Report

On

Green Audit

At

Nagpur Shikshan Mandal's Shri Binzani City College, Nagpur

(Year 2025-26)

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Prepared by

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Acknowledgement

We at Nutan Urja Solutions, Pune, express our sincere gratitude to the management of Nagpur Shikshan Mandal's Shri Binzani City College, Nagpur for awarding us the assignment of Green Audit of their college premises.

We are also thankful to various Head of Departments & other Staff members for helping us during the field measurements.

We hope that the recommendations stated in this report will be useful and worthy of discussions to take things forward to help implementation of energy conservation measures and green practices. While we have made every attempt to adhere to high quality standards, in both data collection and analysis through the report, we would welcome your suggestions so as to improve upon this report further.

Executive Summary

Green Audit of Nagpur Shikshan Mandal's Shri Binzani City College, Nagpur is conducted by Nutan Urja Solutions, Pune. Based On the audit field study, following important points can be presented.

1. Present Energy Consumption

Nagpur Shikshan Mandal's Shri Binzani City College, Nagpur uses Electrical Energy as the source of Energy for various equipment in the college campus. In the following Table, we present the details of Energy Consumption.

Table no 1: Details of energy consumption

Sr no	Parameter	Energy consumed, (Units)	CO2 Emission (MT)
1	Maximum	3,019	2.42
2	Minimum	162	0.13
3	Average	1,702	1.36
4	Total	20,421	16.34

2. Various Measures Adopted for Energy Conservation

1. Usage of STAR Rated ACs at new installations
2. Usage of LED lights at some indoor locations
3. Usage of LED Lights for outdoor lighting.

3. Rain Water Harvesting

The College has installed the Rainwater harvesting project, to reduce dependency on municipal corporation water supply.

4. Waste Management

The College has already installed a Bio composting Plant, wherein, the bio-degradable waste is composted & is used as fertilizer for the garden.

The internal communication is through emails and hence there is hardly any generation of e-Waste in the premises.

5. Percentage of Usage of Renewable Energy

College has installed 40kW solar PV system.

6. Notes and Assumptions

1. Annual working Days-250 Nos
2. Average Rate of Electrical Energy : **Rs 8.2/- per kWh**

Abbreviations

CFL	:	Compact Fluorescent Lamp
FTL	:	Fluorescent Tube Light
LED	:	Light Emitting Diode
V	:	Voltage
I	:	Current
kW	:	Kilo- Watt
kWh	:	kilo-Watt Hour
kVA	:	Active Power

1. Introduction

Shri. Binzani City College, one of the oldest and premier educational institutions, was established on 17th July 1930. It is run under the aegis of Nagpur Shikshan Mandal, Nagpur. It is affiliated to Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur. The college has an imposing building. It is in five separate blocks. It has a huge play ground, a rich library and a well-equipped Physical Education Dept.

1.1 Objectives

1. To study present level of Energy Consumption
2. To Study the present CO_2 emissions
3. To assess the various equipment/facilities from Energy efficiency aspect
4. To measure various Electrical parameters
5. To study Scope for usage of Renewable Energy
6. To study various measures to reduce the Energy Consumption

1.2 Audit methodology

1. Study of connected load
2. Study of various Electrical parameters
3. To prepare the Report with various Encon measures with payback analysis

2. Study of Electrical Energy Consumption

In this chapter, electricity bills are studied for the analysis of electrical energy consumption.

Table no 2.1: Summary of electricity bills

No	Month	Energy (kWh)	Bill Amount (Rs)
1	Jun-26	538	6,456
2	May-26	186	2,418
3	Apr-26	2,084	26,050
4	Mar-26	1,897	20,867
5	Feb-26	1,214	16,996
6	Jan-26	1,279	19,185
7	Dec-25	2,751	33,012
8	Nov-25	162	1,782
9	Oct-25	3,019	34,719
10	Sep-25	2,218	26,616
11	Aug-25	2,746	35,698
12	Jul-25	2,327	23,270
	Total	**20,421**	**2,47,069**

