

# Green Audit Report

Sharanabasveshawar College of Science.

Vidhya Nagar, Kalaburgi-585103

Karnataka-INDIA.

2019-2020



## GREEN FOUNDATION

*Platform for Enviro Audit*

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## Executive Summary

Green Audit is defined as an official examination of the effects a college has on the environment. It helps to improve the existing practices with the aim of reducing the adverse effects of these on the environment concerned. Several institutions have applied various view points to preserve the environment within the campus such as promotion of energy savings, recycling of waste, water use reduction, water harvesting etc., Green audit visualizes the documentation of all such activities taking stock of the infrastructure of the college, their academic and managerial policies and future plans. A green auditor will study an organization's environmental effects in a systematic and documented manner and will produce environmental audit report. A clean and healthy environment aids effective learning and provides a conducive learning environment.

Green audit can be a useful tool for a college of determines how and where they are using the most energy or water or natural resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of green impact on campus directly. Green auditing promotes financial savings through reduction of manmade resource and its uses. It gives an opportunity for the development of ownership, personal and social responsibility for the students and teachers. Thus it is imperative that the college evaluates its own contributions towards a sustainable future. As environmental sustainability is becoming an increasingly important issue for the entire region and the nation, the role of higher educational institutions in relation to environmental sustainability is more relevant.

In this Science College, Kalaburagi the audit process involved initial interviews with the staff to seek clarification of policies, activities, records and with the co-operation of staff and other employers in the implementation of data for the green audit process, through the questionnaire based survey, review of records, observation of practices and observable outcomes, in the green auditing process in the college.

The baseline data prepared for this college will be a useful tool for campus greening, resource management planning of future projects, and documents for implementation of sustainable development of the college. Existing data will allow the college to compare its programs and operations with those of peer institutions, identify areas in need of improvement, and prioritize the implementation of future projects. The green audit reports assist in the process of attaining an eco friendly approach to the sustainable development of the college. It is Hoped that the results presented in the green auditing report will serve as a guide for the educating the college community on the existing environment related practices and resource usage at the college as well as spawn new activities and innovative practices. We expect that the management will be committed to implement the green audit recommendations.

We are happy to submit this GREEN AUDIT REPORT to the authorities, the Principal of Sharanbasaveshwar College of Science, Kalaburagi.

Place: Kalaburagi

Date: 14.11.2019



**KATHARE RAJENDRA**  
General Secretary,  
Green Foundation,

G-37, Century Complex, Opp: Sangam Cinema,  
SB Temple Road, **KALABURGI-585101**  
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## Chapter 1

### Introduction

Sharanabasveshwar College of Science, Kalaburgi established in 1956 is now 64 years old. The college is a centre of higher learning in Kalaburgi Division with undergraduate programs. The college has played a pivotal role in the socio-economic development of the high ranges and the suburban areas of kalaburagi region. The forefathers of the college had envisioned the delivery of quality education wedded with spiritual values to the emerging young population of the region.

The College has 20 regular faculty members in various disciplines of whom (16 Ph D. holders). In addition the college has (33) teachers on ad-hoc basis. About 56% of the faculties are women. The total number of non-teaching staff comes to 17. The college has total student strength of (1001) of which 64% are girls. Though the college is aided by the state government, it also receives occasional funding from University Grants Commission (UGC), Department of Science and Technology (DST), Department of Bio-technology (DBT) and Karnataka State Council for Science, Technology and Environment (KSCSTE). The college regularly conducts memorial or endowment lectures on regular basis. It also organizes interdisciplinary seminars and invited talks by experts periodically at every short intervals on the environmental and green cover topics, related to and with the integral development of student personality is taken care of by various clubs and units like National Service Scheme, National Cadet Corps, Debating Club, Quiz Club, Road Safety Club etc. The students have been consistently contributing through their outstanding performance in the University Youth Festivals, Sports, Games and intellectual pursuits. They maintain high standards in University examinations with regular ranks and distinctions. The college gives due importance to the wholesome development of the human personality, promote healthy staff student relationship and instill in them love and respect towards their parents and elders...

### 1.3 Total Campus Area spared & College Building Area

Campus area 16253.73 M2

Built up area 5253.00 M2 (Three floors)

Sports wing, Outdoor stadium, Canteen, Rest rooms Library, Seminar halls. Computer labs and class Rooms









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In which there is 4000 Sq Mtr is Green Canopy with botanical plants and shrubs. There is separate hostel for boys and girls provisioned them the rooms with attached bath rooms and hot water facilities along with regular medical checkups.

