

REPORT

GREEN AUDIT REPORT

FOR KIMSDU

July 2019



Submitted to:

*Krishna Institute Of Medical Sciences,
"Deemed To Be University", Karad
Malapur, Tal: Karad,
Dist: Satara,
Maharashtra*

Submitted by:

*Green Scientific Development (I) Pvt.
Ltd.*

*4/A Wing, Bldg No. 23
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Date: 18 July 2019

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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.

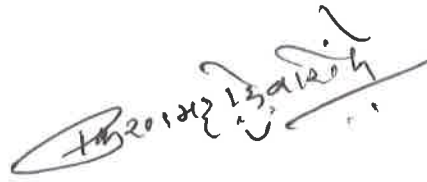
Date of Green Audit 18 July 2019

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

Name of 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

Signature of Auditor :



Lead Auditor

: **Mr. Kiran Shinde**

Certification No

: **ISO 14001:2015_35142852 02 Delegate No 168345**

Dated 15.04.2019

Stamp of Company :





**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. 166345



for TÜV 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

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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. Tushar Kadam	MR	Office Superintendent
3	Mr. Ganesh Patole	Member	Environmental Supervisor
4	Mr. D. S. Kashid	Member	Civil Supervisor
5	Mr. S. Y. Kirdak	Member	HOD- Garden Dept.
6	Mr. Y. G. Kulkarni	Member	HOD - Power House Dept.

Audit Schedule (18 July 2019)

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.

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, radiodiagnosis 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, colordoppler, mammography, DSA etc. It also actively participates in national healthcare programs and various extensions and outreach community programs initiated by the Institute.

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 prioritise for the improvement and implementation in current practices and future expansions. Economical benefits and losses can be calculated with this tool. This can be achieved by establishing rate analysis between current practice Vs standard/optimum utilisation 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 utilisation, 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 asses; 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 analyse environmental responsibility, institution must know there 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 utilisation 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 a huge deal is 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 vapour, 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.

3.0 METHODOLOGY OF GREEN AUDITING

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

3.1 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.

3.2 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.

3.3 OBSERVATIONS/RECOMMENDATION

Audit Observation and Findings on the basis of data analysis.

4.0 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 is 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.

4.1 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.
- Accreditation of National Assessment and Accreditation Council
- 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:

Sr. No.	Area	Water usage (lit./day)
1	Gardening	2,50,000 recycled from STP
2	Operation Theatres	8,000
3	General Wards	34,000
4	Special Wards	10,000
5	Cleaning	5,000
6	Canteen	8,000
7	Drinking	40,000
8	Toilets	25,000
9	Bathrooms	70,000
10	Washing	50,000
11	Construction work	40,000
12	Office usage	20,000
13	Urinals	12,000
14	Laboratories	28,000
15	Leakages	0
	Total	3,50,000

Note: * STP treated water is used for gardening and landscape

Table 2.0: Other water related data is as follows:

Sr. No.	Aspect	Details
1.	Water and wastewater treatment system.	The hospital have following treatment systems on the premises: <ul style="list-style-type: none"> • 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 drinking water filtration	<ul style="list-style-type: none"> • Aqua guard – 44 Nos. • R.O. systems – 3 Nos. • Coolers – 47 Nos.
3.	Urinals and toilets	<ul style="list-style-type: none"> • Western WC – 710 • Indian WC – 405 • Urinals - 163
4.	Waterless urinals	Nil
5.	Bathrooms	1018 Nos
6.	Water taps	4047 Nos
7.	Water taps in laboratories	327 Nos
8.	Bore wells	7 Nos
9.	Ponds	Nil
10.	Water pumps	<ul style="list-style-type: none"> • 2 Nos of pumps 7.5 HP each for bore • 5 Nos of pumps of 5.0 HP each for bore • 1 pump of 20 HP for river water
11.	Quantity of water pumped	350 m ³ /day
12.	Water charges paid	Rs.33596.65 paid to Lift Irrigation management division, Ogalewadi Karad.
13.	Water tanks for storage	37
14.	Quantity of water stored	1600 m ³

