



NAM COLLEGE, KALLIKKANDY

Report on



Prepared & submitted by



**Environmental Audit Cell
Department of Environmental Studies
Kannur University**

March 2022

REPORT AT A GLANCE

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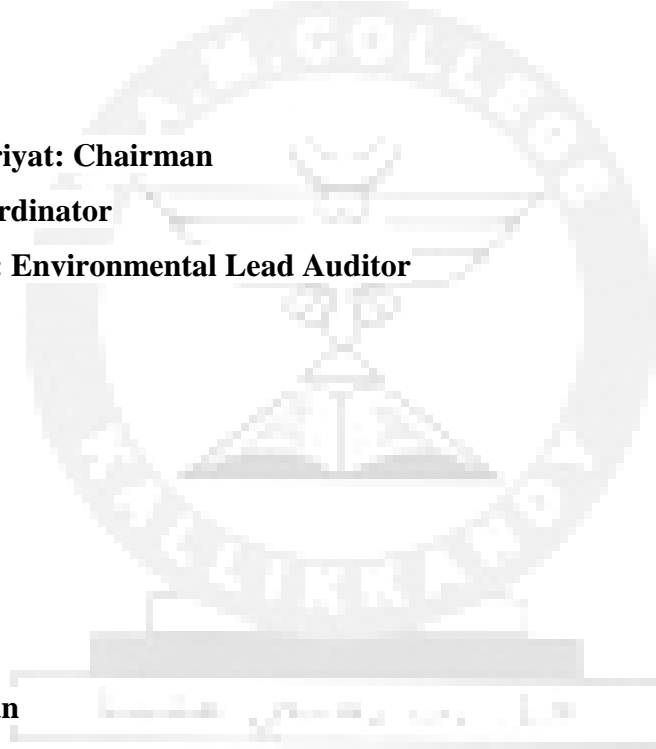
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CERTIFICATE

*This is certified that this **Environmental Audit Report (Energy audit, Water audit and Green audit)** submitted to the N.A.M College, Kallikkandy is an authentic report of Environmental audit done by the Audit Team of the Department of Environmental Studies of Kannur University at N.A.M College, Kallikkandy during the period of 20th - 29th March 2022.*



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Chapter 1

INTRODUCTION

College Profile:

NAM College, Kallikkandy was established by Muslim Educational Foundation (MEF), Panoor, on 16th June 1995. The College is an aided institution affiliated to Kannur University, which is named after Jb.N.A.Mammu Haji, famous philanthropist and Ex- MLA of Peringalam constituency. It is accredited with B Grade by National Assessment and Accreditation Council (NAAC). The College is situated in verdant campus (16.82 Acres) on a hilltop on the left side of Panoor-Nadapuram road, eight kilometers away from Panoor and one kilometer away from Kallikkandy town. The efficient administrative wing and excellent faculty under the adept direction of the Principal of the college along with the competent and resourceful Management have made the institution an outstanding abode of higher learning and research. The college is equipped with sufficient infrastructural facilities for the curricular and co-curricular advancement of students. The academic ambience of the college is highly suitable for molding future generations of citizens imbued with moral values and qualities as envisaged by the vision and motto of the institution.

NAM College (NAMC) is one of the prominent institutions of higher learning belonging to the jurisdiction of Kannur University. The college has secured a commendable track record of academic achievement owing to the joint efforts of the management, principal, teaching, non-teaching staff, students, parents, alumni and other stake holders associated with the college. It is a non-profit society formed for promoting higher education in the region for which prominent people and leaders in the society irrespective of political affiliation joined hands together and mobilized resources for the founding of the college.

GOVERNING BODY OF THE COLLEGE:

- 1. ADIYOTTIL AMMAD (President)**
- 2. P.P.A. HAMEED (General Secretary)**
- 3. R. ABDULLA MASTER (Treasurer)**
- 4. K. P. MOOSA HAJI (Vice President)**
- 5. T. ABOOBACKER (Vice President)**
- 6. P. P. ABOOBACKER (Vice President)**
- 7. ZAINUL ABID (Vice President)**
- 8. Dr. PUTHUR MUSTHAFA (Joint Secretary)**
- 9. PARAMBATH SAMEER (Joint Secretary)**
- 10. T.P. MUSTHAFA (Joint Secretary)**
- 11. V. HARIS (Joint Secretary)**

COLLEGE EMBLEM



The emblem of NAM College Kallikkandy enshrines the ideals of academic excellence and cultural integration. The Shield, symbolic of a reputed seat of learning is adorned with a prayer taken from the Holy Quran “Qul Rabbi Zidniilma” which literally means “Say! O My Lord, enhance me in knowledge”. This is the motto of the college that inspire our students and faculty to strive for intellectual efflorescence and a better world of dedication and service to mankind. The crescent on the top of the emblem is the icon of Islamic culture and faith in future prosperity. The wings beneath the crescent symbolize aspiration to the greatest heights of accomplishments. The open book in the emblem stands for free knowledge to everyone irrespective of the man-made narrow boundaries of the world.

Specific Objectives

- ❖ Highest percentage in University results.
- ❖ Getting students admitted in national level institutions for higher studies.
- ❖ Evaluation of student's abilities and implementation of suitable remedial measures.
- ❖ Activities and programmes to help the weak and the disabled in the society.

Vision and Mission of the College

Vision

- ❖ Education for Intellectual formation, Liberation, and National Integration.

Mission

- ❖ To impart quality education to students belonging to different communities, especially the minority community in the rural area, and equip them to achieve and manage the latest requirements of living through innovation and updating, and in unison to buttress intellectual and moral strengthening of the youth to act as a creative force in the process of nation building.

Motto

- ❖ “Rabbi ZidniIlma” (“Say! O My Lord, enhance me in knowledge”).

PROGRAMMES

The College offers the following Study Programmes under Kannur University.	
A) UNDER GRADUATE COURSES (CCSS)	Sanctioned Strength
1. B.Sc Computer Science (Core)	34
Mathematics & Statistics (Complementary)	
2. B.Sc Polymer Chemistry (Core)	34
Mathematics & Computer Science (Complementary)	
3. B.Sc Mathematics (Core)	34
Statistics & Computer Science (Complementary)	
4. B.A. History (Core)	55
General Economics & Sociology (Complementary)	
5. B.Com (Co-operation)	55
6. B.A. English (Core)	30
History and Journalism (Complementary)	
7. B.B.A (Self-Financing)	
B) POST GRADUATE COURSES (4 SEMESTERS)	
Aided	
1. M.Com (Finance)	
Self-Financing	
1. M.Sc Computer Science	
2. M.Sc Mathematics	
3. M.A English	

Total Campus Area and Built up Area:

NAM College, Kallikkandy			
Location	Total campus area in acres	Built up area and others in acres	
Rural	16.85	Academic main building	2.4
		“A” Block	0.6
		Central Library	0.4
		Canteen	0.2
		Hostel	1.4
		Anas Memorial Building	0.8
		Play Ground	5.7
		Others	5.35

Infra-structure of the College:

Library: NAM College has a separate library building. The well-stocked college library housed in a spacious building where over 13557 books, 15 Journals, 20 Periodicals and plenty of reference books cater to the scholarly needs of the discerning students. Also, to update day-to-day events at national and international levels, newspapers in Malayalam, English, and many periodicals are available. Journals related to Mathematics, Chemistry, Computer Science, and Commerce are also purchased for scholars who aspire to scale the heights of knowledge in different disciplines. There is a separate reading room for the students and staff of the college.

Placements: It is a well-known college. Most of the students got placed in IT companies and education institutions in a short time after their studies. It has an eco-friendly nature.

Faculty: Teachers are qualified and knowledgeable so that the students can catch up easily. The course curriculum is relevant, and it makes the students industry-ready. Students get promoted if they score above 40% in their academics. Teachers are well experienced, and they give extra attentions in studies.

Hostel: This college Provides hostel for girls with twenty well-furnished rooms is a timely help for students who come from distant regions. The infrastructure of the hostel provides facilities like study hall, prayer hall, dining room, and a spacious kitchen. The hostel building is situated just fifty meters away from the college.

Laboratory: The College has a spacious and well-equipped Chemistry and Computer lab that enables each student who opts for the BSc Chemistry and Computer science program to gain the proper and adequate exposure to the world of experimental chemistry which, in turn, enabled many of the alumni of the department to secure admission to prestigious foreign companies and premier institutions for higher studies.

Indoor Auditorium: This College has one main indoor auditorium which is spacious and well ventilated with a seating arrangement for over hundred people. It is installed with facilities for different sports. The construction of an open-air auditorium having space for accommodating around one thousand people is progressing.

Sports: College has an Indoor stadium. It has a playground where students can practice different sports and game items like athletics, football, softball, handball, volleyball, kabaddi, kho-kho, badminton, cricket, etc.

