

REPORT

GREEN AUDIT REPORT

FOR KIMSDU

September 2022



REGISTRAR
Krishna Vishwa Vidyapeeth
(Deemed to be University),
Karad

Submitted to:

Krishna Institute of Medical Sciences,
"Deemed To Be University", Karad
Malkapur- 415539, Tal: Karad,
Dist: Satara, Maharashtra

Submitted by:

Green Scientific Development (I) Pvt.
Ltd.
4/A Wing, Bldg No. 23,
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Date: 27th September 2022

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Green Audit Completion Certificate

Name of the Installation **Krishna Institute of Medical Sciences "Deemed To Be University", Karad, Satara - 415539**

Details of Facility Audited **Hospital, Lab, Hostels, Guest House, Gym, Colleges, University Campus, Cafeteria, Residential Area, Central Library, Waste Facilities, Utilities, Etc.**

Date of Green Audit **27th September 2022**

Name of Lead Auditor **Mr. Kiran Shinde - EMS Lead Auditor**

Co-Auditor **Mr. Mahesh Chhatre - Environment Expert**

Name of Auditing Company **Green Scientific Development (I) Pvt. Ltd.
4/A Wing, Bldg No. 23, Tulsi C.H.S. Ltd, Subhash Nagar, Chembur, Mumbai - 400071**

(Handwritten signature)

Signature of Auditor : _____

Lead Auditor : **Mr. Kiran Shinde**

Certification No : **ISO 14001:2015_35142852 02**

Delegate No 168345, Dated 15.04.2019

Certification By : **TUV NORD CERT GmbH**

Stamp of Company :



(Handwritten signature)
REGISTRAR
Krishna Vishwa Vidyapeeth
(Deemed to be University),
Karad



**PR315: ISO 14001:2015 Lead Auditor
(Environmental Management Systems)
Training course**

Certificate of Achievement

Mr Kiran M Shinde

has successfully completed the above mentioned course and examination.

11th - 15th March 2019

MUMBAI, INDIA

Certificate No. 35242852 02

Delegate No. 168345

for TUV NORD CERT GmbH

Essen, 2019-04-15

The course is certified by CQI and IRCA (Certification No. 18125). The learner meets the training requirements for those seeking certification under the IRCA EMS Auditor certification scheme.

TÜV NORD CERT GmbH

Langemarkstraße 20

45141 Essen

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Green Audit Program

Name of Audit Participants

Auditors - External Members			
1	Mr. Kiran Shinde	Lead Auditor	Lead Auditor
2	Mr. Mahesh Chhatre	Co-Auditor	Environment Expert
Auditee - In-house Members			
1	Mr. S. A. Mashalkar	Chair Person	Assistant Registrar - Estate & Security
2	Mr. Ganesh Patole	Member	Environmental Supervisor
3	Mr. S. S. Gaikwad	Member	Civil Engineer
4	Mr. Y. G. Kulkarni	Member	Electrical Engineer
5	Mr. D. S. Kashid	Member	Civil Supervisor
6	Mr. S. Y. Kirdak	Member	HOD- Garden Dept.

Audit Schedule (27th September 2022)

Heads	From	To	Details
Opening Meeting	9.00	9.45	With Management Team & Auditee
Site Visit	10.00	13.15	Departments
Lunch Hr	13.15	14.00	In House
Site Visit	14.00	18.00	Campus and Utilities
Closing Meeting	18.00	18.45	With Management Team & Auditee

1.0 INTRODUCTION

Krishna Institute of Medical Sciences "Deemed To Be University", Karad is located in Western Maharashtra, India against the background of mountains and valleys. The green, eco-friendly campus is spread over 57 acres and is well connected by rail, road & air.

The University is accredited by NAAC 'A+' grade and has been conferred with ISO 9001:2015 certification.

The constituent faculties of the University include Medical, Dental, Physiotherapy, Nursing, Pharmacy and Allied Sciences offering undergraduate and postgraduate courses in the respective faculties. It also runs Ph.D. programs and Post Doctoral Fellowships in various subjects.

Krishna Institute of Medical Sciences was established in 1984. The college enjoys an enviable reputation among Indian medical schools. Adaption to new technologies, innovative teaching methods, dedicated community service and an experienced faculty have contributed to its long tradition of excellence.

The School of Dental Sciences was started with the approval of the Dental Council of India in the year 2006. A massive state-of-art infrastructure to support 100 undergraduate and 23 postgraduate admissions with the installation of 283 electrically operated chairs, laboratories, instruments, materials and the appointment of an experienced faculty has seen it to grow into an institution of repute. The School aims to address the dental care needs of the community while providing the best dental education and comprehensive hands-on training to its students. As a social responsibility it also carries out the oral health awareness programs and diagnostic camps in surrounding villages.

Krishna Institute of Nursing Science was established in the year 1983. Nursing as a profession and a discipline utilizes knowledge derived from arts, sciences (physical, biological and behavioral), humanities and human experience. Nursing science

incorporates clinical competence, critical thinking, communication, teaching learning, professionalism, and caring and cultural competency. Nurses collaborate with other health disciplines to solve individual and community health problems.

Krishna College of Physiotherapy was established in the year 2002. Physiotherapy is a science which aims to accelerate a patient's recovery after illness or injury and seeks to restore and maintain physical function. It has a role to play in all age groups and in all branches of medicine. During the 4 years course students undergo instruction in basic body structures and organs, their function, disease, recovery and rehabilitation encompassing the subjects of Anatomy, Physiology, Biochemistry, Pathology, Microbiology, Pharmacology, Medicine, Surgery, Orthopaedics, Gynaecology, And Sports Medicine.

They are introduced to various methods of testing, mobilization techniques, electromyography and neuromuscular facilitation. The students also learn about various treatment methods of hydrotherapy, electrotherapy, stimulators, UV radiation, short wave diathermy, laser therapy, wax bath etc., and different technics like bobath, McKenzie and Mulligan.

The Krishna Institute of Allied Sciences was established in 2007 with Two Post graduate courses in Microbiology, Biotechnology with the Inspiration from First Chancellor of Krishna Institute of Medical Sciences "Deemed to be University", Karad, Late Shri. Jaywantraoji Bhosale and with the Keen Interest of First Vice Chancellor Dr. Suresh Bhosale.

Krishna Institute of Pharmacy was established in the year 2017. The latest inclusion in the University is Krishna Institute of Pharmacy. It was started in year 2017 with the intake of 60 students. Within 2 years the intake capacity is increased to 100 per year. Advanced laboratories, classrooms and enthusiastic faculty are the main pillars of the institute.

The teaching hospital is 1125 bedded multispecialty tertiary care hospital with facilities for Critical Care, Endoscopic Surgeries, Dialysis, Cardiology, Cardio-vascular-thoracic-surgery, Oncology, Urology, Neurosurgery, Plastic surgery, Oral and Maxillofacial Surgery and a recognized Renal Transplant Unit. It has fully equipped major operation theaters, minor theaters, labour rooms, blood bank accredited by NABH, radio-diagnosis and radiotherapy, computerized medical records, counselling services etc. There are separate intensive care units like Medical, Surgical, Coronary care, Pediatric, Neonatal (accredited by Neonatology Forum of India), Respiratory and Obstetrics. The neonatal ICU is recognized by Neonatology Forum of India. The radio-diagnosis department has facilities for MRI, color Doppler, mammography, DSA etc. It also actively participates in national healthcare programs and various extensions and outreach community programs initiated by the Institute.

Krishna Institute of Medical Sciences "Deemed to be University", Karad has awarded by International Green University Award 2022 in Green School Conference 2022 held at SUNY Maritime College, New York on 24th September, 2022.

1.1 PREAMBLE

To identify opportunities for Sustainable Development practices, Green Audit is a great tool. Green Audit helps to enhance all environmental aspects. This also not only helps to achieve values of virtue but also protects in various aspects such as Health, hygiene, safety, reduction in liabilities & saves money. A green audit is a valuable tool for any user in many ways which can be used to improve environmental & economic performance of the Auditee resulting in the enhancement in the reputation. General focus of green audit is to know reduce, reuse, recovery practices and its sustainable status. Baseline data collection and its study is a first step. Then in auditing process, the data serves to identify opportunist for the line of actions and current status of the campus. If performed with standard practices and compared with other audits conducted at similar projects, green audit report help to know programme and activities performances, identify areas for improvement and to decide prioritize for the improvement and implementation in current practices and future expansions. Economic benefits and losses can be calculated with this tool. This can be achieved by establishing rate analysis between current practice Vs standard/optimum utilization practice cost.

The **aim and goal of organizing Green Audit** is to know sustainable development practice performed at KIMSDU, Karad. Upgrade the environment condition in and around the institutes, Hospital.

1.2 SCOPE & OBJECTIVE OF AUDIT

The general scope of audit is to visit the site, collect available data and prepare a baseline report to study biodiversity, resource management, measures to mitigate pollution, improve resource quality and sustainable practices.

The specific objectives are:

- ☐ To know the water aspect,
- ☐ To know energy aspect and its status,
- ☐ To know all essential aspects such as air, noise, soil, etc for the premises.
- ☐ To know the biodiversity and suggest measures to improve the same,
- ☐ To suggest sustainable development practices for all the aspects,
- ☐ To know the solid waste and its management practices with 3 R principle,

In Nut shell, to encourage values of sustainable development practices through conducting green audit at premises.

