



GREEN AUDIT REPORT




MES COLLEGE MARAMPALLY

Executed by



2023


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MARAMPALLY





Green Audit Report
MES College, Marampally,
Report No: EA 1084/GA
2023-November

About OTTOTRACTIONS

OTTOTRACTIONS established in 2005, is an organization with proven track record and knowledge in the field of energy, engineering, and environmental services. They are the first Accredited Energy Auditor from Kerala for conducting Mandatory Energy Audits in Designated Consumers as per Energy Conservation Act-2001. Government of Kerala recognized and appreciated OTTOTRACTIONS by presenting its prestigious “The Kerala State Energy Conservation Award 2009” for the best performance as an Energy Auditor. Ottotractions is an ISO 9001-2015, ISO 17020-2012 and ISO 14001-2015 Certified organization, which ensures the quality of its services.

Acknowledgment

We were privileged to work together with the administration and staff of MES College, Marampally. We are grateful to them for the timely help extended to complete the audit and bringing out this report.

With gratitude, we acknowledge the diligent effort and commitments of all those who have helped to bring out this report.

We also take this opportunity to thank the bona-fide efforts of audit team for unstinted support in carrying out this audit.

We thank our consultants, engineers and backup staff for their dedication to bring this report.

Thank you.

B V Suresh Babu
Accredited Energy Auditor
AEA 33, Bureau of Energy Efficiency
Government of India

Preface

Educational institutions always had an important leadership role in society in demonstrating types of changes that used to occur with respect to the prime issues of the time. All around the world, educational institutions are taking steps to declare themselves the next carbon neutral school as a part of the global trend of becoming sustainable. In 2007, Victoria University School of Architecture and Design declared themselves the first carbon neutral campus in the world through the purchase of carbon credits. This concept is not a sustainable model as it does not guarantee the capture of carbon forever and also it is expensive.

The potential for any academic institution- (may be a school in a remote village or a university in an urban setting) - to become the driver for change is huge. Its role of practicing leadership in its community can be utilized to encourage and influence carbon neutral living.

The biggest factors that contribute towards emission are Energy, Transportation and Waste. Any reduction in the carbon emission by the above sectors, starts with the behavioral changes (Low cost) and/or technological investments (High cost). In order to make these changes, the students are to be educated properly on the concept of carbon neutral campuses and methods to reduce it.

In India, the concept of carbon neutral campuses is gaining momentum. Green Audit in Campuses measures the amount of Green House Gases (GHG) emissions produced as a result of its operations through an accounting like inventory of all the sources of GHGs and carbon sequestration in the school campus. Based on this, the total carbon footprint is estimated. Measures are recommended to bring down the carbon footprint of the campus and to make it a carbon neutral campus.

B Zachariah

Director, OTTOTRACTIONS

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1

Introduction



Background

All across the developed countries, educational institutions are now moving to a sustainable future by becoming carbon neutral and greener spaces. They are taking responsibility for their environmental impact and are working to neutralize those effects. To become carbon neutral, institutions are working to reduce their emissions of greenhouse gases, cut their use of energy, use energy efficient equipment, use more renewable energy, plant and protect green cover and emphasize the importance of sustainable energy sources. Institutions that have committed to becoming carbon neutral have recognized the threat of global warming and are therefore committing to reverse the trend. Studies on this line has not struck roots in most of the developing countries-especially among students.

The Sustainable Development Goals (SDGs), launched by the United Nations in 2015, are an excellent vehicle for driving this change. They represent an action plan for the planet and society to thrive by 2030. The SDGs provide a window of opportunity for creating multidimensional operational approaches for climate change adaptation. They address poverty, hunger and climate change, among other issues central to human progress and sustainable development, such as gender equality, clean water and sanitation, and responsible consumption and production.



SUSTAINABLE DEVELOPMENT GOALS



The Green Audit of **MES College Marampally**, aims to assist campus to reduce their carbon footprint and educate tomorrow's leaders about strategies for carbon mitigation using their campus as a model. Also, this audit covers institutes responses towards SDGs by covering SDG 3,6,7,11,13,15. The green audit also aims to educate students and teachers on the concept of carbon footprint and to enable the students to collect data pertaining to the carbon emissions and carbon sequestration in their campus and to calculate the specific carbon footprint of the campus.

The project also suggests plans to make the campus carbon neutral or even carbon negative by implementing carbon mitigation strategies in areas such as,

- a. Energy
- b. Transportation
- c. Waste minimisation
- d. Carbon Sequestration etc.

The major objectives of the audit are:

- To make aware students and teachers on the concept of carbon footprint.
- To calculate the specific carbon footprint of the campus and classify it as carbon negative, neutral or positive.
- To create carbon mitigation plans to reduce their footprint based on the data generated.

MES COLLEGE MARAMPALLY

M.E.S. College Marampally is a Government Aided college affiliated to Mahatma Gandhi University, Kottayam, established in the year 1995. The College has reaccredited by NAAC with A+ Grade (CGPA, 3.38) which is the first ever highest grade in the State as per the revised process of accreditation. The campus is located in a rural area between the towns of Aluva and Perumbavoor, set in salubrious lush green surroundings in close vicinity of the river Periyar and proximate Cochin International Airport.

The governance and the management of the college are anchored in the principles of Muslim Educational Society (Regd.), Calicut which is one of the largest minority educational agencies in Kerala. The establishment facilitated new directions in the

field of higher education by offering a significant number of vocational (Model II) and technical programmes in tune with the demands of job market.

| Occupancy Details | |
|---------------------------------------|----------------|
| Particulars | 2022-23 |
| Total Students | 2671 |
| Staffs | 217 |
| Total Occupancy of the college | 2888 |

For calculating per capita carbon emission estimation, only the student strength is taken into account.

| BASELINE DATA SHEET FOR GREEN AUDIT | | | | | | | |
|-------------------------------------|--|--|-----|-------|-----|---------|---------|
| 1 | Name of the Organisation | MES College, Marampally | | | | | |
| 2 | Address (include telephone, fax & e-mail) | MES College Marampally North Vazhakulam, Aluva Ernakulam (Dist), Kerala, India Pin 683105 | | | | | |
| 3 | Year of Establishment | 1995 | | | | | |
| 4 | Name of building and Total No. of Electrical Connections/building | MES College (2) | | | | | |
| 5 | Total Number of Students | Boys | | Girls | | Total | 2671 |
| 6 | Total Number of Staff | 217 | | | | | |
| 7 | Total Occupancy | 2888 | | | | | |
| 8 | Total area of green cover | 60% | | | | | |
| 9 | Type of Electrical Connection | HT | 0 | LT | | 2 | |
| 10 | Total Connected Load (kW) | 98 | | | | | |
| 11 | Average Maximum Demand (KVA) | - | | | | | |
| 12 | Total built up area of the building (M ²) | 123300 | | | | | |
| 13 | Number of Buildings | 3 | | | | | |
| 14 | Average system Power Factor | 0.99 | | | | | |
| 15 | Details of capacitors connected | Nil | | | | | |
| 16 | Transformer Details (Nos., kVA, Voltage ratio) | TR 1 | | | | | |
| | | 0 | | | | | |
| 17 | DG Set Details (kVA) | DG1 | DG2 | DG3 | DG4 | DG5 | Remarks |
| | | 125 | 30 | | | | |
| 18 | Details of motors | Rating | | Nos. | | Remarks | |
| | | 5 to 10 | | 2 | | | |
| | | 10 to 50 | | | | | |
| | | Above 50 | | | | | |
| 19 | Brief write-up about the firm and the energy/environmental conservation activities already undertaken. | Installed biogas plant, Energy conservation projects, Installed 10kWp solar power plant. Rain water harvesting | | | | | |
| 20 | Contact Person & Telephone number | Dr. Shemi P M | | | | | |
| | | 9995969975 | | | | | |

2

METHODOLOGY



2.1. Sensitisation

Low Carbon campus initiatives are successful when everyone in the campus is engaged including students, teachers and staff. A team of students, teachers and staff were formed to participate in the audit. A sensitisation among students and teachers on the concept of carbon footprint was conducted.



During the audit the students and staffs were sensitised on the project and trained to be a part of the data collection team. This helped in conducting the survey in a participatory mode so that the awareness will penetrate to the grass root level. During the data collection field visit it was stressed that the team will spread these ideas to their homes and friends. This will help in a horizontal and vertical spread of the message to a wider group. It is assumed that through 2888 occupants of this campuses will reach same number of households. This message will spread to at least 10500 individuals approximately.

2.2 Estimation of carbon footprint

A carbon footprint is the amount of greenhouse gases—primarily carbon dioxide—released into the atmosphere by a particular human activity. A carbon footprint can be a broad measure or be applied to the actions of an individual, a family, an event, an organization, or even entire nation. It is usually measured as tons of CO₂ emitted per year, a number that can be supplemented by tons of CO₂-equivalent gases, including methane, nitrous oxide, and other greenhouse gases.

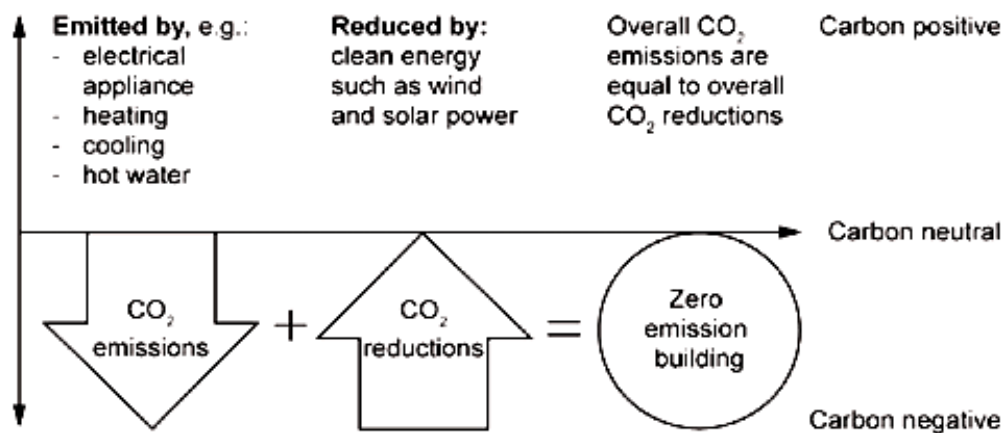
Global Warming Potential (GWP) is a measure of how much heat a greenhouse gas traps in the atmosphere up to a specific time horizon, relative to carbon dioxide. The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of one ton of a gas will absorb over a given period of time, relative to the emissions of one ton of carbon dioxide (CO₂).

| Global Warming Potentials (IPCC Second Assessment Report) | | | | | |
|---|---|------------------|----------------|-----------|-----------|
| Species | Chemical formula | Lifetime (years) | Global Warming | | |
| | | | 20 years | 100 years | 500 years |
| Carbon dioxide | CO ₂ | variable § | 1 | 1 | 1 |
| Methane * | CH ₄ | 12±3 | 56 | 21 | 6.5 |
| Nitrous oxide | N ₂ O | 120 | 280 | 310 | 170 |
| HFC-23 | CHF ₃ | 264 | 9100 | 11700 | 9800 |
| HFC-32 | CH ₂ F ₂ | 5.6 | 2100 | 650 | 200 |
| HFC-41 | CH ₃ F | 3.7 | 490 | 150 | 45 |
| HFC-43-10mee | C ₅ H ₂ F ₁₀ | 17.1 | 3000 | 1300 | 400 |
| HFC-125 | C ₂ H ₂ F ₅ | 32.6 | 4600 | 2800 | 920 |
| HFC-134 | C ₂ H ₂ F ₄ | 10.6 | 2900 | 1000 | 310 |
| HFC-134a | CH ₂ FCF ₃ | 14.6 | 3400 | 1300 | 420 |
| HFC-152a | C ₂ H ₄ F ₂ | 1.5 | 460 | 140 | 42 |
| HFC-143 | C ₂ H ₃ F ₃ | 3.8 | 1000 | 300 | 94 |
| HFC-143a | C ₂ H ₃ F ₃ | 48.3 | 5000 | 3800 | 1400 |
| HFC-227ea | C ₃ H ₂ F ₇ | 36.5 | 4300 | 2900 | 950 |
| HFC-236fa | C ₃ H ₂ F ₆ | 209 | 5100 | 6300 | 4700 |
| HFC-245ca | C ₃ H ₃ F ₅ | 6.6 | 1800 | 560 | 170 |
| Sulphur hexafluoride | SF ₆ | 3200 | 16300 | 23900 | 34900 |
| Perfluoromethane | CF ₄ | 50000 | 4400 | 6500 | 10000 |
| Perfluoroethane | C ₂ F ₆ | 10000 | 6200 | 9200 | 14000 |
| Perfluoropropane | C ₃ F ₈ | 2600 | 4800 | 7000 | 10100 |
| Perfluorobutane | C ₄ F ₁₀ | 2600 | 4800 | 7000 | 10100 |
| Perfluorocyclobutane | c-C ₄ F ₈ | 3200 | 6000 | 8700 | 12700 |
| Perfluoropentane | C ₅ F ₁₂ | 4100 | 5100 | 7500 | 11000 |
| Perfluorohexane | C ₆ F ₁₄ | 3200 | 5000 | 7400 | 10700 |

The methodology for carbon footprint calculations are still evolving and it is emerging as an important tool for green house management. In the present study carbon emission data from the campus is estimated under four categories viz.

- a. Energy
- b. Transportation
- c. Waste minimisation
- d. Carbon Sequestration

Carbon neutrality refers to achieving net zero GHG emission by balancing the measured amount of carbon released into atmosphere due to human activities, with an equal amount sequestered in carbon sinks. It is crucial to restrict atmospheric concentrations of GHGs released from various socio-economic, developmental and life style activities using biological or natural processes. It is recognized that addressing climate change is not as simple as switching to renewable energy or offsetting GHG emissions. Rather, providing an opportunity for innovation in new developmental activities for viable and effective approach to address the problem.



Energy

In the campus carbon emission from energy consumption is categorised under two headings viz. energy from Electrical and Thermal. Energy used for transportation is calculated under transportation sector.



A detailed energy audit is conducted to understand the energy consumption of the campus. Information on total connected loads, their duration of usage and documents like electricity bills are evaluated. Connected loads are calculated by conducting a survey on electrical equipment on each location. Duration of usage was found out by surveying the users. The survey of equipment was conducted in a participatory mode.

The fuel consumption for cooking, like LPG, was studied by analysing the annual fuel bills and usage schedules during the study. Discussions were carried out with the concerned individuals who actually operate the cooking system.

