



Dhanlaxmi Shikshan Sanstha

SSK ARTS & COMMERCE COLLEGE

(Affiliated to Savitribai Phule Pune University)

SSK Campus, Wadzire, Tal: Sinnar, Dist: Nashik, 422102

Unipune ID : PUNNS/AC/144 (2009)

PUNCODE : CAAN018760

AISHE CODE : C-41304

Ref.

Date : / / 20

7.1.3 - Quality audits on environment and energy regularly undertaken by the Institution. The institutional environment and energy initiatives are confirmed through the following

1. Green audit / Environment audit
2. Energy audit
3. Clean and green campus initiatives
4. Beyond the campus environmental promotion activities

HEI Input : A. All of the above

Findings of DVV

1. HEI is requested to kindly note that all the attached documents should be clearly scanned and in the English translated version and should be sealed and signed by the head of the institute.

HEI Response:

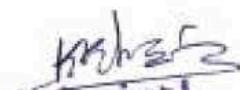
The college has conducted Green Audit, Environment Audit, and Energy Audit from the certified agency and follows the recommendations and suggestions given by the agencies in their reports. After the expiry of the specific period, renewal also conducts on an urgent basis.

The Director & IGBC AP, Green Done Consultants LLP, recently conducted these audits.

The college conducts clean and green campus initiatives through the NSS unit and appoints outside agencies.

The NSS unit conducts extension outreach activities outside the campus as per the prior approval from the affiliating university every year.

Principal


Principal
Sahakarmitra Shivajirao Katkade
Arts & Commerce College,
Naigaon, Tal. Sinnar (Nashik)

Enclosures : Photographs of outreach activities conducted outside of the campus.



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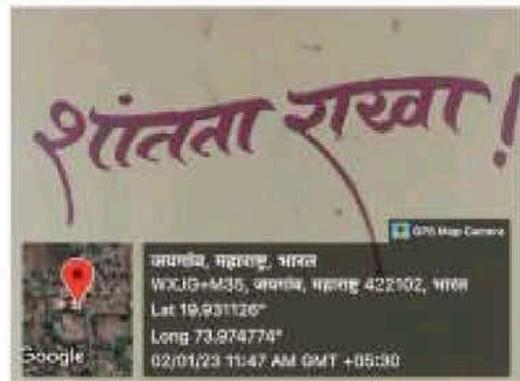
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GDCL/ENA/01/032022



CERTIFICATE FOR ENVIRONMENTAL AUDIT

This Certificate is presented to

**Sahkarmitra Shivajirao Katkade Arts and Commerce College,
Sinnar - 422 102**

For completing the ENVIRONMENTAL AUDIT of Their Campus on the
28th of March 2022.

ATUL JOSHI

Director & Accredited Energy Auditor
Green Done Consultants LLP

*This certificate will remain valid for 3 years
from the date of issuance.*



ALKESH RAJDEV

Director & IGBC AP
Green Done Consultants LLP

GDCL/GA/01/032022



Striving to make the globe greener

GREEN AUDIT CERTIFICATE

CERTIFICATE FOR GREEN AUDIT

This Certificate is presented to

**Sahkarmitra Shivajirao Katkade Arts and Commerce College,
Sinnar - 422 102**

For completing the **GREEN AUDIT** of Their Campus on the
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ALKESH RAJDEV

Director & IGBC AP
Green Done Consultants LLP

GDCL/EA/01/032022



ENERGY AUDIT CERTIFICATE

CERTIFICATE FOR ENERGY AUDIT

This Certificate is presented to

**Sahkarmitra Shivajirao Katkade Arts and Commerce College,
Sinnar - 422 102**

For completing the **ENERGY AUDIT** of Their Campus on
the 28th of March 2022.

ATUL JOSHI

Director & Accredited Energy Auditor
Green Done Consultants LLP

ALKESH RAJDEV

Director & IGBC AP
Green Done Consultants LLP

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3/28/2022

REPORT ON
GREEN AUDIT,
ENERGY AUDIT &
ENVIRONMENTAL AUDIT

**Sahkarmitra Shivajirao
Katkade Arts and
Commerce College**

Wadzire, Sinnar, Nashik-422102

Service Request No.: GDCL/GA/01/032022



**GREEN DONE
CONSULTANTS**

Striving to make the globe greener

Prepared By:

Green Done Consultants LLP.
SUPPORT@GREENDONECONSULTANTS.COM



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1. Executive Summary:

Eco campus is a concept implemented in many educational institutions, all over the world to make them sustainable because of their mass resource utilization and waste discharge in to the environment.

