

#### AN ISO 9001-2015 CERTIFIED SAFA COLLEGE OF ARTS AND SCIENCE

(Affiliated to University of Calicut) **POOKKATTIRI, EDAYUR (PO), VALANCHERY, Malappuram Dist. Kerala - 676552 ©** 0494 2988810, 2988808 ⊠ safacollegeoffice@gmail.com ⊕ www.safacollege.ac.in

## ENVIRONMENT, GREEN AND ENERGY AUDIT REPORT 2021-22

Environment, Green and Energy Audit Report 2021 - 22

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Safa Colleage Of Arts And Science

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## **ENVIRONMENT**, **GREEN AND** ENERGY **AUDIT REPORT** 2021-22



#### AN ISO 9001-2015 CERTIFIED **SAFA COLLEGE OF ARTS AND SCIENCE**

(Affiliated to University of Calicut)

POOKKATTIRI, EDAYUR (PO), VALANCHERY, Malappuram Dist. Kerala

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POOKKATTIB EDAYNE: 6765M

Safa Colleage Of Arts And Science

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### AUDIT ASSESSMENT TEAM

#### MEMBERS PRESENT

SL.No	Name & Designation	In charge	Signature
1	Mr. Anas E (Lead Auditor ISO 1400:2015)	External Assessment Member	an
2	Dr. Shahida AT (Lead Auditor ISO 1400:2015)	External Assessment Member	Sela-
3	Dr. Sabique MK (Lead Auditor ISO 1400:2015)	External Assessment Member	hig

30.12.2021



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## Concept

An environment management system is a quantitative and qualitative data system for tracking air, water, and waste and obtaining operational statistics to improve performance. It helps provide guidelines to maintain a clean and green environment that ensure sustainability. It provides a solution with a 360° view of the campus, making it easier for owners / managers / environmentalists to collaborate, measure, control and mitigate environmental impacts. Ultimately it leads to raising the living standards of humans, animals and plants. Due to changes in environmental conditions, global warming, and the impact of growing human population, green campus initiatives are neccessary around the world. It aims to create a sustainable and eco-friendly campus for participants.

Environmental management audits, such as environmental audit, green campus audit, energy audit are well-developed processes for extracting information about an organization that provide an actual assessment of how organizations are taking action to protect the environment. In order to maintain the eco-friendly atmosphere of an institution, well developed environmental objective and targets should be undertaken to reduce the harmful effects to some extent. These audits can significantly reduce environmental pollution on campus, which in turn reduces the overall impact of global warming. According to government law, all institutions and organizations must comply with environmental legislation and ensure that their activities do not harm the environment.



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# Introduction

The growth of a country starts from its educational institutions, where ecology is considered as an important component of development related to the environment. Educational Institutions today are becoming more sensitive to environmental factors and presenting more ideas to make them eco-friendly. In order to protect the environment within the campus, educational institutions adopt different perspectives on promoting energy savings, recycling waste, reducing water consumption and addressing environmental issues such as water storage. Various types of adverse environmental impacts to the activities pursued by colleges. Environmental auditing is the process of examining the environmental performance of an organization against its environmental policies and objectives.

An environmental audit is a formal examination of the impact on a college environment. As part of such training, an internal environmental audit is conducted to assess the actual situation on campus. Environmental audit is a useful tool for determining how and where a college uses the most energy, water or resources; The college can then think about how to implement the changes and make savings. It can also be used to determine the type and amount of waste, be it used for a recycling project or to improve a waste reduction plan. Environmental auditing and implementation of mitigation measures is a win-win situation for all colleges and students.



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## **Overview of** Institution

Safa College of Arts & Science, towering over a group of Safa institutions, was established in 2009 and is affiliated to the University of Calicut. Safa Group of institutions was implanted under Orphans' Educational and Charitable Trust by honourable Sir VP Kunhimoideen Kutty two decades ago with a vision of upliftment of socio-economic feebler communities of the society. The college is located at Pookkatiri on a lovely hillside overlooking a vast panorama of lush greenery in the midst of a spacious campus, 5 km away from Valanchery towards Perinthalmanna in Malappuram District. On its way towards quality enrichment, the college is steadfast to achieve NAAC accreditation. The institution is renowned for its outstanding holistic education, with various academic programs affiliated under University of calicut, Kerala. Around 5000 students has acquired education in various courses in our college from past 12 years. As a non-governmental organization, Safa College of Arts and Science has set up the most attractive educational cost rates conceivable, giving admittance to understudies from different parts of Kerala. Our primary areas of concentration include: education and literacy, health and wellness, sustainability and security, peace and diplomacy, charity, psychology and human services, business and economic development, ecological and environmental studies, to make our students to create unique reasoning, ideas and experiences for a better life.



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## **Objectives** and Scope

- I. Benchmarking for environmental protection initiatives.
- II. Sustainable use of natural resources in the campus.
- III. Embracing innovative learning through scholastic and co-scholastic activities.
- IV. Empowering and equipping students with skills and knowledge for their future needs.
- V. Facilitating experiential learning and social responsibility through collaborative programmes.
- VI. Uplifting socio-economically challenged communities by providing opportunities and educational assistance.
- VII. Promotion of human values, service to others and inclusiveness.
- VIII. Enhancement of College profiles.



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# About Us

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# Vision

Our vision is to become a centre of excellence in higher education, to produce innovative and socially responsible citizens from all sections of society. These graduates will contribute to the progressive and sustainable development of our nation.

