Green Audit

Shri Pandurang Gramin Vikas Pratishthan's

Dilip Walase Patil

Arts, commerce & Science College

Prepared By

Aarchit Venture

Bharekar Estate Nanded Gaon

Near Nanded City Pune 411041

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1. Introduction

The rapid environmental degradation at local, regional and global level is leading us to global “Environmental poverty”. Stabilization of human population, adoption of environmentally sound and sustainable technologies, reforestation and ecological restoration are crucial elements in creating an equitable and sustainable future for all humans in harmony with nature and natural resources. The main objective to carry out green audit is to check green practices followed by university and to conduct a well formulated audit report to understand where we stand on a scale of environmental soundness. Green audit is the procedure of systematically identifying, quantifying, recordings, reporting and analyzing the environmental diversity components of any organization. It aims to analyze the environmental practices inside and outside of the relevant place, which will have an impact on the environment. Focus was given to assess the consumption of energy, electricity, water as well as disposal of liquid waste, solid waste, hazardous waste, e-waste and an inventory of trees on campus is also prepared to check how much CO2 is sequestered and O2 is released. It is an important tool for universities to determine their consumption of energy, water, or other resources; and then consider and planned to implement changes and make savings. It can create health awareness and promote environmental awareness and ethics. It allows faculty, students and other staff to better understand the impacts of green activities on the premises.

Self-inquiry is a natural and expected development of quality education. Therefore, the institute must evaluate its contribution towards a sustainable future. An environmental sustainability has become an increasingly crucial issue for the every nation; the role of higher education institutions in environmental sustainability has become more important. The rapid urbanization and economic development at the regional and global levels have led to several environmental and ecological problems. In this context, it is necessary to adopt a green campus system for the institute, which will lead to sustainable development while reducing the large amount of atmospheric carbon emissions in the environment.

Government of India through its National Environment Policy (2006) has made mandatory for every organization to have green audit / environmental audit in their organization. The process of environmental audit was formalized by Supreme Audit Institution (SAI) according to the guidelines given in Manual of Standard Orders (MSO) issued by Authority of the Controller and Auditor General of India 2002. University Grants Commission has mentioned “Green Campus, Clean Campus” mission mandatory for all higher educational institutes. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent. Accordingly, realizing the need of being responsible towards environment, NAAC (National Assessment and Accreditation Council), an autonomous body under UGC has also added the concept of Environmental Audit in accreditation methodologies of State

and Central Universities as well as colleges. Accordingly, Shri Pandurang Gramin Vikas Pratishthan's **Dilip Walase Patil Arts, commerce & Science College** has also initiated a Green/Environmental Audit/Energy Audit of its campus at Nimgaonsawa, Tal: Junnar, Dist-Pune - 410 504

2. About the College

Shri Pandurang Gramin Vikas Pratishthan's, Dilip Walase Patil College of Arts, commerce &Science College Nimgaonsawa, Tal. Junnar, Dist. Pune We are happy to inform you that our institution plays vital role in developing rural area of the Eastern part of Pune district by giving higher education to the youth especially girls. The Shri Pandurang Gramin Vikas Pratishthan's Dilip Walase Patil College of Arts, commerce &Science College Nimgaonsawa was established in 27th July 2009 by the great vision of our honorable shri Pandurang Pawar Saheb .The college is situated at Nimgaonsawa in Junnar taluka ,the eastern part of Pune district .The college is covered the area of 4 acres campus including the playground and with green lush trees and pollution free atmosphere. The college is permanently non grant , affiliated to the Savitribai Phule Pune University ,Pune. The Institution offers 3 years undergraduate degree program viz. Bachelor of Arts, in Marathi, English, History & Economics, Bachelor commerce & Bachelor of Science in Chemistry.

Curriculum offered by the college is related to the today's requirement of the nation to give quality education to the youth and aimed at overall personality and career development of the students. The object of the Institution is to give employment to the youth especially girls in the rural area and to speak about the staff of the college very kind hearted and intelligent teachers having good qualification give knowledge to the students. The facilities of Laboratories, library and spacious playground is available in the college.

The institution has NSS unit of 100 students various extension activities are conducted in the year by this NSS volunteers. Women Empowerment Program is conducted with the grand object of empowering women and making them employable by giving them quality education The institution has also 'Earn and Learn Scheme' to help the poor and needful students .The Institution has also Anti Ragging Committee for the security of girls.

Teaching staff is engaged in improving their qualification and quality to do this they are trying to write and publish national and international journals and research papers. The management and whole staff take effort to increase the quality of the education and also the institution.

3. College Vission

- Providing quality education in emerging fields to produce knowledgeable and cultured human resource, contributing to the process of national development.
- Develop life skills and soft skills among the students and provide them value education which will contribute to nation building.
- Provide them free access to ICT and also to foster global competencies among them to meet the changing challenges to keep pace with time.
- Identify geographic justification of Junnar Taluka and Pune and its strong industrial, entrepreneurial, financial and cultural establishments and traditions and develop linkages of the institution with the Public and Private Sectors.
- Pursue the quest for excellence by way of grooming the students for high profile careers.