Transportation

Carbon emission from transportation to be calculated by using the following formula:

Carbon Emission = Number of each type of vehicles × Avg. fuel consumed per year
× Emission factors (based on the fuel used by the vehicle)

Waste Minimisation

The waste generated from the campus is also responsible for the greenhouse gas emission. So, in order to calculate the total carbon foot print of the campus it is necessary to estimate the greenhouse gas emission from the waste generated in the campus by the activity of the students, teachers and staffs.

The calculation of the waste generated has been conducted by keeping measuring buckets for collecting the waste generated in a day. This waste so generated was calculated by weighing it.



Carbon Sequestration

Carbon sequestration is the process involved in the long-term storage of atmospheric carbon dioxide. Trees remove carbon dioxide from the atmosphere through the natural process of photosynthesis and store the carbon in their leaves, branches, stems, bark, and roots.

Carbon sequestered by a tree can be found out by using different methods. Since this study is employed the volumetric approach, the calculation consists of five processes.

- Determining the total weight of the tree
- Determining the dry weight of the tree
- Determining the weight of carbon in the tree
- Determining the weight of CO₂ sequestered in the tree
- Determining the weight of CO₂ sequestered in the tree per year

Detailed calculations and results are given below.

Step 1: Determine the total green weight of the tree

The green weight is the weight of the tree when it is alive. First, you have to calculate the green weight of the above-ground weight as follows:

$W_{\text{above-ground}} = 0.25 D^2 H$ (for trees with $D < 11$)

$W_{\text{above-ground}} = 0.15 D^2 H$ (for trees with $D > 11$)

$W_{\text{above-ground}}$ = Above-ground weight in pounds

D = Diameter of the trunk in inches

H = Height of the tree in feet

The root system weight is about 20% of the above-ground weight. Therefore, to determine the total green weight of the tree, multiply the above-ground weight by 1.2:

$W_{\text{total green weight}} = 1.2 * W_{\text{above-ground}}$

Step 2: Determine the dry weight of the tree

The average tree is 72.5% dry matter and 27.5% moisture. Therefore, to determine the dry weight of the tree, multiply the total green weight of the tree by 72.5%.

$$W_{\text{dry weight}} = 0.725 * W_{\text{total green weight}}$$

Step 3: Determine the weight of carbon in the tree

The average carbon content is generally 50% of the tree's dry weight total volume. Therefore, in determining the weight of carbon in the tree, multiply the dry weight of the tree by 50%.

$$W_{\text{carbon}} = 0.5 * W_{\text{dry weight}}$$

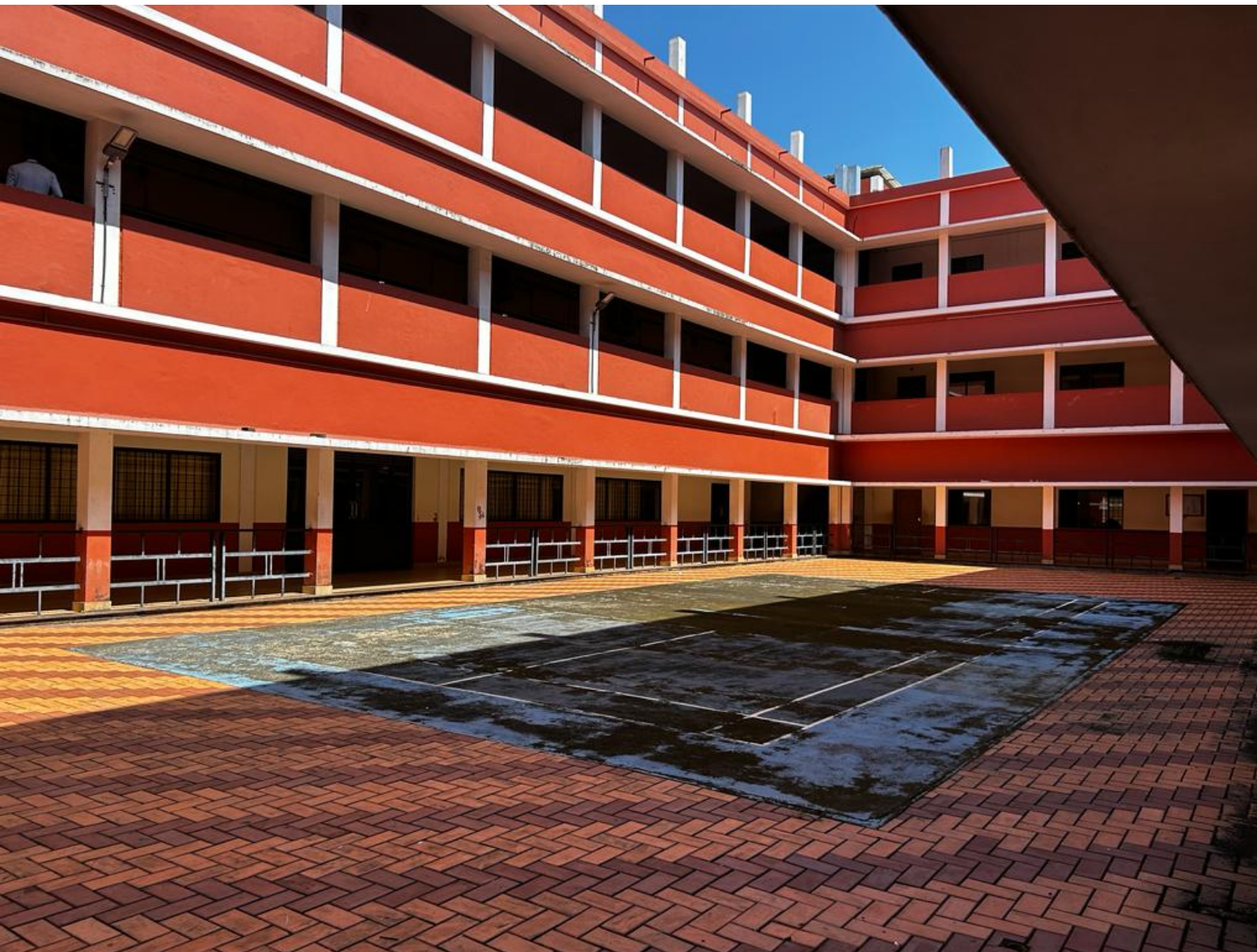
Step 4: Determine the weight of carbon dioxide sequestered in the tree

CO₂ has one molecule of Carbon and 2 molecules of Oxygen. The atomic weight of Carbon is 12 (u) and the atomic weight of Oxygen is 16 (u). The weight of CO₂ in trees is determined by the ratio of CO₂ to C is 44/12 = 3.67. Therefore, to determine the weight of carbon dioxide sequestered in the tree, multiply the weight of carbon in the tree by 3.67. $W_{\text{carbon-dioxide}} = 3.67 * W_{\text{carbon}}$



3

RESULTS AND DISCUSSIONS



3.1 CARBON FOOTPRINT ESTIMATION

3.1.1 ENERGY

a. Electricity

Electricity is purchased from KSEB under LT Connections, the details are given below.

| Electricity Connection Details | | |
|--------------------------------|--------------------------------------|---------------------------------|
| MES College, Marampally | | |
| 1 | Name of the Consumer | MES College, Marampally |
| 2 | Tariff | LT-6A Ndom |
| 3 | Consumer Numbers | 1155846010859, 1155841015860 |
| 4 | Connected Load Total (kW) | 98 |
| 5 | Annual Electricity Consumption (kWh) | 86318 |

Electricity Bill Analysis

| Electricity Bill Details (2022-23) | | | | | | |
|------------------------------------|------|-------------------------|--------------------|-----------|-----------------|------------------------------|
| Name of the Consumer | | MES College, Marampally | | | | |
| Connected Load (kW) | | 82 | Consumer no | | 1155846010859 | |
| Tariff | | LT-6A Ndom | | Section | | Vazhakulam |
| Month | kWh | Fixed charge (Rs) | Energy charge (Rs) | Duty (Rs) | Meter rent (Rs) | Total amount to be paid (Rs) |
| Apr | 3840 | 5330 | 32421 | 3242.1 | 0 | 40993 |
| May | 2490 | 5330 | 23470 | 2347.0 | 0 | 31147 |
| Jun | 2230 | 5330 | 21746 | 2174.6 | 0 | 29251 |
| Jul | 3530 | 5330 | 30365 | 3036.5 | 0 | 38732 |
| Aug | 3070 | 5740 | 27316 | 2731.6 | 0 | 35787 |
| Sep | 3030 | 5740 | 27050 | 2705.0 | 0 | 35495 |
| Oct | 3050 | 5740 | 27183 | 2718.3 | 0 | 35641 |
| Nov | 3715 | 5740 | 31592 | 3159.2 | 0 | 40491 |
| Dec | 3990 | 5740 | 33415 | 3341.5 | 0 | 42497 |
| Jan | 4810 | 5740 | 38852 | 3885.2 | 0 | 48477 |
| Feb | 4690 | 5740 | 38056 | 3805.6 | 0 | 47602 |
| Mar | 4530 | 5740 | 36995 | 3699.5 | 0 | 46435 |

| Electricity Bill Details (2022-23) | | | | | | |
|------------------------------------|------|-------------------------|--------------------|------------|-----------------|------------------------------|
| Name of the Consumer | | MES College, Marampally | | | | |
| Connected Load (kW) | | 16 | Consumer no | | 1155841015860 | |
| Tariff | | LT-6A Ndom | | Section | | |
| | | | | Vazhakulam | | |
| Month | kWh | Fixed charge (Rs) | Energy charge (Rs) | Duty (Rs) | Meter rent (Rs) | Total amount to be paid (Rs) |
| Apr | 4986 | 1040 | 32559 | 3256 | 15 | 36869 |
| May | 3169 | 1040 | 20694 | 2069 | 15 | 23818 |
| June | 1015 | 1040 | 6628 | 663 | 15 | 8346 |
| July | 3467 | 1056 | 22640 | 2264 | 15 | 25974 |
| Aug | 3286 | 1120 | 21458 | 2146 | 15 | 24738 |
| Sep | 3143 | 1120 | 20524 | 2052 | 15 | 23711 |
| Oct | 4085 | 1120 | 26675 | 2668 | 15 | 30478 |
| Nov | 3876 | 1120 | 25310 | 2531 | 15 | 28976 |
| Dec | 3987 | 1120 | 26035 | 2604 | 15 | 29774 |
| Jan | 3259 | 1120 | 21281 | 2128 | 15 | 24544 |
| Feb | 4460 | 1120 | 29124 | 2912 | 15 | 33171 |
| Mar | 4610 | 1120 | 30103 | 3010 | 15 | 34249 |

| Annual Electricity Consumption (kWh) | | |
|--------------------------------------|--------------|---------------------|
| Consumer No | 2022-23 | Connected Load (kW) |
| 1155846010859 | 42975 | 82 |
| 1155841015860 | 43343 | 16 |
| Total | 86318 | 98 |

b. Diesel

| Diesel Consumption Details | | | | |
|----------------------------|----------------|-----------|-------|--------|
| Year | Transportation | Generator | Total | cost |
| | in L | in L | in L | in Rs |
| 22-23 | 4189 | 189 | 4378 | 420900 |

c. LPG

| LPG Consumption Details | |
|-----------------------------------|---------------|
| | 2022-23 |
| No Cylinders | 133 |
| Canteen/Lab LPG Consumption in kg | 2533.3 |
| Total in kg | 2533.3 |

| Base Line Energy Data | | |
|--------------------------------|--|---------|
| MES College, Marampally | | |
| | | 2022-23 |
| 1 | Electricity KSEB (kWh) | 86318 |
| 2 | Electricity DG (kWh) | 568 |
| 3 | Electricity Solar , Off grid (kWh) | 3194 |
| 4 | Electricity (KSEB + DG + Off grid) kWh | 90080 |
| 5 | Electricity Grid Tied (kWh) | 12775 |
| 6 | Diesel (L) | 4378 |
| 7 | LPG (kg) | 2533.33 |
| 8 | Biogas generated/year (kg) | 1650.00 |

| Energy Consumption Profile | | |
|-----------------------------------|-------------|------------------|
| SI No | Fuel | 2022-23 |
| | | kCal |
| 1 | Electricity | 77468601 |
| 2 | Diesel | 45973966 |
| 3 | LPG | 30400000 |
| 4 | Biogas | 7700000 |
| Total | | 161542566 |

| Thermal Fuel Consumption | |
|--|---------|
| MES College, Marampally | |
| | 2022-23 |
| Annual LPG consumption in kg | 2533.3 |
| Annual Diesel consumption in L | 4378 |
| Annual petrol consumption in L | 0 |
| Annual Biogas consumption in kg | 1650.00 |

3.1.2 Renewable Energy



10 kWp Solar Power plant

The installation of a 10 kWp on-grid solar power plant in the campus is an exemplary initiative and one of the best practices adopted by the college. This solar power plant efficiently harnesses the abundant solar energy available, ensuring sustainable electricity generation. With an annual electricity generation capacity of 12775 units, this solar power plant not only meets a significant portion of the campus's energy needs but also helps in reducing the institution's carbon footprint. By mitigating approximately 10.48 tons of CO₂ emissions per year, the solar power plant plays a crucial role in promoting clean energy and environmental conservation within the college. It stands as a shining example of the college's commitment to renewable energy and serves as an inspiration for other institutions to follow suit.

| Solar Power Plant | |
|-------------------|-------------------------|
| Capacity (kWp) | 2022-23 |
| | Annual generation (kWh) |
| 10 | 12775 |

3.2 Specific Energy Consumption

| OTTOTRACTIONS- ENERGY AUDIT | | |
|--------------------------------|--|-----------|
| MES College, Marampally | | |
| Energy Performance Index (EPI) | | |
| SI No | Particulars | 2022-23 |
| 1 | Total building area (m ²) | 123300 |
| 2 | Annual Energy Consumption (kCal) | 161542566 |
| 3 | Annual Energy Consumption (kWh) | 187840 |
| 4 | Total Energy in Toe | 16.15 |
| 5 | Specific Energy Consumption kWh/m ² | 1.52 |

The specific energy consumption in 2022-23 may be taken as benchmark.

3.3. Waste Generation total

The major concern of waste management will be focused on the solid waste produced by the campus. Solid wastes produced in the campus are mainly of three types, food waste, paper waste, and plastic waste. Food wastes produced in the campus are mainly by two means. The vegetable wastes produced in the kitchen during the food preparation. The food waste produced by the students and staffs of the campus after the consumption of meals.