1.3 BENEFITS OF GREEN AUDIT

- ☐ For stakeholders and society, developing an environmental ethic and value.
- ☐ Enhance environment culture, Social Imaging, Profile enhancement for the university.
- ☐ Enhances the Environmental awareness through the education, systematic approach towards environmental management.
- ☐ Resource management and to know potential scope in same.
- ☐ It helps to know the standard of green initiatives in the premises.
- ☐ It provide basis for improvement in sustainability aspect. Waste management by knowing practices for reduction of waste generation, solid handling and its management, and water recycle, etc.
- ☐ Conformation for the compliances for the applicable conditions, rules and regulations.
- ☐ Able to evaluate the cost saving aspects through environmental friendly sound management practices,
- ☐ Able to understand any of the forthcoming complications due to changes in the policies, law, act, applicable statutory compliances
- ☐ Helps to frame action plan for the best environmental performance,
- ☐ Improving environmental standards.
- ☐ Benchmarking for environmental protection initiatives.
- ☐ Financial savings through a reduction in resource use, penalties and actions.
- ☐ Development of ownership, personal involved in the activity.

2.0 TARGET AREAS OF GREEN AUDITING

Green audit forms the part of a resource management process. Although they are individual events, the real value of green audits is the fact that they are carried out, at defined intervals, and their results can illustrate improvement or change over time. Eco-campus concept mainly focuses on the efficient use of energy and water; minimize waste generation or pollution and also economic efficiency. All these indicators are assessed in process of "Green Auditing". Eco-campus focuses on the reduction of contribution to emissions, procures a cost effective and secure supply of energy, encourages and enhances energy use conservation, promotes personal action, reduce the institute's energy and water consumption, reduce wastes to landfill, and integrate environmental considerations into all contracts and services considered to have significant environmental impacts. Target areas included in this green auditing are water, energy, waste and carbon footprint.

❖ Auditing for Water Management

Water is a natural resource; All living matters depend on water. While freely available in many natural environments, in human settlements potable (drinkable) water is less readily available. We need to use water wisely to ensure that drinkable water is available for all, now and in the future. A small drip from a leaky tap can waste more than 180 liters of water to a day; That is a lot of water to waste - enough to flush the toilet eight times. Water contamination and depletion of water table are taking place at recorded negative laps rates. Examining water management practice became a tool to know environmentally sound/responsible practice. Water auditing is conducted for the evaluation of facilities of raw water intake, optimum utilization, reuse-recycle practice and safe disposal. The concerned auditor investigates the relevant method that can be adopted and implemented to balance the demand and supply of water. It is therefore essential that any environmentally responsible entity examine its water use practices

❖ **Auditing for Energy Management**

Energy cannot be seen, but we know it is there because we can see its effects in the forms of heat, light and power. In the energy Management aspect during auditing following parts are essential to assess; Energy sources and its consumption, energy consumption and losses monitoring practices, lighting & appliances facilities, etc. Energy aspect required to be assessed and have importance in the auditing practice to know the sustainability. An old incandescent bulb uses approximately 60W to 100W while an energy efficient light emitting diode (LED) uses only less than 10 W. Energy auditing deals with the conservation and methods to reduce its consumption related to environmental degradation. To analyze environmentally responsibility, institution must know their energy practice.

❖ **Auditing for Waste Management**

Pollution from waste is aesthetically displeasing and results in large amounts of litter in our communities which can cause health problems. Plastic bags and discarded ropes and strings can be very dangerous to birds and other animals. This indicator addresses waste production and disposal, plastic waste, paper waste, food waste, and recycling. Solid waste can be divided into two categories: general waste and hazardous waste.

General wastes include what is usually thrown away in homes such as garbage, paper, tins and glass bottles. Hazardous waste is waste that is likely to be a threat to health or the environment like biomedical waste, cleaning chemicals and fuels. Unscientific landfills may contain harmful contaminants that leach into soil and water supplies, and produce greenhouse gases contributing to global climate change.

Through 3 R principle, one can think and implement solid waste as a resourceful material for its utilization as secondary source. Thus the minimization of solid waste is essential for sustainable operations of hospital. It is therefore essential that any environmentally responsible entities examine its waste processing practices.

❖ **Auditing for Green Campus Management**

Unfortunately, biodiversity is facing serious threats from habitat loss, pollution, over consumption and invasive species. Species are disappearing at an alarming rate and each loss affects nature's delicate balance and our quality of life. Without this variability in the living world, ecological systems and functions would break down, with detrimental consequences for all forms of life, including human beings. Newly planted and existing trees decrease the amount of carbon dioxide in the atmosphere. Trees play an important ecological role within the urban environment, as well as support improved public health and provide aesthetic benefits to cities. In one year, a single mature tree will absorb up to

21.77 kg. of carbon dioxide from the atmosphere, and release it as oxygen. The amount of oxygen that a single tree produces is enough to provide one day's supply of oxygen for people. So while you are busy studying and working on earning those good grades, all the trees on campus are also working hard to make the air cleaner for us. Trees on our campus impact our mental health as well; studies have shown that trees greatly reduce stress, which is a huge deal considering many students are under some amount of stress.

❖ **Auditing for Carbon Footprint**

Commutation of stakeholders has an impact on the environment through the emission of greenhouse gases into the atmosphere consequent to burning of fossil fuels (such as petrol). The most common greenhouse gases are carbon dioxide, water vapor, methane, nitrous oxide and ozone. Of all the greenhouse gases, carbon dioxide is the most prominent greenhouse gas, comprising 402 ppm of the Earth's atmosphere. The release of carbon dioxide gas into the Earth's atmosphere through human activities is commonly known as carbon emissions.

An important aspect of doing an audit is to be able to measure your impact so that we can determine better ways to manage the impact. In addition to the water, waste, energy and biodiversity audits we can also determine what our carbon footprint is, based on the amount of carbon emissions created. One aspect is to consider the

distance and method travelled between home and hospital every day. It undertakes the measure of bulk of carbon dioxide equivalents exhaled by the hospital through which the carbon accounting is done. It is necessary to know how much the organization is contributing towards sustainable development. It is therefore essential that any environmentally responsible entity examine its carbon footprint.

METHODOLOGY OF GREEN AUDITING

The methodology adopted for the green audit conducted at KIMSDU was in three step process comprising of ;

2.1 DATA COLLECTION

In preliminary data collection phase data collection is performed. This is carried out by various discussions, communication with responsible persons. Following steps were taken for data collection ;

- ☐ Preparation of data sheets in the form of checklist and questionnaire.
- ☐ Get the filled data sheets along with essential supporting document.
- ☐ Site Visit to all the facilities under audit. Like; Departments, ICUs, OTs, canteen, Library, admin department, Campus, etc.
- ☐ Collection of data / general information during visit by observation and spot interviews.
- ☐ Sample/Evident collections such as; The power consumption of appliances was recorded by taking an avg. value in some cases.

2.2 DATA ANALYSIS

- ☐ Study the regulatory applicable laws and its compliances.
- ☐ Collect the data sheet, observations and sample/evidence collected.
- ☐ Calculation and compare records maintained for various aspects of water, solid waste, energy (electricity), economics for pollution abatement, standard practices, Trees and species variation and its Quantity, Carbon Foot print and its projection.

2.3 OBSERVATIONS / RECOMMENDATION

Audit Observation and Findings on the basis of data analysis.

3.0 AUDIT OBSERVATIONS AND FINDINGS

The base of any green audit is that its findings are supported by documents and verifiable information. The audit process seeks, on a sampled basis, to track past actions, activities, events, and procedures to ensure that they are carried out according to systems requirements and in the correct manner.

Green audits form a part of a process. Although they are individual events, the real value of green audits is the fact that they are carried out, at defined intervals, and their results can illustrate improvement or change over time.

Although green audits are carried out using policies, procedures, documented systems and objectives as a test, there is always an element of subjectivity in an audit. The essence of any green audit is to find out how well the environmental organisation, environmental management and environmental equipment are performing. Each of the three components are crucial in ensuring that the organisation's environmental performance meets the goals set in its green policy. The individual functioning and the success of integration will all play a role in the degree of success or failure of the organisation's environmental performance.

3.1 REGULATORY STATUS AND STANDARDS

KIMSDU abides by all the environmental regulations applicable to the campus.

- ☐ KIMSDU is a registered and having valid license w. r. t. its scope and activity.
- ☐ KIMSDU has a valid Consent to Operate received from the Pollution Control Board.
- ☐ KIMSDU confirms all the norms lay down by Air Act, Water Act, E-waste, Biomedical waste and Hazardous Waste Rules.