INFRASTRUCTURE OF THE COLLEGE		
TOTAL AREA (ACRES) :16.82		
SL	NAME OF THE BUILDINGS	PURPOSE
1	Main block	Department of Language
		Department of Polymer Chemistry
		Polymer Chemistry Store and Laboratory
		Department of Commerce
		Commerce - Computer Lab
		Department of Management
		Management Office
		IIC
		Department of English
		Department of Computer Science
		Computer Science Lab
		Network Resource center
		College Office
		Principle Room
		Guest Room
		Visitors Room
		Seminar Hall
		IQAC Office
		Department of Mathematics
		Department of History
Museum		
Physical Education Room		
Women Resource Center		
NCC & NSS Office		
Ladies Room		
Student Union Office		
Gymnasium Room		
2	Block A	Canteen
		Yoga Center
3	Block B	Anas Memorial Building
		NAM Centre for local development and research
		Anas memorial palliative care “SPARSANAM”
		NSS Room
3	Block C	Central library
4	Block D	Indoor Stadium
5	Block E	Hostel

College Rules

- Students are expected to wear uniform/neat and decent dress and behave in a polite and decorous manner.
- Students are prohibited from: -
 - Entering the classrooms, laboratories, office, staffroom etc. except when they are expected to be there.
 - Loitering on verandas and in vacant classrooms.
 - Smoking within the college premises.
 - Damaging furniture and other college property.
 - Holding meetings and processions without obtaining the prior permission of the Principal.
- Perfect discipline and decorum should be maintained in the class- room and in the college campus.
- No student shall leave the class before the teacher leaves.
- For acts of misbehavior, the Principal may impose punishment such as fine, cancellation of attendance, withholding of certificate, forfeiture of educational concession and scholarships, suspension and expulsion.
- Students are not allowed to bring mobile phones to the campus. Fine will be imposed to those who bring mobile phone to the college.
- Students have to submit an undertaking that they are ready to obey the rules of the college; they will not indulge in violence and will not commit crimes like ragging, destruction of individual and institutional property.
- Every student has to participate in any one of the co-curricular activities.
- A fine shall be levied on students caught for destruction of individual or institutional property. If the particular student is not identified, a common fine will be imposed.
- Students should bring and wear the ID card issued by the College during the college working hours and produce before teachers as and when necessary. A fine will be imposed for non-compliance with regard to ID Card.
- No individual or groups are allowed to boycott classes.
- Boycotting classes or such strikes are prohibited.

Chapter 2

ENVIRONMENT AUDIT

Scope and Goals of Green Auditing:

Green audit serve as a means to identify opportunities to sustainable development practices, enhance environmental quality, improve health, hygiene and safety, reduce liabilities and save money and achieve values of virtue. Environmental audits can be a highly valuable tool for college in a wide range of ways to improve their environmental and economic performance and reputation while reducing wastages and operating costs. Once a baseline data is prepared after the auditing process, the data can serve as a point of departure for further action in campus greening.

Environment Audit:

Environment audit is a method of assessing an organization's activities that is systematic, recorded, repeated, and objective and services in relation to:

- Assessing compliance with relevant statutory and internal requirements
- Controlling environmental activities under management is simplified.
- Promoting good environmental management
- Maintaining credibility with the public
- Raising staff awareness and enforcing commitment to departmental environmental policy
- Exploring improvement opportunities
- Establishing the performance baseline for developing an Environmental Management System

Conducting green audit is no longer an option but a sound precaution and a proactive measure in today's heavily regulated environment. Indeed, evidence suggests that Environmental Audit has a valuable role to play, encouraging systematic incorporation of environmental perspectives into many aspects of an organization's overall operation, helping to trigger new awareness and new priorities in policies and practices.

The Green Auditing completed at NAM College is an innovative approach towards

empowering the students and teachers in order to improve the existing environmental conditions in and around their campus. The main intention of the programme was to assess the existing biodiversity and natural resource (energy & water) management of the campus through active participation of the institutional community. The conservation of Natural resource through a participatory approach is the main agenda of Environment Auditing, which will make the community more aware about the nature and natural resources. Environment auditing involved the assessment of different components of the campus like Energy, Water, Biodiversity and Waste. The college which has undergone the proposed Environment auditing requires the assistance of any of the experts for biodiversity studies, natural resource management, energy conservation activities, etc.

Aim:

To conduct Environment Audit (Green audit, Energy audit and Water audit) of NAM College, Kallikkandy so as to assess the environmental consciousness of college community.

General and Specific Objectives of Green Auditing

The general objective of green audit is to prepare a baseline report on biodiversity and other resources, measures to mitigate resource wastage and improve resource quality and sustainable practices.

The specific objectives are:

- To prepare a checklist of flora and fauna diversity in and around the College Campus.
- To suggest measures to improve biodiversity within the campus.
- To monitor the energy consumption pattern of the College
- To assess the quantity of water usage within the College Campuses.
- To suggest sustainable energy usage and water conservation practices.
- To find out various sources of organic and solid waste generation and mitigation possibilities.

- To inculcate values of sustainable development practices through green audit process.
- To assess the water usage, energy consumption, waste management of the campus
- To assess the selected flora and fauna of the campus
- To create awareness among the University community
- Verification of legislative and regulatory compliance
- Assessment of internal policy and procedural conformance
- Establishment of current practice status

Areas of audit:

Areas of audit encompassed of:

- ❖ Material management, savings and alternatives
- ❖ Energy management and savings
- ❖ Water management and economy of use
- ❖ Waste generation, management and disposal
- ❖ Noise reduction, evaluation and control (internal and external)
- ❖ Air emissions and indoor air quality
- ❖ Environmental emergency prevention and preparedness
- ❖ Transportation and travelling practices
- ❖ Staff awareness, participation and training in environmental issues
- ❖ Environmental information publicity
- ❖ Public enquiry and complaints response

Procedure:

An environmental audit is typically undertaken in three phases:

- Pre-audit
- On-site audit and
- Post-audit

Each of these phases comprises a number of clearly defined objectives, with each objective to be achieved through specific actions, and these actions yield results in the form of outputs at the end of each phase. During the initial stage of the programme, training was conducted for the college, which included teaching and non-teaching staffs, representatives of the syndicate, and students.

2.3. Target Areas of Green Auditing

▪ Energy Audit

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliances, and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment.

Energy audit was carried out by audit team in order to assess the energy usage pattern in the college. The purpose of an energy audit is to account for consumption and recommend

where savings are possible. The audit typically involved data collection and review, in that equipment survey and system measurements are also collected. Equipment survey helped to understand the system functioning, efficiency can be estimated. During the auditing, the meter readings were recorded and along with that the hours of usage was also noted. The data collected includes, total monthly use in units, total cost per month, number of students and other staffs in each campuses, etc. which was helped to determine the daily usage of energy per person, daily cost, etc.

- **Water Audit**

This indicator addresses water consumption, water sources, irrigation, stormwater, appliances and fixtures. Aquifer depletion and water contamination are taking place at unprecedented rates. It is therefore essential that any environmentally responsible institution should examine its water use practices.

Water audit was conducted in order to assess the daily water usage pattern in the college. Through this we have also measured the water wastage in the campus; this can be used for improving the equipments and its maintenance.

- **Biodiversity Audit**

All plant and animal species including humans are linked together in a complex web of life; we depend upon biodiversity for our survival. Biodiversity is the key to healthy ecosystems and ultimately a healthy planet. It keeps the air and water clean, regulates our climate and provides us food, shelter, clothing, medicine and other useful products. Each part within this complex web diminishes a little when one part weakens or disappears.

The trees work hard to keep the air we breathe clean and healthy. Their leaves take in much of the poisonous unwanted carbon dioxide in the air, and replace it with the oxygen we need for healthy living. In this process, the plants with the help of sunlight, water, minerals and the green material called Chlorophyll within the leaves change the carbon-dioxide into food for themselves. When doing this they release oxygen into the air which is vital for all life on earth. The roots of trees dig deep into the earth and hold it together so that the rain and wind cannot wash or blow it away. This is very important as the earth has only a very thin layer of fertile soil covering it.

The audit was focused to survey for biodiversity of flora and fauna within the campus. This was helped to quantify the area covered by vegetation and to assess the amount and

diversity of habitats. Through the survey the students and faculties get encouraged to device strategies to increase the level of biodiversity in their campus.

- **Biodegradable and hazardous Waste Audit**

This indicator addresses biodegradable waste from campus and hostel canteen, paper waste, hazardous wastes of laboratories and worn-out electric & electronic goods, and plastic wastes. Hazardous materials represent significant risks to human health and ecological integrity. Hazardous wastes are also leached out through the e-waste generated in the campus. They often persist in the environment leaving a legacy of land and water contamination for generations. They also accumulate in the tissues of organisms and become concentrated within food chains, leading to cancer, endocrine disruption, birth defects, and other tragedies. The minimization, safe handling, and ultimate elimination of these materials are essential for the safety of environment.

Waste audit was conducted to assess the amount of waste generated, types of waste generated and disposal methods in the campus. The amount of waste generated in the campus was assessed through a survey, which provided a baseline data. It helped to identify the waste generation in the campus. The survey quantified the waste streams, the effectiveness of the existing waste management systems in the campus, etc. this was helped to identify the ways to reduce waste, the need for implementing new waste management strategies. Waste audits helped in waste diversion and waste reduction and this provided a healthy environment.

Audit Forms used for Data Collection: The various forms used for the data collection is given in the appendix -3



Green Audit

Chapter 3

GREEN AUDIT STATEMENT

A. Green Audit

Biodiversity status of NAM College, Kallikkandy

The biodiversity status of NAM College, Kallikkandy is given below

Floral diversity

Sl. No.	Name of Campus	Total vegetation cover (Acres)	Number of plant species identified
1	NAM College, Kallikkandy	6	36

List of plants seen in the NAM College, Kallikkandy

Sl.No.	Name of plant	Common Name	Family
Trees, Shrubs and Herbs			
1	<i>Mangifera indica</i>	Mango Tree	Anacardiaceae
2	<i>Tamarindus indica</i>	Tamarind Tree	Leguminosae
3	<i>Phyllanthus emblica</i>	Indian Gooseberry	Phyllanthaceae
4	<i>Cocos nucifera</i>	Coconut Tree	Arecaceae
5	<i>Psidium guajava</i>	Guava Tree	Myrtaceae
6	<i>Gliricidia sepium</i>	Sheemakkonna	Papilionaceae
7	<i>Swietenia macrophylla</i>	Mahagani Tree	Meliaceae
8	<i>Macaranga peltata</i>	Uppila Tree	Euphorbiaceae
9	<i>Syzygium cumini</i>	Malabar Plum (Njaval)	Myrtaceae
10	<i>Holarrhenapubescens</i>	Kudakappala	Apocynaceae
11	<i>Morinda citrifolia</i>	Noni Tree	Rubiaceae
12	<i>Anacardium occidentale</i>	Cashew Tree	Anacardiaceae
13	<i>Saraca asoka</i>	Ashoka Tree	Fabaceae
14	<i>Solanum paniculatum</i>	Kattuvazhuthina (Jurubeba)	Solanaceae
15	<i>Muntingia calabura</i>	Jamaica cherry	Muntingiaceae
16	<i>Carica papaya</i>	Papaya	Caricaceae
17	<i>Muntingia calabura</i>	Jamaican cherry	Muntingiaceae
18	<i>Drypetes venusta</i>	Chootta	Euphorbiaceae
19	<i>Peltophorum pterocarpum</i>	Copperpod	Fabaceae
20	<i>Pennisetum polystachion</i>	Grass	Poaceae
21	<i>Terminalia myriocarpa</i>	East indian almond	Combretaceae