Degradable Waste

| Degradable Waste Generation | |
|------------------------------------|----------------|
| MES College, Marampally | |
| Particulars | 2022-23 |
| Total Occupancy | 2888 |
| Waste generated in kg /day | 57.76 |
| Waste generated in kg /Yr | 12707.2 |

Non-Degradable waste

| Solid non degradable Waste Generation | |
|--|----------------|
| MES College, Marampally | |
| Particulars | 2022-23 |
| Total Occupancy | 2888 |
| Waste paper generated in kg /day | 0.5776 |
| Waste plastic generated in kg /day | 0.8664 |
| Waste paper generated in kg /Yr | 127.07 |
| Waste plastic generated in kg /Yr | 190.61 |

3.4. Transportation

The college have 13 Bus for logistics

3.5. Carbon Emission Profile (2022-23)

Carbon emissions in the campus due to the day-to-day activities are calculated and are discussed below. The emission factors considered for estimation and its units are given.

| Emission Factors | | |
|------------------|---------|------------------------|
| Item | Factor | Unit |
| Electricity | 0.00082 | tCo ₂ e/kWh |
| LPG | 0.0015 | tCo ₂ e/kg |
| Diesel | 0.0032 | tCo ₂ e/kg |
| Petrol | 0.0031 | tCo ₂ e/kg |
| Food Waste | 0.00063 | tCo ₂ e/kg |
| Paper Waste | 0.00056 | tCo ₂ e/kg |
| Plastic Waste | 0.00034 | tCo ₂ e/kg |

Carbon Foot Print 2022-23

| Carbon Foot Print | | | |
|--|----------------------------|---------|--------------------|
| Sl. No. | Particulars | 2022-23 | tCO ₂ e |
| 1 | Electricity (kWh) | 90080 | 73.87 |
| 2 | Diesel (L) | 4378 | 14.01 |
| 3 | LPG (kg) | 2533.33 | 3.80 |
| 4 | Biogas (kg) | 1650.00 | 2.310 |
| 5 | Degradable Waste in kg/yr. | 12707.2 | 8.01 |
| 6 | Paper Waste in kg/yr | 127.07 | 0.07 |
| Total Carbon Foot Print tCO₂e/yr | | | 102.06 |

3.6. CARBON SEQUESTRATION

All the activities including energy consumption and waste management have their equivalent carbon emission and they positively contribute to the carbon footprint of the campus. Carbon sequestration is the reverse process, at which the emitted carbon dioxide will get sequestered according to the type of carbon sequestration employed. Even though there are many natural sequestration processes are involved in a campus, the major type of sequestration among them is the carbon sequestration by trees.

| Carbon Sequestration | |
|--|---------|
| Particulars | 2022-23 |
| Total No of Trees | 300 |
| Carbon sequestered by trees in the campus (tCO ₂ e) | 16.96 |

Trees sequester carbon dioxide through the biochemical process of photosynthesis and it is stored as carbon in their trunk, branches, leaves and roots. The amount of carbon sequestered by a tree can be calculated by different methods. In this study, the volumetric approach was taken into account, thus the details including CBH (Circumference at Breast Height), height, average age, and total number of the trees, are required. Details of the trees in the campus compound are given in the Table. Detailed table is included in the technical supplement.

Carbon sequestered by a tree can be found out by using different methods. Since this study is employed the volumetric approach, the calculation consists of five processes.

- Determining the total weight of the tree
- Determining the dry weight of the tree
- Determining the weight of carbon in the tree
- Determining the weight of CO₂ sequestered in the tree
- Determining the weight of CO₂ sequestered in the tree per year

CARBON FOOTPRINT OF THE CAMPUS (2022-23)

Various carbon emitting activities such as consumption of energy, transportation and waste generation leads to the total emission of **102.06 tCO₂e** per year by the campus. The total carbon sequestration by trees in the campus compound is **16.96tCO₂e**. Thus, the current carbon footprint of the campus will be the difference of total carbon emission and total carbon sequestration/mitigation. The following table shows the carbon footprint level:

Specific CO₂ Footprint

| Amount of Carbon to be mitigated for Low Carbon Campus | | |
|--|--|---------|
| SI No | Particulars | 2022-23 |
| 1 | Total carbon emission tCO ₂ e | 102.06 |
| 2 | Total carbon sequestration tCO ₂ e | 16.96 |
| 3 | Amount of carbon mitigated through renewable energy tCO ₂ e | 12.79 |
| 4 | To be mitigated tCO ₂ e | 72.32 |
| 5 | Total No of Students | 2888 |
| 6 | Specific Carbon Footprint kg CO ₂ e/Student/Yr | 25.04 |

The increased consumption of electricity in 2022-23 can be attributed to the ongoing construction of buildings. During this period, the total specific carbon footprint is estimated to be **25.04 kg** of CO₂e per student, based on the data for the year 2021-22.

4

Carbon Mitigation Plans



The total emission of the carbon dioxide per student is **102.06** kg per year (2022-2023). Emission reduction plans were prepared to bring the existing per capita carbon footprint to zero or below so as to bring the campus a carbon neutral or carbon negative campus.

This can be achieved in many ways but, every alternate plan must be in such a way that, it must fulfill the actual purpose of each activity that is considered.

Here, three major methods are taken in to account as the plans for reducing the carbon emission of the campus.

- Resource optimisation
- Energy efficiency
- Renewable energy

RESOURCE OPTIMISATION

The effective use of resources can limit its unnecessary wastage. Optimal usage of the resources (such as fuels) can save the fuel and can also reduce the carbon emission due to its consumption. This technique can be effectively implemented in the 'transportation' and 'waste' sectors of the campus.

WASTE MINIMISATION

Optimal utilisation of paper and plastic stationaries can reduce the frequency of purchase of items. This can reduce the unnecessary wastage of money as well as the excess production of waste. In the case of food, proper food habits and housekeeping practices can optimise its usage.

Currently, the campus is taking an appreciable effort to reduce the unnecessary production of wastes. But the campus still has opportunities to reduce the generation of waste and can improve much more. Resource optimisation can be effectively implemented in all type of waste generated in the campus and the campus can expect about 50% reduction the total waste produced.

ENERGY EFFICIENCY

Energy efficiency is the practice of reducing the energy requirements while achieving the required energy output. Energy efficiency can be effectively implemented in all the sectors of the campus.



FUELS FOR COOKING

The campus uses biogas and commercial LPG cylinders for its cooking purpose. The campus can install a biogas plant to treat food waste and the biogas thus generated can be used in kitchen. Installation of a solar water heater to rise the water temperature to a much higher level, then it has to consume only very less amount of thermal energy for preparing the same amount of food is another method. This can make a positive benefit to the campus by saving money, energy and can reduce the carbon emission of the campus due to thermal energy consumed for cooking.

TRANSPORTATION

Energy efficiency of the transportation sector is mainly depended on the fuel efficiency of the vehicles used. Here mileage of the vehicle (kmpl - Kilometres per Litre) is calculated to assess the fuel efficiency of the vehicle.

Percentage of closeness is the ratio of actual mileage of the vehicle to its expected mileage. If the percentage of closeness of mileages of each vehicle is greater than that of its average, then the efficiency status of the vehicle is considered as 'Above average' and else, it is considered as 'Below average'.

Carbon Mitigation Proposals

After analyzing the historical and measured data the following projects are proposed to make the campus carbon neutral. The projects are from energy efficiency and renewable energy. The further additions in the green cover increase will also give positive impact in the carbon mitigation.

| OTTOTRACTIONS- ENERGY AUDIT | | | | | | |
|--|---|-----------------------|-----------|------------------------|---------------------------------|---|
| MES College, Marampally | | | | | | |
| Greenhouse Gas Mitigation through Major Energy Efficiency Projects | | | | | | |
| Sl No | Projects proposed | Energy saved(Yearly) | | Sustainability (Years) | First year ton of CO2 mitigated | Expected Tons of CO2 mitigated through out life cycle |
| | | (kWh) | MWh | Years | | |
| 1 | Energy Saving in Lighting by replacing existing 53 No's T8 (40W) Lamps to 18W LED Tube | 1119 | 1.12 | 10 | 0.82 | 8.17 |
| 2 | Energy Saving in Lighting by replacing existing 98 No's T12 (55W) Lamps to 18W LED Tube | 2600 | 2.60 | 10 | 1.90 | 18.98 |
| 3 | Energy Saving by replacing existing 350 No's in-efficient ceiling fans with Energy Efficient Five star fans | 6586 | 6.59 | 10 | 4.81 | 48.07 |
| Total | | 10305 | 10 | 10 | 7.52 | 75.23 |

| OTTOTRACTIONS- ENERGY AUDIT | | | | | | |
|---|---|----------------------|-------|------------------------|---------------------------------|---|
| MES College, Marampally | | | | | | |
| Greenhouse Gas Mitigation through Renewable Energy Projects | | | | | | |
| Sl No | Projects | Energy saved(Yearly) | | Sustainability (Years) | First year ton of CO2 mitigated | Expected Tons of CO2 mitigated through out life cycle |
| | | (kWh) | MWh | Years | | |
| 1 | Installation of 70kWp Solar Power Plant | 95813 | 95.81 | 25 | 69.94 | 1748.58 |

| OTTOTRACTIONS- ENERGY AUDIT | |
|--|-------|
| Energy Saving Proposal | |
| Energy Saving in Lighting by replacing existing 53 No's T8 (40W) Lamps to 18W LED Tube | |
| Existing Scenario | |
| 53 numbers of T8(40 W) lamps were identified during the energy audit field survey in the facility. During discussion with officers it is observed that the average utility of these fittings are of 30%. | |
| Proposed System | |
| The existing T8 may be replaced to LED Tube of 18W in phased manner and the savings will be of 55% (inclusive of improved light output and reduced energy consumption) | |
| Financial Analysis | |
| Annual working hours (hr) | 2400 |
| No of fittings | 53 |
| Total load (kW) | 2.12 |
| Annual Energy Consumption (kWh) | 2035 |
| Expected Annual Energy saving for replacing all fittings (kWh) | 1119 |
| Cost of Power (Rs) | 7.00 |
| Annual saving in Lakhs Rs (1st year) | 0.08 |
| Investment required for complete replacements [@Rs 300 per fittings](Lakhs Rs) | 0.16 |
| Simple Pay Back (in Months) | 24.35 |

| OTTOTRACTIONS- ENERGY AUDIT | |
|---|-------|
| Energy Saving Proposal | |
| Energy Saving in Lighting by replacing existing 98 No's T12 (55W) Lamps to 18W LED Tube | |
| Existing Scenario | |
| 98 numbers of T12(55 W) lamps were identified during the energy audit field survey in the facility. During discussion with officers it is observed that the average utility of these fittings are of 30%. | |
| Proposed System | |
| The existing T12 may be replaced to LED Tube of 18W in phased manner and the savings will be of 67% (inclusive of improved light output and reduced energy consumption) | |
| Financial Analysis | |
| Annual working hours (hr) | 2400 |
| No of fittings | 98 |
| Total load (kW) | 5.39 |
| Annual Energy Consumption (kWh) | 3881 |
| Expected Annual Energy saving for replacing all fittings (kWh) | 2600 |
| Cost of Power (Rs) | 7.00 |
| Annual saving in Lakhs Rs (1st year) | 0.18 |
| Investment required for complete replacements [@Rs 300 per fittings](Lakhs Rs) | 0.29 |
| Simple Pay Back (in Months) | 19.38 |

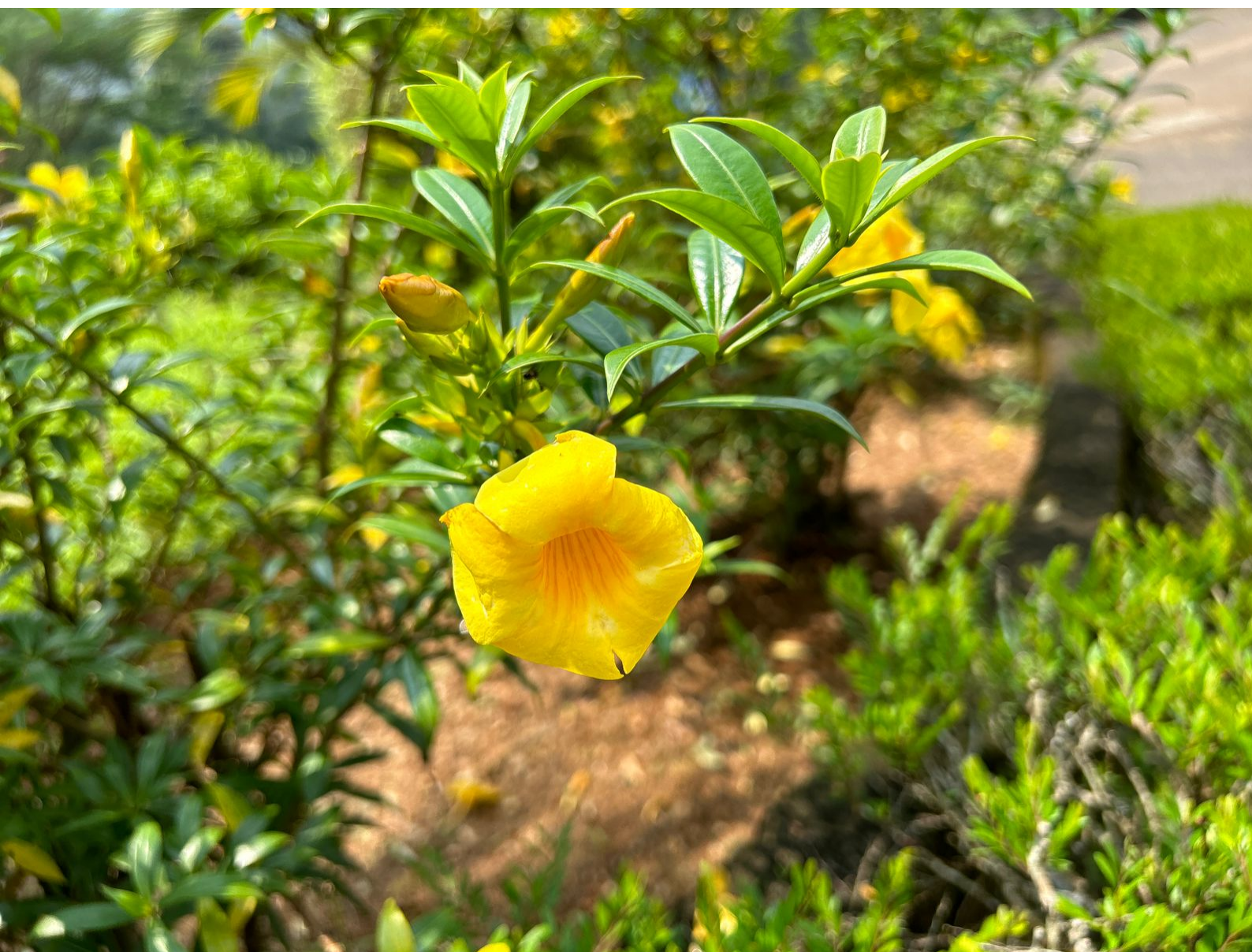
| OTTOTRACTIONS- ENERGY AUDIT | |
|--|--------|
| Energy Saving Proposal | |
| Energy Saving by replacing existing 350 No's in-efficient ceiling fans with Energy Efficient Five star fans | |
| Existing Scenario | |
| There are 350 numbers of ceiling fans installed in the facility with minimum 8 hrs a day operation. All are conventional type and most of them are very old. | |
| Proposed System | |
| There is an energy saving opportunity in replace the existing fans with new five star labelled fans. The five star labelled fans give a savings up to 30% with higher service value (air delivery/watt). | |
| Financial Analysis | |
| Annual working hours (hrs) | 2400 |
| Total numbers of ordinary fans | 350 |
| Total load (kW) | 24.50 |
| Annual Energy Consumption (kWh) | 23520 |
| Expected Annual Energy saving, for total replacement(kWh) | 6586 |
| Cost of Power (Rs) | 7.00 |
| Annual saving in Lakhs Rs (1st year) | 0.46 |
| Investment required for a total replacement (Lakhs Rs) [@3000 Rs per Fan with 50W at full speed] | 10.50 |
| Simple Pay Back (in Months) | 273.32 |