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.3314292 /month
2.	Number of gas cylinders used per month	Commercial gas cylinders- 43 Refilling- 23/month
3.	Cost of gas cylinders used (refilling@Rs.1266)	Rs.29118/month
4.	Number of generators	04
5.	Cost of generator fuel	Rs.79510 /month
6.	Total cost of energy	Rs.3422920 /month
7.	Number of CFL bulbs	276
8.	Number of LED lights	4500
9.	Number of Incandescent bulbs	5
10.	Number of fans	3268
11.	Number of air conditioners	552
12.	Total electrical equipment	45
13.	Number of laptops	48
14.	Number of computers	457
15.	Number of printers	193
16.	Number of projectors	60
17.	Number of photocopiers	12
18.	Number of televisions	135
19.	Energy generation using solar panels	108000 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	10	80	0.08	8	19.2
All wards and hospital	56	560	0.5	8	134.4
Dental college building	10	80	0.08	8	19.2
All OPDs and HR Office	30	300	0.3	8	72
Library	0	0	0	8	0
Pharmacy college building	2	16	0.01	8	3.8
Nursing college building	6	48	0.04	8	11.5
IHR Hostel (old /new)	11	110	0.11	8	26.4
Women's hostels (1 to 6)	26	260	0.26	8	62.4
Blood bank / Radiotherapy	4	40	0.04	8	9.6
O. T / Physiotherapy college	11	110	0.11	8	26.4
Old Pathology / C.M. Stores	6	60	0.06	8	14.4
Transport	2	60	0.06	8	14.4
Café	4	40	0.04	8	9.6
All staff qtrs.	18	144	0.1	8	34.5
University building	10	100	0.1	8	24
Auditorium / Gym hall	21	210	0.21	8	50.4
Pharmacy (old & new) (KH)	3	30	0.03	8	7.2
Civil maintenance	10	100	0.1	8	24
Krishna bank/ Sarita bazar	32	576	0.5	8	138.2
Canteen	4	40	0.04	8	9.6
Total energy usage per month (kWh)					711.36

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 (kWh)
Blood Bank	32	576	0.5	8	138.2
Passages	24	432	0.4	8	103.6
Cancer clinic	16	288	0.2	8	69.1
Administration Offices	33	594	0.5	8	142.5
Administration Offices & ICU with passages	42	756	0.756	8	181.44
Passage & Cashier office near Ward No.24	50	900	0.9	8	216
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

Area	No. of LED Bulbs	Power consumed (Watts)	Power (kW)	Working time (Hrs./day)	Energy usage per month (kWh)
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 (2 nd 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 (2 nd floor)	42	756	0.756	8	181.44
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 (2 nd 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 (2 nd floor)	34	612	0.612	8	146.88
Pharmacy College (2 nd 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
Annexure Building (2 nd floor)	51	918	0.918	8	220.32
Annexure Building (3rd floor)	67	1206	1.206	8	289.44
Annexure Building (Ground floor)	30	540	0.54	8	129.6
Pharmacy College (Lab)	4	72	0.072	8	17.28
Annexure 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
Ladies hostel near dental college	60	1080	1.08	8	259.2
Dental hostel	134	2412	2.412	8	578.88

Area	No. of LED Bulbs	Power consumed (Watts)	Power (kW)	Working time (Hrs./day)	Energy usage per month (kWh)
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	
Total energy usage per month (kWh)					17759.52

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	65	0.065	8	8782.8
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
Krishna bank / Sarita bazar	29	65	0.065	8	452.4
Annexure 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
Pharmacy college	117	65	0.065	8	1825.2
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

Area	No. of Fans	Power Consumed (Watts)	Power (kW)	Working Time (Hrs./day)	Energy Usage per Month (kWh)
Physiotherapy college	44	65	0.065	8	686.4
Total energy usage per month (kWh)					50980.8

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
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

Area	No. of ACs	Working time (Hrs./day)	Power consumed (kWh/day)	Energy usage per month (kWh)
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
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

Area	No. of ACs	Working time (Hrs./day)	Power consumed (kWh/day)	Energy usage per month (kWh)
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
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

Area	No. of ACs	Working time (Hrs./day)	Power consumed (kWh/day)	Energy usage per month (kWh)
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
1 st 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
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

