7.1.3: Quality audits on environment and energy regularly undertaken by the Institution Report on energy audit submitted by the auditing agency.

INDEX

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224.
Dist: Nizamabad. (T.S).

Kshatriya College of Engineering, Nizamabad, Telangana.

Green Audit (Self-Assessment)

2018-19

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224
Dist: Nizamabad

1. Total number of Plants in Campus?

Plant type with approx. count 1800
Full grown Trees 800
Small Trees 400
Hedge Plants 600
Grass Cover SQM *6856.96 m2*

1.1 WATER AND WASTEWATER MANAGEMENT

1. List uses of water in your institute

Basic use of water in campus:

Drinking *–1900 liters*

Gardening *–7500 liters*

Kitchen and Toilets *– 1400 liters*

Others *– 1100 liters*

Hostel *–*

Total = 11.9 KL/Month

Principal
Kshatriya College of Engg.
CHE[illegible]IR-ARMOOR - [illegible]3 224
Dist: [illegible]mab[illegible]

2. How does your institute store water? Are there any water saving techniques followed in your institute?

There are total 17000 liters water storage of water and boosting within the College campus.

Sl. No	Storage Type	Capacity	Quantity	Total (in Litres)
1	OVER HEAD TANK	8000	1	8000
2	OVER HEAD TANK	2000	2	4000
3	OVER HEAD TANK			
4	OVER HEAD TANK			
5	UNDER GROUND TANK (Fire tank)	5000	1	5000
6	UNDER GROUND TANK			
7	UNDER GROUND HEAD TANK			
	TOTAL STORAGE CAPACITY	**15000**		**17000**

Saving Techniques

- *Avoid overflow of water controlled valves are provided in water supply system.*
- *Close supervision for water supply system.*
- *Water Conservation awareness for new students*
- *Sprinklers usage for gardening and grass cover*

Principal
Kshatriya College of Engg.

1.2 CARBON FOOTPRINT - EMISSION & ABSORPTION

1. Electricity used per year - CO2 emission from Electricity

(Electricity used per year in kWh/1000) x 0.84
= 49658 kWh /1000x0.84
= 41.712 ton

2. Diesel used per year CO2 emission from HDS (Diesel)

(Diesel used per year in litres) x 2.68
x 2.68
=2400 x 2.68
= 6.432 ton

3. Transportation per year (car) CO2 emission from transportation (Bus and Car)

Car - About4.6 metric tons r co2 per year
Bus – About 17 tons r co2 per year

Total CO2 emission per year = 69.472

CARBON ABSORPTION BY FLORA IN THE INSTITUTION

There are 800 full grown trees and 400 semi grown trees of different species, on the campus spread over 28.36 acres.
Carbon absorption capacity of one full grown tree 22 kg CO2 Therefore Carbon absorption capacity of 800 full-grown trees 800 x 22 kg CO2 =17.6 tons of CO2.

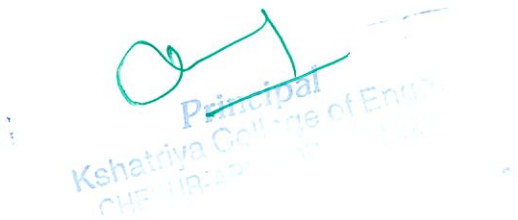
The carbon absorption capacity of 1284 semi-grown trees is 50% of that of full-grown trees. Hence the carbon absorption 400 x 6.8 kg of CO2 = 2.72 tons of CO2

There are approximately Hedge Plants 600 of various species being raised in the gardens and grown in the areas where no buildings are built Carbon absorption of bush plants varies widely with their species. Certain bushes absorb very high level of CO2 where as some others absorb very low level of CO2. In the absence of a detailed scientific study, 200g of CO, absorption is taken per bush (in consultation with Environmental Science specialists). Based on this, total carbon absorption of bushes is 600 x 200 g = 0.12 tons of CO2The lawns on the campus have grass and cover a total area of 73808 sq. ft. Carbon absorption capacity of a 10 sq. ft. area of lawn is 1 g per day Therefore, carbon absorption by lawn area 73808 x 365 x 0.1 g CO2 = 2.69 tons CO2 per year.

Grand total of carbon absorption capacity of the campus is 23.01 tons.

RECOMMENDATIONS

1. Green Belt Development.
2. Deployment of renewable energy sources.
3. Energy savings.



Kshatriya College of Engineering, Nizamabad, Telangana.

Green Audit Report
2019-20

Principal
Kshatriya College of Engg

Overview

Kshatriya College of Engineering (KCEA) was established in the year 2001 under the aegis of Pandit Deendayal Upadyay Educational Society. KCEA is located on a sprawling 40 acres campus. It is located on the serene NH-16 highway, 30 km away from Nizamabad district. KCEA is affiliated to the Jawaharlal Nehru Technology University Hyderabad. (JNTUH) offering graduate programs in engineering and postgraduate programs in the streams of Engineering, Business Administration, and Polytechnic.

GREEN AUDIT - ANALYSIS

1.1 GENERAL INFORMATION

1. Does any Green Audit conducted earlier?

Not Conducted

2. What is the total strength (people count) of the Institute?

Students

Male: 515 Female: 273 Total: 788

Teachers (including guest faculty)

Male: 60 Female: 24 Total: 84

Non-Teaching Staff

Male: 21 Female: 16 Total: 37

Total Strength

Male: 596 Female: 313 Total: 909

3. What is the total number of working days of your campus in a year?

257

4. Where is the campus located?

Adjacent to NH-64, chepur village,Armoor mandal ,Nizamabad District, Telangana

5. Which of the following are available in your institute?

Garden area available
Playground available
Kitchen available
Toilets available
Garbage Or Waste Store Yard available
Laboratory available
Canteen available
Hostel Facility
Guest House available

6. Which of the following are found near your institute?

Municipal dump yard
Garbage heap
Public convenience
Sewer line
Stagnant water
Open drainage
Industry – (Mention the type)
Bus / Railway station at a distance 2-3 kms from campus
Market / Shopping complex at a distance 2-6 kms from campus

1.2 WASTE MINIMIZATION AND RECYCLING

1. Does your institute generate any waste? If so, what are they?

Yes
Electronic waste

2. What is the approximate amount of waste generated per day? (in KG approx.)

Biodegradable waste -
Non-biodegradable waste -

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224
Dist: Nizamabad

Hazardous Waste <
Others -

3. How is the waste managed in the institute? By Composting, Recycling, Reusing, Others (specify)

Others -
Waste Electronic material is sold out to the 3rd party for Recycling / Reusing

4. Do you use recycled paper in institute?

No

5. How would you spread the message of recycling to others in the community?

Our college NCS unit is organizing ofetnly the awareness programs I n near the village Chepur ,Perkit,Govindpet,Mamadipally,Lakkora etc to spread the message or recycling and its importance

6. Can you achieve zero garbage in your institute? If yes, how?

Continuous efforts are put to achieve zero garbage

1.3 GREENING THE CAMPUS

1. Is there a garden in your institute?

Yes

2. Do students spend time in the garden?

Yes

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224

3. Total number of Plants in Campus?

Plant type with approx. count 1750
Full grown Trees 750
Small Trees 390
Hedge Plants 540
Grass Cover SQM 6870.96 m2

4. Is the College campus having any Horticulture Department? (If yes, give details)

No

5. How many Tree Plantation Drives organized by campus per annum?

A minimum 3 in a year

6. Is there any Plant Distribution Program for Students and Community?

YES

8. Is there any Plant Ownership Program?

NO

1.4 WATER AND WASTEWATER MANAGEMENT

1. List uses of water in your institute

Basic use of water in campus:

Drinking *– 1900 liters*

Gardening *– 7800 liters*

Kitchen and Toilets *– 1400 liters*

Others *– 1100 liters*

Hostel –

Total = 12.2 KL/Month KLtr (approximately)

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224
Dist: Nirmal

2. How does your institute store water? Are there any water saving techniques followed in your institute?

There are total 17000 liters water storage of water and boosting within the College campus.

