

**COMMISSIONERATE OF COLLEGIATE EDUCATION,
TELANGANA :: HYDERABAD
PROFORMA FOR GREEN AUDIT**

College Profile

Name of the College:

Address:

Contact Info:

Campus Area:

Built-up Area:

Is the building has ventilators for natural air flow in all rooms: Yes/No

The student and staff (teaching and non-teaching) strength in the college:

Strength	Male	Female	Total
No. of Students			
No. of Teaching Staff			
No. of Non-Teaching staff			

Physical Structure

The available land of the college: _____ acres and _____ Guntas.

The built-up area of the college: _____ Sq.Ft.

No. of Class Rooms	
No. of Laboratories	
No. of Conference halls	
Library Halls	
Auditorium	
Canteen	
Any other (please specify)	

Objectives :	
Prepared by:	
Approved by:	
Remarks :	
FORMS AND SUPPORT MATERIAL	
Questionnaire Document reference name/No.:	
Checklist for Environmental Audit Document reference name/No.:	
Additional forms and support material:	

Background: The history of an Institution / Organization, including information on the setting and construction plan, environmental practices, known environmental issues from the site and neighbours, previous environmental damage/spill at the site and monitoring records. Any changes made or occurred up to the time of the last audit and future plans for the development. The Natural Resources used as input, processing of materials and all finished products (energy, water, raw material use) and wastes including hazardous and toxic wastes.

General Objectives (can be slightly modified according to need of an Institution)

- Environmental risk assessment including compliance to regulations, soil, Water, solid and E-wastes, emissions, hazardous products & noise pollution.

- Waste minimization and Environmental Pollution control plans.
- The optimal utilization of energy, water and other Natural Resources.
- Recycling programs and product life cycle considerations.
- Emergency response plans and procedures.

Protocols used for Environmental Audit

Internal Audit Team Structure: (7+2=9): It comprises of

- The Principal as Chairman,
- The IQAC coordinator as Vice-Chairman,
- The Principal of the neighboring college as special invitee,
- One Coordinator from faculty of Botany/Zoology/ Environmental Science and
- Three members from any faculty interested in Environment related activities.
- College can include two extra invitee members from Forest Department / Pollution control board / Health Department/ etc.

Questionnaire: This is used for acquiring basic information related to different categories to be covered in an institution.

Check List: This is used for providing a detailed listing of all issues to be covered in an institution.

Photographs: A picture speaks 1000 words. Use Photographs to support findings and to highlight good practices with geo-tagging.

Comprehensive Methods: The detailed methodology is required for Environmental Audit and it must be conducted using comprehensive protocols and fixed procedures to ensure collection and documentation of the required data and verification of facts based on the information provided.

Relevant Measures and Standards: The standard measures could be adjusted to be relevant to the organization or activity being audited.

Written Reports: Reports should contain factual observations, reasoning and the documentation of the processes. The clarity and accuracy should be

maintained while presenting the findings with the support of valid and documented evidence.

Evidence verification: The concept of evidence and verification of environmental deficiencies is one of the key elements in an Environmental Audit. Initially the Internal Audit team must verify all procedures, collected data and information through direct field inspection.

Certification and Grading: The External Audit team will assess and evaluate the Internal Audit report and after thorough verification certificate along with grade will be issued.

PROCEDURE		
Procedure	Description	Responsibility
Annual plan	The Environmental Audit Report is prepared by College Authorities each year and it ensures that the entire Environmental Management System is examined, must specify when the Audit was carried out and those responsible for carrying it out.	Internal Environmental audit team/ coordinator
Preparation	The typical questionnaire and check-lists are developed for the area to be Audited before the actual individual Audits are carried out. It is done using established procedures, objectives and action plans. They can be used to measure results in each area. The staff and in-charges of the area to be Audited should be informed well in advance about when the Audit would be done and what it covers.	Internal audit team

