

**QUALITY AUDITS ON ENVIRONMENT & ENERGY REGULARLY
UNDER TAKEN BY THE INSTITUTION, ANY AWARDS RECEIVED
FOR SUCH GREEN CAMPUS INITIATIVES**

SKP GOVERNMENT COLLEGE GUNTAKAL-515801



**GREENAUDIT
REPORT-2021**



MEMBERS OF GREEN AUDIT COMMITTEE:

1. **Dr. K. Gnaneswar, Principal**
2. **Sri P.Janardhana sastry, Vice-Principal**
3. **Dr T.Jitendra, IQAC Co-Ordinator**
4. **Dr.Sashikiran, Co-Ordinator**
5. **Sri J.Bheemalingaiah, Member**
6. **Dr.A.S. Vijaya kumar, Member**



External Audit Committee Members

1. **Dr A.Lakshmaiah, Principal,GDC Bukkapatnam**
2. **Dr M.Thippeswamy, Asst.Prof. , Davangere University**
3. **Dr M. Bheemalingappa, Scientist, KFRI**
4. **Dr. M. Chenna Keshavulu Naik, AP BIODIVERSITY BOARD**



Faculty Team:-

1.Dr P.Sashikiran, Co-Ordinator, In-Charge Dept. of Botany.

2.Sri J.Bheemalingaiah, Member, Lecturer in Botany

3. Dr A.S.Vijaya kumar, Member, Lecturer in Botany

Student Team:-

1.M. Bhaskar Naidu, III B.Z.C

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INTRODUCTION

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of various establishments. It aims to analyze environmental practices within and outside of the concerned sites, which will have an impact on the eco-friendly ambience.

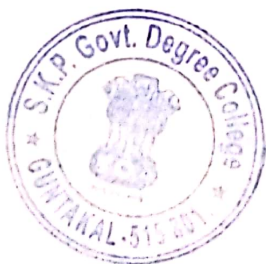
Green auditing is a means of assessing environmental performance. It is a systematic, documented, periodic and objective review by regulated entities of facility operations and practices related to meeting environmental requirements. It is otherwise the systematic examination of the interactions between any operation and its surroundings. This includes all emissions to air, land and water, legal constraints, the effects on the neighboring community, landscape and ecology, the public's perception of the operating company in the local area.

ABOUT GREENERY IN THE COLLEGE CAMPUS

Total area of the college campus is 16 acres, of which 45 percent, is covered by herbs, shrubs and trees, including valuable medicinal flora. The plants have been systematically identified by the Dept. of Botany. There are more than 2600 plant species belongs to 102 genera were audited. The green audit report has been discussed with Green audit committee with suggestions to increase greenery in campus. Extra efforts have been taken by the college to create environment consciousness amongst students. Existing gardens are also maintained by the Dept. of Botany of this college. Extension programs also organized to create environment awareness and conservation of Biodiversity amongst the students and public.

1. GREEN AUDIT APPROACH AND PLAN OF ACTION

1. Audit is a systematic approach.
2. Audit is conducted objectively.
3. Auditor obtains and evaluates evidence.
4. Evidence obtained and evaluated by the auditor concerns assertions about economic actions and events.
5. Auditor ascertains the degree of correspondence between assertions and established criteria.
6. Goal or objective of the audit is communicating the results to interested users




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ACTIVITIES ORGANIZED TO CREATE GREENERY AND ITS CONSERVATION AT COLLEGE CAMPUS IS AS FOLLOWS:

- Plantation of diversified species.
- Attempts made to overcome water scarcity during summer season
- Biodiversity conservation education, awareness programmes, etc
- Common name or Botanical name of plants pasted in plants in the campus
- Medicinal and ornamental plants garden in the campus
- Housekeeping, storage areas, piping, plumping
- MOU with Govt. Organizations to ensure green campus
- Use of bio-fertilizers, organic manures, green manures et
- Awareness programmes conducted related to environment
- Functioning of Eco club, etc for Students
- Government schemes (Swatch Bharath), programmes (Vana Mahotsavam, Vanam Manam)
- Hazardous material disposal facility
- Rain water harvesting system