Sl. No	Storage Type	Capacity	Quantity	Total (in Litres)
1	OVER HEAD TANK	8000	1	8000
2	OVER HEAD TANK	2000	2	4000
3	OVER HEAD TANK			
4	OVER HEAD TANK			
5	UNDER GROUND TANK (Fire tank)	5000	1	5000
6	UNDER GROUND TANK			
7	UNDER GROUND HEAD TANK			
	TOTAL STORAGE CAPACITY	**15000**		**17000**

Saving Techniques

- *Avoid overflow of water controlled valves are provided in water supply system.*
- *Close supervision for water supply system.*
- *Water Conservation awareness for new students*
- *Sprinklers usage for gardening and grass cover*

3. Locate the point of entry of water and point of exit of waste water in your institute.

Entry *– South-West or Open Area*

Exit*- North-East or Main Bulding*

4. Write down ways that could reduce the amount of water used in your institute

Basic ways:

- *Close the taps after usage*
- *Water Conservation awareness for new students*
- *Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage*
- *In new block, push tap are installed to save water*

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224
Dist: Nizamabad

1.5 ANIMAL WELFARE

1. List the animals (wild and domestic) found on the campus (dogs, cats, squirrels, birds, insects, etc.)

Dogs , Squirrels, Birds, Insects , Peacocks

2. Does your institute have a Biodiversity Program or a KARUNA CLUB?

No

1.6 CARBON FOOTPRINT - EMISSION & ABSORPTION

1. Electricity used per year - CO2 emission from Electricity

(electricity used per year in kWh/1000) x 0.84
= 48600kWH /1000x0.84
= 40.82 ton

2. LPG/PNG used per year - CO2 emission from LPG/PNG

(LPG/PNG used per year in KG) x 2.99
x 2.99
= x 2.99
= ton

3. Diesel used per year CO2 emission from HDS (Diesel)

(Diesel used per year in litres) x 2.68
x 2.68
=2400 x 2.68
= 6.432 ton

4. Transportation per year (car) CO2 emission from transportation (Bus and Car)

Car - About4.6 tons r co2 per year
Bus – About 17 tons r co2 per year

Principal
Kshatriya College of Engg.
CHE[illegible]UR-ARMOOR - 503 224
Dist: [illegible]mabad

Total CO2 emission per year cumulative by electricity usage + bus and car transportation = 68.852 Tons

CARBON ABSORPTION BY FLORA IN THE INSTITUTION

There are 750 full grown trees and 390 semi grown trees of different species, on the campus spread over 28.36 acres.
Carbon absorption capacity of one full grown tree 22 kg CO2 Therefore Carbon absorption capacity of 800 full-grown trees 750 x 22 kg CO2 =16.5 tons of CO2.

The carbon absorption capacity of 390 semi-grown trees is 50% of that of full-grown trees. Hence the carbon absorption 390 x 6.8 kg of CO2 = 2.652 tons of CO2

There are approximately Hedge Plants 540 of various species being raised in the gardens and grown in the areas where no buildings are built Carbon absorption of bush plants varies widely with their species. Certain bushes absorb very high level of CO2 where as some others absorb very low level of CO2. In the absence of a detailed scientific study, 200g of CO, absorption is taken per bush (in consultation with Environmental Science specialists). Based on this, total carbon absorption of bushes is 540 x 200 g = 0.108 tons of CO2

The lawns on the campus have grass and cover a total area of 73760 sq. ft. Carbon absorption capacity of a 10 sq. ft. area of lawn is 1 g per day Therefore, carbon absorption by lawn area 73760 x 365 x 0.1 g CO2 = 2.69 tons CO2 per year.

Grand total of carbon absorption capacity of the campus is 21.95 tons.

Principal
Kshatriya College of Engg.

GREEN INITIATIVES BY CAMPUS

- **Solid Waste Management**
  - Waste management is done by composting

- **Tree Plantation Drives**
  - Five plantation drives were carried out in the current year on the Campus.

- **Air Pollution Reduction**
  - The College is in the process of pursuing air quality monitoring by an approved lab.

RECOMMENDATIONS

- College should start drip irrigation to save water on campus
- Increase plantation drives in nearby villages, local bodies, NGOs, and Municipal Corporations.
- Establish an E-waste collection center on campus.

BGS
CERTIFICATION

KSHATRIYA COLLEGE OF ENGINEERING

NIZAMABAD, TELANGANA.

Has been assessed by BGS for the environmental impacts to fulfil the requirements of

GREEN AUDIT

The initiatives carried out by the institution have been found to be satisfactory.

Auditor Signature

Date of Audit: 24.06.2020

BGS Certification Services.
Email: bgscertification@gmail.com.
Thane.

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224
Dist: Nizamabad

Kshatriya College of Engineering, Nizamabad, Telangana.

Green Audit Report
2020-21

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224
Dist: Nizamabad

Overview

Kshatriya College of Engineering (KCEA) was established in the year 2001 under the aegis of Pandit Deendayal Upadyay Educational Society. KCEA is located on a sprawling 40 acres campus. It is located on the serene NH-16 highway, 30 km away from Nizamabad district. KCEA is affiliated to the Jawaharlal Nehru Technology University Hyderabad. (JNTUH) offering graduate programs in engineering and postgraduate programs in the streams of Engineering, Business Administration, and Polytechnic.

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224
Dist: Nirmal

GREEN AUDIT - ANALYSIS

1.1 GENERAL INFORMATION

1. Does any Green Audit conducted earlier?

Not Conducted

2. What is the total strength (people count) of the Institute?

Students

Male: 597 Female: 294 Total: 891

Teachers (including guest faculty)

Male: 62 Female: 28 Total: 90

Non-Teaching Staff

Male: 22 Female: 16 Total: 38

Total Strength

Male: 681 Female: 338 Total: 1019

Principal
Kshatriya College of Engg.
CHERUR-ARMOOR - 6[illegible]224
[illegible]

3. What is the total number of working days of your campus in a year?

257

4. Where is the campus located?

Adjacent to NH-64, Chepur village, Armoor Mandal, Nizamabad District, Telangana

5. Which of the following are available in your institute?

Garden area available
Playground available
Kitchen available
Toilets available
Garbage Or Waste Store Yard available
Laboratory available
Canteen available
Hostel Facility
Guest House available

6. Which of the following are found near your institute?

Municipal dump yard
Garbage heap
Public convenience
Sewer line
Stagnant water
Open drainage
Industry – (Mention the type)
Bus / Railway station at a distance 2-3 kms from campus
Market / Shopping complex at a distance 2-6 kms from campus

1.2 WASTE MINIMIZATION AND RECYCLING

1. Does your institute generate any waste? If so, what are they?

Yes
Electronic waste

2. What is the approximate amount of waste generated per day? (in KG approx.)

Biodegradable waste -
Non-biodegradable waste -

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224

Hazardous Waste <
Others -

3. How is the waste managed in the institute? By Composting, Recycling, Reusing, Others (specify)

Others -
Waste Electronic material is sold out to the 3rd party for Recycling / Reusing