Waste minimization plans for the educational institute are now mandatory to maintain the cleanliness of the campus. To find out the environmental performance of the educational institutions and to analyze the possible solutions for converting the educational campus as eco-campus the conducting Green Audit of institution is essential.

The green auditing of '**Sahkarmitra Shivajirao Katkade Arts and Commerce College, Sinnar**', enables to assess the practices, action and its impact on the environment. This audit was mainly focused on **Green Indicators** like consumption of energy in terms of electricity and fossil fuel, quality & utilization of water, vegetation, waste management practices and carbon foot print of the campus etc.

The premises were evaluated against the various criteria laid down by the National Assessment and Accreditation Council (NAAC). The major observations are.

Renewable Energy

- Institute has installed a 15 kW Solar PV Rooftop system with Net-Metering option.
- However, the solar PV system was under maintenance since Jun'21. Institute has repaired it recently and it will become functional from Mar'22.
- It is estimated that institute must have lost around 1500 - 1800 kWh of generation every month because of unavailability of solar PV system.
- The quantity of organic waste with higher starch contents is not very substantial, consequently, when there will be enough organic waste generation, college may explore the potential for biogas generation.

Green Campus Initiative

- The movement of vehicle inside the campus is partially restricted as of now.
- There are pedestrian friendly pathways for in-campus movement.

Green Audit Report – Sahkarmitra Shivajirao Katkade Arts and Commerce College

- There is restriction on the usage of plastic, which may be extended to completely ban plastic usage inside the campus.
- The campus is surrounded with a lot of greenery, trees, and proper landscaping.
- The bicycles are allowed for in campus movement as required.

Environment & Energy Initiative

- Institute has planted around 22 varieties of more than 400 trees in its campus.

Air Quality & Ventilation

- The classrooms and other area are well ventilated to ensure proper air quality.
- The fans are appropriately installed to ensure proper air circulation
- The indoor as well as outdoor plants have also been provided to improve the environment.

Lighting System

- The usage of natural light is optimized through well designed structure and windows.
- College has started replacing lighting fixtures with LED. It is being progressively replaced.
- Institute may adopt for sensor based operations like motion or day-light sensors for energy conservation.

Water Quality & Conservation

- The water is supplied by the Tube well/ bore well. Water meter may be installed for monitoring the daily water consumption.
- The water quality reports are not available. Water analysis is recommended.
- Portable R.O. plants are installed for water purification.
- The rainwater harvesting system is available.
- The distribution network and piping are more or less satisfactory and adequate.



Waste Management

- The effluent water is discharged in the common drainage system however there is no Sewage Treatment plant.
- The waste is segregated in two type solid and liquid waste.

Air Conditioning System

- There is a single air conditioner in the institute office which is 3-star rated.
- The room temperature is maintained at 24 to 25 °C, which is well within the recommended values.
- The Air Conditioners are serviced regularly and properly maintained.

Infrastructure usage

- Facilities are required to be provided for ease of movements for disabled persons.
- There are adequate fire extinguishers are located at key areas. The college has initiated appropriate measures to meet the safety requirement.
- The draining system for washrooms is efficient and effective.
- No seepages were observed in the building premises.

Green IT culture

- The electronic communication is encouraged to minimize usage of papers
- Most of the papers are reused for doubled sided printing to further minimize usage of paper.



2. Acknowledgment:

We wish to express our gratitude towards Management of **Sahkarmitra Shivajirao Katkade Arts and Commerce College, Sinnar** for having given us the opportunity for conducting the study and the support provided during the study.

We are also thankful to the **Principal Dr. K. T. Khairnar** and **NAAC Coordinator Asst. Prof. Ganesh G. Shirsath** and other college staff for extending the necessary help and co-operation from their side.



3. Audit Team:

From **Green Done Consultants LLP, Mumbai**

1. Mr. Atul Joshi – Accredited Energy Auditor & Director.
2. Mr. Alkesh Rajdev – Accredited Sustainability Consultant, IGBC AP & Director.