4. College Mission

- Upliftment of rural masses through appropriate education.
- To empower the socially, economically and educationally marginalized sections of the rural society of the region.
- To augment a new generation of students for contributing to the future knowledge economy.

6. Objectives

The main objectives of Environmental Audit in Academic Institution are:

- To encourage students in general and girls in particular.
- To encourage students to learn modern techniques and methodologies.
- To develop the competencies among students to face global challenges.
- To inculcate a scientific temper and a humanitarian approach among society.
- To address global and local needs towards national development.
- To sensitize students with a sense of belongingness, integrity, and grattitudeness.

7. Scope and Goal of Environmental Auditing

Government of India through its National Environment Policy in 2006 has made mandatory for every organization to conduct green audit / environmental audit in order to ensure a clean and healthy environment within and outside the organization. Further, it also helps in effective learning and provides a conductive learning environment. Efforts are taking place around the

world in order to address various environmental issues. Green auditing or environmental auditing is one among them for educational institutions. Green auditing helps organization to understand various environmental issues of the organization and identify existing lacuna or gap towards meeting the objective of National Environmental Policy and thus, to plan accordingly.

8. Methodology

An environmental audit has three phases - pre-audit stage, audit stage and post-audit stage, accordingly the environmental audit was conducted

Pre-Audit Stage

Pre-audit stage involved the identification of target areas for environmental auditing. Accordingly following target areas were identified:

- Land Use System
- Biodiversity Status
- Climatic Conditions
- Air Quality
- Noise Pollution
- Water Resources and Management
- Energy Consumption
- Waste disposal and management
- Environmental Awareness
- Mitigation and Management practices

Audit Stage

(A). Collection of data, observation and interaction: This stage of the Audit involved the activities relating to collection of data, observation, interactions and discussion with the concerned stakeholders i.e., faculty, administration and staff members from different departments and sections of the university. A mixture of open ended and closed ended questionnaires were developed and used for data collection. Meetings with specific stakeholders of different target groups identified in the pre-audit stage were conducted for getting the desired information. Detailed discussions on some specific topic were also held.

(B). Review of previous records and policies: This was carried out in order to understand the various initiatives taken by the university towards sustainable environmental

conservation and amelioration. For the purpose, office registers, visitor's book, purchase registers, office communications, policy level documents of AC/ EC were also examined. Further, the published material such as prospectus, university annual reports, bulletins, and other magazines were also studied by the audit team for getting information / data on the target aspects.

(C). Inspection of departments/sections/various sites: The audit team also visited the various departments, sections, offices and its premises in order to have an idea of various activities carried. Campus greenery and gaps were identified. Team also had a visit to play ground, canteen, library, office rooms and parking area.

(D). The stakeholders: The stakeholders included were teaching staff from different schools, people from administration, water supply and maintenance, electricity department and ICT. The committee set up for the purpose discussed the issues related with key target areas. Questionnaires were prepared for getting information and accordingly meeting with concerned stakeholders were conducted. Data on water and energy use was collected from maintenance department.

Post-Audit Stage

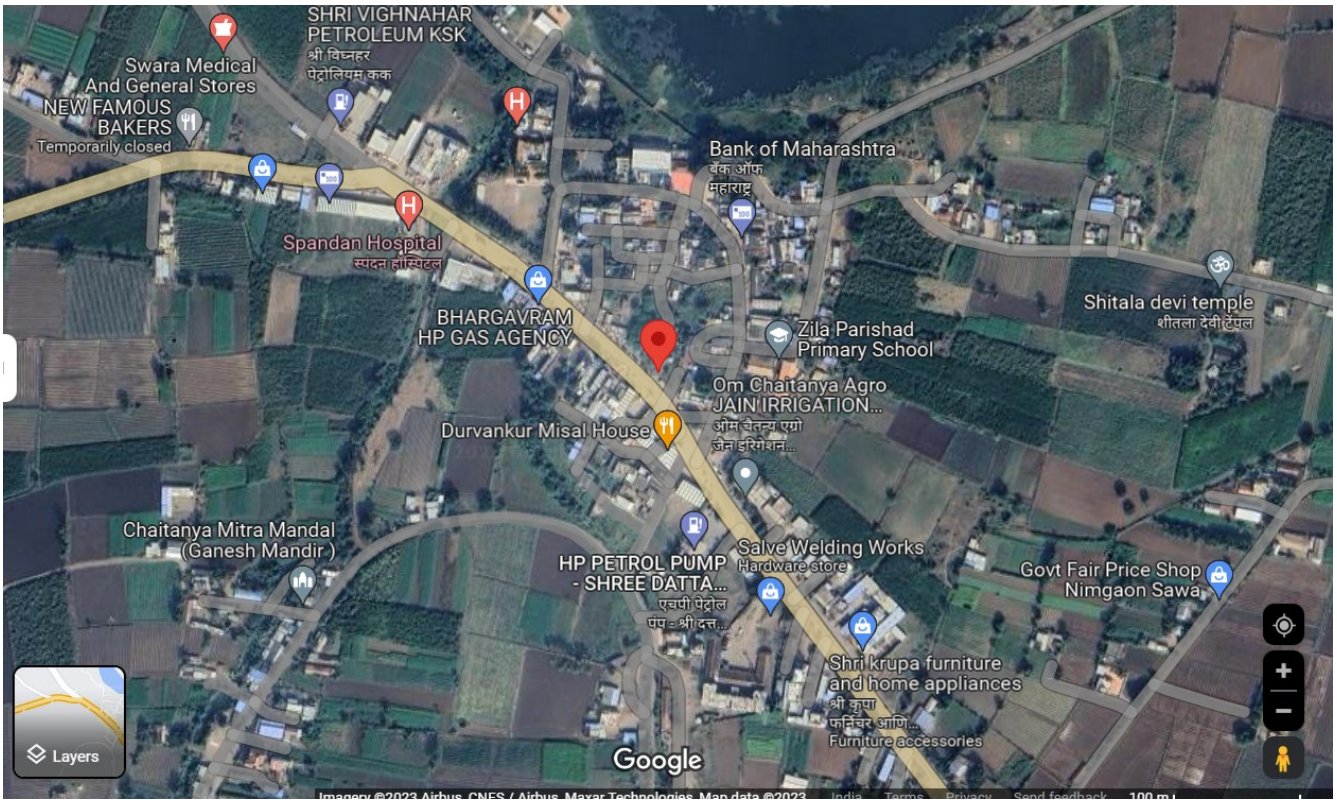
The Post-Audit Stage includes the production of the final report, prepare action plan to overcome the flaws and to keep a watch on the action plan.

