SETH RL SAHARIA GOVERNMENT PG COLLEGE, KALADERA, JAIPUR

Green Audit report

Report prepared.
by: -

COLEAD LLP

Linking Environmental & Architectural Design [*Collaboration*]

Integrated Sustainable Building Design Consultants

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ACKNOWLEDGEMENT

CoLEAD LLP is an Integrated Sustainable Building Design and Green Building Consultancy. CoLEAD specializes in designing, auditing, and retrofitting buildings for improved Energy and resource efficiency and occupant comfort and wellbeing.

CoLEAD is recognized as a Startup by DPIIT, and our energy audit division – ergEnomics is incubated under GGSIP University, New Delhi, Delhi Government for its endeavors in the field of Building science, sustainability and measurements and verifications.

CoLEAD comprises of qualified architects and engineers specializing in Building Energy Performance and accredited by various National and International Green Building Certification agencies including GRIA (TERI), LEED (USGBC) and IGBC.

CoLEAD has successfully delivered green building projects pan India with reputed Government and Private clients and extend a note of thanks to the NAAC Core committee members of SRL Saharia College, Kaladera, Jaipur, Rajasthan to invite us to conduct their Green Audit.

We are thankful to the faculty coordinators for the green audit exercise, without their support, this audit would not be able to be completed.

We are thankful to the other Teaching Staff of the College for giving us necessary inputs to carryout this very vital exercise of Green Audit. We are also thankful to other non-teaching staff members who were actively involved while collecting the data and conducting field measurements.

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Date: 3/06/2023

For COLEAD LLP

Partners

DISCLAIMER

CoLEAD's Green Audit Team has prepared this report for SRL Saharia College based on input data submitted by the representatives of university complemented with the best judgment capacity of the expert team. While all reasonable 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 at by best estimates, calculations and approximations using standards, and no representation, warranty or undertaking, express or implied, is made and no responsibility is accepted by the 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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CONTEXT FOR GREEN AUDIT

To comply with the National Assessment and Accreditation Council (NAAC) guidelines, Higher Educational Institutions are required to submit an annual Green Audit Report starting from the academic year 2016-17. Additionally, it is the responsibility of these institutions to contribute to the reduction of global warming by implementing measures to reduce their carbon footprint as part of their Corporate Social Responsibility. To fulfill the NAAC's requirements, the College Management has chosen to conduct an external Green Evaluation conducted by an independent agency with qualified auditors.

Aims and objectives of Green Audit in Academic Institutes:

The aims and objectives formulated to promote environmentally friendly management in academic colleges/institutions are as follows:

1. Assess the environmental performance and effectiveness of measures to achieve defined objectives and targets.
2. Identify pressures on organizations to improve their environmental performance.
3. Recognize the initiatives taken by the organization towards the environment.
4. Ensure environmental security and reduce threats to human health.
5. Provide baseline information for evaluating and managing environmental change, threats, and risks.
6. Recognize, diagnose, and resolve environmental problems.
7. Identify the effects of the organization on the environment and vice versa.
8. Identify and control the impact of organizational activities on the environment.
9. Suggest protocols for sustainable development of organizations and the environment.
10. Ensure proper utilization of natural resources in line with national environmental policies.
11. Establish parameters for maintaining the health and welfare of the organization's community.
12. Set procedures for the disposal of harmful wastes.
13. Reduce energy consumption.
14. Give preference to energy-efficient and environmentally sound appliances.
15. Minimize water consumption and monitor water quality.
16. Identify hazards and implement safety policies for stakeholders.
17. Facilitate stakeholders with various aspects of disaster management.

18. Train and empower all stakeholders to contribute and participate in environmental protection.
19. Ensure compliance with rules and regulations to prevent environmental disruptions.

To achieve these objectives, the Green Audit process consists of three stages: pre-audit stage, audit stage, and post-audit stage. Each stage has specific objectives and actions that yield results in the form of outputs. Recognizing the importance of environmental audits, this study focuses on reviewing the audit process and the measures that academic institutes can take to contribute to the environment.

Executive Summary

The institution was established in 1959 with the purpose of providing higher education opportunities to students from rural areas lacking such facilities. Since its establishment, the institution has served the academic needs of an approximately 80-kilometer radius surrounding the area. Seth R. L. Saharia envisioned the college as a center for academic excellence, a vision that has been actively pursued and achieved. The college has witnessed significant socio-political, ethical, legal, technological, economic, and environmental changes since its inception. However, it has adapted to these changes and transformed into a platform that fosters the holistic development of both students and faculty members. In 1960, the land and buildings were handed over to the state government to ensure optimal utilization of the infrastructure. The institution's mission encompasses the ambitious goal of establishing an exemplary model of institutional and individual eminence.

The college is dedicated to meeting the legitimate needs of the current generation while ensuring that future generations can meet their own needs in line with the principles of sustainable development goals (SDGs). It endeavors to align institutional activities with environmental conservation, considering the challenges posed by climate change for a secure and sustainable future. SRL Saharia College is deeply committed to upholding and promoting environmental standards across all aspects of its operations, including teaching, research, and community engagement. The college has gained recognition as a responsible institution with a strong ecological focus. The presence of diverse flora and fauna, along with well-maintained herbal and plant gardens, stands as a testament to their commitment to maintaining high environmental standards.

The College has accorded top priority to environmental sustainability by taking several initiatives

like installation of **roof-top solar panels having installed capacity of 21 kW**, Organic Composting Facility to handle wet waste, an Integrated Rainwater Harvesting System for the entire campus, energy efficient lighting with 40% LED lighting and limited use of air-conditioning systems.

The campus is spread on 23.8 hectares of Land area, with a total built up area comprising of 7 blocks of 10,479.90 sq meters and a covered area of 7110 sq meters. The campus has 70% green cover, planted with native draught tolerant trees like Neem, Ashok, Gulmohar, Babool, Aloevera, Tulsi, and Giloy,

The college comprises of departments like 1) Science- Chemistry, Botany, Zoology, Physics and Mathematics, 2) Commerce, 3) Arts and 4) Bachelor of Education. The campus has various amenities like Library, Video conferencing room, ICT and Smart Science labs, Girls common room, Cafeteria, Botanical and Zoological Museum and special feature called Krishi Vandan that promotes education and practical training for Organic Farming, promoting biodiversity and environmental awareness in the campus. The college is equipped with 3 computer laboratories and approximately 77 computers. All laboratories are provided with broadband facilities through four broadband connections. The campus is Wi-Fi enabled with password security and firewall. Nine classrooms are equipped with Interactive smart boards. The college promotes e-learning through a collection of digital libraries, virtual labs and a Learning Management System – 'e Paathshala' with courses offered by NPTEL also made accessible to students.

To run its operations the campus consumes on an average 34,000 kWh Units of Energy annually with a contract demand of 23 kW. The installed Solar PV plant of 21kW has a generation potential of 32,000 kWh giving an opportunity to offset 100% of the annual demand.

The ***Environmental and EnergyPolicies of the SRL Saharia College,*** is made to provide an overview of the College's vision to minimize the environmental impacts of its activities and operation and sustainable management of the available resources. Keeping this in mind SRL Saharia College runs several initiatives to promote environmental sustainability including: -

1. Krishi vandan – An initiative to promote Organic farming, vermicomposting and improving natural biodiversity and decomposing organic waste. The college received the esteemed inauguration by Morarka Foundation, which also provided comprehensive training on organic farming techniques. Environmental conservation remains a key priority, demonstrated through

initiatives like land leveling and the establishment of a nursery. The college actively engaged in the production of vermicompost and involved students in the preparation of seeds for diverse plant and fruit varieties. Collaboration efforts were undertaken with various stakeholders, aiming to create awareness and promote sustainable development practices.

2. Rainwater Harvesting: - The college doesn't have access to Municipal water supply systems and has a Tube well and ground water boring to meet its annual water demand of 31,000 KL. To mitigate the effect the college has installed Rainwater Harvesting recharge pits and storage tank managing a peak runoff of 800KL during peak rainfall seasons.
3. Waste management policy- The college promotes waste segregation at source and manages organic waste through composting and E-waste management. The college composts 2,30,000 kg of Biodegradable waste, sends E-waste of approximately 50 kg/ year for recycling along with the other non-Biodegradables like plastic bags, cans, bottles generated at college level is sent for recycling. Hazardous waste trace amount is generated only by the chemistry lab, which is generally dumped in the landfills after stabilizing it.
4. Promoting educational awareness towards environmental stewardship: - The college organizes a cleanliness drive within and outside the campus under NSS. Students collect bottles, glass, plastics, newspapers or books and take them to your local recycling center or charity in need.
5. Promoting Paperless communication and teaching- The college adopts e-learning and minimizes paperwork for official communication, printing and maintaining records. Through E-paathshala it encourages students to use online resources for learning.