From **Sahkarmitra Shivajirao Katkade Arts and Commerce College, Sinnar.**

1. Principal – Dr. K. T. Khairnar
2. Professor & NAAC Coordinator - Asst. Prof. Ganesh G. Shirsath

4. Introduction:

4.1. About Institute:

Dhanalaxmi Shikshan Santha was established in April 2004. The Trust is working with a motto of 'Development through Education'. Since inception the trust is working on Educational Development and it has implemented quality educational plans for students in rural areas. Last decade has seen more rigorous changes in higher educational area as compared to post-independence era. 'With change in time the students in rural area should not fall behind' with this idea the president of the trust Shri Shivajirao Katkade established a Senior College in educational year 2009 through Dhanalaxmi Shikshan santha.

Started in a small rooms, the senior college was shifted to bigger building & a huge ground at Wadzire, Tal- Sinnar in educational year 2018. The institute is spread across 8 acres with a huge paly ground and a building with various modern facilities. Under the guidance of experienced and highly qualified teaching staff & healthy educational environment, quality education and discipline is imparted. During educational year 2009 there were 53 students which has now increased to more than 500 students. Many alumnae of the institute are working successfully in various jobs and businesses.

A big cricket ground and facilities have been provided by the institute for its students. Many students are representing institute at state level in various sports.

Institute is also in a process of developing a residential facilities for teaching & non-teaching staff in its complex.

Institute is implementing various educational and social programs to ensure that the education should not only remain limited to examinations but should contribute in overall development of the students

4.2. Vision Statement of the Institute

To provide the best possible inputs for pupils to learn, to cultivate habits that lead them to adopt positive attitudes to life and develop a deep sense of human values that will enable them to fulfill their potential and contribute to the society and the country.

4.3. Mission Statement of the Institute

We are committed to specialize, universalize and humanize education for all. Our students will not become learned persons but also responsible, global citizens. Their multiple intelligence inquisitiveness will be enhanced with our rich Indian cultural and traditional heritage.



Google Earth Image

Fig. 1 Location of the College

The student and faculty strength of the college is listed below:

Physical Structure:

Physical Structure	
Total Campus Area	9 Acres
Built-up Area	2935.44 m ²
No. of Departments	2
Conference Halls	1
Class Rooms	10
Office Rooms	4
Libraries	1
Auditorium	1
Canteen	1

Total Strength of Students, Teachers & Non-teaching Staff:

Staff Details	Male	Female	Total
No. of Students	404	112	516
No. of Teaching Staff	6	6	12
No. of Non-Teaching Staff	2	2	4

5. Objectives of Green Audit:

The main aim objectives of this green audit is to assess the environmental quality, management practice and strategies being implemented in Sahkarmitra Shivajirao Katkade Arts and Commerce College, Sinnar.

The specific objectives are:

1. To monitor the energy consumption pattern of the college.
2. To assess the quality of the water in the campus.
3. To quantify the liquid and solid waste generation and management plans in the campus.
4. To assess the carbon foot print of the college.
5. To assess whether the measures implemented by the College have helped to reduce the Carbon Footprint.
6. To impart environment management plans of the college.
7. Providing a database for corrective actions and future plans.
8. To assess whether extracurricular activities of the Institution support the collection, recovery, reuse and recycling of waste generated within the campus.
9. To identify the gap areas and suggest recommendations to improve the Green Campus status of the Sahkarmitra Shivajirao Katkade Arts and Commerce College, Sinnar.

6. Target Areas of Green Audit:

Green audit forms part of a resource management process. Although they are individual events, the real value of green audit is the fact that they are carried out, at defined intervals, and their results can illustrate improvement or change over time. Eco-campus concept mainly focuses on the efficient use of energy and water; Minimize waste generation or pollution and also efficiency in resource utilization. All these indicators are assessed in the process of “Green Auditing of this educational institute”.

Eco-campus focuses on the reduction of contribution to emissions, procure a cost effective and secure supply of energy, encourage and enhance energy use conservation, promotes personal action, reduce the

institute's energy and water consumption, reduce wastes to landfill, and integrate environmental considerations into all contracts and services considered to have significant environmental impacts. **Target areas included in this green auditing are water, energy, waste, green campus and carbon footprint.**

6.1. Auditing for Water Management

Water is a natural resource; All living organisms depend on water. While freely available in many natural environments, in human settlements potable (drinkable) water is less readily available. Groundwater depletion and water contamination are taking place at an alarming rate. Hence it is essential to examine the quality and usage of water in the college. Water auditing is conducted for the evaluation of facilities of raw water intake and determining the facilities for water treatment and reuse. The concerned auditor investigates the relevant method that can be adopted and implemented to balance the demand and supply of water.

