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**KASIREDDY NARAYAN REDDY COLLEGE OF ENGINEERING AND
RESEARCH**

Green Audit Report

2023-24

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Green Audit

- **Green Campus Management and Carbon Foot print of the institute for Environmental Consciousness and Sustainability.**
- **Green Practices**
- **Students, staff using a) Bicycles b) Public Transport c) Pedestrian friendly roads**
- **Plastic-free campus**
- **Paperless office**
- **Green landscaping with trees and plants**



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GREEN CAMPUS MANAGEMENT

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

Area under green cover(in sq ft or in acre)	Sq. Ft.
Availability of Nursery on Campus(Yes/No)	No
Plant Protection Management	Yes
Number of plantations done in the year 2022-23	100
Extent of area(% of area)under tree cover	12%

Table 1: Green Area management



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The trees work hard to keep the air we breathe clean and healthy. They are like sponges. Their leaves take in much of the poisonous unwanted carbon dioxide in the air, and replace it with the oxygen we need for healthy living. This system of absorbing gases on which all plants rely for their food is called photosynthesis. In this process, the plants with the help of sunlight, water, mineral and the green material called Chlorophyll within the leaves change the carbon-dioxide into food for themselves. When doing this they release oxygen into the air which is vital for all life on earth. At night when there is no sunlight the plant no longer makes food, so it does not release the same amount of oxygen.

One is often told not to sleep with plants in one's room, as they will use up all the oxygen. However, at night although photosynthesis does take place the plants also rest, so that little oxygen is absorbed from the air and very little harm can be done to the ones sleeping in the room. The roots of trees dig deep into the earth and hold it together so that the rain and wind cannot wash or blow it away. This is very important as the earth has only a very thin layer (seldom more than one foot) of top soil covering it. If this is washed, blown or worn away leaving rock or sand on which no plants can grow then the earth would become a desert. The removal of this top-soil is called soil erosion. Scientists, all over the world are trying to find ways to prevent soil erosion. One of the most important ways is creating by planting more trees.

Trees send up water vapor into the atmosphere through their leaves. When this vapor meets the cool air above it turns into drops of water which then fall as rain. They give us beauty, color and greenery. This is something which we often forget and fail to appreciate. They are the homes of many birds, animals and insects. Each of these is important in maintaining the balance of nature.

Green Audit

Green Audit defined as documented, verification process of specified environmental activities, events, conditions, management system. Green Audit can create awareness in college staff as well as students which are our responsibility too, to save our environment and also can find the ways to improve environmental issues which are increasing day by day. Environmental problems such as recycling of waste, water conservation and recycling, pollution control, plantation, biodiversity conservation etc. can solve through Green Auditing. Good growth comes from good education as well as good mental and physical health if we protect our environment, we can also protect our health.

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Green Audit means of assessing environmental performance. It is a systematic documented periodic and objective review by regulated entities of facility operations and practices related to meeting environmental requirement. It is otherwise the systematic examination of the interactions between any operation and its surroundings. This includes all emissions to air, land and water, legal constraints, the effects on the neighboring community, landscape and ecology, the public's perception of the operating company in the local area. Green audit does not stop all compliance with legislation. Nor is it a 'green washing' public relations exercise. Rather it is a total strategic approach to the organization's activities.

Our Vision

To Produce Technically Competent Socially Committed Technocrats, Prosper captaincy and Bureaucrats through quality Academics and Research.

Our Mission

To create advanced facilities of teaching and practical training to the UG & PG Students.

To inculcate facilities in the arena of Research & Development.

To develop technical manpower through interactive communication, training, short-term courses, seminars, group discussions, mock-interviews, etc.

To initiate the collaborative real life industrial projects with nearby industries and academic institutions.

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College Green Committee

The college Green committee was established in the college with proactive attitude towards conservation of the environment and objective of generating awareness and promoting environmental care at both individual and community level. The committee aims to create as per meeting atmosphere facilitating conversation, action and feedback on environmental issues engaging faculty, students and the general public. The institution looks at the macro-environmental perspective in the college and the society and envisions nurturing the environment with a greener future.

11.1 Green Campus Policy of College

KNRR is committed to develop its campuses as places where education is combined with environmental friendly practices to promote Sustainable Development by o restricted entry of automobiles, promoting the use of Bicycles and provision of Pedestrian Friendly path ways emanon use of disposable Plastics in line with the State

Government Guidelines. Creating awareness with stakeholders on the need for maintaining greenery in the campus for sustainable ambience.

Encouraging all stakeholders to support and participate in ensuring green cover in the campus of preserving age old trees and protect them to have prolonged life. Enhancement of green cover by landscaping with trees and plants. Conduct of green audit at regular intervals and implement the suggestions towards creating green campus. The faculty, staff and students are encouraged to contribute collectively to develop an eco-friendly sustainable campus and disseminate the concept of eco-friendly culture to the nearby community and wherever possible.

KNRR envisions a clean and green university campus where ecological friendly practices and education combine to encourage sustainable and eco-friendly systems in the campus and beyond the campus. The green campus offers the organization a prospect to take the lead in redefining its green culture through promoting environmental ethics among students and staff The Institute also promotes clean and green campus through adopting, practicing and promoting environmentally friendly practices among students and staff to generate Eco consciousness among them and in the world around them.

