

ENVIRONMENT AUDIT – 2024



**SUM COLLEGE OF TEACHER EDUCATION, MAMBA,
MUZHAPPALA, KANNUR**

EXECUTED BY



ATHUL ENERGY CONSULTANTS PVT LTD

4th FLOOR, CAPITAL LEGEND BUILDING,

KORAPPATH LANE, ROUND NORTH, THRISSUR, KERALA-680020

Ph: +91 735611199/0-6 Web: www.athulenergy.com E-Mail: info@athulenergy.com



May 2024



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PREFACE

The phenomenal growth of population and industrial development exploits the environment in different ways. By this greenhouse effect and other allied problems are threatening the mankind world over. Protection and up gradation of environment is our prime concern for regaining of its original nature required for sustainable development. This context institutions have a major role to play.

Every institution should be imparting knowledge about the campus environment and its surroundings through activities that follows the principles of sustainability and waste management. Hence an evaluation is needed to understand where it stands in the path to be an environment friendly, and in talent nurturing educational institution.

This Environment Audit was done with the aim to assess mainly on waste management of the campus. The college envisages students are to become a centre par excellence of learning, where the best in humans is unveiled, based on human values, focused on life enhancement and constructive in adapting to the needs of the world. This will indicate through the management and students participation in the environment activities

This report is compiled by the BEE certified energy auditor and Environment management (ISO 140001) Consultants along with the project engineers who are experienced in the field of energy, environment and management. The student volunteers made a mammoth contribution with data collection and in preparing an initial skeleton for the report.



ACKNOWLEDGEMENTS

We express our sincere gratitude to the M/s SUM College of Teacher Education, Kannur for giving us an opportunity to carry out the project of Environment Audit. We are extremely thankful to all the staffs for their support to carry out the studies and for input data, and measurements related to the project of Environment audit.

- | | | |
|---|------------------|------------------|
| 1 | C. Ahammed Kutty | Manager |
| 2 | Dr. C V Jayasree | Principal |
| 3 | Krishnakumar | IQAC Coordinator |

Also congratulating our Environment audit team members for successfully completing the assignment in time and making their best efforts to add value.

ENVIRONMENT AUDIT TEAM

1. Mr. Santhosh A

Registered Energy Auditor of Bureau of Energy Efficiency (BEE – Govt. of India)
Accredited Energy Auditor No – EA 0275

2. Mr. Krishnakumar G.

Lead Auditor, ISO 14001, Environment Management and Certified energy auditor.



Yours faithfully

Managing Director
Athul Energy Consultants Pvt Ltd



ENVIRONMENT AUDIT SUMMARY

- ❖ College segregated the waste from college, treated in a scientific manner.
- ❖ Separate storage provisions are done for metal and plastics in college.
- ❖ Incinerator is installed in the college for incinerating sanitary napkin

Suggestions for improvement

- ❖ Vermicompost plant to be installed in the college to treating plant leafsetc.
- ❖ Display the weight of segregated wastes that collected from the canteen, hostels and college in prominent locations which will be an eye-opener for all and it will help in reduce the waste generation.
- ❖ Monthly Records should be kept for segregated wastes which will give the administration to pinpoint the source and can take necessary steps to reduce it.

GENERAL DETAILS

The general details of the M/s SUM College of Teacher Education, Kannur are given below in table.

TABLE 1: GENERAL DETAILS

Sl. No	Particulars	Details
1	Name of the College	SUM College of Teacher Education Mamba, Muzhappala, Kannur
2	Address	
3	Contact Person	Dr. Jayasree CV
4	Contact Phone numbers & Fax	0497-2850600
5	E-mail ID	sumcte@gmail.com
6	Type of Building	Educational Institution
7	Annual Working Days	210
8	No: of Shifts	Day Shift (One) (9AM -4PM)
9	No: of students enrolled	115
10	No: of Teachers	10
11	No: of non-teaching staff	6
12	Total campus area	20234.3 M ²
13	Total Built Up area	3765.6M ²
14	No of class rooms,	30
15	No of labs	04
16	No: of departments	07
17	Incinerator	No
18	Segregation of waste	Yes



ABOUT SUM COLLEGE OF TEACHER EDUCATION

Shamsul – Ulama Memorial (SUM) College of Teacher Education was founded in the year 2006 under the patronage of Jamia Shamsul Ulama Al Islamia Mattanur. It was recognised by the NCTE Southern Regional Committee Bangalore and affiliated to Kannur University. It is situated in the tranquil surrounding of Anjarakandy Panchayat, adjacent to the Mamba mosque , the college enjoys a serene location. It is nearly 17 km away from Kannur Railway Station and bus stand and 10 km away from the Kannur International Airport .The institution boasts a picturesque campus with well maintained infrastructure and provisions catering specifically to physically challenged students .