KIMSDU has obtained

- ☐ ISO 9001 certification.
- ☐ ISO 14001 certification.
- ☐ Accreditation of National Assessment and Accreditation Council (NAAC).
- ☐ Recognition of National Accreditation Board for Hospitals & Healthcare Providers (NABH)
- ☐ Accreditation of National Accreditation Board for Testing and Calibration Laboratories (NABL)

4.2 WATER AND WASTEWATER MANAGEMENT

Table 1.0: Water usage on the campus is tabulated as below:

Fresh Water Consumption Year 2022			
Sr. No.	Description	Water Consumption (M3/day)	Source / Remark
1	Domestic		Fresh water from 1. Malkapur Nagar Parishad - 40 m3/Day 2. Koyana River (Irrigation) - 750 m3/Day
	a) Hospital	74	
	b) Hostel	185	
	c) College	129	
	d) Staff Quarters	16	
	e) Visitors	38	
2	Laundry	32	3. Ground Water - 50 m3/Day
3	Lab Washing	8	
4	Miscellanies	10	
	Total	492	Fresh water

Treated waste water consumption			
Sr. No.	Description	Water Consumption (M3/day)	Source / Remark
1	Gardening	304	Treated / Recycle water from STP Plant
2	Flushing	31	
	Total	335	

Table 2.0: Other water related data is as follows:

Sr. No.	Aspect	Details
1	Water and waste watertreatment system	The hospital have following treatment systems onthe premises: Water Treatment Plant of 750 m3/d capacity Sewage Treatment Plant of 500 m3/d capacity -2 numbers Effluent Treatment Plant of 100 m3/d capacity RWH provided
2	Water coolers with drinkingwater filtration	Aqua guard - 38 R.O. systems - 3 Coolers - 47
3	Number of urinals and toilets	Western WC - 772 Indian WC - 402 Urinals - 217
4	Number of waterless urinals	Nil
5	Number of bathrooms	755
6	Number of water taps	5387
7	Water taps in laboratories	450
8	Number of bore wells	7
9	Number of ponds	Nil
10	Water pumps	2 pumps of 7.5 HP bore 5 pumps of 5 HP bore 2 pumps of 10 HP river water
11	Quantity of water pumped	500
12	Water charges paid	Rs. 47995 paid to lift irrigation management division, Ogalewadi Karad
13	Number of water tanks for storage	32
14	Quantity of water stored	1900

Water Wastage:

Being an environmentally conscious entity KIMSDU is aware of their responsibility and do regular checks for identifying water leakages or wastages. At present there are no leakages or over usages of water identified.

4.3 ENERGY MANAGEMENT**Table 3.0: Collective data on energy**

Sr. No.	Aspect	Details
1.	Electricity charges	Avg. Rs.5065560 /month
2.	Number of gas cylinders used per month	Commercial gas cylinders - 217, Refilling - 110
3.	Cost of gas cylinders used (refilling@Rs.1700)	Rs.187000/-
4.	Number of generators	04
5.	Cost of generator fuel	Rs. 1951433 per month
6.	Total cost of energy	Rs. 7203993/-
7.	Number of CFL bulbs	70
8.	Number of LED lights	4663
9.	Number of Incandescent bulbs	5
10.	Number of fans	3562
11.	Number of air conditioners	691
12.	Total electrical equipment	45
13.	Number of laptops	52
14.	Number of computers	483
15.	Number of printers	215
16.	Number of projectors	93
17.	Number of photocopiers	12
18.	Number of televisions	138
19.	Energy generation using solar panels	88505 kWh/month

Table 4.0: Energy usage by CFL bulbs:

Area	No. of CFL Bulbs	Power consumed (Watts)	Power (kW)	Working time (Hrs./day)	Energy usage per month (kWh)
Medical college building	1	8	0.008	8	1.92
All wards and hospital	7	56	0.056	8	13.44
All OPDs	5	40	0.04	8	9.6
Nursing college building	3	24	0.024	8	5.76
IHR Hostel (old /new)	7	56	0.056	8	13.44
Women's hostels (1 to 6)	12	96	0.096	8	23.04
Blood bank / Radiotherapy	4	32	0.032	8	7.68
O. T / Physiotherapy college	1	8	0.008	8	1.92
Old Pathology /C.M. Stores	6	48	0.048	8	11.52
Transport	2	16	0.016	8	3.84
Café	4	32	0.032	8	7.68
All staff qtrs.	5	40	0.04	8	9.6
University building	2	16	0.016	8	3.84
Pharmacy (old & new) (KH)	5	40	0.04	8	9.6
Civil maintenance	5	40	0.04	8	9.6
Canteen	1	8	0.008	8	1.92
Total energy usage per month (kWh)					134.4

Table 5.0: Energy usage by LED bulbs and tubes

Area	No. of LED Bulbs	Power consumed (Watts)	Power (kW)	Working time (Hrs./day)	Energy usage per month in KWH
Blood Bank	32	576	0.576	8	138.24
Passages	24	432	0.432	8	103.68
Cancer clinic	16	288	0.288	8	69.12

Area	No. of LED Bulbs	Power consumed (Watts)	Power (kW)	Working time (Hrs./day)	Energy usage per month in KWH
Administration Offices	33	594	0.594	8	142.56
Administration Offices & ICU with passages	42	756	0.756	8	6.048
Passage & Cashier office near Ward No.24	50	900	0.9	8	7.2
Passages and ward No 15, 16	65	1170	1.17	8	280.8
Ward no. 16, 17, 18 and passages	85	1530	1.53	8	367.2
Ward No. 5, 4, 32	70	1260	1.26	8	302.4
Ward No. 6, 10	59	1062	1.062	8	254.88
Ward No. 9, 17, 18, 10, 8	78	1404	1.404	8	336.96
Ward NO. 11, 7	49	882	0.882	8	211.68
Ward No. 11 passage	10	180	0.18	8	43.2
Ward No. 10 & passage	42	756	0.756	8	181.44
Ward No. 19, 20, 14	65	1170	1.17	8	280.8
Boys Hostel III (2nd floor)	40	720	0.72	8	172.8
Boys Hostel III (1st floor)	50	900	0.9	8	216
Boys Hostel (Ground floor)	70	1260	1.26	8	302.4
Women Hostel (4th floor)	79	1422	1.422	8	341.28
Women Hostel No. IV (1st floor)	37	666	0.666	8	159.84
Women Hostel No. IV (Ground floor)	51	918	0.918	8	220.32
Women Hostel No. V (3rd floor)	49	882	0.882	8	211.68
Women Hostel No. V (2nd floor)	42	756	0.756	8	181.44

Area	No. of LED Bulbs	Power consumed (Watts)	Power(kW)	Working time (Hrs./day)	Energy usage per month in KWH
Women Hostel No. VIII(1st floor)	23	414	0.414	8	99.36
Women Hostel No. V(Ground floor)	87	1566	1.566	8	375.84
Central Library (4th floor)	32	576	0.576	8	138.24
Central Library (3rd floor)	48	864	0.864	8	207.36
Central Library (2nd floor)	21	378	0.378	8	90.72
Central Library (1st floor)	47	846	0.846	8	203.04
Central Library (Ground floor)	29	522	0.522	8	125.28
Central Library and Nursing Hostel	43	774	0.774	8	185.76
Central Library and Nursing Hostel	52	936	0.936	8	224.64
Dental College Library(4th floor)	45	810	0.81	8	194.4
Dental College (2nd floor)	34	612	0.612	8	146.88
Pharmacy College (2nd floor)	66	1188	1.188	8	285.12
Pharmacy College (1st floor)	40	720	0.72	8	172.8
Physiotherapy College(1st floor)	11	198	0.198	8	47.52
Allied Sciences (2nd floor)	51	918	0.918	8	220.32
Allied Sciences (3rd floor)	67	1206	1.206	8	289.44
Allied Sciences (Ground floor)	30	540	0.54	8	129.6
Pharmacy College (Lab)	4	72	0.072	8	17.28
Allied Sciences Building	35	630	0.63	8	151.2
Ladies hostel No. 3 (3rd floor)	50	900	0.9	8	216
Ladies hostel No. 3 (4th floor)	50	900	0.9	8	216
Ladies hostel No. 4	70	1260	1.26	8	302.4
Nursing College	176	3168	3.168	8	760.32

Area	No. of LED Bulbs	Power consumed (Watts)	Power (kW)	Working time (Hrs./day)	Energy usage per month in KWH
Ladies hostel near dental college	60	1080	1.08	8	259.2
Dental hostel	134	2412	2.412	8	578.88
IHR hostel	155	2790	2.79	8	669.6
NRI hostel	54	972	0.972	8	233.28
B Type quarters	59	1062	1.062	8	254.88
Laundry & Medical college	1400	25200	25.2	8	6048
Medical college and other	389	7002	7.002	8	1680.48
Hill Area	47	846	0.846	8	203.04
Academic plaza	86	1548	1.548	8	371.52
Total energy usage per month (kWh)					19630.4

Table 6.0: Energy usage by fans

Area	No. of Fans	Power Consumed (Watts)	Power (kW)	Working Time (Hrs/day)	Energy Usage per Month (kWh)
Medical college	563	45	0.045	8	6080.4
All wards and hospital	482	65	0.065	8	7519.2
Dental college	451	65	0.065	8	7035.6
All OPDs and HR office	251	65	0.065	8	3915.6
Library	95	65	0.065	8	1482
Pharmacy college	117	65	0.065	8	1825.2
Nursing college	151	65	0.065	8	2355.6
Nursing Hostel	47	65	0.065	8	733.2
Guest house (old /new)	24	65	0.065	8	374.4
NRI hostel	56	65	0.065	8	873.6
IHR hostel (old /New)	107	65	0.065	8	1669.2
Women's hostel (1 to 6)	166	65	0.065	8	2589.6
Dental hostel (BDS)	92	65	0.065	8	1435.2
Sr. boys hostel	164	65	0.065	8	2558.4
Jr. boys hostel	73	65	0.065	8	1138.8
Radiology / NARI OPD	54	65	0.065	8	842.4
Parking Offices	29	45	0.045	8	313.2