Flowering Plants			
1	<i>Calliandrahaematocephala</i>	Red powder puff	Fabaceae
2	<i>IxoraCoccinea</i>	Chethi	Rubiaceae
3	<i>Nerium oleander</i>	Oleander flower	Apocynaceae
4	<i>Cupheahyssopifolia</i>	False heather	Lythraceae
5	<i>Pleroma semidecandrum</i>	Princess flower	Melastomataceae
6	<i>Bauhinia accuminata</i>	Mandharam	Fabaceae
7	<i>Allamandacathortica</i>	Kolambi	Apocynaceae
8	<i>Hibiscus rosasinensis</i>	China rose	Malvaceae
9	<i>Rosa indica</i>	Indian Fragrant Rose	Rosaceae
10	<i>Anthuriumandraeanum</i>	Anthurium	Araceae
11	<i>Ocimum sanctum</i>	Tulsi	Lamiaceae
12	<i>Vernoniacinerea</i>	Little ironwood	Asteraceae
Ornamental plants			
1	<i>Codiaeumvariegatum</i>	Garden croton	Euphorbiaceae
2	<i>Cycasrevoluta</i>	Sago palm	Cycadaceae
3	<i>Dypsislutescens</i>	Areca palm	Arecaceae

Faunal diversity of NAM College Campus

Sl. No.	Category/Name of species
Frogs	
1.	<i>Duttaphrynusmelanostictus</i>
2.	<i>Euphlyctiscyanophlyctis</i>
3.	<i>Minervaryakeralensis</i>
4.	<i>Minervaryacaperata</i>
5.	<i>Hoplobatrachustigerinus</i>
6.	<i>Uperodon triangularis</i>
7.	<i>Clinotarsuscurtipes</i>
8.	<i>Polypedates occidentalis</i>
9.	<i>Polypedatespseudocruciger</i>
10.	<i>Raorchestesakroparallagi</i>
11.	<i>Raorchestesanili</i>
12.	<i>Rhacophorus malabaricus</i>

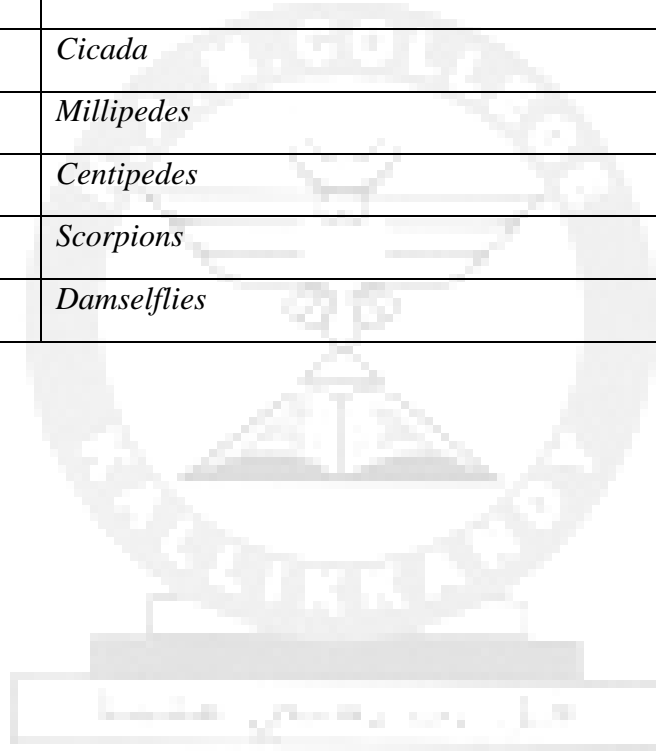
Butterflies	
1.	<i>Blue tiger</i>
2.	<i>Tailed jay</i>
3.	<i>Common jay</i>
4.	<i>Spot swordtail</i>
5.	<i>Common rose</i>
6.	<i>Common mime</i>
7.	<i>Paris peacock</i>
8.	<i>Lime butterfly</i>
9.	<i>Red Helen</i>
10.	<i>Blue mormon</i>
11.	<i>Common mormon</i>
12.	<i>Southern birdwing</i>
13.	<i>Great orange tip</i>
14.	<i>Painted sawtooth</i>
15.	<i>Common castor</i>
16.	<i>Glassy tiger</i>
17.	<i>Common sergeant</i>
18.	<i>Glassy tiger</i>
19.	<i>Chocolate pansy</i>
20.	<i>Bushbrown</i>
21.	<i>Ring butterflies</i>
22.	<i>Atlas moth</i>

Dragonflies	
1.	<i>Orthetrum pruinosum</i>
2.	<i>Orthetrum Sabina</i>
3.	<i>Orthetrum luzonicum</i>
4.	<i>Pantala flavescens</i>
5.	<i>Palpopleura sexmaculata</i>
6.	<i>Trithemis sp.</i>
Reptiles	
1.	<i>Common krait</i>
2.	<i>Wolf snake</i>
3.	<i>Kukri</i>
4.	<i>Indian cobra</i>
5.	<i>Vine snake</i>
6.	<i>Brown Vine snake</i>
7.	<i>Rat snake</i>
8.	<i>Trinket snake</i>
Birds	
1.	<i>Indian white-eye</i>
2.	<i>Common Hoopoe</i>
3.	<i>Golden-fronted leafbird</i>
4.	<i>Purple Sunbird</i>
5.	<i>White-cheeked Barbet</i>
6.	<i>Red-whiskered Bulbul</i>

7.	<i>Red-vented Bulbul Yellow-browed Bulbul</i>
8.	<i>Black-throated Munia</i>
9.	<i>Common Iora</i>
10.	<i>Black naped oriole</i>
11.	<i>Black drongo</i>
12.	<i>Grey Wagtail</i>
13.	<i>Blue rock pigeon</i>
14.	<i>Oriental magpie robin</i>
15.	<i>Little spiderhunter</i>
16.	<i>Common myna</i>
17.	<i>House crow</i>
18.	<i>Brahminy Kite</i>
19.	<i>Black kite</i>
20.	<i>Bronzed drongo</i>
21.	<i>Green Bee-eater</i>
22.	<i>Indian Paradise flycatcher</i>
23.	<i>White-throated kingfisher</i>
24.	<i>Shikra</i>
25.	<i>Black-rumped flame back</i>
26.	<i>Indian Swiftlet</i>
27.	<i>Asian palm swift</i>
28.	<i>Alpin swift</i>
29.	<i>Common Iora</i>
Mammals	
1.	<i>Mongoose</i>
2.	<i>Kitchen rat or House mouse</i>

3.	<i>Bat</i>
4.	<i>Greater Bandicoot rat</i>
5.	<i>Squirrel</i>
Spiders	
1.	<i>Argiope pulchella</i>
2.	<i>Cyrtophoracicatrosa</i>
3.	<i>Cyrtophoracitricola</i>
4.	<i>Eriovixialagleizi</i>
5.	<i>Gasteracanthageminata</i>
6.	<i>Neoscona bengalensis</i>
7.	<i>Parawixiadehaani</i>
8.	<i>Nephila pilipes</i>
9.	<i>Cheiracanthiummelanostomum</i>
10.	<i>Herilia striata</i>
11.	<i>Hippasaagelenoides</i>
12.	<i>Lycosa tista</i>
13.	<i>Pardosa sp.</i>
14.	<i>Nereinesundaica</i>
15.	<i>Oxyopesshetha</i>
16.	<i>Oxyopesjavanus</i>
17.	<i>Salticidae</i>
18.	<i>Asemonea</i>
19.	<i>Epeus indicus</i>
20.	<i>Hyllus semicupreus</i>
Miscellaneous	
1.	<i>Grasshopper</i>
2.	<i>Crab</i>
3.	<i>Ants</i>
4.	<i>Termites</i>

5.	<i>Snails (water and land)</i>
6.	<i>Lady bird beetles</i>
7.	<i>Honey bees</i>
8.	<i>Black beetles</i>
9.	<i>Cicada</i>
10.	<i>Millipedes</i>
11.	<i>Centipedes</i>
12.	<i>Scorpions</i>
13.	<i>Damselflies</i>





Energy Audit

Chapter 4

ENERGY AUDIT

Energy usage in N.A.M College, Kallikandy

The following is energy usage pattern noticed in the college during energy audit.