SRL Saharia College had pursued the following objectives:

1. The organization aims to establish sustainable practices on campus and among stakeholders to ensure long-term viability and environmental protection.
2. Efforts will be made to train personnel and enhance knowledge of environmental issues and their impact among academic staff, students, and other users.
3. A semester-long course curriculum will promote education on the multidisciplinary aspects of the environment and sustainable development.
4. Dedicated committees will monitor and report on the progress and achievements of sustainability projects and initiatives.
5. Compliance with environmental legislation will be upheld, focusing on goals such as plantation, water management, energy conservation, solid waste management, air quality control, and reduction of carbon footprint through lifestyle activities.
6. The Institute aims to become an energy conservation role model by providing training to teachers, non-teaching staff, students, and housekeeping staff.
7. Foster active collaboration with local environmental, energy, and sustainable development groups, engaging government agencies, and municipal corporations. Promote environmental assessment initiatives, raise awareness about maintaining a clean and green campus.
8. Implement initiatives promoting clean fuel, renewable resources, and resource consumption reduction.
9. Incorporate sustainable development education across disciplines, promote research and knowledge dissemination in sustainable development.
10. Establish an environment/green committee to oversee eco-friendly projects on campus and in the surrounding area.
11. Implement the principles of Reduce, Reuse, and Recycle for effective solid waste management. Conduct regular internal energy audits to identify energy-saving options.
12. Establish an energy audit and management cell to ensure regular monitoring and follow-up procedures, ensuring effective implementation at the department level.

GREEN AUDIT/ENVIRONMENTAL AUDIT:

India is actively addressing Sustainable Development Goal 6 and making contributions to several other SDGs, including affordable and clean energy, decent work and economic growth, industry, innovation and infrastructure, sustainable cities and communities, responsible consumption and production, climate action, and partnerships for the goals. Despite being one of the world's fastest-growing economies, India faces environmental challenges such as climate variability, poor air quality, and resource over-exploitation, which have negative impacts on productivity, economic performance, poverty, unemployment, and public health. To tackle these challenges, India has implemented policies and programs to support the SDGs and its Nationally Determined Contributions. Specifically, in the context of green economy, India has adopted a comprehensive approach, including circular economy and sustainable consumption and production, to enhance resource efficiency and control demand and supply chains. SRL Saharia College has undergone an audit in ten thematic areas related to environmental and green practices.

Green Audit/Environmental Audit-Questionnaire considered during the Audit Trail and Focusses on the Areas of Ecosystem Approaches/Environmental Feasibility and Sustainability to be followed/practiced on each of the following aspects by participating college/Institutions in Audit is given below:

1. Waste Minimization and Recycling.
2. Biodiversity and Greening the Campus.
3. Energy Use & its Conservation.
4. Water Use & its Conservation.
5. Carbon Footprint (Lifestyle Footprint);
6. Clean Air (Campus Desirable Ambient Air).
7. Resource Efficiency.
8. Technological Innovations & Green Practices in Education.
9. Environmental Legislation.
10. Social Welfare & Community Outreach.

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I. WASTE MINIMIZATION AND RECYCLING

The following Environmental-Green practices are being followed by SRL Saharia College,

	Information	Responses			
1	Does your college generate any waste? If so, what are they?	Yes, the waste generated on campus is mostly recyclable. Wastes produced on campus are separated as beverage containers, magazines and newspapers, glass, and metal containers etc and compostable organic waste and some chemical laboratory waste.			
2	What is the approximate amount of waste generated per day? (In Kilograms/ month/year) (approx.)	Bio- degradable	Non-Biodegradable	Hazardous	Electronics waste, Chemical discards & Others
		The average college student produces almost 600 pounds of solid waste each year, including disposable cups and pounds of paper, practical records and files, estimated as per the clean drive conducted at the end of every year.	Non-Biodegradables like plastic bags, cans, bottles generated at college level is sent for recycling. The exact amount is not ever weighed.	Trace amount is generated only by the chemistry lab, which is generally dumped in the landfills after stabilizing it.	Being a rural educational institution, not much amount is generated. Only 50 Kg/year is generated.
3	How the waste generated in the College is managed?	1. Composting			
		2. Recycling			
		3. Reusing			
		4. Segregation			
		5. Incineration.			
4	Do you use recycled paper in College?	Yes			
6	How would you spread the message of recycling to others in the community? Have you taken any initiatives? If yes, please specify.	We at the college level organize a cleanliness drive in in our college and outside the college campus under NSS. Students collect bottles, glass, plastics, newspapers or books and take them to your local recycling center or charity in need. We have set up a composting program at our college under our best practice Krishi Vandan.			
8	How do you manage Hazardous and E- waste?	We Stabilize and Neutrilize hazardous waste generated in the chemistry lab before dumping it to our landfills. E- Waste is collected at one place and sent for proper disposal at the end of the year.			
9	Is there any awareness programme on waste minimization being carried out by your college?	We organize awareness programmes and cleanliness drive under NSS.			
10	Are your college staff and students aware about MSW, E-Waste, Hazardous Waste Rules? 2016, 2011, 1989, respectively?	Yes			

The following is estimate of Waste generated annually*: -

Waste Generation Estimation - Occupant generated			
Total No of Students	6329		
Faculty	84		
Service staff	49		
Total occupancy	6462		
Diversity in occupancy	70%		
Total Waste	kg/Person/day	Total waste per day (kG)	Total waste per year (kg)
Trash	0.09	407.106	81,421
Metal Glass Plastic	0.06	271.404	54,281
Paper and Cardboard	0.1	452.34	90,468
Organic	0.25	1130.85	2,26,170
E waste	0.0001	0.45234	90
TOTAL	0.5	2,262	4,52,430
Waste Generation Estimation - Landscape leaf litter			
Leaf litter quanity (gm/sqm/year) as per Jaipurs location- Tropical dry deciduous area * (source ISOLA)			67
Total Green area (sqm)			74,496
Total Annual Leaf litter			4,991.2
Waste Bifurcation by type			
Type		**Weight**	**% of total**
Organic / Bio degrabale		2,31,161.23	50.54%
Bodegrabale recyclable		90,468	19.78%
Non biodegrabale recyclable		54,281	11.87%
Non recyclable		81,421	17.80%
E-waste		90	0.02%

*Estimated from sources like NBC and CPCB / CPHEEO Estimates

(https://cpheeo.gov.in/upload/uploadfiles/files/Part2.pdf)

The college has a total student population of 6,329 in undergraduate and postgraduate programs. The teaching staff consists of 84 permanent members, while there are 49 non-teaching staff. Waste management practices are implemented, including composting pits for organic waste, which is then used for fertilizing gardens and plants. The college's laboratories ensure minimal generation of toxic chemicals during experiments, and waste materials are handled by an agency for proper disposal. Waste segregation and recycling campaigns are being planned, promoting waste hierarchy principles of prevention, reduction, reuse, recycling, recovery, and disposal. The college aims to achieve zero garbage production and has prohibited the use of single-use plastics on campus. Waste containers are strategically placed, and solid waste from various areas is properly disposed of, including hazardous and electronic waste. The college is committed to recycling paper waste and collaborates with authorized wastepaper recyclers.

The college is taking steps to reduce paper waste by updating the library's collection with e-books and e-journals. The library is fully automated with Information and Library Network (INFLIBNET) and NDL, through which education and

study is promoted and facilitated, in which students and faculty members can read 2 lakh e-books and 6 thousand journals. A college component of e-ShodhSindhu consortium with access to 6,000+ journals, 1,99,500+ ebooks under N-LIST and 6,00,000 e books through NDL. Students and teachers are encouraged to submit assignments through email instead of printing hard copies. The Eco-club and NSS team raise awareness about food waste management and strategies for reducing it. The college promotes the reduction, reuse, and recycling of non-biodegradable items and organizes workshops on solid waste management. E-waste management is also prioritized, with initiatives at the departmental and societal levels, collaboration with recycling firms, and awareness programs for responsible disposal. The college aims to develop more arrangements for e-waste disposal and educate students about environmentally friendly practices. Overall, the college focuses on minimizing waste and promoting sustainable waste management on campus.