9. Audit Report

(A) Land Use System

Shri Pandurang Gramin Vikas Pratishthan Sanchalit, Dilip Walse Patil, Arts, Commerce And Science College, Nimgaon Sawa, Tal. Junnar, Dist. Pune. The college is situated on Nimgaon Sawa, Manchar road. At working 1.5 Km. near JPL Cricket Ground, its latitude 19.097665 and longitude is 74.101789. The greenery inside the campus is not only natural, but also added up by the efforts of the staff, faculty and students in the institute.

The college has adequate learning resources, including classrooms with smart classrooms, library and reading area, laboratories & computer centre with LAN, printers, scanners, good quality internet connection, sports ground, IQAC office, Examination Strong Room, seminar hall, and conference hall, RO water purifier system, safe drinking water, separate restrooms for ladies & gents, parking space, and lawns. The available infrastructural facilities are optimally utilized.



MAP- Dilip Walase Patil Arts, commerce & Science College

(B) Climatic Parameters

i. Climate: Average Temperature in Nimgaon Sawa.

The hot season lasts for 2.5 months, from March 13 to May 29, with an average daily high temperature above 93°F. The hottest month of the year in Nimgaon is May, with an average high of 95°F and low of 72°F.

The cool seasonn lasts for 3.0 months, from June 26 to September 25, with an average daily high temperature below 84°F. The coldest month of the year in Nimgaon is January, with an average low of 54°F and high of 85°F

ii. Rainfall:

To show variation within the months and not just the monthly totals, we show the rainfall accumulated over a sliding 31-day period centered around each day of the year. Nimgaon experiences extreme seasonal variation in monthly rainfall.

The rainy period of the year lasts for 6.5 months, from May 5 to November 21, with a sliding 31-day rainfall of at least 0.5 inches. The month with the most rain in Nimgaon is July, with an average rainfall of 13.2 inches.

The rain less period of the year lasts for 5.5 months, from November 21 to May 5. The month with the least rain in Nimgaon is January, with an average rainfall of 0.1 inches.

iii. Humidity:

We base the humidity comfort level on the dew point, as it determines whether perspiration will evaporate from the skin, thereby cooling the body. Lower dew points feel drier and higher dew points feel more humid. Unlike temperature, which typically varies significantly between night and day, dew point tends to change more slowly, so while the temperature may drop at night, a muggy day is typically followed by a muggy night.

Junnar experiences extreme seasonal variation in the perceived humidity.

The muggier period of the year lasts for 5.9 months, from May 5 to November 2, during which time the comfort level is muggy, oppressive, or miserable at least 25% of the time. The month with the most muggy days in Junnar is July, with 30.6 days that are muggy or worse.

The month with the fewest muggy days in Junnar is February, with 0.1 days that are muggy or worse.

V. Wind:

This section discusses the wide-area hourly average wind vector (speed and direction) at 10 meters above the ground. The wind experienced at any given location is highly dependent on local topography and other factors, and instantaneous wind speed and direction vary more widely than hourly averages.

The average hourly wind speed in Nimgaon experiences extreme seasonal variation over the course of the year.

The windier part of the year lasts for 3.5 months, from May 15 to August 30, with average wind speeds of more than 10.4 miles per hour. The windiest month of the year in Nimgaon is July, with an average hourly wind speed of 14.7 miles per hour.

The calmer time of year lasts for 8.5 months, from August 30 to May 15. The calmest month of the year in Nimgaon r is October, with an average hourly wind speed of 6.3 miles per hour.