| Energy Saving Proposal | |
|--|--------|
| Installation of 70kWp Solar Power Plant | |
| Existing Scenario | |
| There is a good potential of solar power electricity generation. The availability of sunlight is very high. There are some canopies available in the proposed site, but by having proper trimming of trees this may be avoided. If the SPVs are placed on the roof top it will help in improving RTTV (Roof Thermal Transmittance Value) of the building. | |
| Proposed System | |
| It is proposed to have a Solar Power Plant of 10kW at the beginning stage. The state and central government is pushing and giving good assistance to the installation. It can be installed as an internal grid connected system which is much cheaper than off grid system. Now days the technology provides trouble free grid interactive and connected system. The installation will provide 25yrs trouble free generation with only 20% efficiency loss at the 25th year. | |
| Financial Analysis | |
| Proposed Solar installed Capacity (kW) | 70 |
| Total average kWh per day expected (3.5kWh/day average) | 262.50 |
| Total annual Generating Capacity (kWh) | 95813 |
| Cost of energy generated annually Lakhs Rs | 12.74 |
| Investment required (INR lakh)(Approx) | 38.50 |
| Simple Pay Back (in Months) | 36.26 |
| Life cycle in Yrs | 25 |
| Total Saving in Life Cycle (Approx) RS lakh | 318.58 |

| Executive Summary | | | | | |
|--|---|--------------|--------------|--------------|---------------|
| Consolidated Cost Benefit Analysis of Energy Efficiency Improvement Projects | | | | | |
| MES College, Marampally | | | | | |
| SI No | Projects | Investment | Cost saving | SPB | Energy saved |
| | | (Lakhs Rs) | (Rs)/Yr | Months | kWh/Yr |
| 1 | Energy Saving in Lighting by replacing existing 53 No's T8 (40W) Lamps to 18W LED Tube | 0.16 | 0.078 | 24.35 | 1119 |
| 2 | Energy Saving in Lighting by replacing existing 98 No's T12 (55W) Lamps to 18W LED Tube | 0.29 | 0.182 | 19.38 | 2600 |
| 3 | Energy Saving by replacing existing 350 No's in-efficient ceiling fans with Energy Efficient Five star fans | 10.50 | 0.461 | 273.32 | 6586 |
| 4 | Installation of 70kWp Solar Power Plant | 38.50 | 12.743 | 36.26 | 95813 |
| | Total | 49.45 | 13.46 | 88.33 | 106118 |
| (The saving are projected as per the assumed operation time observed based in the discussions with the plant officials. The data of saving percentages are taken from BEE guide books and field measurements.) | | | | | |

5

CONCLUSION



The carbon emission from different sectors namely, Energy, Transportation and wastes were calculated using standard procedures. Carbon sequestration by the trees present in the campus was also estimated. From these the total carbon footprint of the campus was arrived at.

| Net Carbon Emission after implementing Energy Efficiency projects and Renewable Energy Projects Proposed | | |
|--|--|--------|
| 1 | Total Carbon Foot Print tCO ₂ e/yr | 102.06 |
| 2 | Carbon Sequestered tCO ₂ e/yr | 16.96 |
| 3 | Carbon mitigated by Renewable Energy tCO ₂ e/yr (Installed) | 12.79 |
| 4 | Carbon mitigated by Renewable Energy tCO ₂ e/yr (Proposed) | 69.94 |
| 5 | Carbon mitigated by Energy Efficiency (Proposed) tCO ₂ e/yr | 7.52 |
| 6 | Effective Carbon footprint tCO ₂ e/yr | -5.15 |
| 7 | Total No of Students | 2671 |
| 8 | Specific Carbon Footprint kg CO ₂ e/Student/Yr | -1.93 |

From this study it was found that carbon footprint of the campus to be **-1.93 kgCO₂e/ Student/ Year** in place of current footprint i.e., **102.06kgCO₂e/ student/ Year**. To achieve this, an investment of **49.45 Lakhs Rs** is required through energy efficiency and renewable energy projects proposed. It will be around **1851 Rs per student** to make the campus the carbon negative.

| Cost to make the campus Carbon Negative | | |
|---|---|-------|
| 1 | Cost of implementation in Energy Efficiency Lakhs Rs | 10.95 |
| 2 | Cost of implementation in Renewable Energy Lakhs Rs | 38.50 |
| 3 | Total Lakhs Rs | 49.45 |
| 4 | Total number of students | 2671 |
| 5 | Cost per student to make the campus carbon negative Rs/ Student | 1851 |

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6

TECHNICAL SUPPLEMENT



| MES College, Marampally | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|-------------|-------------------------|--------------|---------|------------|-----|------|------------|------|-----|-----|-----|-------|----|-----------|-----------|---------|---|-----|--------|----------------|--------|-----|----------------|-----|------------|--|--|---|--|---|--|
| Sl. No | Building | Location | Lights | | | | | | Fans | | | | | IT | | | AC | | | Others | | | | | | | | | | | | |
| | | | LED - T | LED -sq | LED - 20 W | T 8 | T1 2 | LED - 18 W | CF | P F | E F | W F | BLD C | PC | projector | Photostat | printer | 1 | 1.5 | 3 | Coffee machine | Fridge | LCD | Water Purifier | T V | UPS(20kVA) | | | | | | |
| 1 | South block | Silver Jubilee Hall | | | | | | 27 | | | | | 14 | | | | | | | | | | | | 5 | | | | | | | |
| 2 | | Classroomx8 | 16 | | | | | | 32 | | | | | | 4 | | | | | | | | | | | | | | | | | |
| 3 | | Classroomx3 | 6 | | | | | | | 6 | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | Departmentx4 | | | | | | | 16 | 12 | | | | | 8 | | | | | | | | | | | | | | | | | |
| 5 | | Library | 25 | | | | | | 3 | 33 | | 3 | | | 15 | | 1 | | 1 | | | | | | | | | | 1 | | | |
| 6 | | Computer Lab | | 10 | | | | | | 7 | | | | | 80 | 1 | | 1 | | 6 | | | | | | | | | | | 2 | |
| 7 | | 3D animation Lab | | 10 | | | | | | 6 | | | | | 56 | | | | | 4 | | | | | | | | | | | | |
| 8 | | 2D animation | 4 | | 30 | | | | | 2 | | | | | 4 | | | | | | | | | | | | | | | | | |
| 9 | | Stop motion Lab | 2 | | | | | | | 2 | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | Research Lab | 4 | | | | | | | 6 | | | | | 4 | | | | | | | | | | | | | | | | | |
| 11 | | Examination hall | 14 | | | | | | | 4 | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | Audio Vision room | 6 | | | | | | | | | | | | | | | | | 2 | | | | | | | | | | | | |
| 13 | | Corridor | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | | Integrated chemisty Lab | 16 | | | | | | | 10 | | 1 | | | | | | | | | | | | | | | | | | | | |
| 15 | | Classroomx6 | 6 | | | | | | | 18 | 24 | | | | | | | | | | | | | | | | | | | | | |
| 16 | | Classroomx3 | | | | | | | | 6 | 6 | | | | | | | | | | | | | | | | | | | | | |
| 17 | | Advaced electronic lab | | | | | | | | 1 | 10 | | | | 8 | | | | | | | | | | | | | | | | | |
| 18 | | Department | | | | | | 8 | 7 | | 2 | | | | | | | | | | | | | | | | | | | | | |
| 19 | | E.K Abdul Khader Block | Classroomx15 | 30 | | | | | | 30 | 60 | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | Canteen | | | | | | | 12 | 2 | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|-------------|---------------------|------------------|----|----|--------|----|-----|---------|---|---|---|----|---------|--------|---|---|---|----|---|---|---|---|---|---|---|
| 21 | Admin Block | Microbiology Labx2 | 2 | | | 2 | | | 4 | | 1 | | | | | | | | | | 1 | | | | | |
| 22 | | Corridor | | | | 1 0 | | | | | | | | | | | | | | | | | | 2 | 1 | |
| 23 | | Biotechnology Labx3 | 27 | | | | | | 27 | | | | | 9 | | | | | | | | 3 | | | 3 | |
| 24 | | Classroomx16 | 1 | | | 3 2 | 16 | | 4 | | | | | | | | | | | | | | | | | |
| 25 | | Reception | | | | | | 9 | | | | 2 | | | | | | | | | | | | | | |
| 26 | | Classroomsx6 | 6 | | | | 6 | | 12 | | | | | | | | | | | | | | | | | |
| 27 | | Electronics Lab | 7 | | | 1 | 2 | | | | | | 10 | | | | | | | | | | | | | |
| 28 | | Store | 2 | | | | | | 1 | | | | | | | | | | | | | 2 | | | | |
| 29 | | Principal Room | | | | | | 14 | | | | 2 | | 1 | | | 2 | | | | | | 1 | | | |
| 30 | | Exam control Room | | | | | | 6 | | | | | | 1 | | 1 | | 1 | | | | | | | | |
| 31 | | IQAC | | | | | | 9 | | 1 | | | | 2 | | | 2 | 1 | | | | | | | | |
| 32 | | Conference Room | | | | | | 32 | | | | | | | 1 | | | | 4 | | | | | | | |
| 33 | | Hostel | Hostel(6 rooms) | 12 | | | | | 12 | | | | | | | | | | | | | | | | | |
| 34 | | | Hostel(66 rooms) | 66 | | | | | 66 | | | | | | | | | | | | | | | | | |
| | | Total | 269 | 20 | 30 | 5 3 | 98 | 116 | 35 0 | 1 | 5 | 4 | 24 | 18 8 | 2 1 | 2 | 3 | 4 | 17 | 5 | 2 | 4 | 1 | 2 | 5 | 2 |

KERALA STATE ELECTRICITY BOARD LIMITED

DEMAND CUM DISCONNECTION NOTICE

(As per Regulation 122 & 123 of Kerala Electricity Supply Code 2014)

| | | | | | | |
|---|--------------------------------------|---|---------------------|--|------------------------------|--------------------------|
| Section | [5584]-Electrical Section Vazhakulam | Phone# | 0484-2523255 | Customer Care | 1912 | |
| Consumer# | 1155846010859 | Reg. Mob# | 953xxxx420 | Regular CC Bill | KSEBL GSTIN: 32AAECK2277NBZ1 | |
| Name & Mailing Address | | For redressing complaints/grievance approach the concerned CGRF | | | | |
| SECRETARY | | South: Chairperson,CGRF(South),KSEB Ltd, Vidythi Bhavanam,Kottarakkara-691506, Ph:0474-2060220 | | | | |
| MES COLLAGE | | Central: Chairperson,CGRF(Central),KSEB Ltd, Power House Building Ernakulam-682018, Ph:0484-2394288 | | | | |
| MARAMPILLY | | North: Chairperson,CGRF(North),KSEB Ltd,Gandhi Road,Kozhikode-32, Ph:0495-2367820 | | | | |
| | | State Electricity Ombudsman, Pallikkavil Building,Mamangalam, Edappally, Kochi-682024 Ph:0484-2346488 | | | | |
| Bill# | 5584220500349 | Bill Area | M04/2 | DTR | MES COLLEGE NO 1 | |
| Billing Period | 5/2022[Monthly] | Tariff/Phase | LT-6A/Three | Pole# | KK-34/3 | |
| Bill Date | 03-05-2022 | Due Date | 13-05-2022 | DC Date | 28-05-2022 | |
| Contract Demand | (Nil) VA [75% : 0KV, 130% : 0KV] | Connected Load | 81832 Watts | Security Deposit | Rs.128272.00 | |
| Meter# | SCM0CUST0000083145 | Average consumption(Monthly) | | | | |
| Meter Digits | 6.2 | Power Unit/Zone | CUMULATIVE | | | |
| Meter Type/Owner | NET Meter/Customer | KWH | 5851 | | | |
| Last Billed Rdg. Date | Prev. Rdg. Date | Prev. Meter Rdg. Status | | Prst. Rdg. Date | Prst. Meter Rdg. Status | |
| 01-04-2022 | 01-04-2022 | Working | | 03-05-2022 | Working | |
| Power Unit | Zone | Trading | Initial Reading(IR) | Final Reading(FR) | OMF | Units* |
| KWH | Cumulative | Import | 4073.00 | 4250.00 | 20 | 3540 |
| KWH | Cumulative | Export | 22.80 | 23.25 | 20 | 9 |
| Remarks : | | | Bill Details | | | [INR] Amount(Rs.) |
| Last Paid Amount - Rs.47846.00 Last Payment Date - 05-04-2022 | | | a) | Fixed Charges | Fixed Charge[FC] | 5330.00 |
| | | | | | Sub Total | 5330.00 |
| | | | b) | Energy Charges | Energy Charge[EC] | 22951.50 |
| | | | | | Sub Total | 22951.50 |
| | | | c) | Other Charges | Electricity Duty[ED] | 2295.15 |
| | | | | | Sub Total | 2295.15 |
| | | | | | Sub Total | 0.00 |
| | | | e) | Round Off | | 0.35 |
| | | | f) | Total Amt.(Bill#5584220500349) (a+b+c+e) | | 30577.00 |
| | | | g) | Surcharge | | 0.00 |
| | | | h) | Reconnection Fee | | 0.00 |
| | | | i) | Interim Bills | | 0.00 |
| | | | j) | Arrears | | 0.00 |
| | | | k) | Less paid/adj. | | -0.00 |
| l) | Less Advance | | -0.00 | | | |
| | Net Payable(f+g+h+i+j-k-l) | | 30577.00 | | | |
| Demand for 5/2022 is Rupees Thirty Thousand Five Hundred and Seventy Seven Only | | | | | | |

E&OE Payment Options: Cash,Cheque,DD,MO. Online: www.kseb.in (Debit/Credit Cards,Net Banking). Other Platforms: BBPS,Friends,Akshaya,CSC,NACH