SRLS College's waste management Policy

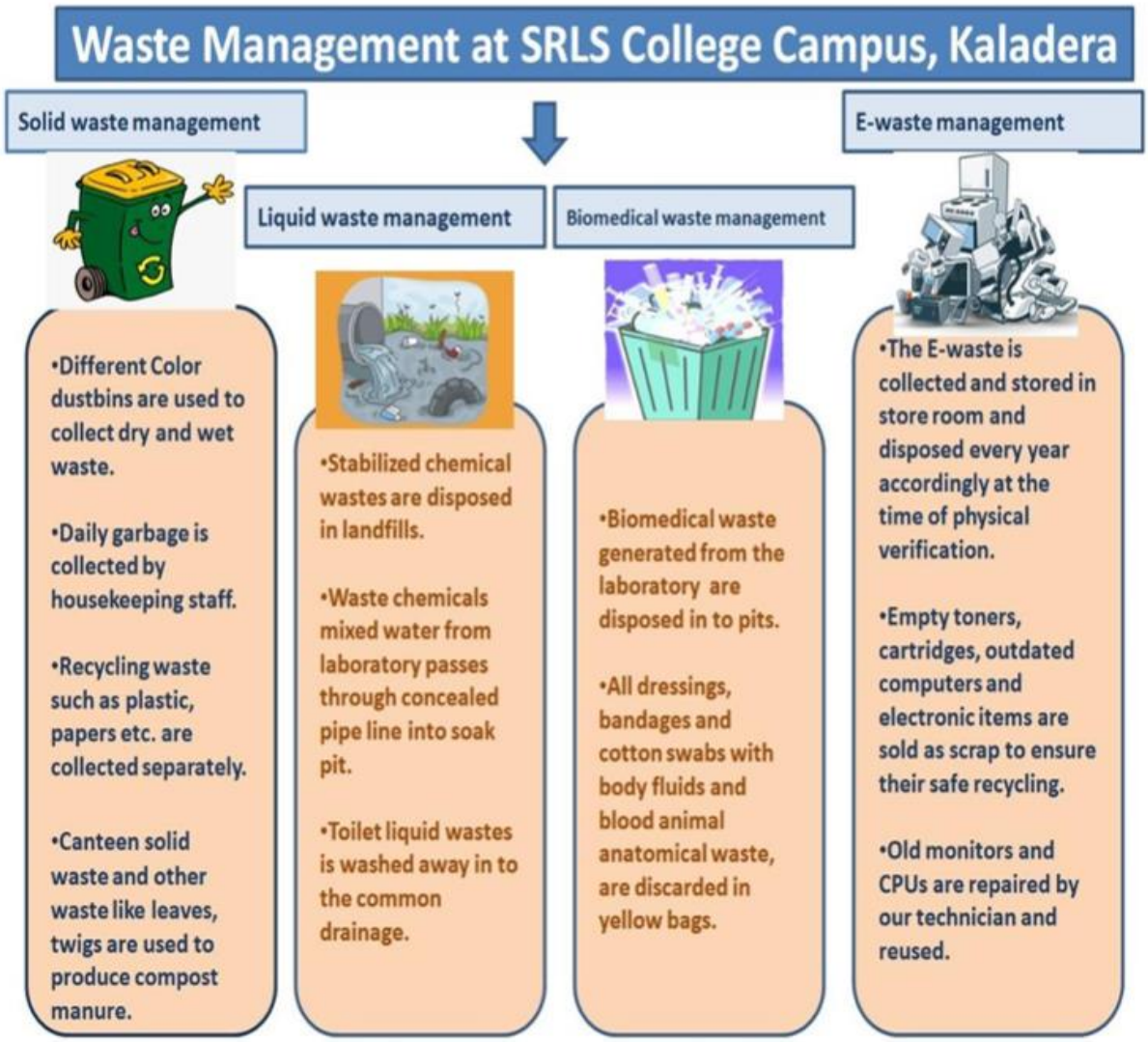
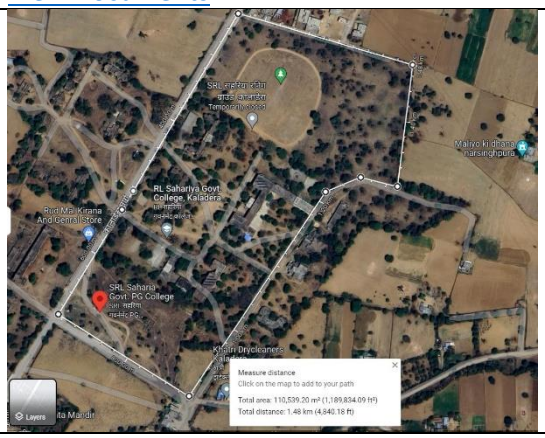


Figure 1- Students participating in landscape waste collection and composting.

II. BIODIVERSITY

The following Environmental-Green practices are being followed by SRL Saharia College is as below:

Sno	Questions	Response
1	Are there any Biodiversity or Greening activities in your college?	YES. The college conducts several plantation drives. The Krishi Vandan initiative of the college promotes Organic farming and Vermi composting on the campus. Further details are in the document attached. View Documents
2	Is there any garden in your college? How much area is being covered?	 Yes, Almost 2/3 rd of the total campus area has green. Approximately 74,500sqm of Campus area is vegetated. The Google map image is attached.
3	Do the students/college participate in the campus greening and biodiversity conservations?	YES, Various plantation activities are organized under NSS, Anandam and our best practice; Krishi vandan
4	Total number of Plants (Herb, Shrubs, Trees, Medicinal) in the Campus.	We have countless number of trees, shrubs and herbs, showing rich biodiversity in the college. A botanical garden, herbarium, and several trees and plants improve the quality of air thereby minimizing air pollution on the campus.
5	Name of some important plant's variety exists in your college campus. (Trees, vegetables, herbs, etc.)	College is dotted with Neem, Ashok, Gulmohar, Babool, Aloe vera, Tulsi, Giloy, etc.
6	Is the College/University campus have any Horticulture Department/Garden committee/Eco-club?	Yes
7	Number of Tree Plantation drives organized by college per annum. (If Any)	Various, under the aegis of NSS, NCC, Anandam, Krishi Vandan
8	Is there any medicinal garden in your college?	Yes
9	Whether College is using compost or bio- fertilizer as a part of green farming?	Yes
10	Does College organize a community awareness programme/Outreach workshops/Online programme for biodiversity conservation?	Yes

The college has established its own botanical gardens with the purpose of educating students about various plants through collection, cultivation, conservation, and display. The gardens feature a wide range of plants from different families, including herbs, shrubs, trees, and climbers. This botanical collection enhances the air quality on campus, contributing to reduced air pollution. The college campus is adorned with trees and plants such as Neem, Ashok, Gulmohar, Babool, Aloevera, Tulsi, and giloy, providing a green and refreshing environment for students. The SRL Saharia college regularly conducted programs to sensitize students towards, environmental and ecological issues and involve students for plantation drives.

The College Eco club, NCC, NSS, and students of Botany department are actively participating in the campus for various environmental, ecological, and social outreach activities.

The college demonstrates a strong commitment to nature and its conservation, evident in the diverse plant species that provide habitats for birds, insects, and mammals. The campus is home to various bird species such as House sparrows, Babblers, Owls, Tree pie, and Crows. Bird nests and water sources have been strategically placed to attract more birds. Regular plantation drives are conducted to enhance the greenery on campus. A green audit has confirmed that SRL Saharia College has implemented eco-friendly measures, making the campus environmentally safe and sustainable. The college community, including students, staff, faculty, and administration, actively works towards achieving sustainability goals. The Eco Club, in collaboration with NSS, NCC, and the building and infrastructure committee, plays a vital role in creating environmental awareness among students. The Eco Club consists of teachers, students, and non-teaching staff who work dedicatedly to make the campus less wasteful, promote eco-friendly causes, and encourage practices such as reducing, reusing, and recycling. The objectives of the Eco Club include motivating students to maintain a green and clean environment through tree plantations, sensitizing them about the negative impacts of plastic bags, and organizing awareness programs and competitions on environmental issues. Additionally, the club aims to instill values and concern for the environment, develop problem-solving skills, and empower individuals to actively participate in environmental protection and implementation.