(C) Biodiversity Status

The campus of the College is located at sub tropical climatic conditions. The campus has a patch of natural forest having a major tree species like Tectona grandis, Dalbergia sissoo, Mallotus phillipinensis, Acacia catechu, Shorea robusta etc. Plantation activities are usually undertaken during rainy season and National Festivals like 15th August, World Environment Day etc. Accordingly many new species of economic and medicinal importance such as Amla, Harar, Bahera, Ashoka, Jacrenda, Neem, Ficus etc, have been introduced. Some herbs and

shrubs were also planted in the campus. There are some faunal species are also found in the area. Table 2, 3, 4 and 5 shows the status of the Floral and Faunal diversity of the campus

Table 2.List of Tree/Shrubs/Herbs species found in the campus

S. No.	Botanical Name	Common Name
TREE		
1.	Tectona grandis,	Sagon/Teak
2.	Dalbergia sissoo,	Sheesham
3.	Mallotus phillipinensis	Rohini
4.	Acacia catechu,	Khair
5.	Shorea robusta	Sal
6.	Haldina cardifolia	Haldu
7.	Ficus bengalensis,	Pepal
8.	Terminalia chebula	Harad
9.	Terminalia bellerica,	Baheda
10.	Euclyptus spp.	Gum tree
11.	Jacaranda mimosifolia	Jacaranda
12.	Emblica officinalis	Jacaranda
13.	Emblica officinalis	Amla
14.	Azadirachta indica	Neem
15.	Saraca asoca	Ashok
16.	Aegle marmelos	Bel
17.	Ficus roxburghii	Timla
Shrubs		
18.	Lantana camara	Kuri
19.	Calotropis procera	Ankh
20.	Cestrum nocturnum	Rat ki rani
21.	Murraya koenigi	Kari Patta
22.	Ricinus cummunis	Arandi
Grasses/Herbs		
23.	Cynodon dactylon	Durba

24.	Desmostachya bipinnata	Kus
25.	Cymbopogon martini	Lemmon Grass

Green Cover of the College Campus.

Gr

Plants in the college campus

Table 3.List of Birds found in and around the Campus

S. No.	Zoological Name	Common Name
26.	Myophonus caeruleus	Blue Whistling Thrush
27.	Passer domesticus	House Sparrow
28.	Corvus splendens	House Crow
29.	Pycnonotus leucogenys.	Himalayan Bulbul

30.	Pycnonotus cafer	Red Vented Bulbul
31.	Psilopogon asiaticus	Blue throated Barbet
32.	Psilopogon haemacephalus	Coppersmith Barbet
33.	Acridotheres tristis	Common Myna
34.	Lanius schach	Long Tailed Shrike
35.	Psittacula cyanocephala	Plum Headed Parakeet
36.	Psittacula krameri	Rose Ringed Parakeet
37.	Milvus migrans	Black Kite
38.	Cinnyris asiaticus	Purple Sunbird
39.	Aethopygasiparaja	Crimson Sunbird
40.	Cercomela fusca	Brown Rock Chat
41.	Saxicola ferreus	Grey Bush Chat
42.	Copsychus saularis	Grey Bush Chat
43.	Cinnyris asiaticus	Purple Sunbird
44.	Aethopygasiparaja	Crimson Sunbird
45.	Cercomela fusca	Brown Rock Chat
46.	Saxicola ferreus	
47.	Aquila nipalensis	Steppe Eagle

Table 4. List of Butterflies found in and around the campus

S. No.	Zoological Name	Common Name
	Pachliopta aristolochiae	Common Rose
	Papilio polytes	Common Mormon
	Graphium doson	Common Jay
	Delias cucharis	Common Jezebel
	Catopsilia crocale	Common Emigrant
	Eurema hecabe	Common Grass Yellow
	Pieris canidia	Indian Cabbage White
	Danaus chrysippus	Plain Tiger
	Danaus genutia	Striped Tiger

	Euploea core	Common Crow
	Cupha erymanthis	Rustic
	Freyeria trochilus	Grass Jewel
	Jamides celeno	Common Cerulean
	Melanitis leda	Common Evening Brown
	Pareronia hippia	Indian Wanderer

Birds In the campus

Table 5.List of Animal found in and around the campus

S. No.	Zoological Name	Common Name
	Panthera pardus	Leopard
	Monitor lizard	Monitor Lizard
	Garden lizard	Garden Lizard

	Naja naja	Cobra Snake
	Python molurus	Indian Python
	Bangaru caeruleus	Common Kraits
	Naja Hannah	King Cobra
	Gloydius himalayanus	Himalayan Pit Viper
	Naja naja	Himalayan Pit Viper
	Ptyas mucosus	Rat Snake

Animal in the campus

(D) Pollution

i. Sources of air pollution: It was observed and revealed from data that the only possible sources of pollution in the College campus are as use of diesel / petrol vehicles, air conditioners, power generator, kitchen waste and other biodegradable waste from canteen, use of electronic appliances and other. The campus located in very small village which is rich in greenery. Found no other source of air pollution in the campus.

ii. Sources of noise pollution: It was observed that there is no industrial as well as the sound generating activities near the College campus and it was revealed from that due to limited number of vehicles the chances of noise pollution seems to be quite below of standard limit. There is no other source of noise pollution in the campus.