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Objectives of the policy: To compose students by understanding the importance of environment and its problem areas important function of the policy.

- To train students to create responsiveness amongst public.
- To encourage students to keep environment safe and clean.
- To encourage students to adopt environment friendly practices which include paper bags, save.
- To help the students to minimize the use of polluting product.

Why Green Audit

The excessive environmental degradation is creating the "Environmental poverty". Thus, academic leaders should initiate the knowledge and benefits of resources so that their institutions respond to environmental issues and challenges. We believe that there is an urgent need to address these problems and reverse the trends of environment degradation.

OBJECTIVES-

- To assess environmental performance
- To promote environmental awareness
- To improve health
- To conserve resources
- To reduce waste
- To improve environmental standards
- To sustainable use of natural resources
- To develop responsibility about environment
- To enhance college profile



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PLANTATION-

To create Environmental awareness at the college campus we organize plantation program with all the staffs and students of our college. We try to plant more trees. To keep the greeneries in the campus we maintain the garden by paid staff under the guidance of garden committee members.

To create- green cover, eco-friendly atmosphere, pure oxygen at the college campus, plantation program is organized every year with involving all students, principal, and all departments faculty members. In this session vanamahotsav program was organized and about 100 or nominal, avenue,

Medicinal plant with rare and exotic beautiful trees was planted in botanical garden and other parts of college campus. To keep the greeneries in the campus, we regularly maintain the gardens which are looked after by paid staff under the guidance of garden committee members. Moreover, every year we try to plant new trees. Seasonal flower garden is also a unique feature of this college. There are so many plants are present in our college campus categorized below-

Category	Numbers(Approx.)
Herbs	30
Shrubs	20
Trees	107
Medicinal Plant	15

IDENTIFICATION OF PLANT SPECIES:

There are so many plant species are present at college campus. The member of the environment committee audited and identified of various plant species with the help of flora.

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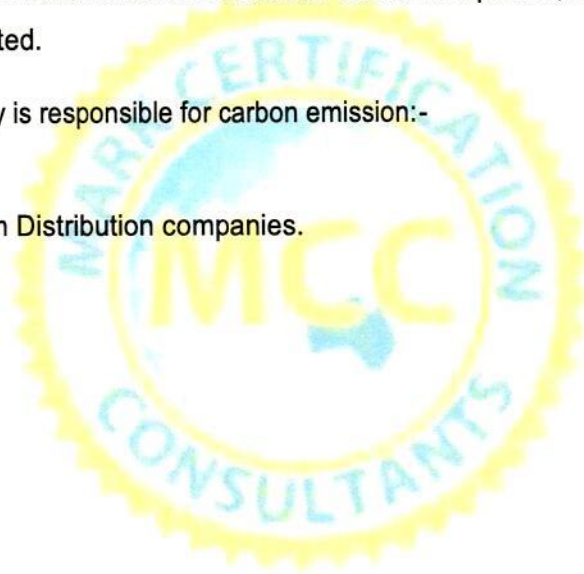
Carbon Footprint

A carbon footprint is the amount of green house gases—primarily carbon dioxide—released into the atmosphere by an individual, event, organization, service, or product, expressed as carbon dioxide equivalent. 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. 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 our 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.

A) The following activity/ utility is responsible for carbon emission:-

- Transportation
- Electricity purchased from Distribution companies.



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11.4.1 Carbon Emission by Transportation
Principal, Administrator, teaching & non-teaching staff and students comes to college either by two wheelers & four wheelers. The two major fuels used by the transport sector are petrol and diesel. These fuels are carbon intensive as they contain 80-85% of carbon by weight.

Sl. No.	Fuel Used	Types of Transport	Persons	Numbers of Persons	A		C	D=C/B	E	F=E x D		G	H=G x F x A
					Nos. of Vehicle Used	mileage				Av. distance in KM	Fuel Consumed per Day per Vehicle in ltr		
1	No Fuel	Bicycle	Students										
			Non-Technical-Staff										
2	Petrol	Two Wheeler	Students	1331	1000	60	20	0.33	180	59.4	2.67	158598	
			Non-Teaching Staff	60	50	60	20	0.33	180	59.4	2.67	7930	
			Teaching Staff	71	59	60	20	0.33	180	59.4	2.67	9357.2	
3	Petrol	Four-Wheeler	Teaching Staff	71	5	20	20	1.0	180	180	2.67		
4	Diesel	Auto	Students	31									
		Bus	Students	300									
			Teaching Staff	10									
Total Co2 emission in Kg Co2 eq per Year													175885.2

Table29: Carbon emission by transport

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Thus, total emission by the transport is **175885** KGCO₂eq. Per year.

Carbon Emission by Electricity

Electricity is taken by DG set which uses diesel for electricity generation.

Parameter	Emission Factor(A)	Unit in KWH (B)(350/day)	Total emission (C=A x B)
Grid Electricity	0.82	130200	104160
Total Kg CO₂Eq. Emission by Electricity			104160

Table30: Carbon Emission by Electricity

Thus, total emission by purchased electricity is 104160 Kg CO₂ Eq.

