Green Audit Report 2019-20

Government Degree College, Luxettipet

Dist. Mancherial, Telangana State

Acknowledgement

The Government Degree College is highly thankful to the audit team for accepting our request and taking up the audit voluntarily. The institute welcomes all the suggestions given by the audit team for making our college campus environment friendly leading to sustainable development. The institute is grateful to audit team comprising of following members:

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Introduction

Environmental audits can be a highly valuable tool for college in a wide range of ways to improve their environmental and economic performance and reputation while reducing wastages and operating costs. The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institute which will lead for sustainable development. The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution and the state government policies. The specific objectives of the audit were to evaluate the adequacy of the management control framework of Environment Sustainability as well as the degree to which the institution is in compliance with the applicable regulations, policies and standards. It will also help the college to compare its programmes and activities with other peer institutions, identify areas for improvement and prioritise the implementation of future projects.

The methodology included: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. It works on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity. Finally a report pertaining environmental management plan with strength, weakness and suggestion on the environmental issue of campus are documented

Through Green Audit one gets a direction as how to improve the condition of environment and there are various other factors that has necessitated the institutions to take up Green Audit. Green Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. The 'Green Audit' aims to analyse environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience.

About the College

The Govt. Degree College, Luxettipet was established in 2008 to cater the educational needs of the socially and economically unprivileged students hailing from remote areas surrounding the region. Due to non-availability of permanent building, the institution started functioning in shift system in the Govt. Junior College premises. In 2015, the college was identified under Model Degree College scheme by RUSA, New Delhi and Rs.12 Crores were sanctioned for the construction of Administrative Block, Men and Women hostel.

The Government Degree College, Luxettipet, fourth Model Degree College in the state and the only one in the northern part of Telangana was digitally inaugurated by Honourable Prime Minister of India, Sri. Narendra Modiji in Feb. 2019, in the presence of Sri. N. Diwakar Rao, Honourable MLA, Mancherial Constituency. In the academic year 2019-20, the institution shifted to its own permanent New Model College Building attached with Men and Women's Hostel spread across 9.3 acres. The institute has good infrastructure with modern digital classrooms, sufficient furniture, Computers and RO plants.

The institute is committed to provide quality education to rural students in an ambient atmosphere and efforts are being made to mould this institution as a prestigious landmark in the entire region. With a meagre admission of 60 students last year, the institution has been able to admit 304 students this academic year. The Institution is offering 7 courses with a number of liberal subject combinations under CBCS system. In the academic year 2019-20, students were admitted in 12 course combinations. There are 23 Teaching Staff posts and 14 Non-Teaching staff posts sanctioned to our institution. There are 20 Teaching and 13 Non-Teaching staff working against the sanctioned posts.

Objectives of Green Audit

The main aim objectives of this green audit are to assess the environmental quality and the management strategies being implemented in Government Degree College, Luxettipet. The specific objectives are:

- To suggest measures to improve biodiversity within the college campus.
- To quantify the liquid and solid waste generation and management plans in the campus.
- To suggest sustainable energy usage and water conservation practices.
- To suggest best protocols for adding to sustainable development
- To awareness among students to real concerns of environment and its Sustainability.

Methodology

There was on-site field visit by the audit team. As planned, the background information was collected using the survey forms/questionnaires as a part of pre-audit.

The methodology included preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. The study includes several facets of 'Green Campus' including

- Water Usage and Conservation
- Tree Plantation,
- Waste Management
- Paperless Work
- Alternative Energy
- Mapping of Biodiversity.

Finally a report pertaining environmental management plan with strength, weakness and suggestion on the environmental issue of campus are documented

Water Usage and Conservation:

The study evaluates the facilities of raw water intake and facilities for water treatment. The process investigates the relevant method that can be adopted and implemented to balance the demand and supply of water in the institute.

S.No	Parameter	Response	Remarks
1	Source of water	Bore well	
2	No of Bore Wells	1	
3	No of motors used	4	1.5HP-3, 5HP-1
4	Horse power – Motor	1.5 HP and 5 HP	
5	Depth of well –Total	350 feet	
6	Water level	200 feet	
7	Number of water tanks	8	
8	Capacity of tank	2000 lts	
9	Quantity of water pumped every day	16000 lts	
10	Any water wastage/why?	No	
11	Water usage for gardening	Yes	
12	Waste water sources	Toilets	
13	Use of waste water	No	
18	No of water coolers	1	
19	Rain water harvest available?	Yes	
20	No of units and amount of water harvested	2	
21	Any leaky taps	No	
23	Any water management plan used?	Yes	
24	Any water saving techniques followed?	Waste water from RO plant diverted to the plantation	

		programme	
25	Are there any signs reminding peoples to turn off the water?	Yes	By sign boards

