suggest that the utility data on consumers underestimate the actual level of access by a degree even greater than was observed with the national-level data. According to the results of the NRVA 2005 survey, about 59% of households reported access to electricity through Breshna. In August 2006, about 68% of the households that participated in the KHEWS reported access to electricity through Breshna, in contrast to the estimate of 34% that was derived from the Breshna utility data on residential consumers in Kabul.

Table 1: Access to Electricity in Afghanistan: Comparison of Survey and Utility Data

| | n = | Public Access (Breshna) % | Access from any Source* % |
|------------------------------------|---------|---------------------------------|---------------------------------|
| NRVA 2005 | | | |
| National data (including kuchis) | 30,020 | 15.6 | 24.8 |
| of which, Urban | 5,755 | 64.2 | 73.0 |
| of which, Rural | 22,601 | 4.3 | 14.1 |
| Breshna utility data (2007) | | | |
| National level** | 435,433 | 11.2% | — |

* For NRVA, "any source" includes public supply, government generator, personal generator (engine), personal generator (micro-hydro), community generator (engine), community generator (micro-hydro), solar.

** Extrapolation based on Breshna data on residential customers and population data from the Central Statistics Office. If kuchi are excluded from this extrapolation (on assumption that kuchi would not consume power from public supply), the access rate becomes 11.9%.

Table 2: Access to Electricity in Kabul: Comparison of Survey and Utility Data

| | n = | Public Access (Breshna) % | From Any Source* % |
|-------------------------------------|----------------|---------------------------------|--------------------------|
| NRVA 2005 | 2,275 | 58.7 | 73.6 |
| KHEWS 2006 | 2,000 | 68.2 | 88.6 |
| Breshna Kabul utility data** | 138,711 | 34.0 | — |

* For NRVA, “any source” includes public supply, government generator, personal generator (engine), personal generator (micro-hydro), community generator (engine), community generator (micro-hydro), solar. For KHEWS, “any source” includes Breshna (own house), Breshna (through neighbor’s connection), personal generator (own), generator (neighbor’s), generator (locally privately owned, not neighbor’s), and community generator.

** Extrapolation based on Breshna Kabul data on residential customers and population data from the Central Statistics Office.

Interpreting the Discrepancy between Utility and Survey Data

As has been demonstrated by the data in Tables 1 and 2, there is a discrepancy between the level of access to electricity reported by people in household surveys, and the level of access to electricity that is derived from the Breshna data. A few factors might account for the discrepancy between the Breshna data and the data gathered by the two household surveys.

First, the estimate of 6% nationwide access was probably inaccurate even when it was calculated some years ago. This estimate was an extrapolation of poor quality data on registered utility customers that were available after the fall of the Taliban on average household size and the overall population. The household surveys, on the other hand, were designed to yield results that are representative of the general population, using established sampling and surveying methodologies.



Second, in the years of reconstruction, efforts by the Government of Afghanistan and Breshna to increase access

have yielded some results in urban Afghanistan, and rural Afghanistan has seen a modest increase in access primarily thanks to the National Solidarity Program.



Household Energy Survey being completed

Third, the private efforts of individuals and domestic entrepreneurs have also contributed to the increased access to electricity and other energy services.

Finally, some part of the discrepancy between the Breshna data and the survey data may be accounted for by unregistered connections to the public supply and/or poor record-keeping by the utility. In this regard, the case of Kabul is of particular note: the percentage of households that reported access to Breshna in the World Bank KHEWS survey is twice the percentage of households with access according to the data from Breshna.

The analysis of the KHEWS data also considered the possibility that so-called “minor consumers” might account for the discrepancy between the estimates of access to electricity



derived from the survey as opposed to the utility data. “Minor” consumers (in Dari, “fari” meaning “branch”) are those who legally receive electricity through “main” consumers (in Dari, “asli” meaning “trunk”) who have the account with Breshna. Because Breshna does not keep records on the number of “minor” consumers, theoretically a large number of “minor” consumers could explain the discrepancy that has been described. However, the data from the KHEWS show that “minor” consumers account for only about 1.5% of the households that participated in the survey. Thus, this is not an important factor in explaining the discrepancy.