2. Objectives of the Study:-

- a. **Verifying compliance:-** Verifying compliance with standards or best available techniques.
- b. **Identifying problems:-** Detecting any leakage, spills or other such problems with the operations and processes
- c. **Measuring environmental impact:-** Measuring the environmental impact of each and every process and operation on the air, water, soil, worker health and safety and society at large.
- d. **Measuring performance:-** Measuring the environmental performance of an organization against best practices.
- e. **Confirming environmental management system effectiveness:-** Giving an indication of the effectiveness of the system and suggestions for improvement.
- f. **Developing the organization's environmental strategy:-** Enabling Management to develop its environmental strategy for moving towards a Greener corporate and performance culture.
- g. **Communication :** - Communicating its environmental performance to its stakeholders though reporting will enhance the image of the Institution.




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3. GENERAL STEPS:-

- Systematic and comprehensive data collection
- Documentation with physical evidences
- Independent periodic evaluation with regulatory requirements and appropriate standards
- Systematic and comprehensive improvement and management of existing system.

4. ONSITE AUDIT ACTIVITIES:-

1. The opening meeting is the first step between the audit team and audited. In this meeting the purpose of audit, the procedure and the time schedule were discussed.
2. Site inspection is the second step for onsite activity. In this step the Audit team discovered matters which are important to the audit but which we're not identified at the planning stage.
3. Assessed strengths and weaknesses of the auditee's management controls and risks associated with their failure were established.
4. Gathering audit evidence i.e. collecting data and information using Audit protocol.
5. Communicated with the staff members of the auditee to obtain the data and information related to the audit.
6. Evaluated the audit evidence against the objectives established for the audit.
7. An exit meeting to explain the audit finding

5. PROCEDURE FOLLOWED:

The study covered the following areas to summarize the present status of environment management in the campus.

1. Green area management
2. Water management
3. Waste management
4. E-waste management

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5.1. GREEN AREA MANAGEMENT:-

- The natural landscape predominates the campus with a rich biodiversity of flora which is taken care by the dedicated team of Botany dept. A continuous monitoring of the biodiversity is carried out by the students, teaching and non-teaching staff.
- The college is maintaining a rich floristic diversity with approximately 2685 plants belonging to 106 varieties of documented plants with trees and other shrubs, herbs and climbers too.
- Medicinal plants like Neem, Tamarind, Cissus, Coculus, Lemon, Aloe vera, Ocimum, Phyllanthus, Vinca rosea, Cassia sps, Costus, Bamboo, Murraya, Eucalyptus, Syzygium, Plectranthus, Widelia, Senna, Clitoria, Feronia, Bryophyllum are grown.
- Ornamental plants like Hibiscus, Moneyplant, Dracaena, Cycas, Tecoma, Dieffenbachia, Duranta, Monstera, Fern are grown.,
- Fruit giving plants like Papaya, Custard apple, Elephant Apple are grown.
- Through Eco-club, NCC and NSS, college has organized activities such as Swachh Bharat Abhiyan, Plantation drives etc., **Vanamahotsavam** is celebrated every year to spread the concept of sustainable development and the importance of environment conservation and management.
- Practice of giving planting pots, samplings and bouquets prepared by the students to honor the guests in various college events is also followed. Large green area of the college campus allows for percolation of water into the soil there by facilitating the recharge of ground water resources. Water is used for drinking purposes, canteen, hostel, toilets, laboratory and gardening. During the survey, the team observed the following.
- The college is situated in a scarcity rainfall area. Therefore, the college took initiative on utilizing rainwater for multiple purposes. As a part of this action plan, "**Rain Water Harvesting Pit**" is behind Conference hall for the storage of rain water. The rain water is allowed to flow from the roofs of the buildings is directed in to the rain water harvesting pits. Some part of the rain water collected is directly used for gardening purpose.
- The waste water from the hostel kitchen is directed to the kitchen garden for growth of various vegetables.
- Plumbing maintenance is done on a regular basis to prevent the wastage of water in the form of leakages.
- In spite of all these, loss of water is observed in the in form of small leakages.

