



Project Information Sheet Manufacturing End-Use Survey, Kabul Province

Lack of electricity constrains economic growth

Implementing Partner	USAID/SARI/E, Nexant, Inc.
Project Start Date	May 2005
Anticipated Finish Date	November 2005

Overview

Motivated by the need to provide a foundation for a continued and sustainable energy sector, USAID/Afghanistan, USAID/SARI/E and Afghanistan's Ministry of Mines and Industry have collaborated on evaluating the electricity use patterns of the manufacturing sector in Kabul Province. The lack of information for this sector—current electricity consumption and forecast needs—is a major impediment to proper planning.

The results of this effort indicate 52 million kWh of electricity were consumed by the manufacturing sector in 2005—equivalent to about the needs of 90,000 households in Afghanistan. Approximately 70% of electricity consumption was met by self-generation having an aggregated capacity of 30 MW. If the consumed capacity, for example, is provided by Afghanistan's electricity utility, the annual savings for the manufacturing sector, in fuel alone, would have been about \$8 million. Moreover, a 27% increase in electricity consumption for 2006 is forecasted for this sector—costing a total of \$11 million a year in fuel.

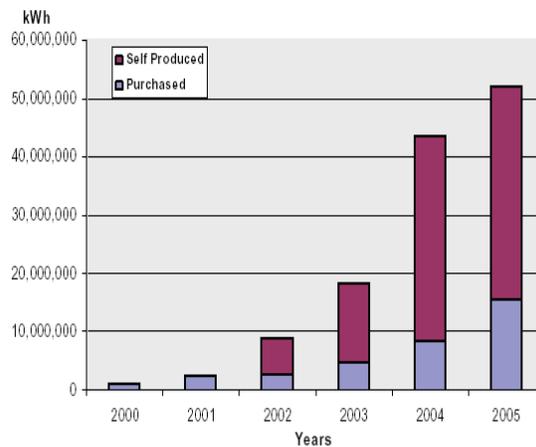
The completion of the North East Transmission System later in 2008, providing much needed power imports from the Central Asian Republics, will bring more reliable electricity to the manufacturing sector of Kabul.

Background

Afghanistan, a nation ravaged by over 20 years of conflict and natural disasters, is faced with an electricity sector that is one of the most under developed in the nation. The damage, destruction, and improper maintenance during this timeframe have resulted in significant electricity shortfalls, hampering economic growth. With unmet needs the manufacturing sector, as other sectors, has turned to self-generation to offset the under capacity of the national electricity grid.

A team of engineering and marketing specialists from the U.S., South Asia and Afghanistan was assembled to perform an extensive census and survey.

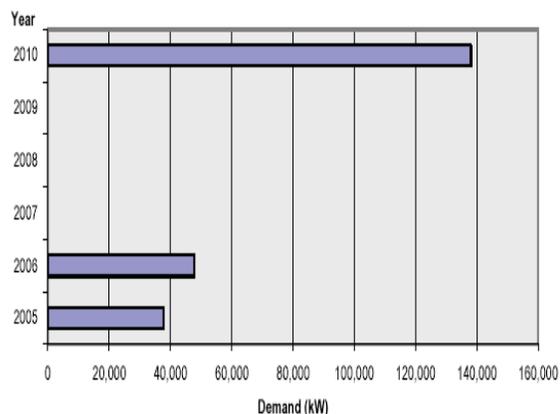
There are 754 manufacturing companies operating in Kabul province. From this group, 280 firms from pre-selected criteria were identified for the survey. The data collected for the year 2005 for electricity consumption from the grid and self-produced are noted:



Total Electricity Consumption – Mfg. Sector

All data collected was placed into a database and various sorts can be delivered.

Moreover, as demand for goods continues to grow, electricity consumption in the manufacturing sector will also increase:





The increase in consumption for 2006, for example, is expected to be approximately 27%—an additional total cost of \$11 million.

Three manufacturing sectors are the major consumers of electricity:

- Construction materials - 47%
- Food and beverage - 14%
- Plastics - 10%

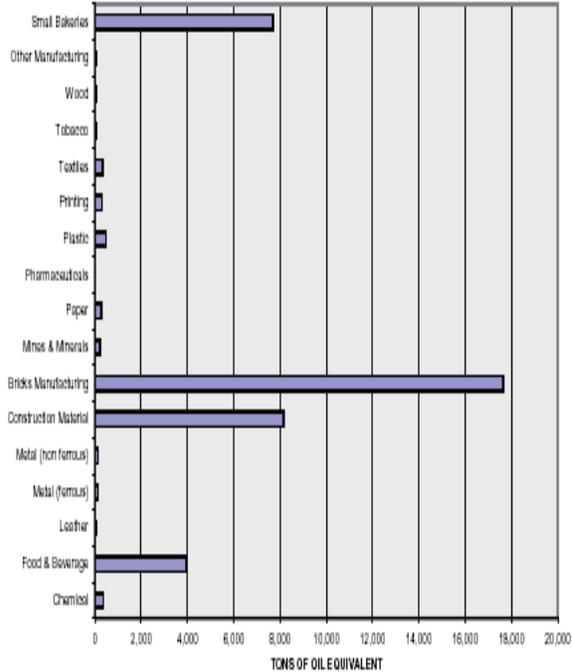
The survey also revealed the sector is a substantial user of thermal energy—totaling 35,170 tons of oil equivalent (TOE) in 2005. The largest consumers are:

- Bricks - 50%
- Small bakeries - 22%
- Construction materials - 17%

The thermal energy sources are: coal, wood, tires, crude oil, and spent oil.

The brick manufacturers used about 14,500 (TOE) of coal in 2005 and the small bakeries used about 7,500 (TOE) of wood in 2005.

The graph below normalizes energy consumption into TOE per manufacturing sub sector:



Total Energy Consumption (TOE) – 2005

Conclusions

- Economic penalty for insufficient grid-based electricity capacity is high
- Electricity consumption will increase significantly; grid-based electricity supply will lag
- A targeted intervention to improve efficiencies of self generating units would be beneficial
- Environmental degradation (deforestation and water and air pollution) will increase
- USAID's initiative to facilitate importing of electricity from the Central Asian Republics is critical to the economic growth of Afghanistan