GREEN AUDIT REPORT
FOR
R.K. VIGYAN (P.G.) MAHAVIDYALAYA

Elion Technologies & Consulting Private Limited

307, 3rd Floor, DDA Lal Market, H-Block
Vikas Puri, New Delhi-110018
Contact No: +91 9013923982,+91 9013890526
Web: www.elion.co.in.

Table of Contents

Acknowledgment

Elion Technologies and Consulting Pvt Ltd places on record it's thanks to R.K. Vigyan (P.G.) Mahavidyalaya for entrusting the task of conducting green audit study.

We acknowledge with gratitude the whole hearted support and cooperation extended by all team members while carrying out the study.

Site Information

Name of College	R.K. Vigyan (P.G.) Mahavidyalaya
College Address	Behind Kalwar Police Station, Kalwar, Jaipur Rajasthan – 303706
Execution Partner	ELION Technologies & Consulting Pvt Ltd
Communication Address	307, 3rd Floor DDA Lal Market H-Block Vikas Puri, New Delhi - 110018
Date of Audit	06th March 2024
Year of Audit	2022- 2023
Audit Participants from Site	R.K. Vigyan (P.G.) Mahavidyalaya
Total College Area	54,454 Square Feet
Total Green Area	29,760 Square Feet

Overview of Institute

R.K. Vigyan (P.G.) Mahavidyalaya is highly reputed, philanthropic education trust, serving as the "Educational Oasis" in Jaipur Region since long. The trust is spear-headed by the trustees who are known for their high energy level, vision and devotion to the cause of furthering educational opportunities for students of the new age. R.K. Vigyan (P.G.) Mahavidyalaya began its glorious journey from July 2003, after the approval of Govt. of Rajasthan with faculties of arts and commerce at present the students are benefitted with all the three faculties' arts, commerce and science. We are also running PG Courses in Geography, Pol. Science, Drawing & Painting, Chemistry, Botany, Zoology, Physics.

R.K. Vigyan (P.G.) Mahavidyalaya Kalwar is a renowned educational institution located in Kalwar, Rajasthan. Established with the vision of promoting education and knowledge, our college offers a wide range of undergraduate and postgraduate programs in various disciplines.

List of courses offered by the institute:

- B.A: - (Hindi Lit., Sanskrit Lit., Urdu Lit., English Lit., Political Science, Public Adm., D & P., Econ., Home Sci., Socio., History., Geography)
- B.Sc.: - (Botany, Zoology, Chemistry, Physics, Mathematics, Home Science)
- B.COM.: - (ABST, BADM, EAFM)
- M.A.: - (Political Science, Drawing Painting, Hindi Lit., History)
- M.Sc. :- (Botany, Zoology, Chemistry, Physics, Mathematics)
- M.A./M.Sc.: - Geography

Introduction

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyze environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere. Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students' better understanding of Green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO2 from the environment. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. 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.

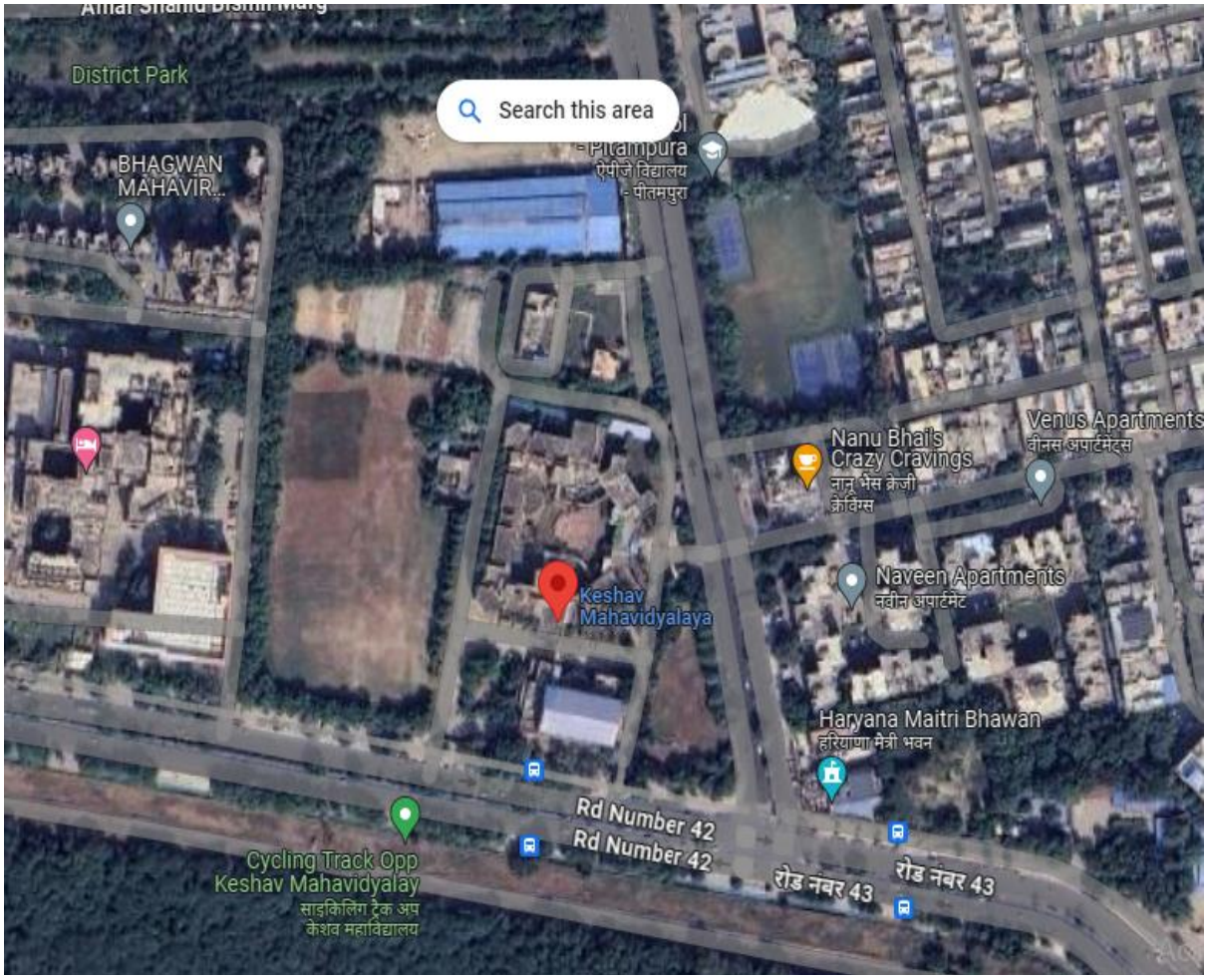
Advantages of Green Audit:

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. Some main advantages of green Audit are:

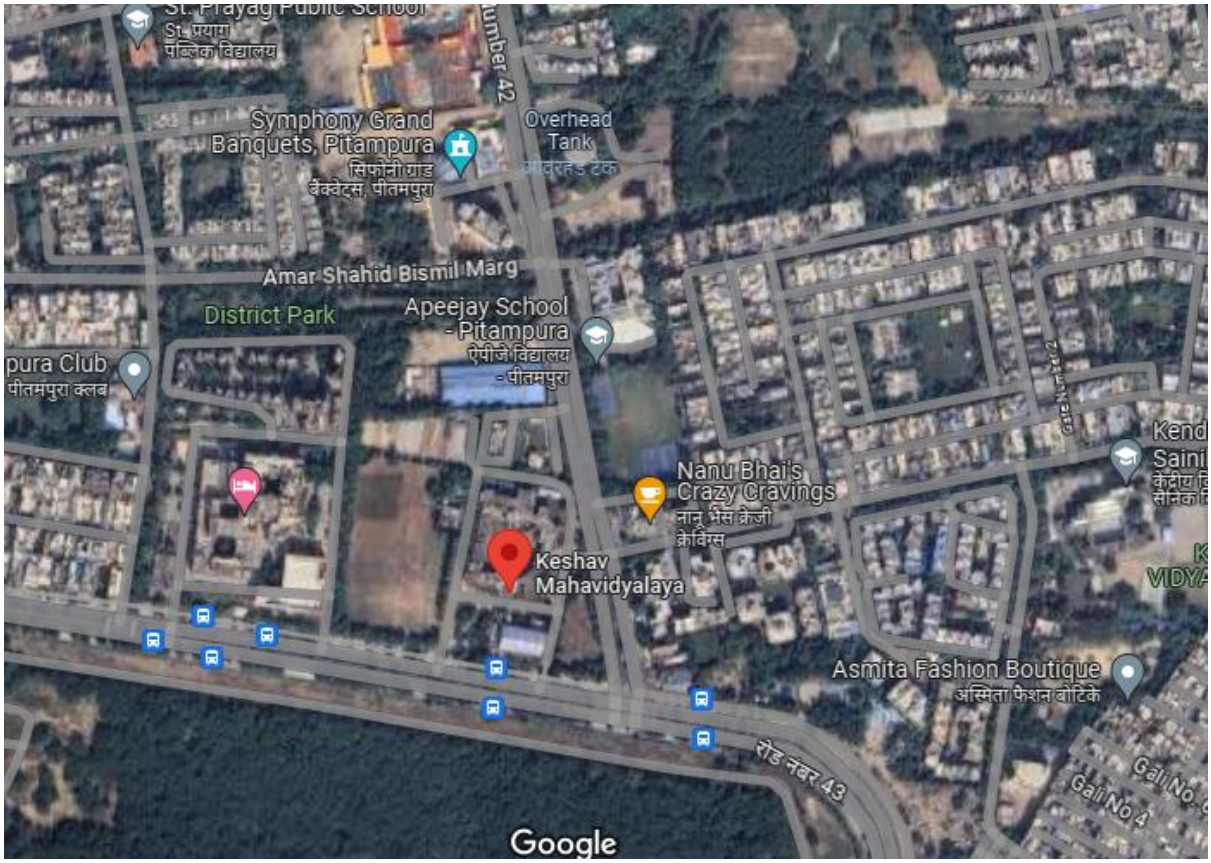
- It helps to shield the environment.
- Minimizing the waste and managing the cost.
- Authenticate conformity with the implemented laws.
- Minimizing the energy consumptions and focus on green and clean energy.
- Ambient Environmental Condition.
- Awareness and Training on Sustainability for Students.
- Awareness about environmental guidelines and duties.

Environment Setting

The land use around the campus is mix of commercial and residential use. Schools, Restaurants, Commercial complexes, restaurants and industries are present around the campus.