# Mission

We are devoted to facilitate transformative and experiential learning and to increase equitable opportunities. We will also encourage scientific inquiry and strive to transform our students into socially responsible and conscientious citizens.



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✓ EXCELLENCE
 ✓ INCLUSIVENESS
 ✓ DIVERSITY

✓ ETHICS & DIGNITY
 ✓ SOCIAL COMMITMENT
 ✓ SUSTAINABILITY

C INTEGRITY



The institutes offer various undergraduate programs and 3 Post graduate programs under the affiliation of University of Calicut. At present institution also offer several addon courses and certificate courses along with the university affiliated programmes.

SI No	Programmes	UG/PG	Year Of Introduction
1	M.Com( Finanace)	Post	2013
2	MA English	Graduate	2018
3	MA Economics	Programme	2019
4	BA English Language &Literature		2009
5	BA Economics With Foreign Trade		2010
6	BA Journalism & Mass Communication		2013
7	Bachelor Of Social Work		2013
8	BSc Physics	Under	2009
9	BSc Mathematics	Graduate Programme	2013
10	BSc Psychology		2020
11	Bachelor Of Computer Applicaton		2010
12	Bachelor of Business Administration		2009
13	B.Com With Computer Application		N2009

#### **DETAILS OF UG & PG PROGRMMES**

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#### DETAILS OF ADD ON COURSES AND CERTIFICATE COURSES

(Data for the Latest Completed Academic Year)

	Parent Department	Add On Certifi- cate
Data Analysing Programme: Statis- tical Package For Social Sciences (SPSS)	PG Department Of Economics	
Diploma In Tally Erp9.0 Accounting Course	PG Department Of Commerce	
Artificial Intelligence	Department Of Computer Application	
Introduction To Research	PG Department Of Commerce	
Economics And Life	PG Department Of Economics	
Logistic Management	Department Of Management Studies	
Fist Aid And Postural Deformities	Department Of Physical Education	
Approaches To Gender Studies	Pg Department Of English	
Document Translation	Department Of Physics	
Introduction To Clinical Psychology	Department Of Osychology	
Life Skill Education	Department Of Social Work	
Online Journalism	Department Of Jouralism	
Digital Electronic Circuites	Department Of Physics	
New Technology In It	Department Of Computer Application	
	tical Package For Social Sciences (SPSS) Diploma In Tally Erp9.0 Accounting Course Artificial Intelligence Introduction To Research Economics And Life Logistic Management Course Fist Aid And Postural Deformities Approaches To Gender Studies Document Translation Introduction To Clinical Psychology Life Skill Education Online Journalism Digital Electronic Circuites	tical Package For Social Sciences (SPSS)PG Department Of EconomicsDiploma In Tally Erp9.0 Accounting CoursePG Department Of CommerceArtificial IntelligenceDepartment Of Computer ApplicationIntroduction To ResearchPG Department Of CommerceEconomics And LifePG Department Of EconomicsLogistic ManagementDepartment Of Management StudiesFist Aid And Postural DeformitiesDepartment Of Physical EducationApproaches To Gender StudiesPg Department Of EnglishDocument TranslationDepartment Of PhysicsIntroduction To Clinical PsychologyDepartment Of Social WorkOnline JournalismDepartment Of JouralismDigital Electronic CircuitesDepartment Of Physics



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#### **DETAILS OF CLUBS & FORUMNS**

1       Nature / Forestry club       Coordinator: Activities: 1. Day observation related to nature         1       Forestry club       Activities: 1. Day observation related to nature         2       Activities: 1. Day observation programmes         3. Nature conservation programmes       3. Nature conservation programmes         4. Nature education camp       Nature education camp         2       Bio Diversity club       Coordinator: Fayida Farhath AP, Assistant Professor of Physics         2       Bio Diversity club       Activities: 1. Conservation of biodiversity programmes         2       Bio Diversity club       Activities: 1. Conservation of biodiversity programmes         2       Bio Diversity club       Activities: 1. Conservation of biodiversity programmes         3. Conduct detailed survey on endemic biodiversity habitat in and around the campus and prepare proposal to focus special attention for conservation.         4. Nature education camp/ field trips       S. "Jeevadhara' total waste management project.         6. Origami' life skill and employability program for the member students       Organic farming         8. Soil collection and testing       Integrated nutrient management (INM)         10. Digital herbal garden (New project looking for)       In Butterfly park (New project looking for)	SI no	Name of the club	Description
<ul> <li>Fayida Farhath AP, Assistant Professor of Physics</li> <li>Activities: 1. Conservation of biodiversity programmes</li> <li>Avareness programmes on biodiversity and it sustainable use .</li> <li>Conduct detailed survey on endemic biodiversity habitat in and around the campus and prepare proposal to focus special attention for conservation .</li> <li>Nature education camp/ field trips</li> <li>"Jeevadhara' total waste management project.</li> <li>Organic farming</li> <li>Soil collection and testing</li> <li>Integrated nutrient management (INM)</li> <li>Digital herbal garden (New project looking for)</li> </ul>	1	_	Abdul Shukoor PK, Assistant Professor of Economics Activities: 1. Day observation related to nature 2. Awareness programmes 3. Nature conservation programmes
Nhav	2	Bio Diversity club	<ul> <li>Fayida Farhath AP, Assistant Professor of Physics</li> <li>Activities: 1. Conservation of biodiversity programmes</li> <li>2. Awareness programmes on biodiversity and it sustainable use .</li> <li>3. Conduct detailed survey on endemic biodiversity habitat in and around the campus and prepare proposal to focus special attention for conservation .</li> <li>4. Nature education camp/ field trips</li> <li>5. "Jeevadhara' total waste management project.</li> <li>6. 'Origami' life skill and employability program for the member students</li> <li>7. Organic farming</li> <li>8. Soil collection and testing</li> <li>9. Integrated nutrient management (INM)</li> <li>10. Digital herbal garden (New project looking for)</li> </ul>