(E) Water Resource and Management

The College has its own tube-well for meeting its water requirements for various purposes such as drinking, use in washrooms, canteen and gardening. Since the university does not have staff quarters at present in the College premises, thus, no household domestic water demand, water consumed in the university premises is for drinking, canteen, sanitary and gardening purposes. There is a water coolers maintained by the organization for meeting drinking water demand of the employee. The audit team did not find any leakage in the taps of washrooms and in other areas.

(F) Energy Consumption and Management

Electricity is mainly needed for lighting the rooms, cooling the rooms in summer and heating the rooms in winter and running computer systems. The college has a server room which needs electricity all the day and night

(G) Waste Disposal and Management

Both biodegradable as well as non-biodegradable wastes are generated from various departments/sections of the university. The principal waste includes paper, grasses, electronic wastes, canteen waste and other solid wastes. Since, The college operates on ODL mode therefore number of students visiting the campus are comparatively less compared to regular universities. Therefore, the waste generated through classroom activity and student's

activities is negligible. Whereas, plastic wastes is completely or strictly banned in the university campus. However, following provisions have been made:

Tank Constructed for water conservation

Waste Water Reuse

i. E-Waste: Besides the above wastes there are another category of waste is E-waste which includes computers, laptops, pen drives, printers, hard discs, CD's and other solid waste, electrical & electronics equipments generated through different department/sections is disposed and managed by the ICT, maintenance and store department of the college and the details are properly maintain in the stocks register. Thereafter in every five year the concerned departments categorize the useless items in to the wastes and disposed through auction and buyback from the authorized buyers as per the Maharashtra Government Rules.

(H) Environmental Awareness

The college staff is aware of the various environmental issues and the various green measures to be adopted in office as well as in their houses. A course on Environmental Studies is compulsory for all under graduate students. Further, college conducts plantation drives in the campus during Environment Day, 15 August and during other important events in the university. Further, college has also adopted nearby villages for environmental awareness activities, health camps and other community programmes being conducted through their participation.

Plantation by students & Teachers

i. Maintenance of Lush Green Campus: College has ten hectares of land which was transferred to it from Forest Department for the purpose of creating infrastructure required for the development of various Offices/ Departments of the college. Further felling of trees for development of various infrastructures will be done with least disturbance following government rules.

ii. Plantation Drives: Plantation drives are regular activities in the campus, and usually in all important occasions, plantation activity is taken up. College has maintained a garden in which different ornamental plants have been raised.

iii. Organic Composting: The activity of making organic compost has been initiated in the campus where all the biodegradable waste materials are filled up in the compost pit. In the course of time, organic compost is prepared. This organic compost is utilized for manuring in flowerbeds and plantations

iv. Energy Conservation efforts:

The college is using star rated Electrical & Electronics equipment which saves energy. LED Bulbs/ Tube-light, 4-5 star Rated Air Conditioners. College has always been effortful in making use of renewable energy resources. The average electricity consumption of the University per month is approximately 12940.38units. For the purpose, College has already installed a grid connected solar power plant of 120 Kw. It is expected that College will produce approximately 400 to 500 units of electricity per day which will be equivalent to 80 % of energy consumption of the University. This is the step forward for energy conservation and will definitely reduce the electricity consumption of the college and save the money for college.

v. Water Conservation Measures through Water Harvesting Tank

Globally, our water resources are depleting each year. Additionally, we cannot generate artificial water and must depend on water sources available on our planet earth. In this context, to reduce dependency of water from tube-well and also to recharge underground water resources, the college adopted one of the simplest and best measures for conserving water. The university had created a water harvesting tank in the back side of the campus. It is a simple strategy by which rainfall is stored for future usage. The process involves collection and storage of rainwater with help of artificially designed systems, that runs off natural or man-made catchment areas e.g. rooftop, compounds, rocky surface, artificially repaired impervious/semiprecious land surface. The collected rainwater from surfaces on which rain falls may be filtered, stored and utilized in different ways or directly used for recharge

purposes. The use of a rainwater harvesting system provides excellent merits. This simple water conservation method

Tank Constructed for water conservation

Waste Water Reuse

Rain Water Harvesting

10. Recommendations

A green audit of any academic institution reveals, ways by which institute can reduce energy consumption, water use and reduction in emission of carbon dioxide in the environment. It is a process to look into and ask ourselves whether we are also contributing to the degradation of the environment and if so, in what manner and how we can minimize this contribution and bring down to zero and preserve our environment for future generation. This process of green audit enables us to assess our life style, action and assess its impact on the environment. Green auditing is the process of identifying and determining whether institutional practices are ecofriendly and sustainable. Traditionally, we are good and efficient users of natural resources. But over the period of time excess use of resources, viz., energy, water, chemicals are become habitual for everyone especially, in common areas. Now, it is necessary to check whether our activities are consuming more than required resources? Whether we are handling waste carefully? Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion it is necessary to verify the processes and convert it in to green and clean one.

As an outcome efforts will be made to reduce carbon foot prints by using electrical vehicles in the campus, and green computing in the administration and examination.

Focus to assess the consumption of energy, electricity, water as well as disposal of liquid waste, solid waste, hazardous waste, e-waste and an inventory of trees in the campus is also prepared to check how much CO2 is sequestered and O2 is released.