R.K. Vigyan Campus



Location of R.K. Vigyan Campus

Green Audit

For Green Audit following 13 major areas (including their subsections) were covered and compliance/ initiatives under these areas were verified/ validated.

a) Good Daylight Design and Ventilation
b) Water Efficiency
c) Wastewater Management
d) Indoor Air Quality
e) Energy Efficiency
f) On-site Energy Generation
g) Temperature and Acoustic Control
h) Paper Waste Management
i) E-Waste Management
j) Canteen and Solid Waste Management
k) Universal Access and Efficient Operation and Maintenance of Building
l) Green Belt
m) Green Programs (Green initiatives)

3.1 Good Daylight Design and Ventilation

S. No.	Question	Yes or No
1	Corridors are wide with good ceiling height. All the corridors receive good daylight.	Yes
2	Classrooms, Labs and Library have high ceiling with wide doors and large windows. Windows are kept open to adequate daylight.	Yes
3	Classroom walls, corridors and labs are white-washed, this enhances the daylight received.	Yes
4	Curtains are provided on some of the windows to avoid glare.	Yes
5	Laboratories are provided with exhaust fans to disperse heat, fumes and odours.	Yes
6	Stair cases receive daylight through special openings (Jali's) provided at mezzanine floor	Yes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Classroom


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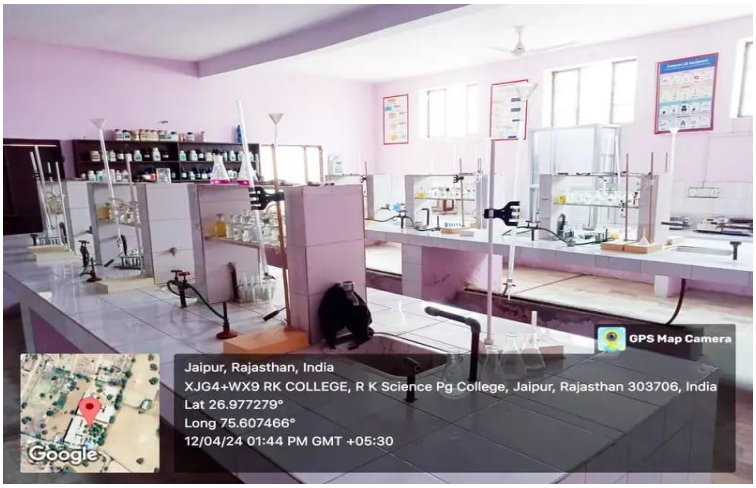
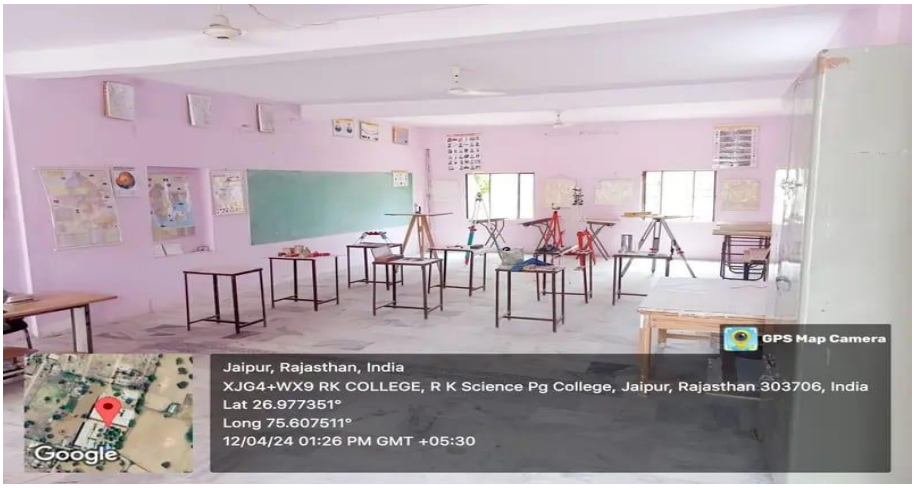


Laboratory

Laboratory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Laboratory


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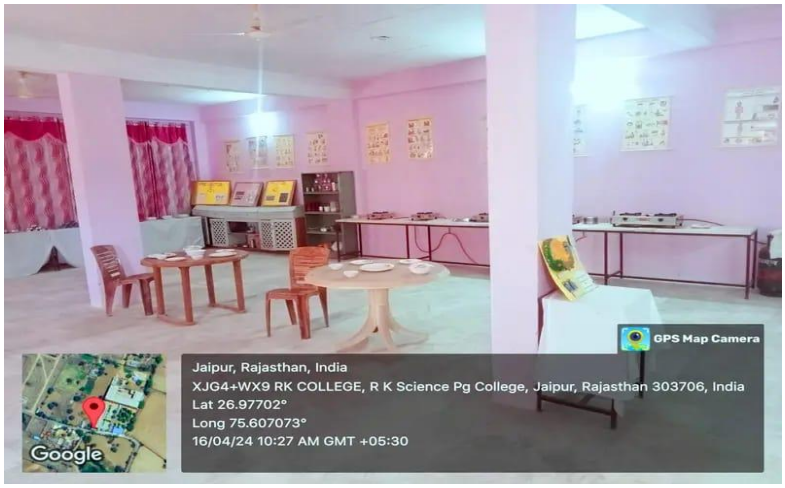