Senior Superintendent

Solar OnGrid Consumer (Generator)

| | | | |
|-------------------|---------------|----------------|-----------|
| Consumer No. | 1155846010859 | Consumer Name | SECRETARY |
| SPIN | 558400017 | Plant Capacity | 10 KW |
| Grid Connected On | 11-03-2020 | | |

Bank Statement for 202205 (Generator)

| | | | |
|----------------|----------|--------------------|----------|
| Units Imported | 3540 kWh | Units Exported | 9 kWh |
| Bank Opening | 0.000 | Billed Consumption | 3531 kWh |
| Bank Closing | 0.000 | | |

Consumption Adjustment Report

| Bill Month | Consumer # | Export | Zone Code | Cons. | Banked Energy | Solar Energy (Bank Energy X Factor) | Adjusted from bank | Billed Cons. | Banked Balance |
|------------|------------|--------|-----------|-------|---------------|-------------------------------------|--------------------|--------------|----------------|
| 202204 | 10859 | 7 | A | 5960 | 0 | 0 | 0 | 5953 | 0 |
| 202205 | 10859 | 9 | A | 3540 | 0 | 0 | 0 | 3531 | 0 |

Page 1

FACTOR : 0-Reading Not Accepted/Door Lock 0.95-Applying Wheeling Charges 1.05-Resetting Wheeling Charges

KERALA STATE ELECTRICITY BOARD LIMITED

DEMAND CUM DISCONNECTION NOTICE

(As per Regulation 122 & 123 of Kerala Electricity Supply Code 2014)

| | | | | | | |
|---|--------------------------------------|--|---------------------|---|--------------------------|-----------------|
| Section | [5584]-Electrical Section Vazhakulam | Phone# | 0484-2523255 | Customer Care | 1912 | |
| Consumer# | 1155841015860 | Reg. Mob# 944xxxx776 | Regular CC Bill | KSEBL GSTIN: 32AAECK2277NBZ1 | | |
| Name & Mailing Address | | For redressing complaints/grievance approach the concerned CGRF | | | | |
| SECRETARY M E S COLLEGE, MARAMPILLY | | South: Chairperson,CGRF(South),KSEB Ltd, Vidythi Bhavanam,Kottarakkara-691506, Ph:0474-2060220 | | | | |
| | | Central: Chairperson,CGRF(Central),KSEB Ltd, Power House Building Ernakulam-682018, Ph:0484-2394288 | | | | |
| | | North: Chairperson,CGRF(North),KSEB Ltd,Gandhi Road,Kozhikode-32, Ph:0495-2367820 | | | | |
| | | State Electricity Ombudsman, Pallikkavil Building,Mamangalam, Edappally, Kochi-682024 Ph:0484-2346488 | | | | |
| Bill# | 5584230300605 | Bill Area | M07/3 | DTR | MES COLLEGE NO 1 | |
| Billing Period | 3/2023[Monthly] | Tariff/Phase | LT-6A/Three | Pole# | KK-34/3 | |
| Bill Date | 01-03-2023 | Due Date | 11-03-2023 | DC Date | 27-03-2023 | |
| Contract Demand | (Nil) VA [75% : 0KV, 130% : 0KV] | Connected Load | 15898 Watts | Security Deposit | Rs.60588.00 | |
| Meter# | GOE020180004352974 | Average consumption(Monthly) | | | | |
| Meter Digits | 6.2 | Power Unit/Zone | CUMULATIVE | | | |
| Meter Type/Owner | TOD/KSEB | KWH | 4064 | | | |
| Last Billed Rdg. Date | | Prev. Rdg. Date | | Prev. Meter Rdg. Status | | |
| 02-02-2023 | | 02-02-2023 | | Working | | |
| Prst. Rdg. Date | | Prst. Meter Rdg. Status | | | | |
| 01-03-2023 | | Working | | | | |
| Power Unit | Zone | Trading | Initial Reading(IR) | Final Reading(FR) | OMF | |
| KWH | Cumulative | Import | 111274.00 | 115884.00 | 1 | |
| Units* | | | 4610 | | | |
| Remarks : | | | Bill Details | | | |
| Last Paid Amount - Rs.33755.00 Last Payment Date - 07-02-2023 | | | | | [INR] Amount(Rs.) | |
| | | | a) | Fixed Charges | Fixed Charge[FC] | 1120.00 |
| | | | | | Sub Total | 1120.00 |
| | | | b) | Energy Charges | Energy Charge[EC] | 30656.50 |
| | | | | | Fuel Surcharge[FS] | 414.90 |
| | | | | | Sub Total | 31071.40 |
| | | | c) | Other Charges | Electricity Duty[ED] | 3065.65 |
| | | | | | Meter Rent[MR] | 15.00 |
| | | | | | Sub Total | 3080.65 |
| | | | d) | GST | MR-CGST | 1.35 |
| | | | | | MR-SGST | 1.35 |
| | | | | | Sub Total | 2.70 |
| | | | e) | Round Off | | 0.25 |
| | | | f) | Total Amt.(Bill#5584230300605) (a+b+c+d+e) | | 35275.00 |
| g) | Surcharge | | 0.00 | | | |
| h) | Reconnection Fee | | 0.00 | | | |
| i) | Interim Bills | | 0.00 | | | |
| j) | Arrears | | 0.00 | | | |
| k) | Less paid/adj. | | -0.00 | | | |
| l) | Less Advance | | -0.00 | | | |
| | Net Payable(f+g+h+i+j-k-l) | | 35275.00 | | | |
| Demand for 3/2023 is Rupees Thirty Five Thousand Two Hundred and Seventy Five Only | | | | | | |

E&OE **Payment Options:** Cash,Cheque,DD,MO. **Online:** www.kseb.in (Debit/Credit Cards,Net Banking). Other Platforms: BBPS,Friends,Akshaya,CSC,NACH

DYUTHI 2023

ONE DAY TECHNOLOGICAL SKILL DEVELOPMENT WORKSHOP ON ENERGY CONSERVATION

Sponsored by

Energy Management Centre, Thiruvananthapuram



Organized by

**Department of Electronics &
Energy & Environmental Conservation Club**

MES College Marampally



On

13 February 2023

Venue: Conference Hall, MES College Marampally

In connection with

International Day of Women and Girls in Science

REPORT

Theme: 'SAVE TODAY; SURVIVE TOMORROW'

Energy conservation is a need of the present time. In order to ensure a better future for the upcoming generations we have to be more responsible and conscious. Saving energy is important because energy use affects the environment and every living being in it. With this objective and as part of International Day of Women and Girls in Science, the Department of Electronics in association with the Energy & Environmental Conservation Club (EECC) of MES College Marampally organized a one-day technological skill development workshop on 'Energy Conservation' for the housewives of Vazhakulam Gramapanchayat & girl students of the college on 13 February 2023. The program was sponsored by the Energy Management Centre (EMC), Thiruvananthapuram, and supported by the Energy Conservation Society (ECS). This is the fourth time we have conducted the workshop for the housewives of Vazhakkulam grama panchayath.

Programme

| | |
|--------------------|--|
| Registration | : 9:00 am |
| Inaugural Function | : 9:45 am – 10:30 am |
| Inaugural Address | : Adv. Sreekala A Advocate, High Court of Kerala |
| Tea break | : 10:30 am – 10: 45 am |
| Session 1 | |
| Time | : 10.45 am – 12.30 pm |
| Topic | : Session on Energy Conservation– Tips to save energy |
| Resource Person | : Sri. Baby Kuraikose, General Manager, Renergy Systems India Private Limited, Thiruvananthapuram |
| Lunch break | : 12:30 pm – 1.30 pm |
| Session 2 | |
| Time | : 1.30 pm – 3.15 pm |

Topic : **Maintenance of electrical and electronic household equipment and how to improve their lives**

Resource Person : **Sri. Trinayanan N R,**
Group Instructor, Industrial Training Department (Rtd) &
General Secretary, Energy Conservation Society

Closing function : 3.15 pm – 3.45 pm

Feedback, Distribution of Certificates & National Anthem

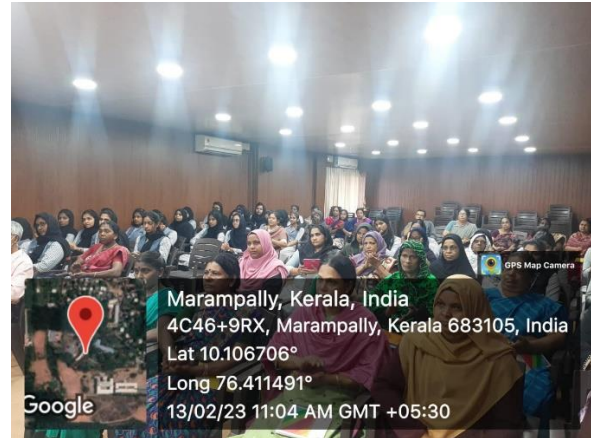
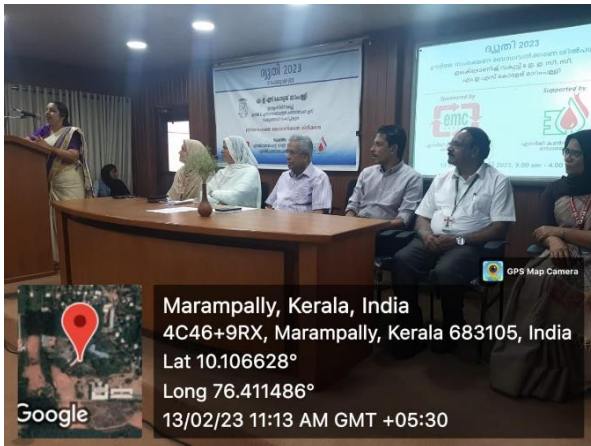
Tea : 3.45 pm - 4 pm

Inaugural function

The programme was inaugurated by **Adv. Sreekala A**, Advocate of High Court of Kerala in the function presided over by Dr. Ajims P Mohammed, Principal of the College. Dr. Shemi P M, Coordinator of the programme delivered welcome speech; Adv Abul Hassan, Chairman of the College Managing Committee, Dr. Jasmine P M, Vice Principal, and IQAC Coordinator; Ms. Rejeena K A, Head of the Department of Electronics gave felicitations and Ms. Jisana Navas of II BSc Electronics proposed vote of thanks.



Inaugural address by Adv Sreekala A



Session 1

The first session started at 11:15 am. The **'Technical Session on Energy Conservation– Tips to save energy'** was handled by Sri. Baby Kuraikose, Director, General Manager, Renergy Systems India Private Limited, Thiruvananthapuram. He explained the basics of energy and its various forms, energy conservation and management, and tips on energy saving in home appliances in the session. Every person can save energy by eliminating the unnecessary use of fans, lights, heaters, or other electrical instruments used in their daily life. It is the easiest and most effective way to save extra energy usage.



Session 1

Session 2

After the lunch break, the second session started at 1.45 pm. The session on '**Maintenance of electrical and electronic household equipment and how to improve their lives**' was handled by Sri. Trinayanan N R, Group Instructor, Industrial Training Department (Rtd) & General Secretary, Energy Conservation Society. In the session, he explained how to make our home more energy efficient, the health hazards of electronic equipment, safety measures, etc.



Session 2

After the second session, the closing function was held at 3:15 pm. Dr. Jasmine P M, Vice Principal, and IQAC Coordinator gave the valedictory address. A feedback session followed by the distribution of certificates was held during the closing function. Dr. Shemi PM, Coordinator proposed a vote of thanks.

About 94 participants (51 housewives and 43 girls) attended the programme. The sessions were very interactive and good feedback was received from the participants. Various sessions of the programme imparted useful information about energy conservation. Overall the programme was a great success.

ഊർജ്ജ സംരക്ഷണ ബോധവൽക്കരണ ശില്പശാല

പെരുമ്പാവൂർ: ഊർജ്ജ സംരക്ഷണ പ്രവർത്തനങ്ങളുടെ ഭാഗമായി മാറംപള്ളി എം.ഇ.എസ് കോളേജിലെ ഇലക്ട്രോണിക്സ് വകുപ്പും ഇ.ഇ.സി.സി.യും സംയുക്തമായി ഇന്റർനാഷണൽ ഡേ ഒഫ് വുമൺ ആൻഡ് ഗേൾസ് ഇൻ സയൻസിനോട് അനുബന്ധിച്ച് വാഴക്കുളം പഞ്ചായത്തിലെ വീട്ടമ്മമാർക്കും കോളേജ് വിദ്യാർത്ഥിനികൾക്കുമായി ഊർജ്ജസംരക്ഷണ ബോധവൽക്കരണ ശില്പശാല സംഘടിപ്പിച്ചു. കോൺഫറൻസ് ഹാളിൽ നടന്ന പരിപാടി അഡ്വ. എ. ശ്രീകല ഉദ്ഘാടനം ചെയ്തു. ബേബി കര്യൂക്കോസും എൻ.ആർ. ത്രിനയനനും ക്ലാസ് നയിച്ചു. പ്രിൻസിപ്പൽ ഡോ. അജിംസ് പി. മുഹമ്മദിന്റെ അധ്യക്ഷതയിൽ നടന്ന യോഗത്തിൽ മാനേജ്മെന്റ് കമ്മിറ്റി ചെയർമാൻ അഡ്വ. എ.എ. അബ്ദുൽ ഹസൻ, വൈസ് പ്രിൻസിപ്പൽ ഡോ. ജാസ്വിൻ പി.എം, ഇലക്ട്രോണിക്സ് വകുപ്പുമേധാവി രജീന കെ.എ. പ്രോഗ്രാം കോഓർഡിനേറ്റർ ഡോ. ഷൈമി പി.എം എന്നിവർ സംസാരിച്ചു.

KERALA KAUMUDI EPAPER
Clipping Kerala Kaumudi - Ernakulam

Dr. Shemi P.M.
Coordinator, Dyuthi 2023
Associate Professor, Department of Electronics
MES College Marampally

MES COLLEGE MARAMPALLY CANOPY NATURE CLUB REPORT

05-06-2022

ENVIRONMENT DAY CELEBRATION

10 students from Nature Club participated in the programme conducted by Kerala Forestry Department at Edappalli Government High School, Kunnupuram, North Edappalli. Smt Indu Vijayan inaugurated the function.





ACTIVITY CONDUCTED IN CONNECTION WITH WORLD ENVIRONMENT DAY



महात्मा गांधी राष्ट्रीय ग्रामीण शिक्षा परिषद
Mahatma Gandhi National Council of Rural Education
Department of Higher Education, Ministry of Education, Government of India



World Environment Day 5th June 2022

Only One Earth!

Calling Higher Education Institutions to Contribute to Swachh and Sustainable Earth






Leave Your Footprints on Earth for a Sustainable Future!
Activities You Can Do – Unearth Yourself!