- The College will follow No Vehicle Day on first Saturday of every month to saved fuel consumption.
- Various awareness programmes will be helpful to motivate all the staff members for optimized sustainable use of available resources.
- The long term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issue.
- To prepare an Environmental Statement Report on green practices followed by different departments, support services and administration.

- The Green Audit Report on environment must reach the public so that it would succeed in reducing the environmental issues and its popularization among stakeholders.
- If possible an environmental audit report must be published annually by the college.
- Government can play significant role for environmental legislation and quality adoption of cleaner and environmentally begin technologies in Government organizations like Universities.

11. References

NEP (2006). National Environment Policy, 2006. Ministry of Environment, Forest and Climate Change, Govt.

Report

On

Environmental Audit

At

Shri Pandurang Gramin Vikas Pratishthan's

Dilip Walase Patil

Post: Nimgaonsawa, Tal: Junnar, Dist:, Pune, 410504

(Year 2021-22)

Prepared by

Aarchit Venture

Bharekar Estate Nanded Gaon

Near Nanded City Pune 411 041

Phone: 8010219736. Email: aarchit.venture@gmail.com

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Acknowledgment

We at Aarchit Venture, Pune wish to express our sincere gratitude to the management of Dilip Walase Patil College Post: Nimgaonsawa, Tal: Junnar, Dist:, Pune, 410504 for assigning the work of Environmental Audit of college campus.

We appreciate the co-operation and support extended to our team members during the entire tenure of field study.

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

We are also thankful to all other staff members who helped us during the Measurements at the field and for giving us the necessary inputs to carry out this vital exercise.

Executive Summary

After the Field measurements & analysis, we present herewith important observations made and various measures to reduce the dependency on Natural resources & reduce the pollution.

Dilip walase Patil College Nimgaonsawa consumes various resources for day to day operations, namely: Air, Water, Electrical Energy & LPG.

1. Various Pollution due to College Activities:

- Air pollution: Mainly CO_2 on account of Electricity & LPG Consumption
- Solid Waste: Bio degradable Kitchen Waste, Garden Waste
- Liquid Waste: Human liquid waste

2. Present Level of CO_2 Emissions:

Sr no	Parameter	Energy consumed, (Units)	CO2 Emission (MT)
1	Maximum	25,433	20.35
2	Minimum	9,382	7.51
3	Average	17,967	14.37
4	Total	215,609	172.49

3. The various projects already implemented for Environmental Conservation:

- Usage of Energy Efficient BEE STAR Rated AC
- Usage of Natural Day light in corridor
- Usage of Eco friendly Vehicle

4. Notes & Assumptions:

1. **1 kWh** of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere
2. 1 kWp Solar PV plant generates 5 kWh/day Electrical Energy for 300 days in an year.

Abbreviations

AC	:	Air conditioner
PES	:	Progressive Education Society
CFL	:	Compact Fluorescent Lamp
FTL	:	Fluorescent Tube Light
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
Qty	:	Quantity
W	:	Watt
kW	:	Kilo Watt
PF	:	Power Factor
M D	:	Maximum Demand
PC	:	Personal Computer
MSEDCL	:	Maharashtra State Electricity Distribution Company Ltd

1. Introduction

1.1 Important Definitions:

1.1.1 Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

1.1.2. Environmental Audit: Definition:

An audit which aims at verification and validation to ensure that various environmental laws are compiled with and adequate care has been taken towards environmental protection and preservation

According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment

1.1.3. Environmental Pollutant: means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

1.1.4. Relevant Environmental Laws in India: Table No-1:

1927	The Indian Forest Act
1972	The Wildlife Protection Act
1974	The Water (Prevention and Control of Pollution) Act
1977	The Water (Prevention & Control of Pollution) Cess Act
1980	The Forest (Conservation) Act
1981	The Air (Prevention and Control of Pollution) Act
1986	The Environment Protection Act
1991	The Public Liability Insurance Act
2002	The Biological Diversity Act
2010	The National Green Tribunal Act

1.1.5. Some Important Environmental Rules in India: Table No-2:

1989	Hazardous Waste (Management and Handling) Rules
1989	Manufacture, Storage and Import of Hazardous Chemical Rules
2000	Municipal Solid Waste (Management and Handling) Rules
1998	The Biomedical Waste (Management and Handling) Rules
1999	The Environment (Siting for Industrial Projects) Rules
2000	Noise Pollution (Regulation and Control) Rules
2000	Ozone Depleting Substances (Regulation and Control) Rules

2011	E-waste (Management and Handling) Rules
2011	National Green Tribunal (Practices and Procedure) Rules
2011	Plastic Waste (Management and Handling) Rules

1.1.6 National Environmental Plans & Policy Documents: Table No-3:

1.	National Forest Policy, 1988
2.	National Water Policy, 2002
3.	National Environment Policy or NEP (2006)
4.	National Conservation Strategy and Policy Statement on Environment and Development, 1992
5.	Policy Statement for Abatement of Pollution (1992)
6.	National Action Plan on Climate Change
7.	Vision Statement on Environment and Human Health
8.	Technology Vision 2030 (The Energy Research Institute)
9.	Addressing Energy Security and Climate Change (MoEF and Bureau of Energy Efficiency
10	The Road to Copenhagen; India's Position on Climate Change Issues (MoEF)