Area	No. of ACs	Working time (Hrs./day)	Power consumed (kWh/day)	Energy usage per month (kWh)
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
PowerHouse 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
Medical college				
Annexure bldg. lecture hall	1	4	2.1	55.5
Annexure bldg. N1 hall	6	4	9.6	249.6
Research lab Microbiology	1	24	9.6	249.6
Lab	1	8	3.2	83.2
NABL lab	2	24	25.6	665.6
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

Area	No. of ACs	Working time (Hrs./day)	Power consumed (kWh/day)	Energy usage per month (kWh)
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
Annexure building – Jupiter hall	9	1	21.6	561.6
Annexure building hall 02	4	2	19.2	499.2
Annexure building hall 03	4	2	19.2	499.2
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	2.2	8	528
	C.V.T.S.	1	2.2	8	528
	C.V.T.S.	1	2.2	8	528
	Dental college	1	7.5	8	1800
	Dental college	1	2.2	8	528
	Transport	1	2.2	8	528
	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	6	8	1440
	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

Dept.	Area	No. of EQ	Power (kW)	Working Time (Hrs./day)	Energy Usage per Month (kWh)
	Chlorine dosing pump	2	0.025	8	12
Total energy usage per month (kWh)					56094

Table 9.0: Energy usages by television:

Area	No. of CFL Bulbs	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
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
Frist 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
GNM hostel no 2				
Ground floor	50	1	4	120

Area	Heater capacity	No. of heaters	Power (kWh/day)	Energy usage per month (kWh)
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
Fourth floor	35	1	4	120
Fourth floor	50	1	4	120
Hostel no 4				
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
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
Third floor	50	1	4	120
Third 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

Area	Heater capacity	No. of heaters	Power (kWh/day)	Energy usage per month (kWh)
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
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
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
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
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
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
Room no. 5	6	1	1	30
Room no. 6	6	1	1	30

Area	Heater capacity	No. of heaters	Power (kWh/day)	Energy usage per month (kWh)
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
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

Area	Heater capacity	No. of heaters	Power (kWh/day)	Energy usage per month (kWh)
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
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

Area	Heater capacity	No. of heaters	Power (kWh/day)	Energy usage per month (kWh)
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)				22995

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
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

Location	Department	No. of computers	Power consumed (Watts)	Power (kW)	Working time (Hrs./day)	Energy usage per month (kWh)
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
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

Location	Department	No. of computers	Power consumed (Watts)	Power (kW)	Working time (Hrs./day)	Energy usage per month (kWh)
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	OBGy	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
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
Biotech college bldg.	Principal	1	100	0.1	8	24
Biotech college bldg.	Office	1	100	0.1	8	24
Biotech 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	248 Kg
Plastic waste	96 Kg
Solid waste	533 Kg
Laboratory waste	10 Kg
Waste water	302 m ³
Glass waste	32 Kg

- E-waste generated in the campus is stored separately as per rules and pollution control board standards. It is disposed through sale to the authorised 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	11 Kg
	Hostel No.4	12 Kg
	Nursing hostel	17 Kg
	Hospital canteen	23 Kg
	Hospital wards	9 Kg
Non-biodegradable	Cafeteria	5 Kg
	IHR hostel	17 Kg
	NRI hostel	19 Kg
	Guest house	6 Kg
	Hostel No.4	6 Kg
	Hostel No.5	7 Kg
	BDS hostel	8 Kg
	Girl's hostel	9 Kg
	VenutaiChavan hostel	9 Kg
	Nursing hostel	8 Kg
	Nursing college	37 Kg
	Sarita bazaar	15 Kg
	Hospital canteen	15 Kg
	Hospital wards	393 Kg
Biomedical waste	Hospital	248 Kg
	Lab	10 Kg
Hazardous waste	Dental model	1.75 Kg
	ETP Sludge	1.10 Kg
Canteen waste	Dry solid waste	16 Kg
	Food waste	23 Kg

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

Sr. No.	Specification	Numbers
1	Geyser Coil	28
2	Choke	14
3	Loose wire	21
4	Exhaust fan body (PUC)	22
5	MCB	11
6	40 Watt tube	35
7	36 Watt tube	30
8	CFL Lamp	15
9	LED Lamp	20
10	PUC Patti	162
	Total	358

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 - 2.0T of manure generates annually which is utilised for the trees planted in the campus.