SUM College of teacher education is a co -educational institution owned and run by Jamia Shamsul Ulama -Al Islamiya.Mamba.College started with a student intake of 100 across 5 optional subjects English, Mathematics ,Natural science, Physical science and Social science. Initially enrolling 100 students, college adapted to changes introduced by NCTE , transitioning to a 50 student intake when the two year B.Ed program was implemented.

Strategically situated in a rural area,the college aims to cater to the educational needs of students particularly girls in such a region .SUM college has evolved over the years to adapt to the changes in educational standards and regulations .All classrooms are equipped with modern technological support enhancing the learning experience, with a focus on providing quality education, inclusive facilities and tranquil learning environment. The college remains committed to nurturing aspiring educators in various disciplines while meeting the needs of rural students.

One distinctive feature of some college of teacher education is its seat allocation policy. College reserves 50% of its seats for the merit quota, ensuring that students with exceptional academic records have a fair chance to enroll .The remaining 50% of seats are allocated for the management quota, providing opportunities for students who might not meet the strict merit requirements but still wish to pursue a career in teaching. Moreover SUM college of Teacher Education adheres rigorously to the state's reservation policy in its merit admission procedure. This commitment to equity and inclusivity ensures that students from various backgrounds and communities have the opportunity to receive quality teacher education.

Vision

To be a leading institution to shape exemplary educators who inspire and empower learners, fostering a brighter future for our society



Mission

To cultivate strong sense of social responsibility community engagement and global awareness among our graduates. To uphold the highest standards of professionalism ethics and integrity in all aspects of our institution



FIGURE 1: SUM COLLEGE OF TEACHER EDUCATION CAMPUS

ABOUT ENVIRONMENT AUDIT

The ICC defines Environmental Auditing as: **“A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of safeguarding the environment and natural resources in its operations/projects.”**

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. Environmental conditions may be monitored from angles that are relevant to Indian requirements, without stress on legal issues or compliance. This innovative scheme is user friendly and totally voluntary. The environmental awareness helps the institution to set environmental examples for the community and to educate young learners.

Here we can mainly divide this report waste management initiatives and installations of systems such as bio gas plant, vermin compost, and incinerator. E-Wastes and collection and segregation of waste in the campus etc and students initiates in waste management as a social cause.

WASTE MANAGEMENT

Waste is generally termed as ‘a resource at the wrong place’. The college authorities are aware of the possible methods and have installed waste management measures like biogas systems. The waste clearance measures associated with different types of wastes are briefly given below. In this college normally three types of wastes are generated and we can divide the same as,

1. Bio degradable
2. Non bio degradable and
3. E-waste

1. BIODEGRADABLE WASTES

Biodegradable waste includes any organic matter in waste which can be broken down into carbon dioxide, water, methane or simple organic molecules by micro-organisms and other living things by composting, aerobic digestion, anaerobic digestion or similar processes also includes some inorganic materials which can be decomposed by bacteria. These materials are non-toxic to the environment and mainly include the natural substances like plants and animals waste, even the dead plants and animals, fruits, paper, vegetables, etc. get convert into the simpler units, which further get into the soil and are used as manures, biogas, fertilizers, compost, etc.

The biodegradable wastes are mainly from student’s food. Now these food wastes are collected by piggery farm and used as secondary food chain for pigs by maintaining quality manner.

I. BIO GAS PLANT

Biogas is the mixture of gases produced by the breakdown of organic matter in the absence of oxygen (anaerobically), primarily consisting of methane and carbon dioxide. Biogas is a renewable

energy source Biogas is produced by anaerobic digestion with methanogen or anaerobic organisms, which digest material inside a closed system, or fermentation of biodegradable materials. This closed system is called an anaerobic digester, bio digester or a bioreactor.

