



राष्ट्रीय वनश्री संगोपन संस्था, चाळीसगाव (कृषि, वन व ग्रामीण विकास संस्था)

- संस्था नोंदणी अधिनियम १८६० अन्वये नो. क्र. ९९५ जळगाव (महाराष्ट्र) •
- मुंबई सार्वजनिक विश्वस्थ व्यवस्था अधिनियम १९५० अन्वये नो.क्र. एफ.-९५० जळगाव •

‘वनश्री’, गजानन कन्स्ट्रक्शन, भडगाव रोड, चाळीसगाव जि. जळगाव (महाराष्ट्र) फोन नं. ०२५८९-२२३०५५

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Green Audit Certificate

I hereby certify that the Green Audit Committee of Nanasaheb Y. N. Chavan Arts, Science and Commerce College, Chalisgaon has conducted the Green Audit of the campus in respect of Water and Sewage Management, Energy use and Conservation, Noise Environment, Waste Management and the Flora on the campus. The audit has been conducted adhering to the methodological tools like physical inspection, observation, document-review and interviews of key persons concerned. The Green Audit practice will have a positive impact on the healthy and recreational atmosphere on the college campus.



Pradham
Secretary
Rashtriya Vanashri Sangopan Sanstha
Chalisgaon Dist. Jalgaon (M.S.)

GREEN AUDIT REPORT (2016-17)

RASHTRIYA SAHAKARI SHIKSHAN PRASARAK MANDAL LTD. CHALISGAON SANSTHA'S

NANASAHEB YASHVANTRAO NARAYANRAO CHAVAN

ARTS, SCIENCE AND COMMERCE COLLEGE, CHALISGAON,

DIST. JALGAON (M.S.)

Prepared by

Green Audit College Committee

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Rashtriya Sahakari Shikshan Prasarak Mandal Ltd. Chalisgaon Sanstha's Nanasahab Yashvantrao Narayanrao Chavan Art's, Science & Commerce College, Chalisgaon Dist. Jalgaon, is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and reverse the trends. The college has initiated "The Green Campus" program five years back that activity promote the various projects for the environment protection and sustainability.

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 include: 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 are 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.

INTRODUCTION

Green audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. The 'Green Audit' aims to analyze 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.

About the College

Rashtriya Sahakari Shikshan Prasarak Mandal Ltd. Chalisgaon Sanstha's Nanasahab Yashvantrao Narayanrao Chavan Art's, Science & Commerce College, Chalisgaon Dist. Jalgaon, Maharashtra is a NAAC (A) grade 34 years young college having Three faculties- Arts, Science and Commerce. The college is located in the heart of the city with beautiful campus. The college main building shows separate laboratories of Chemistry, Botany, Zoology, Microbiology, Physics and Electronics, Psychology, Geography, Statistics, Functional English, Computer science and Information technology. The college has adopted the Green Campus system for environmental conservation and sustainability. The Green Campus has been active since last 5 years both as a group of sub committees that actively promote the various projects. The college administration works on the several facets of Green Campus including Water Conservation, Tree Plantation, Waste Management, Paperless work.

Objectives of the study

The main objective of the green audit is to promote the Environmental Management and Conservation in the College Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environmental Sustainability in compliance with the applicable regulations, policies and standards. The 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 to analyzing the pattern and extent of resource use on the campus.
- ❖ To establish a baseline data to assess future sustainability by avoiding the interruptions in environment
- ❖ To bring out a status report on environmental compliance.

Methodology

In order to perform green audit, the methodology include different tools such as preparation of 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 summarize the present status of environment management in the campus:

- 1) Water Supply and Sewage management
- 2) Noise Environment
- 3) Energy use and conservation
- 4) Waste Management
- 5) Green Area

Observations and Recommendations

1) Water Supply & Sewage management

Water is a key driver and is vital to development of Biodiversity, Agriculture, Humans as well as the Economy. With recent experiences across the world and in India, the water scarcity and security is emerging issues. The state of Maharashtra has also faced severe impact of the water scarcity in the recent past. Therefore water management is a crucial step of sustainable development and it also has been made an integral part of the Sustainable Development Goals (SDGs).

Unplanned urban growth and economic development has placed unprecedented pressures on natural resources especially on water. Increasing demand for the water in urban areas such as Chalisgaon highlights the necessity of the overall water management.

Observations

The study observed that water supply is taken from Chalisgaon Municipal Corporation. Water is used for drinking purpose, canteen, toilets, laboratory and gardening. During the survey, no loss of water is observed. On an average the total use of water in the college is 10,000 L/day, which includes 4,000 L/day for domestic purposes, 4,000 L/day for gardening and 1,000 L/day for different laboratories. Gardens are watered by using drip irrigation system to save water. This is one of the unique steps towards greening practices.

Recommendations

- It is necessary to have a fresh water treatment system like RO filtration process.
- Similarly, periodical cleaning of water tanks is very essential.
- Reuse and recycle of water system is necessary.