Area	No. of Fans	Power Consumed	Power (kW)	Working Time (Hrs/day)	Energy Usage per Month
Allied Sciences building	71	65	0.065	8	1107.6
Laundry /Civil maintenance	25	65	0.065	8	390
Café / Transport	8	65	0.065	8	124.8
Dental library	43	65	0.065	8	670.8
Swimming pool	6	65	0.065	8	93.6
Old accounts office	3	65	0.065	8	46.8
Old pharmacy	6	65	0.065	8	93.6
New pharmacy	13	65	0.065	8	202.8
Biomedical Engg.	1	65	0.065	8	15.6
Venus hall	9	65	0.065	8	140.4
Parking	36	65	0.065	8	561.6
New pharmacy college	119	65	0.065	8	1856.4
Physiotherapy college	50	65	0.065	8	780
Library	31	45	0.045	8	334.8
Total energy usage per month (kWh)					49160.4

Table 7.0: Energy usage - Air Conditioners

Area	No. of ACs	Working time (Hrs./day)	Power consumed (kWh/day)	Energy usage per month (kWh)
Radiotherapy				
DS room	1	8	4.2	110.9
Mammography	1	8	3.2	83.2
Panel room	1	24	6.4	166.4
Procedure room	1	8	4.2	110.9
Pathology lab - KH	1	8	3.2	83.2
Administrative Office	1	1	0.8	20.8
Machine room	2	24	192	4992
Chiller room	1	24	96	2496
Seminar hall	2		0	0
Administrative Office	2		0	0
Conference hall	1		0	0
OPD	1	2	0.8	20.8
Administrative office	1	2	1.6	41.6
New Pathology lab - KH	1	24	6.4	166.4
Blood bank				
Blood bank collection room	1	8	2.1	55.4
Quality control - 1	1	24	12.8	332.8
Quality control - 2	1	24	12.8	332.8
Serology	1	24	12.8	332.8

Area	No. of ACs	Working time (Hrs./day)	Power consumed (kWh/day)	Energy usage per month (kWh)
Transmission room	1	24	12.8	332.8
Composition room	1	24	12.8	332.8
Storage room	1	24	12.8	332.8
Quality control - 3	1	24	12.8	332.8
Storage room	1	8	2.1	55.4
HoD Office	1	8	4.2	110.9
Ward 12				
Ward no12 OT	1	8	4.2	110.9
Eclampsia room	1	10	5.3	138.66
ICU	1	24	12.8	332.8
OT and related areas				
OT 8	2	8	6.4	166.4
OT 9	1	8	4.2	110.9
OT No 1	1	8	38.4	998.4
OT No 2	1	8	38.4	998.4
OT No 3	2	8	70.4	1830.4
OT No 4	3	8	374.4	9734.4
OT No 5	2	8	70.4	1830.4
OT No 6	2	8	96	2496
OT No 7	2	8	96	2496
Ward no 13 PICU	2	24	25.6	665.6
SICU	2	24	32	832
Ward and related areas				
Ward 25 MICU	5	24	64	1664
Ward 25 MICU	5	24	32	832
Ward 26 SICU	3	24	48	1248
Ward 26	2	24	25.6	665.6
Ward 26	4	24	25.6	665.6
Ward 16	2	5	5.3	138.6
Ward 1	3	24	48	1248
Ward 1	1	24	9.6	249.6
HOD room	1	8	2.1	55.4
OT	4	20	352	9152
Administrative Office near OT	2	8	4.2	110.9
Cath lab				
Cath lab equipment room - Sec 1	1	24	105.6	2745.6
Cath lab equipment room - Sec 2	1	8	35.2	915.2
Cath lab ICU & Day Care - Sec 1	1	18	64.8	1684.8
Cath lab ICU & Day Care - Sec 2	2	18	43.2	1123.2
Ward 7	1	6	3.2	83.2
Ward 9	1	6	3.2	83.2
Ward 10	1	6	2.4	62.4

Area	No. of ACs	Working time (Hrs./day)	Power consumed (kWh/day)	Energy usage per month (kWh)
Ward 10 burn ICU	2	10	8	208
Ward 11 PR 215	1	8	2.1	55.4
Ward 11 PR 216	1	8	2.1	55.4
Ward 14 HoD	1	24	9.6	249.6
NICU	4	24	51.2	1331.2
Doctor's room	1	8	2.1	55.4
PICU	1	24	12.8	332.8
Doctor's room	1	8	2.1	55.4
Common Room	1	8	3.2	83.2
OT	1	8	51.2	1331.2
Ward 11 new PR room	24	5	144	3744
New eco room	1	8	5.3	138.6
UPS Room	0	24	0	0
New eco room	1	8	2.1	55.4
Radiology building				
MRI control room	1	24	9.6	249.6
Report room	1	10	4	104
HOD cabin	1	8	3.2	83.2
Sonography	2	24	25.6	665.6
CR room	1	8	3.2	83.2
Report room	1	8	3.2	83.2
X RAY machine 6	1	8	3.2	83.2
CT room	2	24	32	832
CT report	1	24	12.8	332.8
X RAY machine 8	1	8	3.2	83.2
DSA room	1	4	1.6	41.6
Seminar room	2	4	3.2	83.2
X ray report	1	8	2.1	55.4
CT UPS	1	24	12.8	332.8
MRI	2	24	192	4992
MRI Machine room	2	24	115.2	2995.2
Chiller room	1	24	384	9984
Pharmacy and related area				
Pharmacy store 1	2	24	25.6	665.6
Pharmacy store 2	2	24	19.2	499.2
Pharmacy server room	1	24	6.4	166.4
Ward 3 CICU 1	2	24	25.6	665.6
Ward 3 CICU 2	1	8	6.4	166.4
Telephone room	1	24	9.6	249.6
OPD area				
ECG room	1	10	5.3	138.6
Cath lab report room	1	8	2.1	55.4

Area	No. of ACs	Working time (Hrs./day)	Power consumed (kWh/day)	Energy usage per month (kWh)
Ophthalmology OPD 1	1	8	2.1	55.4
Ophthalmology OPD 2	1	8	3.2	83.2
ENT OPD classroom	1	8	3.2	83.2
ENT machine OPD	1	8	4.2	110.9
Dermatology OPD 1	1	8	4.2	110.9
Dermatology OPD 2	2	8	6.4	166.4
VIP ICU bldg.				
VIP ICU - Waiting area	1	2	1.0	27.7
VIP ICU 2	3	2	2.4	62.4
Hostels and Guest House				
Hostel no 6	15	5	20	520
Guest house	12	1	0.69	110.8
Hostel no 1	4	12	11.2	582.4
IHR room 23	1	10	5.3	138.6
IHR room 9	1	10	2.6	69.3
NRI hostel	22	12	70.4	1830.4
Extension bldg.	33	12	158.4	4118.4
New international hostel	97	12	1396.8	36316.8
Jr. Boy's hostel	2	12	12.8	332.8
Sr. Boy's hostel	6	12	38.4	998.4
Administration bldg. (medical bldg.)				
Administration office 1	1	2	1.0	27.7
Administration office 2	1	2	0.5	13.8
Medical Director office AC 1	1	8	4.2	110.9
Medical Director office AC 2	1	0	0	0
Meeting hall	2	3	3.2	83.2
PA TO Medical Director office	1	8	4.2	110.9
Administration office 3	1	8	2.1	55.4
Administration office 4	1	8	4.2	110.9
1st floor administration office reception	1	8	4.2	110.9
Administration office 5	1	8	4.2	110.9
Administration office 6	1	8	4.2	110.93
Administration office 7	2	12	12.8	332.8
Meeting hall	2	8	6.4	166.4
Administration office 8	1	8	3.2	83.2
Administrative Office9	1	5	1.3	34.6
University bldg.				
Finance Officer	1	10	4	104
Server room	1	24	6.4	166.4
Registrar office	1	10	5.3	138.6
Anti-chamber 1	1	5	1.3	34.6
AR – Academics	1	8	2.1	55.4

Area	No. of ACs	Working time (Hrs./day)	Power consumed (kWh/day)	Energy usage per month (kWh)
Photocopy room	1	8	2.1	55.4
Exam hall	2	5	4	104
Anti-chamber 2	1	8	2.1	55.5
Chancellor office	3	4	6.4	166.4
Administration office 15	1	8	4.3	110.9
Anti-chamber 3	1	8	2.1	55.5
COE Office	1	8	3.2	83.2
AR - Academics	1	8	3.2	83.2
Anti-chamber 4	1	5	1.3	34.7
Administration office 10	1	8	4.3	110.9
Administration office 11	1	8	5.3	138.7
Administration office 12	1	4	2.1	55.5
Administration office 13	1	8	3.2	83.2
VC office	1	8	4.3	110.9
Meeting hall 1	1	8	4.3	110.9
Meeting hall 2	2	8	8.5	221.9
Exam hall	2	8	38.4	998.4
Administration office 14	2	8	38.4	998.4
Conference hall	4	4	38.4	998.4
Chairman's office	2	4	19.2	499.2
PA to chairman office	2	8	38.4	998.4
Meeting hall 3	2	0.1	0.4	10.4
Printer room	1	3	3.6	93.6
Central Medical Store bldg.				
CM Store (HoD cabin)	1	8	4.3	110.9
CM Store (Office)	1	8	4.3	110.9
Power House bldg.				
Power House HoD room	1	0	0.0	0.0
Power House - EMS	1	5	2.0	52.0
AR Office area				
AR - Estate and Security	1	8	4.3	110.9
ATM	1	24	9.6	249.6
Allied Sciences College				
Allied Sciences bldg. lecture hall	1	4	2.1	55.5
Allied Sciences bldg. N1 hall	6	4	9.6	249.6
Allied Sciences building - Jupiter hall	9	1	21.6	561.6
Allied Sciences building hall 02	4	2	19.2	499.2
Allied Sciences building hall 03	4	2	19.2	499.2
Medical college				
Research lab Microbiology	1	24	9.6	249.6
Lab	1	8	3.2	83.2
NABL lab	2	24	25.6	665.6