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3	Tourism club	Coordinator: <b>Abdul Shukoor PK, Assistant Professor of Economics</b> Activities: 1. Participated district and state level camp 2. Visited to kerala flood affected area 3. Webinar on challenges faced by tourism due to covid-19 4. World tourism day celebrations on 28th Septeber 2020
		Coordinator: Sandra M, Assistant Professor of Social Work
		Activities: 1. Invited talks
		2. 'Opparam' - visited to paralyzed and marginalize
		People
		3. Audio library for blind
		4. 'Thanal' - tree plantation
	SIP	5. Distributed study equipment for poor students
4	(Students	6. Handover the tailoring machine for children's
4	Initiatives in	Home – santhi bhavan, randathani
	Palliative)	7. Blood donation help desk
		8. Palliative care day celebration.
		9. Eid-challenge-food for palliative care patients
		10. Letter for wheel-chaired patients during covid 19
		11. Lifesaving equipment distribution
		12. Poem review writing competition on
		world refugee day
	POOKKATTIN	Nol
	C EDAYUR-6765M CA	PRINCIPAL
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5	Womens' Development Cell (Wdc)	Coordinator: <b>Fathima Suhara C, Assistant Professor of Economics</b> Activities: 1. Day observation related to women equality day and gender equality day 2. Gender sensitization programmes 3. Invited talks 4. Pre-marital counselling 5. Life skill training 6. Employability program 7. Health awareness class 8. Women empowerment program in collaboration with kudumbasree and child care department
6	NSS (National Service Scheme)	Coordinator: <b>Shafeeque P, Assistant Professor of Arabic</b> Activities: 1 June 5: Environment day celebration 2. One day residential orientation for new comers 3. 'Shiksha' - an educational attainment program to the marginalized people 4. Pre-marital counselling 5. Koythulsavam 6. Cleaning 7. Several community based extension activities in association with panchayath and municipalities 8. 7 Day nss camp
	POOKKATTIE POOKKATTIE COAYEE 676559 Date 125 # 35	PRINCIPAL Safa College of Arts And Science Pookkattiri, Edayur-676552

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# Certificate

This is to certify that an "Environmental Audit" for SAFA COLLEGE OF ARTS AND SCIENCE, POOKKATTIRI Edayoor PO, Valanchery, Malappuram District. Kerala 676552 has been conducted in December 2021 to extracting information about the institution that provides a realistic assessment of how the institutions and organizations take steps towards protecting the environment.

Malappuram 31.12.2021

Dr.Sabique MK Coordinator

Dr. SABIQUE MK

Contiled Lead Auditor

(ISD 14001:2015)

Rug. No. 2105210721010106

Dr.Shahida A T Auditor

Dr. SHAHIDA A T

Certified Lead Auditor

(ISO 14001:2015)

Mr. Anas E Auditor

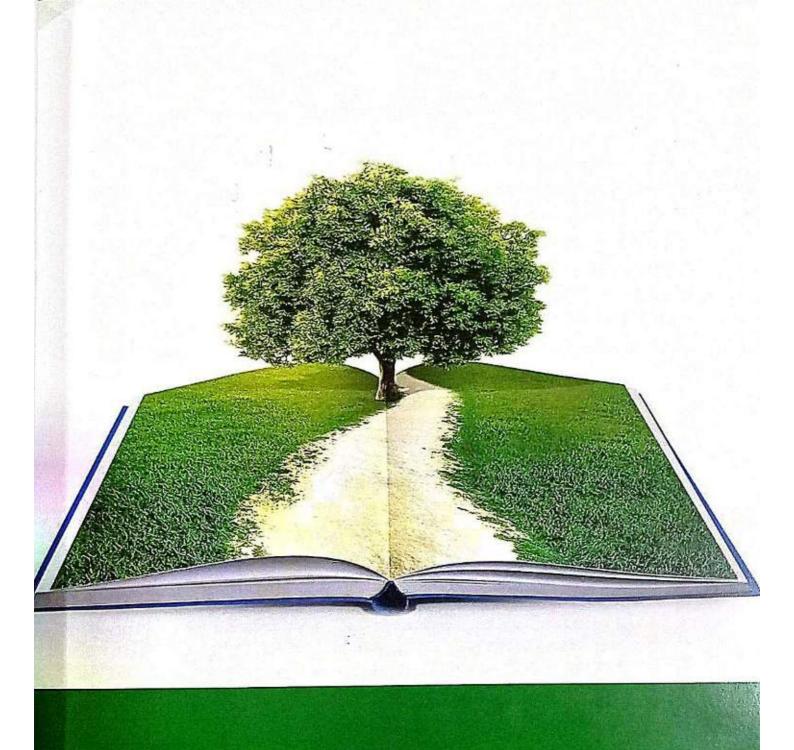
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# Environmental Audit

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## Introduction

Environmental Audit is a well-developed process of extracting information about an Institution or Organization that provides a realistic assessment of how the Institutions and Organizations take steps towards protecting the environment. In order to conserve or protect the eco-friendly atmosphere of an Institution and Organization, well-developed environmental objectives and targets should be undertaken to reduce the impact of human activity to a greater extent. These audits help provide guidelines to minimize the environmental pollution within the campus remarkably which in turn reduce the impact of global warming as a whole. It provides a solution at 360° view of the surrounding campus and makes it easy for Owners / Managers/ Environmentalists to collaborate, measure, control, and reduce environmental impacts. Finally, it leads to enhancing the quality of life for human beings, animals and plants.