Observation: The bore water is the main source of water. There is one bore in the college and in summer season another bore located in the adjacent BC Welfare school is utilized. The water level in the available bore goes down in summer. There is sump with about 50,000 litre capacity in use. Another sump with 1 lakh litres capacity is ready and the connection through Mission Bhagiratha (safe drinking Godavari Water) is expected to be completed by state government very soon. There are three RO plants each in Administrative block, girls hostel and boys hostel. The waste water from only one RO plant is used for gardening. The waste water from hostel kitchen was found to feed tomato and snap melon plants. The water from over head tank is also channelized to plants. There is minimum wastage of water.

Suggestions:

The Institute must go for automatic control systems to minimise water losses from over head tanks. More water recharging pits is needed. Construction of rain water harvesting tank of huge capacity can meet the needs of gardening and cleaning of utensils in hostels. Proper care should be taken for the maintenance of RO plants. The RO plants can be put aside to save energy and water wastage as soon the safe water is supplied through Mission Bhagiratha

Carbon Foot Print Analysis

1. Total number of vehicles used by the stakeholders of the college: 10

2. Number of cycles used : 0

3. No: of two wheelers used : 7

Average distance travelled : 05 km

Average quantity of fuel used: ½ Ltr

4. No: of cars used : 03

Average distance travelled : 150 km/03 = 50 km

Average quantity of fuel used : 2.5 Ltr

5. No. of persons using public transportation: 205

6. No. of persons using college conveyance : ----

7. No. of generators used per day :

8. Amount of fuel used : Nil

9. Number of LPG cylinders used in canteen/Labs: 1

10. Use of any other fossil fuels in the college: Using firewood in the college hostels.

11. Any suggestion to reduce the use of fuel:

Use of fire wood for cooking in college hostels should be reduced and more efficient and eco friendly methods like solar energy should be encouraged. Students and staff should be motivated to use bicycles.

Energy Management:

Energy conservation is an important aspect of campus sustainability which is also linked with carbon foot print of the campus. Energy auditing deals with the conservation and methods to reduce its consumption related to environmental degradation. This indicator addresses energy consumption, energy sources and monitoring the working of energy appliances for optimum utilization of its effectiveness.

S. No.	Electrical items	Nos	Number of Items used	Power(W)/ unit	Total Power (W)	kW	Usage /day	kWhr	No. Of days in month	Total consumption in a month
1.	LED Tube	645	65	18 W	1170	1.17	6	7.02	25	175.5 KW
2.	Fans	322	80	75 W	6000	6	6	36	25	900KW
3.	Motors	3 (0.5HP)	3	373 W	1119	1.11	1	1.11	25	27.75KW
		3 (1.5HP)	3	1119	3357	3.35	1	3.35	25	83.75 KW
		1 (5 HP)	1	3730	3730	3.7	1	3.7	25	92.5 KW
4.	Printers	06	6	60	360	0.36	1	0.36	25	9 KW
5.	Computers	51	30	250	7500	7.5	2	15	25	375 KW
6.	UPS	03	3	1000	3000	3.0	0.5	1.5	25	37.5 KW
7.	Projectors	03	3	280	840	0.8	0.5	0.4	25	10 KW
8.	Laptops	02	2	50	100	0.1	1	0.1	25	2.5 KW
9.	CC Camera setup	38	38	50	1900	1.9	24	45.6	25	1140 KW

10.	Oven	01	1	1500	1500	1.5	0.5	0.75	25	18.75 KW
11.	Centrifuge	03	3	850	2550	2.5	0.5	1.25	25	31.25 KW
12	Exhaust Fans	43	15	32	480	0.48	2	0.96	25	24 KW
									Total	2927.5 KW

As per the electricity bill for the month of August 2020, the institute consumed 2674 units of energy.

Observation:

The institute being running in a newly constructed building and with new equipments, the energy utilization is found to be appropriate and satisfactory. Non usage of air conditioners in institute is found to be beneficial in terms of energy saving and environmental friendly. The entire campus including street lights are equipped with LED tubes and LED bulbs. Electricity saving posters are pasted in the premises for reminding the students to switch off the appliances when not in use.

Recommendations:

The potential of renewable energy sources needs to be explored. The institute and hostels has large roof area which may be utilized for solar panels. Solar water heaters and solar panels for street lights with sensors may be utilized for saving energy. The electricity appliances like fans needs to be checked periodically and proper lubrication should be done for bearing. Floor wise/Block wise main switches should be installed to prevent any energy wastage.