RECOMMENDATIONS:

- Need of regular monitoring, controlling overflows, repairing even minute leakage is essential. The resould be large scale recycle water system is necessary.


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5.2.WASTE MANAGEMENT:-

Waste is an obvious culprit and pollutant, contributing to landfills and toxins which harm the earth's soil and atmosphere. Keeping in mind, the college took various initiatives to reduce the dumping of waste.

5.2.1 GREEN& SAFE LABORATORIES:

In the Chemistry laboratories of our college nearly one 350 students perform practical's per year. Consequently, there is considerable quantity of Chemical wastage and which in turn threatening the safety of the students, health of students and also contributing to environmental pollution in the college campus.

In view of the seriousness of the above problem the lecturers of Department of Chemistry have formed in to **"Green & Safe Chem Labs"** committee. The prime objective of this committee is to strictly implement the policy of **"3R' s – Reduce – Reuse – Recycle and also measures for the Safety of the students"** in the Chemistry laboratories of our college.

I. REDUCE:

- We have taken steps in minimizing the usage of Chemicals and Reagents in the day-to-day practical's by implementing the following alternative approaches.
- In preparing derivatives and preparations only minimal quantities of reactants are taken. This also reduces the requirement of reagents and also the consumption of fuel
- We are encouraging our students to use 5ml test tubes in place of conventional 20ml test tubes while doing qualitative Organic or Inorganic analysis.

II. REUSE:

- We are collecting separately and reusing the preparations /derivatives prepared by a class of students, by giving them as sample for the qualitative detection of functional groups or Cations/Anions.
- We are collecting the left-over volumetric analysis solutions from a batch of students and reusing them for next batch of students.
- We are collecting the left over chemical in Organic or Inorganic analysis in separately labeled bottles from a batch and reusing these Chemicals for the next batch of students.

III. RE-CYCLE:

- Even old stock of Chemical is also used at least for qualitative
- Determinations and no Chemical is discarded as trash.
- No bottle with Chemical is thrown out inside the college campus.
- The empty plastic/glass containers and broken glassware are sent to local re-cyclingunits.


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IV . SAFE DISPOSAL OF CHEMICAL WASTES:-

- The sinks are regularly cleaned to facilitate quick drainage of Chemicals from the lab.
- The waste acid/alkaline solutions are collected in separately labeled bottles and these solutions are neutralized before letting them through the sink.
- The filter papers and other solid wastes collected from Chemistry labs are being dumped into a pit dug in a secluded place in the vicinity of Chemistry labs, for it to undergo biodegradation.

V. INITIATIVES TAKEN FOR SAFETY OF STUDENTS:-

- A "First Aid Box" with required medicines is kept available in the Chemistry laboratory.
- A "Fire Extinguisher" is fixed in each of the two laboratories.
- "Lab Safety Rules" are written with paint on the inner walls of the two Chemistry Laboratories.

6. RECOMMENDATIONS FOR GREENING:

- Initiate herbal garden in the College. It gives awareness to the students and also it acts as basic means of medicine for everyone. Plant medicinal plants in ground so that it can attain the full growth and increase number of species.
- White Wash the trees up to 3ft with limestone and neem oil mix. It can prevent pests and diseases in trees.
- Install bio-gas plant so that you can convert the college mess and kitchen waste into manure and you can get bio gas also. It may reduce the fuel expenditure.

CONCLUSION:

- Thus through the "Green Audit" of the college campus, the following objectives get full filled.
- The information about the wide range of varieties of Plant kingdom being grown in the college campus.
- Provides information on the extent of percentage of vegetation in the college campus.
- It provides information about the soil fertility and purity of water being used both in college and in hostels.
- The procedures adopted so as to keep college campus free from solid waste and their profitable management.
- Profitable management of e- waste by sending it for re-cycling.