4. Do you use recycled paper in institute?

No

5. How would you spread the message of recycling to others in the community?

Our college NCS unit is organizing ofetnly the awareness programs I n near the village Chepur ,Perkit,Govindpet,Mamadipally,Lakkora etc to spread the message or recycling and its importance

6. Can you achieve zero garbage in your institute? If yes, how?

Continuous efforts are put to achieve zero garbage

1.3 GREENING THE CAMPUS

1. Is there a garden in your institute?

Yes

2. Do students spend time in the garden?

Yes

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224
Dist: Nizamabad

3. Total number of Plants in Campus?

Plant type with approx. count 1790
Full grown Trees 780
Small Trees 350
Hedge Plants 500
Grass Cover SQM 6556.96 m2

4. Is the College campus having any Horticulture Department? (If yes, give details)

No

5. How many Tree Plantation Drives organized by campus per annum?

A minimum 3 in a year

6. Is there any Plant Distribution Program for Students and Community?

YES

8. Is there any Plant Ownership Program?

NO

1.4 WATER AND WASTEWATER MANAGEMENT

1. List uses of water in your institute

Basic use of water in campus:

Drinking *– 1900 liters*

Gardening *– 7900 liters*

Kitchen and Toilets *– 1400 liters*

Others *– 1200 liters*

Hostel *–*

Total = 12.4 KL/Month

Principal
Kshatriya College of Engg.
CHE[illegible]-ADB-[illegible]OR - 503 224

2. How does your institute store water? Are there any water saving techniques followed in your institute?

There are total 17000 liters water storage of water and boosting within the College campus.

Sl. No	Storage Type	Capacity	Quantity	Total (in Litres)
1	OVER HEAD TANK	8000	1	8000
2	OVER HEAD TANK	2000	2	4000
3	OVER HEAD TANK			
4	OVER HEAD TANK			
5	UNDER GROUND TANK (Fire tank)	5000	1	5000
6	UNDER GROUND TANK			
7	UNDER GROUND HEAD TANK			
	TOTAL STORAGE CAPACITY	**15000**		**17000**

Saving Techniques

- *Avoid overflow of water controlled valves are provided in water supply system.*
- *Close supervision for water supply system.*
- *Water Conservation awareness for new students*
- *Sprinklers usage for gardening and grass cover*

3. Locate the point of entry of water and point of exit of waste water in your institute.

Entry *– South-West or Open Area*

Exit*- North-East or Main Bulding*

4. Write down ways that could reduce the amount of water used in your institute

Basic ways:

- *Close the taps after usage*
- *Water Conservation awareness for new students*
- *Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage*
- *In new block, push tap are installed to save water*

Principal
Kshatriya College of Engg.
CHEPUR-ARIMOOR - 683 224
Dist: Ernakulam

1.5 ANIMAL WELFARE

1. List the animals (wild and domestic) found on the campus (dogs, cats, squirrels, birds, insects, etc.)

Dogs, Squirrels, Birds, Insects, Peacocks

2. Does your institute have a Biodiversity Program or a KARUNA CLUB?

No

1.6 CARBON FOOTPRINT - EMISSION & ABSORPTION

1. Electricity used per year - CO2 emission from Electricity

(Electricity used per year in kWh/1000) x 0.84
= 49050 kWh /1000x0.84
= 41.202 ton

2. LPG/PNG used per year - CO2 emission from LPG/PNG

(LPG/PNG used per year in KG) x 2.99
x 2.99
= x 2.99
= ton

3. Diesel used per year CO2 emission from HDS (Diesel)

(Diesel used per year in litres) x 2.68
x 2.68
=2400 x 2.68
= 6.432 ton

4. Transportation per year (car) CO2 emission from transportation (Bus and Car)

Car - About4.6 metric tons r co2 per year
Bus – About 17 tons r co2 per year

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224
Dist: Nirmal

Total CO2 emission per year cumulative by electricity usage + bus and car transportation= 69.234 ton

CARBON ABSORPTION BY FLORA IN THE INSTITUTION

There are 780 full grown trees and 350 semi grown trees of different species, on the campus spread over 28.36 acres.
Carbon absorption capacity of one full grown tree 22 kg CO2 Therefore Carbon absorption capacity of 800 full-grown trees 780 x 22 kg CO2 =17.16 tons of CO2.

The carbon absorption capacity of 350 semi-grown trees is 50% of that of full-grown trees. Hence the carbon absorption 350 x 6.8 kg of CO2 = 2.38 tons of CO2

There are approximately Hedge Plants 500 of various species being raised in the gardens and grown in the areas where no buildings are built Carbon absorption of bush plants varies widely with their species. Certain bushes absorb very high level of CO2 where as some others absorb very low level of CO2. In the absence of a detailed scientific study, 200g of CO, absorption is taken per bush (in consultation with Environmental Science specialists). Based on this, total carbon absorption of bushes is 500 x 200 g = 0.10 tons of CO2

The lawns on the campus have grass and cover a total area of 70578 sq. ft. Carbon absorption capacity of a 10 sq. ft. area of lawn is 1 g per day Therefore, carbon absorption by lawn area 70578 x 365 x 0.1 g CO2 = 2.58 tons CO2 per year.

Grand total of carbon absorption capacity of the campus is 22.22 tons.

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224
Dist: Nizamabad

GREEN INITIATIVES BY CAMPUS

- **Solid Waste Management**
  - There is ban on single use plastic and plastic crockery in the campus.

- **Renewable Energy**
  - Solar power plant of capacity 60 KW is to be installed on building roof.
  - College has signed an agreement with third party solar power provider for 0.06 MW.
  -
- **Tree Plantation Drives**
  - Five plantation drives were carried out in the current year on the Campus.
  - Plants survival rate is around 90%

- **Air Pollution Reduction**
  - Personal Vehicles (Students) are not allowed in the campus

Environment Committee Initiatives – KCEA has an environment committee.

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224

RECOMMENDATIONS

- Environmental parameters should be included in purchase policy to achieve a cradle to grave approach for sustainability.
- College should go for water balancing / audit for monitoring the use and wastage of water.
- A Water Meter should be installed at every building of the institute to monitor water consumption per capita.
- College should start drip irrigation to save water on campus
- College should increase the use of Sprinklers for gardening purposes
- Flow rate of taps should be checked, it should not be more than 2.5 liters/minute.
- Increase plantation drives in nearby villages, local bodies, NGOs, and Municipal Corporations.
- Arrange training programs on environmental management systems and nature conservation for schools and local people.
- Establish an E-waste collection center on campus.

Green building guidelines for future expansion projects of the campus.

Principal
Kshatriya College of Engg.
CHEFUR-ARMOOR - 503 224
Dist: Nizamabad

AUDIT CERTIFICATE

PRESENTED TO

KSHATRIYA COLLEGE OF ENGINEERING

NIZAMABAD, TELANGANA.

Has been assess by MQCIUL for the comprehensive study of environmental impacts on institutional working framework to fulfil 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

Date of Audit: 23.06.2021

MARK CERTIFICATION CONSULTANTS, 8-1-402/A/5/2, TOLICHOWKI, HYDERABAD -500008, TELANGANA, INDIA.
Website: WWW.MARKCERTIFICATION.COM,
Email: INFO@MARKCERTIFICATION.COM

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224
Dist: Nizamabad

Kshatriya College of Engineering, Nizamabad, Telangana.

Green Audit Report
2021-22

Principal
Kshatriya College of Engg.