Total Carbon dioxide emission at KNRR

Area	CO ₂ eq.emission in KG
Electricity	104160
Transport	175885
Total	280045

Table31: Total Carbon dioxide emission at KNRR

Reduction of Carbon Emission

B) The following installation/ activity is responsible for reduction in carbon emission:-

- Composting
- Tree plantation

Reduction of Carbon Emission due to absorption of CO₂ by Tree Plantation

Planting is a great way to help sequester carbon emissions. Through photosynthesis is trees **absorb carbon dioxide to produce oxygen, food and wood.**

Particulars of Flora	Numbers	Carbon absorption by one tree Per year	Total Carbon Dioxide in Kg
Full grown Tree	250	6.8	1700
Semi Grown Tree		3.4	
Quarter grown plants	30	1.7	51
Total Carbon dioxide absorption by trees			1751

Table33: Carbon absorption by tree plantation.

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Total Reduction in Carbon dioxide emission at KNRR

Area	Reduction in CO2 eq. emission in KG
Trees	280
Total	1750

Table34: Total Reduction in Carbon dioxide emission



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RECOMMENDATIONS

12.1 Formation of SWATCH KNRR CELL:

We recommend to formation of the SWATCH KNRR CELL for spreading awareness on the importance of energy conservation. SWATCH KNRR CELL will participate in all energy conservation activities and organize programs.

Every year, India observes National Energy Conservation on December 14. The day is organized by the Bureau of Energy Efficiency (BEE) – which operates under the Ministry of Power, aiming to present India's stellar achievements in cost-efficient energy production and resource conservation.

SWATCH KNRR CELL will celebrate "Energy Conservation Day" on 14th December, each year. Further plans for the future may be discussed on this day, targeting holistic development as the main goal towards mitigation of climate change. It would not only help in imparting knowledge on energy efficiency but also in its implementation in households and institutions.

Objective of SWATCH KNRR CELL

The objective of the club is to create awareness among the students, staff and teachers and equip them for efficient management of all forms of energy, to promote energy efficiency and energy conservation. The club will keep to spread "Energy Conservation Messages" in the society by conducting awareness programs to students and public.

12.2 Enhancement of Energy Efficacy of light fittings:

Cleaning of tube-lights/bulbs to be done periodically, to remove the dustcover. It affects on lamp efficacy (lm/watt).

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General Recommendation for Energy Saving in Office Equipment

Equipment	Wattage	Comments
CRT Monitor	100 - 120W (during operating condition)	CRT monitors consume a lot of power, much of which is wasted as heat, and represent the largest power consumption component in a typical desktop computer. Emit potentially harmful radiation. Fortunately, most CRT monitors these days are legacy equipment as new computers are generally supplied with LCD monitors. Unfortunately; most CRT monitors end up in landfill.
Desktop Computer	150W (during operating condition)	Power consumption will differ significantly depending on whether a CRT or LCD monitor is used. In home and office situations where it is necessary to run multiple desktop computers, it may be possible to make significant power savings by running a single terminal server computer with several LCD monitors and key boards attached. Terminal server computer scan also greatly simplify network management, software upgrades, etc
Photocopier	7-30W (Stl.Mode)40-300W (Standby)200-1300W (Op. condition)	Most of the energy used in a photocopiers consumed by the controllers, which are usually kept hot on stand-bay, consuming from 40-300W. Significant energy savings (40%to60%) can be made by ensuring that photocopiers are switched off at night and on weekends. Some photocopiers consume up to 30 watts even when switched off, so photocopiers should be switched off at the power outlet tone sure they are really "off".

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LCD Monitor	30-50W (during operating condition)	LCD monitors typically require about 30% of the power required for a CRT monitor with the same screen area. In addition, the amount of heat generated by an LCD monitor is considerably less than a CRT monitor, resulting in a lower load on ACs. Building cooling needs may be decreased by up to 20%.
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Inkjet Printer (during operating condition)	120W	Inkjet printers use relatively little power in comparison to laser printers. From an energy consumption point of view, inkjets are preferable to lasers. Unfortunately, they typically cost more to run on a cost -Per -print basis and sometimes produce less than optimum results
Laser Printer (during operating condition)	25-80W (Standby)150-1100W	Laser printers consume significant amounts of power even when in standby mode. Over the course of an 8-10hr working day, a laser printer could consume around 1kWh of energy. On the other hand, laser printers are cheaper to run on a cost-per page basis and generally produce better results. Both the number of laser printers used, and the number of hours they are operated for, should be minimized. As with printing of any kind, office procedures should be developed which minimize the need for printing to paper
Laptop Computer (during operating condition)	15-40W	Laptop computer power consumption is typically 10% to 25% of that of a desktop computer. In situations such as an office or home office, where computers may operate for 8to10hours a day, this difference is significant and could represent an energy saving of up to 1kWh per day.

