

RAJARAJESWARI COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi,
Affiliated to the Visvesvaraya Technological University, Belagavi



Criterion: 7.1 Academic Year: 2016-2020



7.1.6. Quality audit on environment and energy regularly undertaken by the institution and any awards received for such green campus initiatives:

Sl No	Description	Link
1	Green Audit	https://www.rrce.org/rrce/wp-content/uploads/2016/12/DVV-7.1.6.pdf
2	Energy Audit	
3	Environment audit	
4	Clean and green campus recognitions / awards	
5	Beyond the campus environmental promotion activities	

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Principal
Principal
RAJARAJESWARI
COLLEGE OF ENGINEERING
Ramohalli Cross, Bengaluru-74



Report

7.1.6. Quality audit on environment and energy regularly undertaken by the institution and any awards received for such green campus initiatives.

1. Green Audit

1.1: Introduction

The green audit analyses the environmental exercise inside and outside the campus which will have an impact on the eco-friendly atmosphere. Green audit can be defined as the process of assessing the environmental impact of an organization, process, project, product, etc. A green audit reveals ways in which you can reduce energy consumption. It was commenced with the motive of inspecting the effort in the institutions whose exercises can cause threat to the health of inhabitants and the environment. Through the green audit, a direction as how to improve the structure of environment and include several factors that have determined the growth of carried out the green audit. Green audit requirement of National Assessment and Accreditation Council (NAAC) is a self-governing organization of India which proclaims the institutions as Grade A, B or C according to the scores allotted during the accreditation.

1.2: Need for Green Auditing

Green auditing, it is the process of recognizing and deciding whether institutions practices are eco-friendly and sustainable. Traditionally, humans are good and efficient users of natural resources. But over the period of time there is an excess use of resources like energy, water, is becoming habitual for everyone especially, in common areas. Now, it is necessary to check whether our processes are consuming more than required resources? Whether we are handling resources carefully? Whether Green audit regulates all such kind of implementations and gives an structured way of natural resource utilization. In the era of climate change and resource depletion it is necessary to verify the processes and convert it in to green and clean one. Green audit furnish an approach for it. It also increases overall awareness among the people working in institution towards an environment.



1.3. Objectives of Green Audit

1. To inspect the current practices, which can effect on environment such as of resource utilization, waste management etc.
2. To recognize and examine significant environmental issues.
3. Setup a goal, vision, and mission for Green practices in a campus.
4. Set up and implement Environment Management in various departments.
5. Continuous assessment for betterment in performance in green.

1.4: Benefits of Green Audit to Educational Institutions

1. It helps in protecting the environment in and around the campus.
2. Confess the cost saving methods by waste minimization and energy conservation.
3. Entitle the organization to setting a better environmental performance.
4. It depicts good image of institution through its clean and green campus.
5. Finally, it helps in building positive impression through green initiatives for the upcoming NAAC visit.

1.5: Major initiatives undertaken

1. College has prepared Green Environmental policy and has taken efforts for sustainable development on the college campus.
2. College has installed solar panels and has further plans of its expansion
3. The institution has successfully completed and recently commissioned a BIO gas plant to handle 500 kg/day of solid waste.
4. Institution replaced of CFL tube lights with LED lights for energy conservation.

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5. College has works to maintain biodiversity on the campus and also participates in preventing pollution in society through various drives during Ganesh Visarjan etc.

6. College has included environment protection and management subjects in the curriculum more particularly in Civil Engineering.

The college has also adopted the 'Green Campus' system for environmental conservation and sustainability. There are main three pillars i.e. zero environmental foot print, positive impact on occupant health and performance and 100% graduates demonstrating environmental literacy. The goal is to reduce CO₂ emission, energy and water use, while creating an atmosphere where students can learn and be healthy. The 'Green Campus' has been active since last 2 years both as an assembly group of sub committees that actively promote the various projects. The college administration works on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity.

