

GREEN AUDIT – 2021



M. E. S COLLEGE ERUMELY KOTTAYAM, KERALA

EXECUTED BY



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PREFACE

Every institution should be imparting knowledge about the campus environment and its surroundings through activities that follows the principles of sustainability. Hence an evaluation is needed to understand where it stands in the path to be an environment friendly, talent nurturing educational institution. This Green Audit was done with the aim to assess and rate the sustainable nature of the campus. The college vision is “to enlighten and empower women in rural and suburban society and enable them to act as agents of social transformation and acquire knowledge of self and surroundings and to make the world a better place”. And in the **social goals**, it is written as “**to make the students aware of the pressing global issues and the moral responsibility to handover to the coming generation an eco-friendly life style and an earth free from pollution, filth, bigotry and corruption**”. It was observed by us from the students’ participation during the green audit.

This report is compiled by the BEE certified energy auditor 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 preparing an initial skeleton for the report.

ACKNOWLEDGEMENTS

We express our sincere gratitude to the M. E. S Erumely Kottaym for giving us an opportunity to carry out the project of Green 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 Green audit.

- | | | |
|---|----------------------|-----------|
| 1 | P. M Abdhul Salam | Chairman |
| 2 | Adv. Muhammed Najeeb | Secretary |

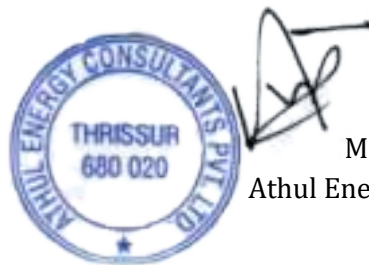
Also congratulating our Green audit team members for successfully completing the assignment in time and making their best efforts to add value.

Audit was conducted on 10th November 2021 with the help of M. E. S college students and staff.

GREEN AUDIT TEAM

- 1. Mr. Santhosh A**
Registered Energy Auditor of Bureau of Energy Efficiency (BEE – Govt. of India)
Accredited Energy Auditor No – EA 7597
- 2. Ashok KMP** Project Director , Certified GRIHA professional
- 3. Mr. Harikrishnan** Project Engineer

Yours faithfully



Managing Director
Athul Energy Consultants Pvt Ltd



GREEN AUDIT SUMMARY

- ❖ MES Management taken considerable effort for maintaining the green and sustainable campus.
- ❖ The buildings constructed by the college without disturbing the harmony of the hilly terrain area and do not cause any damage to the nature.
- ❖ All buildings are done maximum utilization of natural light and ventilation and gravitational advantages for water utilization.
- ❖ College creates a psychic environment among students to reduce the academic stress.
- ❖ Staff and student's collaboration of Bhoomithra sena club and NSS is held responsible for maintenance of greenery inculcating a sustainable culture among the student's community. By recognizing the importance of making youth compassionate towards nature MES decided to keep different eco systems,

Suggestions for improvement

- ❖ Display boards are to be placed in the Oxygen Park, Leisure benches, Silent zone, herbal, botanical garden areas with name of trees in that areas.
- ❖ Creation of vegetable to be done as per seasonal wise and local important vegetables.
- ❖ Nashtravanam or star garden street on the way to college ground sides to be created on the college
- ❖ Water harvesting can be done by using the level difference of college buildings by installing proper filtering mechanism and tanks in the college. The water from Golden jubilee block can be used in PG or IT block. The water from PG and IT block for main block or to hostel toilets. Etc.
- ❖ Ground water recharging to be done in the down skirts of college by construction of percolation pits for collecting the rain water flesh through the surface This will reduce the velocity of flow of water, soil erosion, maintain the surface moisture level for longer time after rainy season etc which will help to maintain the green forest coverage for longer time and useful for ground water recharging.
- ❖ Suggested to conduct a detailed study on geological and hydrogeological mapping of the area to find out proper sizing of percolation pits, contour trenches, deep well recharging, collection of water passing through road, gutter etc
- ❖ Water meter to be installed for measuring water consumption per day.
- ❖ Practice Institutional Ecology- Set an example of environmental responsibility by establishing institutional ecology policies and practices of resource conservation.

**EXECUTIVE SUMMARY IN TABLE**

The general details of the M. E. S Erumely are given below in table.

Table 1 EXECUTIVE SUMMARYMD ETAILS

| Sl. No: | Particulars | Det ails |
|---------|--|--|
| 1 | Name of the College | M. E. S College |
| 2 | Address | Erumely, Kottayam |
| | | Kerala -686509 |
| 3 | Contact Person | Remadevi A IQAC Coordinator , 9496802344 |
| 4 | Contact Phone numbers & Fax | 0494-2460336 |
| | | 0494-2460635 |
| 5 | Web site & E-mail ID | www.meserumelycollege.ac.in principal@meserumelycollege.ac.in |
| 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 | 1876 |
| 10 | No: of teaching staff | 78 |
| 11 | No: of non-teaching staff | 30 |
| 12 | Total campus area | 20.92 Acre |
| 13 | Total Built Up area M ² | 11634 |
| 14 | No of PG courses | 16 |
| 15 | No of U G courses | 08 |
| 16 | No of hostel students | 62 |
| 17 | No of plants and trees in the college | 1089 |
| 18 | No of plant species in college | 85 |
| 19 | Grounds | Football and Cricket ground |
| 20 | Auditorium | Natural open auditorium , |
| 21 | Oxygen park | Done |
| 22 | Greenery around college | Very good |
| 23 | Silent area | Maintained well in college |
| 24 | Travel inside college campus | Restricted vehicle movement in the college campus, parking bay for the college. |

ABOUT MES ERUMELY

M.E.S College, Erumely is the first unaided Arts and Science College affiliated to Mahatma Gandhi University, established in 1995. The college obtains minority status with effect from September 2012. The college situated on the side of Eranakulam- Pampa National Highway, 4Km away from Erumely. The serene atmosphere, sylvan surrounding and nourishing unpolluted air will ever provide quite a conducive environment for learning. The college belongs to a network of education institutes founded and operated by Muslim Educational Society. In founding the college, the founders had in their minds the glorious tasks of dispelling darkness and spreading the true wisdom all around irrespective of caste, creed, language and religion. The college had made every effort to be compassionate and sensitive to the marginalised and the people needy