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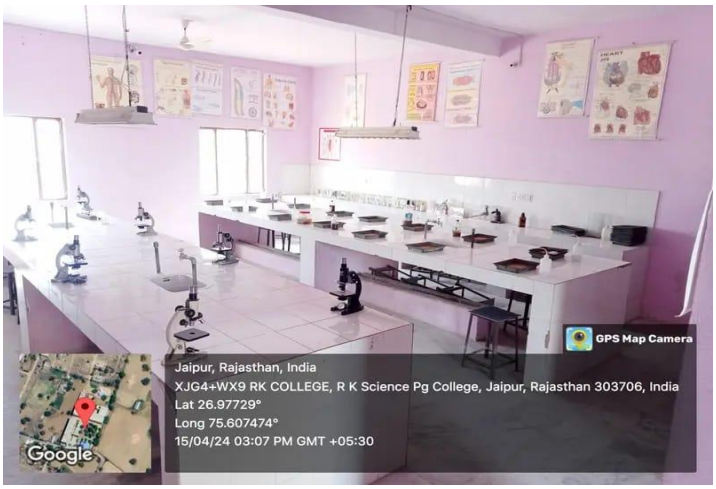

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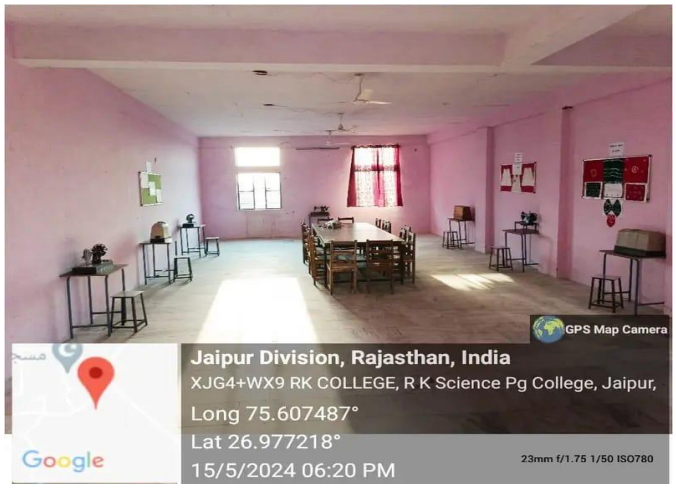
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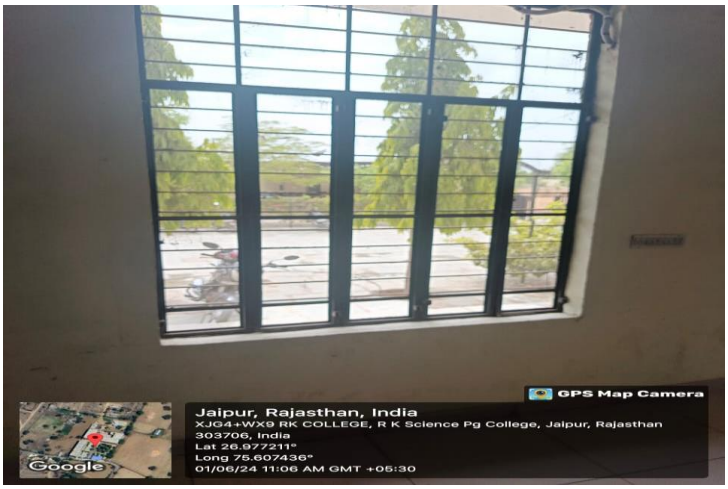
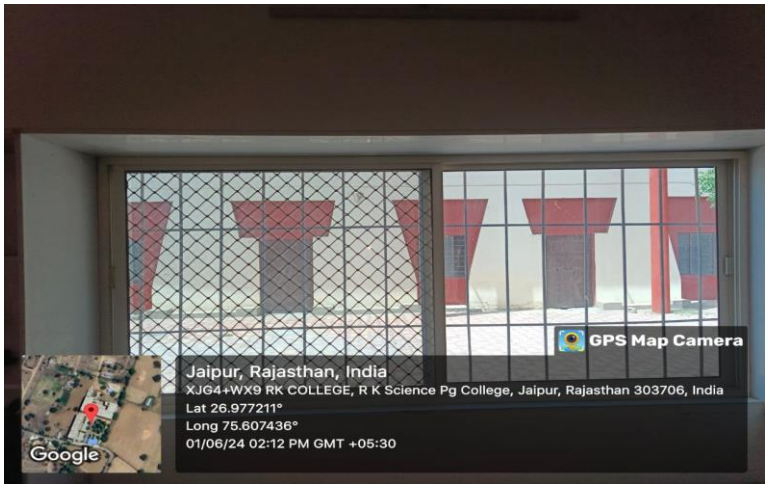
Corridors





Windows with Jali's

Staircases

Staircases

3.2 Water Efficiency:

a) Groundwater and Government water is the source of water supply in the campus.
b) Groundwater is stored in an underground tank

Location	Tank Capacity	Type (Underground/Overhead)
On the roof of each building	2000 Liters	Overhead

c) RO filter with water dispensers are placed at every floor.
d) Normally mops are used for floor cleaning and hose is used for cleaning once a week.
e) Sensor based water taps are provided in the washrooms.
f) Dual flushing system is provided in the washrooms.
g) Signages are provided in washrooms emphasizing water conservation.
h) Water from air conditioning unit and reject water from water purifiers is used for watering plants and trees in the garden.
i) Rain water harvesting system is available and rainwater is stored in a tank and reused further as and when required.