6.2. Auditing for Energy Management

Energy conservation is an important aspect of campus sustainability which is also linked with carbon footprint of the campus. Energy auditing deals with the conservation and methods to reduce its consumption related to environmental degradation. It is therefore essential that any environmentally responsible institution examine its energy use practices.

6.3. Auditing for Waste Management:

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.

Solid waste can be divided into three categories: bio-degradable, non-biodegradable and hazardous waste.

1. Bio-degradable wastes includes food wastes, canteen waste, wastes from toilets etc.
2. Non-biodegradable wastes include what is usually thrown away in homes and schools such as plastic, tins and glass bottles etc.

3. Hazardous waste is waste that is likely to be a threat to health or the environment like cleaning chemicals, acids and petrol.

Unscientific management of these wastes such as dumping in pits or burning them may cause harmful discharge of contaminants into soil and water supplies, and produce greenhouse gases contributing to global climate change respectively. Special attention should be given to the handling and management of hazardous waste generated in the college.

Bio-degradable waste can be effectively utilized for energy generation purposes through anaerobic digestion or can be converted to fertilizer by composting technology. Non-biodegradable waste can be utilized through recycling and reuse. Thus the minimization of solid waste is essential to a sustainable college. The auditor diagnoses the prevailing waste disposal policies and suggests the best way to combat the problems.

6.4. Auditing for Green Campus Management:

Trees play an important ecological role within the urban environment, as well as support improved public health and provide aesthetic benefits to cities. In one year, a single mature tree will absorb up to 48 pounds of carbon dioxide from the atmosphere, and release it as oxygen. The amount of oxygen released by the trees of the campus is good for the people in the campus. So while you are busy studying and working on earning those good grades, all the trees in campus are also working hard to make the air cleaner for you.

6.5. Auditing for Carbon Footprint:

Burning of fossil fuels (such as petrol) has an impact on the environment through the emission of greenhouse gases into the atmosphere. The most common greenhouse gases are carbon dioxide, water vapour, methane, nitrous oxide and ozone. Of all the greenhouse gases, carbon dioxide is the most prominent greenhouse gas, comprising 402 ppm of the Earth's atmosphere. The release of carbon dioxide gas into the Earth's atmosphere through human activities is commonly known as carbon emissions. Vehicular emission is the main source of carbon emission in the campus, hence to assess the method of transportation that is practiced in the college is important.

7. METHODOLOGY ADOPTED:

The methodology adopted to conduct the Green Audit of the Institution had the following components.

Onsite Data Collection:

Due to Covid restrictions, virtual tour of the college campus was organized by the Green Audit Team. The data samples and relevant photographs were collected through geo-tagged photographs. The key focus of the audit was on assessing the status of the green cover of the Institution, their waste management practices and energy conservation strategies etc.

Focus Group Discussion:

The Focus Group discussions were held with the staff members and the management focusing various aspects of Green Audit. The discussion was focused on identifying the attitudes and awareness towards environmental issues at the institutional and local level.

Energy, Waste Management and Carbon Foot Print Analysis Survey:

With the help of teachers and staff, the audit team has assessed the energy consumption pattern and waste generation, disposal and treatment facilities of the college. The monitoring was conducted with a detailed questionnaire survey method.

8. AUDIT STAGE:

Green auditing in **Sahkarmitra Shivajirao Katkade Arts and Commerce College, Sinnar** began with the assessment of the status of the green cover of the Institution followed by waste management practices and energy conservation strategies etc. The team monitored different facilities at the college, determined different types of appliances and utilities (lights, taps, toilets, air conditioners, etc.) as well as measuring the usage per item (Watts indicated on the appliance, etc.) and identifying the relevant consumption patterns (such as how often an appliance is used) and their impacts. The staff and learners were interviewed to get details of usage, frequency or general characteristics of certain appliances. Data collection was done in the sectors such as Energy, Waste, Greening, Carbon footprint and Water use. College records and documents were verified several times to clarify the data received through survey and discussions.

9. GREEN AUDIT REPORT

9.1. Water Quality Assessment:

Water is provided through a tube-well / bore well. Institute currently do not have any water treatment plant however, portable R.O. unit is provided in the campus to provide water for drinking purpose. The bore well water is being used for flushing and gardening.