Table: General Recommendation for Energy Saving in Office Equipment

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Energy Audit Report

2023-24

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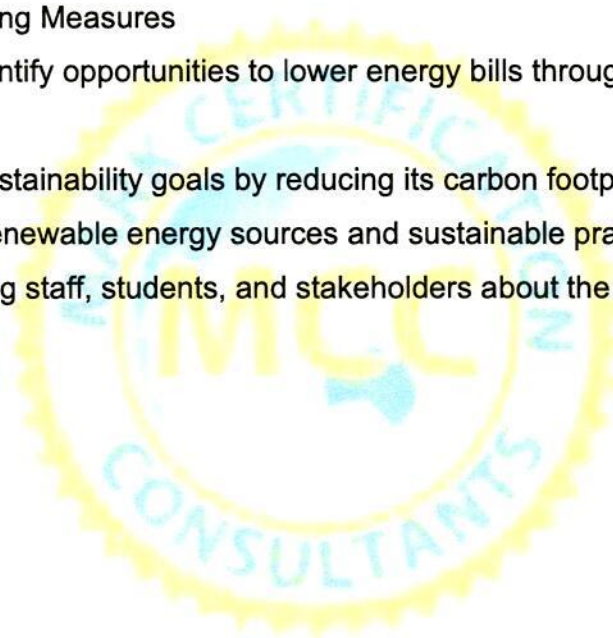
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Introduction

Conducting an energy audit is a crucial step for any organization or institution aiming to improve its energy efficiency, reduce costs, and minimize environmental impact. The primary purpose of an energy audit include.

1. Identify Energy Consumption Patterns.
2. Detect Energy Wastage: Identify areas where energy is being wasted, such as inefficient lighting, heating, cooling, and equipment operation
3. Evaluate Energy Efficiency of the institution
4. Recommend Energy-Saving Measures
5. Reduce Energy Costs: Identify opportunities to lower energy bills through improved efficiency and reduced consumption.
6. Support the institution's sustainability goals by reducing its carbon footprint and environmental impact.
7. Promote the adoption of renewable energy sources and sustainable practices.
8. Increase awareness among staff, students, and stakeholders about the importance of energy conservation.



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About College

KNRCER - Kasireddy Narayan Reddy College of Engineering & Research is a highly reputed Institute, established in 2008 with EAMCET Counselling Code **KNRR**. **Dr M. Narendra Kumar** is the Principal at the helm of affairs of the college. He is an eminent academician and highly accomplished man with vast experience.

The Brilliant Group turned a golden leaf with the icon of technical education in Telangana who steered the Engineering education onto the echelons of national and international corridors, a versatile, sagacious genius **Sri Kasireddy Narayan Reddy**, an eminent and dynamic educationalist of our state, taking reigns as the **Chairman** of all the colleges in **Brilliant Group of Technical Institutions**.

He has been leading the Brilliant Grammar High Schools to be among the top-notch schools in our state since 1986. With the same motivation and dynamism, he established the Brilliant Group of Technical Institutions in 2008 and has been constantly upgrading them perpetually to promote a valued technical education in our state.

Our campus is a 70 acre stretch of land with hillocks on one side and plain area on the other three sides. The students are provided with plenty of opportunities to develop their individual talents and abilities and to aspire for excellence in academic and personality development.

At **KNRCER**, we believe in engender and promulgate knowledge and talent in core and frontier disciplines through innovative education programs, research, industrial training and consultancy and developing a new cadre of proficient citizens with a high level of competence, profound sense of social commitment and moral ethics

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Segment	Electrical Equipment	Wattage In Watt	Quantity	Total Loading Watt
Lighting	Tube Light	40	727	29,080
	LED Bulb	18	330	5,940
	LED Street Light	45	15	675
	Sockets	60	950	57,000
	Total Lighting Load			92,695
HVAC (Power Load)	Ceiling Fans	50	463	23,150
	Wall Mount Fan	60	11	660
	Exhaust Fan	40	1	40
	AC	1500	13	19,500
	Machines	62458	56	62,458
	Transformers	28000	14	28,000
	Total HVAC Load			133,808
Office Equipment	Computer	70	332	23240
	Printer	250	16	4,000
	Photo Copy Machine	650	2	1,300
	Speakers	900	4	3,600
	Amplifiers	800	1	800
	Projector	200	12	2,400
	UPS	2800	16	44,800

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Total Office Equipment Load				80,140
Water Supply	Pump 1	746	1	746
	Pump 2	1492	1	1492
	Total Water Supply Load			2,238
Others	Block -1	870		870
	Block-2	5670		5670
	store	204		204
	Total Other Load			6,744
Total Load Connected in Kilo Watt				315.625

1 transformer substation and distribution of electrical energy of KNRR comes under HT consumer tariff RR No HT-38 is outlined in this part of report. It includes HT 11kv line and energy is distributed in LT 440V. It also includes 125 KVA DG set for back up supply.

It is observed in the year 2023-24 that power consumption can be reduced by replacing CFL bulbs and tube lights by LED tube lights, 330 tube lights were replaced by led bulbs, which reduced nearly 7000W power consumed by the tube lights.

