

Abstract

In Kenya, there is high dependence on hydroelectric power which over the years has become very unreliable especially due to many blackouts and high cost. During the dry seasons the water level in the dams is very low leading to reduction in power production from the hydropower plants. The power has to be supplemented from independent generators which use diesel to generate the balance of power albeit at a higher cost. This project has been undertaken to investigate the power consumption trends at Kenya Technical Teachers College (KTTC) and the possibility of using solar energy in the hostels to supplement electrical power sourced from KPLC.

In KTTC, the electricity power consumption is about 45860kWh per month translating to an average monthly consumption of 89kWh per student per month and 1068kWh per year. This is at a cost of Ksh 797,800.00 per month which is about Ksh 1,555.00 per student per month. This is quite high compared to a national annual average of 844kWh for high income households and 544kWh for low income households of four persons as reported in a renewable energy journal [1] and 340kWh per household as cited in a report to the World Bank by the Energy Group of Columbia Earth Institute [2]. This is about 50kWh per person per month.

Analysis of electric power consumption at KTTC indicated an average consumption of 89kWh per boarding student per month. Estimate on use of hot water indicated that up to 64% of the students use hot water for bathing during the months of April, May, June and July. An estimate on the cost of installation of solar hot water heating system totaled to about Ksh 6.96million with a payback period of about four years. This would reduce the cost of electricity to the institutions greatly.