The College offers seven UG Programmes such as Computer Applications (BCA – model III), B.Sc. Electronics, Business Administration (BBA – Model III), B.Com. Computer Application (Model II), B.Com. Finance & Taxation (Model II), B.Com. Marketing (Model II) B.Com Office Management & Secretarial Practice (Model III) and eight Post Graduate programmes such as M.Sc. Computer Science, M.Sc. Electronics, M.Com Finance & Taxation, M.Com Marketing & International Business, M Com Management & Information Technology, Master of Social Work (M.S.W), M.A Economics, M.A. English Language and Literature. Through the academic community consisting of faculty, staff and students the college create, integrate, and disseminate knowledge, and foster in the students critical thinking and other intellectual skills along with the attitudes and abilities that enable them to live as educated, tolerant, and empowered leaders disseminating values to the **society**

Vision

MES College Erumely strives at providing accessible and affordable quality education for pursuing truth and knowledge to re imagine young minds for having a committed, selfless, ethical life along with a motive of great excellence in higher education

Mision

- Producing socially committed intellectually empowered, ethically sensitive change-makers through excellence who would be dedicated to working for the common good of society.
- Creating a space for individuals from various Socio-economic identities especially for the less fortunate in order to fulfil their aspirations to have Serving as a catalyst for fulfilling dreams of the academic community to achieve the most suitable careers and committed life. Affordable quality education



Figure 1 MAIN ENTRANCE OF COLLEGE

GREEN AUDIT

The whole world is on the road to a sustainable development, and the environment conservation is the top priority among the list as every human activity has its effect on their surroundings, which is the environment. Hence be it a house, a commercial building, an industrial building, or any other construction will disturb the balance of the environment. It is very important to do a detailed study about the effects on the environment. This is conducted under the name of *Green Audit*, which can be defined as *the official examination of the effects a company or other organization has on the environment, especially the damage that it causes*. The objectives of the green audit can be listed as follows:

- Including participants from every section of the organization in the auditing process.
- Understanding the environment by drawing a simple sketch of the total area.
- Identifying the activities in the premises and listing them.
- Calculating the resource consumption like the land and water.
- Assessing the waste management and disposal.
- Study the energy usage pattern.
- Identify the good practices.
- Suggest the viable solutions to improve the sustainable nature of the organization.
- Compile the report with the above-mentioned details.
- Conduct a walkthrough audit to check the suggestions implemented by the institution and suggest for further improvements
- Verify all the points with actual measurements is it is meeting the performance and gave suggestions for improvement

CAMPUS ENVIRONMENT

The environment in and around the college campus plays an important part in maintaining a healthy atmosphere in nurturing talents. Trees are the major source of the oxygen we breathe, and receiver of the carbon dioxide we exhale. The sustainability of an ecosystem depends on the number of plants and trees in and around the surroundings. The open space in the college is used for gardening and maintain a botanical garden, herbal garden and silence zone, large open garden etc.



FIGURE 2: CAMPUS VIEW

Scientific studies are proved that the nature can able to cure any diseases and this will reduce the stress among students during theirs studies and also increase the compassion among them and to nature. Ultimately the campus is maintaining natural equilibrium trees, birds and water bodies with human beings. Gardens and landscape are an aesthetic delight and it promotes attentiveness of students. Persons exposed to plants have higher level of positive feelings (pleasant, calm) as opposed to negative feelings (anger, fear).

SUSTAINABLE CONSTRUCTION OF BUILDINGS

Energy consuming devices installed to achieve the comfort levels for the occupants of the building gives rise to heat generation which adversely affects the environment within the building and in the surrounding. Buildings are thus the major pollutants that affect the urban air quality and contribute to climate change. Buildings are the major consumers of energy during their construction, operation and maintenance.

M. E. S Erumely has developed an ecological design in their buildings and adopted minimum negative impact on ecosystem. Their approach to the constructional activities consciously is to conserve energy and ecology and avoid the adverse effects of ecological damage.

MES management constructed the building to optimum utilisation of land and classrooms and with abundant light and natural ventilation. Maximum day light ingress and natural ventilation increases the indoor air quality and avoid the sick building syndrome. The whole facility and buildings are designed to maximum and optimum utilisation of land without affecting the natural hill area design and thus avoiding the landslides.



FIGURE 3: BUILDING VIEW

1. BUILT UP AREA

Table 2 BUILT UP AREA

| Sl. No: | Floor | Total Built Up Area ft ² |
|--------------|---|--|
| 1 | Administrative block | 16674 |
| 2 | IT Block (Commerce Block) | 14899 |
| 3 | PG Block | 13448 |
| 4 | Golden Jubilee Block | 10795 |
| 5 | Amenity Centre | 3387 |
| 6 | Seminar Hall block | 5477 |
| 7 | Other Buildings(Mosque, ladies Hostel,) | 30153 |
| Total | | 94833 |

2. GREENERY AROUND THE CAMPUS

MES College Erumely located in a hilly terrain and the total area of 25 acres of land only few areas are covered with trees and it is well protected by management. Educational institutions serve as important incubators for developing a ‘green ‘sense among students and teachers and create a new generation of professionals to drive the future change. Green sense is the sensitivity towards environment that is addressed in our decisions, practices and general lifestyle. In MES College teaching sustainability and environment not in books but it is demonstrated in the campus



Figure 4 GREENERY IN THE CAMPUS



3. BUILDINGS IN MES COLLEGE

Administrative Block

Administrative block have 3 floors but it is constructed by minimum impact or layout change to the hilly terrain land. It contains main office, rooms for management, principal room's library, class room for BCA first year, kitchen and staff dining rooms and ladies toilets.



Figure 5 ADMINISTRATIVE BLOCK

IT Block – Commerce block

It block have area of 15000 sq. feet with class rooms for M Com, B Com, systems lab , vice principals room , toilets for boys.

PG Block

PG Block of area 13448 Sq. feet with 3 floors and class rooms for M Sc Computer science, BSc electronics, B Com, Ladies toilets, examination hall, Departments of Languages



. Figure 6 IT & PG BLOCK

Golden Jubilee Block

Golden Jubilee block is working only in ground floor, construction another floors are going on. The total area of golden jubilee block is 11000 sq. ft. Now golden jubilee block have class rooms for BBA, MSW, and departments of management and social work and toilets.