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 authorised 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 250 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 3096 Nos.
- Tree cover of the campus 89784 Sq. Mtrs.
- Free space in the campus 129393 Sq. Mtrs.
- Hospital 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	102
6	Palm	611
7	Kashid	79
8	Sandalwood	62
9	Ficus	162
10	Yellow Gulmohar	58
11	Nimb	57
12	Silver Oak	134
13	Plumeria	64
14	Neelmohar	50
15	Custard Apple	47
16	Sesam	45
17	Saras	65
18	Giripushpa	31
19	Ashoka	27
20	Ramphal	27
21	Booc	31
22	Bottle Brush	32
23	Gulmohar	21
24	Indian Almonds	15
25	Audumbar	15

Sr. No.	Name of the Tree	No. of Trees Planted
26	Thuja	18
27	Guava	42
28	Cherry	19
29	Chiku	13
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	5
41	Crotan	5
42	Rentry	5
43	Pomogranate	4
44	Karanji	4
45	Karaja	23
46	Fushcia	4
47	Jackfruit	4
48	Parijaat	3
49	Tabebuya	2
50	Rudraksha	3
51	Akrol	2
52	Mehendi	2
53	Kawat	2
54	Christmas tree	1
55	Anant	2
56	Cyprus	2
57	Bakul	2
58	Bel	2
59	Saragi	16
60	Bhokar	1
61	Baldoli	1
62	Taman	1
63	Yellow Bamboo	100
64	RaktaChandan	2
65	Betelnut	11
	Total No of Trees	3096

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. Aananda T. Suryagandh	Housekeeping Assistant
3.	Mr. Dnyandev P. Hogade	Housekeeping Attendant
4.	Mr. Kismat I. Modak	Housekeeping Assistant
5.	Mr. Balu B. Yedage	Housekeeping Attendant
6.	Mr. Kailash P. Lakhe	Housekeeping Attendant
7.	Mr. Vijay A. Mate	Housekeeping Assistant
8.	Mr. Avinash M. Bansode	Housekeeping Assistant
9.	Mr. Bhikaji A. Kamble	Housekeeping Assistant
10.	Mr. Vivek S. Kapurkar	Housekeeping Assistant



Photograph 3_Cleaning Drive



Photograph 4_Cleaning Drive

B. Plantation :

Since year 2015 KIMSDU is actively doing plantation. Within 05 years it is evident that they planted more than 1000 trees i.e. 1174 nos. Now the total count of the premises is 3096. It is very appreciable w. r. t. green campus drive by providing such a huge green coverage.

Year	No. of trees planted per year
2015	71
2016	286
2017	279
2018	247
2019	281
2020	10
TOTAL	1174

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 organised on the day such as seminars, plantations, cycle rally etc.



Photograph 5_WED Appreciation of participants



Photograph 6_WED Participants

4.7 CARBON FOOTPRINT

The carbon footprint data is important to estimate and minimise the carbon dioxide (CO₂) emission in the atmosphere. Carbon dioxide is one of the main green house 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	30
Number of persons using cars	176
Number of persons uses two wheelers	940
Number of persons using other transportations	1348
Number of visitors per day	2000
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. 60,320/- (754 L x @ Rs 80/-)

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 utilised to know/find out the KIMSDU strengths and weakness of environmental sustainable practices. It also considered through the professional approach towards way to responsible utilising 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 a 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.

Organisation has utilising 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 Malakapur Municipal Council supply. It is observed that adequate water meters are installed in the premises to track the water quantities utilised. 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 authorised 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

authorised recycler. Colour 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 108000 units per month.

Area For improvements

- There are no waterless urinals available at present in the premises, so management can think of provision of same to reduce down the water usage in the future.
- Carbon footprints can be improved further through some process changes like issue the guidelines for car pull or can execute the odd and even car number car driving on alternate days, For Common transportation KIMSDU can run e-vehicles for pick-up and drop of staff members. This will reduce the fossil fuel consumption drastically.
- KIMSDU can promote use of cycles within the campus.

