GREEN AUDIT REPORT

LAXMI NARAIN DUBEY COLLEGE, MOTIHARI

2022-23

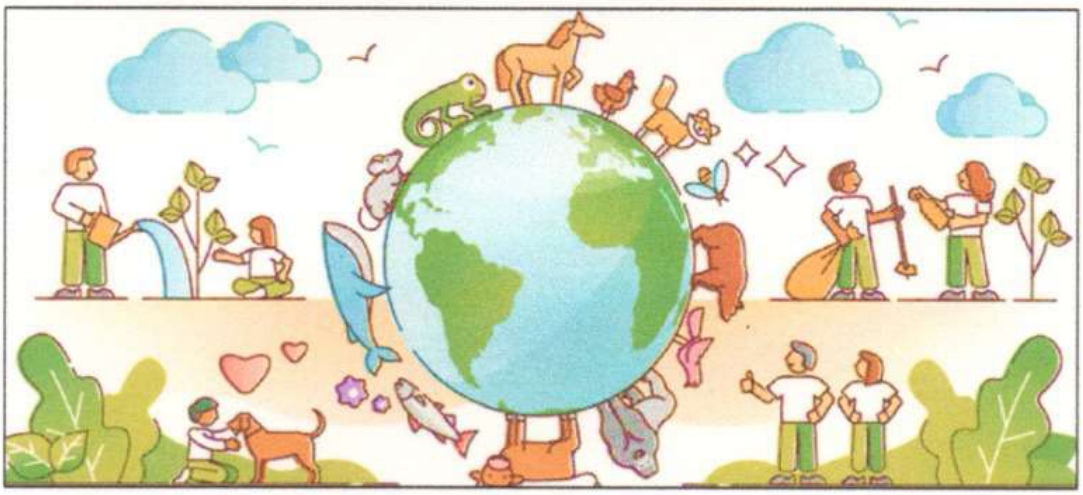


Executive Summary

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.

Laxmi Narain Dubey College, Motihari, is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and reverse the trends. 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.

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. With this in mind, 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 Departments are in compliance with the applicable regulations, policies and standards. It can make a tremendous impact on student health and learning college operational costs and the environment. The criteria, methods and recommendations used in the audit were based on the identified risks.



1. Introduction

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. It was initiated with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment.

Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit. Green audit is assigned to the criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India which declares the institutions as Grade A, B or C according to the scores assigned during the accreditation.

1.1About the College

Laxmi Narain Dubey (L.N.D.) College was founded in the year 1966 in the district head quarter of East Champaran, Motihari with a gigantic vision to contribute in the betterment of educational scenario of North Bihar. It was made a constituent unit of Babasaheb Bhimrao Ambedkar Bihar University Muzaffarpur in 1980 and included in the list of colleges maintained under section 2(f) and 12(B) of the UGC Act, 1956 under the head Government College. Being situated in the heart of the city, the area of the college campus is more than 7 acres having well maintained roads, sufficient greenery and buildings. The college has been a prominent higher education learning center in Motihari, and well known for its teaching, discipline, and fairness in examinations. The courses being taught in the college campus are: four-year degree courses (B.A., B.Sc.), six-semesters vocational courses like Bachelor in Computer Applications (B.C.A.), Bachelor in Business Administration (B.B.A.) and two-years Bachelor in Education (B.Ed.). Post Graduate courses in seven different subjects will be started from 2023-24 session. The college comprises 17 Departments spanning various subjects pertaining to the branches of humanities, social science, arts, science, computer application, business administration and education. Because of its tremendous popularity, more than nine thousand students are enrolled in various courses in the college campus. The faculty members in the college are doing their best in imparting the classroom learning experience to the students. In recent years, the college has made many technological developments, which make it a premier higher education center in the arena of off-line as well as online teaching module. The entire faculty members of the college have been made technology-enabled to keep pace with the state-of-the-art teaching practices at the global level. The establishment of virtual classrooms and development of e-contents (video/audio lectures and texts) according to the University syllabus helps a huge

fraction of college students in enhancing their learning capacity. Further, the fully digitized central library, separate block for PG departments, well-equipped recording room and language lab, advanced smart classrooms, state-of-the-art seminar hall and conference room are one of the few examples of the availability of grand infrastructures in the college. The prime motive of the college is to impart education through classroom teaching; however, the college is becoming the centre of academic excellence through frequent events of national seminars and workshops by various departments and cells of the college. There is Research and Development (R&D) cell in the college to harness the culture of healthy and innovative research work. Under its aegis, the faculty members have published research articles in various international high impact factor journals. Moreover, the college has its own innovation and start-up policy (LNDC-ISP) through which the students and faculties are regularly motivated towards entrepreneurship through frequent workshops and seminars. In the college campus, the alumni meet of past students has been organized. To be part of the Fit India Movement, the college has its own Gym with all the modern equipment to bring about behavioural changes and physically active lifestyle of students and employees. As far as the aspects of national security and social activities are concerned, the NCC and NSS units are performing their parts exceptionally.