Overview

Kshatriya College of Engineering (KCEA) was established in the year 2001 under the aegis of Pandit Deendayal Upadyay Educational Society. KCEA is located on a sprawling 40 acres campus. It is located on the serene NH-16 highway, 30 km away from Nizamabad district. KCEA is affiliated to the Jawaharlal Nehru Technology University Hyderabad. (JNTUH) offering graduate programs in engineering and postgraduate programs in the streams of Engineering, Business Administration, and Polytechnic.

GREEN AUDIT REPORT – DETAILS

1. Does any Green Audit conducted earlier?

Conducted.

2. What is the total strength (people count) of the institute?

Students
Male: 509 Female: 305 Total: 814

Teachers
Male: 55 Female: 27 Total: 82

Non-Teaching Staff
Male: 21 Female: 18 Total: 36

Total Strength
Male: 585 Female: 350 Total: 935

Principal
Kshatriya College of Engg.
CHEYYAR-ARNIYAR - 604 224
Dist: Tiruvannamalai

3. What is the total number of working days of your campus in a year?

258

4. Where is the campus located?

Adjacent to NH-64, Chepur village, Armors Mandal, Nizamabad District, Telangana

5. Which of the following are available in your institute?

Garden area available
Playground available
Kitchen available
Toilets available
Garbage Or Waste Store Yard available
Laboratory available
Canteen available
Hostel Facility
Guest House available

6. Which of the following are found near your institute?

Municipal dump yard
Garbage heap
Public convenience
Sewer line
Stagnant water
Open drainage
Industry – (Mention the type)
Bus / Railway station at a distance 2-3 kms from campus
Market / Shopping complex at a distance 2-6 kms from campus

1.2 WASTE MINIMIZATION AND RECYCLING

1. Does your institute generate any waste? If so, what are they?

E- Waste

2. What is the approximate amount of waste generated per day? (in KG approx.)

Biodegradable waste -
Non-biodegradable waste -

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224
Dist: Nizamabad

Hazardous Waste <
Others -

3. How is the waste managed in the institute? By Composting, Recycling, Reusing, Others (specify)

Waste Electronic material is sold out to the 3rd party for Recycling / Reusing

4. Do you use recycled paper in institute?

No

5. How would you spread the message of recycling to others in the community?

Our college NCS unit is organizing ofetnly the awareness programs I n near the village Chepur ,Perkit,Govindpet,Mamadipally,Lakkora etc to spread the message or recycling and its importance

6. Can you achieve zero garbage in your institute? If yes, how?

Continuous efforts are put to achieve zero garbage

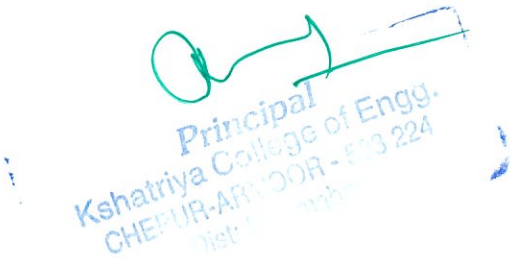
1.3 GREENING THE CAMPUS

1. Is there a garden in your institute?

Yes

2. Do students spend time in the garden?

Yes



3. Total number of Plants in Campus?

Plant type with approx. count 1800
Full grown Trees 800
Small Trees 400
Hedge Plants 600
Grass Cover SQM 6856.96 m2

4. Is the College campus having any Horticulture Department? (If yes, give details)

No

5. How many Tree Plantation Drives organized by campus per annum?

A minimum 3 in a year

6. Is there any Plant Distribution Program for Students and Community?

YES

8. is there any Plant Ownership Program?

NO

1.4 WATER AND WASTEWATER MANAGEMENT

1. List uses of water in your institute

Basic use of water in campus:

Drinking – 2500 liters

Gardening – 8500 liters

Kitchen and Toilets – 1500 liters

Others – 1200 liters

Hostel –

Total = 13.7KL/Month

Principal
Kshatriya College of Engg.
CHEPUR-ARMOOR - 503 224

2. How does your institute store water? Are there any water saving techniques followed in your institute?

There are total 17000 liters water storage of water and boosting within the College

Sl. No	Storage Type	Capacity	Quantity	Total (in Litre)
1	OVER HEAD TANK	8000	1	8000
2	OVER HEAD TANK	2000	2	4000
3	OVER HEAD TANK			
4	OVER HEAD TANK			
5	UNDER GROUND TANK (Fire tank)	5000	1	5000
6	UNDER GROUND TANK			
7	UNDER GROUND HEAD TANK			
	TOTAL STORAGE CAPACITY	**15000**		**17000**

Saving Techniques

- *Avoid overflow of water controlled valves are provided in water supply system.*
- *Close supervision for water supply system.*
- *Water Conservation awareness for new students*
- *Sprinklers usage for gardening and grass cover*

3. Locate the point of entry of water and point of exit of waste water in your institute.

Entry – South-West or Open Area

Exit- North-East or Main Building

4. Write down ways that could reduce the amount of water used in your institute

Basic ways:

- Close the taps after usage
- Water Conservation awareness for new students
- Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage
- In new block, push tap are installed to save water

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1.5 ANIMAL WELFARE

1. List the animals (wild and domestic) found on the campus (dogs, cats, squirrels, birds, insects, etc.)

Dogs, Squirrels, Birds, Insects, Peacocks

2. Does your institute have a Biodiversity Program or a KARUNA CLUB?

No

1.6 CARBON FOOTPRINT - EMISSION & ABSORPTION

1. Electricity used per year - CO2 emission from Electricity

(Electricity used per year in kWh/1000) x 0.84
= 48900 kWh/1000 x 0.84
= 41.076 ton

2. LPG/PNG used per year - CO2 emission from LPG/PNG

(LPG/PNG used per year in KG) x 2.99
x 2.99
= x 2.99
= ton

3. Diesel used per year CO2 emission from HDS (Diesel)

(Diesel used per year in litres) x 2.68
x 2.68
=2400 x 2.68
= 6.432 ton

4. Transportation per year (car) CO2 emission from transportation (Bus and Car)

Car – About 4.6 tons r co2 per year
Bus – About 17 tons r co2 per year

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Total CO_2 emission per year cumulative by electricity usage + bus and car transportation = 41.076 + 6.432 + 21.6 = 69.108 tons

CARBON ABSORPTION BY FLORA IN THE INSTITUTION

There are 800 full grown trees and 400 semi grown trees of different species, on the campus spread over 28.36 acres.
Carbon absorption capacity of one full grown tree 22 kg CO_2 Therefore Carbon absorption capacity of 800 full-grown trees 800 x 22 kg CO_2 =17.6 tons of CO_2.

The carbon absorption capacity of 400 semi-grown trees is 50% of that of full-grown trees. Hence the carbon absorption 400 x 6.8 kg of CO_2 = 2.72 tons of CO_2

There are approximately Hedge Plants 600 of various species being raised in the gardens and grown in the areas where no buildings are built Carbon absorption of bush plants varies widely with their species. Certain bushes absorb very high level of CO_2 where as some others absorb very low level of CO_2. In the absence of a detailed scientific study, 200g of CO, absorption is taken per bush (in consultation with Environmental Science specialists). Based on this, total carbon absorption of bushes is 600 x 200 g = 0.12 tons of CO_2

The lawns on the campus have grass and cover a total area of 73807 sq. ft. Carbon absorption capacity of a 10 sq. ft. area of lawn is 1 g per day Therefore, carbon absorption by lawn area 73807 x 365 x 0.1 g CO_2 = 2.69 tons CO_2 per year.

Grand total of carbon absorption capacity of the campus is 23.13 tons.

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GREEN INITIATIVES BY CAMPUS

- **Solid Waste Management**
  - Waste management is done by composting
  - There is ban on single use plastic and plastic crockery in the campus.