Sl. No	Campus	Average Monthly Electricity charge (Rs)	Average Monthly gas refilling charge (Rs)	Average Monthly generator fuel charge(Rs)
1	N.A.M. College Kallikandy	42535.00	18000	5264

Checklist of Electrical and Electronic equipment

NO	LOCATION	NAME OF EQUIPMENT	USAGE PATTERN	POWER RATING STAR	AVERAGE USE PER WEEK	NO. OF AVERAGE DAYS OF USE IN A WEEK
1	CANTEEN	MIXIER	2	2	12 hr	6
		REFRIGERATOR	24	3	168 hr	7
		GRINDER	3	3	18 hr	6
2	SEMINAR HALL	PROJECTOR	1	3	4 hr	3
		SPEAKER	4	3	4 hr	3
		INTERCOM	2	3	1hr	3
3	CLASS	PROJECTOR	12	3	20 hr	6
		INTERCOM	26	3	1 hr	6
4	DEPARTMENT	INTERCOM	6	3	1 hr	6
		PRINTER	3	3	12hr	6
		COMPUTER SYSTEM	9	3	40 hr	6
		SCANNER	1	3	12 hr	6
5	LIBRARY	COMPUTER SYSTEM	4	3	46 hr	6
		PRINTER	2	3	12 hr	6
		SCANNER	1	3	12 hr	6
		INTERCOM	2	3	1 hr	6
6	IQAC	SCANNER	1	3	12 hr	6
		COMPUTER SYSTEM	2	3	46 hr	6
		INTERCOM	1	3	1 hr	6
		PRINTER	1	3	12 hr	6
7	LAB	PRINTER	1	3	12 hr	6
		COMPUTER SYSTEM	19	3	12 hr	6
		INTERCOM	3	3	1 hr	6

8	MANAGEMENT OFFICE	AC	3	3	46 hr	6
		TV	1	4	46 hr	6
		PC	3	3	46 hr	6
		PRINTER	3	3	12 hr	6
		MINI FRIDGE	1	3	168 hr	7
		INDUCTION COOKER	1	3	46 hr	6
		SCANNER	1	3	12 hr	6
		INTERCOM	1	3	1 hr	6
9	VISITOR ROOM	INTERCOM	2	3	1 hr	6
10	COLLEGE OFFICE	COMPUTER SYSTEM	8	3	46 hr	6
		PRINTER	4	3	12 hr	6
		SCANNER	2	3	12 hr	6
11	PRINCIPLE OFFICE	TV	1	4	46 hr	6
		PRINTER	1	3	12 hr	6
		COMPUTER SYSTEM	2	3	46 hr	6
		INTERCOM	2	3	1 hr	6
		SCANNER	1	3	12 hr	6
12	Campus	CCTV	57	3	168 hr	7

Indoor and outdoor energy consumption

Location No.	Type ¹	Use ²	Construction type ³	Windows & doors ⁴ /skylight ⁵ /wall windows ⁶		No. of light points ⁷			fan	Average Hours of use /week ⁸
				windows	Door	tube	CFL	LED		
GROUND BLOCK										
1	Language dept.	Faculty work	Concrete	2	4	0	2	0	2	40 hr
2	Toilet	Washroom	Concrete	2	2	0	0	2	0	2.5 hr
3	Polymer chemistry department	Lab works	Concrete	1	1	2	0	1	2	40 hr
4	Class room	Lecture	Concrete	42	22	2	10	6	21	40 hr
5	Polymer Chemistry store & lab	Lab work	Concrete	12	5	2	7	0	3	6 hr
6	Commerce Department	Faculty work	Concrete	1	1	0	0	5	2	40 hr
7	Management office	Office work	Concrete	5	7	0	0	43	8	40 hr
8	Visitors room	Guest	Concrete	4	2	2	2	0	2	2 hr
BLOCK 1										
9	IIC	Faculty work	Concrete	8	1	2	0	0	0	20 hr
10	Toilet	washroom	Concrete	4	7	5	0	12	0	2.5 hr
11	English department	Faculty work	Concrete	6	5	0	0	4	3	40 hr
12	Class	Lecture	Concrete	32	15	9	0	9	21	40 hr
13	Computer science lab	Lab work	Concrete	8	3	0	1	0	1	6 hr
14	UPS Room	UPS	Concrete	2	1	0	1	0	0	168 hr

15	Network resource centre	Resource function	Concrete	4	2	1	0	3	3	40 hr
16	College office	Office work	Concrete	1	2	0	0	18	8	40 hr
17	Principal room	Office work	Concrete	4	1	0	0	7	2	40 hr
18	Guest room	Visitors	Concrete	2	1	2	3	2	4	2 hr
19	Seminar hall	Lecture	Concrete	11	6	0	0	29	10	6 hr
20	Store room	Lab work	Concrete	1	1	0	0	1	1	40 hr
21	IQAC office	Office work	Concrete	7	1	0	0	9	4	40 hr
22	Verandah	walking	Concrete	5	0	3	0	24	0	84 hr
BLOCK 2										
23	Vacant	-	-	-	-	-	-	-	-	-
24	Class	Lecture work	Concrete	18	41	0	0	1	24	40 hr
25	Computer science department	Lab work	Concrete	1	1	0	1	0	2	40 hr
26	Maths department	Faculty work	Concrete	2	2	2	0	0	1	40 hr
27	History department	Faculty work	Concrete	2	2	0	1	0	2	40 hr
28	Museum	Faculty work	Concrete	1	1	0	0	0	1	40hr
29	Verandah	Walking	Concrete	1	0	0	7	0	0	84 hr
BASEMENT										
30	Physical education	Faculty work	Concrete	4	2	0	1	1	2	40 hr
31	Class	Lecture	Concrete	8	2	0	4	0	2	40 hr
32	Student union office	student welfare	Concrete	1	4	2	2	0	1	5 hr

33	Gymnasium room	Gym activity	Concrete	2	4	1	1	0		7.5 hr
34	Ladies room	Resting purpose	Concrete	5	5	0	0	2	2	18 hr
35	NCC & NSS Room	NSS & NCC Activity	Concrete	2	1	0	0	1	0	5 hr
36	Women resources centre	Research activity	Concrete	4	1	0	24	0	2	5 hr
37	Toilet	Washroom	Concrete	4	6	6	0	0	0	2.5 hr
38	NAM local development and palliative	Others	Concrete	14	14	1	1	0	0	10 hr
39	Indoor stadium	Gaming activity	Concrete	9	3	0	0	30	0	15 hr
40	Canteen	Food	Concrete	9	4	18	1	3	6	40 hr
41	Central library	Reading and reference purpose	Concrete	37	4	16	0	9	12	40 hr

Existing energy management methods

- Outdoor lights are connected with solar
- Wiring and electrical maintenance are periodically monitored and replacement are made
- Installed biogas plant are used for the canteen purpose
- Campus have transformer room and power generator room
- Use energy efficient led bulbs

Electric Appliance Audit:

The total energy utilization of college campus for different purposes is 3913 kwh/month. A hybrid source of energy comprising solar and wind type of non-conventional category of energy will be a good alternative energy sources for the University.

Average Electricity charges per campus are Rs.42535/-month. Average Gas refilling charges per campus are Rs.18000/-month. Average Generator fuel charge per campus is Rs.5264/-month.

Energy saving through the replacement of incandescent bulbs to LED light may be a good energy management system for the college. Awareness programmes for the stakeholders to save energy may also increase sustainability in the utilization of various energy sources. Although staffs are encouraged to switch off their own lights, monitors and other equipment, the college administrative staff should carry out a lock down of the building at the end of every day and switch off any lights or equipment that have been left on. All the incandescent bulbs have to be replaced by low energy bulbs. Lighting in some areas such as the toilets are controlled by PIR (passive infrared light) sensors. Lighting in the library should be predominantly LEDs and energy saving bulbs. The college should improve its monitoring and reporting of energy usage and provide information to campus users. The awareness boards for energy savings have to be installed in the campuses.

Another important source of alternative energy for the college is solar power. No greenhouse gas emissions are released into the atmosphere while using solar panels to create electricity. The sun provides more energy than we'll ever need, electricity from solar power is a very important energy source in the move to clean energy production. Proper wiring of buildings has to be ensured and older wiring if necessary has to be replaced. The buildings in some of the campus are nearly 17 years old, therefore wiring may be replaced to avoid electricity leakage and to protect College and its appliances from potentially dangerous or expensive damage that may arise due to faulty wiring.

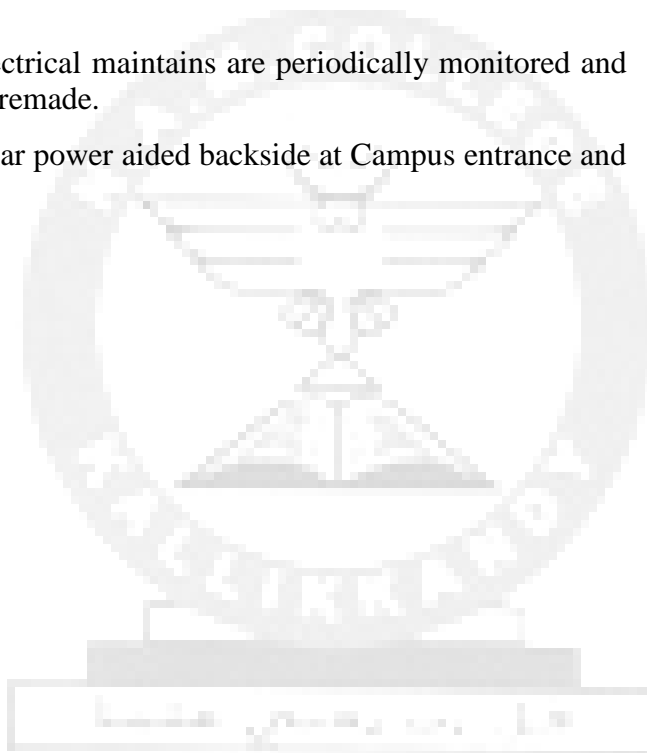
Existing energy management methods in the College campus

- The College campus produces biogas and is using in Kitchen of

college canteen.

- Energy saving campaigns are organised by different departments
- Older and damaged equipment's found to be replaced if necessary.
- Wiring and electrical maintains are periodically monitored and replacements are made.
- Established solar power aided backside at Campus entrance and near library.

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Water Audit

Chapter 5

WATER AUDIT

Water usage in NAM College, Kallikandy

The following is water usage pattern noticed in the college during water audit.