This audit is a systematic, documented, periodic and objective review by a regulated entity of facility operations and practices related to meeting the environmental requirements. This audit is undertaken by observing, measuring, recording the data and collecting and analyzing the various components in an organization related to environment.

## **Objectives of Environmental Auditing**

- · Define sources, quantify types of waste being generated
- · Collate information on unit operations, raw material, products, water usage and wastes
- · Highlight process inefficiencies and areas of poor management
- Help in setting targets for waste reduction
- Permit the development of cost-effective waste management strategies
- Raise awareness in the workforce regarding the benefits of waste reduction
- Help to improve process efficiency
- · Assess the quantity of water usage within the institution
- Find out various sources of organic and solid waste generation and mitigation possibilities.
- Document the waste disposal system
- Bring out a status report on environmental compliance.

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## Methodology

Methodology includes: data collection, campus physical inspection, monitoring and review of documentation, and data analysis.

# **Requirements met by the institution or practices existing**

- 1. Internal environment procedure has been developed in the institution by constituting a body consisting of faculty members and students
- 2. Programmes for the achievement of environmental objectives and targets were implementing in the institution
- 3. Responsibilities has been assigned for programs at functional level through clubs and activities
- 4. The following environmental aspects considered in the campus
  - A. Drinking water
  - B. Waste water treatment facility
  - C. Solid waste management facility
  - D. Renewable energy (Solar panel)
  - E. Air ventilations in classrooms and seminar hall
  - F. Biogas plant
  - G. Rain harvesting system
  - H. Incinerator for sanitary napkin disposal
  - I. Housekeeping or storage area
- 5. Signed MoU with some NGOs and Govt bodies to ensure eco-friendly campus maintenance.
- 6. Functioning Forestry club, Biodiversity club and National Service Scheme among students on environmental conservation
- 7. With aim of providing awareness programs for environmental monitoring and eco system maintenance to the stakeholders
- 8. Conducting outreach programs for dissemination of natural resources and environmental protection
- 9. Composting pits implemented
- 10. College management is provides skills, finance and support for environmental protection measures
- 11. Steps to ensure the absents of mosquitoes, vectors, or predators identified in the campus which are the root cause of various diseases spreading to students
- 12. Conducting day observations related to the nature and conservation
- 13. Conducted survey on biodiversity in and around the campus and prepare project based on it for the environmental conservation

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## **Recommendation/Suggestion**

- 1. Sign boards indicating the following to be created
  - A. plastic free campus
  - B. tobacco free campus
  - C. don't walk on the lawns
  - D. don't pluck the flowers
- 2. Separate boards to be used for the following (with names in English, Malayalam and scien tific name). A QR code also can be implemented with short descriptions.
  - A. Fruit garden
  - B. Vegetable garden
  - C. Butterfly garden
  - D. Herbal garden
- 3. Some schemes of Government can be implemented for environmental protection of the campus like Swatch Bharath Abhiyan and Clean India Mission
- 4. Recycling of kitchen wastes collected from hostels and other places should implemented properly
- 5. Steps should be taken for organic waste management, segregation of waste and resume methods
- 6. Bicycles, Battery operated vehicles or low carbon emitting vehicles can be used for the transportation in the campus
- 7. Projects or dissertation works on environmental science and management can be carried out by students and teachers in collaboration concerned bodies
- 8. Strategies should be adopted for E-waste management and biochemical waste management in the campus
- 9. Digital or automatic technology to reduce consumption of paper, gas, water and energy can implemented
- 10. Number of Waste bins to be increased.
- 11. As the institution having wide variety of trees and plants, list of trees and its variety can be prepared
- 12. As the campus situating in high land a wind mill can thought of
- 13. There are some spots in the campus that can constitute as view points
- 14. Keep details of services and maintenance on the drinking water machines for ensuring its cre ibility among users

### Conclusion

The institution has taken initiatives to conduct environmental audit. Through these practices a team consisting of faculty members and students were constituted. The institution could identify its own resources and areas to be improved in environmental activities. The recommendations of audits to be included in Annual Programs Planning and incorporated with academic activities.

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# CERTIFICATE

This is to certify that an "Green Campus Audit" for SAFA COLLEGE OF ARTS AND SCIENCE, POOKKATTIRI Edayoor PO, Valanchery, Malappuram District Kerala 676552 has been conducted in December 2021 to asses sustainable development practices on biodiversity and other resources, measures to reduce resource wastage, and improve resource quality and sustainability.

Malappuram

31.12.2021

Dr. Shahida A T.