- **Renewable Energy**
  - The college is using solar lights for street lights.

- **Tree Plantation Drives**
  - Two plantation drives were carried out in the current year on the Campus.
  - Plants survival rate is around 87%

- **Air Pollution Reduction**
  - Personal Vehicles (Students) are not allowed in the campus

Environment Committee Initiatives – KCEA has an environment committee.

RECOMMENDATIONS

- Eco-friendly product purchase.
- College should increase the use of Sprinklers for gardening purposes
- Increase plantation drives in nearby villages, local bodies, NGOs, and Municipal Corporations.
- Establish an E-waste collection center on campus.

Green building guidelines for future expansion projects of the campus
Note: Other details will be added later on.

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AUDIT CERTIFICATE

PRESENTED TO

KSHATRIYA COLLEGE OF ENGINEERING

NIZAMABAD, TELANGANA.

Has been assess by MQCIUL for the comprehensive study of environmental impacts on institutional working framework to fulfil 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

Date of Audit: 22.06.2022

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Kshatriya College of Engineering
Nizamabad, Telangana.

Green Audit Report
2022-23

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Dist: Nizamabad

Green Audit Report Structure

INTRODUCTION

OVERVIEW OF COLLEGE

VISION AND MISSION

AUDIT PARTICIPANTS

EXECUTIVE SUMMARY

GREEN AUDIT ANALYSIS

- 1.1 GENERAL INFORMATION OF COLLEGE
- 1.2 WASTE MINIMIZATION AND RECYCLING
- 1.3 GREENING THE CAMPUS
- 1.4 WATER & WASTE WATER MANAGEMENT
- 1.5 ANIMAL WELFARE
- 1.6 CARBON FOOTPRINTS

INITIATIVES TAKEN BY COLLEGE

RECOMMENDATION

CONCLUSION

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Acknowledgement

We would like to thank the management of KCEA for assigning this important work of Green Audit. We appreciate the co-operation to the teams for completion of assessment.

We would also like to thank Dr. V. Vedprakash – Coordinator, *IQAC*, for her continuous support and guidance, without which the completion of the project will not be possible. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

We are also thankful to the IQAC team last but not the least, we would like to thank Prof. Dr. R. K. Pandey ***(Principal),*** **KCEA** for giving us an opportunity to evaluate the environmental performance of the campus.

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Disclaimer

MQCIUL Audit Team has prepared this report for **KCEA** based on input data submitted by the representatives of College complemented with the best judgment capacity of the expert team.

While all sensible care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

It is further informed that the conclusions are arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

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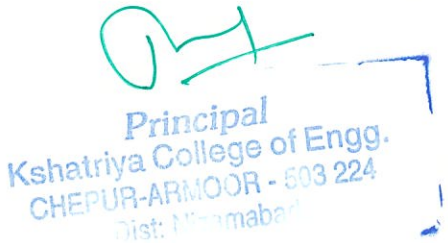
Concept & Context

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory from the academic year 2019–20 onwards that all Higher Educational Institutions should submit an annual Green, Environment and Energy Audit Report. Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade A, Grade B or Grade C according to the scores assigned at the time of accreditation. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

In view of the NAAC circular regarding Green auditing, the College management decided to conduct an external environment assessment study by a competent external professional auditor. The green audit aims to examine environmental practices within and outside the College campus, which impact directly or indirectly on the atmosphere. Green audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of College/college environment. It was initiated with the intention of reviewing the efforts within the institutions whose exercises can cause risk to the health of inhabitants and the environment.

Through the green audit, a direction as how to improve the structure of environment and inclusion of several factors that can protect the environment can be commenced. This audit focuses on the Green Campus, Waste Management, Water Management, Air Pollution, Energy Management & Carbon Footprint etc. being implemented by the institution. The concepts, structure, objectives, methodology, tools of analysis, objectives of the audit are discussed below.

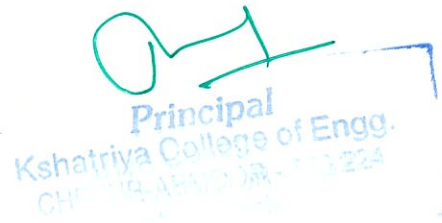


Introduction

Now a days, the educational institutions are becoming more thoughtful towards the environmental aspects and as a result new and innovative concepts are being introduced to makethem sustainable and eco-friendly. To preserve the environment within the institution, a numberof viewpoints are applied by the several educational institutes to solve their environmental problems such as promotion of the saving the energy, waste recycle, water consumption reduction, water harvesting and many more...

The activities carried out by the institution can also create adverse environmental impacts. Greenaudit is defined as an official inspection of the effects a College has on the environment. Green Audit is conducted to evaluate the actual scenario at the institution campus. Green audit can be a useful tool for a College/college to determine how and where they are using the most of the energy or water or resources; the College can then decide how to implement changes and make savings. It can also be used to determine the nature and volume of waste, which can be used for a recycling project or to improve waste minimization plan.

Green auditing and the application of mitigation measures is a win-win situation for all the institutions, the learners and the mother earth. It can also result in health awareness and can promote the environmental awareness, values and beliefs. It provides a better understanding to staff and students about the Green impact on institution. Green auditing also upholds financial savings through reduction of resource usage. It gives an opportunity to the students and teachers for the development of ownership of the personal and social responsibility. The audit process involves primary data collection, site walk through with the team of College/college including the assessment of policies, activities, documents and records.



Overview of the College

The educated is the one who has learned how to learn ...and change. "It is only through Right Education one can bring a desired and positive change in this society. Goyal Group of Industries envisaged the need of right education and so as an extension to the philosophy of, "SERVICE TO CUSTOMERS".

KCEA today is the name to reckon with for its Student Centric interventions to meet the objective of imparting Quality Engineering and Management Education aiming for the sole motto of making the leaders in chosen disciplines, ready to take on the challenges of world of work effectively and efficiently. The courseware addresses the educational and emotional needs of the students which in turn help them to advocate the cause of "Responsible Citizenship" not only at workplace but in all walks of life in the dynamic world order.

Kshatriya College of Engineering (KCEA) was established in the year 2001 under the aegis of Pandit Deendayal Upadyay Educational Society. KCEA is located on a sprawling 40 acres campus. It is located on the serene NH-16 highway, 30 km away from Nizamabad district. KCEA is affiliated to the Jawaharlal Nehru Technology University Hyderabad. (JNTUH) offering graduate programs in engineering and postgraduate programs in the streams of Engineering, Business Administration, and Polytechnic.

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Vision & Mission

Our Vision:

To be a center of excellence in technical education with research orientation and to develop human resources to serve the society and nation building.

Our Mission:

- To provide comprehensive technical education programmes in various disciplines and to contribute effectively to the profession and the society.
- Establishing centre of excellence in inter disciplinary areas which are important and relevant to industry and employment with scope for research.
- To inculcate human values and ethical practices to the graduates through co- curricular and extracurricular activities.

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Audit Participants

On behalf of college:

1. M. Laxman.
2. A. Kailash.
3. M. Subhash.
4. Dr. C. Dayanand.
5. A. Kiran Kumar.

On behalf of Audit Team:

Mr. Anilkumar G Swami. (Lead Auditor – ISO 14001 & ISO 50001)

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Executive Summary

Green auditing is an essential step to identify and determine whether the institutions practices are sustainable and ecological. Traditionally, we were upright and efficient users of natural resources. But over the period of time, excessive usage of resources like water, electricity, petrol, etc. have become habitual for everyone especially, in urban and semi-urban areas. It is actually the right time to check if we (our process) are consuming more than required resources? Whether we are using resources sensibly?