Area	No. of ACs	Working time (Hrs./day)	Power consumed (kWh/day)	Energy usage per month (kWh)
Academics office	1	8	2.1	55.5
Animal lab	2	8	8.5	221.9
Dean's office	1	8	3.2	83.2
AR – Administration	1	8	2.1	55.5
Virology	1	8	4.3	110.9
Central physiology	1	8	4.3	110.9
Research lab	1	8	4.3	110.9
MET hall	4	8	12.8	332.8
ELECTO physiology	1	8	3.2	83.2
EEG	1	8	4.3	110.9
HSP LAB	1	8	4.3	110.9
S1 hall	8	2	8.5	221.9
S2 hall	2	2	8.0	208.0
Molecular lab	2	4	25.6	665.6
Pharmacy College			0.0	0.0
Media room	2	24	19.2	499.2
HoD room	1	24	6.4	166.4
IT room	1	24	6.4	166.4
Counselling lab	3	4	8.0	208.0
Computer lab 1	1	4	2.1	55.5
Computer lab 2	1	4	2.1	55.5
OBGY lab	3	8	16.0	416.0
Library bldg.			0.0	0.0
Library	5	15	40.0	1040.0
Library	2	15	12.0	312.0
Basement	2	15	20.0	520.0
IT lab	3	8	9.6	249.6
PG library	4	12	25.6	665.6
Auditorium	6	2	6.4	166.4
Auditorium	8	2	10.7	277.3
Reading room	1	2	17.6	457.6
Dental college bldg.				
Dean's office	1	8	4.3	110.9
Dean's office waiting area	1	8	2.1	55.5
Meeting hall	1	8	4.3	110.9
Dental lab	1	8	4.3	110.9
Administrative office	1	8	3.2	83.2
New gym	1	6	28.8	748.8
Museum	1	0.1	1.6	41.6
Total energy usage per month (kWh)				154052.99

Table 8.0: Energy usage by electrical equipment:

Dept.	Area	No. of EQ	Power (kW)	Working Time (Hrs./day)	Energy Usage per Month (kWh)
Compressor	Casualty ICU	1	2.2	8	528
	KH ICU	1	2.2	8	528
	Ward no 21-28	1	7.5	8	1800
	Operation theatre	1	7.5	8	1800
	C.V.T.S.	1	7.5	8	1800
	C.V.T.S.	1	7.5	8	1800
	Dental college	1	7.5	8	1800
	Dental college	1	2.2	8	528
	Transport	1	2.2	8	528
	Ward No 11	1	7.5	8	1800
	Laundry	1	2.2	8	528
	Laundry	1	2.2	8	528
	C.S.S.D.	1	2.2	8	528
Autoclave	C.S.S.D. no 1	1	18	8	4320
	C.S.S.D. no 2	1	18	8	4320
	C.S.S.D. no 3	1	18	8	4320
	C.S.S.D. no 4	1	6	8	1440
	C.S.S.D. no 5	1	18	8	4320
	C.V.T.S.	1	6	8	1440
	Cath lab	1	18	8	4320
	KH ICU	1	18	8	4320
Pump WTP	Raw water pump	2	7.5	8	3600
	Dosing mixer	1	0.55	8	132
	Polymer dosing mixer	1	0.55	8	132
	Sludge transfer pump	2	0.75	8	360
	Filter feed pump	2	11	8	5280
	Air blower	1	3.7	8	888
	Brine tank mixer	1	1.1	8	264
	Flash Tank mixer	1	0.75	8	180
	Flocculator	1	0.55	8	132
	Flocculator (spare)	1	1.1	8	264

	Chlorine dosing pump	2	0.025	8	12
	Alum dosing pump	2	0.025	8	12
	Poly dosing pump	2	0.025	8	12
	UV Unit	1	0.025	8	6
PUMP STP	Sewage Transfer pump	2	2.2	8	1056
	Air blower	2	11	8	5280
	Filter feed pump	2	5.5	8	2640
	Sludge pump	2	0.75	8	360
	Poly dosing mixer	1	0.55	8	132
	Poly dosing mixer(spare)	1	2.2	8	528
	Poly dosing pump	2	0.025	8	12
	Chlorine dosing pump	2	0.025	8	12
Total energy usage per month (kWh)					64590

Table 9.0: Energy usages by television:

Area	No. of Tvs	Power Consumed (Watts)	Power (kW)	Working Time (Hrs./day)	Energy Usage per Month (kWh)
All wards and hospital	1	40	0.04	6	7.2
Dental college	1	40	0.04	6	7.2
Nursing hostel	1	40	0.04	6	7.2
Guest house (old /new)	37	40	0.04	6	266.4
NRI hostel	4	40	0.04	6	28.8
IHR hostel (old /new)	2	40	0.04	6	14.4
Women's hostel (1 To 7)	3	40	0.04	6	21.6
All staff qtrs.	86	40	0.04	6	619.2
Pharmacy college	1	40	0.04	6	7.2
Physiotherapy college	1	40	0.04	6	7.2
Parking offices	1	40	0.04	6	7.2
Total energy usage per month (kWh)					972

Table 10.0: Energy Usage of Heaters:

Area	Heater capacity	No. of heaters	Power (kWh/day)	Energy usage per month (kWh)
Ladies hostel no. 01				
A side				
Ground floor	100	1	7	210
Ground floor	50	1	7	210
First floor	50	1	7	210
First floor	50	1	7	210
Second floor	100	1	7	210
Second floor	100	1	7	210
Ladies hostel B side				
Ground floor	50	1	7	210
Ground floor	100	1	7	210
First floor	100	1	7	210
First floor	100	1	7	210
Second floor	50	1	7	210
Second floor	100	1	7	210
New hostel	300	1	42	1260
New hostel	300	1	42	1260
New hostel	300	1	42	1260
Sr. Boys hostel	50	6	24	720
Sr. Boys hostel – Rector room	15	1	4	120
Jr. Boys hostel	100	10	70	2100
New hostel	15	1	4	120
New hostel	15	1	4	120
GNM hostel no 2				
Ground floor	50	1	4	120
Ground floor	35	1	4	120
First floor	35	1	4	120
First floor	50	1	4	120
Second floor	50	1	4	120
Second floor	10	1	6	180
BDS hostel no 3				
Ground floor	35	1	4	120
Ground floor	35	1	4	120
Ground floor	100	1	6	180
First floor	50	1	4	120
First floor	50	1	4	120
Second floor	35	1	4	120
Second floor	50	1	4	120
Third floor	35	1	4	120
Third floor	50	1	4	120

Area	Heater capacity	No. of heaters	Power (kWh/day)	Energy usage per month (kWh)
Fourth floor	35	1	4	120
Fourth floor	50	1	4	120
Fourth floor	50	1	4	120
Fourth floor	50	1	4	120
Hostel no 4	50	1	4	120
Ground floor	35	1	6	180
Ground floor	15	1	4	120
First floor	50	1	4	120
First floor	50	1	4	120
Second floor	50	1	4	120
Second floor	50	1	4	120
Second floor	50	1	4	120
Third floor	50	1	4	120
Third floor	50	1	4	120
Third floor	50	1	4	120
Hostel no 5				
Ground floor	50	1	4	120
Mess	35	1	1.3	40
First floor	50	1	4	120
First floor	35	1	4	120
First floor	15	1	0.6	20
Second floor	50	1	4	120
Second floor	50	1	4	120
Second floor	50	1	4	120
Third floor	50	1	4	120
Third floor	50	1	4	120
Third floor	50	1	4	120
Fourth floor	50	1	4	120
Fourth floor	50	1	4	120
Fourth floor	50	1	4	120
Hostel no 6				
Ground floor	50	1	3	90
Ground floor	10	1	1	30
Ground floor	10	1	1	30
First floor	10	1	5	150
First floor	15	1	0.5	15
First floor	15	1	0.5	15
First floor	10	1	0.5	15
First floor	10	1	0.5	15
First floor	10	1	6	180
First floor	50	1	6	180