Coordinator

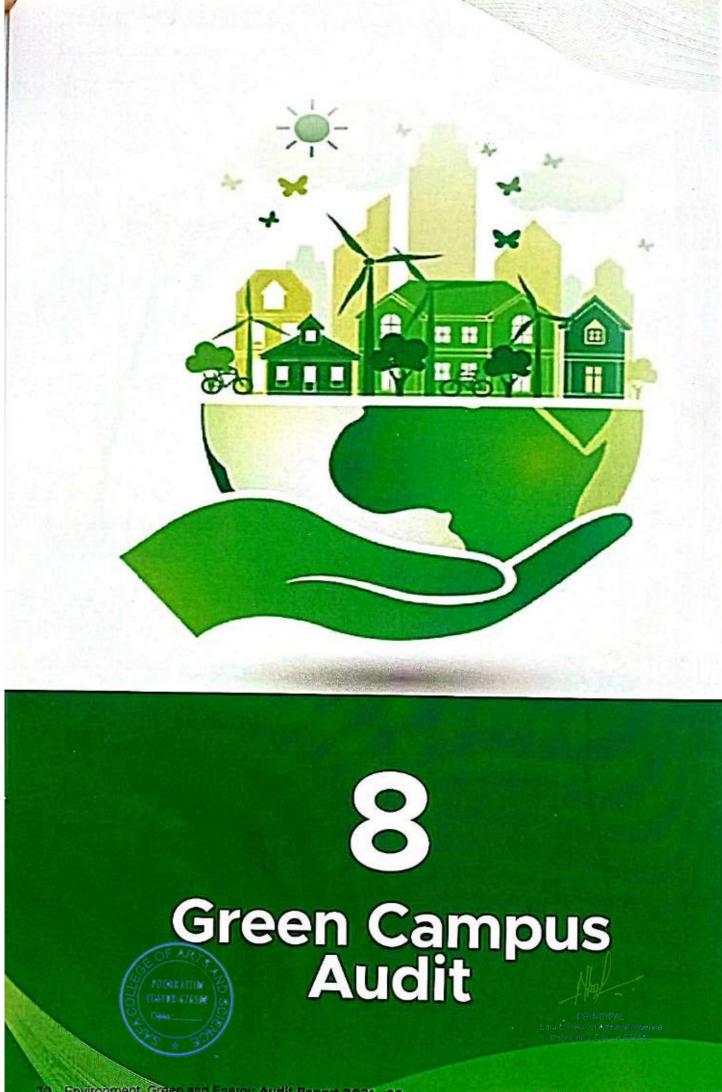
SHAHIDA A T (ified Lead Auditor ' SO 14001:2015)

Auditor

Dr. Sabique M K

Auditor

ANASE Dr. SABIQUE MK Certified Lead Auditor Certified Lead Auditor (ISO 14001:2015) (ISO 14001:2015). Un No. 2106170721010121 Reg. PRINCIPAL Safa College of Arts And Science Pookkattiri, Edayur-676552



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## Introduction

The Green Audit is a tool for identifying opportunities for sustainable development practices, improving environmental quality, improving health, hygiene and safety, reducing liability, saving money, and achieving values of virtue. Green audit is a process of systematic identification, measurement, recording, reporting and analysis of the components of the institute's environmental diversity. The goal of Green Auditing is to help the organization implement sustainable development practices and to establish role models for the community and young learners. It can create health awareness and promote environmental awareness, values and ethics. This makes staff and students better aware of the green impact on campus. If self-inquiry is a natural and inevitable aspect of the growth of quality education, then institutional self-inquiry can be said to be the natural and inevitable aspect of the growth of an educational institution with a quality. As environmental sustainability is becoming more and more important concern for the country, the role of higher education institutions in relation to environmental sustainability is becoming more and more prevalent.

## **General and Specific Objectives of Green Auditing**

The general objective of the Green Audit is to prepare a basic report on biodiversity and other resources, measures to reduce resource wastage, and improve resource quality and sustainability.

#### The specific goals are:

- To prepare a checklist of flora and fauna on and around the college campus.
- To suggest measures to improve biodiversity within the college campus.
- To monitor the energy consumption pattern of the college.
- To assess the level of water usage within the college campus.
- To suggest sustainable energy use and water conservation methods.
- To explore different sources and mitigation possibilities for the production of organic and solid waste.
- Develop the values of sustainable development activities through a green audit system.
- To report the expenditure on green initiatives during the last five years



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## Methodology

The aim of the Green Audit is to ensure that the practices followed by the campus are in line with the country's Green Policy. Methodology includes: data collection, campus physical inspection, monitoring and review of documentation, and data analysis.

## **Best Practices**

First time green audit was conducted in the campus, some of the best practices followed by the campus was examined during campus physical inspection. Outreach programmes are conducting for dissemination of green campus initiatives, natural resources, awareness of environmental pollution and biodiversity conservation. Rain Harvesting system, water reservoirs are the major highlights of the campus. The functioning of Eco club, Forum, Association, NSS, bodies and social service league for students and staff members for biodiversity conservation are appreciable. Conduction of awareness programmes for environmental monitoring and ecosystem maintenance to the stakeholders. Implementation of composting pits, vermicompost unit, recycling of kitchen waste collected from hostels and other places. To spread the importance of biodiversity conservations in the campus projects, awareness programmes, etc. are conducing under various clubs and forums listed below. Well occupied labs, some Shade plants (less number), Froot plants (majority included mango tree) are accountable.