- 📍 Find Out Area Under Green Cover in your Campus
- 🌱 Initiate Campus Nursery – Distribute Plant Seeds
- 🗑️ Form Swachh Teams – Take up Challenge to Observe Zero Waste Week on Campus
- 🏆 Appreciate & Award Best Performing Team Members as Zero Waste Champions!

📄 Document the Day's Proceedings and Send the Report to MGNCRE
Email: mgncre2023@gmail.com Register: <https://forms.gle/HSvYLSJ3w3DCIDB8>

For Queries, Please Contact B S C Naveen Kumar Phone: 7660802102 Email: mgncre2023@gmail.com

Activity 1

Build up! Outdoor classrooms and healthy open places on Campus

As a part of the programmes announced by Mahatma Gandhi National Council of Rural Education for Higher Education Institutions, to encourage and rehabilitate the environment, our college has adopted Activity 1 which is *to build up outdoor class room and healthy open places on campus.*

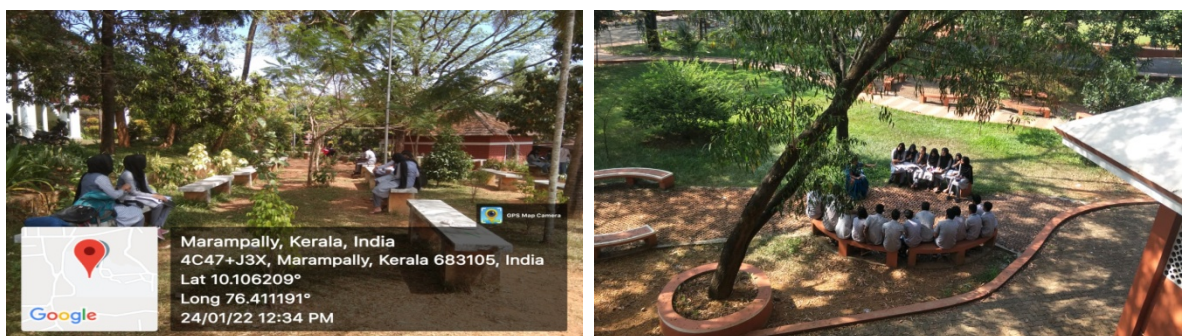
World Environment Day 2022 is held under the theme **Only One Earth**, highlighting the need to live sustainably in harmony with nature by bringing transformative changes – through policies and our choices towards cleaner, greener lifestyles. It also calls for collective, transformative action on a global scale to celebrate, protect and restore our planet.

Engaged learning environment increases students' attention and promotes meaningful learning experiences, encourages higher levels of student performance, and motivates students to practice higher-level critical thinking skills. Here the work is done collaboratively. Learning spaces help to build better relationships and communication between classmates. The students focus more on creativity rather than productivity. These areas awaken students' interest in learning.



Our campus grounds provide excellent learning opportunities on plant and animal resources. Here our teachers take classes in these open spaces which provide students to breathe fresh air and to interact with nature.

The positive effects of nature exposure include improved cognitive functioning (including increased concentration, greater attention capacities, and higher academic performance), better motor coordination, reduced stress levels, increased social interaction with adults and other children, and improved social skills.



Several factors can affect learning ability, including seating, light, noise, and even colour. Students who study in a positive learning environment have been shown to be more motivated, engaged, and have a higher overall learning ability.



With the approval and financial support of **KSCSTE**, the college has constructed “**Santhisthal**”, which is a project aimed at conservation of rare endangered and threatened species of plants and medicinal herbs. For that, *we created a diversity club under the supervision of which “Shanthisthal” was constructed in an area of 10 cents, where plants of medicinal values were planted, nurtured, maintained including RET species of plants in the backyard of the E K block of the campus.*



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.

Environment Audit was done with the aim to assess mainly on *waste management* of the campus. The college vision is *“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”*.

The mission of college is *“to mould individuals into successful and vibrant professionals facilitating comprehensive and rounded formation, to function as effective and empathetic human beings, grounded with courage of conviction, personal integrity, professional ingenuity and social commitment “*

The Green Audit was done with the aim to assess and rate the sustainable nature of the campus.



MGNCRE

महात्मा गांधी राष्ट्रीय ग्रामीण शिक्षा परिषद
Mahatma Gandhi National Council of Rural Education
Department of Higher Education, Ministry of Education, Government of India



Certificate of Appreciation

Dr. Ajims P Muhammed, Principal, MES COLLEGE MARAMPALLY, Ernakulam, Kerala has contributed to the World Environment Day Celebrations June 2022 by facilitating and completing the Green activities on campus. The initiatives taken up under Swachhta Activities were building outdoor classrooms, reinforcing greenery and showcasing the green decisions of the Institution. Mahatma Gandhi National Council of Rural Education congratulates the Institution for its participation and adding impetus to the activities conducted by the faculty members and students.

Date: 20.06.2022
Certi: MG/SAP/WED/N167

B S C Naveen Kumar
MGNCRE World Environment Day 2022
Monitoring Officer



MGNCRE

महात्मा गांधी राष्ट्रीय ग्रामीण शिक्षा परिषद
Mahatma Gandhi National Council of Rural Education
Department of Higher Education, Ministry of Education, Government of India



Certificate of Appreciation

BHAVYA KAMAL K MENON, ASSISTANT PROFESSOR, MES COLLEGE MARAMPALLY, ERNAKULAM, KERALA has contributed to the World Environment Day Celebrations June 2022 as a faculty coordinator by conducting and completing the Green activities on campus. The initiatives taken up under Swachhta Activities were building outdoor classrooms, reinforcing greenery and showcasing the green decisions of the Institution. Mahatma Gandhi National Council of Rural Education appreciates the team work during the activities.

Date: 20.06.2022
Certi: MG/SAP/WED/FC/196

B S C Naveen Kumar
MGNCRE World Environment Day 2022
Monitoring Officer

08-06-2022

WORLD OCEAN DAY

"Revitalization: collective action for the ocean" was the theme for World Oceans Day 2022, a year framed by the UN Decade of Ocean Science and the celebration of the United Nations Ocean Conference, two years after being cancelled because of the pandemic.

World Oceans Day reminds every one of the major role the oceans have in everyday life. They are the lungs of our Planet and a major source of food and medicine and a critical part of the biosphere.

The purpose of the Day is to inform the public of the impact of human actions on the ocean, develop a worldwide movement of citizens for the ocean, and mobilize and unite the world's population on a project for the sustainable management of the world's oceans.

Canopy Nature Club celebrated World Ocean Day on 8 July 2022. On the same day, Inauguration of Nature Club for the academic year 2022-23 was also conducted. Shri Vishnupriyan Kartha ,Founder Secretary, Cochin Natural History Society was the resource person.

Programme began by planting a tree sapling in the college premises. It was then followed by an official gathering. Programme began by invoking the blessings of God Almighty. Ms Final Rosna of S5 BSc Electronics delivered the welcome speech. Dr Jasmine P.M., Vice-Principal and IQAC Co-ordinator of the college presided over the function. She briefly described about the hazards of water pollution and environment safety. Shri Vishnupriyan Kartha K ,the resource person of the day gave a detailed explanation of Revitalization –theme of Ocean Day.

IIC Coordinator ,Dr Sam Kollannore U. and NSS programme officer ,Dr. Raphika P.M. felicitated in the programme. Resource person handed over the trophy to NSS officer Dr Ally C Antony and Nature Club coordinator Smt Neelima T K for participating in cleaning of Puthuvype beach under the “PROMISE PROJECT” during the year 2021-22. Ms Jisana Navas of S3 BSc Electronics proposed the vote of thanks. Coordinator of the programme was Ms Bhavya Menon.85 students participated in the programme. It came to an end by 3.30 pm.

**Inauguration of
CANOPY NATURE CLUB**

MES COLLEGE MARAMPALLY
DEPT. OF ELECTRONICS AND BIOSCIENCES
IQAC, IIC, NSS, EECC

TALK ON - CLIMATE CHANGE AND OCEANS
CHIEF GUEST
Vishnupriyan Kartha k.
Founder Secretary, Cochin natural History Society

08 | JUNE | 2022
2.00 PM @ CONFERENCE HALL

Dr. Ajims P. Muhammed, Mrs. Rajeena K.A., Dr. Umesh B.T., Dr. Jasmine P.M.,
Dr. Raphika P.M., Dr. Sam Kollannore U., Mrs. Bhavya Kamal K. Menon,





07-07-2022

As a part of Forestry Day celebrations students of Fifth Semester BSc Electronics, Sharon Joseph V and Ambadi Vijayakumar participated in the Quiz Competition held at Al Ameen College, Edathala

12-08-2022

കർക്കിടക കഞ്ഞിയും മരുന്നു സേവയും

As a part of Karkkidakam ,Canopy Nature Club distributed” Karkkidaka kanji” to the staff and students on 12 August 2022 .The programme was inaugurated by Principal ,Dr. Ajims P. Mohammed . Majority of the staff came forward to have this “Medicinal food”. It was purely eco friendly programme which utilized plates made up of sugar cane and spoon with the leaves of jack fruit plant. The food was prepared by Nature club faculties and was distributed during noon interval. All the teaching and non teaching staff of the college and students participated in the event and made it a grand success.







15-08-2022

PLANTING OF 75 MEDICINAL PLANTS

As a part of 75 years of Indian Independence, Canopy Nature Club decided to plant 75 medicinal plants and named it as “*Azadi ka Amritmahotsav Udyan*”. Medicinal plants have been used in healthcare since time immemorial.

Students of nature club cleaned a particular area and planted many plants of medicinal value. They took care of those plants by watering and cleaning the nearby premises.

Medicinal plants such as Aloe, Tulsi, Neem, Turmeric, Ginger etc cure several common ailments. These are considered as home remedies and were planted in our garden.



Platinum Jubilee Celebrations of Indian Independence

MES COLLEGE MARAMPALLY



“Planting of 75 medicinal saplings”

**Under the aegis of
Canopy Nature club
&
Energy and Environment
Conservation Club (EECC)**

**Dr. Ajims P Mohammed
Principal**

**Ms. Bhavya Menon
Coordinator
Nature Club**

**Dr. Raphika P M
Coordinator
EECC**

**Student Coordinators
Ms. Final Rosna Subair
Mr. Ali Akber T K
Mr. Vignesh V**

| | NAME | SCIENTIFIC NAME | USES |
|----|---------|---------------------|--|
| 1. | എറുക്ക് | Calotropis Gigantea | Use calotropis for conditions such as digestive disorders, toothache, cramps, joint pain, and many others, but there is no good scientific evidence to support these uses. Using calotropis is unsafe, especially in high doses. |

| | | | |
|-----|--------------|-----------------------------|---|
| 2. | പനിക്കുർക്ക | <i>Coleus aromaticas</i> | It is a folkloric medicinal plant used to treat malarial fever, hepatopathy, renal and vesical calculi, cough, chronic asthma, hiccough, bronchitis, helminthiasis, colic, convulsions, and epilepsy. |
| 3. | Aloe vera | Aloe vera | Use it for treating suntan or a pimple as its strong anti-viral and anti-bacterial properties aid in effectively treating skin problems. |
| 4. | neem | Azadirachta | Neem extracts can be used against hundreds of pests and fungal diseases that attack food crops. |
| 5. | തുളസി | <i>Ocimum sanctum</i> | Possess antifertility, anticancer, antidiabetic, antifungal, antimicrobial, hepatoprotective, cardioprotective, antiemetic, antispasmodic, analgesic, adaptogenic and diaphoretic actions. |
| 6. | മഞ്ഞൾ | <i>Curcuma longa</i> | home remedy for various diseases including biliary disorders, anorexia, cough, diabetic wounds, hepatic disorders, rheumatism, and sinusitis. |
| 7. | മുക്കുറ്റി | <i>Biophytum sensitivum</i> | used as a traditional folk medicine in ailments such as inflammation, arthritis, wounds, tumors and burns, gonorrhoea, stomach ache, asthma, cough, degenerative joint disease, urinary calculi, diabetes, snake bite, amenorrhoea and dysmenorrhoea. |
| 8. | കപ്പലൂരുക്കി | <i>Scoparia dulcis</i> | The whole plant is used for ailments like diarrhoea, stomach-ache, kidney stones, kidney problems, and fever. |
| 9. | കരിമ്പമ്പി | <i>Vitex negundo</i> | These bioactive compounds exhibit anti-inflammatory, antioxidant, antidiabetic, anticancer, antimicrobial. VN is typically known for its role in the modulation of cellular events like apoptosis, cell cycle, motility of sperms, polycystic ovary disease, and menstrual cycle. |
| 10. | കച്ചവേണി | <i>Eclipta alba</i> | the whole plant is used as antiseptic, febrifuge, tonic, de-obstruent in hepatic and spleen enlargement and is emetic. In combination with aromatics, the juice is given in anaemia, catarrh and cough. |

| | | | |
|-----|-------------------|-------------------------------------|--|
| 11. | യൂര | <i>Psidium guajava</i> | the most common and popular traditional remedy for gastrointestinal infections such as diarrhoea, dysentery, stomach aches, and indigestion and it is used across the world for these ailments. |
| 12. | കമയൂണിസ്റ്റ് പച്ച | <i>Eupatorium odoratum</i> | widely used for its wound healing property. the several parts of this herb have been used to treat wounds, burns, and skin infections. |
| 13. | ഇഞ്ചി | <i>Zingiber officinale</i> | used for a wide array of unrelated ailments such as arthritis, rheumatism, sprains, muscular aches, pains, sore throats, cramps, constipation, indigestion, vomiting, hypertension, dementia, fever, infectious diseases, and helminthiasis |
| 14. | കുരുമുളക് | <i>Piper nigrum</i> | used traditionally for the treatment of various diseases including; cough, cold, dyspnoea throat diseases, intermittent fever, dysentery, stomach ache, worms and piles. |
| 15. | നന്ദിമൂലം | <i>Mimosa pudica</i> | It majorly possesses antibacterial, antivenom, antifertility, anticonvulsant, antidepressant, aphrodisiac, and various other pharmacological activities. The herb has been used traditionally for ages, in the treatment of urogenital disorders, piles, dysentery, sinus, and also applied on wounds. |
| 16. | കനകചിരംബരം | <i>Crossandra infundibuliformis</i> | Flower extract is used in various conditions like fever, headache, aperitif, pain and wound healing. |
| 17. | Adalodakam | <i>Adathoda vasica L.</i> | Leaves are made into paste and mixed with honey and taken in empty stomach for cough and bronchitis. Leaves of Adathoda mix with jaggery used against menstrual problems. |
| 18. | Manjadi | <i>Adenanthera pavonina</i> | In traditional medicine, a decoction of the young leaves and barks used to treat diarrhoea. Also, the ground seeds are used to treat inflammation. |
| 19. | Kasu mavu | <i>Anacardium occidentale L.</i> | Fruit has anticancer activity, it is also used for vitamin C deficiency. Decoction of fruit is used for vomiting |
| 20. | Anjili | <i>Artocarpus hirsutus Lam.</i> | Fruits are used for digestive problems and it also increases sperm production |