Water Tanks

Water Tanks

Toilet

AC Outdoor Unit

Air Conditioner

Motor Starter Panel

Bore well

Water Cooler

RO System

Water Taps

Water Dispenser

3.3 Wastewater Management:

a) Water treatment plant or water recycling plant is available in the campus.

3.4 Indoor Air Quality;

Indoor Air Quality (IAQ) refers to the air quality within and around buildings and structures, as it relates to the health and comfort of building occupants. Some common indoor pollutants are listed as below:

- Molds and other allergens – This may arise from water seeping into the building envelope or skin, plumbing leaks, condensation due to improper ventilation, or from ground moisture penetrating a building part.
- Carbon monoxide – Sources of carbon monoxide are incomplete combustion of fossil fuels.
- Volatile organic compounds (VOCs) – VOCs are emitted by paints and lacquers, paint

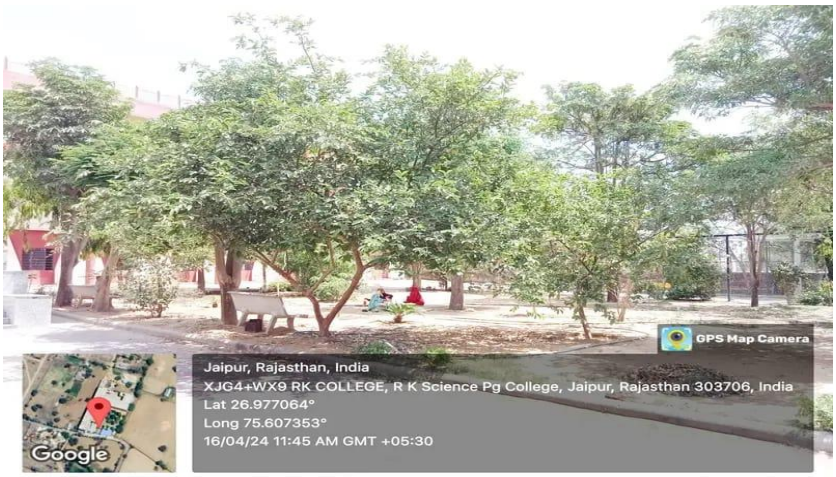
strippers, pesticides, office equipment such as copiers and printers, correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers, and photographic solutions etc.

- Carbon dioxide – Due to human respiration
- Particulate matter – Due to construction and maintenance activities

Major observations under indoor air quality are as below:

a) Split Air Conditioner is used in the college.
b) Indoor plants are present in the campus. Indoor plants can be plotted not only for the aesthetic appearance but also for health benefits. Refer Annexure 1 for details.
c) Indoor air quality testing is conducted using proprietary equipment. It is advised to retain documentation for these assessments.
d) Exhaust fans are provided in washrooms to dissipate heat and odour.