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#### Existing waste management Practices

Waste disposal is the activities and actions required from the beginning to the final disposal of waste. This includes collection of waste, transportationof waste, its treatment and disposal, and monitoring and control of the waste treatment process. The waste around the college is separated daily into wet and dry waste and disposed off separately. Dry waste includes paper, cardboard, and glass tin cans; Wet waste refers to organic waste such as vegetable waste and leftover food. Waste segregation is essential as the amount of waste generated today poses major problems. Material evaluated as biodegradable are composed to create fertilizers. Through this good quality manure is produced which can be used as a modifier of the soil and as a source of plant nutrients. Through smart initiatives such as "biogas plants", waste treatment enables campus to achieve higher environmental performance. Through recycling or reuse, we contribute to the conservation of natural resources, energy conservation, environmental protection and landslide reduction. Eco-friendly practices and necessary measures such as energy conservation, waste recycling and carbon neutral are adopted. Organic recyclable waste is treated as compost for plants available on college campus and other solid waste generated on college campus.

### **Conclusion and Recommendations**

Each Year a plan for the Green Campus Audit is prepared by management and ensure that the environmental management system and ecosystem service are implemented within the campus.

- Establishment of aquarium and aquatic plants
- · Labelling of common name and botanical name of plants
- Establishment of terrace garden and kitchen garden
- Frequency of watering for plantation (Record maintenance)
- · Herbal, zodiac, medical and ornamental plants garden in the campus
- · List of plants and animals included birds in the campus
- Drinking water use monitoring and Analysis
- Control measures taken for mosquitos, vectors and predators
- Landscape design and soil erosion control
- To reduce e-waste, give practice to the stakeholders

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- Direction boards and indoor plants for better understanding
- Awareness programmes for students by introducing how to nurture indoor and outdoor plants
- Keep soft copies of student's project to reduce paper waste.
- Increase the number of shade trees.
- RO water plants
- Viewpoints and space for bird watch
- Sufficient number of waste bins
- Drip irrigation / automatic irrigation for gardens
- Chemical waste management in chemistry lab
- Eco friendly canteen
- Wind mill
- Miyawaki
- Student involvement should be improved.
- International eco club incorporate with existing biodiversity club
- Group discussion points and stone benches
- MoU with Govt. Non-Governmental organizations to ensure green campus
- Natural topography or Vegetation.
- Operation of water irrigation system, trip and sprinkler irrigation methods
- Organic waste management and reuse methods
- Role of Indian Green Building Council in green campus initiatives
- Use of biofertilizers, organic manures, green manures and chemical fertilizers, etc
- Increase the use of natural resources in the campus
- Use of recycled water for irrigation purpose or any other purpose
- Assign responsibilities of each programme at each appropriate function and level. (Environ mental engineer & Staff working for environment monitoring)
- Solid waste management facility
- Implementation of Government schemes (Swatch Bharath Abhiyan-Clean India Mission)
- Implications of advanced methods for watering plantations
- Waste water treatment plants and facility
- To Establish sufficient number of lawns, trees, herbs, shrubs and climbers in the campus
- Project and dissertation work on environmental science and management carried out by students and staff members
- Use of metering for water utility, IoT based watering, automation, water device, remote water lines, etc.
- Public transport, low-emitting vehicles and control of car smokes and exhaust



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# Certificate

This is to certify that an "Energy Audit" for SAFA COLLEGE OF ARTS AND SCIENCE, POOKKATTIRI Edayoor PO, Valanchery, Malappuram District Kerala 676552 has been conducted in December 2021 to asses energy costs, availability and reliability of supply of energy, energy conservation technologies and ways to reduce energy consumption.

Malappuram

31.12.2021

Coordinator

ANASE

Certified Lead Auditor

(ISO 14001:2015)

g. No. 21061707210101

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Dr. Sabique M K

Auditor

Dr. SABIQUE MK

(ISO 14001:2015

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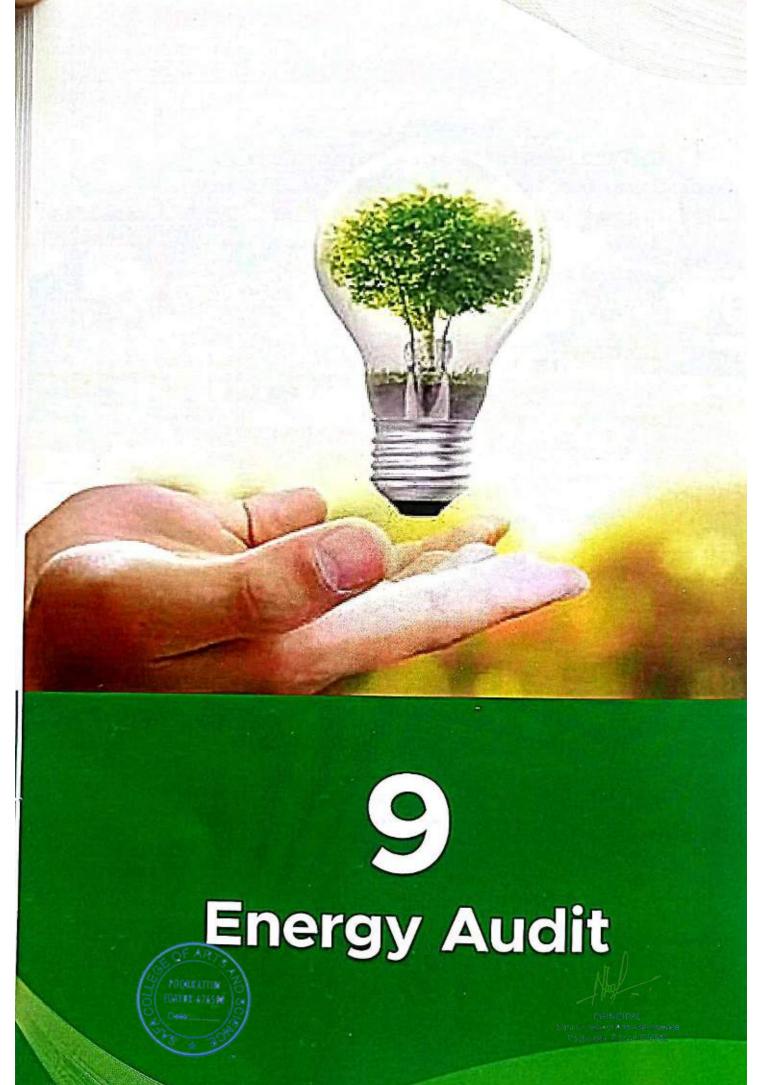
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Dr. Sh