| | | | |
|-----|------------------|---------------------------------|---|
| 21. | Erikku | Calotropis gigantea (L.) Dryand | 2 or 3 leaves are heated and holding it tightly to the heel will cure heel pain. Leaf is made into paste and applying it to the ear to cure ear pain. A 4-5cm long stem is taken and its tip is crushed in the tooth brush and brushing using it cure tooth pain. |
| 22. | Kanthari mulakku | Capsicum annum L. | Including fruits in the diet regularly will control cholesterol, heart diseases and diabetes. A drink is made using fruits, curry leaves and curd used for digestion |
| 23. | Kanikkonna | Cassia fistula | Paste of leaf is used for scorpion bite. A paste made using leaf and rice water is applied on skin to treat skin diseases. Decoction of bark is used for stomach pain. Oil made using flowers are used for skin diseases |
| 24. | Kattuthina | Eleusine indic | Tea made by the leaves is used for ovarian cysts. Having the decoction of whole plant daily will increase the amount of water in body and expels salt as urine. |
| 25. | Eucali | Eucalyptus globulus Labill. | Eucalyptus oil is made by crushing the leaves and mixing it in oil and keeping it under sun for 10 days. Inhaling thus oil prevent migraine, Stress, and anxiety. Applying this oil will also cure joint pain. |
| 26. | Neelamulla | Eranthemum pulchellum L. | Decoction of the root is used for ulcers. |
| 27. | Vishnukranti | Evolvulus alsinoides | Decoction of root is used for fever. Whole plant is mixed with milk and ghee used for infertility |
| 28. | Murikooti | Euphorbia hirta | It is often used traditionally for female disorders. 5 g of leaves are made into juice and applying it on teeth using a cotton to cure tooth pain. |
| 29. | Irattimaduram | Glycyrrhiza glabara | Root extracts of mulethi aids in increasing the production of lymphocytes and macrophage thereby improving your defence mechanism & powder if root is used for curing dandruff. |

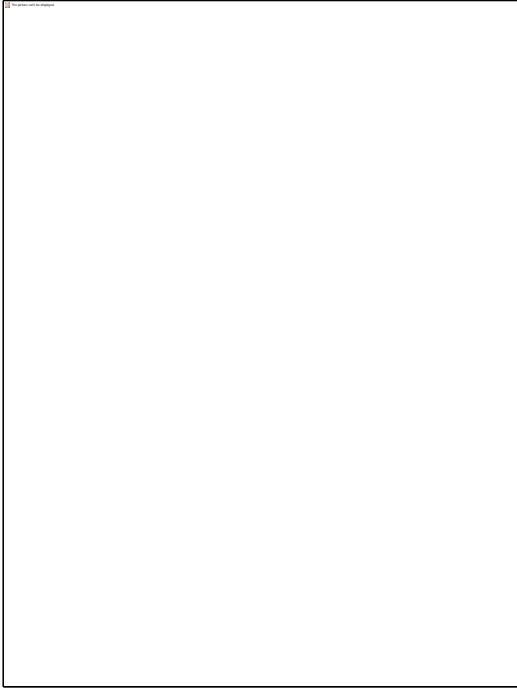
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| 30. | Thiruthali | <i>Ipomoea obscura</i> | Root bark is used as purgative, whole plant is used for snake bite. |
| 31. | Arippu | <i>Lantana camara</i> | Decoction of fresh root is used for dysentery. |
| 32. | Thumba | <i>Leucas asper</i> | Decoction of whole plant cure malarial fever, Juice of leaves are applied to skin to treat skin diseases and swelling |
| 33. | Vatta | <i>Macaranga peltata</i> | Leaves are used to make a food called "Ada" before rainy season which helps to prevent all the disease during the rainy season and also boosts immunity. |
| 34. | Cenkolli | <i>Mallotus philippensis</i> | Leaf of juice mixed in cured is used to cure digestive problems. Leaf is made into paste and applied on skin to cure skin disease |
| 35. | Pulivenda | <i>Hibiscus sabdariffa</i> L | Consumption of tea made using petals daily reduce hypertension. |
| 36. | Elumbotti | <i>Blepharis maderaspatensis</i> (L.) | It is used to treat eye disease. Juice extracted from leaf is heated with gingelly oil and applied on affected places to heal wound |
| 37. | Kasturi venda | <i>Abelmoschus moschatus</i> L | Tea made using the leaves are used to cure urinary infection. Seeds are made into paste and mix with honey taking this daily will cure mouth ulcers and sexual disorders |
| 38. | Kunni kuru | <i>Abrus precatorius</i> L | Paste of seed is used in skin disorders. Leaves of <i>Abrus</i> is mixed in and kept in the inflamed area. A tea made of using the leaves are used against cough and cold. |
| 39. | Pavakka | <i>Momordica charantia</i> | Handful of tender leaves are chopped and boiled in 2 glass of water and having this daily can control diabetes |
| 40. | Manjapavitta | <i>Morinda tinctoria</i> roxb | Juice of leaves are applied externally to relieve pain. |
| 41. | vellila | <i>Mussaenda glabrat</i> | Decoction of tender leaves and roots are used for Kidney disease. Decoction of white leaves is used for asthma. |
| 42. | Nilanarakam | <i>Naregamia alata</i> Wight & Arn | Whole plant is made into juice and applied on head daily before bath can cure migraine. |

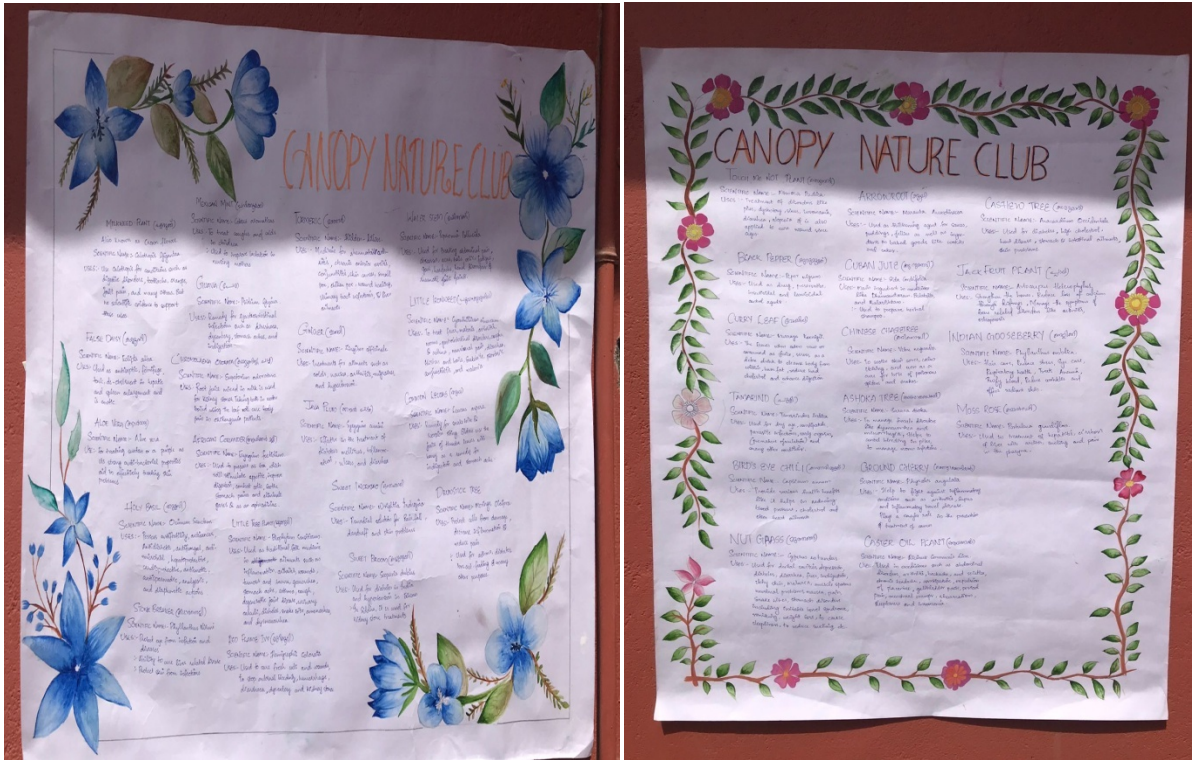
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| 44. | nelli | Phyllanthus emblica L. | A juice is made using fruits and it is mixed with turmeric and having this daily will control diabetes |
| 45. | Kizharnelli | P. niruri L. | Whole plant is washed and made into pieces and adding it to boiling sesamum oil and massaging the head with that oil can cure migraine. |
| 46. | Chirukizhukan elli | P. urinaria L. | Decoction of fruits is used in folk medicine to treat jaundice, diabetes, malaria, and liver diseases. |
| 47. | Blue grass | Poa pratensis L. | Decoction of leaves are used for urinary tract infection. |
| 48. | pigweed | Trianthema portulacastrum | Decoction of whole plant is used for anaemia and stomach diseases. |
| 49. | Ashokam | saraca asoca | According to traditional medicine even seeing the tree will reduces stress and sitting under the shelter of the tree will reduce our sorrows. |
| 50. | Arippu | Lantana camara L | Decoction of fresh root is used for dysentery. |
| 51. | Kilukki | Crotalaria pallida Aiton. | Seeds are used to make shampoo which cure dandruff. Decoction of leaves is used for urine infection. |
| 52 | Mashithand | Peperomia pellucida Kunth | Whole plant is made into juice and having this daily in empty stomach will prevent kidney disorders. Leaves are made into paste and applied on inflammated area and also as a pain killer. Leaf decoction also used for cholesterol. |
| 53 | Thookuchethi | Quisqualis indica L. | Decoction of the root is used to treat rheumatism and a concentrated decoction of the fruit is used as a gargle effective against toothache. |
| 54 | Kallurikki | Scoparia dulcis L. | Paste of whole plant mixed in tender coconut water and having this daily for 1 week will cure Kidney stones. Paste of leaves is also used for wound healing |
| 55 | kurumthotti | Sida acuta Burm.f. | Whole plant is boiled in 2 L of water it's used for rheumatism and body pain. Juice of whole plant mixed with milk is used to control blood pressure |
| 56 | Kajiram | Strychnos nux vomica L | Seeds are powdered and used for diabetes, piles, arthritis and headache. Leaves are |

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| | | | made into paste and mixed in ghee and used for skin diseases. |
| 57 | Seemakogini | Stachytarpheta indica (L).Vah | Decoction of whole plant is used for diabetes. Tea made by using leaves is used for fever. Paste of whole plant is used for wound healing. |
| 58 | Thuppalpotty | Ruellia prostrata Poir. | Decoction of whole plant is used for diabetes. 94 Santalum album L. Santhalaceae Chadanam Tree Whole plant |
| 60 | Karamullu | Canthium rheedii DC | Decoction of leaves is used to prevent cancer. |
| 61 | Ummam | Datura stramonium L | A paste of leaves mixed in Coconut oil is applied on scalp for treating dandruff. Decoction of leaves and flowers are used for bronchitis. Decoction of leaves is used for menstrual pain. |
| 62 | Oorila | Desmodium gingeticum L. (DC) | Root juice mixed with curd us used to cure blood in stool. Root paste applied for scorpion bites. Root juice mixed with milk is used daily to prevent heart disease. |
| 63 | Padathali | Cyclea peltata Arn. | Decoction of leaves and tuber are used for Kidney stones. Oil made using leaves is used for hair growth. Paste of leaves is used for snake bite. Decoction of leaves is used for fever |
| 64 | Karuka | Cynadon dactylon L | Whole plant is made in to paste and holding this in to the wound will stop bleeding |
| 65 | Butterfly pea | Centrosema pubescens Benth. | Decoction of whole plant is used for stomach discomfort |
| 66 | Communist pacha | Chromolaena odorata (L.) | Root Juice mixed in milk is used for kidney stones. Taking bath in water boiled using the leaf will cure body pain in chikengunia patients. |
| 67 | spider flowers | Cleome rutidospermum DC | Leaf juice is used for skin diseases. |
| 68 | Kuttuppana | Glycosmis pentaphylla | Extract of root bark have been shown to exhibit significant activity in treatment of diarrhoea. Adding a handful of leaves to boiling water and taking bath with that water will reduce body pain |
| 69 | Varrungu | Carallia brachiata Lour | Decoction of bark is used for skin diseases. Paste of bark is used for wound healing. |
| 70 | Thazhuthama | Boerhaavia diffusa L. nom. cons | The whole plant is added in boiling water and it is used daily in empty for weight loss. A handful of leaves are made in to juice and mixed in mother's milk and used for eye disease. |
| 71. | kattuvaka | Albizia lebbeck | Decoction of bark is used medicinally to treat inflammation, jaundice and mouth ulcers. |

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| 72. | daivappala | <i>Alstonia scholaris</i> L. | Bark is made into paste used for skin diseases. |
| 73. | mullucheera | <i>Amaranthus spinosus</i> | Leaf decoction with adding a pinch of salt and used for digestion. Juice made up of tender leaves is used to increase blood count in dengue patients. |
| 74. | Kumminipacha | <i>Ageratum conyzoides</i> | Oil made using the leaf is used to cure Arthritis. Leaf juice is also applied for healing wounds. |
| 75. | Chinese violet | <i>Asystasia gangetica</i> L. | Decoction of leaf is used for asthma. |







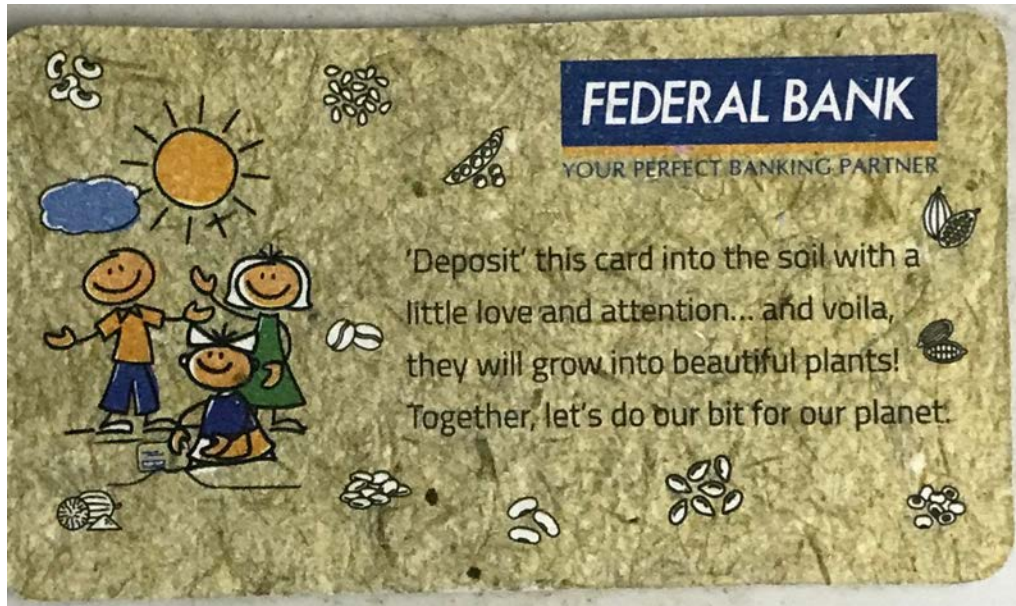
19-08-2022

SOWING SEEDS OF GOODNESS

As a part of Indian Independence and Farmer's day on Chingam 1, Federal Bank of Marampally came up with an idea to distribute seeds of Tulasi to the students and staff of our college. Nature Club took the initiative to distribute them.