Variation in energy consumption is as follows,

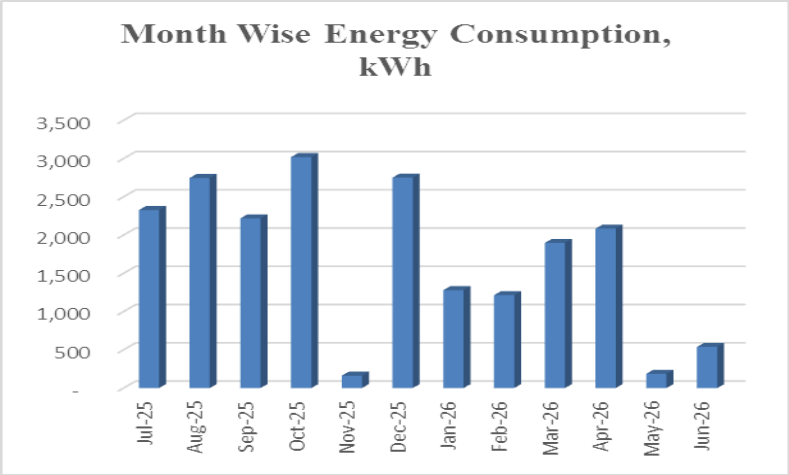


Figure 2.1: Month wise energy consumption

Monthly variation in electricity bill is as follows,

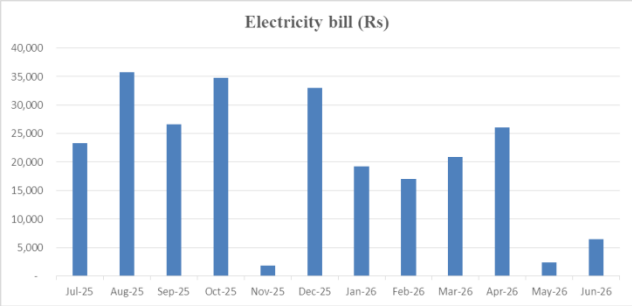


Figure 2.2: Month wise electricity bill

Key observations of electricity bill are as follows,

Table no 2.2: Key observations

Sr no	Parameter	Energy consumed, (Units)	CO2 Emission (MT)
1	Maximum	3,019	2.42
2	Minimum	162	0.13
3	Average	1,702	1.36
4	Total	20,421	16.34

3. Carbon Foot printing

1. A Carbon Foot print is defined as the Total Greenhouse Gas emissions (CO_2 emissions), emitted due to various activities. In this we compute the emissions of Carbon-Di-Oxide, by usage of the various form of Electrical Energy used by the College for performing its day to day activities

2. Basis for computation of CO_2 Emissions:

The basis of Calculation for CO_2 emissions due to Electrical Energy is as under

- 1 Unit (kWh) of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere.

Based on the above Data we compute the CO_2 emissions which are being released in to the atmosphere by the College due to its Day to Day operations

We herewith furnish the details of various forms of Energy consumption as under

Table 3.1: Month wise Consumption of Electrical Energy & CO2 Emissions

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Jun-26	538	0.43
2	May-26	186	0.15
3	Apr-26	2,084	1.67
4	Mar-26	1,897	1.52
5	Feb-26	1,214	0.97
6	Jan-26	1,279	1.02
7	Dec-25	2,751	2.20
8	Nov-25	162	0.13
9	Oct-25	3,019	2.42
10	Sep-25	2,218	1.77
11	Aug-25	2,746	2.20
12	Jul-25	2,327	1.86
	Total	**20421**	**16.34**

In the following Chart we present the CO2 emissions due to usage of Electrical Energy.