- Based on the water consumption about 90% of the water supplied is converted in to the waste water either through the washrooms, chemical laboratories, etc. the campus generated about 2000 m³ of waste water every day.
- It was observed that there is no separate drainage system for collecting and transporting sewage and liquids from chemical laboratories.
- None of the buildings have Rain Water Harvesting (RWH) System implemented.

Sewerage Management

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2) Noise Environment

- Noise pollution is one of the major environmental issues in India today and most of us are unaware of the hazards it can cause. In India, we all are subjected to some form of loud noises for a considerable amount of time on daily basis as well across the year based on the festive season such as Ganesh Festival, Diwali and others.
- Unwarranted sounds such as honking, other vehicular noise, the loudspeakers and not to forget about household noise such as television and music system sounds on daily basis are inevitable. In our country it's a major perception that happiness can only be expressed by creating loud noises.
- Exposure to high levels of noise may cause permanent hearing loss. The repeated exposures to loud noise can lead to permanent tinnitus and/or hearing loss. Furthermore, it may create physical and psychological stress, reduce productivity, and interfere with communication and concentration. The effects of noise induced hearing loss can be profound & can be limiting your ability to hear high frequency sounds, understand speech, and seriously impairing your ability to communicate.

The observations show that all the locations show high level of noise pollution. The causes of noise pollution may be proximity of the main road with high traffic volumes, other buildings

such as Dairy area and telephone exchange where variety of noisy activities are conducted the school building and other areas experience high noise levels.

3) Energy use and conservation

Energy source utilized by all the departments and common facility Centre is electricity only. Total energy consumption is determined as **42.5 KVA** in the month of January, 2013 i.e. 510kw/year by major energy consuming equipment's. Equipment's like computers are used with power saving mode. In science departments like physics, chemistry, mathematics, botany and zoology electricity was shut down after occupancy time is one of the green practices for energy conservation.

Observations

- Large numbers of LED lamps are used.
- Photovoltaic cells are not installed in the campus.

Recommendations

- Installation of LED lamps instead of CFL
- Support renewable and carbon-neutral electricity options.
- Photovoltaic cells installed in the campus as an alternate renewable source of energy.

Electrical Load Calculations in the College

Sr. No.	Description	Total Nos.
01	Tubes	190
02	Fans	103
03	Refrigerators	04
04	Computers	110
05	LASER printers	22
06	Xerox machines	02
07	LCD projectors	02
08	Air conditioners	03
09	Electric pump (3H.P.)	01
10	Hot plates (1000 W)	02
11	Mixers	02

Total load (approx.): 42.5 KVA in the month of January, 2013

4) Waste Management

This indicator addresses waste production and disposal of different wastes like paper, food, plastic, biodegradable, construction, glass, dust etc. and recycling. Solid waste includes wasted materials resources that could be channeled into better service through recycling, repair and reuse. 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.

Observations

The total solid waste collected in the campus is 20 kg/day. Waste generation from tree droppings 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. Segregation of chemical waste generated in chemistry laboratory is also practiced. Single sided used papers reused for writing and printing in all departments. Very less plastic waste is generated by some departments, 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. Few glass bottles are reused in the laboratories. The food waste from main canteen is used in biogas production plant or sent for vermicomposting. The institute has adopted biogas plant and vermiculture composting in culture hours on 80 sq. ft. land. The main purpose of this is to reduce disposable waste in the college campus. After complete process of vermicomposting, it is used as manure in the garden. Awareness program among farmers is also conducted in the village nearby.

Recommendations

- Provide sufficient, accessible and well publicized collection points for recyclable waste
- Single sided papers to be used for writing and photocopy.
- Important and confidential papers after their validity to be sent for pulping
- No segregation of the common garbage in the campus.
- Most of the times the horticulture waste and other common garbage from the campus is burnt near the parking lot which pose a threat to the environment and the human health.
- Chemical / other hazardous waste (liquid & solid) needs to be disposed as per government norms.

- Recyclables viz. paper, metal scrap etc. is disposed of / sold out to scrap dealers a tender procedure, however no information is available on the recyclables.

5) Green Area

Plants, a great creation of almighty god serves in many ways like health, recreation and socio economic up-liftment of human been for our present, future generations. A plant not only beautifies the campus but it also imparts life and colors to a particular areas. As the plants has many fold importance. In this regards the beautiful campus of the college is enriched with the plant wealth of about 200 plants in all. They are divided in to 45 different plant species belonging to different plant families. There are total 80 arboreal plants/trees and remaining's are in the form of shrubs, climbers, herbaceous and potted plants as well. There are certain ornamentals and aquatic plants and cacti plant varieties too.

To nurture the nature college has campus beautification committee through which varieties of the plants were planted through college funding's even the ladies hostel campus was also beautified. Under the COP course entitled HORTICULTURE TECHNOLOGY various potted plants a were purchased and planted in pots in Varanda of Botany department.

College also took interest in the Mission of Govt. of Maharashtra of Plantation target; our college also gave contribution of squirrel in this regards. In all the way college aimed to enrich and beautifies the campus to create aesthetic value recreational and healthy atmosphere in the college campus which may better helpful in teaching and learning process.