It is recommended that the institute should carry out water quality analysis for bore well water and R.O. water once in a year.

Green Audit Report – Sahkarmitra Shivajirao Katkade Arts and Commerce College

9.2. Water Management:

The source for the water used in the College is a single bore well present in the campus.



Institute has installed an underground tanks of 75 KL capacity for domestic water.



Water availability is good throughout the year however institute has to procure tanker water to meet its demand during summer. Approximately 15 nos. of water tankers (10 KL each) are required to fulfill the water demand during 4 months of summer.

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- **Water consumption meter** is not installed on the bore-well water. Institute is not maintaining record of its daily water consumption.
- College has displayed signboards for spreading awareness of its water saving initiatives.



- There was no leaking taps or water wastage reported during the audit phase.
- There is no formal water management plan available with the institute.
- The institute has installed **Rain Water Harvesting** system for recharging the bore well with rainwater from the roof.



Green Audit Report – Sahkarmitra Shivajirao Katkade Arts and Commerce College

- There is no **Sewage Water Treatment** plant in the campus to recycle the waste water for the use of flushing and gardening. The waste water is being drained to main drainage system of the city.
- There is no laboratory in the campus.

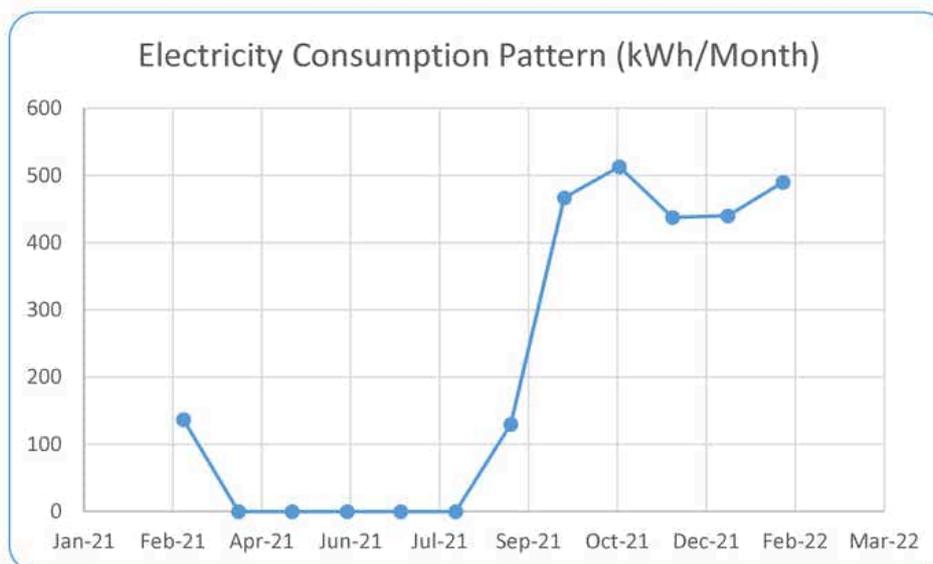
9.3. Energy Audit Report:

9.3.1. Electrical Bill Analysis:

Electricity is supplied by MAHARASHTRA STATE ELECTRICITY DISTRIBUTION COMPANY LIMITED. The institute falls under 52 LT-II A tariff category. The electricity charges under this tariff is Rs. 7.18/kWh and wheeling charges is Rs. 1.38/kWh. Demand charges is Rs. 415/kVA. Electricity Duty of 21% is applicable on the above heads. In addition to it Tax on Sale @ 18 Ps/kWh is also applicable.

Considering electricity duty of 21%, effective electricity charges works out to be Rs. 10.36/kWh.

Following chart shows the energy consumption pattern of the college over last 12 months. The college has consumed an average of 217.9 kWh/month electricity in a year. The total electricity bill amount was 33495/- for last 12 months excluding penalties due to delayed payments.