Air Conditioner



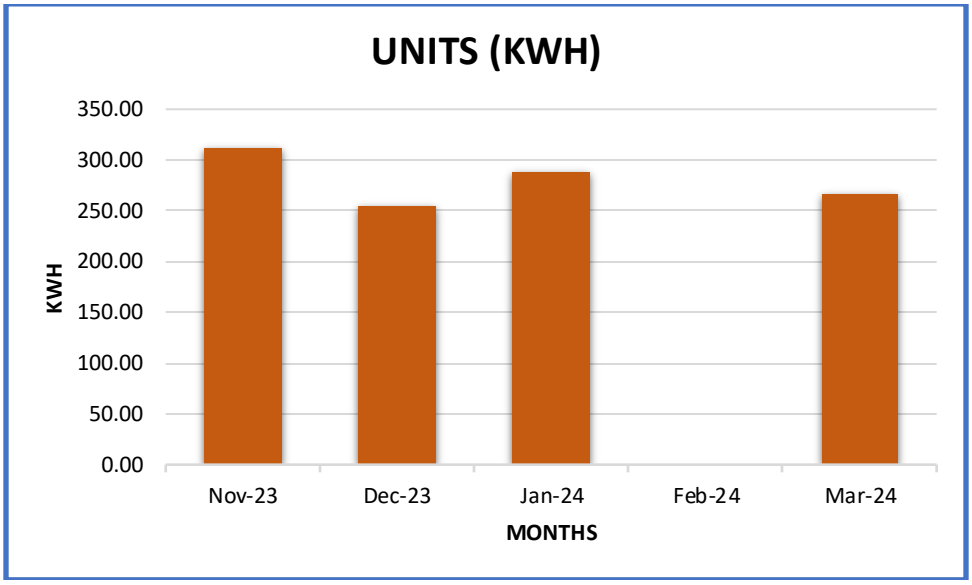
Green Campus

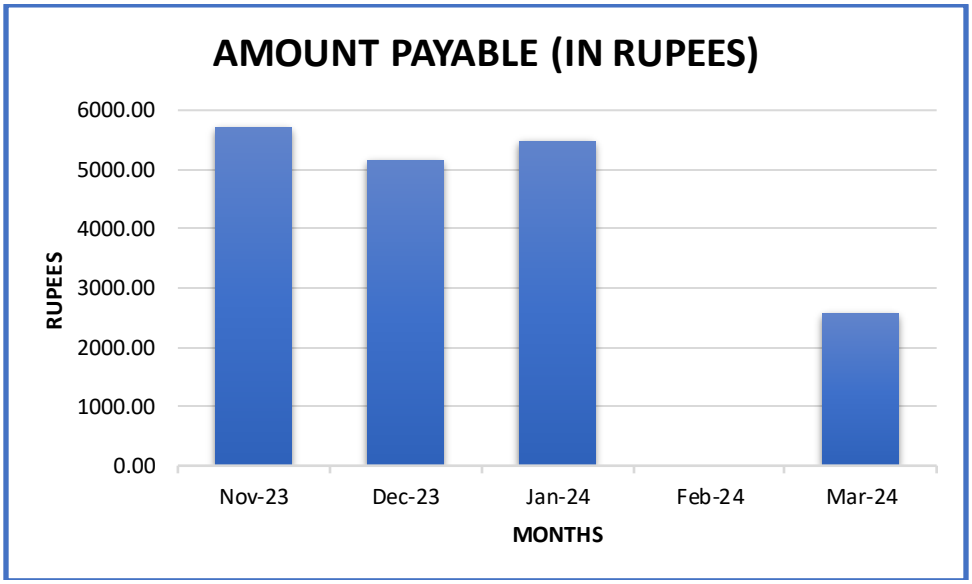
Green Campus

3.5 Energy Efficiency:

The major electricity consuming equipment installed in the campus are Air Conditioners, Water Coolers, Lighting, Desktop, Printers etc.

Following are details of energy consumption:



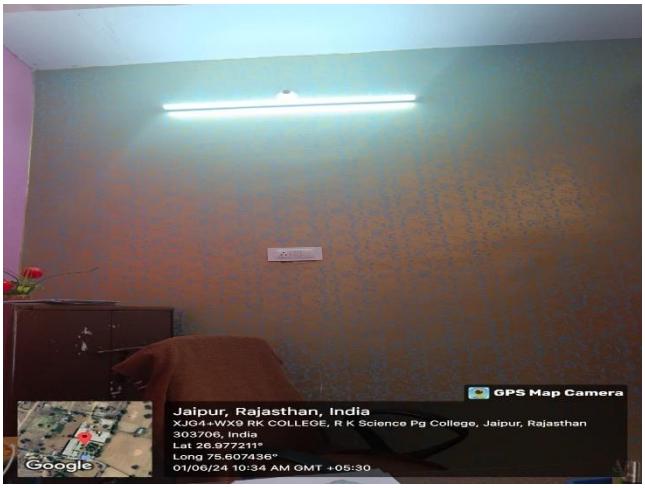


It was observed that:

a) LED lights are installed in the entire campus.
b) Campus has air conditioners which are in good working condition.

Cooler

Fan



LED Tube Light

Bore well

Bore Well

3.6 On Site Energy Generation (usage of LPG/ Natural Gas):

a) LPG is used for cooking in canteen/pantry.
b) Yes, Diesel Generator available in the campus. Average running 10 hrs/ month and 5 Star Rating.

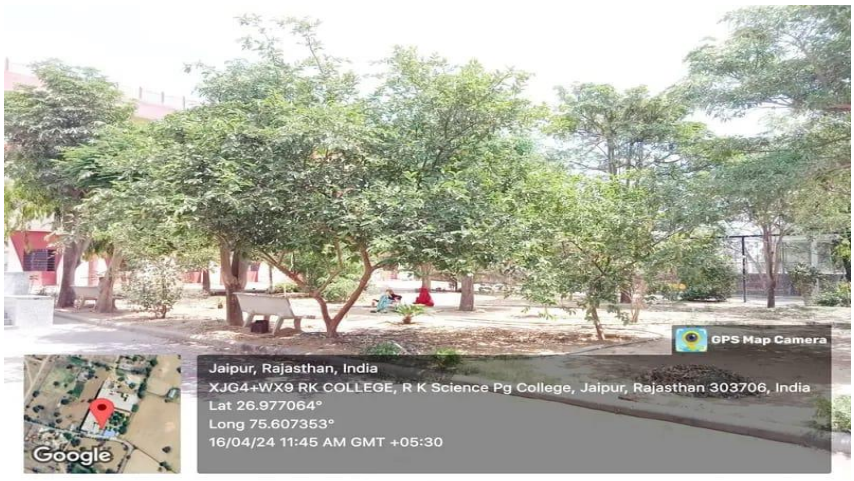
LPG Gas Cylinder

DG Set

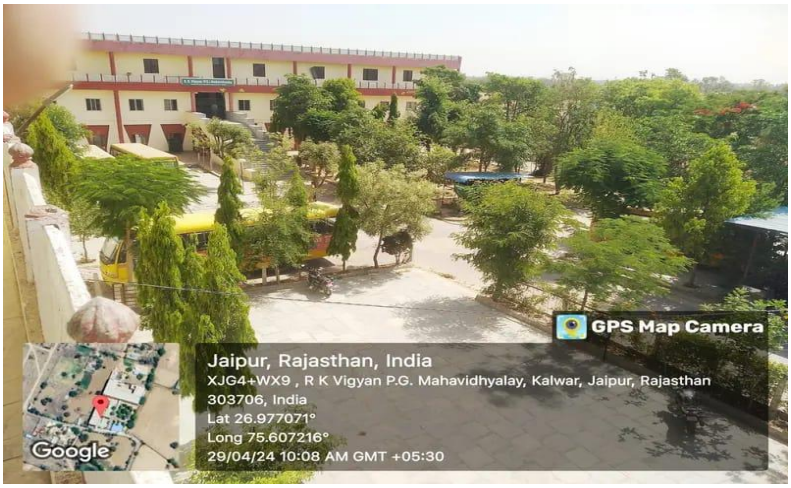
3.7 Temperature and Acoustic Control

a) White washed rooms & corridors and white/off-white flooring improve the lighting conditions.
b) The campus has done tree plantation front of the building, garden and play garden.
c) There is no noise pollution inside and around the campus.