Figure 7 GOLDEN JUBILEE BLOCK

Other Buildings

Other buildings consists of seminar hall buildings which contains, seminar hall, room for KSIDC , Post office, canteen etc. , mosque, Ladies hostel, amenities block which is a dedicated examination hall facility for conducting examination .



Figure 8 OTHER BUILDINGS

4. CARBON DIOXIDE LEVELS

Air quality is a major area of concern inside a building. The percentage share of oxygen and carbon dioxide should be such that the occupants are able to perform their tasks without any discomfort. This is generally done through a provision of fresh air duct for the air conditioning systems or by providing windows. Numerous factors need to be considered for the design and fabrication of the fresh air supply system like the number of occupants, weather pattern and air quality of the location, and so on. For the human comfort, production of carbon-dioxide (CO₂) within a building space is the prime area of consideration. This is associated with respiration which produces CO₂. As a result, the carbon-dioxide levels will increase if ventilations are not provided.

As per various standards (like the ASHRAE Standard 62.1-2016), indoor CO₂ concentrations up to 1200 ppm is considered acceptable. For a typical outdoor condition, this value may change from 300 to 500 ppm.

The measurements were recorded along different locations inside the campus and the peak values are given in the following sections. The key concentration was on the study of carbon dioxide levels.

Table 3 CARBON DIOXIDE LEVELS

| Sl. No. | AREA | Measured CO ₂ | Standard CO ₂ level (Range) | Remarks |
|-----------------------------|------------------------------|--------------------------|--|---------|
| Administrative Block | | | | |
| 1 | Principal Room | 600 | 300-500 | Good |
| 2 | Office | 425 | 300-500 | Good |
| 3 | Class room of BCA | 600 | 300-500 | Good |
| 4 | Library | 340 | 300-500 | Good |
| IT Block | | | | |
| 1 | Class room of Mcom | 560 | 300-500 | Good |
| 2 | Vice principal room | 450 | 300-500 | Good |
| 3 | Systems Lab | 550 | 300-500 | Good |
| 4 | Class room of Bcom | 550 | 300-500 | Good |
| P G Block | | | | |
| 1 | Electronics lab | 550 | 300-500 | Good |
| 2 | Class room for Msc Computer | 450 | 300-500 | Good |
| 3 | Dept. of Languages | 460 | 300-500 | Good |
| 4 | Examination monitoring cell | 550 | 300-500 | Good |
| Golden Jubilee Block | | | | |
| 1 | Class room for BBA | 420 | 300-500 | Good |
| 2 | Class room for MSW | | 300-500 | Good |
| 3 | Dept. for Management studies | 430 | 300-500 | Good |

5. HERBAL GARDEN

The literal meaning of Ayurveda is “science of life,” because ancient Indian system of health care focused on views of man and his illness. It has been pointed out that the positive health means metabolically well-balanced human beings. Ayurveda is also called the “science of longevity” because it offers a complete system to live a long healthy life. It is an interactive system that is user-friendly and educational. It teaches the patient to become responsible and self-empowered. It is a system for empowerment, a system of freedom, and long life. A significant part of knowledge and tradition is currently being eroded due to modernization, acculturation and availability of alternatives. Therefore, it is urgent to inculcate young minds to realize the fascinating knowledge and tradition associated with these resources, and help them understand the immense potentials the Kerala medicinal plants possess for the future.

The “Promoting Herbal Gardens in Schools and colleges” has been a fun-filled learning activity for the students where they got the opportunity to learn about the medicinal plants by actually planting the medicinal herbs and watching them grow in their gardens, and by exploring information about them from various sources.

The task of making the garden itself has been enriching in terms of making students realize the importance of teamwork such as detailed planning, and allocation of tasks within a team. For the teachers, herbal garden project has been useful in terms of ease with which they could integrate the concept with other subject matter activities, such as writing essays, poems and stories, making posters, drawing and painting, making herbariums, and even preparing food recipe using some of the culinary herbs students have planted in their gardens. Kerala Government is also making lot of initiatives to developing and inculcating the herbal gardens in schools and colleges.

Recommendation

College is to create herbal / medicinal garden in the college campus. There many areas are suitable for the creation especially free space available on the road side of ground from the IT block.



6. KUTTIVANAM (SMALL FOREST)

MES developed an untouched and protected version of forest in their premises. This is maintained in the form of old tradition such as Kavau, the small untouched forest which we can see in most parts Kerala. Kavau is maintained as forest areas that human beings are mostly prohibited and considered a sacred place in the Kerala



FIGURE 9: KUTTIVANAM

Such a place can have following benefits to the ecosystem.

1. **Maintain the equilibrium of air and food:** Humans and animals need food and oxygen and excrete carbon dioxide and water. The plants, algae, etc, in the Kuttivanam use carbon dioxide and water and release or produce oxygen and food.
2. **Filter and store water, and drastically reduce storm-water runoff:** Forests filter and regulate the flow of water. The litter over the forest floor acts as a sponge which filters, stores and gradually releases the water to natural channels and ground water.
3. **Conserve valuable topsoil and reduce soil erosion:** A forest is like a protective green cloth over Mother Earth's fragile body.
4. **Conserve biodiversity and balance ecology:** In a natural environment, the populations of species are balanced to an optimum minimum level
5. **Reduce pollution:** Plants can remove and/or Phyto remediate pollutants and contaminants from soil and water.
6. **Arrest or reverse global warming:** Global warming can cause extinction of species, tropical cyclones, extreme weather, tsunamis, abrupt climatic change, sea level rise, increased human stress resulting in violence, etc. These are just a few of its catastrophic effects. Plants can lock CO₂ in their bodies to save our planet and the life on it.

NAKSHTRAVANAM – STAR GARDEN

In Vedic astrology, the zodiac is divided into 27 Nakshatras or stars. An individual is born under a particular star, known as his or her birth star. From ancient times, particular trees have been associated with birth stars. The concept of a Nakshatra Vanam involves the planting of these trees in a grove and nurturing them, to help develop a place of sanctity. Gardening can provide students with hands-on learning opportunities while increasing environmental awareness and vital experience in problem-solving.

Every student and staff has a birth star which is related to a tree, animal and bird in Nature.