Green audit standardizes all such practices and provides an efficient way to use natural resources. In the time of climate change and resource exhaustion it is necessary to re-check the processes and convert it in to green and sustainable. Green audit provides an approach for it. It also increases overall awareness among the folks working in institution towards the eco-friendly environment.

This is the fifth attempt to conduct green audit of this College campus for fulfilment of NAAC criteria. This Audit was mainly focused on greening indicators like consumption of energy in terms of electricity and

Fossil fuel, quality of soil, water usage, vegetation, waste management practicesand carbon foot print of the Campus. Initially a questionnaire was shared to know about the existing resources of the campus and

Resource consumption pattern of the students and staffs inthe College.

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GREEN AUDIT - ANALYSIS

1.1 GENERAL INFORMATION

1. **Does any Green Audit conducted earlier?**

Conducted.

2. **What is the total strength (people count) of the Institute?**

Students
Male:497 Female:279 Total:794

Teachers (including guest faculty)
Male:58 Female:23 Total:81

Non-Teaching Staff
Male:20 Female:16 Total:36

Total Strength
Male:575 Female:336 Total:911

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3. **What is the total number of working days of your campus in a year?**

252

4. **Where is the campus located?**

Adjacent to NH-64, chepur village, Armoor mandal, Nizamabad District, Telangana

5. **Which of the following are available in your institute?**

Garden area: Available
Playground: Available
Kitchen: Available
Toilets: Available
Garbage Or Waste Store Yard: Available
Laboratory: Available
Canteen: Available
Hostel Facility
Guest House: Available

6. **Which of the following are found near your institute?**

Municipal dump yard
Garbage heap
Public convenience
Sewer line
Stagnant water
Open drainage
Industry – (Mention the type)
Bus / Railway station: At a distance 2-3 kms from campus
Market / Shopping complex: At a distance 2-6 kms from campus

1.2 WASTE MINIMIZATION AND RECYCLING

1. **Does your institute generate any waste? If so, what are they?**

Yes
Electronic waste

2. **What is the approximate amount of waste generated per day? (in KG approx.)**

Biodegradable waste -
Non-biodegradable waste -

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Hazardous Waste <

Others -

3. How is the waste managed in the institute? By Composting, Recycling, Reusing, Others (specify)

Others -

Waste Electronic material is sold out to the 3rd party for Recycling / Reusing

4. Do you use recycled paper in institute?

No

5. How would you spread the message of recycling to others in the community?

Our college NCS unit is organizing often the awareness programs I n near the village Chepur ,Perkit, Govindpet, Mamadipally, Lakkora etc to spread the message or recycling and its importance

6. Can you achieve zero garbage in your institute? If yes, how?

Continuous efforts are put to achieve zero garbage

1.3 GREENING THE CAMPUS

1. Is there a garden in your institute?

Yes

2. Do students spend time in the garden?

Yes

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3. Total number of Plants in Campus?

Plant type with approx. count 1800
Full grown Trees 800
Small Trees 400
Hedge Plants 600
Grass Cover SQM *6856.96 m2*

4. Is the College campus having any Horticulture Department? (If yes, give details)

No

5. How many Tree Plantation Drives organized by campus per annum?

A minimum 3 in a year

6. Is there any Plant Distribution Program for Students and Community?

YES

8. Is there any Plant Ownership Program?

NO

1.4 WATER AND WASTEWATER MANAGEMENT

1. List uses of water in your institute

Basic use of water in campus:

Drinking *– 2000 liters*

Gardening *– 8000 liters*

Kitchen and Toilets *– 1400 liters*

Others *– 1000 liters*

Hostel *–*

Total = 12.4KL/Month (approximately)

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2. How does your institute store water? Are there any water saving techniques followed in your institute?

There are total 17000 liters water storage of water and boosting within the College campus.

Sl. No	Storage Type	Capacity	Quantity	Total (in Litres)
1	OVER HEAD TANK	8000	1	8000
2	OVER HEAD TANK	2000	2	4000
3	OVER HEAD TANK			
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5	UNDER GROUND TANK (Fire tank)	5000	1	5000
6	UNDER GROUND TANK			
7	UNDER GROUND HEAD TANK			
	TOTAL STORAGE CAPACITY	**15000**		**17000**

Saving Techniques

- *Avoid overflow of water controlled valves are provided in water supply system.*
- *Close supervision for water supply system.*
- *Water Conservation awareness for new students*
- *Sprinklers usage for gardening and grass cover*

3. Locate the point of entry of water and point of exit of waste water in your institute.

Entry *– South-West or Open Area*

Exit*- North-East or Main Bulding*

4. Write down ways that could reduce the amount of water used in your institute

Basic ways:

- *Close the taps after usage*
- *Water Conservation awareness for new students*
- *Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage*
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1.5 ANIMAL WELFARE

1. List the animals (wild and domestic) found on the campus (dogs, cats, squirrels, birds, insects, etc.)

Dogs , Squirrels, Birds, Insects , Peacocks

2. Does your institute have a Biodiversity Program or a KARUNA CLUB?

No

1.6 CARBON FOOTPRINT - EMISSION & ABSORPTION

1. Electricity used per year - CO2 emission from Electricity

(electricity used per year in kWh/1000) x 0.84
= 48,768 kWH /1000x0.84
= 40.97 ton

2. LPG/PNG used per year - CO2 emission from LPG/PNG

(LPG/PNG used per year in KG) x 2.99
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3. Diesel used per year CO2 emission from HDS (Diesel)

(Diesel used per year in litres) x 2.68
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4. Transportation per year (car) CO2 emission from transportation (Bus and Car)

Car - About4.6 Tons r co2 per year
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Total CO2 emission per year cumulative by electricity usage + diesel + bus and car transportation = (69 ton)

CARBON ABSORPTION BY FLORA IN THE INSTITUTION

There are 800 full grown trees and 400 semi grown trees of different species, on the campus spread over 28.36 acres.
Carbon absorption capacity of one full grown tree 22 kg CO2 Therefore Carbon absorption capacity of 800 full-grown trees 800 x 22 kg CO2 =17.6 tons of CO2.

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Grand total of carbon absorption capacity of the campus is 23.13 tons.

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GREEN INITIATIVES BY CAMPUS

- **Solid Waste Management**
  - Waste management is done by composting.
  - Recycling of used paper is carried out in paper recycling plant.
  - There is ban on single use plastic and plastic crockery in the campus.

- **Renewable Energy**
  - Solar power plant of capacity 60 KW is to be installed on building roof.
  - College has signed an agreement with third party solar power provider for 0.06 MW.
  - The college is using solar lights for street lights.

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- **Tree Plantation Drives**
  - Five plantation drives were carried out in the current year in the Campus.
  - Plants survival rate is around 85%

- **Air Pollution Reduction**
  - Personal Vehicles (Students) are not allowed in the campus
  - College is in process to pursue air quality monitoring by NABL approved lab.

Environment Committee Initiatives – KCEA has an environment committee.

RECOMMENDATIONS

- Environmental parameters should be included in purchase policy to achieve a cradle to grave approach for sustainability.
- College should go for water balancing / audit for monitoring the use and wastage of water.
- Water Meter should be installed at every building of institute for monitoring of water consumption per capita.
- College should start drip irrigation to save water in campus
- College should increase the use of Sprinklers gardening purpose
- Flow rate of taps should be checked, it should not be more than 2.5 liters/minute.
- Increase plantation drives in nearby villages, local bodies, NGO and Municipal Corporation.
- Arrange training programmes on environmental management system and nature conservation for schools and local people.
- Establish an E-waste collection center in campus.