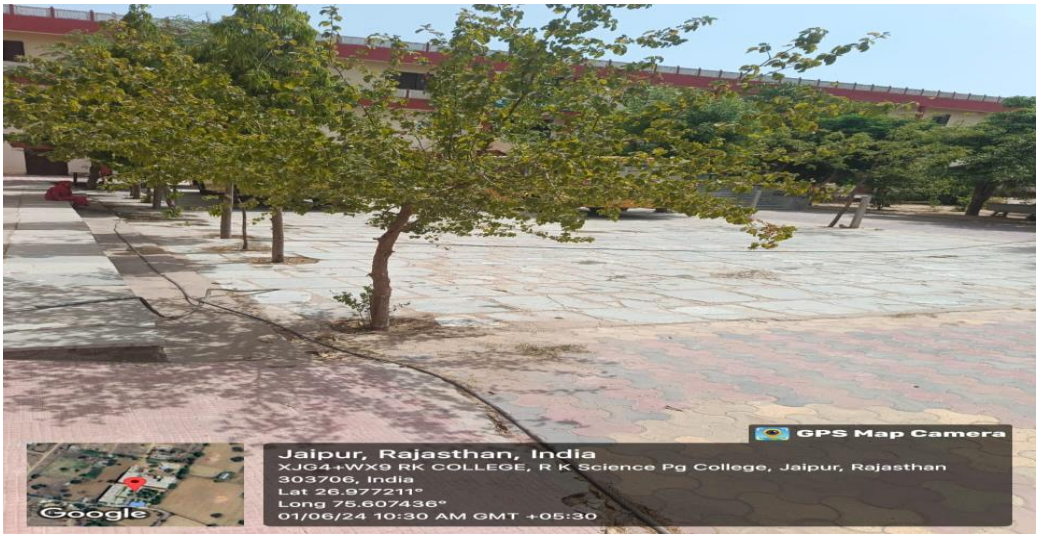
Green Campus



Green Campus



Green Belt



Green Belt

3.8 Paper Waste Management:

Being academic institution, waste paper is the main solid waste generated in the premises. The College has taken steps to minimize and avoid paper usage. It was observed that:

a) Prints and photocopies are taken on both sides of the pages to avoid excess paper usage. Rather than photocopy, digitalization (scanning) is practiced.
b) Internal notices and communications are through E-mail/WhatsApp.
c) Faculty and administration staff uses old papers and envelops for internal usages as rough work, file markers, page separators etc.
d) Old papers and answer sheets are kept in a separate storage room and disposed off as per college policy.

3.9 E-Waste Management:

a) E-waste is disposed off or discarded after approval from committee and is disposed by certified vendors.

3.10 Solid Waste Management:

It was observed that:

a) Wet waste and dry waste segregation is practiced in the premises. Separate bins are provided for wet biodegradable and dry recyclable waste.
b) Compost pit is also available for composting of dry waste such as leaves, flowers etc.

c) The daily waste is collected and disposed off through contractual vendors.
d) Biodegradable waste is mainly generated in canteen.

3.11 Universal Access and Efficient Operation and Maintenance of Building:

It was observed that:

a) College is easily accessible. Staircase and ramps are provided for staff and students.
b) Since the access and staircases are wide and uncluttered, it is possible to have a safe evacuation during emergency.
c) Fire extinguishers and Fire hose reel are provided for emergency. They are inspected and serviced by fire protection Service Company annually.
d) Directional exit signages and floor markings are present on every floor of the campus.
e) Regular Fire Safety Trainings is given to staff and students on annual basis.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3.12 Green belt/ Landscaping:

a) Large trees and plants are planted in the premises. Plantation also helps maintaining lower temperatures of the area.

3.13 Green Initiatives:

College is regularly celebrating important days such as Environment Day, Yoga Day, Earth Day etc as well as other cultural programs.


कृपया शान्ति बनाये रखें।
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Recommendations/Suggestions

For Improving Energy Consumption:

a) Every classroom and lab with central switch board can have a diagram linking location of a tube light, fan etc. with corresponding switch. This will ensure that correct fitting is switched on/ off and can save time & unnecessary operation.
b) Installation of automatic lights with sensors can be considered.
c) Standard Operation Procedures (SOPs) should be prepared and followed for green purchasing. Equipment with star rating, using eco-friendly materials; with safe disposal policy to be preferred. Policy of returning equipment at the end of life span to the supplier to be preferred.
d) For purchasing new electronic appliances, star rating provided by Bureau of Energy Efficiency (BEE) should be considered. The equipment which has maximum star ratings could be purchased, which will consume less energy, ensure environmental sustainability and also operate at low cost.
e) Usage of light reflectors is recommended as the reflectors can spread light to relatively large areas.
f) If possible, computers should be switched off from main power connections.
g) Notices/signages can be put up/displayed near switches and on notice boards, informing students and staff to switch off all electricals when not in use.
h) Control sensors can help to reduce consumption by automatically dimming lights when people are not around, and keeping blinds open to use natural light & reduce energy consumption.
i) Raise awareness:
   - Encourage students to help in monitoring energy consumption & implement corrective actions
   - Integrate energy education into classroom learning.