Water usage

Sl.	Purpose	Quantity
1	Water cooler	1
2	No of toilet	25
3	No of toilet flush	25
4	No of water taps	30
5	No of washbasin taps	52
6	No of faucet	25
7	No of bore well	3
8	No of wells	2
9	Rain water harvesting system	50000 (L)

WATER AUDIT

Sl. No.	Tap name*/Tap no.	Type of the tap (plastic/ brass etc.)	Condition (poor/moderate/ good)	Average number of people using per day	Average time per head per day	Average amount of water releasing per minute	Leaking or not	If leaking average amount of water loss per minute
1	Kitchen tap.....18...	Plastic/steel	Good	750	1 hours	1	No	Nil
2	Wash basin tap...52.....	Plastic /steel	Good	810	1.5 hours	1	No	Nil
3	Toilet tap30.....	Plastic /steel	Good	700	2 hours	2	No	Nil
4	Toilet flush...25.....	Plastic/steel	Good	700	2.5 hours	3	No	Nil
5	Shower...1.....	Steel	Good	1	1hours	1	No	Nil
6	Health faucet...25....	steel	Good	600	30 minutes	0.5	No	Nil
7	Other.....6.....	Plastic/steel	Good	8	3 hours	3	No	Nil

3.5. Water audit at NAM College

The water audit was done during the March month where the usage of water is at the peak. The College campus uses 8611 litres of water every day. The main source of water is groundwater. Water from the public water supply is also utilized. Approximately 15 Litres of water is lost through the leaking of pipes. Proper passage of water through the pipes has to be ensured. Leakage has to be prevented and various other sources of water need to be found out as well. Drip irrigation should be practiced in gardens. If water treatment system is installed at canteen and chemical laboratories, the amount of water lost through pollution can be prevented.

The preference should be given to the recycling of water in the College to maintain an Efficient Water Management system. Awareness programmes for the management of sustainable water use will be highly efficient in this campus. Efficient water saving devices should be installed in all toilets. New toilets that are to be installed should have a dual flush system in place. Water management systems are to be introduced in the urinals. Some alternatives include spray taps, which can save about 70% of water and energy used for hand washing. Consider carrying out meter readings on a regular basis (e.g. bi-monthly) in order to monitor water usage. Not only will this make checking water bills much easier but will also allow a baseline to be set from which further reductions can be measured, as well as possibly altering the any leaks.

Existing water management methods installed in the campuses

- Rain water harvesting system of 50000 litre capacity has been installed.
- Water conservation and green awareness campaigns have been conducted on behalf of Bhoomithrasena club and National Service Scheme (NSS)
- Rain water collection pits are dug in order to recharge groundwater.
- Started to add more greenery in order to improve ground water resource.

Waste measure and its disposal

In connection with the Environment audit total solid waste generated per day from the various sources of the college was measured. The details are given below

- Total stakeholders : 1197
- Teaching staff : 53
- Non- teaching staff : 24
- Class room : 33
- E wastes (computers, electrical and electronic parts)- kept in store room
- Plastic waste: plastic bottle
- Solid waste (damaged furniture, paper waste, paper plates, food waste) – damaged furniture is used for reuse purpose and for temporary purpose it is kept in store room
- Chemical waste (laboratory): Direct release in to the sewage tank
- Glass ware (broken glass wares from the lab): for temporary purpose it is kept in store room
- Waste treatment :Biogas plant
- Napkin incinerator : 1

Quantity of waste generated in each campus

- Bio degradable – 1-2.5 kg/day/Campus(office)
- Non bio degradable – 1-1.5kg/day(office)
- Bio degradable – 0.25 kg/day(labs)
- Non-bio-degradable – 0.2 kg/day(labs)
- Hazardous waste – 0.5kg/day
- Canteen waste (biodegradable)– 3kg/day
- Canteen waste (Non-biodegradable) – 0.5 kg/day

A composting pit is highly essential for the treatment of bio degradable waste generated from the canteen, hostels, food leftover by students and staff, office, vegetable garden and from the College campus cleaning process. Different methods such as pit

composting, vermi-composting, bacterial composting using bacterial consortium may be used to treat the bio degradable waste. Hazardous waste such as chemical waste from laboratories, E-waste, plastic, glass, tin waste etc. generated from the college campus can be collected properly and may be handed over to the local self-governments treatment yards or else college should install proper chemical disposing unit. E-waste, plastic and glass bottles, other plastic wastes, cans, broken glass wares, tins etc., may be recycled or sold out.

The College has missed few major recycling opportunities, with the exception of food waste from the dining halls. Installation of more sanitary napkin destroyer at ladieshostel, waiting room and enhance the capacity of existing incinerator in girl's hostels and campus. Different coloured bins maybe placed inorder to collect and segregate various types of waste. Training and campaigns in cotton bag making for students and staff will reduce use of throw away plastic carry bags. Periodical training in health & hygiene, waste management and disposal, green healthy practices may inculcate a positive attitude for a clean and healthy living.

There should be proper sign boards displayed to tell students where to go for the disposal of other recyclables, plastics and hazardous wastes. There should be in place a policy for the handling and disposal of hazardous materials. The College should have plans for dealing with hazardous wastes in academic departments as well as the maintenance activities. The College should ensure that the hazardous materials are disposing in a proper way. Chemistry department may change their chemical waste disposal to eco-friendly method. Green chemistry is the utilisation of a set of principles that reduces or eliminates the use or generation of hazardous substances in the design, manufacture and application of chemical products.

College is committed to manage chemical wastes produced in its practical in a safe and environmentally sound manner that complies with all applicable central and state government regulations. At present, the College does not have a proper waste management system and wastes arereaching the environment (air and water). Since the College has a strong commitment to protect the environment and to be abide by the regulations of the government, in next five years we plan to introduce "Chemical's Waste Management Guidelines".

The College should develop and implement proper management practices in the handling, storage, and disposal of chemical wastes that are generated in its laboratories. The handling and storage will be the areas where College can take adequate steps in the campus itself while disposal can be done in cooperation with a suitable outside agency.

The handling and storage should be strictly according to the “Chemicals Waste Management Guidelines”.

As part of the guidelines, hazardous waste determination will be carried out for the waste from all laboratories and it will be stored in separate appropriate containers. As part of the hazardous waste management, the laboratories will take essential steps to minimise the quantity of waste, set up a satellite accumulation area, properly label all waste containers, close the waste containers to minimise exposure to atmosphere, and contact the collaborating waste disposal agency for a pick up.

Laboratories should be asked to maintain the purchase of smallest quantities of chemicals for particular purposes, and share surplus chemicals with other laboratories. Laboratories shall be asked to perform minimum scale experiments and keep software assisted chemical storage data to avoid duplicate purchases.

Hazardous waste Satellite accumulation areas can be maintained under strict and proper guidelines. The guidelines should address the requirements of the satellite storage area, properties of storage containers, storage limit and storage period before pick up. Proper labeling of the storage containers can be done which will ease the disposal process.

Individual safety of the students and staff working in the laboratories should be ensured along with the waste management guidelines. The College can provide the safety wears to all in the laboratory and wearing them should be made mandatory. Safety alarms can be installed in all laboratories and students can be given training to use fire extinguishers in emergency situations of fire and explosion. Fire extinguishing cylinders should be installed in all laboratory areas. In addition, eye bath facility and open area showers can be introduced in front of all chemical laboratories. First aid boxes should be installed in all departments to help students who can possibly be injured while performing an experiment.

Existing waste management methods practised

- Open dumping of biodegradable waste
- Cleaning the campuses on daily basis
- Installed Plastic bottle collection (bottle booth)
- Installed Biogas plant for biodegradable waste disposal

- Installed Incinerators for sanitary napkin disposal
- Strictly banned use of paper cup and paper plate in the campus and promoted use of steel cup and steel plate.

Noise level

In connection with the Environment audit noise level recorded from the college was given below

Sl.	Location	High level (dB)	Low level (dB)	Average Sound level(dB)	Remarks
1	Outdoor area	65.5	50	57.75	Acceptable
2	Indoor area	87.6	68.9	78.25	Noisy

3.9. Consolidation of audit findings

Environment Audit (Green Audit) will create a greater appreciation and understanding of the impact of College's actions on the environment. College has successfully been able to identify the impacts on the environment through the various auditing exercises. The green auditing exercise has brainstormed and provides insights on practical ways to reduce negative impact on the environment. Participating in this green auditing procedure has gained knowledge about the need of sustainability of the College campus. It will create awareness around the use of the Earth's resources in your home, College, local community and beyond. College should adopt an Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions. White good producing companies are rapidly developing in the area of energy efficiency. Many computer hardware and electrical supply companies now cooperate with customers to reclaim old or damaged parts. Although over twice as expensive up front, LCD monitors are estimated to use 30-40% less energy overall than CRTs. All computers purchased by the University have an Energy Star rating, which is beginning to be a standard requirement for computers.

3.10. Preparation of action plan

Administrators' policies referring to College and approach towards the use of resources need to be considered in purview of green audit report. An environmental policy should be formulated by the Administrator of the College. The College should have a policy on green awareness raising or training programmes for students and staff, green awareness policy right from kitchen staff to procurement policy by the Syndicate. Based on the policies, College should have an action plan. The green audit report will be a base line for the action plan to be evolved.

3.11. Follow up action and plans

Green Audits are exercises which generate considerable quantities of valuable environment and resource management information. The time and effort and cost involved in this exercise is often considerable and in order to be able to justify this expenditure, it is important to ensure that the findings and recommendations of the audit are considered at the correct level within the organisation and action plans and implementation programmes based on the audit findings. Audit follow up is part of the wider process of continuous

improvement. Without follow up, the audit becomes an isolated event which soon becomes forgotten in the pressures of organisational priorities and the passing of time.

3.12. Environmental Education:

The following environmental education programmes may be implemented in the College campus before the next green auditing:-

Training programmes in solid waste management, liquid waste management, setting up of biodiversity garden, tree management, medicinal plant nursery, butterfly garden, vegetable cultivation, water management, energy management, landscape management, pollution mitigation methods, and water filtration methods.