Area	Heater capacity	No. of heaters	Power (kWh/day)	Energy usage per month (kWh)
First floor	50	1	6	180
Second floor	10	1	0	0
Second floor	10	1	0	0
Second floor	10	1	0	0
Second floor	10	1	0	0
Second floor	10	1	0	0
Com. bath room	50	1	6	180
Com. bath room	50	1	6	180
Third floor	10	1	0	0
Third floor	10	1	0	0
Third floor	10	1	0	0
Third floor	10	1	0	0
Third floor	10	1	0	0
Com. Bath room	50	1	6	180
Com. Bath room	50	1	6	180
Fourth floor	10	1	2	60
Fourth floor	10	1	0.5	15
Fourth floor	10	1	0.5	15
Fourth floor	10	1	0.5	15
Fourth floor	50	1	5	150
Fourth floor	50	1	5	150
Fourth floor	50	1	5	150
I. H. R. hostel new bldg.				
Ground floor	50	1	4	120
Ground floor	50	1	4	120
First floor	50	1	4	120
First floor	50	1	4	120
First floor	50	1	4	120
Second floor	50	1	4	120
Second floor	50	1	4	120
Second floor	50	1	4	120
Third floor	50	1	4	120
Third floor	50	1	4	120
Third floor	50	1	4	120
Third floor	50	1	4	120
I. H. R. hostel old building				
Ground floor	35	1	5	150
Room no. 1	6	1	1	30
Room no. 2	6	1	1	30
Room no. 3	6	1	1	30
Room no. 4	6	1	1	30

Area	Heater capacity	No. of heaters	Power (kWh/day)	Energy usage per month (kWh)
Room no. 5	6	1	1	30
Room no. 6	6	1	1	30
Room no. 7	6	1	1	30
Room no. 8	6	1	1	30
Room no. 9	6	1	1	30
Room no. 10	6	1	1	30
Room no. 11	6	1	1	30
Room no. 12	6	1	1	30
Room no. 13	6	1	1	30
Room no. 14	6	1	1	30
Room no. 15	6	1	1	30
N. R. I. hostel				
Ground floor	15	1	5	150
Room. 103	6	1	2	60
Room. 102	6	1	2	60
Room. 101	6	1	2	60
Room. 107	6	1	2	60
Room. 105	6	1	2	60
Room. 106	6	1	2	60
First floor 201	15	1	5	150
Room. 202	15	1	5	150
Room. 203	6	1	2	60
Room. 204	6	1	2	60
Room. 205	6	1	2	60
Room. 206	6	1	2	60
Room. 207	6	1	2	60
Room. 208	6	1	2	60
Room. 209	6	1	2	60
Second floor 301	6	1	2	60
Room. 302	6	1	2	60
Room. 303	6	1	2	60
Room. 304	6	1	2	60
Room. 305	6	1	2	60
Room. 306	6	1	2	60
Room. 307	6	1	2	60
Room. 308	6	1	2	60
Room. 309	6	1	2	60
Room. 310	6	1	2	60
Room. 311	6	1	2	60
Room. 312	6	1	2	60
Room. 313	6	1	2	60

Area	Heater capacity	No. of heaters	Power (kWh/day)	Energy usage per month (kWh)
Room. 314	6	1	2	60
Room. 315	6	1	2	60
Third floor 401	6	1	2	60
Room. 402	6	1	2	60
Room. 403	6	1	2	60
Room. 404	6	1	2	60
Room. 405	6	1	2	60
Room. 406	6	1	2	60
Room. 407	6	1	2	60
Room. 408	6	1	2	60
Room. 409	6	1	2	60
Room. 410	6	1	2	60
Room. 411	6	1	2	60
Room. 412	6	1	2	60
Room. 413	6	1	2	60
Room. 414	6	1	2	60
Room. 415	6	1	3	90
Sr. Boy's Hostel	50	1	4	120
Jr. Boy's Hostel	50	1	4	120
A type quarters [old]				
A 1	15	1	2	60
A 1	15	1	2	60
A 1	15	1	2	60
A 2	15	1	2	60
A 2	15	1	2	60
A 2	15	1	2	60
A 3	15	1	2	60
A 3	15	1	2	60
A 3	15	1	2	60
A 4	15	1	2	60
A 4	15	1	2	60
A 4	15	1	2	60
A 5	15	1	2	60
A 5	15	1	2	60
A 5	15	1	2	60
I. H. R. hostel (Inside rooms)				
First floor	50	1	4	120
Room no. 1	6	1	1	30
Room no. 2	6	1	1	30
Room no. 3	6	1	1	30
Room no. 4	6	1	1	30

Area	Heater capacity	No. of heaters	Power (kWh/day)	Energy usage per month (kWh)
Room no. 5	6	1	1	30
Room no. 6	6	1	1	30
Room no. 7	6	1	1	30
Room no. 8	6	1	1	30
Room no. 9	6	1	1	30
Room no. 10	6	1	1	30
Room no. 11	6	1	1	30
Room no. 12	6	1	1	30
Room no. 13	6	1	1	30
Room no. 14	6	1	1	30
Room no. 15	6	1	1	30
Room no. 16	6	1	1	30
Second floor	50	1	4	120
Room no. 17	35	1	3	90
Room no. 18	6	1	2	60
Room no. 19	6	1	2	60
Room no. 20	6	1	2	60
Room no. 21	6	1	2	60
Room no. 22	6	1	2	60
Room no. 23	6	1	2	60
Room no. 24	6	1	2	60
Room no. 25	6	1	2	60
Total energy usage per month (kWh)				24465

Table 11.0: Energy Usages by desktop computers:

Location	Department	No. of computers	Power consumed (Watts)	Power (kW)	Working time (Hrs./day)	Energy usage per month (kWh)
University	VC Office	5	100	0.1	8	120
University	Director Research	9	100	0.1	8	216
University	Registrar Office	11	100	0.1	8	264
University	Exam Section	5	100	0.1	8	120
KIMS & Hospital	Academic	4	100	0.1	8	96
University	Accounts	16	100	0.1	8	384
KIMS & Hospital	Administration office KIMS	5	100	0.1	8	120
KIMS & Hospital	Anatomy	9	100	0.1	8	216
KIMS & Hospital	Biochemistry	6	100	0.1	8	144
KIMS & Hospital	F.M.T	4	100	0.1	8	96
KIMS & Hospital	ICT	6	100	0.1	8	144
KIMS & Hospital	Library	32	100	0.1	8	768
KIMS & Hospital	Microbiology	6	100	0.1	8	144
KIMS & Hospital	NABL	3	100	0.1	8	72

Location	Department	No. of computers	Power consumed (Watts)	Power (kW)	Working time (Hrs./day)	Energy usage per month (kWh)
KIMS & Hospital	P.&S.M.	5	100	0.1	8	120
KIMS & Hospital	Pathology	4	100	0.1	8	96
KIMS & Hospital	Pharmacology	3	100	0.1	8	72
KIMS & Hospital	Photography	4	100	0.1	8	96
KIMS & Hospital	Physiology	6	100	0.1	8	144
KIMS & Hospital	Lecture hall	4	100	0.1	8	96
KIMS & Hospital	Genetic lab	2	100	0.1	8	48
KIMS & Hospital	Hostels	4	100	0.1	8	96
KIMS & Hospital	Accounts KH	12	100	0.1	8	288
KIMS & Hospital	Admission	8	100	0.1	8	192
KIMS & Hospital	Anaesthesia	1	100	0.1	8	24
KIMS & Hospital	Biomedical	1	100	0.1	8	24
KIMS & Hospital	Blood Bank	5	100	0.1	8	120
KIMS & Hospital	Civil	2	100	0.1	8	48
KIMS & Hospital	CM Store	9	100	0.1	8	216
KIMS & Hospital	Dermatology OPD	1	100	0.1	8	24
KIMS & Hospital	Dietician OPD	1	100	0.1	8	24
KIMS & Hospital	ECG	1	100	0.1	8	24
KIMS & Hospital	Electric	2	100	0.1	8	48
KIMS & Hospital	House Keeping	1	100	0.1	8	24
KIMS & Hospital	Incinerator	1	100	0.1	8	24
KIMS & Hospital	HR Office	2	100	0.1	8	48
KIMS & Hospital	MD Office	3	100	0.1	8	72
KIMS & Hospital	Medicine OPD	3	100	0.1	8	72
KIMS & Hospital	Medical records	4	100	0.1	8	96
KIMS & Hospital	MSW	1	100	0.1	8	24
KIMS & Hospital	NABH Office	2	100	0.1	8	48
KIMS & Hospital	NARI OPD	2	100	0.1	8	48
KIMS & Hospital	Neuro Surgery	1	100	0.1	8	24
KIMS & Hospital	New Pharmacy	6	100	0.1	8	144
KIMS & Hospital	Night evening supervisor room	1	100	0.1	8	24
KIMS & Hospital	Nursing office	5	100	0.1	8	120
KIMS & Hospital	O.T	4	100	0.1	8	96
KIMS & Hospital	OBGy	4	100	0.1	8	96
KIMS & Hospital	Ophthalmology	2	100	0.1	8	48
KIMS & Hospital	Orthopaedic	2	100	0.1	8	48
KIMS & Hospital	Pathology KH	5	100	0.1	8	120
KIMS & Hospital	Paediatric	3	100	0.1	8	72
KIMS & Hospital	Pharmacy Sec-2	8	100	0.1	8	192
KIMS & Hospital	PRO	3	100	0.1	8	72
KIMS & Hospital	Security	4	100	0.1	8	96
KIMS & Hospital	Surgery	3	100	0.1	8	72