Table 4 NAKSHTRAVANA TREES

| Sl No: | Star Name | Tree name | Botanical Name |
|--------|--------------|--------------|-------------------------------|
| 1 | Aswathy | Kanjiram | <i>Strychnos nux-vomica</i>] |
| 2 | Bharani | Nelli | <i>Embllica officinalis</i>] |
| 3 | Karthika | Aathi | Ficus racemosa |
| 4 | Rohini | Njaval | <i>Syzygium cumini</i>] |
| 5 | Makayiram | Karngali | <i>Acacia catechu</i>] |
| 6 | Thiruvathira | Karimaram | <i>Diospyros ebenum</i>] |
| 7 | Punartham | Mula | <i>Bambusa bambos</i>] |
| 8 | Pooyam | Arayal | <i>Ficus religiosa</i>] |
| 9 | Ayilyam | Nangu | <i>Mesua ferrea</i>] |
| 10 | Makam | Plassu | <i>Butea monosperma</i>] |
| 11 | Uthram | Ithi | <i>Ficus tinctoria</i>] |
| 12 | Atham | Ambazham | Spondias pinnata |
| 13 | Chithira | Koovalam | Aegle marmelos |
| 14 | Chothi | Nerr maruthu | Terminalia arjuna |
| 15 | Visakham | Vayam Kaitha | Flacourtia jangomas |
| 16 | Anizham | Elanji | <i>Mimusops elengi</i>] |
| 17 | Triketta | Vetti | Aporusa lindleyana |
| 18 | Moolam | Vella Pine | Vateria indica |
| 19 | Pooradam | Vanchi | Salix tetrasperma |
| 20 | Uthradam | Plavu | Artocarpus heterophyllus |
| 21 | Thiruvonam | Erukku | Calotropis gigantea |

| | | | |
|----|--------------------|-----------|-----------------------|
| 22 | Avittam | Vanni | Prosopis juliflora |
| 23 | Chathayam | Kadambu | Anthocephalus cadamba |
| 24 | Pooruttathy | Mavu | Mangifera indica |
| 25 | Uthrattathy | Karimbana | Borassus flabellifer |
| 26 | Revathi | Elippa | Madhuca longifolia |

Recommendation

College is to be create star garden in the college campus. Every student and staff has a birth star which is related to a tree, animal and bird in Nature. So maintaining of star garden is easy and which is having medicinal values

7. HERBAL GARDEN

It is a garden that exists to grow vegetables and other plants useful for human consumption. Gardening can provide students with hands-on learning opportunities while increasing environmental awareness and vital experience in problem-solving. The school gardens are changing the eating habits of the students

Gardens are a wonderful way to use the college campus as a classroom, reconnect students with the natural world and the true source of their food, and teach them valuable gardening and agriculture concepts and skills that integrate with several subjects, such as math, science, art, health and physical education, and social studies, as well as several educational goals, including personal and social responsibility. They gain self-confidence and a sense of "capableness" along with new skills and knowledge in food growing — soon-to-be-vital for the 21st century students become more fit and healthy as they spend more time active in the outdoors and start choosing healthy foods over junk food.



8. OXYGEN SUPPLIERS

Trees release oxygen when they use energy from sunlight to make glucose from carbon dioxide and water. Like all plants, trees also use oxygen when they split glucose back down to release energy to power their metabolisms. Averaged over a 24-hour period, they produce more oxygen than they use up; otherwise there would be no net gain in growth.

The following trees are giving 30% more oxygen as compared with other trees. The bamboo is considered as grass category but gave maximum amount of oxygen

TABLE 5 OXYGEN SUPPLIERS OF NATURE

| Malyalam Name | English Name | Botanical Name | Importance |
|----------------------|---------------------|-----------------------|--|
| Aryaveppu | Neem | Azadirachta Indica | Ever green and suitable to us traditionally, Absorbs SO ₂ , and Nitrogen and other pollutants |
| Maruthu | Maruthu | Terminalia Arjuna | Important in Ayurveda, absorbs particulate matter along with CO ₂ |
| Njaval | Jamun | Syzygium Cumini | In mythology India is called as Jamuna deep and absorbs SO ₂ , Nitrogen m particulate matter |
| Ezhilam pala | Sarpagandi | Alstonia Schol | Heavily attracted by honey bee and helping high pollination absorbs pollutants |
| Peraal | Banyan | Ficus Benghalensis | Highest oxygen supplier |
| Aal | Pipalva | Ficus Religiosa | In ficus family high oxygen supplier |
| Curry Veppu | Curry Tree | Murraya Koenigii | Used in kitchen for helping digestion and toxic removal from air |
| Asoka | Asoka | Sarga Asoka | Absorbs particulate matter and suitable for most areas |
| Mula | Bamboo | Bamboos Bambooseae | Highest oxygen supplier, can be used as boundary or as cluster. |

9. OXYGEN PARK

Green space in the college where you can go for morning and evening walks, as well as for picnics. Oxygen Park is a location where we can rest and release all our stress by nature. In this aesthetic location with ample ventilation take us into heaven in the earth. This park is anything but regular with its many sections for picnic lovers, children, fitness enthusiasts, and just about anyone who wants to spend some quiet time amidst nature. Fitness enthusiasts, get here for some fresh air and undisturbed yoga sessions. Undisturbed nature along with water bodies enhances your creativity due to comfort feeling to mind along with abundant supply of oxygen



Figure 10 OXYGEN PARK

10. SILENT ZONE

Now a day's silent zones are getting important in academic institutions. The noise pollution leads to stress and other medical and neurotic problems to children's and also creativity and absorption capacity of knowledge is also going down. For reduction of academic stress level there is space for complete relaxation which gives the importance of silence zone. MES College have aerated certain silent zones in the college itself. Mosque in the college is gives its spiritual acme to the students and also total silence is also keep there. Natural silence zones are also crated in the college campus where there is no sound other than natures sound.

Recommendation

In the following area silent zone can be created and cordoned with bamboo fencing.



Figure 11 SILENT ZONE IN COLLEGE



11. OPEN AUDITORIUM

Open stage on side of the main b building can accommodate more than 400 persons. The stage is located in the centre like open theatre. Nature playing a vital role in this stage because it will create only sound not echo or noise during the show. Due to the leaves of the plants will absorb all the echo reverberated from the buildings. Due to the stage is designed in open model the sound reflections are less also giving a scenic beauty to the college.