Campus photos showing the various plants and trees

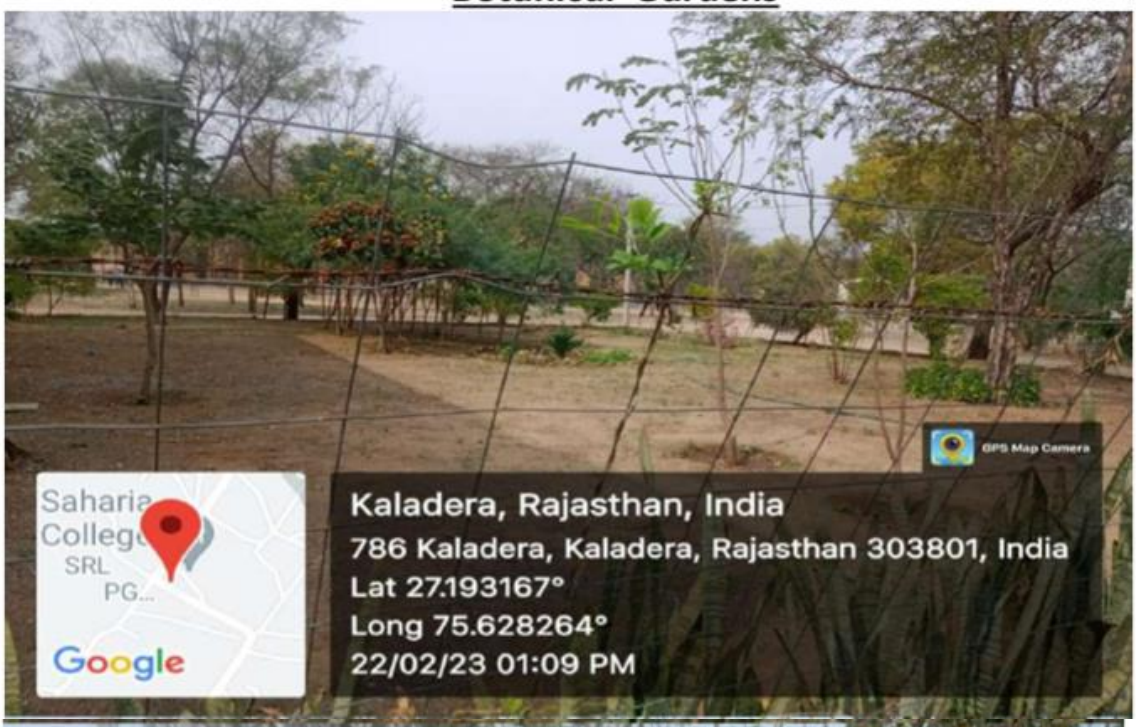


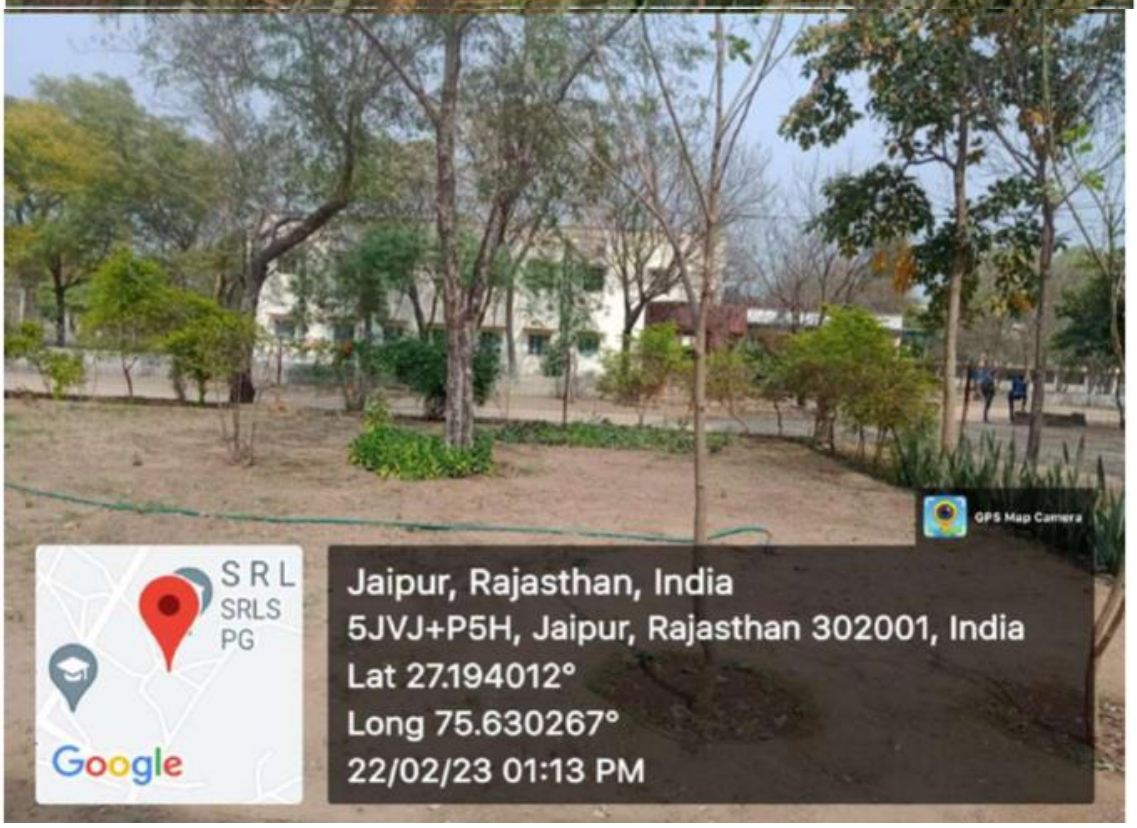

Tree Plantation Drive
Latitude 27.194889^0
Longitude 75.630704^0

Latitude 27.194889^0
Longitude 75.630704^0

Latitude 27.194889^0
Longitude 75.630704^0

Botanical Gardens





Seth RL Saharia Governmnent PG College, Kaladera

Botanical Gardens

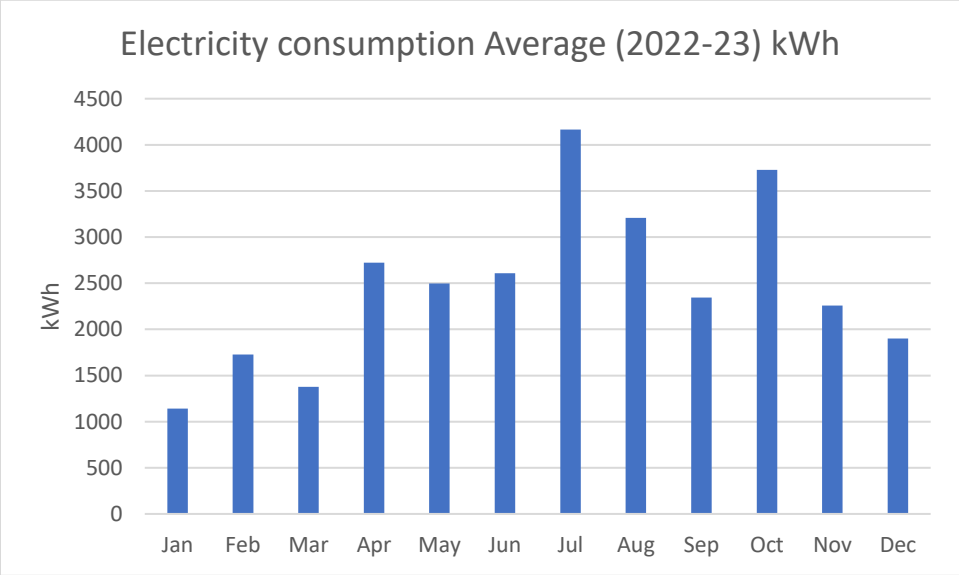
III. ENERGY USE & ITS CONSERVATION

The following Environmental-Green practices are being followed by SRL Saharia College is as below:

1.	How much energy is used and saved by the College (in KW per month) per day/per month/per year?	The SRL Saharia College uses energy **KW**H in year. Annual energy used 34,440 kWh/Year
2.	List ten ways that you use energy in your college. (Electricity, LPG, firewood, others).	The campus uses Electricity for Lighting, Fans and College equipment like Computers, boards, and lab equipment. LPG is used in the Canteen for cooking. A detailed list of Lab equipment is attached View Documents
3.	Are there any energy saving methods employed in your college? If yes, please specify. If no, suggest some methods.	Minimum use of Air conditioning. Only installed in Labs and Conference rooms. The college buildings are naturally ventilated with maximum passive cooling and use of Ceiling fans. Old Tungsten and Halogen lamps have been replaced upto 40% by CFL and LED bulbs. Old fans are being replaced with Energy efficient BLDC fans. Sign boards are displayed at various locations to inform students and staff about energy savings. Use of natural lights and natural ventilation are promoted.
4.	How many CFL/LED bulbs has your college installed? Mention energy used by LED bulbs?	Tungsten lights are present in some classrooms, corridors of old building, Science building, Hostel and Library. They can be replaced with CFL or LED. However newly constructed buildings like new building RUSA, NSB etc. are fitted with CFL, LED or tube lights. College is planning to replace tungsten lights with CFL/LED.
5.	Are any alternative energy sources employed / installed in your college? (Photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.,) Please Specify.	Yes, photovoltaic cells for solar energy are being used as a source of renewable energy through a solar PV establishment (**21 KW**) already commissioned by college.
6.	Do you run "switch off" mock-drills at college?	Yes, the College regularly organizes mock drills for the switch off campaign.
7.	How much energy (per month) is being saved by the use of efficient technologies by SRL Saharia College?	Yes,**32,000 KWH** annually is the Renewable Energy potential that can offset 100% energy demand annually
8.	Does the classroom have sufficient solar light illumination? Provide details.	Yes, National Standard for interior illumination for educational institute is 200/300/500 for lecture theatre, the SRL Saharia College complying as per the International / Indian standard IS-3646 (Part-I), 1992 (Range of illumination in lux should be 300/500/750 lux).
9.	Does the College organize any workshops/ seminars/ campaigns to educate students and staff?	Yes, the College is involved in these activities.

10.	Does your machinery (TV, AC, Computer, printers, etc.) run on standby modes most of the time?	Yes, in practice.

The following is estimate of Energy Consumption Annually: -



Energy consumption	Average (2022-23) kWh
Jan	1142
Feb	1728
Mar	1376
Apr	2724
May	2498
Jun	2608
Jul	4167
Aug	3208
Sep	2346
Oct	3729
Nov	2260
Dec	1902

Total Annual Energy Consumption: - 34,000 kWh (average of last two years)

Peak Contract demand = 23.3kW

Installed Solar PV Capacity = 21kW

Potential Energy generation = 32,900kWh

RESULTS

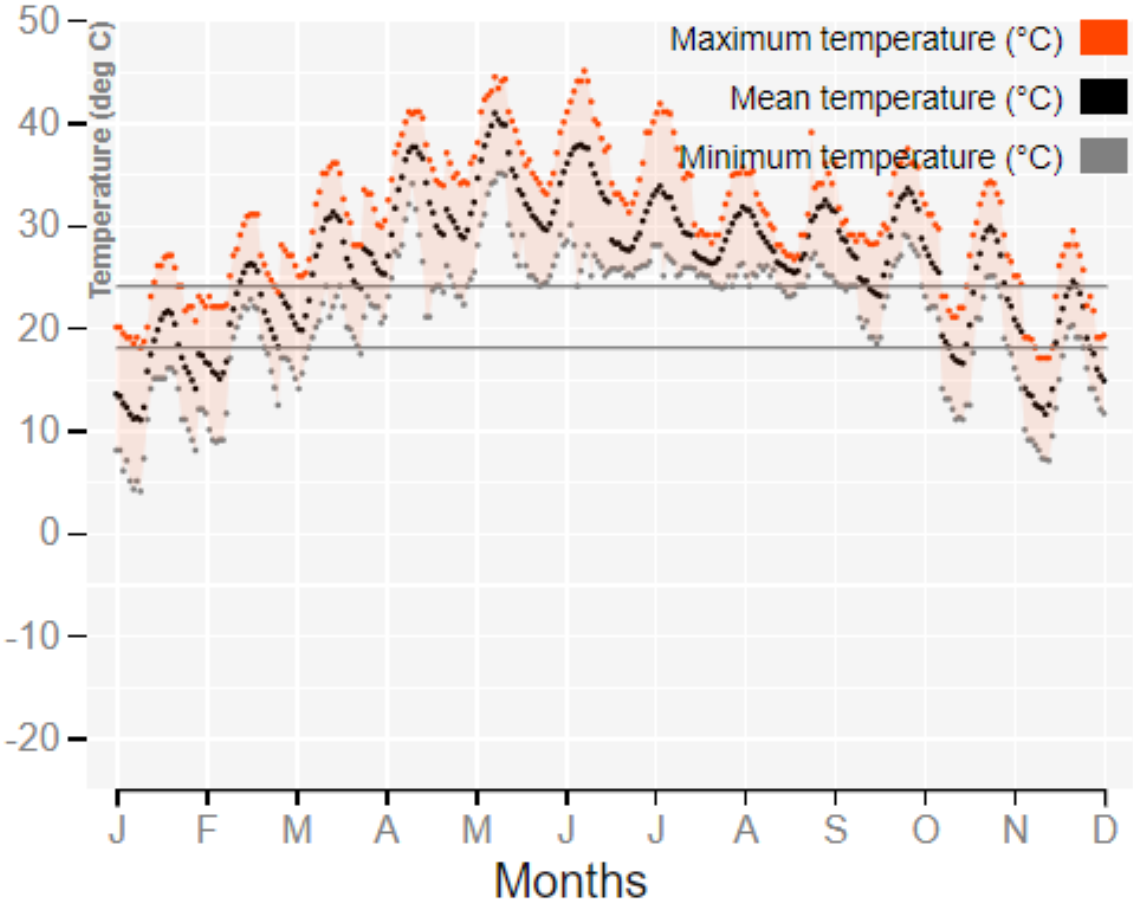
Print Results

32,968 kWh/Year*

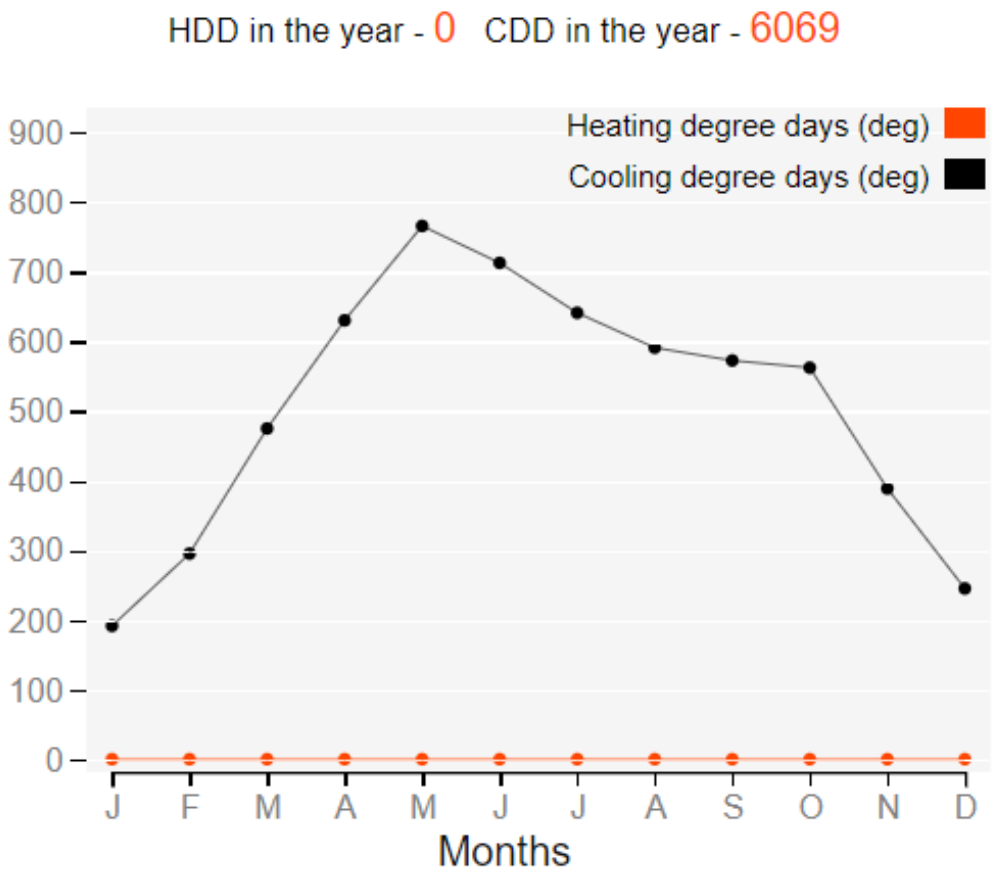
Month	Solar Radiation (kWh / m^2 / day)	AC Energy (kWh)
January	5.37	2,619
February	6.14	2,621
March	6.95	3,155
April	7.14	3,052
May	6.88	3,038
June	6.22	2,727
July	5.32	2,497
August	5.41	2,539
September	6.10	2,769
October	6.07	2,831
November	5.61	2,605
December	5.15	2,514
Annual	6.03	32,967

