CRITERION-VII

EVIDENCE(S), AS PER SOP

METRIC No. 7.1.6	Quality audits on environment and energy are regularly undertaken by the institution
	The institutional environment and energy initiatives are confirmed through the following: 1. Green audit 2. Energy audit 3. Environment audit 4. Clean and green campus recognitions/awards 5. Beyond the campus environmental promotional activities
• Reports on Green audit, Energy audit, and Environment audit • Quality audits certificate on environment and energy	

GREEN AUDIT

2019-20 & 2020-21

AUDIT REPORT

Studied for

Pt. Ravishankar Shukla University

Amanaka G.E.Road, Raipur,
Chhattisgarh (India) - 492010

Analysed by

Greenvio Solutions

23 March 2022

Letter and Certificate of Consent

GREEN AUDIT

This is to certify that the Green Audit for 2019-20 and 2020-21
has been conducted for

Pt. Ravishankar Shukla University

Amanaka G. E. Road, Raipur, Chhattisgarh (India) - 492010

The Study observed the following:

The Institution undertakes multiple Green Practices as part of its activities.

The Buildings in the premises are well designed as per requirements of Green Buildings.

Regular and prompt action is by the team towards Building maintenance and improvement.

The Institution actively participates & conducts awareness programs related to Green Practices.

Overall the study concludes:

The Green Audit practices managed and implemented by the Institution are excellent.

Study and Audit done by:

Ar. Nahida Shaikh
Project Head and Green Building Consultant

Sustainable Academe – Greenvio Solutions
Sustainability Department of Greenvio Solutions, Naigaon
An environment Design and Consultancy developing Healthy and Sustainable Environments
sustainableacademe@gmail.com I **greenviosolutions@gmail.com**

About the Project Head - Ar. Nahida Shaikh has completed audits of multiple Institutes including Technical, State University, Private University and Single Faculty Colleges for a total of more than **50 lakhs+ sq. ft. of Built-up area audited till date** Pan India as an Accredited Green Building Professional-Architect.

She has **authored over 6 books** for Colleges in India titled *Towards a Healthy & Sustainable Institute, An Ecologically Sound Institution, Education amidst the nature, Micro efforts towards a Green Institution leading to Macro Results, An Eco-friendly Developed Institutions* f these are published with ISBN Number as Paperback and the book titled *An Urban Green Habitat* published with ISSN Number.

She is a Registered Licensed **Architect** with the Council of Architecture, India an **Indian Green Building Council Accredited Professional** (IGBC AP), an **Assocham GEM Certified Professional** (Regn. No. GEM CP 22/718) and she has completed her Lead Auditor Course on Environment Management System, Green Campus Audit, Energy Audit and Hygiene Audit to Educational Institutions and Industries.

Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing e[illegible] services within the stipulated time frame.

GREENVIO SOLUTIONS SUSTAINABLE ACADEME

(Valid till March 2023)

Disclaimer

The Audit Team has prepared this report for the **Pt. Ravishankar Shukla University** located at *Amanaka G.E.Road, Raipur, Chhattisgarh (India) - 492010* based on input data submitted by the University analysed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the Hon'ble Management and University. The warranty or undertaking, expressed or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

The audit is a thorough study based on the inspection and investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm with the Project Head - Ar. Nahida Shaikh who has completed audits of multiple Institutes including Technical, State University, Private University and Single Faculty Universities of more than 50 lakhs+ sq. ft. of Built-up area audited till date Pan India as an Accredited and Certified Green Building Professional-Architect. Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing excellent quality services within the stipulated time frame.

The Study is conducted in capacity of Accredited & Certified Green Building Professional with extensive experience.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting Audits

Palghar District, Maharashtra- 401208

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Acknowledgement

The Audit Assessment Team thanks the **Pt. Ravishankar Shukla University, Raipur, Chhattisgarh** for assigning this important work of Environment Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to Hon'ble **Prof. Keshari Lal Verma Sir, Vice Chancellor** and **everyone from the University.**

Our heartfelt thanks to Chairpersons of the entire process **Prof. Girish Kant Pandey Sir,** Registrar for the valuable inputs.