- Display of environmental awareness board such as – Save water, save electricity, No wastage of food/water, no smoking, switch off light and fan after use, plastic free campus etc.,
- Give priority to environmental clubs and its programmes
- Set up model rainwater harvesting system, vegetable garden, medicinal plant garden, butterfly garden etc,
- Conduct exhibition on throw away plastic danger, recyclable products etc
- Display various slogans and pictures to protect environment
- Implement chemical treatment system for waste water from the laboratories and incinerators,
- Different coloured waste bins to segregate waste and its easy collection.

Chapter 6

CONCLUSION AND RECOMMENDATIONS

Environment audit or Green Audit is the most efficient way to identify the strength and weakness of environmental sustainable practices and to find a way to solve problem. Green Audit is one kind of professional approach towards a responsible way in utilising economic, financial, social and environmental resources. Green audits can “add value” to the management approaches being taken by the College and is a way of identifying, evaluating and managing environmental risks (known and unknown). There is scope for further improvement, particularly in relation to waste, energy and water management. The NAM College in recent years considers the environmental impacts of most of its actions and makes a concerted effort to act in an environmentally responsible manner. Even though the College does perform fairly well, the recommendations in this report highlight many ways in which the College can work to improve its actions and become a more sustainable institution.

Suggestions

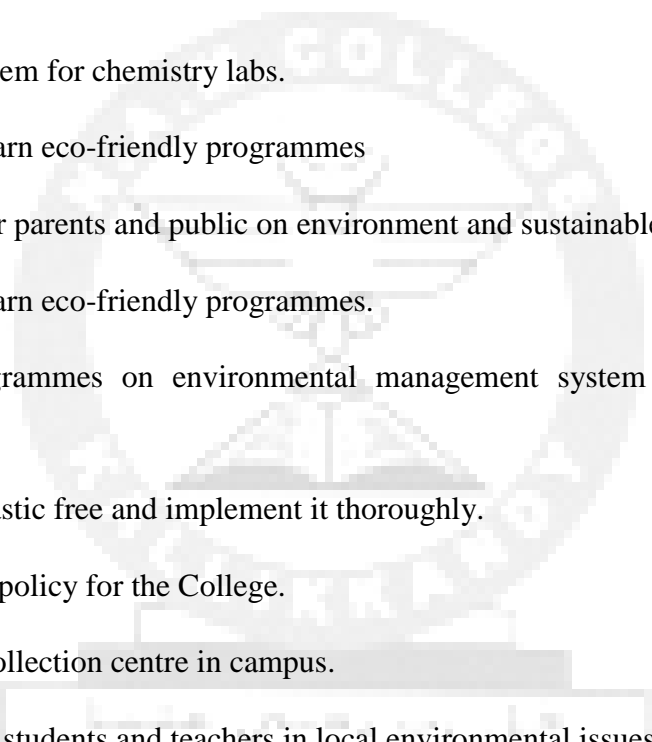
Some of the very important suggestions are:-

- i. Adopt the proposed Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions.
- ii. Increase recycling education on campus.
- iii. Increase Awareness of Environmentally Sustainable Development- Use every opportunity to raise public, government, industry, foundation, and college awareness by openly addressing the urgent need to move toward an environmentally sustainable future.
- iv. Educate for Environmentally Responsible Citizenship- Establish programs to produce expertise in environmental management, sustainable economic development, population, and related fields to ensure that all university graduates are environmentally literate and have the awareness and understanding to be ecologically responsible citizens.

- v. Practice Institutional Ecology- Set an example of environmental responsibility by establishing institutional ecology policies and practices of resource conservation, recycling, waste reduction, and environmentally sound operations.
- vi. Involve All Stakeholders- Encourage involvement of government, foundations, and industry in supporting interdisciplinary research, education, policy formation, and information exchange in environmentally sustainable development. Expand work with community and nongovernmental organizations to assist in finding solutions to environmental problems.
- vii. Collaborate for Interdisciplinary Approaches- Convene college faculty and administrators with environmental practitioners to develop interdisciplinary approaches to curricula, research initiatives, operations, and outreach activities that support an environmentally sustainable future.
- viii. Increase education on reduce, reuse, and recycling of resources and waste products in the campus.

4.2. Recommendations

- Appoint a green protocol officer at College level
- Install Biogas plant and Compost units
- Install Solar panels wind energy harvesting system to generate electricity
- Install Incinerators to dispose sanitary napkins
- Install rain water harvesting system in all roof top and ground.
- Dig sufficient rain water pits in the college campus wherever possible and maintain it regularly.
- Set up water recycling unit where the recycled water can be used for gardening in College and hostels.
- Grow up vegetable garden and medicinal garden and gradually develop it as a nursery.
- Develop butterfly gardens that arouse appreciation towards flora and fauna diversity.
- Name all the trees and plants with its common name and scientific name.

- 
- Display boards of fauna diversity to generate enthusiasm for learners.
 - Layout ‘Green Chemistry’ that reduces or eliminates the use or generation of hazardous substances in the design, manufacture and application of chemical products.
 - Install waste water system for chemistry labs.
 - Organize earn while learn eco-friendly programmes
 - Conduct exhibitions for parents and public on environment and sustainable practices.
 - Organize earn while learn eco-friendly programmes.
 - Arrange training programmes on environmental management system and nature conservation.
 - Declare the campus plastic free and implement it thoroughly.
 - Adopt an environment policy for the College.
 - Establish an E-waste collection centre in campus.
 - Ensure participation of students and teachers in local environmental issues.
 - Renovation of cooking system in the canteen to save gas.
 - Establish a purchase policy that is energy saving and eco-friendly.
 - Replace incandescent and CFL lamps with LED lights.
 - Replace LCD computer monitors with LED monitors.
 - Conduct seminars, workshops and exhibitions on environmental education.
 - Establish water, energy and waste management systems.
 - Avoid plastic/thermocool plates and cups in the College level or department level functions.
 - Introduce add-on courses eco-friendly income generating to all interested students.
 - Sound level should be minimized by awareness and through the prohibition of horn by the vehicles within the University premises.

Commitments after Green Auditing

In the light of Environment audit or green audit, the College should, adopt some additions in the vision and mission statements promoting compliance with environmental laws and regulations for sustainable existence of the College.

Vision Statement

The NAM College is committed to becoming an innovative leader among academic institutions in the areas of environmental education and research and in the practice of environmental management and stewardship.

The College is obliged to the principle of sustainable development, and will use its resources in a manner that does not compromise the ability of future generations of the College and global communities to meet their needs.

Mission Statement

The College is devoted to promote the environment management and conservation in the College campus and community with the purpose to identify, quantify, describe and prioritize framework of environment sustainability in compliance with the applicable regulations, policies and standards.

Dr. Manoj K

Coordinator

Committee on Green Audit

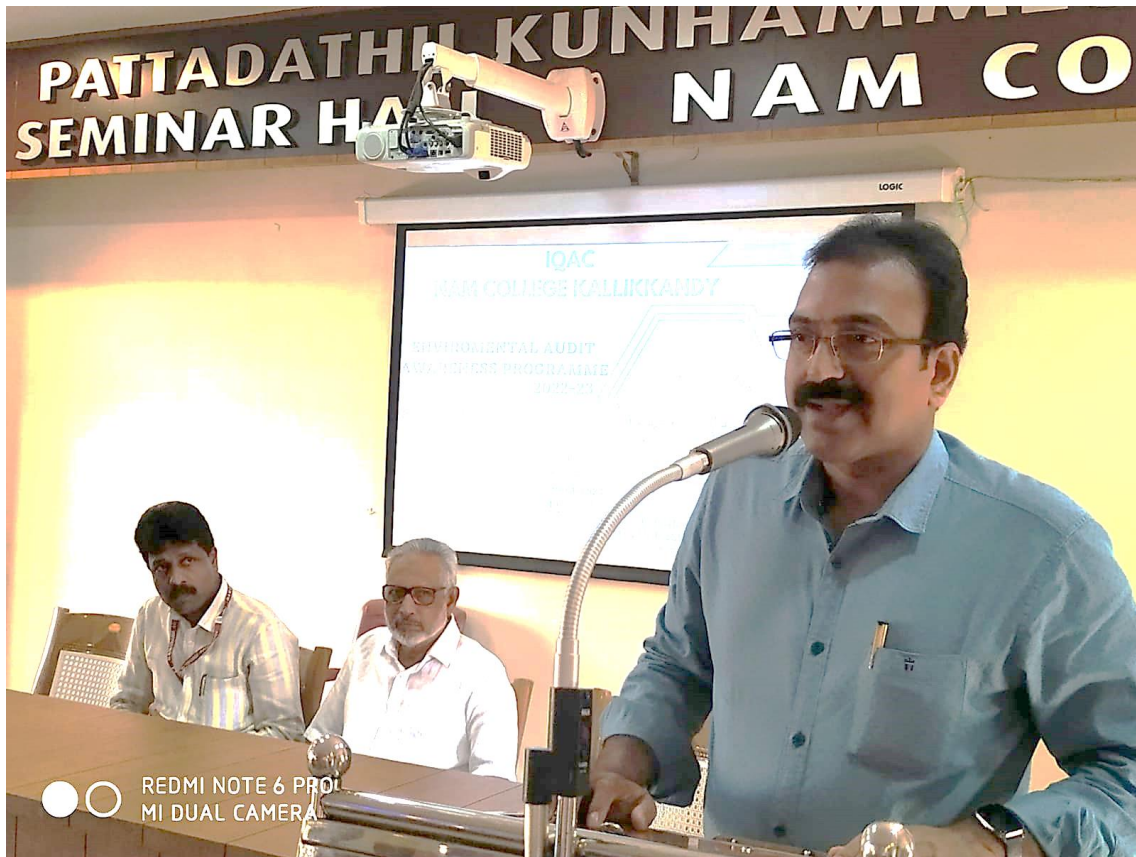
Environment Auditing
Selected images



AM College

Audit Team with College Authorities





Environment Audit – Awareness Programme



Audit Team members inspecting Energy Devices

Pre-Audit Questionnaire

NAM COLLEGE, KALLIKKANDY

ENVIRONMENT AUDIT - PRE-AUDIT QUESTIONNAIRE

Guidelines

The purpose of this questionnaire is to gather the necessary information on the audit site prior to undertaking an on-site audit. The questionnaire covers each area of environmental concern, and is supplemented by information checklists for each of these areas. This questionnaire is designed to familiarize the environmental audit team with the site operations prior to the audit visit, while information checklists highlight a list of the documents required prior to the audit.