CLIMATE ASSESMENT OF JAIPUR

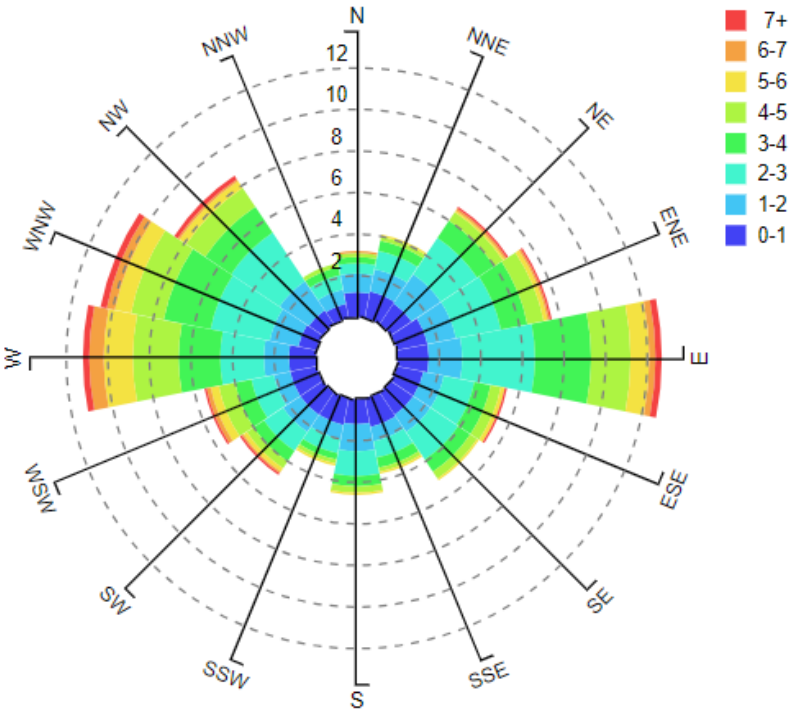
1. **Outdoor Weather**



Hourly heating and cooling degree days for each month



Frequency of wind directions and velocities for the whole year or selected hours during the year



Wind velocity (m/s)

The ***SRL Saharia College*** uses energy for electricity (Lights, Fans, ACs, Computers, Security Camera, Microwave, Refrigerators), and others. The energy saving methods employed in the College such as energy saving drives using posters for saving energy displayed.

More than 80% of the college buildings are naturally ventilated and comfortable due to ceiling fans and Operable windows. Certain labs and Video conference rooms are air conditioned. Installed air conditioners can be upgraded to 5 Star Invertor Acs.

The refrigerators and most of the equipment in the laboratories also have star ratings with less energy consumption. ***SRL Saharia College*** has given much importance to the use of renewable energy sources.

The awareness on energy conservation was regularly conveyed to staff and students to make them more responsible. Small activities like switching off lights, fans and computers not in use were completely practiced by all the members of College. The temperature of the air conditioners in the campus was setat 24°C during peak summer to reduce energy consumption without affecting the comfort. The day scholar students and staff are mostly relying on the public transport services i.e. buses for their transportation which saves the fuel consumption and also reduces the carbon emissions from private vehicles. This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliances, and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment. An old incandescent bulb uses approximately 60W to 100W while an energy efficient light emitting diode (LED) uses only less than 10 W. Moreover the classrooms are designed with adequate daylight and windows for cross ventilation.

Figure 2- Classrooms- Use of electricity for interactive display

Figure 3- Classrooms with adequate daylight

Figure 4- Use of LED Lighting in Classrooms

Figure 5- Installed Solar PV of 21kW

IV. WATER USE & ITS CONSERVATION

The following Environmental-Green practices are being followed by SRL Saharia College is as below:

1.	What are the sources of water inSRL Saharia College?	1) Groundwater; 2) Rainwater Harvest, (Rainwater recharged into ground)
2.	List source & uses of water in your college?	Uses: 1. Drinking 2. Gardening / Irrigation 3. Kitchen and Toilets 4. Labs
3.	Daily quantity of water uses per day?	On working days approx.- 120 KL/day
4.	How does your college store water? Are there any water-saving techniques followed in your college?	Yes, undergound water tanks are installed for the storage of water. Water conservation techniques such as rainwater harvesting, is in practice.
5.	Are there signs reminding students/ staff to turn off water taps?	Yes
6.	Write down ways that could reduce the amount of water used in your college and are being practiced.	Basic Four ways to reduce the use of water: 1. Close the taps after usage; 2. Maintenance and monitoring of valves in supply system to avoid overflow, 3. Maintain leakage and spillage; 4. Water Conservation awareness for students. 5. Hoses with Nozzle guns and

7.	Water use from the College water meter (in units) for one month /year? And annual water charges paid for water uses?	No meter installed
8.	Does your college harvest rainwater?	Yes, modern rainwater harvesting systems are available.
9.	Is there any water recycling system or treatment of water?	No STP is installed
10.	Does College organize workshops/ conferences/ training/seminars for the students and College staff for water management and conservation?	Yes, the College administration, eco-club and NSS routinely organize various conferences, seminars and awareness programs for water conservation and management.

Water use Equipment Details	
WCs	
Number of WC (Water closets)	20
Are the WCs Dual flush (half and full flush)?	No
Are the WCs Low flow (typical low flow are 6 L/flush and 3 L/flush for half)	
Urinals	
Number of Urinals	43
Are the Urinals having sensors?	
Are the Urinals Low flow (typical low flow is 1.5 L/flush or waterless)	
Faucets / Taps	
Number of Toilet faucets / Taps	20
Are the Taps having sensors?	No
Are the Taps Low flow (typical low flow is 6 L /mins	No

The ***SRL Saharia College*** of University uses the water in various ways such as drinking, gardening, kitchen, toilet, washroom, and renovation purposes. The approximate total use of water on working days is 120 kiloliters per day. The College is practicing reduction and minimization of water use. Furthermore, the College is also practicing in prevention and leakages of water. There are four basic ways adopted by the College to prevent and minimize water wastage in the College:

1. Close the taps after usage;
2. Maintenance and monitoring of valves in supply system to avoid overflow,
3. Maintain leakage and spillage;
4. Water Conservation awareness for students.

The college may consider installing Low flow fixtures and aerators in taps to reduce the water consumption.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V. CARBON FOOTPRINT (Lifestyle Carbon Footprints)

The following Environmental-Green practices are being followed by SRL Saharia College is as below:

1.	Total Number of vehicles used by the stakeholders of the College (per day). Number of visitors with vehicles per day?	Based on estimates 70% uses public transport to reach college campus while 20% uses bicycle or walk. The rest of the participants prefer private vehicles or car polling.
2.	No. of two wheelers used by the staff members and students? (Annual average of fuel used).	No information available
3.	No. of cars used per day by the staff and students of the College? (Annual average of fuel used)	Private vehicles are in use, out of which approximately 30% users rely on CNG, 40% on petrol, 30% Diesel
4.	No. of cycles used by the staff members and students and no. of persons using common (public) transportation?	No information available
5.	Number of generators used every day (hours). Give the amount of fuel used per day? (monthly average of fuel used)	No Gensets
6.	Number of LPG cylinders used in the canteen (Give the amount of fuel used per month and amount spent).	Number of LPG cylinders used in the canteen, not provided.
7.	Quantity of kerosene/diesel/petrol used in the canteen/labs (Give the amount of fuel used per month and amount spent).	Quantity of kerosene/diesel/petrol used in the canteen/labs, not provided.
8.	Amount of taxi/auto charges paid per month for the transportation of office goods to the College? (Please state the distance traveled in kilometers).	No information available
9.	Use of any other fossil fuels (Coal, wood etc.) in the College (Give the amount of fuel used per day and amount spent).	Fossil fuels are prohibited in the College.