## Chapter 2.1

The green audit practically involves energy conservation, use of renewable resources, rain water harvesting, efforts of carbon sequestration methods, planting trees, waste management including hazardous and e-waste. This requires data collection and efforts for clarification of environmental policies. Green auditing includes systematic identification, recording and analysis of components related to sustainable development of an educational institution to preserve for future generations. The process has three important stages such as pre audit stage, audit stage and post audit stage. In, a training programme conducted for students and staff to help them collect data during the audit processes. Pre- audit meeting was held in the college also provided an opportunity to reinforce the scope and objectives of the audit, and discussions that were held on the practicals associated with the audit. This meeting is an important prerequisite for the green audit. In the said college, meeting was conducted successfully and necessary documents were collected directly from the college before the initiation of the audit processes. Actual planning of audit processes was discussed in the pre-audit meeting. With the help of staff and the college management.

The college authorities were ready to encourage all green activities. It was decided to promote all activities that are environment friendly such as awareness programs on environment, campus farming, planting more trees in the campus etc. after the green auditing. The management of the college was willing to formulate policies based on green auditing report.

## 2.2 Scope and Goals of Green Auditing

A clean and healthy environment aids effective learning and provides a conducive learning environment. There are various efforts around the world to address environmental education issues. Green Audit is the most efficient and ecological way to manage environmental problems. It is a kind of professional care which is the responsibility of each individual who are the part of economical, financial, social and environmental processes. It is necessary to conduct green audit in college campus because students become aware of the green audit, its advantages to save the planet and they become good citizen of our country. Thus Green audit becomes necessary at the college level. A very simple indigenized system has been devised to monitor the environmental performance of this Sharanabasaveshwar College of Science. It comes with a series of questions to be answered on a regular basis.



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This innovative scheme is user friendly and totally voluntary. The aim of this is to help the institution to set environmental examples for the community, and to educate the young learners.

## 2.3 Benefits of the Green Auditing

Empower the organizations to frame a better environmental performance. More efficient resource management.

- \*Benchmarking for environmental protection initiatives
- \*To provide basis for improved sustainability
- \*To create a green campus
- \*To enable waste management through reduction of waste generation, solid- waste and water recycling
- \*To create plastic free campus
- \*Recognize the cost saving methods through waste minimizing and managing.
- \*Point out the prevailing and forthcoming complications.
- \*Authenticate conformity with the implemented laws
- \*Enhance the alertness for environmental guidelines and duties
- \*Impart environmental education through systematic environmental management approach and improving environmental standards
- \*Financial savings through a reduction in resource use
- \*Development of ownership, personal and social responsibility for the College and its environment.
- \*Enhancement of college profile developing an environmental ethic and value systems in youngsters.
- \*Green auditing should become a valuable tool in the management and monitoring of environmental and sustainable development programs of the college.





## 2.4 Target Areas of Green Auditing

Green audit forms part of a resource management process. Although they are individual events, the real value of green audits 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 economic efficiency. All these indicators are assessed in process of "Green Auditing of educational institute". Eco-campus focuses on the reduction of contribution to emissions, procures a cost effective and secure supply of energy, encourages and enhances 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.



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## **Auditing for Water Management**

Water auditing is a method of quantifying water flows and quality in simple or complex systems, with a view to reducing water usage and often saving money on otherwise unnecessary water use. Water is life; virtually everything we do or use each day involves water. Yet, we do not give it the importance that is due to it. India will soon be a water-stressed country and we all need to work towards our water security. There is an increasing awareness around the globe of the centrality of water to our lives. This awareness crosses political and social boundaries. In many places people have difficult access to drinking water. Often it is polluted. We need use water wisely to ensure that drinkable water is available for all, now and in the future. Water auditing is a mechanism for conserving water, which will grow in significance in the future as demand for water increases. . It 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. It is therefore essential that any environmentally responsible institution examine its water use practices.