Please complete the forms as thoroughly and accurately as possible. Where a question does not apply or cannot be answered, please respond with not applicable or unknown. Respondents are encouraged to provide responses which reflect the actual conditions as opposed to the 'ideal' situation. Provision of pertinent information prior to the audit visit will allow the audit team to be adequately prepared resulting in a more effective audit.

Note: Unless otherwise specified, references made to 'premises' or 'area' in this questionnaire generally refer to premises which the respondent represents

SL NO	FORMS	DESCRIPTION	LINK
1.	Form-1	General Departmental Information (Building)	https://forms.gle/sj7Aj6Aeo5h3zpgM6
2.	Form-2	Overall Environmental Management Information (Departmental Level)	https://forms.gle/BwtNpaz1fgZN34qWA
3.	Form-3	Materials Procurement Policy (Departmental Level)	https://forms.gle/TCWHrFcmiZwGUzRJ7
4.	Form-4	Energy Management	https://forms.gle/DTzRVjVqcVWCrXnz9

5.	Form-5	Material Management (Office Operation)	https://forms.gle/ivztweAWpZxwiV2UA
6.	Form-6	Material Management (Laboratory Operation)	https://forms.gle/DLXBB3f86phTxUKV6
7.	Form-7	Material Management (Pesticide)	https://forms.gle/XiysYuHMnuViZ1Np9
8.	Form-8	Material Management (Asbestos)	https://forms.gle/fhFg5ZNVHVAkgrWuY6
9	Form-9	Water Supply Management	https://forms.gle/HQq3wkaXFgdwwtuu5
10	Form-10	Wastewater Management	https://forms.gle/1ipKP8TEPUBFVEBN9
11	Form-11	Solid Waste Management	https://forms.gle/p1t85D2KXjncpTga7
12	Form-12	Air Quality Monitoring and Control (General)	https://forms.gle/AUWRHh7D93RfDoU77
13	Form-13	Air Quality Monitoring and Control (Laboratory Operation)	https://forms.gle/LLEcZiuRqVBrDiev7
14	Form-14	Noise Monitoring and Control	https://forms.gle/6R8ZTrhM2TKrL4Ux9
15	Form-15	Transportation and Travel	https://forms.gle/D6PEt1WbUxc1DPT49
16	Form-16	Emergency Response Procedures	https://forms.gle/Uiv8mjBhYfgnktTQ6
17	Form-17	Staff Awareness and Training	https://forms.gle/o44PQ1LyPnifGEgT8
18	Form-18	Publicity of Environmental Information	https://forms.gle/Yk45V3agAJ6gWDgc9
19	Form-19	Response to Public Enquiries and Complaints	https://forms.gle/ZyYpE7JrtKGX6ruP8

Onsite Data collection Sheets

Environment audit of NAM College

(Data to be filled by the Principal / Manager only)

Energy Audit Form**On Site Survey:****A. Indoor Lighting:**

No.	Location No.	Type ¹	Use ²	Construction type ³	Windows & doors ⁴ /skylight ⁵ /wall paint reflection ⁶	No. of light points ⁷	Hours of use / week ⁸
1.	1.	Language dept.	Faculty work	Concrete	Windows-2,Door-4	CFL-2	40 hr
2.	2.	Toilet	Washroom	Concrete	Windows-2, Door-2	LED-2	2.5 hr
3.	3.	Polymer chemistry Dept.	Faculty work	Concrete	Windows-1, Door-1	Tube-2, LED-1	40 hr
4.	4.	Class room	Lecture	Concrete	Windows-42, Door-22	Tube -2, CFL-10,LED-6	40 hr
5.	5.	Polymer Chemistry store & lab	Lab work	Concrete	Windows-12, Door-5	Tube -2, CFL-7, LED-0	6 hr
6.	6.	Commerce Department	Faculty work	Concrete	Windows-1, Door-1	Tube -0, CFL-0, LED-5	40 hr
7.	7.	Management office	Office work	Concrete	Windows-5, Door-7	Tube -0, CFL-0, LED-43	40 hr
8.	8.	Visitors room	Guest	Concrete	Windows-4, Door-2	Tube -2, CFL-2, LED-0	2 hr
9.	9.	IIC	Faculty work	Concrete	Windows-8, Door-1	Tube -2, CFL-0, LED-0	20 hr
10.	10.	Toilet	washroom	Concrete	Windows-4, Door-7	Tube -5, CFL-0, LED-12	2.5 hr
11.	11.	English department	Faculty work	Concrete	Windows-6, Door-5	Tube -0, CFL-0, LED-4	40 hr
12.	12.	Class	Lecture	Concrete	Windows-32, Door-15	Tube -9, CFL-0, LED-9	40 hr
13.	13.	Computer science lab	Lab work	Concrete	Windows-8, Door-3	Tube -0, CFL-1, LED-0	6 hr
14.	14.	UPS Room	UPS	Concrete	Windows-2, Door-1	Tube -0, CFL-1, LED-0	168 hr
15.	15.	Network resource centre	Resource function	Concrete	Windows-4, Door-2	Tube -1, CFL-0, LED-3	40 hr
16.	16.	College office	Office work	Concrete	Windows-1, Door-2	Tube -0, CFL-0, LED-18	40 hr
17.	17.	Principal room	Office work	Concrete	Windows-4, Door-1	Tube -0, CFL-0, LED-7	40 hr
18.	18.	Guest room	Visitors	Concrete	Windows-2, Door-1	Tube -2, CFL-3, LED-2	2 hr

19.	19.	Seminar hall	Lecture	Concrete	Windows-11, Door-6	Tube -0, CFL-0, LED-29	6 hr
20.	20.	Store room	Lab work	Concrete	Windows-1, Door-1	Tube -0, CFL-0, LED-1	40 hr
21.	21.	IQAC office	Office work	Concrete	Windows-7, Door-1	Tube -0, CFL-0, LED-9	40 hr
22.	22.	verandah	walking	Concrete	Windows-5, Door-0	Tube -3, CFL-0, LED-24	84 hr
23.	23.	Class	Lecture work	Concrete	Windows-18, Door-41	Tube -0, CFL-0, LED-1	40 hr
24.	24.	Computer science Dept.	Lab work	Concrete	Windows-1, Door-1	Tube -0, CFL-1, LED-0	40 hr
25.	25.	Maths department	Faculty work	Concrete	Windows-2, Door-2	Tube -2, CFL-0, LED-0	40 hr
26.	26.	History department	Faculty work	Concrete	Windows-2, Door-2	Tube -0, CFL-1, LED-0	40 hr
27.	27.	Museum	Faculty work	Concrete	Windows-1, Door-1	Tube -0, CFL-0, LED-0	40hr
28.	28.	verandah	Walking	Concrete	Windows-1, Door-0	Tube -0, CFL-7, LED-0	84 hr
29.	29.	Physical education	Faculty work	Concrete	Windows-4, Door-2	Tube -2, CFL-1, LED-1	40 hr
30.	30.	Class	Lecture	Concrete	Windows-8, Door-2	Tube -0, CFL-4, LED-0	40 hr
31.	31.	Student union office	student welfare	Concrete	Windows-4, Door-1	Tube -2, CFL-2, LED-0	5 hr
32.	32.	Gymnasium room	Gym activity	Concrete	Windows-2, Door-4	Tube -1, CFL-1, LED-0	7.5 hr
33.	33.	Ladies room	Resting purpose	Concrete	Windows-5, Door-5	Tube -0, CFL-0, LED-2	18 hr
34.	34.	NCC & NSS Room	NSS & NCC Activity	Concrete	Windows-2, Door-1	Tube -0, CFL-0, LED-1	5 hr
35.	35.	Women resources centre	Research activity	Concrete	Windows-4, Door-1	Tube -0 CFL-24, LED-0	5 hr
36.	36.	Toilet	Washroom	Concrete	Windows-4, Door-6	Tube -6, CFL-0, LED-0	2.5 hr
37.	37.	NAM local development and palliative	Others	Concrete	Windows-14, Door-14	Tube -1, CFL-1, LED-0	10 hr
38.	38.	Indoor stadium	Gaming activity	Concrete	Windows-9, Door-3	Tube -0, CFL-0, LED-30	15 hr
39.	39.	Canteen	Food	Concrete	Windows-9, Door-4	Tube -18, CFL-1, LED-3	40 hr
40.	40.	Central library	Reading and reference purpose	Concrete	Windows-37, Door-4	Tube -16, CFL-0, LED-9	40 hr

Note:

1. Class room, verandah, corridor, staircase, canteen, lab, office, toilet *etc.*
2. Room use: List primary activity such as lecture hall, office, art, music, conference, and home economics.
3. Concrete, tile roof, asbestos, with or without ceiling *etc.*
4. Number of windows and approximate size.
5. Availability of skylight- Poor/Average/Plenty.
6. Wall paint colour, neatness (dirty or clean) *etc.*
7. Bulb Count/ Watts: Identify the type (incandescent, fluorescent tube, CFL, LED) and number of bulbs and wattage of each bulb.
8. Approximately calculate the no. of hours of use for each light (average use in a week) and record it separately.