Biogas is a renewable, as well as a clean, source of energy. Gas generated through bio digestion is non-polluting; it actually reduces greenhouse emissions. No combustion takes place in the process, meaning there is zero emission of greenhouse gasses to the atmosphere; therefore, using gas from waste as a form of energy is actually a great way to combat global warming. Another biogas advantage is that, unlike other types of renewable energies, the process is natural, not requiring energy for the generation process. In addition, the raw materials used in the production of biogas are renewable.

Bio gas plant reduces soil and water pollution. Consequently, yet another advantage of biogas is that biogas generation may improve water quality. Moreover, anaerobic digestion deactivates pathogens and parasites; thus, it's also quite effective in reducing the incidence of waterborne diseases.

Bio gas generation produces organic fertiliser. The by-product of the biogas generation process is enriched organic (digestive), which is a perfect supplement to, or substitute for, chemical fertilizers. The fertilizer discharge from the digester can accelerate plant growth and resilience to diseases, whereas commercial fertilizers contain chemicals that have toxic effects and can cause food poisoning, among other things.

At present in SUM College the food wastes generated from the students lunch are collected in a bin which is then converted as vermicompost .

Recommendation

- | |
|---|
| <ol style="list-style-type: none">1. Install portable bio gas plant to cater the food wastes and generate bio gas (methane) for cooking in the canteen and slurry as manure for garden. |
|---|

II. VERMI-COMPOST

It is the product of the decomposition process using various species of worms, usually red wigglers, white worms, and other earthworms, to create a mixture of decomposing vegetable or food waste, bedding materials, and vermin cast. Vermicompost contains water-soluble nutrients and is an excellent, nutrient-rich organic fertilizer and soil conditioner.^[3] It is used in farming and small scale sustainable, organic farming.

The major source of raw material for vermi-compost is the leaves in the college campus and also the wastes generated which are not fed into biogas such as Chicken bones etc. The vermi-compost plants installed near to the scrap yard in the college campus

Benefits of Vermi-compost

a. For Soil

- ❖ Improves soil aeration



- ❖ Enriches soil with micro-organisms (adding enzymes such as phosphatase and cellulose)
- ❖ Microbial activity in worm castings is 10 to 20 times higher than in the soil and organic matter that the worm ingests
- ❖ Attracts deep-burrowing earthworms already present in the soil
- ❖ Improves water holding capacity

b. For Plant growth

- ❖ Enhances germination, plant growth, and crop yield.
- ❖ Improves root growth, Enriches soil with micro-organisms, adding plant hormones such as auxins and gibberellins.

c. For Economic

- ❖ Bio wastes conversion reduces waste dumping in landfills.
- ❖ Elimination of bio wastes from the waste stream reduces contamination of other recyclables collected in a single bin (a common problem in communities practicing is single-stream recycling)
- ❖ Creates low-skill jobs at local level.
- ❖ Low capital investment and relatively simple technologies make vermicomposting practical for less-developed agricultural regions.

d. For Environmental

- ❖ Helps to close the "metabolic gap" through recycling waste on-site.
- ❖ Large systems often use temperature control and mechanized harvesting, however other equipment is relatively simple and does not wear out quickly
- ❖ Production reduces greenhouse gas emissions such as methane and nitric oxide (produced in landfills or incinerators when not composted).

Recommendation

We recommend install one vermin compost plants in the college due to its wise area tree coverage and for easiness for maintenance of vermin compost plant. Manure requirements are divided into two area for gardens and plantation.

2. NON-BIODEGRADABLE WASTE

Materials that remain for a long time in the environment, without getting decompose by any natural agents, also causing harm to the environment are called non-biodegradable substances. These materials are metals, plastics, bottles, glass, poly bags, chemicals, batteries, etc. But as these are readily available, convenient to use, and are of low cost, the non-biodegradable substances are more often used. But instead of returning to the environment, they become solid waste which cannot be broken

down and become hazardous to the health and the environment. Hence are regarded as toxic, pollution causing and are not considered as eco-friendly.

Many measures are taken these days, concerning the use of non-biodegradable materials. The **three 'R'** concept which says **Reduce-Recycle -Reuse** is in trend, which explains the use of the non-biodegradable materials. As we already discuss that these substances do not decompose, or dissolve easily so can be recycled and reuse. And one can help in reducing this waste by instead of throwing the plastics and poly bags in the garbage; it can be put in the recycling bags to use again.