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Segment	Electrical Equipment	Wattage In watts	Quantity	Hours	No. Of Days	Annual Unit Consumption in KW
Lighting	Tube Light	40	727	6	215	37,513.20
	LED Bulb	18	330	6	215	7,662.60
	Street Light	45	15	10	350	2,362.50
	Sockets	60	950	2	215	24,510.00
HVAC (Power Load)	Ceiling Fans	50	463	6	190	26,391.00
	Wall Mount Fan	60	11	4	190	501.60
	Exhaust Fan	40	1	4	120	19.20
	AC	1500	13	4	120	9,360.00
	Machines	62458	56	1	120	7,494.96
	Transformers	28000	14	1	120	3,360.00
Office Equipment	Computer	70	332	2	150	6,972.00
	Printer	250	16	2	150	1,200.00
	Photo Copy Machine	650	2	2	120	312.00
	Speakers	900	4	1	80	288.00
	Amplifiers	800	1	1	80	64.00
	Project	200	12	3	120	864.00
	UPS	2800	16	2	200	17,920.00
Water Supply	Pump 1	746	1	2	200	298.40
	Pump 2	1492	1	1	200	298.40
Others	Block -1	870		4	200	696.00

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	Block-2	5670		5	220	6,237.00
	store	204		3	215	131.58
Total Annual Energy Consumption in KWH						1,52,456.44

Measures to Save Energy:

1. Increasing number of LED bulbs.
2. Regular servicing of DG sets.
3. Create awareness among the students/faculties regarding conservation of energy.
4. Use of solar energy as a source for different electrical equipments

Energy Consumption Details at KNRR (FY: 2022-23). Supplier:

Month	Starting Date	Billing Date	Stating Units	Billing units	Number of days	Units consumed	Average units Consumed / 30 , days
Apr	1/04/2022	1/05/2022	14820	29,640	30	14820	494
May	1/05/2022	1/06/2022	29,640	44,400	31	14760	492
Jun	1/06/2022	1/07/2022	44,400	61,560	30	17160	572
Jul	1/07/2022	1/08/2022	61,560	75,960	31	14400	480
Aug	1/08/2022	1/09/2022	75,960	87,315	31	11355	378.5
Sep	1/09/2022	1/10/2022	87,315	98,400	30	11085	369.5
Oct	1/10/2022	1/11/2022	98,400	108,615	31	10215	340.5
Nov	1/11/2022	1/12/2022	108,615	117,465	30	8850	295
Dec	1/12/2022	1/01/2023	117,465	129,345	31	11880	396
Jan	1/01/2023	1/02/2023	129,345	141,375	31	12030	401
Feb	1/02/2023	1/03/2023	141,375	152,565	28	11190	373
Mar	1/03/2023	1/04/2023	152,565	166,500	31	13935	464.5

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Environment Audit

Report 2023-24

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Water Management

- **Auditing for Water Management of the institute for Environmental Consciousness and Sustainability**
- **Rain water harvesting structures and utilization in the campus**

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1. WATER MANAGEMENT

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

PDIT, gets water from Municipal Corporation, and two ground water bore well sources. There are two sumps well and 10 overhead tankers.

Sl. No.	Water Tank Capacity	Numbers	Total Capacity
1	1000 liter	10	10000
Total Consumption of water in Liter			10000

Table 1 : Overhead water storage tank capacity in college
Quantities of water taps and water coolers

Description	College
Water Taps	180
Water Coolers	5

1.1 Water Consumption

Water Audit at SCCOE,					
1	2	3	4	5	6
Activity	Average liters of water used per activity in liters	Number of times activity done each day	Total water used by a person each day (liters)	Number of people in the College using water	Water Consumption per day
College Premises					
Wash hands and face	10	3	2	1000	2000
Toilet / Urinal flush	9	3	4	1000	4000
Drinking	1	2	2	1400	2800
Laboratory			2	60	120
Gardening			3000		3000
Canteen	1	1		1000	1000
Total water consumption in college					12920

Table 2: Total water consumption in college

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1.2 Rain Water Harvesting System

No Rainwater harvesting is a technology used to collect, convey and store rain water for later use from relatively clean surfaces such as a roof, land surface or rock catchment. RWH is the technique of collecting water from roof, Filtering and storing for further uses. Rainwater Harvesting is a simple technique of catching and holding rainwater where its falls. Either, we can store it in tanks for further use or we can use it to recharge

Ground water depending upon the situation. RWH system provides sources of soft, high quality water reduces dependence on well and other sources and in many contexts are cost effective.

1.3.1 Wastewater Management

Waste water discharge from the collage hostel and canteen is directed to municipality drainage and is connected to the canal. Some of these water is used to irrigate the nearby seasonal plant beds.

More than 10 water purifiers are installed at various sites throughout the college campus. Waste water from these purifier outlets is used to water various indoor and outdoor plants to ensure least water wastage and beautification of the campus.

Potted plants have been placed below the outlets of Air Conditioners so that the water discharge from these outlets can be utilized properly.

1.3.2 Awareness Program on Water and Energy Conservation

1.3.2.1 World Environment Day was observed by organizing a one day program on 28.12. 2023 with the theme "National Energy conservation week" wherein resource persons across the nation drew the attention of the audience towards the alarming consequences of uneconomical use of energy and pollution. Brainstorming discussions with highly esteemed experts of many diverse fields.

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7.1.2.3: The institute has facilities and initiatives for water conservation

Sl. No	Details	Page No
1	Policy document of water conservation	
2	Leakage proof water distribution systems in the campus.	
3	RO water filter unit in college campus.	
4	Water conservation awareness by using posters/stickers.	
5	Bore well recharge arrangement in college campus.	
6	Rain water harvesting in College Boys hostel campus.	