## **Auditing for Energy Management**

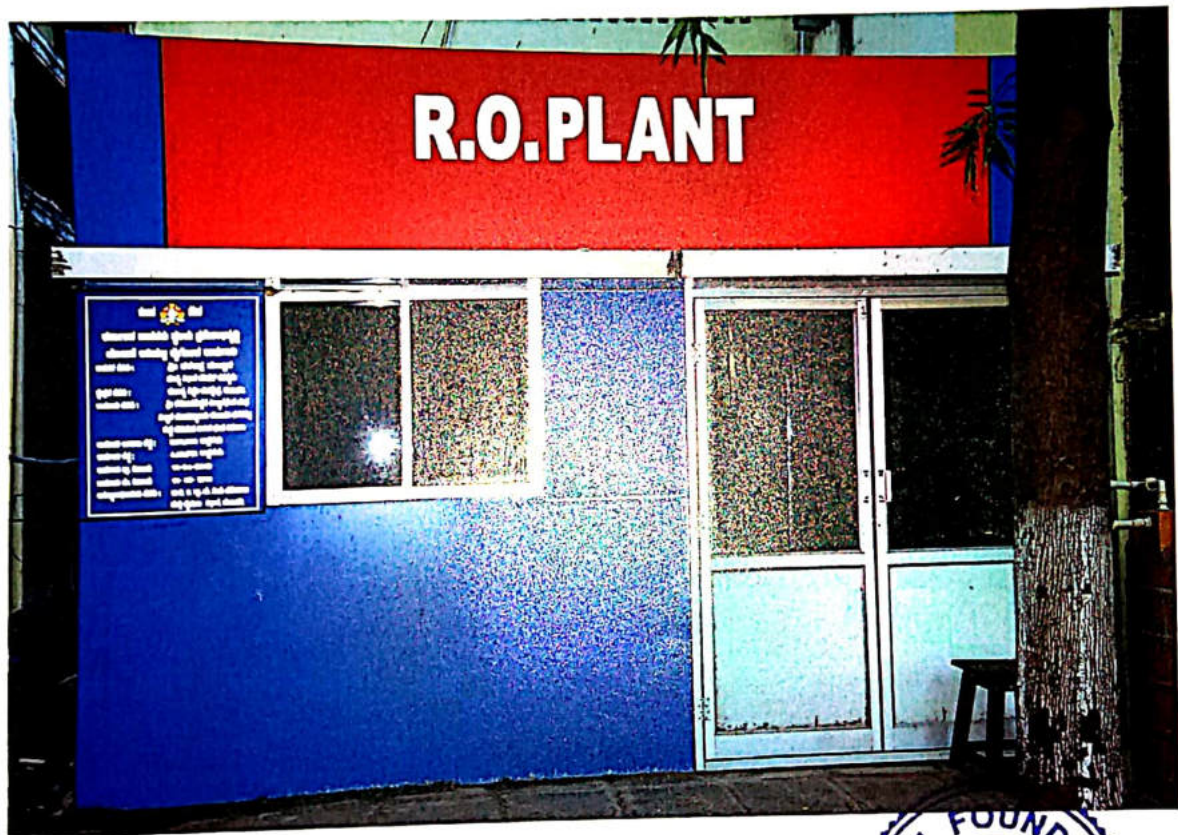
An energy audit is an inspection, survey and analysis of energy flows for energy conservation in a building, institution, processor system to reduce the amount of energy input into the system without negatively affecting the output. It shows where the power consumption is more in the given system without negatively affecting the out put. It shows where the power consumption is more in the given system. It can also be called as controlling of the power usage to avoid-losses and maximize efficiency. Energy management (audit) approach is understanding energy costs, bench marking, energy performance, matching energy use to requirement, maximizing system efficiencies, optimizing the input energy requirements, and fuel and energy substitution. Energy cannot be seen, but we know it is there because we can sense its effects in the forms of heat, light and power. This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliances, and vehicles. Energy use is clearly an important aspect of campus Attainability and thus requires no explanation for its inclusion in the assessment. An old incandescent bulb uses approximately 60W to 100W while an energy efficient light emitting diode (LED) uses only less than 10 W. Energy auditing deals with the conservation and methods to reduce its consumption related to environmental degradation.

## **Auditing for Waste Management**

A waste audit is a methodically thought out process which can be used to determine the amount and types of waste that are generated by an organization. Information from these audits can help the organization to determine how we can reduce the amount of waste that an institution generates. In most work places, cardboard, paper, plastics, metals and food constitute the









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majority of what goes in the garbage. Pollution from waste is aesthetically unpleasant and results in large amount of litter in communities which can cause health problems. Plastic bags and discarded ropes and strings can be very dangerous to birds and other animals. Solid waste can be divided into two categories: general waste and hazardous waste. General wastes include what is usually thrown away in homes and schools such as garbage, paper, tins and glass bottles. Hazardous waste is waste that is likely to be a threat to health or the environment like cleaning chemicals and petrol. Unscientific landfills may contain harmful contaminants that leach into soil and water supplies, and produce greenhouse gases contributing to global climate change. The auditor diagnoses the prevailing waste disposal policies and suggests the best way to combat the problems.

## **Kitchen waste of the College Canteen**

a) Water waste: There is no wastage of water in the college premises. RO system of water purification is installed for clean drinking consumption and it is drained to the garden through the underground pipeline.

b) Food Waste: Of about 400 persons daily in & through 'Dasoh' feed in which 5 to 6 Kg of kitchen and plate left over waste is again feed to cattle through local persons on daily basis.

E-waste, Chemical waste and Garden waste are disposed of with a proper care.

Biodiversity is biological and diversity. It refers to all the varieties of life that can be found on EARTH./ Plants animals, fungi and micro organisms are part and parcel of it.

Here in this college premises of 1 acre of green cover  
( $160 \times 256 / 10.72 = 3820.89$  Sq Mtr) is maintained through garden with different types of plants and shrubs, covering of 72% with that of roof concrete area.