Internal Audit	Based on the questionnaire and checklists, the Audit is carried out in the form of interviews / physical visit about and observations of the actual state of affairs. The team suggests further changes and correction as and when required.	Internal Audit team
Wrap-up meeting	<p>An Audit Report is prepared which is examined together with the in-charges responsible for the each area; minor areas are taken care of immediately, while a conclusion for the Audit as a whole is written down.</p> <p>Correction Reports are examined and corrective action is agreed upon. The Internal Audit team and the College Management / Principal sign the reports made. Then the reports must be submitted to the CCETS, Hyderabad.</p>	Internal audit team
Follow-up	When deadlines for corrective action are reached, the Coordinator responsible for the area Audited is contacted and the Environmental Manager checks the corrective action carried out. If corrective action is effective, the case is closed. If not, a new report is prepared.	Coordinator
Reporting	A comprehensive joint report is prepared on the basis of all the Internal Environmental Audits of the College. This report forms the basis for certification and grading by the External Audit team and it holds the authority to review the entire report.	External Audit team/ Principal/ IQAC coordinator

AUDITING FOR WATER MANAGEMENT

1. List out uses of water in your college.
2. What are the sources of water in your college?
3. How many wells are there in your college?
4. No. of motors used for pumping water from each well?
5. What is the total horse power of each motor?
6. What is the depth of each well?
7. What is the present depth of water in each well?
8. How does your college store water?
9. Quantity of water stored in your overhead water tank? (in liters)
10. Quantity of water pumped every day? (in liters)
11. If there is water wastage, specify why.
12. How can the wastage be prevented / stopped?
13. Locate the point of entry of water and point of exit of waste water in your College.
14. Where does waste water come from?
15. Where does the waste water go?
16. What are the uses of waste water in your college?
17. What happens to the water used in your labs? Whether it gets mixed with ground water?
18. Is there any treatment for the lab water?
19. Whether Green Chemistry methods are practiced in your labs?
20. Write down four ways that could reduce the amount of water used in your college.
21. Record water use from the college water meter for six months.

22. Bimonthly water charges paid to water connections if any
23. No. of water coolers. Amount of water used per day? (in liters)
24. No. of water taps. Amount of water used per day?
25. No. of bath rooms in staff rooms, common, hostels. Amount of water used per day?
26. No. of toilet, urinals. Amount of water used per day?
27. No. of water taps in the canteen. Amount of water used per day?
28. Amount of water used per day for garden use?
29. No. of water taps in laboratories. Amount of water used per day in each lab?
30. Total use of water in each hostel?
31. At the end of the period, compile a table to show how many liters of water have been used in the college for each purpose
32. Is there any water used for agricultural purposes?
33. Does your college harvest rain water?
34. If yes, how many rain water harvesting units are there? (Approx. amount)
35. How many of the taps are leaky? Amount of water lost per day?
36. Are there signs reminding people to turn off the water? Yes/No
37. Is there any waterless toilets?
38. How many water fountains are there?
39. How many water fountains are leaky?
40. Is drip irrigation used to water plants outside? Yes/No
41. How often is the garden watered?
42. Quantity of water used to watering the ground?
43. Quantity of water used for bus cleaning? (Liters per day)

44. Amount of water for other uses? (Items not mentioned above)
45. Area of the college land without tree/building canopy.
46. Is there any water management plan in the college?
47. Are there any water saving techniques followed in your college? What are they?
48. Please share Some IDEA for how your college could save more water.

AUDITING FOR ENERGY MANAGEMENT

1. List the ways that you use energy in your college. (Electricity, electric stove, kettle, microwave, LPG, firewood, Petrol, diesel and others).
2. Electricity bill amount for the last year
3. Amount paid for LPG cylinders for last one year
4. Weight of firewood used per month and amount of money spent? Also mention the amount spent for petrol/diesel/ others for generators?
5. Are there any energy saving methods employed in your college? If yes, please specify. If no, suggest some.
6. How much money does your college spend on Energy such as electricity, gas, firewood, etc. in a month?
7. How many CFL bulbs has your college installed? Mention use (Hours used/day for how many days in a month)
8. Energy used by each bulb per month? (For example- 60 watt bulb x 4hours x number of bulbs = Kwh).
9. How many LED bulbs are used in your college? Mention the use (Hours used/day for how many days in a month)
10. Energy used by each bulb per month? (kWh).
11. How many incandescent (tungsten) bulbs have your college installed? Mentions use (Hours used/day for how many days in a month)
12. Energy used by each bulb per month? (kWh).