Figure 12 OPEN AUDITORIUM

12. OPEN GROUND

Education is incomplete without sports and games. Sports and games **are beneficial in teaching us punctuality, responsibility, patience, discipline, and dedication towards our goal.** The importance of games and sports in student's life is immense. It has proved to be very therapeutic in nature. Sports help improve stronger social skills, such as dispute management and sport-based interaction. **Sports inculcate the feeling of fairness in a child and it encourages them to be committed, taking defeat in a positive manner.** It teaches us to be joyful, united, and appreciative in life. Students are the youth of our Nation, and they need to be energetic, physically active, and mentally fit. By understanding the responsibility to make its students as healthy MES College built and maintained football ground, cricket ground in a greenery surroundings.



Figure 13 OPEN GROUND

**LIST OF TREES IN THE CAMPUS**

The college campus is divided into various locations for listing out the trees. The college campus contains 1089 Plants and trees in 85 various species.

Table 6 LIST OF TREES IN THE CAMPUS

| Sl.no. | Name of trees | Botanical name |
|--------|-------------------------|--------------------------|
| 1 | Fern leaf tree | Filicium decipiens |
| 2 | Tree jasmine | Murraya paniculata |
| 3 | Opp leaves | Leathy leaves |
| 4 | Tree-cap leaves | Unknown |
| 5 | Teak | Tectona grandis |
| 6 | Ramboottan | Nephelium cappaceum |
| 7 | Coconut tree | Cocos nucifera |
| 8 | Mango | Mangifera indica |
| 9 | Bear apple | Ziziphus jujuba |
| 10 | Mahogany | Swietenia macrophylca |
| 11 | Hongkong orchid tree | Bauhinia blakeana |
| 12 | Copper pod tree | Peltophorum pterocarpum |
| 13 | Dividivi | Libidibia coriaria |
| 14 | Lovi lovi | Flacourtia inermis |
| 15 | Guava | Psidium guajava |
| 16 | Nutmug tree | Myristica fragrans |
| 17 | Vatta tree | Macarang peltata |
| 18 | Jamica cherry | Muntingia cacabura |
| 19 | Drumstick tree | Moringa olifera |
| 20 | Sapota | Manilkara zapota |
| 21 | Karinarakam | Zanthoxylum fagara |
| 22 | Apple chamba/bell fruit | Syzygium aqueum |
| 23 | Litchi | Litchi chinensis |
| 24 | Ulli chamba | Syzygium aqueum |
| 25 | Butter fruit0 | Persea americana |
| 26 | Jack fruit tree | Artocarpus heterophyllus |
| 27 | Neem tree | azadirachta indica |
| 28 | Elanji | Mimusops elanji |
| 29 | Mangosteen | Garcinia mangostana |
| 30 | Yellow bells | Tecoma stans |
| 31 | Golden shower tree | Cassia fistula |
| 32 | Eugenia | Eugenia oliena |
| 33 | Acacia | Acacia nilotica |
| 34 | Ruty kamala | Mallotus tetracoccus |



| | | |
|---------------|-------------------------|---------------------------|
| 35 | Mantaly tree | Terminalia mentalis |
| 36 | Weeping fig | Ficus nitida |
| 37 | Malabar tamarind | Garcinia gummigutta |
| Sl.no. | Name of trees | Botanical name |
| 38 | Bread fruit tree | Artocarpus alticis |
| 39 | Trumpet tree | Tabebuia rosea |
| 40 | Lakshmi tharu | Simarouba glauca |
| 41 | Star apple | Chrysophyllum cainito |
| 42 | Malabar plum | Syzygium jambos |
| 43 | Bilimbi | Averrhoa bilimbi |
| 44 | Cinnamon | Cinnamomum zeylankum |
| 45 | Gulmohar tree | Delonix regia |
| 46 | Yellow silk cotton tree | Cochlospermum religiosum |
| 47 | Egg fruit | Pouteria camperhina |
| 48 | Indian gooseberry | Elembica officinalis |
| 49 | Golden bottle brush | Melaleuca bracteata |
| 50 | Yellow mantharam | Bauhinia tomentosa |
| 51 | White mantharam | Bauhinia accuminta |
| 52 | Pride of india | Lagerstroemia speciosa |
| 53 | Glossy leaf fig | Ficus benjamina |
| 54 | Travellers plantain | Ravenala madagascariensis |
| 55 | Ylang ylang tree | Cananga odorata |
| 56 | Pride of babados | Caesalpinia pulcherrima |
| 57 | Wild jack | Artocarpus hirsutus |
| 58 | Rudraksha tree | Elaeolarpus ganitrus |
| 59 | Black daman tree | Canarium strictum |
| 60 | Champak tree | Michelia champaca |
| 61 | Soursop | Anona muricata |
| 62 | Thaanni | Terminalia bellarica |
| 63 | Pongam oil tree/oong | Pongamia pinnata |
| 64 | Aattuvanji | Homonoiariparia |
| 65 | Sappam | Caesalpinia sappan |
| 66 | Jamun tree | Syzygiumcumini |
| 67 | Pomelo | Citrus maxima |
| 68 | Tabebuia | Bignoniaceae |
| 69 | Bullock's heart | Anona reticulata |
| 70 | Coral jasmine | Nyctanthes arbortristis |
| 71 | Mort tree | Polyalthis longi folia |
| 72 | Tamerind tree | Tamarindus indica |
| 73 | Indian boel tree | Aegle marmelos |



| | | |
|---------------|----------------------|-----------------------|
| 74 | Rose apple | Syzygium aqueum |
| 75 | Indian asoka tree | Saraca asoca |
| 76 | Hog plum | Spondias mangifera |
| Sl.no. | Name of trees | Botanical name |
| 77 | Coffee | Coffea arabica |
| 78 | Rose wood | Dalbergia sisso |
| 79 | Mangium | Acacia mangium |
| 80 | Badam | Terminaliacatappa |
| 81 | False cinnamon tree | Cinnamomum verum |
| 82 | All spice | Pimenta dioica |
| 83 | Star fruit | Averroha carambola |
| 84 | Melastamo | Melastomacandidum |

13. SPECIAL INITIATIVES OF COLLEGE

I. DISABLED FRIENDLY:

Disability is only disabling when it prevents someone from doing what they want or need to do. Government of India signed the UNCRPD (United Nations Convention on the Right OF Persons with Disabilities) on 1st October 2007. In this article 9 says about the requirements of disabled persons on accessibility to buildings. As per the signed UNCRPD Indian Parliament passed an act as RPD (Right to Persons Disability) act on March 2016. As per new act, all buildings should have ramps at the entry, exit, lifts for higher floors, separate toilet with suitable arrangements such as hand rails etc.