Location	Department	No. of computers	Power consumed (Watts)	Power (kW)	Working time (Hrs./day)	Energy usage per month (kWh)
KIMS & Hospital	Ward-Cathlab-W2	5	100	0.1	8	120
KIMS & Hospital	Wards-CVTS-W1	3	100	0.1	8	72
KIMS & Hospital	Wards (3-32)	33	100	0.1	8	792
KIMS & Hospital	X-Ray	14	100	0.1	8	336
Dental college	Dean	1	100	0.1	8	24
Dental college	Office	6	100	0.1	8	144
Dental college	OPD	1	100	0.1	8	24
Dental college	Oral Pathology	1	100	0.1	8	24
Dental college	Prosthodontics	2	100	0.1	8	48
Dental college	Conservative	4	100	0.1	8	96
Dental college	OMDR	3	100	0.1	8	72
Dental college	Oral Surgery	3	100	0.1	8	72
Dental college	PHD	2	100	0.1	8	48
Dental college	Periodontics	2	100	0.1	8	48
Dental college	Orthodontics	1	100	0.1	8	24
Dental college	Pedodontics	2	100	0.1	8	48
Dental college	Store	2	100	0.1	8	48
Dental college	Library	3	100	0.1	8	72
Dental college	NAAC office	1	100	0.1	8	24
Dental college	Server room	2	100	0.1	8	48
Dental college	Cashier room	1	100	0.1	8	24
Dental college	Computer lab	10	100	0.1	8	240
Nursing college	Principal	1	100	0.1	8	24
Nursing college	Office + V.P	7	100	0.1	8	168
Nursing college	Med Surgical	1	100	0.1	8	24
Nursing college	OB./Gyn.	1	100	0.1	8	24
Nursing college	Psychiatry	1	100	0.1	8	24
Nursing college	Paediatric	1	100	0.1	8	24
Nursing college	Library	2	100	0.1	8	48
Nursing college	Computer lab	15	100	0.1	8	360
Nursing college	Education	1	100	0.1	8	24
Nursing college	Community health	1	100	0.1	8	24
Nursing college	Lecture hall		100	0.1	8	0
Physiotherapy college	Principal	1	100	0.1	8	24
Physiotherapy college	Office	2	100	0.1	8	48
Physiotherapy college	NAAC Room	2	100	0.1	8	48
Physiotherapy college	Library	5	100	0.1	8	120
Physiotherapy college	OPD Counter	2	100	0.1	8	48
Physiotherapy college	Orthotic/Pros	2	100	0.1	8	48
Physiotherapy college	Lecturer hall		100	0.1	8	0

Location	Department	No. of computers	Power consumed (Watts)	Power (kW)	Working time (Hrs./day)	Energy usage per month (kWh)
Pharmacy college	Principal	1	100	0.1	8	24
Pharmacy college	Office	1	100	0.1	8	24
Pharmacy college	Computer lab	21	100	0.1	8	504
Pharmacy college	Library	1	100	0.1	8	24
Pharmacy college	Staff room	1	100	0.1	8	24
Allied Sciences college bldg.	Principal	1	100	0.1	8	24
Allied Sciences college bldg.	Office	1	100	0.1	8	24
Allied Sciences college bldg.	Lab	17	100	0.1	8	408
Total energy usage per month (KWh)						10968

4.4 WASTE MANAGEMENT

Table 12.0: Waste Generated in the Premises:

Type of waste	Per day
Biomedical waste	237.81 Kg
Solid waste	1156.13 Kg
Waste water	440 m3

- ☐ E-waste generated in the campus is stored separately as per rules and pollution control board standards. It is disposed through sale to the authorized E-waste recycler.
- ☐ To treat sewage and effluent generated in the campus KIMSDU have separate treatment plants of capacity 2 x 500 m3/day and 100 m3/day respectively. The total treated water is recycled 100%
- ☐ 3 R principle sound practices are implemented.
- ☐ Use of plastic in the premises is banned.
- Non-hazardous solid waste is handled and disposed through sound practices.

Table 13.0: Area wise Waste generation:

Type of Waste	Areas	Wt.
Biodegradable	Cafeteria	76 Kg
	Hostel No.4	15 Kg
	Nursing Hostel	5 Kg
	Hospital Canteen	31 Kg
	Hospital Wards	20 Kg
Non-biodegradable	Cafeteria	21 Kg
	IHR Hostel	35 Kg
	NRI Hostel	15 Kg
	Guest House	31 Kg
	Hostel No.4	28 Kg
	Hostel No. 5	22 Kg
	BDS Hostel	44 Kg
	Girl's Hostel	29 Kg
	Venutai Chavan Hostel	29 Kg
	Nursing Hostel	18 Kg
	Nursing College	35 Kg
	Sarita Bazaar	23 Kg
	Hospital Canteen	27 Kg
	Hospital Wards	676 Kg
Biomedical Waste	Hospital & Lab	237.81 Kg
Hazardous Waste	Dental Model	6 Kg
	ETP Sludge	1 Kg
Canteen Waste	Dry Solid Waste	10 Kg
	Food Waste	10 Kg

Table 14.0: E-Waste generated (one month data):

Sr. No.	Specification	Numbers
1	Geyser Coil	24
2	Choke	35
3	Loose wire	23
4	Exhaust fan body (PUC)	4
5	MCB	9
6	36 Watt tube	110
7	CFL Lamp	57
8	LED Lamp	88
	Total	350

Sample/Evident collection Water Management:

Sample 1 : Biodegradable solid waste is collected, segregated & stored in a scientific manner. It is further treated in house to produce manure. KIMSDU has installed sufficient capacity organic waste convertor/waste composter machine. Averagely 1.5 T - 2.0 T of manure generates annually which is utilized for the trees planted in the campus.



Photograph 1_Waste Composter Plant



Photograph 2_Manure stored near Composter

Sample 2 : E-waste generated in the campus is stored separately as per E waste rules & Norms of pollution control board standards and is sent to authorized E-waste recycler. Site visit conducted and observed to be satisfactorily.

Sample 3 : To treat sewage and effluent generated in the campus KIMSDU have separate treatment plants of capacity 2 x 500 m³/day and 100 m³/day respectively. Total 335 m³/day treated sewage water is reused for gardening purpose. Site visit conducted and observed to be satisfactorily.

4.5 GREEN CAMPUS

The Green campus drive is an initiative of the KIMSDU to protect the environment. The KIMSDU has been declared as a 'No Plastic' zone'. The campus protects age old trees in addition to several new trees and plants planted. The campus is lush green with gardens, lawns, flowers and plants wherever there is open space.

- Total number of plant species identified 65 Nos.
- Total number of plants 3716 Nos.
- Tree cover of the campus 89784 Sq. Mtrs.
- Free space in the campus 129393 Sq. Mtrs.
- University campus area 233757 Sq. Mtrs.

Table 15.0: Type and number of trees planted in the premises

Sr. No.	Name of the Tree	No. of Trees Planted
1	Subabul	273
2	Bougainvillea	275
3	Coconut	242
4	Teak	160
5	Mango	104
6	Palm	715
7	Kashid	79
8	Sandalwood	62
9	Ficus	162
10	Yellow Gulmohar	58
11	Nimb	57
12	Silver Oak	145
13	Plumeria	82
14	Neelmohar	50
15	Custard Apple	47
16	Sesam	45
17	Saras	65
18	Giripushpa	31
19	Ashoka	27
20	Ramphal	27
21	Booc	46
22	Bottle Brush	32
23	Gulmohar	21
24	Indian Almonds	15

Sr. No.	Name of the Tree	No. of Trees Planted
25	Audumbar	15
26	Thuja	18
27	Guava	42
28	Cherry	19
29	Chiku	14
30	Suru	13
31	Indian gooseberry	9
32	Rubber	8
33	Nilgiri	8
34	Kanchan	8
35	Jambul	8
36	Tamarind	22
37	Non-native tamarind	18
38	Drumsticks	12
39	Banyan	4
40	Berry	6
41	Crotan	5
42	Rentry	5
43	Pomogranate	4
44	Karanji	4
45	Karaja	56
46	Fuchsia	4
47	Jackfruit	4
48	Parijaat	7
49	Tububuya	2
50	Rudraksha	3
51	Akrol	2
52	Mehendi	4
53	Kawat	2
54	Christmas	1
55	Anant	2
56	Cyprus	2
57	Bakul	10
58	Bel	4
59	Saragi	16
60	Bhokar	1
61	Baldoli	1
62	Taman	9
63	Yellow Bamboo	100
64	Rakta Chandan	3
65	Betelnut	11
66	Konakarpus	101

Sr. No.	Name of the Tree	No. of Trees Planted
67	Punrajeeva	3
68	Kadamb	9
69	Pensil pine	8
70	Chritna	195
71	Terminalia mantaly	3
72	Brahbi	2
73	Astrishrunkla	1
74	Samdrufal	1
75	Arjun	1
76	Salvan	1
77	Kalmedh	3
78	Adulsa	4
79	Anantmul	2
80	Bhiti	2
81	Danti	2
82	Shwetchitrak	2
83	Dayti	2
84	Gokarn	2
85	Gulvel	2
86	Gavtichaha	2
87	Kagani	2
88	Kuda	2
89	Lajalu	2
90	Koshta	2
91	Madhunashi	2
92	Damvel	2
93	Krushnagsa	2
94	Shami	2
95	Vekhand	2
96	Saphedhgunj	2
97	Makha	1
98	Dalchini	1
99	Jitsaya	2
100	Ambhehaldh	2
101	Beba	1
102	Kajara	1
103	Sapedhrui	1
104	Khare	1
105	Peveli koranti	2
106	Varun	1
107	Vala	2
108	Shatavari	2
109	Sarpagandha	2
110	Pitvan	2

111	Panfuti	2
112	Neerbrahmi	2
113	Agnimanth	2
114	Murudhshing	2
115	Metha	2
116	Bhava	8
117	Sitaashok	3
	Total No of Trees	3716

4.6 ROUTINE GREEN PRACTICES:

A. Swachha Bharat Abhiyan :

To support the cleanliness campaign started by Government of India KIMSDU regularly arranges campus cleaning program.