13. How many fans are installed in your college? Mention use (Hours used/day for how many days in a month)
14. Energy used by each fan per month? (kWh).
15. How many air conditioners are installed in your college? Mention use (Hours used/day, for how many days in a month)
16. Energy used by each air conditioner per month? (kWh).
17. How many electrical equipment including weighing balance are installed your college? Mention the use (Hours used/day for how many days in a month)
18. Energy used by each electrical equipment per month? (kWh).
19. How many computers are there in your college? Mention the use (Hours used/day for how many days in a month)
20. Energy used by each computer per month? (kWh).
21. How many photocopiers are installed by your college? Mention the use (Hours used/day for how many days in a month).
22. How many cooling apparatus are in installed in your college? Mention the use (Hours used/day for how many days in a month)
23. Energy used by each cooling apparatus per month? (kWh) Mention the use (Hours used/day for how many days in a month)
24. Energy used by each photocopier per month? (Kwh) Mention the use (Hours used/day for how many days in a month) how many inverters your college installed? Mention the use (Hours used/day for how many days in a month)
25. Energy used by each inverter per month? (kWh).
26. How many electrical equipment are used in different labs of your college? Mention the use (Hours used/day for how many days in a month)
27. Energy used by each equipment per month? (kWh)
28. How many heaters are used in the canteen of your college? Mention the use (Hours used/day for how many days in a month)

29. Energy used by each heater per month? (kWh)
30. No. of street lights in your college?
31. Energy used by each street light per month? (kWh)
32. No. of TV in your college and hostels?
33. Energy used by each TV per month? (kWh)
34. Any other item that uses energy (Please write the energy used per month) Mention the use (Hours used/day for how many days in a month)
35. Are any alternative energy sources/nonconventional energy sources employed / installed in your college? (Photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.) Specify.
36. Do you run "switch off" drills at college?
37. Are your computers and other equipment put on power-saving mode?
38. Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby mode most of the time? If yes, how many hours?
39. What are the Energy Conservation methods adapted by your college?
40. How many boards displayed for saving Energy awareness?
41. How much ash is collected after burning fire wood per day in the canteen?
42. Write a note on the methods/practices/adaptations by which you can reduce the energy use in your college campus in future.

Calculation of energy for electrical appliances

Appliance Power used in (watt) Usage per day (hours) Number of appliances
 Average kWh per day (Watt X hours X Number X 1000) Average kWh per month (Watt X hours X Number X 1000 x 30) Incandescent bulb 60 watt CFL 18 W Microwave 1000W Stove 3000W Kettle 2500W

AUDITING FOR WASTE MANAGEMENT

1. What is the total strength of students, teachers and non-teaching staff in your college?

No. of Students;

No. of Teachers;

No. Non-teaching staff;

Gents - Ladies

Total

Which of the following are available in your College?

Give area occupied

Garden area

Garbage dump (number)

Playground area

Laboratory

Kitchen

Canteen

Toilets (number)

Car/scooter shed area

Number of class rooms

Office rooms and others (specify)

2. Which of the following are found near your college?

Mark the level of disturbance it creates for the college in a scale of 1 to 9.

Municipal dump yard

Garbage heap

Public convenience Sewer line

Stagnant water

Open drainage Industry – (Mention the type)

Bus / Railway station Market / shopping complex / public halls

WASTE

3. Does your college generate any waste? If so, what are they?

4. How much quantity?

5. Number or weight E-waste Hazardous waste (toxic)

Solid waste

Dry leaves

Canteen waste

Liquid waste

Glass

Unused equipment

Medical waste if any

Napkins Others (Specify)

6. Is there any waste treatment system in the college?

7. Is there any treatment for toilet/urinal/sanitary napkin waste?

8. What is the approximate quantity of waste generated per day?
(in Kilograms) Office Laboratories Canteen/kitchen

9. Why waste is a problem?

10. Whether waste is polluting ground/surface water? How?

11. Whether waste is polluting the air of the college? How?

12. How is the waste generated in the college managed? Methods

a. Composting b. Recycling c. Reusing d. Others (specify)

13. How many separate boxes do you think you would need to put into a classroom to start a waste segregation and recycling campaign?