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## LIST OF PLANTS SHARNBASAVESHWAR COLLEGE OF SCIENCE KALABURGI



Sl. No	Botanical name	Common name	Family	Number
1.	<i>Abrus precatorius</i>	Gulganji	Fabaceae	
2.	<i>Acacia ferruginea</i>	Banni mara	Fabaceae	2
3.	<i>Acalypha hispida</i>	Fox tail	Euphorbiaceae	1
4.	<i>Adathoda vasica</i>	Adusoge	Acanthaceae	4
5.	<i>Adenium obesum</i>	Desert rose	Apocyanaceae	8
6.	<i>Aegle marmelos</i>	Bael	Rutaceae	3
7.	<i>Aerva lanata</i>	Mountain knot grass	Amaranthaceae	2
8.	<i>Albizia lebbeck</i>	Rain tree	Fabaceae	3
9.	<i>Alternanthera brasiliana</i>	Joy weed	Amaranthaceae	30
10.	<i>Terminalia catappa</i>	Badam tree	Combrataceae	3
11.	<i>Allmanda cathartica</i>	Golden trumpet	Apocyanaceae	1
12.	<i>Aloe vera</i>	Lole sara	Liliceae	6
13.	<i>Anthurium</i>	Tail flower	Araceae	3
14.	<i>Hymenocallis littoralis</i>	Spider lily	Amarylidaceae	3
15.	<i>Annona squamosa</i>	Custard apple	Annonaceae	3
16.	<i>Artemisia absinthium</i>	wormwood	Asteraceae	1
17.	<i>Araucaria heterophylla</i>	Christmas tree	Araucariaceae	4
18.	<i>Artocarpus heterophyllus</i>	Jack fruit	Moraceae	1
19.	<i>Asparagus racemosus</i>	Shatavari/Tayi beru	Asparagaceae	6
20.	<i>Azdiracta indica</i>	Neem	Meliaceae	15
21.	<i>Baccopa monnieri</i>	Neerbrahmami	Scrophularaceae	2
22.	<i>Pogonatherum paniceum</i>	Bamboo grass	Graminae	106
23.	<i>Basella alba</i>	Basale soppu	Basselaceae	1
24.	<i>Piper betle</i>	Betel	Piperaceae	1
25.	<i>Bougainvillea spectabilis</i>	Paper flower	Nyctaginaceae	5
26.	<i>Bryophyllum pinnatum</i>	Air plant	Crassulaceae	5
27.	<i>Butea monosperma</i>	Muttugada gida	Fabaceae	1
28.	<i>Caesalpinia pulcherima</i>	Sankeshwar	Fabaceae	2
29.	<i>Casuarina equisetifolia</i>	Gali mara	Casuarinaceae	1
30.	<i>Cathranthes roseus</i>	Sadabahar	Apocyanaceae	6
31.	<i>Ceiba pentandra</i>	Silk cotton	Malvaceae	1
32.	<i>Centella asiatica</i>	Brahmi	Apiaceae	4
33.	<i>Cestrum nocturnum</i>	Night jasmine	Solanaceae	1
34.	<i>Chrysanthemum indicum</i>	Sevantage	Asteraceae	2
35.	<i>Cissus quadrangularis</i>	Nolli gida	Vitaceae	4
36.	<i>Citrus lemon</i>	Nimbe	Rutaceae	1
37.	<i>Coleous aroamticus</i>	Dodda pathri	Lamiaceae	4
38.	<i>Cocos nucifera</i>	Coconut	Arecaceae	4
39.	<i>Commiphora wightii</i>	Guggul	Burseraceae	1
40.	<i>Costus igneus</i>	Insulin plant	costaceae	2