Waste Management:

The educational institutions represent the main components of sustainability promotion in our society. Waste management is one of the challenges that educational institutions have to face in accomplishing sustainability goals. Human activities create waste, and it is the way these wastes are handled, stored, collected and disposed of, which can pose risks to the environment and to public health. Pollution from waste is aesthetically unpleasing and results in large amounts of litter in our communities which can cause health problems. Furthermore, solid waste often includes wasted material resources that could otherwise be channelled into better service through recycling, repair, and reuse. Solid waste generation and management is a burning issue. Unscientific handling of solid waste can create threats to everyone. The survey focused on volume, type and current management practice of solid waste generated in the campus.

Types of waste	Particulars
E- Waste	Computers, electrical and electronic parts
Plastic waste	Pen, Refill, plastic bottles, plastic containers, wrappers
Solid waste	Damaged furniture, paper plates, paper waste, food waste
Chemical waste	Laboratory waste
Waste water	Washing, urinals, bathrooms
Glass waste	Broken glass from laboratory

Observation:

The college has minimum solid waste generation. The institute has no recycling unit within the campus or any policy for transporting the recyclable waste to other available units. Most of the vegetable and food waste in the hostel is collected in the small containers/drums provided by cattle rearers for feeding the cattle. As most of the electronic items are newly purchased, the e-waste is minimal. The institute has the policy framed by the Commissioner of Collegiate Education, Telangana State for disposing off the e-waste. The other solid waste is collected by the municipality workers and disposed off by their policy in force.

Recommendations:

The institute must provide sufficient and accessible collection points for recyclable waste and proper care must be taken to transport the material for recycling units. The waste papers and brown cartoon waste can be collected for recycling instead of burning. The institute can segregate the biodegradable and non-biodegradable waste and can produce organic manure which can be used in the institute for plantations and can start a vermi compost unit.

Green Campus Management:

A Green Campus is a place where environmental friendly practices and education combine to promote sustainable and eco-friendly practices in the campus. The green campus concept offers an institution the opportunity to take the lead in redefining its environmental culture and developing new paradigms by creating sustainable solutions to environmental, social and economic needs of the mankind. The green campus practice is a boon to promote mental and physical health of the students and staff. The following are the details of trees available in the campus:

S. No.	Common/local name	Scientific name	No. of trees
1.	Guava	Psidium guajava	76
2.	Indian banyan	Ficus benghalensis	5
3.	Neem	Azadirachta indica	30
4.	Papaya	Carica papaya	6
5	Pomegranate	Punica granatum	3
6	African tulip	Spathodia Camapanulata	12
7	Yellow Bells/Pachagotla	Techoma stans	4
8	Gulmohar	Delonix regia	11
9	Jasmine sps/kada malle	Millingtonia hortensis	7
10	Kanuga /Biodiesel plant	Pongamia pinnata	32
11	Goose berry/Amla	Emblica officinalis	40
12	Vavilaku	Vitex negundo	2
13	Lemon	Citrus aurantifolia	1
14	Indian Plum	Ziziphus jujuba	31
15	Curry leaves	Murraya koenigi	2
16	Pulichinta	Pithacolobium dulci	2
17	Subabul	Leucaena leucocephala	1
18	Siris tree	Albizia lebbeck	1
19	Indian Rosewood	Dalbergia sissoo	4
20	Sira chettu	Phyllanthus reticulata	4
21	Gu Phool - Talambrala chettu	Lantana camara	20
22	Sima tangedu	Senna siamea	7
		Total	301

Observation: The institute has good scope for plantation and making the campus green. Though some plantation is done but due to poor soil condition, the plant

growth is very less. There were about 300 trees in the campus, mostly planted in the last year.

Suggestions: The institute has about 7 acres of land available for plantation. Though the soil is not fertile and not much useful for plant growth, the plants suitable for the soil are to be identified and preferred for plantation. Efforts should be made to produce organic manure using the food waste, dried leaves and vermi compost for increasing the fertility of soil. Black dry soil available from the nearby ponds and fields can be used to replace the upper layer of some part of the land for growing good plants. Proper irrigation facility needs to implemented.

Report Prepared & Certified by:

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3.	Sri. M. Bhargav, Assistant Engineer, Telangana State Education Welfare Infrastructure Development Corporation (TSEWIDC), Mancherial District	TSEWIDC, MANCHERIAL ASST. ENGINEER ASST. ENGINEER TSEWIDC, MANCHERIAL
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