NIMIT provided all such facilities (Ramp, separate, toilet with hand rail in all floors, lifts etc.) Shows their commitment to the society.

II. PARKING BAY FOR VEHICLES”

To avoid the air pollution the vehicles are not allowed in the campus, but they are parked in the parking area, reasonably away from college buildings.



III. LESURE BENCHES

Care taken by the college to have Plantation of plants. The greenery has remained useful in developing NATURE Leisure time for students. This will reduce the academic stress among students and its constructed and placed in various parts of college campus such as in outside of open auditorium on the road side near the way to IT block etc.



Figure 14 LEISURE BENCHES

14. WATER RESOURCES AND CONSERVATION

The requirement of water for the college, hostels and gardening etc are met by supply from big well just outside of college boundary. The water is collected in one main tanks. The water thus collected is supplied through gravity to other tanks of located in main building, hostels, etc.

The water from different wells are checked in an accredited laboratory in time to time to ensure its portability.

1. WATER RESOURCES

There are three wells in the college, one well is located near the chapel which is not use at present. Well located outside of campus is the main source of water for college and hostel

Table 7 WATER RESOURCES

| Location | Source |
|----------------------------------|--------|
| Well outside of college Boundary | Well |

Water from the main well which is located just outside of boundary wall is pumped to main tank located of capacity 50kL. By pump. Then direct connection is given to HM block, separate tanks are installed in Hostel, MBA block, canteen, etc.

Table 8 WATER CONSUMPTION

| Sl.No: | Location | Capacity of Water Tanks | Quantity | Total Capacity | Consumption per day |
|--------------|------------|-------------------------|----------|----------------|---------------------|
| | | Litres | Nos | Litres | Litres |
| 1 | Main block | 15000 | | 10,000 | 15000 |
| Total | | | | | 15000 |

2. WATER CONSUMPTION POINTS

The labs have the highest tap points whereas the toilet accounts for the major consumption. The water outlet points in the college campus and hostel are listed in the following table.

TABLE 9 WATER CONSUMPTION POINTS

| Location | No: of taps |
|-----------------------------|-------------|
| Washing area taps | 18 |
| Urinals | 12 |
| Toilets for students | 18 |
| Flushes for students | 12 |
| College compound and garden | 05 |
| Staff rooms | 08 |
| Total | 73 |



3. GROUND WATER RECHARGING

Rainwater harvesting (RWH) is a technique of collection and storage of rainwater into natural reservoirs or tanks, or the infiltration of surface water into subsurface aquifers (before it is lost as surface runoff). One method of rainwater harvesting is rooftop harvesting. With rooftop harvesting, most any surface — tiles, metal sheets, plastics, but not grass or palm leaf can be used to intercept the flow of rainwater and provide a household with high-quality drinking water and year-round storage. Other uses include water for gardens, livestock, and irrigation, etc.

Rainwater harvesting for ground water recharge.

Aim and Objectives:

- Conservation of rainwater for future use
- To use rainwater for gardening Activity: Conservation of rainwater in soil or in a container is known as rainwater harvesting.

The rainwater from entire college campus and roof top of building is collected through PVC pipes and feed into ground at four locations in the campus

Recommendation

- ❖ The MES College can utilise the advantage of level difference of various buildings for catering the water requirements of toilets by using rain water. The rain water from Golden Jubilee block to be collected by installation of PVC pipes and utilise in the PG and IT block. The water from PG and IT block can be utilised in the administrative and ladies hostel. Proper piping, filtering unit and tanks to be installed at the suitable locations.
- ❖ The water overflowing can be used to recharge the ground water at various locations of the college
- ❖ The use of biomass in the form coconut shells can be used to cover the foot of the trees which can behave as recharging soak pits.
- ❖ Construction of percolation pits (Mazha kuzhical) around the campus area for collecting the rainwater flush through ground surface. This will reduce the velocity of flow of water, soil erosion, maintain the surface moisture level for longer time after rainy season etc which will Help to maintain the green forest coverage for longer time and useful for ground water recharging
- ❖ Suggested to conduct a detailed study on geological and hydrogeological mapping of the area to Find out proper sizing of percolation pits, contour trenches, deep well recharging, and collection of water passing through road, gutter etc

15. STUDENTS ACTIVITIES

Trees are the major source of the oxygen we breathe and receiver of the carbon dioxide we exhale. The sustainability of an ecosystem depends on the number of plants and trees in and around the Surroundings.

Bhoomithra sena Club (BMC) and NSS take care about all the environmental activities of college and maintain the campus greenery successfully. It has the representation from students from each class, teachers and representatives from management. The major activities are as follows.

I. Campus Beautification

The main objective of the campus beautification to practice the environment conservation in practical. Lot of samplings are done in the area and the road to golden jubilee block.



II. DASAPUSHPAM PLANTING

Daspushpam Ia 10 sacred flower having medicinal importance traditionally by Keralaits are planted in college Following are the flowers as 1, Poovamkurunthal, 2.Muyalchevian 3. Karuka4.Kayyoni, 5. Nilapana 6.Vishnukranthi 7. Cheroola. 8. Thiruthalli, 9.Uzhinja, 10.Mukkuthi these plants are connected with Onnam festival of Kerala.

III. World environment day celebrations



In connections with world environment day celebrations planting of trees are done in the college to make campus more sustainable. Plant a tree by volunteer is done and it is celebrated as Vanamaholsavu. Identification and labelling of tree in the campus done by students



IV. Two Day Seminar on Environmental Accounting and Green Practices

Two day Seminar on “Environmental Accounting and Green Practices “ for PG Students of MES College Erumely was Conducted on 14th & 15th February 2021 by the Economics the Economics Department , In Association with IQAC MES College Erumely. In this two day seminar and paper presentation various aspects of green accounting practices are discussed by Dr. Reshmi, Dr. Asok. Kumar and Dr. Rakshi Chandra sehar. The programme by inaugurated by Jp . PH Najeeb and key note address by Prof. M N Maheen principal of MES College.