Canopy Nature Club organized "Sowing seeds of goodness" on 19 August 2022 in association with Federal Bank, Marampally as a part of 75 years of Indian Independence. 300 packets of Tulasi seeds were distributed to the students and faculties. Students sowed these seeds in several part of college campuses.









22-08-2022

INAUGURATION OF FORESTRY CLUB

Canopy nature club in association with Forestry club conducted Inauguration of Institutional Planting Social Forestry Division, Ernakulam on 22 August 2022 at 11.00 am. 200 plants were planted in the campus. The programme was inaugurated by Mr. J. Madhavan, Deputy conservator social forestry division, Ernakulam. Principal, Dr. Ajims P. Mohammed presided over the function. Vice Principal and IQAC Coordinator Dr. Jasmine P.M. felicitated about the need for conservation of plants. The programme came to an end by 12.00 pm.







എംഇഎസ് കോളജിൽ ഫോറസ്‌ട്രി ക്ലബ്ബ് രൂപീകരിച്ചു

മാറമ്പിള്ളി: എംഇഎസ് കോളജിൽ പുതുതായി രൂപീകരിച്ച ഫോറസ്‌ട്രി ക്ലബ്ബിന്റെ ഉദ്ഘാടനവും ഇന്റർനാഷണൽ ഓസോൺ ദിനചരണവുമാണ് നടത്തി.

സോഷ്യൽ ഫോറസ്‌ട്രി ഡിവിഷന്റെ ആഭിമുഖ്യത്തിൽ രൂപീകരിച്ച ഫോറസ്‌ട്രി ക്ലബ്ബിന്റെ ഉദ്ഘാടനം കോളജ് പ്രിൻസിപ്പൽ ഡോ. അജിംസ് പി മുഹമ്മദ് അധ്യക്ഷത വഹിച്ച ചടങ്ങിൽ മാറമ്പിള്ളി പഞ്ചായത്ത് പ്രസിഡന്റ് ഗോപാൽ ഡിയോ, സുഗതകുമാരിയുടെ പ്രശസ്തമായ നാളേക്കുവേണ്ടി, ഒരു തൈ നടാം എന്ന കവിത ചൊല്ലി നിർവഹിച്ചു. എറണാകുളം സോഷ്യൽ ഫോറസ്റ്റ് ഡിവിഷൻ ഡെപ്യൂട്ടി കൺസർവേറ്റർ ജയമാധവൻ മുഖ്യപ്രഭാഷണം നടത്തി.

കേരള ഫോറസ്റ്റ് റിസർച്ച് ഇൻസ്റ്റിറ്റ്യൂട്ടിലെ ഫോറസ്റ്റ് എൻ്റ് മോളജി സെക്ഷൻ സയന്റിസ്റ്റ് ഡോക്ടർ ജിത്തു യു കൃഷ്ണൻ വിദ്യാർത്ഥികൾക്ക് ഓസോൺ പാളികളുടെ പ്രാധാന്യത്തെ പറ്റി ക്ലാസ് നടത്തി.

വൈസ് പ്രിൻസിപ്പൽ ഡോ. ജാസ്മിൻ പി എം, ഫോറസ്റ്റ് റേഞ്ച് ഓഫീസർ റഷീദ്, ബയോസയൻസ് വിഭാഗം മേധാവി ഡോ. ഉമേഷ് ബി ടി, ഇലക്ട്രോണിക്സ് വിഭാഗം മേധാവി റെജിന കെ എ എൻ.എസ്.എസ് പ്രോഗ്രാം ഓഫീസർ ഡോ. റഫീക് പി എം, നേച്ചർ ക്ലബ്ബ് കോർഡിനേറ്റർ ഭവ്യ മേനോൻ ഫോറസ്‌ട്രി ക്ലബ്ബ് കോർഡിനേറ്റർ മുരളി, രമ്യ, ഷഹാന മുത്താസ് സംസാരിച്ചു.

01-09-2022

CUP OF LIFE 2022

Cup of Life 2022, A gender equity programme was an initiative of Shri. Hibi Eden MP in association with Indian Medical Association ,Cochin and District Administration Ernakulam.

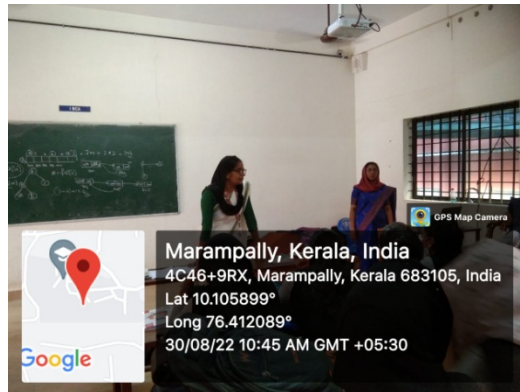
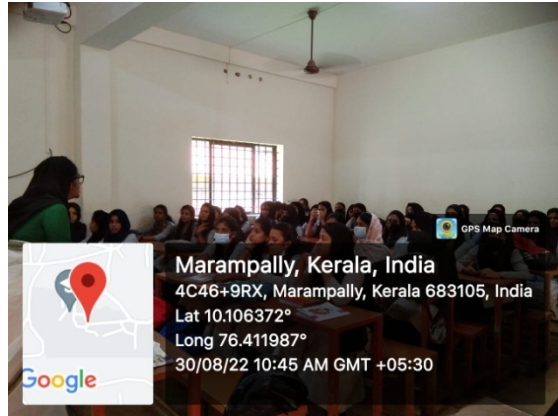
Nodal officer of the event was Ms. Bhavya Menon. Ten teachers from the college attended the training on 25 August 2022 at IMA Hall,Ernakulam.





IQAC of MES College Marampally together with MES Youth Wing organized the campaign on 29 and 30 August 2022 and distribution of menstrual cups on 1 September 2022. 685 registrations were conducted from the college including students, teaching and non teaching staffs. The programme was organized in association with Women Cell, Nature Club, NSS, NCC, IIC, IEDC and YRC.







CUP OF LIFE

As initiative of
HIBI EDEN MP

Muthoot Finance

In association with
Muthoot Medical Association - Medical Administration
Kochi - Ernakulam

**MES COLLEGE
MARAMPALLY**
Aluva, Ernakulam

**IQAC &
MES YOUTH WING**
Organizes

"CUP OF LIFE 2022"
GENDER EQUITY PROGRAMME

Empowering Women and
Girls Through Good and Healthy
Menstruation Hygiene

In association with
Women cell, Nature Club, NCC, NSS,
Youth Red Cross, IEDC, IIC



1 SEPTEMBER 2022 @ 10 AM
Venue: Seminar Hall, South Block

| | | |
|--|--|---|
| <p>Dr. Ajims P. Muhammed Principal</p> | <p>Mr. Mohammed Nisar P.H. MES Youth Wing District secretary</p> | <p>Dr. Jasmine P.M. IQAC Co-ordinator</p> |
| <p>Ms. Bhavya Menon Nodal Officer</p> | <p>Ms. Amina Nazeer SS B.Sc. Biotechnology, Student Co-ordinator</p> | |

The programme began at 10.30 am with a silent prayer. Mr. Muhamed Nizar B.H., MES Youth wing secretary welcomed the gathering. Dr. Ajims P. Mohammed ,Principal of the college presided over the function. The programme mainly emphasised “Empowering women and girls through good and healthy menstruation hygiene.”

Cup of Life 2022 was inaugurated by Mr. Jabbar Jalal, MES Youth Wing state president. He distributed the menstruation cups to the registered students.

Adv. A.A. Abul Hassan, Secretary and correspondent of College Management Committee, Dr. Jasmine P.M. ,Vice Principal and IQAC Coordinator, Dr. Shemi P.M.,Staff Association Secretary, Lt. Ibrahim Salim, NCC programming officer and Mr Shafeek C.A. State executive member, MES Youth Wing felicitated in the programme.

Ms. Bhavya Menon, Nodal Officer of Cup of Life 2022 proposed the vote of thanks.The programme came to an end by 11:30 am by National Anthem.







16-09-2022

INTERNATIONAL OZONE DAY OBSERVANCE



MES COLLEGE MARAMPALLY

**Inauguration of Forestry Club
&
International Ozone day
Observance 2022**

**“GLOBAL COOPERATION
PROTECTING LIFE ON
EARTH”**

Organized by Forestry
club, Nature
club, EECC, Department of
Biosciences & Department of
Electronics



Resource Person:
Dr. Iithu U Krishnan
Scientist
Department of forest entomology
Kerala forest research institution
Peechi Thrissur

16 September 2022
Friday 10:30 am
@ conference Hall

Forestry Club Inauguration:
Sri. Gopalakrishnan
President Vazhakulam
Grama panchayath

Coordinators: Dr Jasmine PM, Mrs. Murali Ramya,
Dr Raphika PM, Smt. Bhavya Menon

International Ozone Day was observed on 16 September by Department of Electronics and Biosciences in association with Forestry club and Energy and Environmental Conservation club of the college. Inauguration of Forestry club was also held on the same day. The programme began at 10:30 am by a silent prayer. Dr. Umesh B.T., Head, Department of Biosciences welcomed the gathering. The programme was presided over by Principal, Dr. Ajims P. Mohammed.

Inauguration of the programmes was held by Sri. Gopal Deo, President of Vazhakulam Grama Panchayath. He inaugurated the Forestry Club by reciting the Poem, "Oru thaiyyu nadam" of Smt. Sugatakumari. Sri. A Jayamadhavan, Deputy conservator of Forest, Social Forestry Division, Ernakulam proposed the keynote address.

Dr. Jasmine P.M., Vice principal and IQAC Coordinator, Smt. Rejeena K.A., Head, Department of Electronics, Smt. Bhavya Menon, Nature Club Coordinator, Dr. Raphika P.M., EECC Coordinator and Smt. Murali Remya, Forestry club Coordinator felicitated in the programme.

The technical session was led by Dr. Jithu U Krishnan, Junior scientist, Department of Forest technology, Forest Health Division. He gave a brief idea about the ozone layer, its importance and need for the preservance of this layer in its future.

Ms. Jisana Navas proposed the vote of thanks. The programme came to an end by 12:30 pm. 90 students participated in the programme.





14-12-2022

WORKSHOP ON PAPER BAG MAKING

As a part of Energy Conservation Day, Canopy Nature Club conducted a Workshop on Paper Bag Making. The resource person of the workshop was Smt. Ramla Beevi, Assistant Professor, Department of Commerce, MES College Marampally.

20 students participated in the workshop. Bags were made from newspapers and they were distributed to the cooperative store of the college and nearby shops as an extension activity.

These bags replaced plastic bags from the campus. The programme was coordinated by Smt. Dhanya Sasikuar, Joint Coordinator, Nature Club





20-12-2022

CLEAN THE ENVIRONMENT

As a part of Clean The Environment project, the students of Nature Club cleaned **SHANTHISTHAL** of the college .

With the approval and financial support of KSCSTE, “Santhisthal” was created by the Department of Biosciences. It was a project aimed at conservation of rare endangered and threatened species of plants and medicinal herbs. For that, they created a diversity club under the supervision of which “Shanthisthal” was constructed in an area of 10 cents, where plants of medicinal values were planted, nurtured, maintained including RET species of plants in the backyard of the new block of the campus.

More than three buckets of plastic bottles and other waste materials were collected. 10 students from Canopy Nature Club participated in this mission. The programme was coordinated by Smt. Dhanya Sasikumar

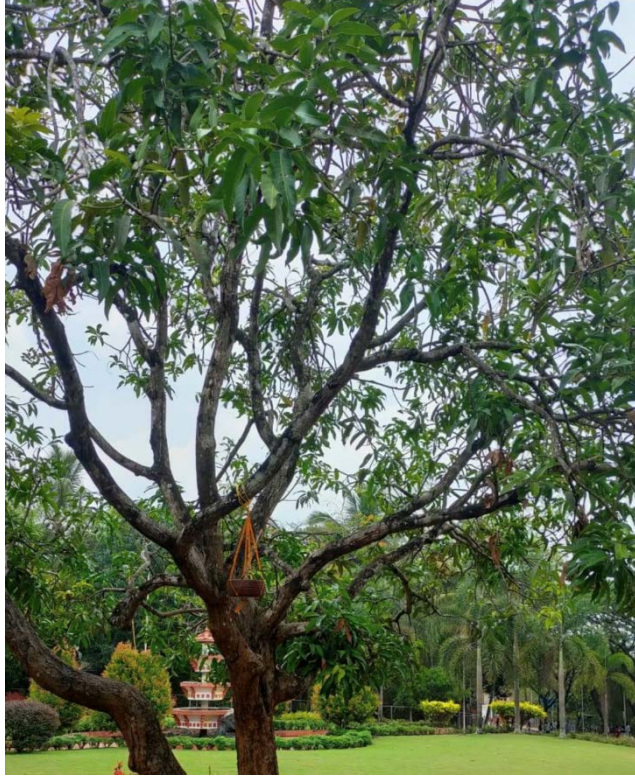




30-03-2023

WATER TO THE THIRSTY BIRDS

Nature club in association with Forest club of the college started a new endeavour to give water to the thirsty birds in the campus on 30 March 2023.. The programme was inaugurated by Dr. Ajims P. Mohammed ,Principal of the college. Dr. Jasmine P.M., Vice Principal , Forest club coordinators Ms.Lina Anil and Ms. Amrutha Dinesh felicitated in the programme. Students of Forest club and Nature club took all the efforts to keep the water pots on the trees.



Programme Coordinator

Ms. Bhavya Menon

Joint Coordinator

Ms. Dhanya Sasikumar