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Co2 Emersion Reduction per year in SKPGDC College Campus				
Number of Plants	Number of Plants	Number of Plants	Number of Plants	CO2 reduction in Ton's
410	410	410	410	0.57
858	858	858	858	3.185
212	212	212	212	1.368
106	106	106	106	-
NIL	NIL	NIL	NIL	-
1568	1568	1568	1568	5.123

REPORT

Trees play an important ecological role with in the urban environment, as well as support improved public health and provides a esthetic benefits to cities. Newly planted and existing trees decrease the amount of carbon dioxide in the atmosphere. In one year, a single mature tree will absorb up to 20 Kg of carbon dioxide from the atmosphere, and release It as oxygen. The amount of oxygen that a single tree produces is enough to provide one day's supply of oxygen for humans. Carbon sequestering capabilities of a tree depends on the type of the tree and age of such tree. There are totally 465 trees in college premises. Considering their varied age factors and type of tree, they grouped under 3 categories and weighted average of Carbon sequestering per tree in each group were determined. Above analysis indicates that a total of 5 tons of carbon dioxide was sequestered on annual basis.

Identification of Plant species and Bio-diversity in the college campus, based on our data collected, there are plants in the college campus. In this 73 are trees, 26 are shrubs, 70 are herbs and remaining 14 are climbers. Out of 465 trees, 73plants are present in the botanical garden. So, 465 plants in our college contribute to the Oxygen supply that we utilize and 5 ton's of Co2 is being sequestered in college campus.


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IDENTIFICATION OF PLANTS IN THE CAMPUS



GARDEN MAINTENANCE BY



PHOTOS OF SOIL AUDIT



SWACHHA BHARAT FOR MAINTAINING GREEN CAMPUS



S K P GOVERNMENT DEGREE COLLEGE

RE-ACCREDITED WITH 'B' GRADE BY NAAC

GUNTAKAL

A REPORT ON ENERGY AUDIT



ENERGY AUDIT COMMITTEE

S.No	Name	Designation
1	Dr.K.Gnaneswar	Principal & Chairman
2	C.Sankar Reddy	Convenor
3	Dr. T.Jithendra	IQAC Coordinator
4	A.Ravi Sankar Sarma	Member
5	M.Obulesu	Member
6	S.Pavani	Member
7	G.C.Ashok	Member
8	Amith Vikram	Student Representative
9	Durga Naik	Student Representative
10	Roopa	Student Representative

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Functional Roof top Solar System installed over the College Building



Solar roof top system installed over the roof of the College Building

INFERENCE FROM THE DATA:

The 'Energy Audit' team after a detailed study arrived at the following inferences.

- ✚ The electricity consumption percentage out of total consumption for 128 Tube lights is 6.18%.
- ✚ For 127 Fans the electricity consumption percentage is 34.56%
- ✚ For 61 Computers the electricity consumption percentage is 28.69%
- ✚ For 5 submersible pump and electric motors the electricity consumption percentage is 10.56%
- ✚ For 19 Printers the electricity consumption percentage is 18.91%
- ✚ The electricity due to Fans is maximum (34.56%) because of fact that in the place where our college is located is hot during most part of the year.
- ✚ Accordingly The electricity consumption percentage of Air conditioners if also high (24.16%).
- ✚ The total annual electricity of college is 17034 unit and expenditure incurred per annum is Rs. 2,76,047 /- .
- ✚ The electricity consumption of college will be low in the months of October and January on account of mid-term holidays.

SUGGESTIONS FOR REDUCING POWER CONSUMPTION:

The 'Energy Audit' team on the basis of inferences of the study proposes the following suggestions pertaining to the means to be implemented to cut short the Electricity consumption.