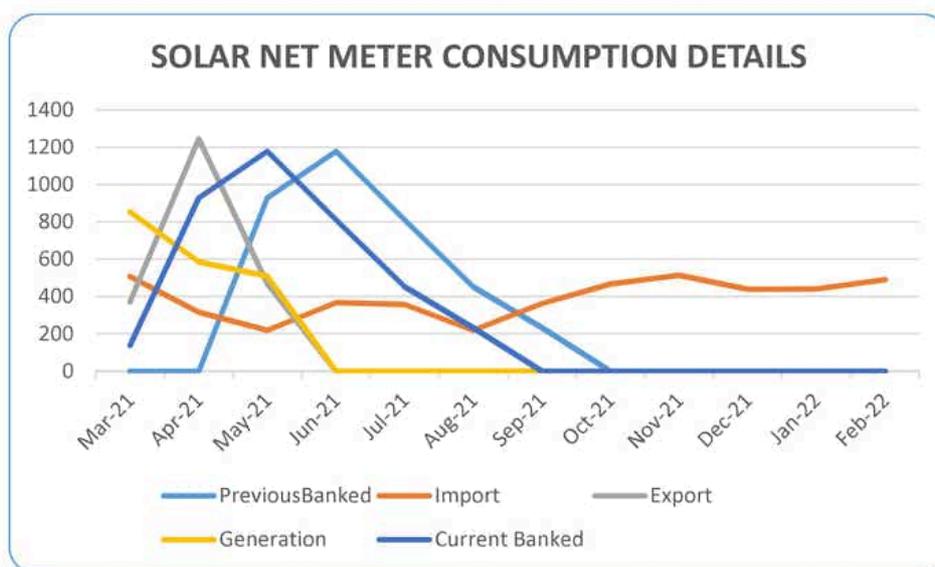


Due to Covid restrictions, the physical college was not operational before Aug'21 which is reflecting on the energy consumption pattern.

Institute has installed a 15 kW Solar PV Rooftop system with Net-Metering option. Following chart shows the generation, import, export & banking of Units generated within last 12 months. It can be conclude

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from the chart that the system stopped generating solar power since Jun'21. During the discussion, it was found that the system is under maintenance since Jun'21 and recently institute has repaired it and it will become functional from Mar'22. It is estimated that institute must have lost around 1500 - 1800 kWh of generation every month because of unavailability of solar PV system.



9.3.2. Electrical Consumers:

There is only single air conditioner of 2 TR capacity is installed in the office. The installed air conditioner is three star rated. The temperature setting is generally kept at 24-25 °C. The air conditioner is well maintained and serviced regularly.



Green Audit Report – Sahkarmitra Shivajirao Katkade Arts and Commerce College

The list of common electrical consumers along with its typical electricity consumption is provided in the table below.

Energy Audit				
Type of Electrical Device	Quantity	Power	Operation	
	Nos.	Watt	Hrs/Day	Days/Month
FANS	22	80	10	20
CFL BULBS	35	20	3	20
COMPUTER	11	N.A.	4	20
PRINTER	4	N.A.	1	10

9.4. Alternate Sources of Energy and Energy Conservation Measures

- Institute has installed a 15 kW Solar PV Rooftop system.



- Institute is utilizing the natural light to its maximum. The classroom and offices are designed in such a way that it allows maximum sun light and reduces requirement of artificial lights.



- Since there is no hostel/ residential facility or canteen in the institute, hence there is no solar water heating system required.
- Since the biodegradable waste generation is very low, there is no Bio-gas plant.
- Institute do not have any sensor based operation to save energy.
- Institute is has already started replacing existing lighting fixtures with LEDs and energy efficient lighting fixtures. Even the street lights are equipped with LED lightings.



9.5. Waste Management:

Following data provide the details of the waste generated & the disposal method adopted by the college.

Total number of stakeholders in the college: **1064**

Staff Details	Male	Female	Total
No. of Students	404	112	516
No. of Teaching Staff	6	6	12
No. of Non-Teaching Staff	2	2	4

Total number of rooms (Class rooms, canteen, office, auditorium, library etc.): **18**

Physical Structure	
Total Campus Area	9 Acres
Built-up Area	2935.44 m ²
No. of Departments	2
Conference Halls	1
Class Rooms	10
Office Rooms	4
Libraries	1
Auditorium	1
Canteen	1

9.5.1. Waste Management Practices Adopted by the College:

Following table shows the quantum of waste generation from office & canteen.

Approximate quantity of waste generated per day (in kg)				
Office	Type of Waste			
Quantity	Biodegradable	Non-Biodegradable	Hazardous	Others
< 1kg		Y		
2 - 10 kg				
> 10 kg				
Canteen	Type of Waste			
Quantity	Biodegradable	Non-Biodegradable	Hazardous	Others
< 1kg	Y			
2 - 10 kg				
> 10 kg				

- There is no biomedical waste generation happening in the college.
- There is no hazardous chemicals and radioactive waste getting generated in the college.
- The institute is segregating the waste in to 2 categories viz. solid & liquid waste.