14. What should be the use for each box? (Develop a Colour code with reasons)

15. Do you use recycled paper in College?

16. Is there any waste wealth program practiced in the college?

Approx. Bio degradable Non-Bio degradable Hazardous Others < 1 kg. 2 - 10 kg. > 10 kg.

Approx. Bio degradable Non-Bio degradable Hazardous Others < 1 kg. 2 - 10 kg. > 10 kg.

Approx. Bio degradable Non-Bio degradable Hazardous Others < 1 kg. 2 - 10 kg. > 10 kg.

17. How would you spread the message of recycling to others in the community? Have you taken any initiatives? If yes, please specify.

18. Can you achieve zero garbage in your college? (Reduce, Recycle, Reuse, Refuse) If yes, how?

AUDITING FOR GREEN CAMPUS MANAGEMENT

1. Is there a garden in your college? Area?

2. Do students spend time in the garden?

3. List the plants in the garden, with approx. number of each species.

4. Suggest plants for your campus. (Trees, Vegetables, Herbs, etc.)

5. List the species planted by the students, with numbers.

6. Whether you have displayed scientific names of the trees in the campus?

7. Is there any plantations in your campus? If yes specify area and type of plantation.

8. Is there any vegetable garden in your college? If yes how much area?

9. Is there any medicinal garden in your college? If yes how much area?
10. What are the vegetables cultivated in your vegetable garden? (Mention the quantity of harvest in each season)
11. How much water is used in the vegetable garden and other gardens? (Mention the source and quantity of water used).
12. Who is in charge of gardens in your college?
13. Are you using any type of recycled water in your garden?
14. List the name and quantity of Pesticides and Fertilizers used in your gardens?
15. Whether you are doing Organic Farming in your college? How?
16. Do you have any composting pit in your college? If yes, what are you doing with the compost generated?
17. What do you doing with the vegetables harvested? Do you have any student market?
18. Is there any botanical garden in your campus? If yes give the details of campus flora.
19. Give the number and names of the medicinal plants in your college campus.
20. Any threatened plant species planted/conserved?
21. Is there a nature club in your college? If yes what are their activities?
22. Is there any arboretum in your college? If yes details of the trees planted
23. Is there any fruit yielding plants in your college? If yes details of the trees planted.
24. Is there any groves in your college? If yes, details of the trees planted.
25. Is there any irrigation system in your college?
26. What is the type of vegetation in the surrounding area of the college?
27. What are the nature awareness programmes conducted in the campus?

28. What is the involvement of students in the green cover maintenance?
29. What is the total area of the campus under tree cover? or under tree canopy?
30. Share your ideas for further improvement of green cover.

AUDITING FOR CARBON FOOTPRINT

1. What is the total strength of students and teachers in your College?

No. of Students

No. of Teachers

No. of Non-teaching staff

Gents - Ladies

Total

2. Total Number of vehicles used by the stakeholders of the college ? (per day)
3. No. of cycles used?
4. No. of two wheelers used? (average distance travelled and quantity of fuel and amount used per day)
5. No. of cars used? (average distance travelled and quantity of fuel and amount used per day)
6. No. persons using common (public) transportation (average distance travelled and quantity of fuel and amount used per day)
7. No. of persons using college conveyance by the students, non-teaching staff and teachers (average distance travelled and quantity of fuel and amount used per day)
8. Number of Parent-Teacher meetings in a year? Parents turned up (approx.)
9. Number of visitors with vehicles per day?

10. Number of generators used per day (hours)? Give the amount of fuel used per day.
11. Number of LPG cylinders used in the canteen? (Give the amount of fuel used per day and amount spent).
12. Quantity of kerosene used in the canteen/labs? (Give the amount of fuel used per day and amount spent).
13. Amount of taxi/auto charges paid and the amount of fuel used per month for the transportation of vegetables and other materials to canteen.
14. Amount of taxi/auto charges paid per month for the transportation of office goods to the college.
15. Average amount of taxi/auto charges paid per month by the stakeholders of the college.
16. Use of any other fossil fuels in the college (Give the amount of fuel used per day and amount spent).
17. Suggest the methods to reduce the quantity of use of fuel used by the stakeholders/students/teachers/non-teaching staff of the college.
18. Are the Rooms in Campus are Well Ventilated? Yes/No
91. Window Floor ratio of the Rooms Good/Not Enough ?