Team Members:

Sr. No.	Participant	Designation
1.	Mr. Ganesh S. Patole	Environmental Supervisor
2.	Mr. Pramod S. Salunkhe	Attendant
3.	Mr. Pravin V. Chavan	Housekeeping Assistant
4.	Mr. Shankar V. Yelmare	Housekeeping Assistant
5.	Mr. Subhash T. Kharat	Housekeeping Attendant
6.	Mr. Kismat I. Modak	Housekeeping Assistant
7.	Mr. Vivek S. Kapurkar	Housekeeping Assistant

Cleaning Drive Photographs





B. Plantation:

Since year 2015 KIMSDU is actively doing plantation. Within 05 years it is evident that they planted more than 1000 trees. Now the total count of the premises is 3716. It is very appreciable w. r. t. green campus drive by providing such a huge green coverage.

Year	No. of new trees planted per year
2015	71
2016	286
2017	279
2018	247
2019	281
2020	180
2021	190
2022	430

C. World Environment Day:

World Environment Day (WED) is observed worldwide on 5th June. KIMSDU also celebrates WED with participation of staff and stakeholders. Various programs are organized on the day such as seminars, plantations, cycle rally etc.



WED Participants



WED Appreciation of participants

4.7 CARBON FOOTPRINT

The carbon footprint data is important to estimate and minimize the carbon dioxide (CO₂) emission in the atmosphere. Carbon dioxide is one of the main greenhouse gases among others which are responsible for damaging ozone layer of the earth.

The summary of fossil fuel usage observed in the campus as follows:

Number of persons using cycles	85
Number of persons using cars	275
Number of persons uses two wheelers	2050
Number of persons using other transportations	1565
Number of visitors per day	2750
Average distance travelled by stake holders	3 Kms/Day
Expenditure for transportation per person per day	11/-

Fossil Fuel Calculations :

Petrol used by two wheelers/day : 470 L (Per person to and fro 40 kms = 1L)
 Fuel used by four wheelers(176 Persons): 176 L (Per person to and fro 20kms = 1L)
 Fuel for persons (total 1348 persons) travelling by common transportation : 108 L (4 L/person x 50 persons)
 Total fossil fuel use is : **754 L / day**
 Total fuel cost per day for transportation : Rs. 75,400/- (754 L x @ Rs 100/-)

Burning of fossil fuels is the main source and cause of carbon dioxide release to the atmosphere. Reducing the fuel consumption will lead to reduce carbon dioxide emissions in the atmosphere. Use of fossil fuels has to be reduced for the sake of community health. The above target areas particular to the hospital was evaluated through questionnaire circulated among the key staff for data collection and the personal interview. The analysis data and approach of people found & observed very positively.

5 CONCLUSIONS AND RECOMMENDATIONS

There is always scope for the further improvement w. r. t. to its approach and aspects with changing circumstances. Green Audit is a tool utilized to know/find out the KIMSDU strengths and weakness of environmental sustainable practices. It also considered through the professional approach towards way to responsible utilizing of financials to handle economic, social responsibility and environmental resources. Green Audit initiative taken by the institute and is a way of identifying, evaluating and managing environmental risks. No approach or sound practices are 100 % full proof.

- KIMSDU is operating and acting environmentally responsible manner by considering and adopting abatement practices for all environmental impacts of most of its actions and makes a continual improvement.
- KIMSDU has an Environmental policy and found committed towards compliance of government laws, regulations and other policy mechanisms concerning environmental issues.
- KIMSDU considered and worked out efficiently on all the probable and potential impactful issues present in the premises with related to all the activities which include air & water pollution, waste management, maintenance of biodiversity, the management of natural resources & ecosystem in campus.
- Organization has utilizing all the resources taken from environment in economic way with social due care.
- Water management and conservation is in good condition. The various sources of water are river, bore wells and some part through Malkapur Municipal Council supply. It is observed that adequate water meters are installed in the premises to track the water quantities utilized.
- The sewage wastewater after treatment is used for gardening (maximum quantity) purpose and some portion is recycled for WC flushing purpose. There is no wastage of water observed in the premises. All the taps/ faucets are well maintained.
- KIMSDU have installed rainwater harvesting in the campus which is used for recharging the few bore wells in the premises. It is estimated that around 10 lakh litres of water can be saved through rain water harvesting.

- Waste Collection, segregation and treatment is well practiced in the premises. Biodegradable waste is collected separately and sent to waste composter of capacity 1000 Kg/day. It can process waste upto 700 Kg at a time. Manure generated from composter is used for gardening purpose.
- KIMSDU has a biogas plant.
- Non-biodegradable municipal waste is regularly collected by authorized agency.
- Biomedical waste is collected and disposed of on the daily basis. Biomedical waste is sent to Common Biomedical Waste Disposal Facility operated by Karad Hospital Association.
- E-waste generated in the premises are stored separately and disposed of through authorized recycler. Color coded waste segregation bins are facilitated in the premises and followed strictly.
- KIMSDU is very conscious about energy management. Maximum bulbs and tube lights are of energy saving type (LED and CFL). To cater the energy expansion need KIMSDU have installed 500 kW and 400 kW solar plants for energy generation. Due to this solar project KIMSDU is saving 110000 units per month.

Area For improvements

- Carbon footprints can be improved further through innovative ideas. For internal transportation KIMSDU can run e-vehicles for pick-up and drop of staff members/visitors etc. This will reduce the fuel consumption drastically.
- KIMSDU can promote use of cycles within the campus.

Conclusion

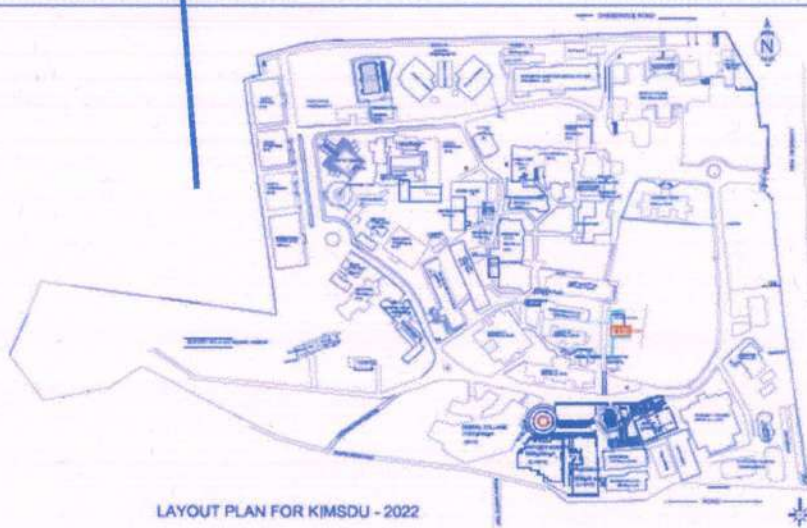
On the basis of site observation, site survey and sampling carried out for fact finding, we found the essence of green audit satisfactorily for all the environmental aspects, objectives set. Organization's environmental performance found accountable, monitored, analyzed for its results for continual improvement.

Green audit carried out at KIMSDU facility are found to be satisfactory w. r. t. requirements of rules and regulations enforced by authorities, organizational set policies & procedures, documented systems, objectives taken time to time and compliances essential for ISO 14001:2015.

6 ACKNOWLEDGEMENTS

Green Scientific Development (I) Pvt. Ltd. is thankful to the Management of the Krishna Institute of Medical Sciences, "Deemed To Be University", Karad for entrusting processes of Green auditing with us. We thank all the participants of the auditing team especially engineering, maintenance and environmental staff who took all the efforts along with us to gather data and participated in throughout the survey for facts findings. We also thank the office staff who helped us during the document verification.

7 ANNEXURE: CAMPUS LAYOUT



LAYOUT PLAN FOR KIMSDU - 2022

SITE PLAN AT GAT NO./S.NO 3A/2, KOYANA VASAHAT GRAMPANCHAYAT & S. NO. 144/B, 145, 266/B, 261/3C/B & 262

AT-MALKAPUR, TAL.-KARAD, DIST.- SATARA. FOR KRISHNA INSTITUTE OF MEDICAL SCIENCE DEEMED to be UNIVERSITY , KARAD.

8 Photo Gallery (KIMSDU CAMPUS)




REGISTRAR
Krishna Vishwa Vidyapeeth
(Deemed to be University),
Karad