1. Presently the college has a single unit of 'Solar Energy'. The electricity consumption could be drastically cut short by establishing a few more 'Solar Energy' units in the college campus.
2. All the class student representatives should be instructed to switch off fans and lights immediately after the completion of class.
3. All the students should be instructed to unplug the unused electronic appliances.
4. A centralized 'Switch Off' panel board should be arranged in college.
5. The lights set for illumination in the common areas of the campus should be maintained with perfect timings.
6. At present less number of LED bulbs are provided. So all the tube lights and bulbs may be replaced by LED bulbs in the college to save the power.


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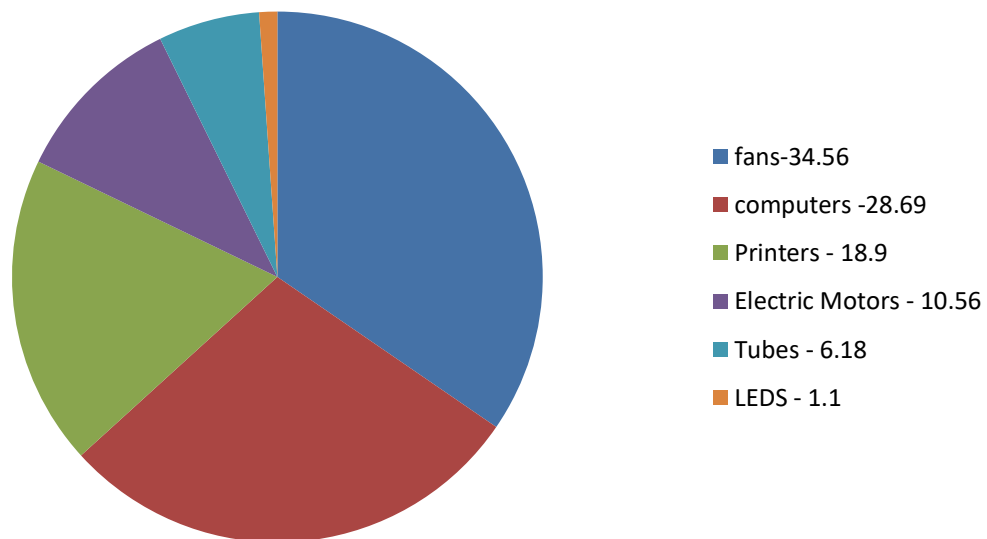
ANALYSIS OF DATA:

The above data is further analysed so as to obtain the numerical information as shown in the given table.

Percentage power consumption of certain appliances out of total power consumption

S.NO	Name of Appliance	Percentage of Power consumption
1	Tube Lights	6.18
2	Fans	34.56
3	Computers	28.69
4	Electric motors	10.56
5	Printers	18.91
6	LED	1.1

Percentage of Power Consumption



ENERGY AUDIT REPORT

INTRODUCTION:

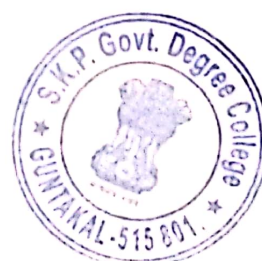
The increase in usage of electricity in any institution is a measure of its advancement in academics, Information and Communication Technology, research potentiality and so on. All Higher Educational Institutions primarily require electricity power for the infrastructural facilities such as class rooms, seminar halls, virtual class rooms, administrative block, various departments, laboratories, JKC and MANA TV room. The bulbs, LED bulbs, fans, ACs, computers, backups, inverters and electrical, electronic equipment used in the laboratories are the means of electrical consumption in an educational institution.

The 'Energy Audit' team has collected information on the total number of different kinds of electrical and electronic appliances which are presently in usage along with their power consumption wattage.

Table - 2: Electricity bills of College

S.No	Month	Consumption Units(KWH)
1	March 21	1505
2	April 21	1658
3	May21	1726
4	June 21	1241
5	July 21	1431
6	August 21	1547
7	September 21	1446
8	October 21	1342
9	November 21	1296
10	December 21	1381
11	January 22	1341
12	February 22	1120
Total Power Consumed Yearly		17034
Average Power Consumed Yearly		1419.5


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the future of our children
the future of our planet

it's in OUR hands

that's why Energy Matters