Carbon Footprint - Sample Report

- Petrol used by two wheelers/day- 229 L
- (Per person to and fro 40 Kms=1L) Fuel used by four wheelers (52 Persons) - 104 L
- (Per person to and fro 40 Kms=2L) Fuel for persons (total 2314 persons) travelling by common
- Transportation =184 L (4L x 50 persons)

Total fossil fuel use is 517 L / day

Total fuel cost per day for transportation =Rs. 36190/- (517 L x Rs 70)

Cost of stakeholder transportation per month (Rs.36190x22 days)- Rs.796180

Water management

SL NO	PARAMETERS	Response	Remarks
1	Source of water		
2	No. of Wells		
3	No. of motors used		
4	Horse power – Motor		
5	Depth of well –Total		
6	Water level		
7	Number of water tanks		
8	Capacity of tank		
9	Quantity of water pumped every day		
10	Any water wastage/why?		
11	Water usage for gardening		
12	Waste water sources		
13	Use of waste water		
14	Faith of waste water from labs		
15	Whether waste water from labs mixed with ground water		
16	Any treatment for lab water		
17	Whether any green chemistry method practiced in labs		
18	No. of water coolers		
19	Rain water harvest available?		
20	No. of units and amount of water harvested		
21	Any leaky taps		
22	Amount of water lost per day		
23	Any water management plan used?		
24	Any water saving techniques followed?		

25	Are there any signs reminding peoples to turn off the water?		
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Results of water quality-I

Parameters	Bore Well water	Municipal Tap water	Standard value (BIS)
Dissolved Oxygen (mg/l)			6-8
Acidity (mg/l)			200
Alkalinity (mg/l)			200
Chloride (mg/l)			250
Hardness (Total)			200
Conductivity (μ s)			
Ph.			6.5-8.5
Total Dissolved Solids (ppm)			500
Salinity (ppt)			
Total coliform			0
Fecal coliform			0

Water Quality Analysis (Biological) Report of the college – II (with Photographic evidence)

S.No	Parameter/ WHO permissible level	Zooplankton (No of Samples/Sites)	Methodology
1	Protozoan (Ciliates)		
2	Rotifers		
3	Ostracods		
4	Insect Larvae		
5	Water Fleas		
6	Bivalves		
7	Snails		
8	Mussels		

9	Any Other (Specify)		
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**Water Quality Analysis (Biological) Report of the college – III
(with Photographic evidence):**

S.No	Phytoplanktons	Scientific Name and number	Methodology
1	Diatoms (Bacillariophyceae)		
2	Dinoflagellates (Dinophyceae)		
3	Coccolithophores (Prymnesiophyceae)		
4	Green algae (Chlorophyceae)		
5	Cyanobacteria (earlier Blue-green algae)		
6	Others (specify)		

ENERGY AUDIT

Room No. / name	Electrical Device/Items	Number	Power	usage time (hour/day)

2. Waste management

Approximate quantity of waste generated per day (in kg)

Office				
Approx.	Biodegradable	Non -Biodegradable	Hazardous	Others
<1Kg				
2-10Kg				
>10Kg				

Laboratories				
Approx.	Biodegradable	Non -Biodegradable	Hazardous	Others

<1Kg				
2-10Kg				
>10Kg				

Canteen/kitchen				
Approx.	Biodegradable	Non - biodegradable	Hazardous	Others
<1Kg				
2-10Kg				
>10Kg				

3. How the waste generated in the college is managed?

A)Composting/ Vermicomposting	Yes/ No	Remark
B)Recycling		
C)Reusing		
D)Other ways		

4. Waste generated in the college?

E-waste		
Hazardous waste		
Solid waste		
Dry leaves		
Canteen waste		
Liquid waste		
Glass		
Unused Equipment		
Napkins		
Others (specify)		

Do you use recycled paper in college?	
Any waste management methods used?	