1. Policy document of water conservation

KNRR formulates Institute Policy on Water Conservation and Management. Basically, conserving water is an excellent way to save the environment and put off chores. Rainwater harvesting is one of the most efficient and effective ways of conserving water. It is more like the recycling of natural water.

This document covers the following:

1. Water Resources in the institute
2. Save water.
3. Benefits of Water conservation

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Water Resources in the Institute:

- Bore well from where the water is stored in the tanks..
- Provision of water purifier system/ water filter & coolers which purifies the water for drinking purpose.
- For rain water harvesting, we have ground water recharge pits in the college campus.
- They consume the water into the ground and hence the rain water gets harvested properly.

Save water:

1. Avoid leakage of water from the taps.
2. Turn the tap off when not in use especially when you brush your teeth or wash clothes.
3. Rainwater harvesting is another method to conserve water.
4. The water supply should be limited in those areas which enjoys the unlimited water supplies.

The benefits of Water conservation are:

- Saving money, environment and energy.
- Protecting the drinking water resources.
- Reduce or minimize the pollution and health problems.
- Reduce the need for new waste water treatment facilities.

How to Manage Water in College

Water conservation and management encompasses the policies, strategies and activities made to manage water as a sustainable resource, to protect the water environment, and to meet current and future human demand, these areas are usually associated with large population centers or agriculture, where water use is high. Here are ways students can help conserve the world's most precious resource with little effort and no cost!

- Bring a reusable water bottle /cups to dining halls to decrease the amount of cups that need to be washed.
- Use a dishwasher (if have one) instead of hand washing to use less running water.
- Garden/Plants need regular supply of water to grow.
- Use "leftover" water from a drinking glass or from washing fruit and veggies to water plants
- Water plants in the early morning/ late evening to decrease the amount of evaporation.
- Have a leak or drip timely repaired.
- Schedule showers for post-exercise to avoid taking multiple showers in a day.
- Report leaks on campus and in your neighborhood workshop.

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- Rain water collected at the terrace should be either directed to the water harvesting pits or directed to the play field/garden

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1. Leakage proof water distribution systems in the campus.

KNRR has a network of well-built, leakage proof water distribution system in the campus. It is used to disperse the water to wash rooms, laboratories, rest rooms etc. Water for these purposes is provided through a different set of overhead tanks of 1000Ltrs and 2000Ltrs capacity water head tanks.

Overhead tanks

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RO water filter unit in college campus.

KNRR has a reverse osmosis (RO) water filtering unit in campus. It is important in colleges because it can provide clean and safe drinking water for students and staffs. RO water purifiers use a semipermeable membrane to filter impurities and contaminants from water, resulting in pure and fresh water with a lower concentration of dissolved solids.

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RO water filter unit

3. Water conservation by creating awareness through posters/ stickers.
KNRR has initiating water conservation by creating awareness in students and staffs. The Posters/stickers like "save water", don't wastewater" are used for awareness creation.

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Water conservation awareness poster "Save Water"

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4. Bore well recharge arrangement in college campus.

Bore well recharge is environmental friendly way to recharge groundwater using harvested surface water. Hence KNRR has initiating waterconservation by creating 02 bore well recharge arrangement in college campus.

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7.1.2.1. The institution has the facilities and initiatives for alternativesources of energy and energy conservation measures.

Sr. No	Details	Pag e No
7	Policy documents of energy and energyconservation measures	
8	Solar Energy	
9	Use of energy efficient LED bulbs/lights	
10	Sensor based energy conservative street lights	

1. Policy documents of energy and energy conservation measures

KNRR has implemented an Energy Conservation Policy for an "Environment of educational excellence" in an effort to foster environmental awareness and the holistic development of its students. By using strategies that are compatible with a safe, secure, and environmentally conscious campus community, the university seeks to realistically and completely cut energy consumption, provide acceptable indoor air quality, and increase energy efficiency on campus. Energy conservation, as defined by this policy, will be achieved by creating an aggressive and forward-thinking strategy to provide energy-efficient, accountable, and economical operations.

Applies to:

- Faculty, staff, students and visitors.
- Energy conservation practices and eco-friendly habits are inculcated among students and staff through cautioning them about simple things which are really effective to reduce Electricity Consumption like students and staff turning off all lights, appliances and Electronics not in use.
- Our Energy conservation practices include the College replacing all tube lights with LED tubes, LED bulbs being the most energy efficient lighting option. LED Tubes use 75% less electricity than incandescent tubes, (Energy Star). LED tubes last about 25 through LED.
- Annual Energy audit is made mandatory.
- To save energy at the institution level with time-bound plan towards energy conservation. Thus the institution has adopted a mechanism to use renewable energy and install 60 W Solar power Street lights in the campus outside which ensures that renewable energy is used to meet considerable degree of power requirement, thus subscribing to Environmental Sustainability.