Auditor

Dr. SHAHIDA A T Certified Lead Auditor (ISO 14001:2015) -Leg. No. 2106210721010

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### Introduction

Energy efficiency means economizing on the use of energy without adversely affecting economic growth and development. It includes improving the efficiency of energy extraction, transmission and distribution, and increasing the productivity of energy use.

Energy Audit is defined as "the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption".

## **Objectives**

The energy Audit was intended to meet the following objectives

- Conduct a simple walk through audit or observation of the energy consumption of electrical appliances within the campus of SAFA COLLEGE OF ARTS AND SCIENCE, POOKKATTIRI
- Review and analyses energy usage history of the institution to create a baseline from which savings can be measured in the audited building.
- Determine steps to be taken to reduce energy consumption throughout the buildings and to suggest available options for system improvements in accordance with the budget.
- Identify and evaluate measures that could improve the environmental performance of the buildings/wards and provide recommendations.

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## Methodology

There are three phases of Energy Audit

- 1. Pre audit phase
- 2. Audit phase
- 3. Post audit phase

#### **Pre Audit Phase:**

#### **Data Collection**

In preliminary data collection phase, executive data collection was performed using different tools such as observation, survey communicating with responsible persons and measurement. Following steps were taken for data collection:

- The team went to each department, classroom, office, Library, canteen, hostel, resource centre etc.
- Data about the general information was collected by observation and interview.
- The power consumption of appliances was recorded by taking an average value in some cases.

#### **Audit Phase:**

In SAFA COLLEGE OF ARTS AND SCIENCE, POOKKATTIRI energy auditing was done with the help of faculty members. The energy audit started with the team walking through all the different facilities at the college, determining the different types of appliances and utilities (lights, fans, taps, fridges, air conditioners etc.) as well as measuring the usage per item( Watts indicated on the appliances) and identifying the relavant consumption patterns and their impacts. The staff were interviewed to get details of usage, frequency or general characteristics of certain appliances.

#### **Energy Consumption Data**

Load	:9 KW
C Demand	: 8.96 KVA
Phase	: 3
Average consumption	: 1094 Units
Average monthly expense	: Rs. 6000
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## Requirements met by the institution or existing practices

- Use of LED bulbs in more than 90% is highly appreciable
- SSD storage systems are used in computers which are more resistant to physical shock, run silently and have quicker access time and lower latency.
- Use of day lights in classrooms is good.
- Centralized water flow is well maintained.
- Use of solar energy and wheeling to the grid are appreciable.
- Open well recharge system is maintained.
- Well sound UPS system is an added advantage in the energy utilization.

#### Recommendations or Suggestions for improvement

Based on the analysis of the power consumption data, certain steps have been recommended for improving energy efficiency of the campus. Complete cost analysis of implementation of recommended measures has been performed wherever necessary. A number of general measures for energy efficiency have been listed. Some important recommendations are listed below for better energy efficiency.

- Installation of master switch outside a room can make it easy for a person to switch off all the appliances of a room in case someone forget to switch off while leaving the room
- Motion sensors can be used in toilets to automatically switch on the light when there is any movement and switch of the light when there is no movements.
- Energy accounting should be streamlined
- Energy efficient Air conditioners (more than 3 star rating) should be used.
- Energy awareness camps should be organized
- Display boards regarding the less energy consumption should be displayed.
- Power generator should be established in the campus.
- Use of drip irrigation and sprinkler are suggested for gardening.
- Water meters should be installed.
- Sensor based water flow should be developed.
- A wind mill is suggested as the college in a hilly area.
- Electric vehicles may be used for internal transportation.

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#### **Post Audit phase:**

Energy audits form an ongoing process. Innovative energy saving initiatives has to be designed and implemented every year to make the college environmentally sustainable. Follow up programs of energy auditing recommendations should be done meticulously before the next audit.