1.2 Objectives of the Study

The main objective of the green audit is to promote the Environment Management and Conservation in the College Campus. The purpose of the audit is to identify, quantify, describe

and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

The main objectives of carrying out Green Audit are:

- To introduce and aware students to real concerns of environment and its Sustainability.
- To secure the environment and cut down the threats posed to human health by analysing the pattern and extent of resource use of the campus.
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requiring high cost.
- To bring out a status report on environmental compliance.

1.3 Methodology

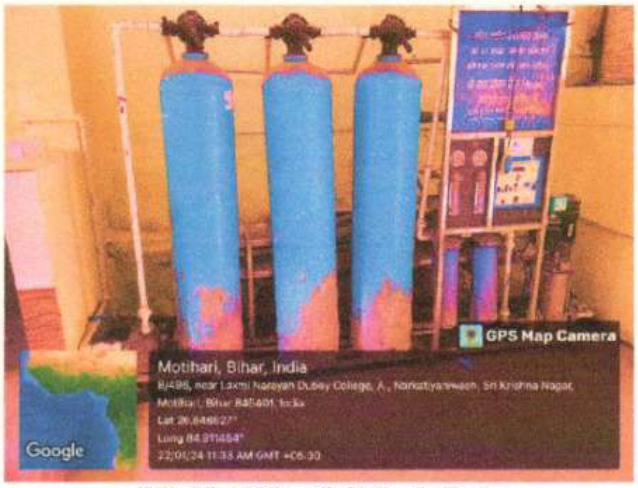
In order to perform green audit, the methodology included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. The study covered the following areas to summarise the present status of environment management in the campus:

- Water management
- Energy Conservation
- Waste management
- E-waste management
- Green area management

1.4. Observations and Recommendations

1.4.1 Water Use

The Reverse Osmosis Plant installed in the students' amenities centre caters to the drinking water needs of all the Students, Teachers, supporting Staff and the Visitors. This indicator addresses water consumption, water sources, irrigation, storm water, appliances and fixtures. A water audit is an on-site survey and assessment to determine the water, use and hence improving the efficiency of its use.



RO PLANT at L.N.D. College

a) Observations

The study observed that the Water tanker supply system, Tube well and Municipal connection are major sources of water in college and both the hostels. Water is used for drinking purpose, toilets and gardening. The waste water from the RO water purifier is used for gardening purpose. During the survey, no loss of water is observed, neither by any leakages, nor by over flow of water from overhead tanks. The data collected from all the departments is examined and verified. On an average the total use of water in the college is 29,000 L/day, which include 28,000 L/day for domestic, gardening purposes and 1,000 L/day for drinking purpose. Rain water harvesting units are also functional for recharging ground water level.

b) Recommendations

In campus small scale/medium scale/ large scale reuse and recycle of water system is necessary. Minimize wastage of water and use of electricity during water filtration process, if used, such as RO filtration process and ensure that the equipment's used for such usage are regularly serviced.

Ensure that all cleaning products used by college staff have a minimal detrimental impact on the environment, i.e. they are biodegradable and non-toxic, even where this exceeds the Control of Substances Hazardous to Health (COSHH) regulations. Gardens should be watered by using drip/sprinkler irrigation system to minimise water use.

1.4.2 Energy Use and Conservation

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment.

a) Observations

Energy source utilized by the campus is electricity only. Total average energy consumption is determined as 2814 KWH/month. The entire campus including common facility centres are equipped with LED lamps and LED tube lights, except at few locations. Besides this, photovoltaic cells are also installed in the campus as an alternate renewable source of energy. The Solar power generated is supplied to Bihar State Electricity Board. Computers are set to automatic power saving mode when not in use. Solar water heaters are installed in hostel buildings as to promote renewable energy. Also, campus administration runs switch–off drill on regular basis.

b) Recommendations

- In campus premises electricity should be shut down from main building supply after occupancy time, to prevent power loss due to eddy current.
- Support renewable and carbon-neutral electricity options on any energy purchasing consortium, with the aim of supplying all college properties with electricity that can be attributed to renewable and carbon-neutral sources.
- It is preferable to purchase electricity from a company that invests in new sources of renewable and carbon-neutral electricity.
- Installation of LED lamps instead of CFL and replacing the old tube lights with the new LED tubes.
- 5–star rated Air Conditioners, Fans and CFLs should be used.
- Cleaning of tube-lights/bulbs to be done periodically, to remove dust over it.