V. EARTHLINGS 2021 – GREEN EXHIBITION

Nature and Bhoomitra Sena Club, MES College Erumely, in association with CDC and IQAC, organised an inter-departmental exhibition competition, Earthlings 2021 on December. The major purpose of exhibition is to raise awareness of issues impacting the environment upon which we all depend, as well as actions we can take to improve and sustain it. Each department had the opportunity to choose one given topic for the exhibition. Amazon rainforest, Energy management, Kerala flood, natural calamities, eco-tourism, water bodies, green economics, Nature in literature, expression of nature, waste management, environment and technology were the provided topics for the exhibition. The exhibition started at 9.30 am in the morning.

The Department of Social Work organised a stall called Majestic portraying the theme "Expressions of nature" and got the first prize. The second prize was achieved by the Department of Electronics for their stall, Griha, based on the subject Green economics. Department of Business Management got the third prize for their stall named Amfora based on the topic Amazon rainforest. The exhibition had made a wide impact among the students and faculties.



VI. Awareness class on organic farming

Department of Social Work, MES college, Erumely conducted a community activity in association with Manimala Grama Panchayat based on organic farming. The sessions were held on 21st January 2018 at CMSLP School Karikatur. The program coordinators were Mr. Jobin. C. Valson and Aneesha. A. The class session was handled by Adv. Binoy Jose and the session was inaugurated by the president Miss Litha Shaji. The focus of the subject was to reduce the risks of human, animal, and environmental exposure to toxic materials, fine-tune farming practices to meet local production conditions and satisfy local markets.



VII. Collaboration with Jalanidhi Project

In association with the Jalanidhi Project in May 2018. The students conducted various awareness programmes and field surveys to collaborate the jalanidhi project with the various communities in Wayanad. Jalanidhi Project is an important player in the rural water supply and sanitation sector in Kerala. Grama Panchayath is the nodal agency responsible for implementation of the project. The student social workers had a great opportunity to work in collaboration with the Jalanidhi Project. They explore the functions and management of jalanidhi project and also the community where the project is implemented.



VIII. Gandhi Global Solar Yathra

Gandhi Global Solar Yathra is planned by IIT Bombay to promote self-sufficiency in energy for sustainability. This yathra mainly aims to spread the message of non-violence towards the environment and bring awareness on the severity of climate change and lack of energy access to billions. With the vision to promote the use of solar energy, IIT Bombay in association with the **Unnath Bharath Abhiyan** has organized a workshop to train students and sensitize them towards solar energy on October 2nd 2018, commemorating the 150th birth anniversary of Mahatma Gandhi, October 19th 2019. MES College Erumely was a partner of **Gandhi Global Solar Yathra**. As part of this yathra, IIT Bombay gave online training for the staff members of the Electronics Department. The function inaugurated by Adv. Sebastian Kulathumkal, District Panchayat President, Kottayam and was presided over by Jb. P. H. Najeeb, Chairman, MES College, Erumely. Principal Mr. Maheen M. N. delivered a brief description about U.B.A. project

IX. THANNAL

It is a project of NSS unit of MES College as responsible eco project to convert waste dumpyard into attractive tourism park at Erumely. The project is initiated by the NSS unit and launched and opened for the public during the year 2016 by Sri Dr Babu Sebastian, the Honourable Vice Chancellor of Mahatma Gandhi University, Kottayam. The Thanal project was developed by the participatory discussion of the local peoples and NSS unit. All the activities in the Thanal are only utilised the commitment and work of volunteers while they are studying and not receiving any external financial support. This is a story of self-dependence for development written by the NSS Unit. This place is featured with lakhs and Lakhs of Ayyappa pilgrims visiting every year from all over Southern India and other states. Thanal converted that area into beautiful eco-friendly garden and other eco-friendly facilities.

Thanal have different components 1. Thanal Community Library, Thanal Rain Gunge System, Information Centre for Pilgrims, Garden, Thanal Amenities, Thanal Eco Conservation Network. Through this programme the social link to the society is formed. This project is going on at present also.



Environment Protection & Conservation

It acts as a common platform for the NSS volunteers and local community to plan and implement sustainable environment protection programmes

Thanal Community Library

The NSS unit alty foomlated an NSS community library at Thanal. The books were collected by the volunteers from the locality and made available for the visitors of Thanal. It promoted the concept of open libraries. The volunteers fixed a rain gauge within the site and regularly collected the reading of rain water in the area. It educated the local peoples related to the rainfall available in the place.

Recreational Activities

Thanal is also a place to give recreation for the travellers, villagers and road users the project was started from the wastes but now it is a beautiful location said by the peoples for recreations

Information Centre for Pilgrims

Two NSS volunteers deputed by the unit in the information centre to assist the pilgrims. The services of the information centre are health advices, traffic advices, free drinking water, leaflets, guidance, and other support services

Garden

Thanal garden is developed and maintained by the NSS unit, NSS volunteers by the leadership of the Programme Officer hit the place every week and conduct Maintenance activities the place was

planted with flowering plants, shading trees, and other garden plants

Thanal Amenities

A number of amenities such as swings, sitting benches, walking areas, ponds, bamboo constructions, community library, awareness generation boards etc.

Thanal Eco Conservation Network

The Thanal programs strived to develop a network of local communities to promote the people to act against wastes. They are planning participatory programmes by the leadership of the NSS unit of MES College Erumely

Project Monitoring Committee

The thanal project is conserved by the formation of an advisory and Monitoring committee at the community level with the participation of local peoples





X. Waste land Reformation

The wasteland regeneration programmes and tree plantation were implemented by the NSS unit. Also the river stream near the area was protected by temporary check dams and bio measures. The NSS unit of MES College Erumely initiated to implement a wasteland development programme at Vechoochira in association with Grama Panchayath. The 200 NSS volunteers of the unit were actively involved in the various activities of the project. They take part in land protection, watershed development activities and mass communication programmes to protect nature.