1.5 Internal Green Audit Report

1.5.1. Brief about college

a. Name : RajaRajeswari College of Engineering

b. No. of Branches : 9 (CSE,ECE,ISE,CIV,EEE,ME,AI&ML,MBA,MCA)

c. No. of Students : 2310

d. No. of faculty members: 192

e. No. of non-teaching members : 50

f. No. of Buildings : 6

g. Total campus Area : 36855 m² (9 acres 4 guntas)

h. College Building spread Area : 6330 m²

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- i. Girls Common room : 1 – 120 m²
- j. Boys Common room : 1 – 120 m²
- k. Garbage Collection bins : 120 no.
- l. Class Rooms : 65 – each class room area = 110smt
- m. No. of Labs : 7+7+4+8+8+10+1+3(MBA+MCA) = 50 nos.
- n. R&D : 1+1+1+1+1 =5
- o. IOT : 1
- p. Seminar hall : 1+1+1+1+1+1+1 = 7
- q. Smart classroom : 1
- r. College Library : 1
- s. Dept. Library: 12
- t. First Aid/Sick Room :1 - 10 m²

	No. of Students	No. of Teachers	No. of Non teaching staff
Male	1383	122	26
Female	927	70	24

1.5.2. Environmental Policy of the College.

RajaRajeswari College of Engineering is an eco-friendly environment college. It's a self-motivated college to enhance and experience the green campus by influencing student activities and events like plantation, plastic free campus, systematic arrangement of plants – medicinal, Flowering, Climbers and Creepers, Herbs and Shrubs.

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Environmental Policy: Faculty and staff along with students of RajaRajeswari College of Engineering is committed for the rules and follows the regulations of sustainable development.

The following are the keen areas of implementation.

- Effective utilization of solar energy by installing solar bulbs and solar water heater at girls and boys hostels.
- Giving proper awareness to the students and staff about sensible usage of water.
- To increase the digitalization in office and minimizing the pen-paper work.
- Using the garden waste as fertilizer to avoid chemical in campus environment.
- To reduce the sound pollution inside the campus area.
- To maintain plastic free campus.
- To nurture the Flora and Fauna, since it gives the natural feel in this concrete world.
- To bring in use the 'Rain Water Harvesting' on the campus.
- To maximize the use of ICT and minimize the use of paper. It will help to go towards 'Paperless Office'.
- To use the solid waste through vermin-compost on the campus and use it as a fertilizer.

1.5.3: CONSTITUTION FOR GREEN AUDIT:-

The Green Audit is carried out as per the environmental policy of the RRCE and Green audit checklist. The aim of the audit is to check the existing enactments and furnish the advice for the development of environmental policy and practice in the zone of:-

1. Waste Management (Solid waste management and E-waste management).
2. Water conservation and management,
3. Tree plantations
4. Bio-diversity and threatened/ endangered species preservations,
5. Energy use and conservations,
6. Eco-friendly campus,
7. Green environment and clean campus.

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1.5.4: INTERNAL AUDITORS FOR GREEN AUDIT:-

Sr.No.	Name of Auditor	Designation
1	DR. Chandrashekar T, Principal, RRCE Bengaluru	Chairman
2	Dr. Balakrishna R, Dean, RRCE, Bengaluru	Member
3	Dr. D C Sharma, Professor, Dept of Civil Engg, RRCE, Bengaluru	Member
4	Dr. Savitha B, Assoc. Professor, Dept of Mathematics, RRCE, Bengaluru	Convener

1.5.5: WATER MANAGEMENT

Water management is the control and movement of water resources to minimize damage to life and property and to maximize efficient beneficial use. Good water management of dams and levees reduces the risk of harm due to flooding. Water resource management is the activity of planning, developing, distributing and managing the optimum use of water resources. It is an aspect of water cycle management.

1.5.6: ENERGY MANAGEMENT

DIESEL GENERATOR AND TRANSFORMER DETAILS

The RajaRajeswari College of Engineering has three Diesel Generator, three control panels and one transformer installed in the campus. The Diesel generator and transformer details and its capacity is given in detailed in the table mentioned below.

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S.No	Equipment Name	Make	Capacity in (kVA)
1	Diesel Generator - 01	Cooper corp	180
2	Diesel Generator – 02	Cummings	125
3	Diesel Generator – 03	TPS	82.5
4	Transformer -01	Vyoma switch gear	75



Photo.1: Diesel generator 01

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Photo.2: Diesel generator 02

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Photo.3: Diesel generator 03