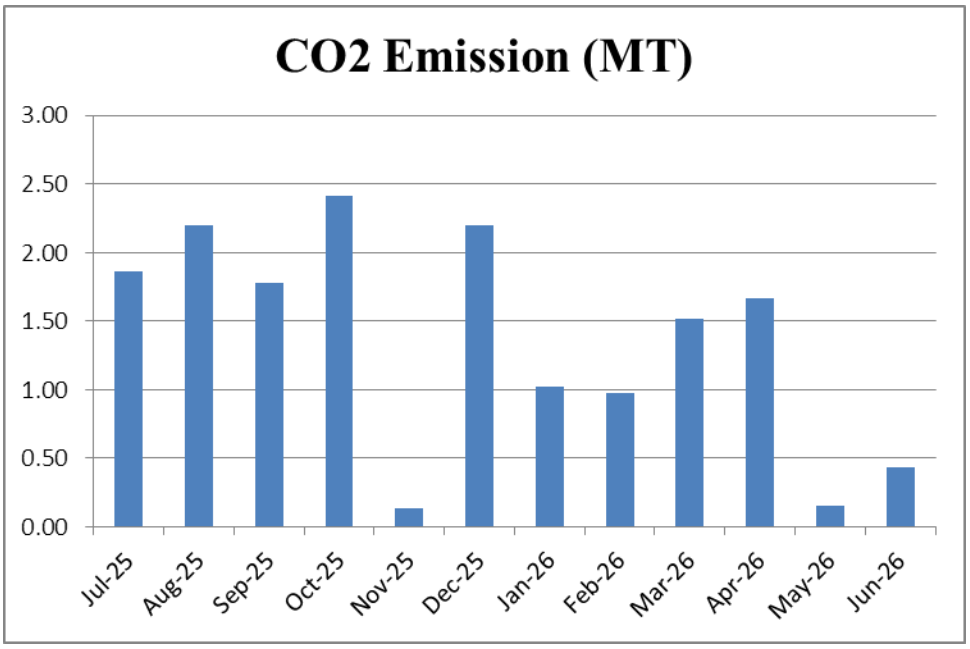


Figure 3.1: Month wise CO2 Emission

4. Study of Usage of Alternate Energy

In this Chapter, we compute the percentage of Usage of Alternate/Renewable Energy to Annual Energy Requirement of the College. The College has installed Roof Top Solar PV System. The Installed Capacity of Solar PV Plant is **40 kWp**.

Table 4.1: Computation of % Usage of Alternate Energy to Annual Energy Requirement

No	Particulars	Value	Unit
1	Annual Energy Purchased from MSEDCL	20,421	kWh/Annum
2	Energy Generated by Roof Top Solar PV System	60000	kWh/Annum
3	Total Energy Requirement of College	80,421	kWh/Annum
4	% of Usage of Alternate Energy to Annual Energy Requirement	75	**%**

Photograph of Solar PV plant



5. Study of Rain Water Harvesting

The College has already installed Rain Water Harvesting project, wherein the rain water falling on the terrace is collected and through pipes it is fed to underground Water Storage tank. This stored water is then reused for domestic purpose.

Photograph of Rain Water Harvesting pipe



6. Study of Waste Management

6.1 Solid Waste Management

The College has already installed a Bio composting Plant, wherein, the bio-degradable waste is composted & is used as fertilizer for the garden.

6.2 e-Waste Management

The internal communication is through emails and hence there is hardly any generation of paper waste in the premises.

7. Study of Green Practices

7.1 No of students who don't use own Vehicle for coming to Institute

Out of total students coming to Institute, about 40% students use own Automobile.

7.2 Usage of Public Transport

During the Students transport study, it was revealed that the local students who are residing near areas make use of Public Transport like Municipal Transport local buses, local sharing type auto rickshaws. Some students use bicycles. Institute encourages students to not to use automobiles.

In order to encourage students, college celebrates fourth Saturday of each month as no vehicle day. On no vehicle day, personal vehicle in college is not allowed.

7.3 Pedestrian Friendly Roads

The Institute has well defined pedestrian foot paths as to facilitate the easy movement of the students within the campus.

Photograph of Road within campus



7.4 Plastic Free Campus

The Institute is an active participant in the Government of India's most prestigious project of SWATCHH BHART ABHIYAN. Various measures adopted for this purpose are as follows

- Installation of Separate waste bins for Dry waste & wet waste
- Usage of paper tea cups in the Institute canteen

7.5 Paperless Office

The internal communication of the Institute is through the Internet. There are hardly any day to day operations, where printing is required.

7.6 Green Landscaping with Trees and Plants

The Institute has beautiful maintained Garden.



Figure 7.1: Beautiful maintained Garden of college