The analysis also considered the possibility that people participating in the survey did not completely understand what was meant by “public supply” and “Breshna” as opposed to other sources of electricity. However, it was clear from discussions with the interviewers and the researchers that Breshna is well known in Afghanistan (indeed, it is essentially a household word) and that people understand well the difference between the relatively low-cost public supply of electricity and other sources of electricity that are much more expensive to the individual household.

Finally, the analysis considered whether people would have any incentive to overstate their access to electricity through Breshna. However, there is no credible reason for people to do this, indeed, the opposite incentive would seem to prevail (i.e., people underreporting access to Breshna in order to keep unregistered connections from coming to the attention of the authorities).

In conclusion, considering all the facets of the analysis as presented above and the fact that the two surveys gave results that are very similar, it seems likely that the survey results

more accurately reflect the actual level of access to electricity in Afghanistan and particularly in Kabul. At the very least, it would seem reasonable to conclude that the estimate based on Breshna data represents the minimum boundary of the estimate of access to electricity, while the survey data represent the maximum boundary, with the actual level somewhere in between and likely closer to the survey results.

Recommendations

It is impossible to manage a power system efficiently and effectively without accurate information on the number of consumers in the system and their demand characteristics (quantity and time of power consumption). The reasons for this are obvious: in the short run, in addition to making the already weak financial condition of Breshna worse (by not being part of the company’s formal billing and payment system), a high percentage of unregistered consumers causes demand to significantly exceed supply, resulting in voltage fluctuations, outages, equipment failure, and generally poor quality of electricity supply for all consumers. In the medium-to-longer term, a poor knowledge of its customer base will make it impossible for Breshna to forecast its electricity demand (including willingness and ability of different customer groups to pay for electricity services) and to generate or contract sufficient power supply to meet this demand.



The primary recommendation coming from this review of recent data on access to electricity is for the Ministry of Energy and Water and Breshna to carry out a series of measures to improve the quality of the data on the power distribution system in Kabul. Kabul represents fully half of the

national power system in Afghanistan according to data on power billed; it could be that Kabul is, in fact, even more significant in the national power system than the currently available data suggest. Without accurate data on the number of consumers on the system (as well as more detailed data on consumers' locations on the system and relative levels of demand, and so forth), there is a high risk that investment and operational decisions could be misguided or suboptimal.



Specific measures to consider are:

- A comprehensive census of the Kabul power consumers to accurately re-assess the system and create an accurate and comprehensive customer database;
- Regularizing and/or disconnecting unregistered consumers;
- Computerizing record keeping and providing training for workers in using the computerized system. At present, most data are recorded by hand and on paper, which leads to a high level of errors and giving a high level of discretion to bill collectors and other workers in the system who interface directly with consumers;
- Outsourcing meter reading and customer management (with incentives to reduce commercial losses) and installing an automated meter reading system for the larger-volume customers.

Closing Thoughts

Notwithstanding the higher-than-supposed level of access to electricity in Afghanistan, particularly in Kabul, it should be stressed that the electricity sector continues to severely constrain economic and human development in Afghanistan. The power supplied is generally of poor quality, meaning

fluctuating voltage levels (which damage machines and appliances), power surges, and blackouts are common. There are still extreme supply-side constraints for existing consumers (power from the public grid is available only a few hours daily in most places), to say nothing of the supply that would be required to fuel economic growth; and industrial load is virtually nonexistent. The high cost of private generation is prohibitive for most of the population, allowing for only very limited generation when the public supply is not available. The government and its international partners need to keep a strong focus on addressing these fundamental problems while improving the operations of the national utility, Da Afghanistan Breshna Moassese (Breshna), in particular, dramatically improving the quality of data collection in the national power system.



The World Bank

In Washington:

Michael Haney

Phone: 1-202-473-3680

E-mail: mhaney@worldbank.org

Website:

www.worldbank.org.af