XI. Mangroves Reforestation Project

The NSS unit organised a Mangrove Reforestation Project at Pathiramanal Island, Kaankom. It is initiated for the purpose of conserving seashore ecology of the Kumarakom kwaterregion. The project was also initiated to address the environmental issues of Pathiramanal hand and Kumarakom to the general public. Hon'ble Former Minister for Forests Sri. Thiruvanchoor Radhakrishnan inaugurated the scheme at Kumarakom. Dr. S Suja Beegum, Principal, MES College, Erumely presided over the meeting. NSS volunteers conducted a seminar in connection with programmes as importance of Ayurveda with collaboration of Ayushya Ayurvedic Hospital, Kumarakom. 900 trees are planted in Pathiramannal island. All these planted trees are monitored by NSS volunteers and make sure it is regenerating its function.

XII. Street Theatre for Eco Conservation

The theatre form aims to seek public attention in preventing ecological disruption. The unit developed a street theatre for developing a mass awareness related to eco conservation. The 30 minutes of folk art was presented in the adopted villages. The NSS volunteers conducted a



kalajadha in different areas of Perunad Grama Panchayath and Manimala Grama Panchayath. The Kalajadha focused on generating local awareness regarding the conservation of local plant species. The kalajadha coordinated by the NSS volunteers focused on developing attention towards conserving local plant species especially fruit bearing plants. The globalisation affected widespread marketization of fruits and vegetables resulted in mass loss of local fruits varieties. After the street theatre presentation, local mango trees were planted in the area by the NSS volunteers with the participation of the local peoples.

XIII. Study of Ecological issues in Western Ghats

The study focused on the waste problems, soil pollution, water pollution, noise pollution, and change in the ecological conditions due to tourism in Western Ghats. The unit conducted a study on the ecological problems due to tourism in Western Ghats in January to February 2013 at Vandiperiyar, Kumily and Anakkara.

XIV. School Beautification

The NSS unit beautified the campus of Government UP School Mukkada on 27th March 2013. The programme was inaugurated by Mrs. Laila Beegum, Principal, Government UP School Mukkada.

XV. Mukkada –Plachery Vaziyora Eco Tourism Project

It is a project for enhancing eco-friendly pathways by students of the college. The project includes **Spring Conservation, Trunk Monitoring, Roadside Discussion, Shade Tree Maintenance, Environmental Entertainment System** and **Environmental awareness programme** in the **Mukkada Village**.

Mukkada Natural Spring Conservation scheme

The Natural spring conservation project initiated by the unit aims at creating mass awareness and action in conserving the natural springs in the project area. The Mukkada – Plachery roadside was gifted with a natural spring on its side with sufficient water for 365 days in a year. The NSS volunteers of the college initiated to protect the natural spring through an action plan developed with a combined discussion of local peoples, local environmentalists, NSS activists and academicians coordinated by the unit Govt. UP School, Koovakavu, Manimala Grama Panchayath. NSS unit conducted a cleaning programme nearer to the spring and constructed a protective pond to reduce the negative use of the natural spring.

Facilities created by the NSS Unit at the Area as part of UBA (Unnat Bharat Aayan)

1. Shading Trees at the Roadside 2. Roadside Benches. 3. Flowering Plants 4.Environment Education Programmes. 5. Waste Management 6. Local Monitoring Committee. 7. Swings. 8. Dragonfly & Damselfly Observation Project9. Natural Spring Conservation.



XVI. Oru Hemathakalanthinte Ormakkayi

The Unit produced and directed a documentary film-“Oru Hemantha Kalathinte Ormaykku ” which highlights the significance and importance of the roadside eco-tourism project. The beginning of the project, local participation, tourism activities etc. Are covered in the film. The release of the film was conducted by Prof. Dr. Unni PKS, Syndicate Member, Mahatma Gandhi University, Kottayam in a meeting at MES College, Erumely

XVII. Pumpakkoru Mulathottil

Mulamthottil is a Programme organised NSS unit of MES College Erumely in association with Kerala Forest Department. The Students planted Bamboos on the banks of the river Pamba. The Programme aims to prevent Soil Erosion and enhance Environmental Sustainability of that area Bamboo plants and vetiver species were planted by the NSS volunteers on the Pampa river bank (Pampavalley area of Kottayam district) to reduce the soil erosion and soil saturation level



XVIII. Green Village Clean Village

A Survey and seminar was conducted by providing a thorough awareness regarding Bio-compost and waste management to the volunteers, who later conveyed this to the villages. Following the flood most of the houses of the village seemed useless and filled with mud. The NSS volunteers cleaned those houses and repaired them to rehabilitate. The plastic waste was collected and removed from the rivers



XIX. Green Pampa Clean Pampa

The NSS unit of MES College Erumely is organising integrated programmes for making the holy Pampa-Sabarimala clean and green. Pre-Sabarimala season cleaning, Post- Sabarimala Season cleaning, leaflet distributions, pollution control programmes, cloth bag distribution etc. The Function inaugurated by Sri. PC George, MLA, Poonjar. Sri. PP Abdul Kareem, Chairman, MES College presided over the meeting. Sri. M N Maheen (Principal, MES College, Erumely),

XX. Vegetable cultivation

Lot of vegetables are cultivated in the fertile college campus by student's and staff



XXI. World plastic bag free day

Essay writing is a very sensitive form of self-expression. It is a harmonious blending of 'thought' and 'expression'. . It is considered to be the most effective test of the ability of a candidate to express his thoughts on a topic of interest in general, unambiguous and impressive language. In connection with July 3 plastic free day essay competition is arranged in the college.

XXII. Eco friendly paper , seed pen making

Department of Commerce Br Finance and Taxation conducted an activity to reduce single use plastic waste and motivate growing green eco-friendly pens made from recycled paper with embedded seeds and were distributed to employee.

CONCLUSION:

Green Audit is the most efficient & ecological way to solve such an environmental problem. Green Audit is one kind of professional care which is the responsibility of each individual who are the part of economic, financial, social, environmental factor. Green audits can “add value” to the management approaches being taken by the college and is a way of identifying, evaluating and managing environmental risks (known and unknown). The green audit reports assist in the process of attaining an eco-friendly approach to the development of the college.

The auditors observed during the campus visit and after the conversation with the staff and students of MES College, Erumely that they have taken continuous and considerable effort in several years for nurturing and maintaining the green coverage over the campus which is being well appreciated by us. There is still opportunity to attain the perfection some of the identified suggestions are listed in the executive summary.

ANNEXURE - 1