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41.	<i>Crescentia cujeta</i>	Begger's bowl	Bignoniaceae	1
42.	<i>Codiaeum variegatum</i>	Croton	Euphorbiaceae	8
43.	<i>Cymbopogon citratus</i>	Lemon grass	Poaceae	1
44.	<i>Delonix regia</i>	Gulmohar	Fabaceae	2
45.	<i>Dieffenbachia</i>	Dumb cane	Araceae	15
46.	<i>Dracaena marginata</i>	Dragon tree	Asparagaceae	15
47.	<i>Duranta repens</i>	Goldendew drop	Verbenaceae	50
48.	<i>Eclipta alba</i>	Bringraj	Asteraceae	1
49.	<i>Eucalyptus globules</i>	Nilgiri	Myrtaceae	3
50.	<i>Ervatamia divericata</i>	Chakramallige	Apocynaceae	15
51.	<i>Eugenia jambolana</i>	Nerale	Myrtaceae.	2
52.	<i>Euphorbia milli</i>	Crown of thorns	Euphorbiaceae	17
53.	<i>Euphorbia pulcherima</i>	poinsettia	Euphorbiaceae	1
54.	<i>Euphorbia tirucalli</i>	Kalli tree	Euphorbiaceae	1
55.	<i>Ficus benjamina</i>	Weeping fig	Moraceae	23
56.	<i>Euphorbia tithymaloides</i>	Devil's backbone	Euphorbiaceae	20
57.	<i>Euphorbia triangularis</i>	Triangle ficus	Euphorbiaceae	2
58.	<i>Ficus bengalensis</i>	Banyan tree(aalad mara)	Moraceae	2
59.	<i>Ficus religiosa</i>	Arali mara	Moraceae	1
60.	<i>Gossypium hirsutum</i>	cotton	Malvaceae	6
61.	<i>Gymnema sylvestri</i>	Madhu nashini	Apocynaceae	1
62.	<i>Hemelia petans</i>	Firebush,	Rubiaceae	2
63.	<i>Hibiscus rosa-sinensis</i>	Daasavala	Malvaceae	8
64.	<i>Ixora coccinia</i>	West Indian jasmine	Rubiaceae	8
65.	<i>Jasminum sambac</i>	Mogra	oleaceae	1
66.	<i>Leucaena leucocephala</i>	Subabul	Fabaceae	8
67.	<i>Mangifera indica</i>	Mango	Anacardaceae	4
68.	<i>Majorana origanum</i>	Marugu	Lamiaceae	1
69.	<i>Manikara zapota</i>	Sapota,	Sapotaceae.	2
70.	<i>Michelea champaca</i>	Sampige	Magnoliaceae	1
71.	<i>Milingtonia hortensis</i>	Akash mallige	Bignoniaceae	10
72.	<i>Mimosops elengi</i>	Ranjala/Bakula	Sapotaceae	1
73.	<i>Morinda sps</i>	Nooni	Rubiaceae	1
74.	<i>Moringa oleifera</i>	Drumstick	Moringaceae	1
75.	<i>Mussaenda erythrophylla</i>	Bellotti	Rubiaceae	1
76.	<i>Nerium indicum</i>	Kanagilu	Apocynaceae	54
77.	<i>Nephrolepis</i>	Golden Fern Plant	Nephrolepidaceae	1
78.	<i>Nyctanthes arbortristis</i>	Parijata	oleaceae	1
79.	<i>Ocimum sanctum</i>	Tulsi	Lamiaceae	4
80.	<i>Ocimum basilicum</i>	Kamakasturi	Lamiaceae	2
81.	<i>Passiflora perviflora</i>	Kukkiballi	Passifloraceae	1
82.	<i>Peltaphorum pterocarpum</i>	Copper pod tree	Fabaceae	6
83.	<i>Phyllathus emblica</i>	Nellikaayi gida	Euphorbiaceae	1
84.	<i>Physalis minima</i>	Little Gooseberry.	Solanaceae	1
85.	<i>Piper longam</i>	Long pepper	Piperaceae	1
86.	<i>Pithecellobium dulce</i>	Vilayati Hunase	Fabaceae	2
87.	<i>Polyalthia longifolia</i>	Ashok	Annonaceae	25
88.	<i>Punica granatum</i>	Pomegranate	Punicaceae	2



89.	<i>Pongamia pinnata</i>	Honge mara	Fabaceae	2
90.	<i>Epipremnum aureum</i>	Money plant	Araceae	
91.	<i>Pterospermum acerifolium</i>	Kanak Champa,	Malvaceae	
92.	<i>Phyllanthus acidus</i>	Star gooseberry	Phyllanthaceae	
93.	<i>Quisqualis indica</i>	Kempu Malle	Combretaceae	
94.	<i>Ravulofia tetraphylla</i>	Sarpaganda	Apocynaceae	4
95.	<i>Rhapis excelsa</i>	Rapix palm	Arecaceae	27
96.	<i>Rheo discolor</i>	Christ in the cradle	Commelinaceae	20
97.	<i>Sansevieria trifasciata</i>	Mother -in-law's tongue	Asparagaceae	1
98.	<i>Sansevieria cylindrica</i>	Snake plant	Asparagaceae	2
99.	<i>Santalum album</i>	Srigandha	Santalaceae	1
100.	<i>Spathodia companulta</i>	Fountain tree	Bignoniaceae	1
101.	<i>Stercularia feotida</i>	Bastard poon tree,	Malvaceae	1
102.	<i>Syngonium podophyllum</i>	Arrowhead plant	araceae	25
103.	<i>Tabubia argentic</i>	Golden bell	Bignoniaceae	2
104.	<i>Tecoma stans</i>	Trumpet bush	Bignoniaceae	1
105.	<i>Tectona grandis</i>	Teak	Verbenaceae	8
106.	<i>Thuja occidentalis</i>	Thuja	Cupressaceae	10
107.	<i>Tinospora cordifolia</i>	Amruthaballi	Menispermaceae	1
108.	<i>Tradescantia pallida</i>	walking jew,	Commelinaceae	8
109.	<i>Tylophora indica</i>	Aadu muttada gida	Apocynaceae	1
110.	<i>Vitex negundo</i>	Lakki gida	Verbanaceae	2
111.	<i>Zamiculus zamifolia</i>	Zz plant	Araceae	1