Green building guidelines for future expansion projects of the campus
Note: Other details will be added later on.

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The lawns on the campus have grass and cover a total area of 73797 sq. ft. Carbon absorption capacity of a 10 sq. ft. area of lawn is 1 g per day Therefore, carbon absorption by lawn area 73797 x 365 x 0.1 g CO2 = 2.69 tons CO2 per year.

Grand total of carbon absorption capacity of the campus is 23.13 tons.

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GREEN INITIATIVES BY CAMPUS

- **Solid Waste Management**
  - Waste management is done by composting.
  - Recycling of used paper is carried out in paper recycling plant.
  - There is ban on single use plastic and plastic crockery in the campus.

- **Renewable Energy**
  - Solar power plant of capacity 60 KW is to be installed on building roof.
  - College has signed an agreement with third party solar power provider for 0.06 MW.
  - The college is using solar lights for street lights.

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- **Tree Plantation Drives**
  - Five plantation drives were carried out in the current year in the Campus.
  - Plants survival rate is around 85%

- **Air Pollution Reduction**
  - Personal Vehicles (Students) are not allowed in the campus
  - College is in process to pursue air quality monitoring by NABL approved lab.

Environment Committee Initiatives – KCEA has an environment committee.

RECOMMENDATIONS

- Environmental parameters should be included in purchase policy to achieve a cradle to grave approach for sustainability.
- College should go for water balancing / audit for monitoring the use and wastage of water.
- Water Meter should be installed at every building of institute for monitoring of water consumption per capita.
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- College should increase the use of Sprinklers gardening purpose
- Flow rate of taps should be checked, it should not be more than 2.5 liters/minute.
- Increase plantation drives in nearby villages, local bodies, NGO and Municipal Corporation.
- Arrange training programmes on environmental management system and nature conservation for schools and local people.
- Establish an E-waste collection center in campus.

Green building guidelines for future expansion projects of the campus
Note: Other details will be added later on.

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AUDIT CERTIFICATE

PRESENTED TO

KSHATRIYA COLLEGE OF ENGINEERING

NIZAMABAD, TELANGANA.

Has been assess by MQCIUL for the comprehensive study of environmental impacts on institutional working framework to fulfil 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

Date of Audit: 21.06.2023

MARK CERTIFICATION CONSULTANTS, 8-1-402/A/5/2, TOLICHOWKI, HYDERABAD -500008, TELANGANA, INDIA.
Website: WWW.MARKCERTIFICATION.COM,
Email: INFO@MARKCERTIFICATION.COM

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Kshatriya College of Engg

KSHATRIYA COLLEGE OF ENGINEERING

NIZAMABAD, TELANGANA.

Has been assessed by BGS for the environmental impacts to fulfil the requirements of

GREEN AUDIT

The initiatives carried out by the institution have been found to be satisfactory.

Auditor Signature

Date of Audit: 24.06.2020

BGS Certification Services.
Email: bgscertification@gmail.com.
Thane.

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Kshatriya College of Engineering
Nizamabad, Telangana.

Green Audit Report
2023-24

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Green Audit Report Structure

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VISION AND MISSION

AUDIT PARTICIPANTS

EXECUTIVE SUMMARY

GREEN AUDIT ANALYSIS

- 1.1 GENERAL INFORMATION OF COLLEGE
- 1.2 WASTE MINIMIZATION AND RECYCLING
- 1.3 GREENING THE CAMPUS
- 1.4 WATER & WASTE WATER MANAGEMENT
- 1.5 ANIMAL WELFARE
- 1.6 CARBON FOOTPRINTS

INITIATIVES TAKEN BY COLLEGE

RECOMMENDATION

CONCLUSION

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Acknowledgement

We would like to thank the management of KCEA for assigning this important work of Green Audit. We appreciate the co-operation to the teams for completion of assessment.

We would also like to thank Dr. V. Vedprakash – Coordinator, *IQAC*, for her continuous support and guidance, without which the completion of the project will not be possible. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

We are also thankful to the IQAC team last but not the least, we would like to thank Prof. Dr. R. K. Pandey ***(Principal),*** **KCEA** for giving us an opportunity to evaluate the environmental performance of the campus.

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Disclaimer

MQCIUL Audit Team has prepared this report for **KCEA** based on input data submitted by the representatives of College complemented with the best judgment capacity of the expert team.

While all sensible care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

It is further informed that the conclusions are arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

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Concept & Context

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory from the academic year 2019–20 onwards that all Higher Educational Institutions should submit an annual Green, Environment and Energy Audit Report. Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade A, Grade B or Grade C according to the scores assigned at the time of accreditation. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

In view of the NAAC circular regarding Green auditing, the College management decided to conduct an external environment assessment study by a competent external professional auditor. The green audit aims to examine environmental practices within and outside the College campus, which impact directly or indirectly on the atmosphere. Green audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of College/college environment. It was initiated with the intention of reviewing the efforts within the institutions whose exercises can cause risk to the health of inhabitants and the environment.

Through the green audit, a direction as how to improve the structure of environment and inclusion of several factors that can protect the environment can be commenced. This audit focuses on the Green Campus, Waste Management, Water Management, Air Pollution, Energy Management & Carbon Footprint etc. being implemented by the institution. The concepts, structure, objectives, methodology, tools of analysis, objectives of the audit are discussed below.

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Introduction

Now a days, the educational institutions are becoming more thoughtful towards the environmental aspects and as a result new and innovative concepts are being introduced to makethem sustainable and eco-friendly. To preserve the environment within the institution, a numberof viewpoints are applied by the several educational institutes to solve their environmental problems such as promotion of the saving the energy, waste recycle, water consumption reduction, water harvesting and many more...

The activities carried out by the institution can also create adverse environmental impacts. Greenaudit is defined as an official inspection of the effects a College has on the environment. Green Audit is conducted to evaluate the actual scenario at the institution campus. Green audit can be a useful tool for a College/college to determine how and where they are using the most of the energy or water or resources; the College can then decide how to implement changes and make savings. It can also be used to determine the nature and volume of waste, which can be used for a recycling project or to improve waste minimization plan.

Green auditing and the application of mitigation measures is a win-win situation for all the institutions, the learners and the mother earth. It can also result in health awareness and can promote the environmental awareness, values and beliefs. It provides a better understanding to staff and students about the Green impact on institution. Green auditing also upholds financial savings through reduction of resource usage. It gives an opportunity to the students and teachers for the development of ownership of the personal and social responsibility. The audit process involves primary data collection, site walk through with the team of College/college including the assessment of policies, activities, documents and records.

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Overview of the College

The educated is the one who has learned how to learn ...and change. "It is only through Right Education one can bring a desired and positive change in this society. Goyal Group of Industries envisaged the need of right education and so as an extension to the philosophy of, "SERVICE TO CUSTOMERS".

KCEA today is the name to reckon with for its Student Centric interventions to meet the objective of imparting Quality Engineering and Management Education aiming for the sole motto of making the leaders in chosen disciplines, ready to take on the challenges of world of work effectively and efficiently. The courseware addresses the educational and emotional needs of the students which in turn help them to advocate the cause of "Responsible Citizenship" not only at workplace but in all walks of life in the dynamic world order.

Kshatriya College of Engineering (KCEA) was established in the year 2001 under the aegis of Pandit Deendayal Upadyay Educational Society. KCEA is located on a sprawling 40 acres campus. It is located on the serene NH-16 highway, 30 km away from Nizamabad district. KCEA is affiliated to the Jawaharlal Nehru Technology University Hyderabad. (JNTUH) offering graduate programs in engineering and postgraduate programs in the streams of Engineering, Business Administration, and Polytechnic.