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Save Energy tips to be followed:

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- ✓ Activate power management features on computer and monitor so that it will go into a Lowpower "sleep" mode when the students and staff are not working on it.
- ✓ Turn off the monitor when the students and staff leave the table.
-
- ✓ Whenever possible, shut down rather than logging off.
- ✓ Turn off unnecessary lights and use daylight instead.
- ✓ Avoid the use of decorative lighting
- ✓ Use LED or compact fluorescent bulbs.
- ✓ Keep lights off in conference halls, classrooms, seminar halls when they are not in use.
- ✓ Use the fans only when they are needed.
- ✓ Unplug appliances not plugged into power strips (Like TVs, Refrigerators, ACs, tea /coffeepots, printers, and chargers etc.)

PRINCIPAL

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2. **Solar Energy**KNRR provides the solar water heaters facility in boy's hostel for energy conservation. Boy's hostel has total 14 units of solar water heaters with a capacity of 250 liters per day and MS/GI Coated outer tank arrangements.

250 LPD capacity solar water heaters

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3. Use of energy efficient LED bulbs.

KNRR is using Light Emitting Diode (LED)bulbs/lights in campus, corridors, labs and classrooms for energy conversion. LED bulbs/lights are consuming much less energy to provide the same amount of light as

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compared to other forms of bulbs/lights. One of the main reasons LED bulbs/lights are so efficient is that most of their energy is used solely to create light, rather than creating light and heat.

Energy efficient LED bulbs/lights in corridors

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4. Sensor Based Street lights:

KNRR is using Sensor based street lights in college campus. These sensor based street lights are designed to detect motion and ambient light levels. The lights are energy efficient LED lights, so they allow significant savings on energy bills.

Sensor Based Street light

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Waste Management

- **Auditing for Waste Management** of
the institute for Environmental
Consciousness and Sustainability.
- **Waste Management steps including:**
 - **Solid waste management**
 - **Liquid waste management**
 - **E-waste management**

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2. WASTE MANAGEMENT

This indicator addresses waste production and disposal, plastic waste, paper waste, food waste, and recycling. Municipal solid waste has a number of adverse environmental impacts, most of which are well known and not in need of elaboration. To reduce waste at institute, students and staff are educated on proper waste management practices through lectures, advertisement on notice boards, displaying slogan boards in the campus.

Waste is collected on a daily basis from various sources and is separated as **dry and wet waste**. Color coded dustbins are used for different types of wastes. Green for wet and blue for solid waste.

Daily garbage is collected by housekeeping personnel and handed over to authorized personnel of Municipal Corporation, for further processing.

2.1 Solid Waste management

Solid waste can be divided into two categories: general waste and hazardous waste. General waste includes what is usually thrown away in homes and schools such as paper, plastics tins and glass bottles. Hazardous waste is waste that is likely to be a threat to one's health or the environment like cleaning chemicals and petrol. Small bucket and big buckets are used for solid waste.

Small Plastic bucket = 40
Nos. Big Plastic Bucket
= 20

Nos.

Total Production of Solid Waste (Bio degradable): 2-10 Kg Total Production of Solid Waste (Non Bio degradable) : Less than 1 Kg College also have two numbers of Napkins/Wending/Burning Machine

2.1.1 Non Bio degradable Waste – Plastic Bottles / Waste Paper etc.

Non- biodegradable are those waste, which cannot be decomposed by biological processes. These are of two types - Recyclable: waste

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having economic values but destined for disposal can be recovered and reused along With their energy value. e.g. Plastic, paper, old cloth etc. Non-recyclable: waste which do not have economic value of recovery. e.g. Carbon paper, thermocol,

Tetra packs etc. Disposal of non-biodegradable waste is a major concern, not just plastic, a variety of waste being accumulated. There are a few ways to help non-biodegradable waste management. The impact of non-biodegradable waste on the environment and also focuses on its safe disposal for sustainable environment.

Waste material like plastic, papers etc. are collected and sold out to scrap vendor from time to time.

- ▣ College has also planned for compost pit to produce compost manure from the canteen solid waste and waste from other sources. Manure will be used for the purpose of botanical garden, Swami Vivekananda Garden, herbal garden as well or for planted tree.

2.2 Liquid waste management:

The waste chemicals mixed water from laboratory should not be mixed with groundwater. Labs are bringing to adopt fully or to minimize hazardous chemical.

2.2.1 Re-use of waste water

Waste water discharge from the canteen is directed to a small tank (Oxidation pond) named Lotus tank. It is surrounded by a wire mesh. The tank contains a variety of eye catching aquatic plants. Water of this pond issued to irrigate the nearby seasonal plant beds.

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a. Re-use of impure wastewater from water purifiers.

Impure drinking water is one of the main sources of infection, even mild poisoning, in many cases. Hence, it is important to use water purifiers in college campus. About 16 water purifiers are installed at various sites throughout the college campus. Waste water from these purifier outlets is used to water various indoor and outdoor plants to ensure least water wastage and beautification of the campus.

b. Re-use of waste water from Air Conditioners

Potted plants have been placed below the outlets of Air Conditioners so that the water discharge from these outlets can be utilized properly.

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2.3 E-Waste Management

Waste Electrical and Electronic Equipment (WEEE) or E-waste is one of the fastest growing waste streams in the world. In developed countries, it equals 1% of total solid waste on an average.

In developing countries, it ranges from 0.01% to 1% of the total municipal solid waste generation. In countries like China and India, though annual generation per capita is less than 1 kg, it is growing at an exponential pace. Presently, a very small amount of E waste from offices and glass waste from labs is generated in College.