Energy Audit Sample Report

Sl. No	Electrical appliances/instruments	Number	Power (W)/unit	Total power (W)	kW	Operation /day	kW/hr.	No.of days in month	Total consumption per month
1	CFL	63	14	882	0.882	4	3.528	25	88.2
2	TUBE	272	38	10336	10.336	4	41.344	25	1033.6
4	LED BULB	97	9	873	0.873	4	3.492	25	87.3
5	LED TUBE	42	20	840	0.84	4	3.36	15	50.4
6	PROJECTOR	10	280	2800	2.8	1	2.8	25	70
7	SPEAKERS	36	10	360	0.36	1	0.36	25	9
8	FAN	233	60	13980	13.98	4	55.92	20	1118.4
9	COMPUTER	140	250	35000	35	4	140	20	2800
10	LAPTOPS	10	50	500	0.5	4	2	20	40
11	PRINTERS	2	60	120	0.12	1	0.12	20	2.4
12	PHOTOSTAT MACHINE	6	650	3900	3.9	2	7.8	15	117
13	SCANNER	1	50	50	0.05	0.5	0.025	15	0.375
14	UPS	3	1000	3000	3	12	36	20	720
15	INDUCTION	1	2000	2000	2	0.25	0.5	15	7.5
16	A/C	2	7000	14000	14	1	14	15	210
17	REFRIGERATOR	7	150	1050	1.05	24	25.2	30	756
18	TABLE FAN	2	55	110	0.11	2	0.22	25	5.5
19	MIXER GRINDER	2	750	1500	1.5	2	3	15	45
20	OVEN	3	1500	4500	4.5	2	9	10	90
22	CENTRIFUGE	2	850	1700	1.7	0.25	0.425	8	3.4
23	AUTOCLAVE	1	1700	1700	1.7	1	1.7	4	6.8

24	ULTRASOUND	1	700	700	0.7	0.25	0.175	5	0.875
25	LAMINAR FLOW	1	600	600	0.6	1	0.6	15	9
26	EXHAUST FAN	1	32	32	0.032	4	0.128	25	3.2
27	IRON BOX	2	2000	4000	4	0.25	1	15	15
28	SEWING MACHINE	6	100	600	0.6	4	2.4	25	60
29	COLOUR BULB	13	60	780	0.78	1	0.78	5	3.9
30	INCUBATOR	2	40	80	0.08	4	0.32	25	8
31	DISTILLATION UNIT	1	1000	1000	1	1	1	12	12
32	SANITARY NAPKIN INCINERATOR	6	1200	7200	7.2	1	7.2	25	180
33	CCTV DVR	24	10	240	.24	24	5.76	30	720
	Total Consumption per month						9515.15 kW/hr		

Faunal diversity in college campus (with Photographic evidence)

Faunal group	Scientific name	Number (If enumeration is done)	Seasonality
Spiders			
Moths & butterflies			
Other insects: (Dragon Flies, Bees, Wasps, Bugs, and Beetles etc..)			
Annelids			
Other Arthropods			
Amphibians			
Reptiles			
Birds			

Mammals			
Any other (specify)			

**Air quality Determination:
Air Quality Index (parameters studied/recorded/ Seasonal):**

NO ₂	
NO	
O ₃	
PM2.5	
PM10	
CO	
Humidity	
Barometric Pressure	
Wind Speed	
Wind Direction	
Sun Rise	
Sun Set	

Measurements of Noise level in and around the college

S.No	place (S)	Measurements (Duration in seconds)	Minimum (dBA)	Maximum (dBA)	Average (dBA)
1	Library				
2	Canteen				
3	Play ground				
4	Auditorium				
5	Science Block				
6	Any Other (Specify)				

If any eco-friendly or restoration activities conducted, please specify

GRADING FOR ENVIRONMENTAL AUDIT REPORT

S.NO	COMPONENTS FOR ASSESSMENT	MARKS	GRADES
1	Energy audit	20	A+ : 91-100
2	Waste audit	15	
3	Water audit	15	
4	Landscape or Environment audit	15	A : 81-90
5	Carbon footprint & Oxygen emission audit	15	
6	Green activities (conduction of seminars/conferences/workshops/student competitions/awareness programmes/observation of environmental related days etc.	10	B+ : 71-80
7	Student clubs (Environmental club/Green club/Nature club/Biodiversity club/ ECO Club/Friends and Fauna Club/Science club etc.) activity annual report	10	B : 61-70
	Total	100	C : 51 - 60

for Commissioner of Collegiate Education