Note: THE REMAINING AREA OF THE COLLGE CAMPUS IS FLOURISHED WITH BEAUTIFUL LAWNS

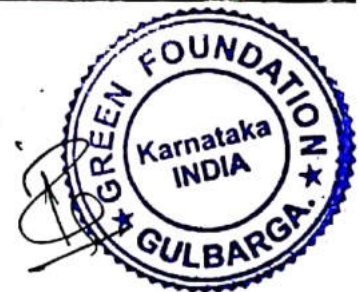
## Auditing for Green Campus Management

Green Campus is an environment which improves energy efficiency, conserving resources and enhancing environmental quality by educating for sustainability and creating healthy, living and learning environments. Green Campus rewards long term commitment to continuous environmental improvement from the campus community. Green colleges make a point to account for sustainable living when designing and operating their buildings. Many of their facilities incorporate natural lighting, improve air quality, and reduce energy and water use. Trees play an important ecological role within the urban environment, as well as support improved public health and provide aesthetic benefits to cities. Planting trees without consideration for their species location, and maintenance will not result in all of their wished-for benefits. It is essential to plan where the trees are planted and to plan their ongoing maintenance in order to maximize future benefits and to ensure long-term on tree survival and growth. Trees in a college yard improve air quality and can reduce temperatures with their cool shade. They are a small environmental n investment that will pay dividends for decades to come. In one year, a single mature tree will absorb up to 48 pounds of carbon dioxide from the atmosphere, and release it as oxygen. So while you are busy studying and working on earning those good grades, all the trees on campus are also working hard to make the air cleaner for us. Trees on our











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campus impact our mental health as well; studies have shown that trees greatly reduce stress, which a huge deal is considering that many students are under some amount of stress.

## **Auditing for Carbon Footprint**

Microcosms of the world at large, college campuses are great test beds for environmental change, and many students are working hard to get their administrations to take positive action. The initiatives that are emerging are models for the larger society, and the students pushing for them will be taking these lessons with them, too as they enter the work force after graduation. Foremost on the minds of green-leaning students today is global warming, and many are joining hands to persuade their colleges to update policies and streamline operations so that their campuses can become part of the solution. Commutation of stakeholders has an impact on the environment through the emission of greenhouse gases into the atmosphere consequent to burning of

fossil fuels, such as petrol diesel. 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. The question is what should be done to reduce carbon emissions. Often the challenge lies in choosing just the right approach that will contribute most to the objective. Naturally, the results of these interventions also have to be monitored and assessed;

Many colleges want to reduce their carbon dioxide (CO<sub>2</sub>) emissions. But that's not so easy, given that a range of factors determine carbon emissions, including mobility, waste, and energy consumption. So, gaining insight into CO<sub>2</sub> emissions is extremely important.

An important aspect of doing an audit is to be able to measure your impact so that we can determine better ways to manage the impact. In addition to the water, waste, energy and biodiversity audits we can also determine what our carbon footprint is, based on the amount of carbon emissions created. One aspect is to consider the distance and method traveled between home and college every day. It undertakes the measure of bulk of carbon dioxide exhaled by the organization through which the carbon accounting is done. towards sustainable development. It is necessary to know how much the organization is contributing

## **2.5 Methodology of Green Auditing**

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The criteria, methods and recommendations used in the audit were based on the identified risks. The methodology includes: preparation and filling up of this SB College, a questionnaire, physical inspection of the campus, observation and review of the documents, interviewing responsible persons and data analysis, measurement and recommendations. The methodology adopted for this audit was a three step process comprising of. . . . .

**1. Data Collection** - In data collection phase, exhaustive data collection as observation, survey was performed using different tools such communicating with responsible persons and measurements. Data collection was done from the primary sources.

Following steps were taken for data collection:

- The team visited each department, centres, Library,









canteen, gardens, 1 campus etc.

- Data on the general information was collected by observation and interview.
- The power consumption of appliances was recorded by taking an average value in some cases.
- Plants were identified using standard taxonomic books.
- Waste generated was measured directly at the source of production.

**2. Data Analysis** – Detailed analysis of data collected include: computation of energy consumption, analysis of latest electricity bill of the campus, understanding the tariff plan provided by the GESCOM the Energy supplying Company Gulbarga. Data related water usage were also analyzed using appropriate methodology.

**3. Recommendation** - On the basis of results of data analysis and observations, some steps for reducing power and water consumption were recommended proper treatment methods for waste were also suggested. The above target areas particular to the college was evaluated through questionnaire.

#### **Auditing for Water Management:**

Use of water in the college. With sources and flow transmission and lifting to overhead tanks, with pumping motors. With specifications of motors used for pumping water. With storing capacity. Water wastages and prevention and stoppage. Rain water harvesting and conservation of water. Are some of the criteria considered while auditing of water management.

#### **Rain water Harvesting:**

The total roof area is 56320 Sqft ie 5253 Sq Mtrs

The quantity of rain water collected through roof only and the same is harvested...

ie  $777 \times 5253 = 4081581$  Litres

[Here 777 is average rainfall in Kalaburagi in mm 5253 Sq Mtrs is Roof Area]

#### **Auditing for Energy Management:**

List out the ways that for use of energy in the college. Electricity, electric stove, microwave, LPG, firewood, Petrol, diesel and others. Are there any energy saving methods employed in specify. Type of bulbs tube used for illumination etc. in a month. Are any alternative energy sources/nonconventional energy sources employed/ installed in your college? photovoltaic cells for solar energy, windmill, energy efficient stoves, etc., How many CFL and LED bulbs has your college installed? Are considered for the auditing of energy management.