The E-waste collected is stored in store room and disposed every year by selling it to vendors.

The total e-waste kept in college is about 50 Kg.

The Level of disturbance it creates for the college in a scale 1 to 9.

Sl. No.	Area	Rating
1	Municipal Dump Yard	9
2	Garbage heap	9
3	Sewer line	8
4	Stagnant water	9
5	Open drainage	7
6	Industry	No

7.1.2.2 : The institute has facilities and initiatives for management of the various types of degradable and non-degradable waste.

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SI No	Details	Page No
11	Policy document for degradable and non-degradable waste	
12	Solid waste management	
13	Liquid waste management	
14	Plastic waste management	
15	Compost pit for degradable waste management	

1. Policy document for degradable and non-degradable waste

KNRR is a green campus with lush green lawns, beautiful scenery, aesthetically pleasing architecture, and cutting-edge infrastructure. Usually more Number of students will study in one academic year. Most of the students are coming from Villages of various Dist. Being a rural background student they don't have much knowledge about waste management.

So, it is necessary to keep the college campus clean and ecofriendly by creating awareness about the cleanliness, health and hygiene among the student community. So, policy is framed to maintain and manage the waste generated during college hours.

This policy envisages to guarantying the moral, social and legal responsibilities of the College in creating an environment-friendly and sustainable world devoid of waste and Exploitation of nature. This policy is a guidance document to the teaching and non-teaching faculties, and students to behave responsibly in the production of waste, waste segregation, storage, and handling. Transport and disposal.

Policy objectives:

- Creating awareness among faculty and Students about the ways in which waste is generated and the means by which they can reduce waste generation.
- It is instructed to Maintenance committee recruited temporary Staff to segregate degradable and non-degradable waste.
- Following the five "R" principle of reduce, reuse, recycle, refuse and regenerate. Maintaining the campus plastic free.
- To reduce waste generation during college program and day today work in the campus.
- To encourage holistic approach of waste management in the campus
- Educate and create Awareness to the community about proper waste management through extension activities.

Policy for solid waste management

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- The solid waste generated in the college is related to the day-to-day activities should be segregated into degradable and non-degradable waste.
- The students should be encouraged to discard wastes to the respective baskets based on the type of solid waste.
- Dustbins should be kept in each class rooms, ladies' room, staff room, laboratories and library of the college.
- It should be monitored by the class teachers.
- NSS, Red Cross, Rovers and Rangers unit should actively take part in collecting the leaf litter and other degradable waste for making bio compost.
- The food waste generated by the students and staffs should be taken by them to their own home to reduce the generation of waste within the campus.

Liquid waste management:

- Liquid waste generated in the institute comes under three categories. So, policy is framed to manage such liquid waste in the campus.
- Waste water should be released into college garden.
- Awareness about the importance of drinking water should be explained the beginning of the academic year to the fresher's of the college.

E-waste management:

- Electronic waste includes damaged and unserviceable CD's, printers, monitors, hard disc, scanners, calculators, battery, mouse, Key pad, CPU, Xerox machine etc. E wastes should be placed in the separate room

PRINCIPAL

2. Solid waste management

KNRR has provided the separate dust bins for the collection of dry waste and wet waste separately in college campus.

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Dry solid waste dustbin

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Wet solid waste dustbin

3. Liquid waste management

KNRR has a reverse osmosis (RO) water filtering unit in campus. It is important in colleges because it can provide clean and safe drinking water for students and staffs.

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RO water filtering unit.

4. Plastic waste management

KNRR has provided the separate dust bins for the collection of plastic waste like pens, plastic geometrical instruments, plastic bags etc. separately in college campus.

Plastic wastes dustbin

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5. Compost pit for degradable waste management

Creating a compost pit is an excellent way to manage organic waste and enrich your soil. KNRR has provided the compost pit to create a pile of decaying degradable wastes. 02 compost pits with a size of 05 feet * 05 feet are constructed in college campus. The organic fertilizer generated in compost pits is used for plantin our college campus.

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Degradable waste managing compost pit

2.4 Environment Management Policy: Leading the way to a cleaner and healthier Environment

- Reducing degradable and non-degradable waste in the campus
- Reducing pollution through gases, heat, odor, chemicals and hazardous microorganisms
- Reducing water consumption and wastage
- Appropriate training to staff and students for environmental awareness through academic programs and campus awareness initiatives
- Facilitation of research in sustainability



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AUDIT CERTIFICATE

PRESENTED TO

KASIREDDY NARAYAN REDDY COLLEGE OF ENGINEERING AND RESEARCH
Hyderabad, Telangana.

Has been assessed by MCC for a comprehensive study of environmental impacts on institutional working framework to fulfill the requirements of

GREEN AUDIT

The green initiatives carried out by the institution have been verified on the report submitted and was found to be satisfactory.

The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.

Auditor Signature

Auditor Name

Date of Audit: 19.06.2024.



Mr. AnilKumar Gurayya Swami

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ENVIRONMENT AUDIT

The green initiatives carried out by the institution have been verified on the report submitted and was found to be satisfactory.

The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.

Auditor Signature

Auditor Name

Date of Audit: 19.06.2024.



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