Table: Rich flora of our college campus

Sr. No.	Botanical Name	Local Name	Habit	Family
1	<i>Albizia saman</i>	Rain tree	Tree	Mimosaceae
2	<i>Annona squamosa</i>	Sitaphal	Shrub	Annonaceae
3	<i>Azadirachta indica</i>	Neem	Tree	Meliaceae
4	<i>Dalbergia sissoo</i>	Shisham	Tree	Caesalpiniaceae
5	<i>Tamarindus indica</i>	Chinch	Tree	Caesalpiniaceae
6	<i>Delonix regia</i>	Gulmohor	Tree	Caesalpiniaceae

7	<i>Spathodia sp.</i>	Spathodia	Tree	Combretaceae
8	<i>Bombax ceiba</i>	Kat-Savar	Tree	Bombaxsaceae
9	<i>Ficus benjamina</i>	Ficus	Tree	Moraceae
10	<i>Ficus elastica</i>	Rubber tree	Tree	Moraceae
11	<i>Ficus racemosa</i>	Umbar	Tree	Moraceae
12	<i>Leucaena latisiliqua</i>	Subabhul	Tree	Mimosaceae
13	<i>Putranjiva roxburghii</i>	Putranjiva	Tree	Caesapiniaceae
14	<i>Albizia lebbeck</i>	Siris	Tree	Mimosaceae
15	<i>Polyalthia longifolia</i>	Ashok-Khota	Tree	Annonaceae
16	<i>Gliricidia sepium</i>	Undirmar	Tree	Papilionaceae
17	<i>Ficus religiosa</i>	Pipal	Tree	Moraceae
18	<i>Terminalia catappa</i>	Jangli Badam	Tree	Combretaceae
19	<i>Hamelia patens</i>	Hamelia	Shrub	Rubiaceae
20	<i>Hibiscus rosa sinensis</i>	Jaswand	Shrub	Malvaceae
21	<i>Bougainvillea spectabilis</i>	Bougainvel	vine	Nyctaginaceae
22	<i>Mimusops elengi</i>	Bakul	Tree	Sapotaceae
23	<i>Ficus benghalensis</i>	Banyan	Tree	Moraceae
24	<i>Hyophorbe legenicaulis</i>	Bottle palm	Tree	Arecaceae
25	<i>Adhatoda vesica</i>	Adulsa	Shrub	Acanthaceae
26	<i>Musa paradisiaca</i>	Kela	Tree	Musaceae
27	<i>Peltophorum pterocarpum</i>	Sonmohor	Tree	Caesalpinaceae
28	<i>Areca sp.</i>	Areca palm	Palm	Arecaceae
29	<i>Areca sp.</i>	Fan palm	Potted	Arecaceae
30	<i>Quisqualis indica</i>	Lal chameli	Climber	Combretaceae
31	<i>Ixora coccinia</i>	Ixora	shrub	Rubiaceae
32	<i>Rhoeo dicolor</i>	Rhoeo	herb	Comelinaceae
33	<i>Alstonia scholaris</i>	Saptaparni	Tree	Apocynaceae

34	<i>Clerodendron inermis</i>	Dedoni	Shrub	Verbenaceae
35	<i>Nerium oleander</i>	Kanher	Shrub	Apocynaceae
36	<i>Caesalpinia pulcherima</i>	Shankasur	Small tree	Caesalpiniaceae
37	<i>Rosa sp.</i>	Rose	Shrub	Rosaceae
38	<i>Zebrina sp.</i>	Zebrina	Herb	Comelinaceae
39	<i>Pongamia glabra</i>	Karanj	Tree	Caesalpiniaceae
40	<i>Jasminum officinale</i>	Jat-jai	Climber	Oleaceae
41	<i>Calotropis gigantea</i>	Rui	Shrub	Apocynaceae
42	<i>Tabernaemontana divaricata</i>	Tagar	shrub	Apocynaceae
43	<i>Euphorbia tirucali</i>	Thor	shrub	Euphorbiaceae
44	<i>Croton sp.</i>	Croton	Shrub	Euphorbiaceae
45	<i>Ficus benjamina</i>	Benjamin fig	Tree	Moraceae

Recommendations

- Reviews periodically the list of trees planted in the garden, allot numbers to the trees and keep records. Give scientific names to the trees.
- Promote environmental awareness as a part of course work in various curricular areas, independent research projects and community service.
- Establish a college environmental committee that will be advice and guide the staff and students.
- 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 ‘Environmental Day’ and plant trees on this day to make the campus greener.

CONCLUSIONS

Considering the fact that the institution is predominantly an undergraduate and partial postgraduate college, there is significant environmental research both by faculty and students. The environmental awareness initiatives are substantial. The vermicomposting and horticulture

practices 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 ecofriendly and scientific techniques. This may lead to the prosperous future in context of Green Campus and thus sustainable environment and community development.

As part of green audit of campus we carried out the environmental monitoring of campus includes Illumination, noise level, ventilation and indoor air quality of the class room. It was observed that Illumination and ventilation is adequate considering natural light and air velocity present. Noise level in the campus well within the limit i.e. below 50 db at day time.