

Case Study on Electricity Access Impact of a Generation Project

Accessistan is a country in Africa, with a population of 100 million people across 20 million households and a 20% urbanization rate. Only about 20% of the households have been connected to electricity till date. The country is endowed with large geothermal and hydropower potential which remains largely undeveloped. Most of the generation at present is from fossil fuel based sources - mainly coal fired. The country faces perpetual power shortages with urban areas getting power for about 12-16 hours, while rural areas receive supply for only about 6-8 hours each day.

The erstwhile integrated power sector in Accessistan was unbundled some time back with three distribution companies across northern, central and southern parts of the country, a unified transmission company and a generation company. The country has a large mining industry that requires electricity for various processes. Given perpetual shortage of power from the distribution companies, most mining industry players have set up captive power generation plants.

The Government of Accessistan (GoA) is applying for an international grant to facilitate the development of renewable geothermal energy resources in the country. GoA proposes to pilot geothermal plants in the country by utilizing the proposed grant towards development of the 200 MW ABC Geothermal project by the Accessistan Power Generation Company Limited (APGCL). When commissioned, the plant is expected to operate with a plant load factor of 90%, and would serve as a base-load plant.

APGCL has signed power purchase agreements (PPAs) with XYZ Aluminum Ltd for 40 MW capacity, while remaining 160 MW would be provided to the Southern Region Power Distribution Company (SRPDCL).

SRPDCL serves the least electrified part of the country, with a population of about 40 million people across 8 million households, and an electrification rate of only 12%. The company experiences high T&D losses of about 40%. Of the remaining 60% electricity, nearly 20% is supplied to households, while the remaining 40% is consumed by industries, commercial establishments, agriculture and public utilities / government buildings. However, given the electricity generation shortfalls, most consumers experience planned outages and the overall consumption levels are also low (see Table below).

Lack of household electricity access has become an important political issue in the country – especially with neighboring countries posing rapid expansion in household connections over the last five years. Over the next five years, GoA would be implementing a focused plan for expansion of household electricity access. The three distribution companies would be providing new electricity connections to households, while holding back any more connections to industries, commercial establishments, agriculture or public utilities.

The statistics department of the GoA conducted the National Sample Survey last year. Information about electricity consumption levels based on the survey is provided below. The same information was also corroborated by SRPDCL's own billing information data.

	< 66 kWh	66-321 kWh	321-1318 kWh	1318-2121 kWh	2121-12000 kWh	> 12000 kWh
% of connected consumers	10%	50%	28%	10%	1.5%	0.5%
Average consumption	50	200	600	1500	4000	14000

Please help SRPDCL in assessing the access impact of the ABC Geothermal Project.