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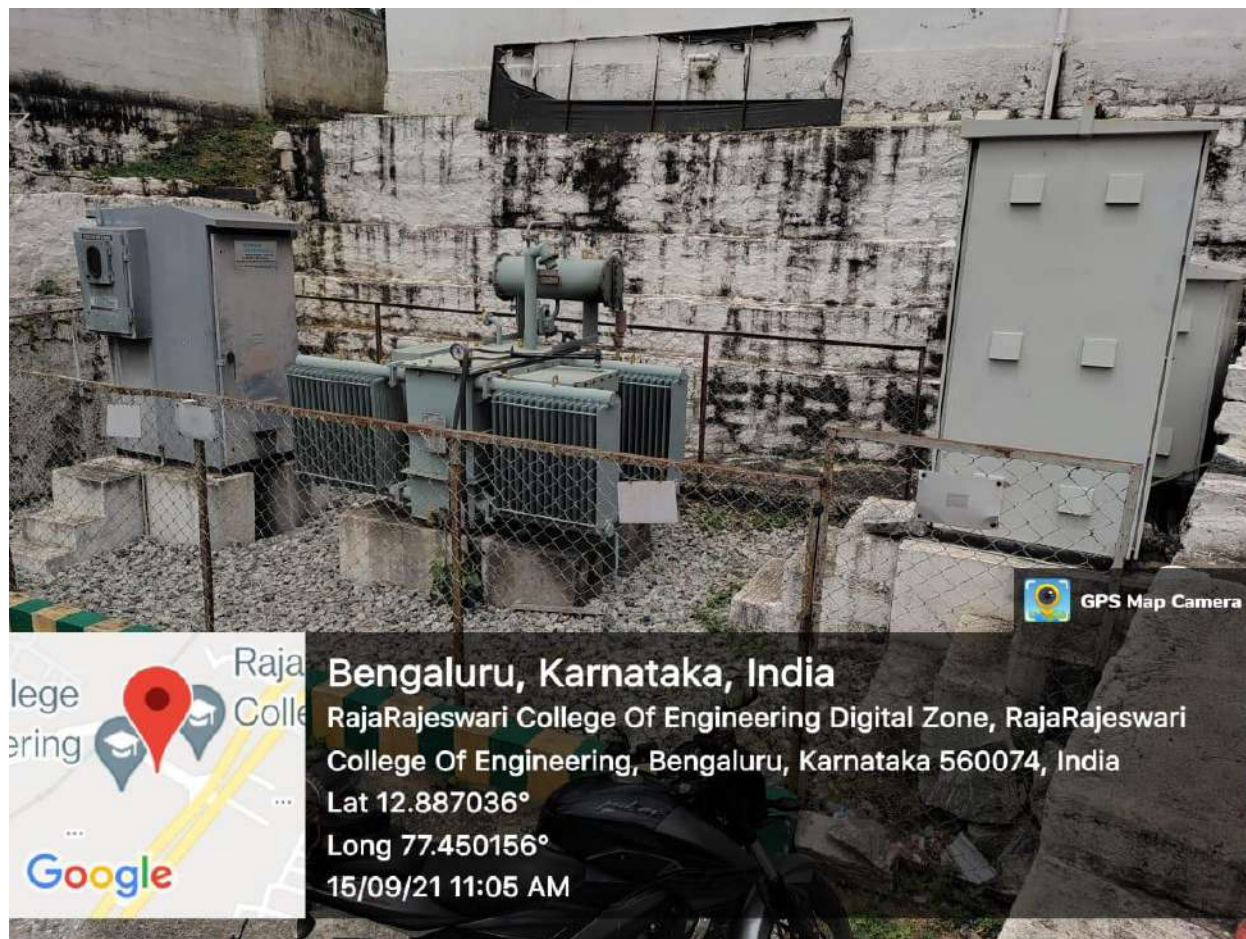


Photo.4: Transformer

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Phot.5: Sensor based Control panel 01 and control panel 02

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Phot.6: Control panel 03

1.5.7: MAJOR RECOMMENDATIONS:

1. College should install Rain water harvesting.
2. College should install Hazardous waste disposal through authorized agency
3. College should install solar photovoltaic energy harnessing to reduce electric power consumption
4. More number of Energy and flow meters to be installed for monitoring of energy and water consumption.
5. College should maintain the legal register for the applicable environment related regulations and comply with this as per the requirement.

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1.5.8: EXECUTIVE SUMMARY

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institute which will lead for sustainable development.. Being a premier institution of higher learning, the college has initiated 'The Green Campus' program, that actively promote the various projects for the environment protection and sustainability. The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Environmental Policy adopted by the institution. It works on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity. With this in mind, the specific objectives of the audit are to evaluate the adequacy of the management control framework of environment sustainability as well as the degree to which the Departments are in compliance with the applicable regulations, policies and standards. The criteria, methods and recommendations used in the audit were based on the identified risks.

The Green Audit is the process of accessing the environmental impact of an organization. It helps to know whether the institution is implementing eco-friendly and go green practices in the campus.

Principal

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RAJARAJESWARI

COLLEGE OF ENGINEERING

Ramohalli Cross, Bengaluru-74