1.2 Objectives

1. To study present usage of Natural resources the College is consuming
2. To Study the present pollution sources
3. To study various measures to make the campus Self sustainable in respect of Natural resources
4. To suggest the various measures to reduce the pollution: Air, Water, Noise

1.3 Audit Methodology:

1. Study of College as System
2. Study of Electrical Energy Consumption
3. Study of CO2 emissions
4. Suggestions on usage of Renewable Energy

1.4 General Details of College

No	Head	Particulars
1	Name of Institution	Dilip walase Patil College
2	Address	At/Post: Nimgaonsawa, Tal: Junnar, Dist:, Pune, 410504
3	Affiliation	Savitribai Phule Pune University

2. Study of Consumption of Various Resources

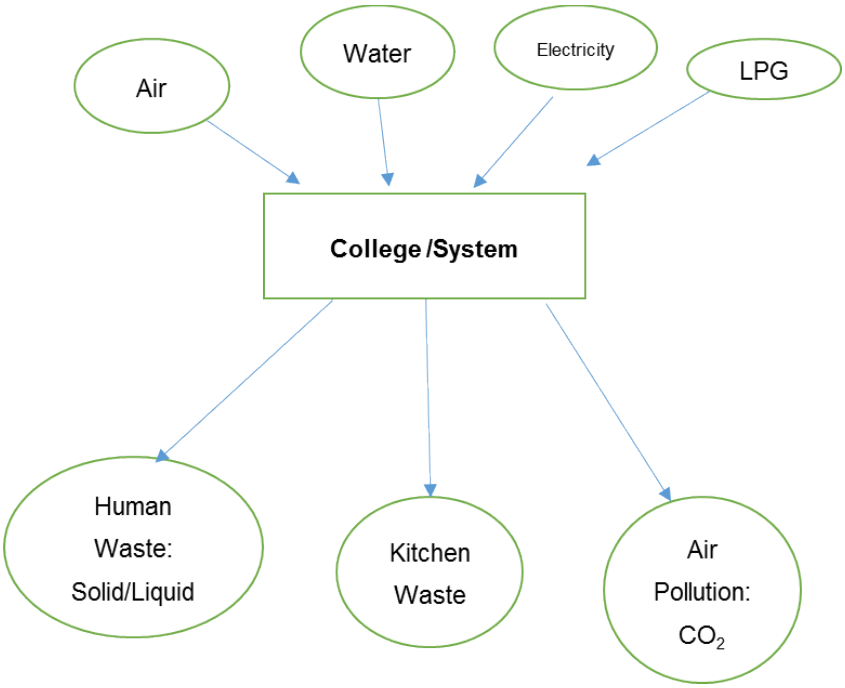
The Institute consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy
4. Liquefied Petroleum Gas

Also, college emits following pollutants to environment

1. Human Waste: Solid/ Liquid
2. Kitchen waste
3. Air pollution

We try to draw a schematic diagram for the College System & Environment as under.



Now we compute the Generation of CO2 on account of consumption of Electrical Energy & LPG as under.

The calculation of electrical energy consumption by college can be given as,

Table 2.1: Electrical Energy Consumption

No	Month	Energy (kWh)
1	Jun-22	20,521
2	May-22	17,499
3	Apr-22	20,976
4	Mar-22	25,433
5	Feb-22	22,635
6	Jan-22	22,185
7	Dec-21	23,893
8	Nov-21	14,360
9	Oct-21	19,078
10	Sep-21	9,953
11	Aug-21	9,694
12	Jul-21	9,382
	Total	**215,609**
	Maximum	**25,433**
	Minimum	**9,382**
	Average	**17,967**

2.1 Variation of Monthly Electrical Energy Consumption

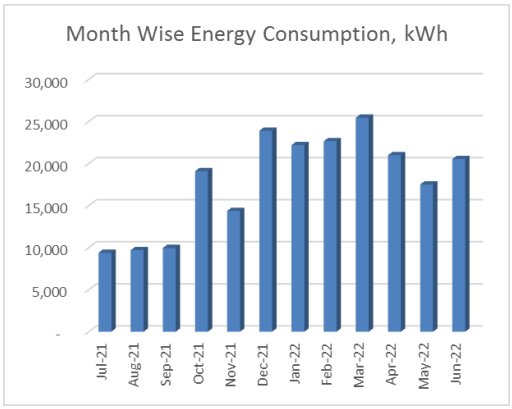


Figure 2.1 : Monthly Electrical Energy Consumption

2.2 Key Inference drawn

From the above analysis, we present following important parameters:

Table 2.2: Variation in Important Parameters

No	Parameter/ Value	Energy Consumed, kWh
1	**Maximum**	25,433
2	**Minimum**	9,382
3	**Average**	17,967
4	**Total**	215,609

3. Study of Environmental Pollution

In this Chapter, we present the various types of Pollution as under:

3.1 Air Pollution

The College is using two forms of Energies, namely: Thermal in the form of LPG and Electrical Energy used for day to day operations of the College. The major pollutant on account of above Energy forms is the Carbon Di Oxide.