Non-recyclable wastes are collected and burned once in a month using incinerator places inside the campus itself. The recyclable wastes are sorted out into categories and supplied it to the collecting units.

INCINERATOR

The objective of waste incineration, in common with most waste treatments, is to treat waste to reduce its volume and hazard, whilst capturing (and thus concentrating) or destroying potentially harmful substances. Incineration processes can also provide a means to enable recovery of the energy, mineral and/or chemical content from waste. Basically, waste incineration is the oxidation of the combustible materials contained in the waste. Waste is generally a highly heterogeneous material, consisting essentially of organic substances, minerals, metals and water. During incineration, flue-gases are created that will contain most of the available fuel energy as heat. The organic substances in the waste will burn when they have reached the necessary ignition temperature and come into contact with oxygen. The actual combustion process takes place in the gas phase in fractions of seconds and simultaneously releases energy. Where the calorific value of the waste and oxygen supply is enough, this can lead to a thermal chain reaction and self-supporting combustion, i.e. there is no need for the addition of other fuels.

The incinerator is used for incinerating non-biodegradable waste such as paper, plastic, sanitary napkins etc. The ash generated are as for manoeuvre after mixing with cow dung for plants. The ash generated from plastic will be treated separately.

The ash generated from incinerator were used as a fuel is used as manoeuvre for plants. The college campus promoting biodegradable packaging and reducing the consumption of plastic to a large extent

At present college is incinerating the wastes as open incineration

Recommendation

We recommend installing one electrical incineration for incinerating sanitary napkin and one more incinerator for other wastes as stationary etc.

3. ELECTRONIC WASTE

Electronic waste or e-waste describes discarded electrical or electronic devices. E-waste or electronic waste is created when an electronic product is discarded after the end of its useful life. The rapid

expansion of technology and the consumption driven society results in the creation of a very large amount of e-waste in every minute. Used electronics which are destined for refurbishment, reuse, resale, salvage recycling through material recovery, or disposal are also considered e-waste. Informal processing of e-waste in developing countries can lead to adverse human health effects and environment pollution. Certain components of some electronic products contain materials that render them hazardous, depending on their condition and density.

College collecting all old computers, and other electronic wastes and stored in a separate room

Recommendation

We recommend to dispose the E wastes through KSPCB OR CPCB (Kerala state or central pollution control boards) approved agencies in a regular manner or kept all E-wastes in a separate place till the disposing of these items through approved agencies.

FACILITIES PROVIDED BY COLLEGE FOR WASTEMANAGEMENT COLLECTION

- Toilets in every floor of all buildings separately for girls and staff.
- Certain toilets are facilitated for disable friendly with suitable hand rails and support mechanisms.
- Bins are provided in various areas of Campus for segregated collection of bio degradable (food,) and non-bio degradable wastes (Plastic, bottles)
- Every day cleaning and sanitisation is done at each and every toilet by cleaning personnel
- Separate team is maintained by college for maintain the clean campus, collection wastes from bins.



Figure 2 COLLECTION BIN FOR FOOD WASTES



CONCLUSION

Environment audit is the best way to analyse and solving the critical issues of waste management. Environment audit can add value to management approach being taken by college for identifying, collecting, segregating and processing of waste generated in the college campus. By analysing the waste generation in each segment such as biodegradable, non-degradable, R waste etc. gave an indication of waste generation and thus put control for the same to reduce the environmental impacts in due course.

The findings in the report show that college perform fairly well in waste management issues and taken considerable efforts in a responsible manner. During audit and the conversations with the college team, we observed that M/s SUM College of Teacher Education Kannur, done various approaches in the past few years to performing well to sustainable environment. Even though there is space for further improvement that mentioned in the executive summary, the college is a good example for the minimisation of environment issues in the existing conditions.

ANNEXURE

➤ EnMsCertified Professional



G KRISHNAKUMAR

has attended the following live virtual classroom course:

Transition training for Environment Management System as per ISO 14001:2015

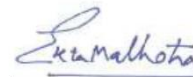
Course is designed to explain:

- Requirements of ISO 14001:2015 in context of audit.
- Key changes from ISO 14001: 2004 to 14001:2015

Session Duration: 16 Hours

CERTIFICATE NUMBER
2020260507

TRAINING DATE:
25th & 26th May, 2020



Authorising Signature:



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