10	Whether air conditioners used in Classroom, Staff room, faculty room?	Only 20% building has air conditioners

Preliminary Carbon Footprint assesment			
Carbon Calculations	Value	kG Co2 eq per unit	Total Annual emissions
Electricity consumed (kWh)	34,000	1.2	1,88,49,600
Electricity generated (kWh)	33,000	-1.2	-60,98,400
Non biodegradable Waste generated	135702	1.5	3,13,47,162
Fuel consumption for cooking (for approximately 6 meals serving 50 people) m3 of Gas	45	1.83	12,682
Green Cover (m2)	86900	-15	-20,07,39,000
Carbon Footprint			-15,66,27,956

A general assessment is made of the carbon footprint of the campus considering the energy consumption and waste generation within the campus. The Carbon equivalent numbers are derived from various technical resources and publications. It indicates that the campus has a positive footprint due to its green cover and use of Solar Energy. However other factors like Transportation and logistics are not currently estimated in the calculations.

Lifestyle Carbon Footprints

The term "carbon footprint" refers to the greenhouse gas (GHG) emissions generated directly and indirectly by activities or products throughout their lifecycle, with a focus on consumption. It can be calculated for products as well as the daily activities of individuals or organizations. In the context of daily activities, the term "lifestyle carbon footprint" specifically refers to the GHG emissions emitted directly and indirectly from household consumption, excluding those induced by government consumption and capital formation. While the Paris Agreement does not limit the GHGs to be reduced, it is important to consider non-CO2 emissions due to their higher global warming potential, along with lifestyle and consumption choices. This includes emissions of methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF6). Most global carbon footprint analyses and the UNEP Emissions Gap Report 2018 incorporate these gas species by estimating carbon footprints using carbon intensity data or GHG intensity data when specific gas types are not mentioned.

Organizational footprint

Green House Gases directly and indirectly emitted from the production, distribution, use, and disposal of products, including those embedded in imported parts and products. This type of measurement is used for carbon footprint labeling and comparison of two or more types of options of products or processes, and is typically based on a bottom-up process analysis of life cycle assessment (LCA). The specification for this

type of measurement is also published as International Organization for Standardization (ISO) 14067 (ISO 2018a). GHGs emitted from direct activities of organizations (scope 1), sourcing of energy (scope 2), and other indirect emissions through value chains including production, distribution, use, and disposal of products sold (scope 3). The standards for this type of measurement include ISO 14064-1 (ISO 2018b) and GHG Protocol (Greenhouse Gas Protocol 2011), and this measurement is typically based on the hybrid method of bottom-up process analysis LCA and top-down input–output (I/O) analysis–based estimation. GHGs directly emitted from activities of households and governments located in a country or city and those indirectly emitted from the final demands of those actors and capital investment including production, distribution, use, and disposal of purchased products and services including those embedded in trades. This type of measurement is typically based on the top-down I/O analysis method. A closer examination of lifestyle carbon footprints based on physical consumption units revealed several hotspots. Focusing efforts to change lifestyles in relation to these areas would yield the most benefits: meat and dairy consumption, fossil- fuel based energy, car use and air travel. lifestyle carbon footprints.

The following suggestions came from Carbon Footprint task/work carried out by the SRL Saharia College, :

1) **GHG Information Management System:** A carbon management team can be established consisting of representatives from teaching staff, students and other non-teaching staff of various departments.
2) **Energy and Environmental Policy Formulation:** An energy environmental policy already formulated by the Management to commit to adopt sustainable practices at the campus. The policy should be well communicated & displayed across the campus;
3) **Green events**: The activities carried out at the campus should be performed in light of low carbon emissions. The team may ensure low carbon products and strategies are adopted for various events;
4) **Setting of reduction targets:** Based on the baseline and available resources, the College may develop its short / medium / long term reduction targets and plans to achieve the targets;
5) **Awarding and labelling Departments**: Eco-club and other department with minimum carbon emissions should be rewarded with eco-friendly labels/batches/medals/trophies/certificates to motivate other departments to work towards the same;
6) **Eco suggestion box:** A suggestion box can be placed at the campus inviting innovative ideas from students/teachers/other staff members for carbon reduction.

VI. CLEAN AIR (CAMPUS DESIRABLE AMBIENT AIR)

The following Environmental-Green practices are being followed by SRL Saharia College is as below:

1.	Are the Rooms in Campus being well ventilated?	Yes				
2.	Window floor ratio of the Rooms	Very Good				
3.	What is the ownership of the vehicles used by your college? (Please Tick only one)		Yes			
		✓	Operator-owned vehicles			
			college -owned vehicles			
			A combination of campus-owned and operator-owned vehicles			
4.	Provide details of school-owned motorized vehicles?	**Buses**	**Cars/ Vans**	**Two Wheelers (Scooter/Motor Bikes) etc.**	**Other**	**Total**
	No. of vehicles					
	No. of vehicles more than five years old	--	--	--	--	--
	No. of Air-conditioned vehicles	--	--	--	--	--
	PUC done	--	--	--	--	--
5.	Specify the type of fuel used by your school's vehicles:	Buses	Cars/ Vans	Two Wheelers (Scooter/Motor Bikes) etc.	Other	Total
	Diesel	--	--	--	--	
	Petrol	--	--	--	--	
	CNG	--	--	--	--	
	LPG	--	--	--	--	
	Electric	--	--	--	--	
6.	Air Quality Monitoring Program (If Any)	No				
7.	Students suffer from respiratory ailments? (If Any)	No, however, College has created a good green buffer to provide clean air/good air for their health.				
8.	Details of Genset	No Genset				
9.	Does the College ban on biomass	Yes				

	(Horticulture or Solid waste) burning?	
10.	Does the College follow Construction and Demolition Rules, 2016?	Yes.

SRL Saharia College has adopted norms for CLEAN AIR Rooms (including classrooms and common rooms): all the rooms in the campus, including the classrooms have ample good provision for admission of air and natural light, thereby maintaining a good ventilation. There are a minimum of two windows, two doors and two ventilators per room (more than 1 m2 in area) opening to internal (corridors) or external open spaces or both. Each block in the campus is directly open to external air at least on one side, whilethe inner side opens into a cross-ventilated verandah whose width is as per the NBC norms. Most lengths of the external walls (except those of the newly constructed block) are lined by trees/shrubs. There is ample natural light in all the rooms, supplemented with artificial fixtures. All the rooms have efficient cross-ventilation, supplemented with electric fans (minimum 4 per room, according to size) for better circulation. ACs used in some rooms and offices are regularly serviced once annually to maintain the indoor air quality. Only dust-free chalk is used for blackboards to reduce particulate matter. Laboratories: Each of the science departments have well ventilated and illuminated laboratories. Proper storage facilities of chemicals are also installed. ACs used in computer laboratories are regularly serviced to maintain the indoor air quality. Only dust-free chalk is used for blackboards in wet labs and marker pens/projector in dry labs to reduce particulate matter. Toilets: All the toilets are also well ventilated supplemented with exhaust systems. Canteen and kitchen areas: canteen has an open space seating plan to allow good ventilation given its heavy footfall. The kitchen is well ventilated with fans and exhausts.