Water Conservation:

a) Provide information on water usage and savings to students/ staff through notices, screen savers in computer labs.
b) Dry sweep or use a sponge broom when possible, instead of using a hose to clean floors, sidewalks, or other hard surfaces.
c) Minimize/ reduce water usage by installing water saving faucets such as prismatic taps, tap aerators, jet sprays etc.
d) Installation of waterless urinals can be considered to reduce water consumption.
e) Water balance diagram can be prepared to quantify the water consumption by installing water meters at key points. Based on data gathered, appropriate measures can be taken to reduce the water consumption.

Paper and other Solid Waste Reduction:

a) Inventories of all solid waste generated in the premises must be maintained.
b) Enhance recycling. This can be done by creating a group where students can recycle books, personal clothes and other material to needy students. This can be an initiative under green program.
c) Standard Operating Procedures (SOP) for Solid and E-waste management and for recycling of waste should be prepared & practiced. The SOP's may include collection, segregation and reuse of different types of wastes, if any (e.g. biodegradable waste for composting). This will help in safe disposal of waste to recycle agencies.
d) Training as well as awareness programs should be organized on segregation of biodegradable waste and recycling of waste. Efforts should be taken to inform students about recycling options and signs should be posted on appropriate bins indicating what could be dumped in each bin.
e) The college can introduce online app, which can be useful for conducting internal exams, assignment/ reports submission. This system can also be used for displaying important notices, timetables.
f) Paper usage shall be monitored to understand the impact of digitization in the facility.

Others:

a) Environmental advisory committee could be formed. The discussions/ information sharing among different departments can generate lot of ideas and awareness on green issues.
b) Maintain minutes of meetings of environmental committees; evaluate the effectiveness of various environmental programs conducted by the institutes. Set annual targets for Green Initiatives & monitor them closely. Create 'Green Champions'.
c) Since each student uses computer lab, the screen savers can be set up for creating environmental awareness. (Ergonomics, water conservation etc.). Short 30 second pop up can be displayed on computer screens when they are on standby mode. Or wallpapers informing students about environment conservation can be created.
d) Consider detailed energy audit (energy consumption, thermal emission, visual comfort) and water audit.
e) Adopt environmentally responsible purchasing policy, and work towards creating and implementing a strategy to reduce environmental impact of its purchasing decision.

Annexure 1 – Indoor Gardening Details

Indoor plants are commonly used for their aesthetics benefits but they also have vital role reducing airborne pollution. The right choice of plants can be an excellent way of improving indoor air quality and general health. Local landscape contractor can be contacted for supply and rotation of these plants.

Plants	VOC it removes	Indoor source of VOC's	Plant care
 Aloe Vera	Formaldehyde, Trichloroethylene and Benzene	Chemical based cleaners and paints	Easy to grow with enough sunlight
 Bamboo Plant	Formaldehyde, Trichloroethylene and Benzene	Paints, Plastics, Wood products etc.	Thrives under low light conditions as well as easy to maintain
 Chinese Evergreen	Benzene	Paints	Low maintenance plant that prefers low light conditions.

 **English Ivy**	Formaldehyde, Benzene, Air borne fecal matter particles	Wood, Paper products, Air borne fecal – matter particles from pests	Easy to maintain
 Janet Craig	Formaldehyde, Benzene and Trichloroethylene	Paints, Plastics, Wood products etc.	Medium to low light tolerant plant. Requires little water for growth.
 Golden Pothos or Devils Ivy	Formaldehyde, Cleanses air	Exhaust fumes, carpeting materials, panelling and furniture products made with particle board	Extremely easy to maintain under low to bright light conditions. Fast growing and grows well under Fluorescent light.
 Mass Cane	Formaldehyde, benzene and trichloroethylene	Paints, Plastics, Wood products etc.	Medium to low light tolerant plant. Requires little water for growth.

 Snake plant	Formaldehyde and trichloroethylene	cooking fuels, wood products, facial tissues, personal care products and waxed papers	Drought resistant and Tolerates a variety Of light conditions. Hard to damage or kill.
 Peace Lily	Formaldehyde, benzene and trichloroethylene	Paints, Plastics, Wood products etc.	Relatively easy to maintain. Survives in low light conditions.
 Red-edged Dracaena	Formaldehyde and trichloroethylene	cooking fuels, wood products, facial tissues, personal care products and waxed papers	Drought resistant and Tolerates a variety of light conditions. Hard to damage or kill.
 Spider Plant	Formaldehyde, benzene, carbon monoxide and xylene	cooking fuels, wood products, Printing	Easy to maintain under medium to bright light condition.

 Parlor Palm	Purifies indoor air	-	Easy to maintain

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Registered Office:
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Vikas Puri, New Delhi-110018
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Email: support@elion.co.in
Website: www.elion.co.in