9.6. Green Campus:

The college campus is relatively new and the plantation has been done recently.

- Total number of plant species identified - 22.
- Total number of plants in the campus – 438

Green Audit Report – Sahkarmitra Shivajirao Katkade Arts and Commerce College



Table 6. List of plants in the campus

SR.NO	NAME OF TREE	NO.OF TREE
1	Sour Tamarind (आंबट चिंच)	140
2	Gulmohor (गुलमोहोर)	37
3	Nim tree (निम)	70
4	Vachellia nilotica (बाभुळ)	12
5	Subabul (सुबाभूळ)	25
6	Almond tree (बदाम)	8
7	Millettia pinnata (करंजी)	3
8	Hibiscus (जास्वंद)	27
9	Neolamarckia tree (कदंब)	11
10	Mulberry (तूतु)	1
11	Champak tree(चाफा)	5
12	Lead tree (शिसव)	9
13	Palm tree (खजुर)	23
14	Ramphal (रामफळ)	1
15	Banyan tree (वड)	1
16	Mango tree (आंबा)	6
17	Fig tree (उंबर)	1
18	Peepul tree (पिंपळ)	1
19	Ashoka tree (अशोका)	40
20	Bamboo tree (बांबू)	4
21	Christmas tree	1
22	Weeping Bottle brush / Callistemon viminalis (चील)	12
	TOTAL	438

Green Audit Report – Sahkarmitra Shivajirao Katkade Arts and Commerce College

9.6.1. Green Campus Initiatives:

Following are few activities under green campus initiatives.

- College campus is not very large however, automobile entry is partially restricted in the campus.



- Institute is yet to adopt the battery-powered vehicle for transportation. However cycles are being used for internal transport.



- The pathways inside the campus are pedestrian friendly.



- Institute has initiated banning plastic in the campus.
- The college campus is landscaped with various trees & plants.

Green Audit Report – Sahkarmitra Shivajirao Katkade Arts and Commerce College

9.6.2. Quality audits on Environment and Energy:

Institutes has initiated carrying out following audit on regular basis.

1. Green Audit
2. Environmental Audit
3. Energy Audit

This is the first audit and institute plans to have such audits every year.

Institute is carrying out many environmental promotion activities in the campus throughout the year. These activities include

- ✓ Cleanliness Drive
- ✓ Plantation Drive

The institute not only organizes such program inside the campus but is also actively doing it outside the campus as well.



Green Audit Report – Sahkarmitra Shivajirao Katkade Arts and Commerce College

9.6.3. Routine Green Practices:

Every year college celebrates Swachha Bharat Abhiyan, World Environment Day and World Water Day in the campus. The main focus of these programs was to provide awareness to the students about the importance of the environment, its conservation and sustainable use of environmental resources. The programs are conducted through seminars, poster presentation, quiz competition debates etc.



9.6.4. Disabled-Friendly Environment:

Institute need to provide a disabled friendly washroom. However, there is a requirement of a ramp and a lift/ wheelchair for easy access to classrooms for disabled students and staff.

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9.6.5. Air Quality & Ventilation:

The classrooms and offices in the premises are well ventilated. The fans are operational and adequately placed to effect the sufficient air changes. Fans installed are not star-rated. College has done indoor plantation to provide fresh air inside the premises.