VII. TECHNOLOGICAL INITIATIVES

The following of Environmental-Green practices are being followed by SRL Saharia College is as below:

Technological Innovations & Green Practices in Education		
1	What Technological and Innovative teaching and learning process are applied by the college to minimize consumption of resources?	ICT and Digital technology, Paperless office setup
2	Does college integrate ICT tools for interactive?	Yes
3	Does the College use innovative solutions for reduction of paper wastes?	Paperless office setup
4	Does the college have implemented any innovative solutions for management of construction and demolition waste?	By practicing source reduction, salvaging, recycling, and reusing existing materials.
5	Does the college use innovative solutions for management of waste & Wastewater?	Yes

VIII. ENVIRONMENTAL LEGISLATIVE COMPLAINCE

The following of Environmental Legislative Compliance Green practices are being followed by SRL Saharia College is as below:

Environmental Laws		
1)	Are you aware of any environmental laws pertaining to different aspects of environmental management?	Yes
2)	Does your college have any rules to protect the environment? List possible rules you could include.	The implementation of "A Green Clean Campus" Policy with following objectives: 1. Enriching the greenery in the campus by promoting annual tree plantation activities 2. Sensitizing the staff and the students on environment issues and eco-friendly lifestyle. 3. Promoting "Zero Waste Lifestyle through "Recycle & Reuse" Practice. 4. Implementation of effective waste management measures. 5. Establishment of a complete "Plastic Free Zone". 6. Implementation of environment friendly activities outside the college campus.
3)	Environmental Ambient Air Quality Monitoring conducted by the College?	Yes
4)	Does Environmental Water and Wastewater Quality monitoring conduct by the Institute?	Yes
5)	Does stack monitoring of DG sets conducted by the Institute/or through Accredited laboratory?	No
6)	Is any warning notice, letter issued by state government bodies?	No
7)	Is there any Hazardous waste generated by the College? If yes, explain its category and disposal method.	Only trace amount by the chemistry lab.
8)	Does any Bio medical waste/Electronic waste generated by the College? If yes explain its category and disposal method.	Yes, Biomedical wastes generated by the Biology labs are incenerated and E- Waste is collected at one place and sent for proper disposal at the end of the year.

IX. SOCIAL WELFARE & COMMUNITY OUTREACH

The following Environmental-Green practices are being followed by SRL Saharia College is as below:

Social awareness and community engagement		
1	Are college students being well aware of environmental concern pertaining to local communities?	Yes, Social Awareness and Community Drives are organized under the agis of NSS and NCC
2	Does your college have any initiative to educate and aware local communities to resolve their concern about local environmental issues?	Yes, Through Social Drives and Community Outreach Programmes.
3	Does the college involve in environmental awareness and participate in National and International programmes through community outreach in your campus?	Yes
4	Does college have adopted nearby habitats or villages for environmental cleanliness and social awareness programmes? If Yes explain	Three villages are adopted under NSS at Seth RL Saharia Government PG College, Kaladera, Jaipur. 1. Raiger Basti, Kaladera 2. Narsinghpura 3. Indra Colony, Kaladera Swachhata Abhiyaan and Cleanliness awreness programmes are organized every year.
5	Does college have National Service Scheme (NSS) to provide hands on experience to young student in delivering community services.	Yes
6	Does College celebrate Biodiversity & Nature Day, Earth Day, and Ozone Day etc. eminent in the Campus? participate in National and Local Environmental Protection Movement?	Yes
7	Does College have any Recognition/ Certification for environment friendliness?	Yes
8	Does College provide vocational training for students?	Yes, Vocational Training Under RSLDC,…….
9	Does College conduct a green/ environmental audit of its campus?	Yes

AREA OF IMPROVEMENTS

- The environmental policy for SRL Saharia College should be developed and adopted forenvironmental sustainability.
- Campus Biodiversity of SRL Saharia College should be maintained and recorded properly.
- Water Metering of bore wells and other sources in different uses are not available. However, water meters should be installed and maintained for inventory of water uses.
- Energy meters can be installed for each building to minimize wastage and proper monitoring.
- Water conservation practices should be implemented properly including recycling of wastewater systems.
- SRL Saharia college must exercise and come out with outcome Lifestyle Carbon footprint.
- Storage of chemicals like; paints, gum resins, oils, lubricants, acids etc. should be placed at designated area and safety/warning signs should be displayed.
- A Waste Management plan should be prepared for the campus and placing of Multi coloured bins for waste seggregation
- Laboratory waste management policy should be developed and implemented properly.
- The monthly inventory of e-waste is required to be maintained in formats on a regular basis.
- A monthly inventory of all waste generated and disposed of should be maintained.
- Environmental monitoring and quality assessment should be ensured on a regular basis.
- College activity including transport, fuel uses and electricity should be maintained effectively aiming for overall reduction in carbon footprint.
- The Community Environmental Awareness programme should be regularly organised by the College.
- College (DBC) must develop some more innovations in Green Practices in Education.

RECOMMENDATIONS

- The SRL Saharia College should develop a Biodiversity Garden representing diverse flora of thearea.
- Set up a water recycling unit where the recycled water can be used for gardening in college.
- Interactive boards of flora and fauna diversity to generate enthusiasm for learners.
- Rainwater pits should be maintained in the campus wherever possible.
- Promotion of Student startups focusing on environment and sustainability.
- Peri-urban community specific outreach program for environmental awareness.
- Training and awareness of environmental legislation should be organized for faculty staff and students.
- Replace tube lights and bulbs with energy efficient LEDs.
- More energy efficient air conditioners and coolers should be used in the College campus.
- Finally, SRL Saharia College needs to develop more and more nature-based solutions (NBS) tokeep the clean environment of the campus area.

Social Welfare and Community Outreach

SRL Saharia college involves in various social activities, few are Tabulated below:

S.No.	ISSUES	ACTION TAKEN
	Organize Webinars	Webinars were organized on **a. Socio Economic Impact on Covid 19 in India.** **b. IPR.** **c. SSO Id.** **d. Yuwaon ke Sarwangeen Vikas mein Scouting kiMahati Bhumika.**
	Augmentation of Sports Facilities in College	a. A new **kabbadi** ground was prepared. **b.** Students brought laurels to college in various competitions such as **Wrestling, Boxing, Athletics, Kho Kho.** c. 12 stations Multi-gym was utilized and maintained .
	Community Connect Initiatives	a. A **corona vaccination camp** for 15-18 years students was conducted. b. *ANANDAM*, the initiative of ingraining community concern and selfless social service in the students as an integral and compulsory part of the course curriculum. c. NSS activities, planting trees etc.
	Value Education	a. Students of the college participated in the **SarvodayaVichar Pareeksha** conducted by RBSE. b. This offline exam was promoted and facilitated bythe college. c. Essay competition by **Ambedkar Foundation** onConstitution day.
	Navaachar Prakoshth	**a.** Students participated in a state level (on GK) **Rajeev Gandhi Digital Quizathon;** **b.** A student of this college secured 26th position in this state wide Quizathon; **c.** A faculty member was also a subject expert in this quiz. **d.** A **Gram Sansad** was conducted in Rajasthani for the college students to make them aware of the international scenario. **e.** Workshop on pre exam planning and management was conducted. **f.** A faculty member was selected for training on **E content generation conducted by ISRO.**

	Faculty Development	Teachers participated in a. Refresher Programmes. b. Faculty Development Programmes. c. Training Programmes. d. Workshops/Webinars on NEP, 2020. e. 25 Research Papers and 22 writing in the form of books and chapters in books published in journals and books.
	Gender Sensitization	a. One day workshop on Women Health and Hygiene was conducted. b. A faculty member participated in **Girls Empowerment and Monitoring Training** conductedby Bodh Shiksha Samiti. c. **UDAAN**, a programme for women initiated by thestate government was introduced under Women Cell.
	Purchase of New Books,Upkeeps of Library	a. New Books were Purchased in library. b. Inflibnet subscription providing online access to unlimited literature.
	Environmental Consciousness	a. Planting Trees. b. Ban on plastic stopping use of disposable cups and glasses. c. Restricted entry of vehicles. d. Green Audit and Electricity Audit was carried out inthe college. e. Botanical garden maintained. f. Bio- Degradable Waste Management. g. Plants of medicinal importance were grown and distributed. h. The process of tagging trees with Botanical name is on.
	Utilization & Disbursal of Funds	Funds were disbursed to purchase and maintain a. Consumable items in the laboratories. b. Stationery for all around use. c. Upkeep of existing equipment. d. Maintenance of the building and campus. e. Books. f. Internet.
	Designated Mentors	The system of assigning mentors to each section of every class was continued to facilitate the effective dispersal of informative updates on specifics of college events as well as

		E-content of various disciplines.
	Preparation Of E-Content	**a.** Sanskrit lectures prepared by one of our faculty members were selected for a study app **MyBookLo** **b.** The faculty members prepared e-content of their respective subjects under **Gyandoot.**
	Internet & ICT Training	a. Workshop on **SSO Id**, IPR and **Pay manager**. b. Internet connectivity with a speed of 100 mbps.
	Students Mentoring	Various activities under Women Cell, Arts, Science and Commerce Councils, Literary Innovation and Youth Skill Development Cell, Planning Forum, literary and cultural committee and human rights club.
	Website Update	The faculty profiles were updated.
	Grievance Redressal: Sampark Portal	All grievances were resolved well within the stipulated time.

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