B. Outdoor Lighting:

No.	Location No.	Type ¹	Use ²	Tree cover ³	No. of light points ⁴	Hours of use/week ⁵	Remarks
1	1	Entrance to portico way	Walkway	poor	Tube -0, CFL-0, LED-22	84 hr	

Note:

1. Play ground, main road, byroad to library, garden, behind of a building *etc.*
2. Use: List primary activity such as badminton court, football court, walkway *etc.*
3. Whether the area has tree cover blocking direct sunlight: rich/ moderate/poor.
4. Bulb Count/ Watts: Identify the type (incandescent, fluorescent tube, CFL, LED, Sodium vapour lamp, neon bulb *etc.*) and number of bulbs and wattage of each bulb.
5. Approximately calculate the no. of hours of use for each light (average use in a week) and record it separately.

C. Equipment's/ Instruments/Appliances:

NO	LOCATION	NAME OF EQUIPMENT	USAGE PATTERN	POWER RATING STAR	AVERAGE USE PER WEEK	NO. OF AVERAGE DAYS OF USE IN A WEEK
1	CANTEEN	MIXIER	2	2	12 hr	6
		REFRIGERATOR	24	3	168 hr	7
		GRINDER	3	3	18 hr	6
2	SEMINAR HALL	PROJECTOR	1	3	4 hr	3
		SPEAKER	4	3	4 hr	3
		INTERCOM	2	3	1hr	3
3	CLASS	PROJECTOR	12	3	20 hr	6
		INTERCOM	26	3	1 hr	6
4	DEPARTMENT	INTERCOM	6	3	1 hr	6
		PRINTER	3	3	12 hr	6
		COMPUTER SYSTEM	9	3	40 hr	6
		SCANNER	1	3	12 hr	6
5	LIBRARY	COMPUTER SYSTEM	4	3	46 hr	6
		PRINTER	2	3	12 hr	6
		SCANNER	1	3	12 hr	6
		INTERCOM	2	3	1 hr	6
6	IQAC	SCANNER	1	3	12 hr	6
		COMPUTER SYSTEM	2	3	46 hr	6
		INTERCOM	1	3	1 hr	6
		PRINTER	1	3	12 hr	6
7	LAB	PRINTER	1	3	12 hr	6
		COMPUTER SYSTEM	19	3	12 hr	6

		INTERCOM	3	3	1 hr	6
8	MANAGEMENT OFFICE	AC	3	3	46 hr	6
		TV	1	4	46 hr	6
		PC	3	3	46 hr	6
		PRINTER	3	3	12 hr	6
		MINI FRIDGE	1	3	168 hr	7
		INDUCTION COOKER	1	3	46 hr	6
		SCANNER	1	3	12 hr	6
		INTERCOM	1	3	1 hr	6
9	VISITOR ROOM	INTERCOM	2	3	1 hr	6
10	COLLEGE OFFICE	COMPUTER SYSTEM	8	3	46 hr	6
		PRINTER	4	3	12 hr	6
		SCANNER	2	3	12 hr	6
11	PRINCIPLE OFFICE	TV	1	4	46 hr	6
		PRINTER	1	3	12 hr	6
		COMPUTER SYSTEM	2	3	46 hr	6
		INTERCOM	2	3	1 hr	6
		SCANNER	1	3	12 hr	6
12	Campus	CCTV	57	3	168 hr	7

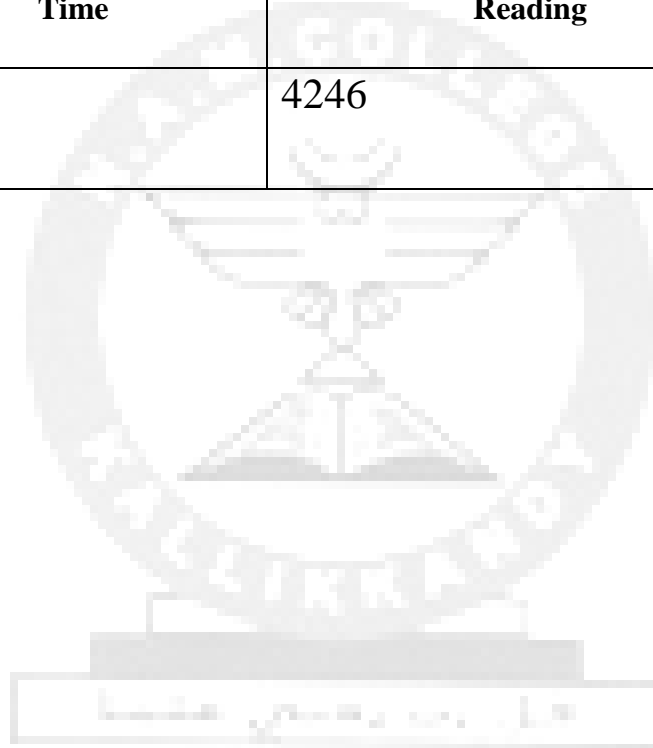
Note:

1. Check the power rating of equipments, instruments or appliances from the manufacturers label fitted on the backside of the equipment.
2. Collect the usage time and pattern from the respective persons

ENERGY AUDIT
Electricity Meter Reading Data Entry Form

Meter No.: A0129500..... Location: NAM COLLEGE, KALLIKKANDY

Date	Time	Reading	Comments
29-03-2022	1.24	4246	KSEB reading was considered



Water Audit Form-1

Data sheet for entry of water usage pattern of Department

Department name:NAM COLLEGE CAMPUS.....

Location Name:COLLEGE CAMPUS.....

Date and time of data collections:21-01-2023.....

Sl. No.	Tap name*/Tap no.	Type of the tap (plastic/brass etc.)	Condition (poor/moderate/good)	Average number of people using per day	Average time per head per day	Average amount of water releasing per minute	Leaking or not	If leaking average amount of water loss per minute
1	Kitchen tap.....18...	Plastic/steel	Good	750	1 hours	1	No	Nil
2	Wash basin tap.....52...	Plastic /steel	Good	810	1.5 hours	1	No	Nil
3	Toilet tap.....30	Plastic /steel	Good	700	2 hours	2	No	Nil
4	Toilet flush.....25.	Plastic/steel	Good	700	2.5 hours	3	No	Nil
5	Shower.....1	Steel	Good	1	1 hours	1	No	Nil
6	Health faucet.....25	steel	Good	600	30 minutes	0.5	No	Nil
7	Other.....6.	Plastic/steel	Good	8	3 hours	3	No	Nil

WATER Audit form 2

Activity	Measurement of water use per day				
	Rate of discharge (l)	Duration of use	Average quantity per use	No. of uses	Total daily uses (l)
Kitchen tap	3 Litres	2 times a day	2	50	100
Wash basin	1 Litres	2 times a day	3	712	2136
Toilet tap	20 Litres	2 times a day	10	50	500
Toilet flush	3 Litres	4 times a day	8	50	400
Shower	3 Litres	4 times a day	3	45	135
Health faucet	3- 5 Litres	2 times a day	6	712	4272
Others	2 Litres	8 times a day	1.5	712	1068
Leaking/dripping tap (per minute)	-	-	-	-	-
Total					8611 L

Summary of Results

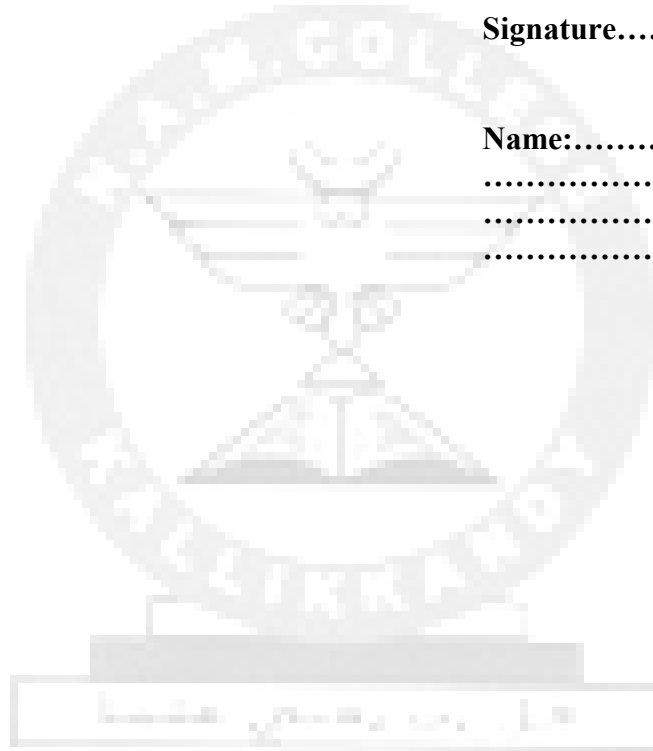
Total daily use of water/ per capita use of water/ capacity of water tank:8611 L

Signature.....

**Dr. Manoj K
Coordinator
Environment Audit
Kannur University**

Signature.....

Name:.....
.....
.....
.....



A. CampusInfrastructure

Form for Solid & Liquid Waste measure and its disposal		
Source/Type	No/Quantity	Remarks
Total Stakeholders –		
Class rooms–		
Other rooms–		
Number of hostel inmates -		
Number of Garbage dumps –		
Number of toilets -		
E-wastes- computers, electrical and electronic parts – Disposal by selling		
Plastic waste- Burning, dumping pit		
Solid wastes – Damaged furniture, paper waste, paper plates, food wastes		
Chemical wastes – Laboratory waste		
Waste water – Washing, urinals, bathrooms		
Glass waste – Broken glass wares from the labs		
Waste treatments – Biogas plant and compost system		
Napkin incinerator -		
Any other		

Quantity of waste generated		
	Amount	Remarks
▪ Bio degradable		
▪ Non-bio-degradable		
▪ Hazardous waste		
▪ Canteen waste (biodegradable)		
▪ Recyclable		
▪ Any other		

Form for Biodiversity Audit

No.	Name of the Plant	Common name	Family
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