The collge management installed the Solar Roof Top Photo Voltaic system power generation of capacity of 354.36 KWp synchronized with GESCOM through net Metering system. This enables the clean and green energy process. Additionally by implementing CFL, LED bulbs for illumination with BEE Starred electrical appliances.

The reduction of CO<sub>2</sub> emission with SRTPV System is as under. . . . .

$0.932 \times 354.36 = 330$  Kgs of CO<sub>2</sub> reduced from the emission.

[0.932 kgs is the quantity of CO<sub>2</sub> reduction in emission for 1 KWp of Solar PV system installation.]







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Apart from this the Carbon dioxide Emission can be reduced by taking necessary precautions and enough awareness is mentioned through out the year among themselves between NSS, NCC, teaching, non teaching, Canteen and the administrative staffs through the routine life style and conversations very effectively and efficiently.

## **Auditing for Waste Management:**

The total strength of students, teachers and Non teaching staff in the College and their behavior is directly related to Waste management.

The wastage may be E-waste, Hazardous waste (toxic), Solid waste, Dry leaves, Canteen waste, Liquid waste, Glass, Unused equipment, Medical waste if any, Napkins, etc.. The quantity of the waste generated is calculated per day basis and waste treatment system is necessary and is implemented. Composting, Recycling, Reusing, Others if any can be considered. Here the wormy compost is installed for the garden waste. Water waste is drained for gardening.

## **Auditing For Green Campus Management**

Some of the following issues are to be considered....

1. The garden are in the college?
2. Do students spend time in the garden?
3. List the plants in the garden, with approx. numbers of each species.
4. Is there any plantations in your campus?
5. Use of any quantity of pesticides and fertilizers.
6. What are you doing with the compost generated?
7. Is there any botanical garden in your campus?
8. Is there any fruit yielding plants in the garden or college premises?
9. What is the involvement of students in the green cover maintenance?
10. What is the total area of the campus under tree cover?



## **Auditing for Carbon Footprint:**

The total strength of students and teachers in the college with all categories ladies & gents. Number of vehicles and bicycles used by the staff and students.

The some of the issues for auditing if carbon footprint are as number of two wheelers cars, common transportation, fuel consumption, average distance travelled, number of visitors with vehicles, number of LPG cylinders used in the canteen, the transportation of vegetables and other materials to canteen, and use of any other fossil fuels in the college etc etc are considered for the carbon footprint and carbon dioxide emission.

Burning of fossil fuels is the main source and cause of carbon dioxide release to the atmosphere. Carbon dioxide release for the stakeholders to reach the college is very high. It is contributing to the global warming and increasing the pace of climate change.







# Green Foundation

## Follow Up Action and Plans

Green Audits are exercises which generate considerable quantities of valuable management information. The time and effort and cost involved in this exercise is often considerable and in order to be able to justify this expenditure, it is important to ensure that the findings and recommendations of the audit are considered at the correct level within the organization and that action plans and implementation programs result from the findings.

Audit follow up is part of the wider process of continuous improvement. Without follow-up, the audit becomes an isolated event which soon becomes forgotten in the pressures of organizational priorities and the passing of time.

## Environmental Education

The following environmental education program may be implemented in the college before the next green auditing:-

- Training programs in solid waste management, liquid waste management, setting up of medicinal plant nursery, water management, vegetable cultivation, paddy cultivation, tree planting, energy management, landscape management, pollution monitoring methods, and rain water harvesting methods.
- Increase the number of display boards on environmental awareness such as – save water, save electricity, no wastage of food/water, no smoking, switch off light and fan after use, plastic free campus etc.
- Activate the environmental clubs
- Set up model rainwater harvesting system, rainwater pits, vegetable garden, roof garden, etc. for providing proper training to the students. Conduct exhibition of recyclable waste products
- Implement chemical treatment system for waste water from the laboratories.