- 1 unit (kWh) of Electrical Energy emits 0.8 Kg of CO_2 in the atmosphere
- 1 Kg of LPG emits 3 Kg of CO_2 in the atmosphere

In the following Table, we present the CO_2 emissions.

Table 3.1: Month wise Consumption of Electrical Energy & CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Jun-22	20,521	16.42
2	May-22	17,499	14.00
3	Apr-22	20,976	16.78
4	Mar-22	25,433	20.35
5	Feb-22	22,635	18.11
6	Jan-22	22,185	17.75
7	Dec-21	23,893	19.11
8	Nov-21	14,360	11.49
9	Oct-21	19,078	15.26
10	Sep-21	9,953	7.96
11	Aug-21	9,694	7.76
12	Jul-21	9,382	7.51
	Total	**215,609**	**172.49**
	Maximum	25,433	20.35
	Minimum	9,382	7.51
	Average	17,967	14.37

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

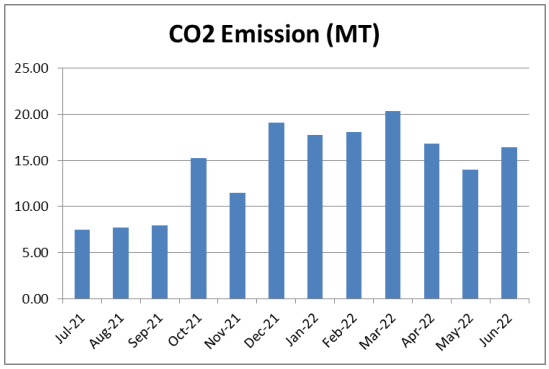


Figure 2.1: CO2 emission due to usage of electrical energy.

3.2 Study of waste management

Solid Waste Management:

Every day the solid wastes are collected from each laboratory, classrooms as well as from the campus. The collected waste is segregated in a suitable place in the campus. The recyclable and non- recyclable dryas well as wet waste is separated for further process.The college has been working towards a paperless office and hasminimized paper usage by carrying out most of its functions using computer facilities. The dustbins have been installed in places where biodegradable and non-biodegradable waste are segregated, and the NSS unit conducts awareness programs.

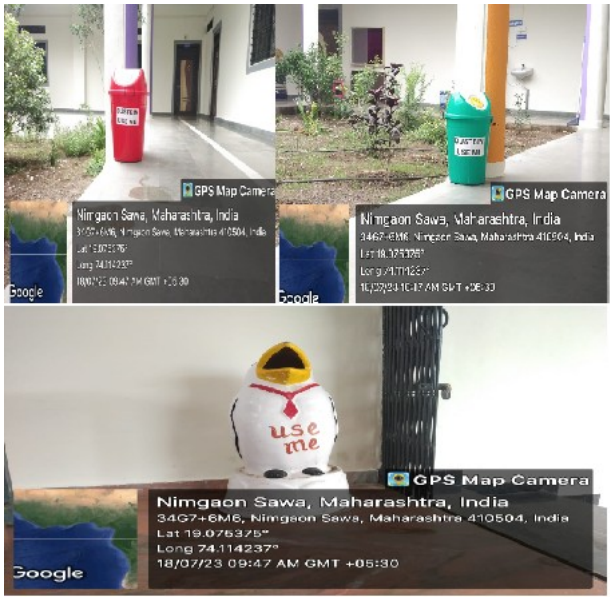
The scrap papers collected from each department are sent to make pulp. College has signed one letter for Shivshakti Raddi Depo, Pro. Mrs. Pralhad Ghatkar. To avoid the misuse of apparatus and chemicals, instructions are displayed in laboratory. The scarp benches from the classrooms are utilized by making small seating bench which are further used in the ground.

The use of plastic is banned, and the campus has been declared a''No Plastic Zone". The Wet and Dry waste Dustbins are kept inside and outside the campus, and the dry & wet waste so collected in thesedustbins is shifted to village authorities.

The institution has Vermicomposting unit which composts the degradable waste. The non-degradable waste like plastic and other materials are collected in trash bins at common places. College has signed one MOU with Shriram Sliding Glass and Aluminum Works Nimgaon Sawa,

Tal. Junnar, Dist. Pune in order to dispose the raw material as well. Campus is declared as plastic and tobacco free zone.

Segregation of dry waste



3.3Study of e-Waste Management:

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

4. Environmental Promotion and Sustainability Activities Beyond Campus

Today the whole plants (earth) is in dangerous, so many issues are there for global warming, Air pollution, Soil pollution, Water pollution etc. taking into consideration. The probable

Hazardous NSS volunteers tried to save the environment by doing the extension activity. Ours students organize these activities every year.

1. Tree plantation in the surrounding area

2. The also did the work of cleaning village and roads

3. Ours students also try to inspire people to save the trees

4. Today we are suffering for water pollution and to stop the water pollution. Our students accepted the project of cleaning the river and river bank

5. To keep the environment to clean and green our students arrange the cycle really for giving the massage with the slogan

6. Water conservation is the need of time the is why ours NSS volunteers made a dam with bags of sand and soil

Cleaning Village And Road

Raksha bandhan With Trees

Tree Plantation

NSS Volunteers, Cleaning the River and River Banks

Bicycle Rally for Environment Awareness