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Vision & Mission

Our Vision:

To be a center of excellence in technical education with research orientation and to develop human resources to serve the society and nation building.

Our Mission:

- To provide comprehensive technical education programmes in various disciplines and to contribute effectively to the profession and the society.
- Establishing centre of excellence in inter disciplinary areas which are important and relevant to industry and employment with scope for research.
- To inculcate human values and ethical practices to the graduates through co- curricular and extracurricular activities.

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Audit Participants

On behalf of college:

1. M. Laxman.
2. A. Kailash.
3. M. Subhash.
4. Dr. C. Dayanand.
5. A. Kiran Kumar.

On behalf of Audit Team:

Mr. Anilkumar G Swami. (Lead Auditor – ISO 14001 & ISO 50001)

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Executive Summary

Green auditing is an essential step to identify and determine whether the institutions practices are sustainable and ecological. Traditionally, we were upright and efficient users of natural resources. But over the period of time, excessive usage of resources like water, electricity, petrol, etc. have become habitual for everyone especially, in urban and semi-urban areas. It is actually the right time to check if we (our process) are consuming more than required resources? Whether we are using resources sensibly?

Green audit standardizes all such practices and provides an efficient way to use natural resources. In the time of climate change and resource exhaustion it is necessary to re-check the processes and convert it in to green and sustainable. Green audit provides an approach for it. It also increases overall awareness among the folks working in institution towards the eco-friendly environment.

This is the fifth attempt to conduct green audit of this College campus for fulfilment of NAAC criteria. This Audit was mainly focused on greening indicators like consumption of energy in terms of electricity and

Fossil fuel, quality of soil, water usage, vegetation, waste management practicesand carbon foot print of the Campus. Initially a questionnaire was shared to know about the existing resources of the campus and

Resource consumption pattern of the students and staffs inthe College.

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GREEN AUDIT - ANALYSIS

1.1 GENERAL INFORMATION

1. **Does any Green Audit conducted earlier?**

Conducted.

2. **What is the total strength (people count) of the Institute?**

Students
Male:497 Female:279 Total:794

Teachers (including guest faculty)
Male:58 Female:23 Total:81

Non-Teaching Staff
Male:20 Female:16 Total:36

Total Strength
Male:575 Female:336 Total:911

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3. What is the total number of working days of your campus in a year?

252

4. Where is the campus located?

Adjacent to NH-64, chepur village, Armoor mandal, Nizamabad District, Telangana

5. Which of the following are available in your institute?

Garden area: Available
Playground: Available
Kitchen: Available
Toilets: Available
Garbage Or Waste Store Yard: Available
Laboratory: Available
Canteen: Available
Hostel Facility
Guest House: Available

6. Which of the following are found near your institute?

Municipal dump yard
Garbage heap
Public convenience
Sewer line
Stagnant water
Open drainage
Industry – (Mention the type)
Bus / Railway station: At a distance 2-3 kms from campus
Market / Shopping complex: At a distance 2-6 kms from campus

1.2 WASTE MINIMIZATION AND RECYCLING

1. Does your institute generate any waste? If so, what are they?

Yes
Electronic waste

2. What is the approximate amount of waste generated per day? (in KG approx.)

Biodegradable waste -
Non-biodegradable waste -

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Hazardous Waste <
Others -

3. How is the waste managed in the institute? By Composting, Recycling, Reusing, Others (specify)

Others -
Waste Electronic material is sold out to the 3rd party for Recycling / Reusing

4. Do you use recycled paper in institute?

No

5. How would you spread the message of recycling to others in the community?

Our college NCS unit is organizing often the awareness programs I n near the village Chepur ,Perkit, Govindpet, Mamadipally, Lakkora etc to spread the message or recycling and its importance

6. Can you achieve zero garbage in your institute? If yes, how?

Continuous efforts are put to achieve zero garbage

1.3 GREENING THE CAMPUS

1. Is there a garden in your institute?

Yes

2. Do students spend time in the garden?

Yes

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3. Total number of Plants in Campus?

Plant type with approx. count 1800
Full grown Trees 800
Small Trees 400
Hedge Plants 600
Grass Cover SQM 6856.96 m2

4. Is the College campus having any Horticulture Department? (If yes, give details)

No

5. How many Tree Plantation Drives organized by campus per annum?

A minimum 3 in a year

6. Is there any Plant Distribution Program for Students and Community?

YES

8. Is there any Plant Ownership Program?

NO

1.4 WATER AND WASTEWATER MANAGEMENT

1. List uses of water in your institute

Basic use of water in campus:

Drinking *– 2000 liters*

Gardening *– 8000 liters*

Kitchen and Toilets *– 1400 liters*

Others *– 1000 liters*

Hostel *–*

Total = 12.4KL/Month (approximately)

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2. How does your institute store water? Are there any water saving techniques followed in your institute?

There are total 17000 liters water storage of water and boosting within the College campus.

Sl. No	Storage Type	Capacity	Quantity	Total (in Litres)
1	OVER HEAD TANK	8000	1	8000
2	OVER HEAD TANK	2000	2	4000
3	OVER HEAD TANK			
4	OVER HEAD TANK			
5	UNDER GROUND TANK (Fire tank)	5000	1	5000
6	UNDER GROUND TANK			
7	UNDER GROUND HEAD TANK			
	TOTAL STORAGE CAPACITY	**15000**		**17000**

Saving Techniques

- *Avoid overflow of water controlled valves are provided in water supply system.*
- *Close supervision for water supply system.*
- *Water Conservation awareness for new students*
- *Sprinklers usage for gardening and grass cover*

3. Locate the point of entry of water and point of exit of waste water in your institute.

Entry *– South-West or Open Area*

Exit*- North-East or Main Bulding*

4. Write down ways that could reduce the amount of water used in your institute

Basic ways:

- *Close the taps after usage*
- *Water Conservation awareness for new students*
- *Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage*
- *In new block, push tap are installed to save water*

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1.5 ANIMAL WELFARE

1. List the animals (wild and domestic) found on the campus (dogs, cats, squirrels, birds, insects, etc.)

Dogs , Squirrels, Birds, Insects , Peacocks

2. Does your institute have a Biodiversity Program or a KARUNA CLUB?

No

1.6 CARBON FOOTPRINT - EMISSION & ABSORPTION

1 Electricity used per year - CO2 emission from Electricity

(electricity used per year in kWh/1000) x 0.84
= 48,768 kWH /1000x0.84
= 40.97 ton

2. LPG/PNG used per year - CO2 emission from LPG/PNG

(LPG/PNG used per year in KG) x 2.99
x 2.99
= x 2.99
= ton

3. Diesel used per year CO2 emission from HDS (Diesel)

(Diesel used per year in litres) x 2.68
2400 x 2.68
=6.432 ton

4. Transportation per year (car) CO2 emission from transportation (Bus and Car)

Car - About4.6 Tons r co2 per year
Bus – About 17 ons r co2 per year

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Total CO2 emission per year cumulative by electricity usage + diesel + bus and car transportation = (69 ton)

CARBON ABSORPTION BY FLORA IN THE INSTITUTION

There are 800 full grown trees and 400 semi grown trees of different species, on the campus spread over 28.36 acres.
Carbon absorption capacity of one full grown tree 22 kg CO2 Therefore Carbon absorption capacity of 800 full-grown trees 800 x 22 kg CO2 =17.6 tons of CO2.

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