## Awareness on Carbon Consumption

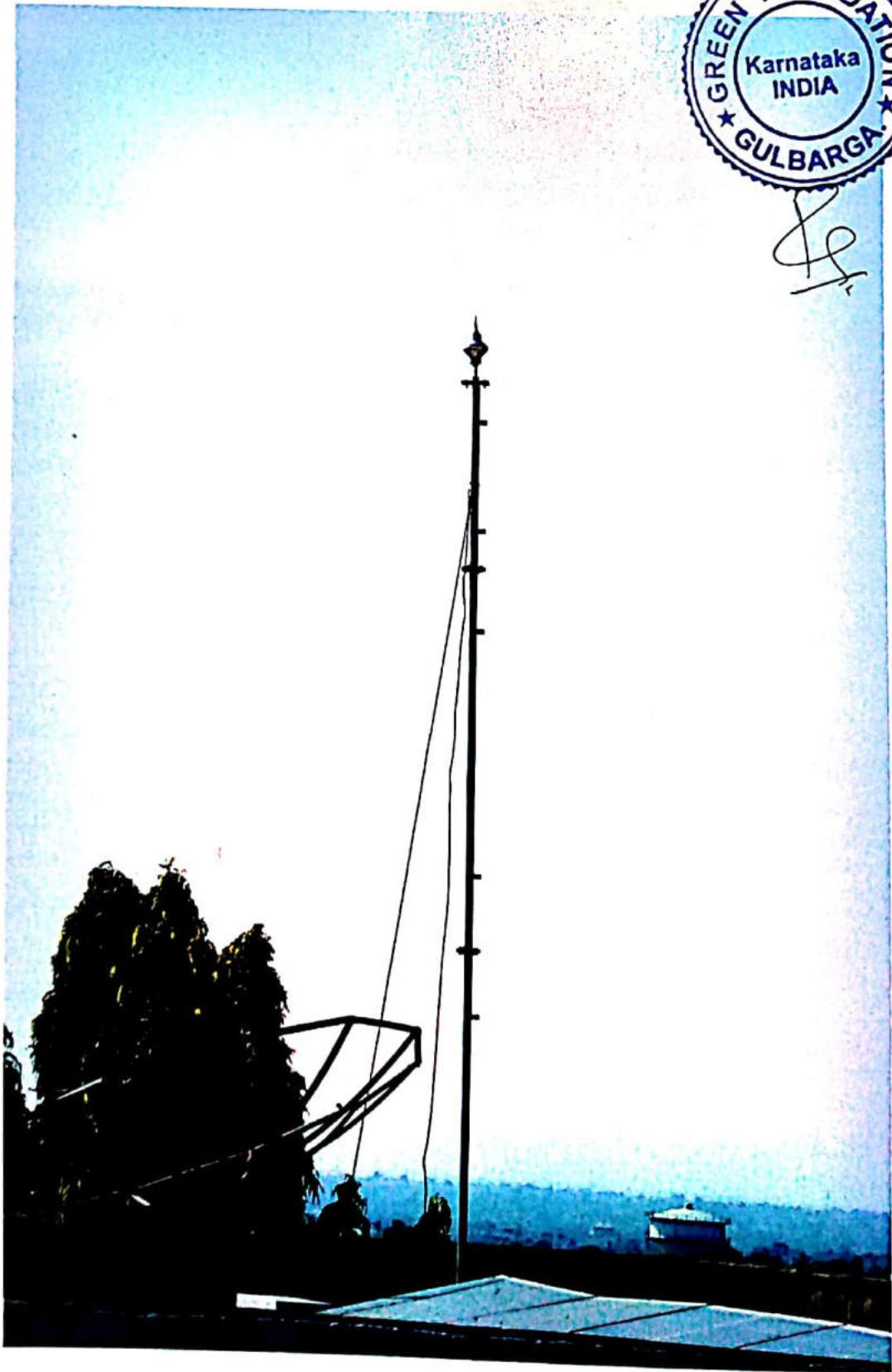
- Students and Staff members may be made aware of pollution caused by use of vehicles.
- The carbon consumption awareness programs on carbon emission at individual as well as social level will help to avoid air and noise pollution in the campus due to vehicles.

## Common Recommendations

- Adopt an environmental policy for the college
- Establish a purchase policy towards environmental friendly materials
- Introduce UGC Environmental Science course to all students
- Conduct more seminars and group discussions on environmental education
- Students and staff can be permitted to solve local environmental problems
- Renovation of cooking system in the canteen to save gas









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- Establish water, waste and energy management systems

## Follow Up and Action Plans

Green audits form a part of an on-going process. Innovative green initiative have to be designed and implemented every year to make the college environmentally sustainable. Follow up programs of green auditing recommendations should be done meticulously before the next audit.

## Next Audit

In order to promote continuous improvement it is recommended to conduct the next green auditing during the year 2021.

## Transparency of Green Audit Report

Green audit report is one of the useful means of demonstrating an organization's commitment to openness and transparency, then it should feel confident enough to make its green audit reports freely available to those who request them. As a basic rule, green audit reports should be made available to all.

**At a glance the Nature's Resources and its consumption:**

Sl No	Particulars	World's consumption	Indian's consumption
1	Water	135 LPD	92 LPD
2	Energy	2674 KW Per Capita	1181 KW Per Capita
3	Air Quality Index	Honululu-Hawaii 22	Satana- Madhya Pradesh 65 SB College of Science 95
4	Green Cover	30.71%	24.56%
5	Green Cover	30.71%	72.00% of SB College of Science
6	Carbon Foot Print	4.97 Tons of CO <sub>2</sub> /Capita	1.80 Tons of CO <sub>2</sub> /Capita 0.60 Tons of CO <sub>2</sub> /Capita

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