Solar Roof Top Panel installed at L.N.D. College

1.4.3 Waste Generation

This indicator addresses waste production and disposal of different wastes like paper, food, plastic, biodegradable, construction, glass, dust etc. and recycling. 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.

a) Observations

Waste generation from tree droppings and lawn management is a major solid waste generated in the campus. The waste is segregated at source by providing separate dustbins for Bio-degradable and Plastic waste. Single sided used papers reused for writing and printing in all departments and recently both side printing is carried out as per requirements. The waste generated by newspapers 300kg/year, magazine 280kg/year and of cartons is 20kg/year. Very less plastic waste (0.1Kg/day) is generated by the department, office, garden etc. but it is neither categorized at point source nor sent for recycling. Metal waste and wooden waste is stored and given to authorized scrap agents for further processing. The solid waste is collected by the municipal corporation and disposed by their methods.

b) Recommendations

- Reduce the absolute amount of waste that is produced from college staff offices.
- Make full use of all recycling facilities provided by City Municipality and private suppliers, including glass, cans, white, coloured and brown paper, plastic bottles, batteries, print cartridges, cardboard and furniture.
- Provide sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated.
- Important and confidential papers after their validity to be sent for pulping.
- Vermicomposting should be adopted on at least 300 sq. ft. of land.

Vermicomposting Unit

1.4.4 E-Waste Generation

E-waste can be described as consumer and business electronic equipment that is near or at the end of its useful life. This makes up about 5% of all municipal solid waste worldwide but is much more hazardous than other waste because electronic components contain cadmium, lead, mercury, and Polychlorinated biphenyls (PCBs) that can damage human health and the environment.

Campus cleaning programme

a) Observations

E-waste generated in the campus is very less in quantity. Administration conducts the awareness programmes regarding E-waste Management with the help of various departments. The E-waste and defective item from computer laboratory are being stored properly. The institution has decided to contact approved E-waste management and disposal facility in order to dispose E-waste in scientific manner.

CLEAN INDIA CAMPAIGN with Motihari Nagar Parishad

b) Recommendations

- Recycle or safely dispose of white goods, computers and electrical appliances. Use reusable resources and containers and avoid unnecessary packaging where possible.
- Always purchase recycled resources where these are both suitable and
- available.

The 5 R's, Refuse, Reduce, Reuse, Recycle, Rot

1.4.5 Green Area

This includes the plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards. This also helps in ensuring that the Environmental Policy is enacted, enforced and reviewed using various environmental awareness programmes.

Botanical Garden

a) Observations

Campus is located in the vicinity of many trees (species) to maintain the bio-diversity. Various tree plantation programs are being organized at college campus and surrounding villages through NSS (National Service Scheme) unit. This program helps in encouraging eco-friendly environment which provides pure oxygen within the institute and awareness among villagers. The plantation program includes various type of indigenous species of ornamental and medicinal wild plant species. Seed bowls were prepared and planted by 450 members, including NSS unit and students of the college.

b) Recommendations

- Review periodically the list of trees planted in the garden, allot numbers to the trees and keep records. Assign scientific names to the trees.
- Promote environmental awareness as a part of course work in various curricular areas, independent research projects, and community service.
- Create awareness of environmental sustainability and take actions to ensure environmental sustainability.
- Establish a College Environmental Committee that will hold responsibility for the enactment, enforcement and review of the Environmental Policy. The Environmental Committee shall be the source of advice and guidance to staff and students on how to implement this, Policy.
- Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings.
- Celebrate every year 5th June as 'Environment Day' and plant trees on this day to make the campus Greener.
- Indoor plantation to inculcate interest in students, Bonsai can plant in corridor to bond a relation with nature.
- Green library should be established.

5. Conclusions

Considering the fact that the institution is predominantly abide the laws and norms of green audit and there is significant environmental research both by faculty and students. The environmental awareness initiatives are substantial. The installation of solar panels and rain water harvesting system are noteworthy. Besides, environmental awareness programmes initiated by the administration shows how the campus is going green. Few recommendations are added to curb the menace of waste management using eco-friendly and scientific techniques. This may lead to the prosperous future in context of Green Campus & thus sustainable environment and community development. As part of green audit of campus, we carried out the environmental monitoring of campus including Illumination and Ventilation of the class room. It was observed that Illumination and Ventilation is adequate considering natural Light.

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Signature and Stamp

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