### Reference

- The Environment [Protection] Act 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- The Petroleum Act: 1934 The Petroleum Rules: 2002 13
- The Central Motor Vehicle Act: 1988 (Amended 2011) and The Central Motor VehicleRules:1989 (Amended in 2005)
- Energy Conservation Act 2010.
- The Water [Prevention & Control Of Pollution] Act 1974 (Amended 1988) & the Water(Prevention & Control of Pollution) Rules – 1975
- The Air [Prevention & Control Of Pollution] Act 1981 (Amended 1987) The Air (Prevention & Control of Pollution) Rules – 1982
- The Gas Cylinders Rules 2016 (Replaces the Gas Cylinder Rules 1981
- E-waste management rules 2016
- Electrical Act 2003 (Amended 2001) / Rules 1956 (Amended 2006)
- The Hazardous Waste (Management and Handling and Trans-boundary Movement) Rules, 2008 (Amended 2016)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)
- The Batteries (Management and Handling) rules, 2001 (Amended 2010)
- Relevant Indian Standard Code practices
- Internal Records of the Campus



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#### **Photo Gallery**







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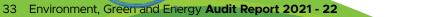
കേരള വനം-വന്വജീവി വകുഷ് സോഷ്വൽ ഫോറസ്ട്രി ഡിവിഷൻ മലഷുറം "കേരള സർക്കാരിന്റെ 100 ദിന പരിപാടി"

#### ഫോറസ്ട്രി ക്ലബ്ബ് ഉദ്ഘാടനവും ഫെർബൽ ഗാർഡൻ ഡിക്ലറേഷനും

ഉദ്ഘാടനം : ആബിദ് ഹുസൈൻ തങ്ങൾ (MLA കോട്ടക്കൽ നിയോജക ഉണ്ഡലം)

2022 ഫെബ്രുവരി 26 ശ്രന്നി 3PM ഫോന്ഡ്ടി ക്ല്ല്, സഫ കോളജ് ഓഫ് ആർട്ട്നിട് നിന്നൻസ് വളാഞ്ചേര് സ്പാന്ഡ്ടി കല്ല്, സഫ കോളജ് ഓഫ് ആർട്ട്നിട് നിന്ന് നിന്ന് നിന്നം നിന്നംനം നിന്നം നിന്നംനം ന നിന്നം നിന്നെ നിന്നം നിന്നം നിന്നം നിന്നം നിന്നം നിന്നംനെ നിന്നം നിന്നം നിന്നം നിന്നം നിന്നം നിന്നം നിന്നം നിന്ന നിന്നം നിന്നെ നിന്നം നിന്നം നിന്നം നിന്നം നിന്നം നിന്നം നിന്നെ നിന്നെ നിന്നെന്നെ നിന്നെ നിന്നം നിന്നം നിന്നെ നിന നിന്നെ ന

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## Inauguration of SOURA PHASE 1 50 kWp ROOF TOP SOLAR PV PLANT



19th September 2022 Monday,11.30am @ Safa College of Arts and Science Pookkattiri





Inauguration:

Prof: K.K ABID HUSSAIN THANGAL (Member of Legislative Assembly)

Valuable Presence: Mrs. HASEENA IBRAHIM (President - Edayoor Panchayath)

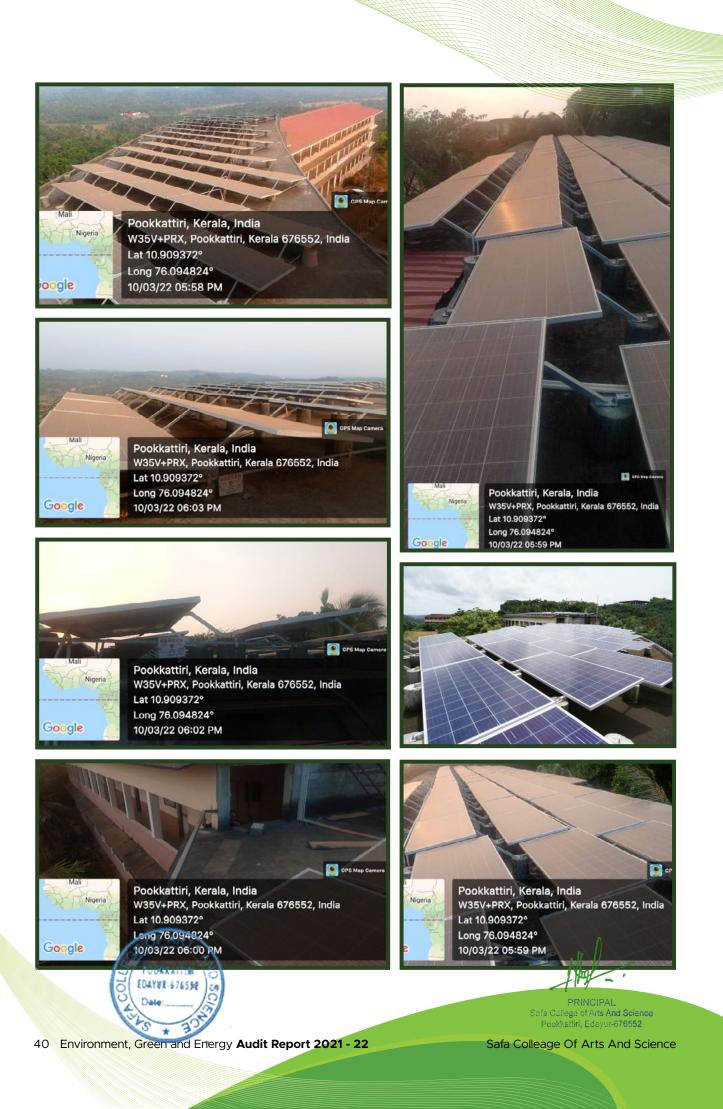
Solar Plant Project Presentation: Mr. SUDHARMAN P.K (Deputy Chief Engineer, Electrical Circle-Tirur)

AN ISO 9001-2015 CERTIFIED SAFA COLLEGE OF ARTS AND SCIENCE (Affiliated to University of Calicut) POOKKATTIRI, EDAYUR (PO), VALANCHERY PHONE : 0494 2988810, 9995748103, 9846823215



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