9.6.6. Infrastructure Usage:

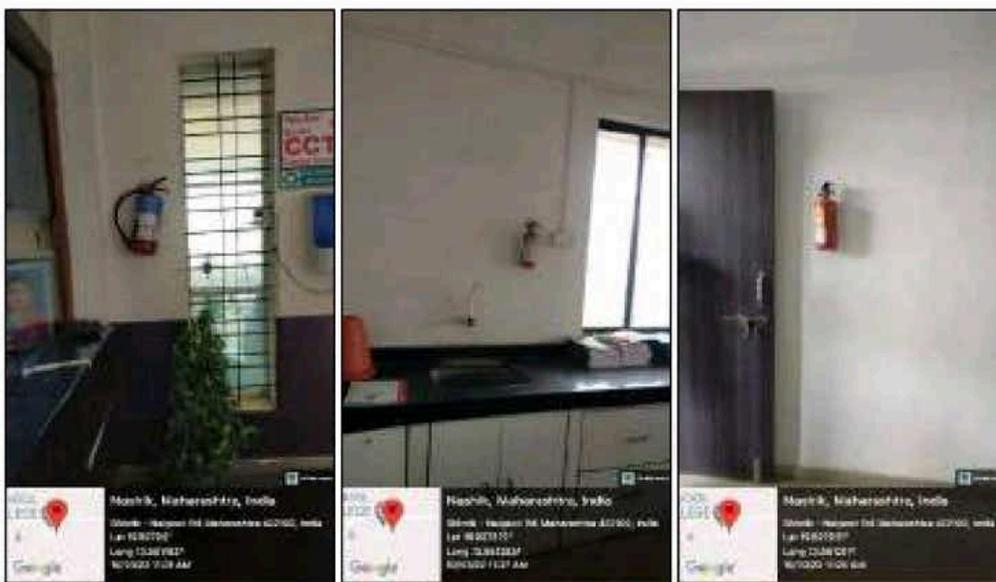
- College premises one common entrance and has broad passage ways.



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- The campus has proper drainage system and there were no leakages/ seepages from the roof was observed.
- The premises has fire extinguishers installed at required locations which are regularly checked and maintained.



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9.6.7. Green IT Culture:

The institute is following a green IT culture.

- Email/ electronic communication mode is preferred to save papers.
- Both side printing is being adopted to save paper and trees.

10. Carbon Foot Print Analysis:

10.1. CO₂e Calculation:

Carbon Foot Print Calculation		
A- Scope 1 (Direct Emission)		
Source	Fuel Consumption	CO ₂
DG	NA	NA
Vehicles	NA	NA
Others	NA	NA
B- Scope 2 (Indirect Emission)		
Source	Unit Consumption	CO ₂ (KG)
Electricity Consumption	2615	2353.5
Total A+B	2615	2353.5
Carbon Offset		
Source	Quantity	CO ₂ (KG)
Solar	Nil	0
Trees	438	8760
Others	Nil	0
Total	Nil	2240

Sr. No	Description	Remark
1	Direct Emissions	No Data available
2	Indirect Emissions	Calculated as per international standards
3	Reductions	To increase the carbon offset, it is recommended to ensure proper operation & maintenance of Solar PV Rooftop System.

11. SUGGESTIONS AND RECOMMENDATIONS:

11.1. Water Management:

- There should be a proper monitoring of water consumption pattern in the campus. The bore well should be installed with water meter to monitor the consumption. The water meter readings to be recorded every day or every week at a fixed time.
- It is recommended to check water quality from bore well and R.O. water quality for dissolved oxygen, acidity, alkalinity, chloride, hardness, pH, and conductivity, total dissolved solids and E-coli/ coliform.
- The wash basin taps may be equipped with water saving fixtures.
- The flush tanks of the toilets may be fitted with dual volume system.
- Institute may install drip irrigation system to water the garden and plants in the campus.
- It also recommended to install water meter on bore well to monitor daily consumption of water. It is suggested to keep record of daily water consumption.

11.2. Energy Management:

- Institute has installed a Solar PV rooftop system. However, could not avail the required benefits as the system was under maintenance. A 15 kW solar PV rooftop system is capable of generating around 1500-1800 kWh of energy every month. It is recommended to keep the system up & running all the time to avoid financial losses and to avoid the adverse impact on environment.
- The energy audit recommend to avoid the use of more energy consuming electrical appliances and to replace with more environment friendly and energy efficient appliances (for example five stars rated Air conditioner, star rated fans) in the college.
- College may adopt sensor-based (occupancy sensors) energy conservation approach for offices, classrooms and washrooms as well.
- Going forward college may also replace existing tube lights with LEDs.

11.3. Green Campus:

- Institute may restrict the entry of all automobiles inside its campus.
- More Battery powered vehicles may be adopted in future to reduce emissions inside campus.
- Use of cycles may be promoted among the students.

11.4. Waste Management:

College may undertake feasibility study to install sewage water treatment in the campus to recycle waste water and use it in flush or for gardening purpose.

Leaf litter from the campus can be effectively used for aerobic/ vermi composting, so that the composted material can also be used as good manure.

Try to completely ban the use of plastic in the campus, and to encourage the use of biodegradable materials as alternatives. Try to achieve the goal of plastic free campus.