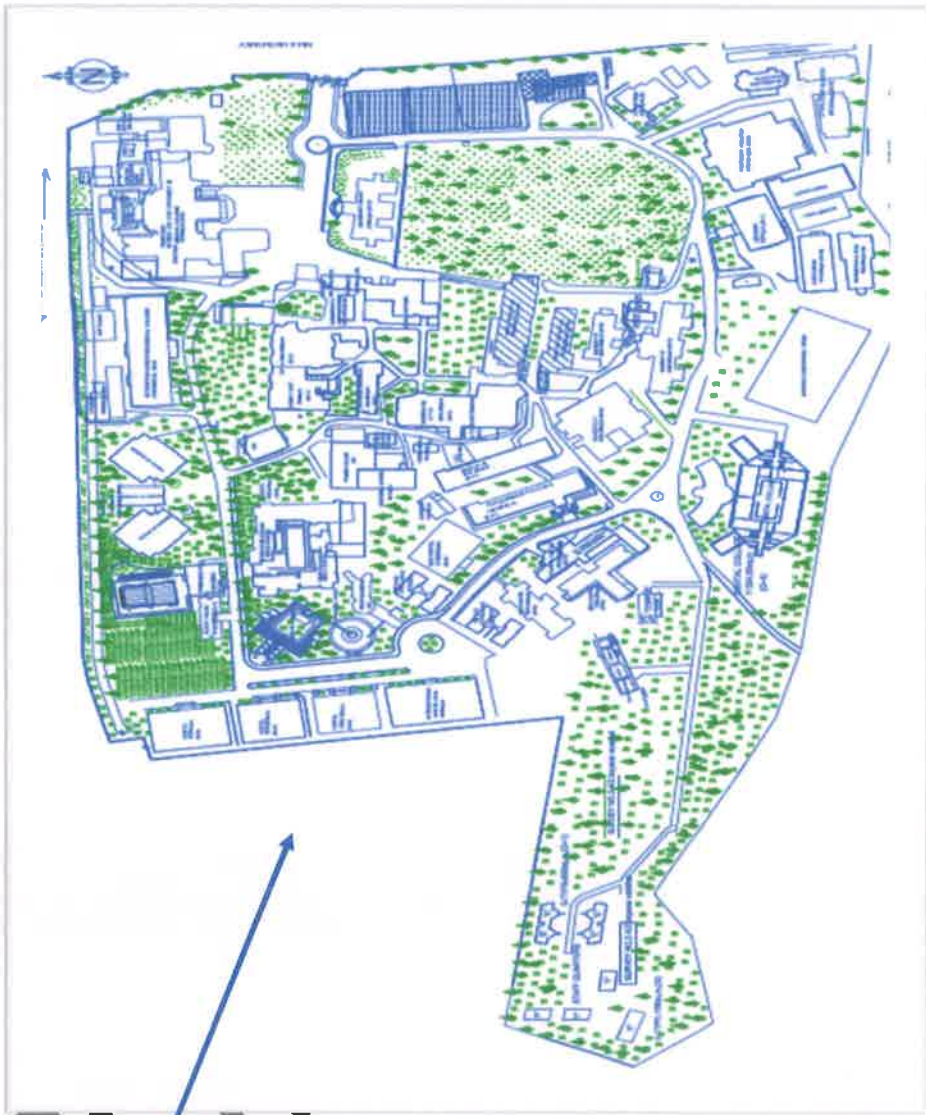
Conclusion

Green audit carried out at KIMSDU facility are found to be satisfactory w. r. t. requirements of rules and regulations enforced by authorities, organisational set policies & procedures, documented systems, objectives taken time to time. It is very difficult to see each and every aspect on site but with all 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. Organisation's environmental performance found accountable, monitored, analyzed for its results for continual improvement.

6 ACKNOWLEDGEMENTS

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7 ANNEXURE: CAMPUS LAYOUT



8 Photo Gallery (KIMSDU CAMPUS)