The kind gesture for the inventory and data collection of **and Mr. Kuldeep Bhupendra,** Incharge - Engineering Section is quite commendable.

We are also thankful to **University's Task force the faculty members - Audit Coordinators** who have collaborated to collect data required **Dr. Sanjay Tiwari,** Professor, Coordinator: M.Tech. in Optoelectronics & Laser Technology, Coordinator: Institute of Renewable Energy Technology & Management, S.O.S. in Electronics & Photonics; **Prof. Arti Parganiha,** Professor of Bioscience.

We highly appreciate the assistance of the **entire Teaching, Non-teaching and Admin staff** for their support while collecting the data.

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

Contents

Greenvio Solutions

Hereby presents

An Environment & Ecological friendly premise

Established as a State Private University at Raipur

vide Chhattisgarh Act of 1973

The prestigious

Pt. Ravishankar Shukla University

Amanaka G.E.Road, Raipur, Chhattisgarh (India) - 492010

1. Introduction

1.1 About Pt. Ravishankar Shukla University

An educational institute is beyond than being just a building. It helps one in acquiring knowledge which is a gateway to being successful and a good human.

"A good education is the best gift you can give yourself or anyone else"

- Mahtab Narsimhan

Pt. Ravishankar Shukla University is Chhattisgarh's largest and oldest institution of higher education, founded in 1964, and named after the first chief minister of erstwhile Madhya Pradesh. The University has a sprawling campus in the western part of the capital of Chhattisgarh, Raipur. The campus of University is spread in 300.17 acres of land. There are Twenty-Nine teaching departments in the University. Out of which six departments buildings have been constructed recently. A variety of self-financed courses have been initiated in some departments. The total number of employees is 700, who provide the administrative support at different levels.

Attracted by the opportunity to study and conduct advanced research with renowned professors and fellow scholars in one of the Chhattisgarh's most dynamic cities, students also come from the neighbouring States. There are 5000 students enrolled for variety of courses offered by the departments who are steered under the guidance of more than 100 faculty members. Jurisdiction of RSU covers entire central and southern part of Chhattisgarh. There are 180 educational institutions affiliated to the University. In the academic year 2005-06, about 1,25,000 students were enrolled, both for undergraduate and postgraduate courses. The University plays a major role in the educational, cultural and economic life of the region.

"There is no school equal to a decent home and no teacher equal to a virtuous parent."

- Mahatma Gandhi

It is one of the premier State Educational University providing quality education with best state of the art facility & Infrastructure to the students.

1.2 Statement, Section of University

1.2.1 Vision towards the future

- To **make quality higher education accessible to all sections of society,** including the tribal population of Chhattisgarh.
- To **provide quality education in the disciplines** of arts, humanities, social sciences, natural sciences and other disciplines of learning.
- To **develop human resource with world class competence and skills** in the respective disciplines.

1.2.2 Mission for achieving benchmarks

- To develop the university as a centre of excellence for higher education and knowledge resource
- To promote understanding the value of self-learning, creativity and competence building:
  - By providing world-class education through university-teaching departments and schools.
  - By promoting quality research in university schools and affiliated colleges.

1.2.3 About the Engineering section

Engineering section is an important component of the administrative infrastructure of Pt. Ravishankar Shukla University. The section mainly works on all matters subject to the control of the Building Committee.

The Building committee advises the Executive Council on all matters related to construction of buildings, repairs, alteration, additions to existing buildings, select and recommend site or acquisition, accord technical sanction to the plans and estimates, and expenditure.

The composition of the Building Committee is such that the members are nominated for the period of two years, as per additional Statute 3 of the University Act

1.2.4 About the Development section

The Development section is an important component of the administrative structure of the University. It periodically performs work related to all type of purchase proposals i.e. inviting quotations, preparation and floating tenders for the purpose of purchase, organizes the meeting of Central Purchase Committee duly constituted as per provisions of the University Act, preparation and floating the expression of interest, disposal of waste material such as used answer books etc.

The section also supervises works related to the printing of various documents, proforma, Degree & preparation of gold medal etc.

1.3 Institutions in the premises

The aim of the University is to continuously enhance the teaching methods in order to provide students with an opportunity for their all-round development. In order to manage the programme offerings in a much better way, Pt. Ravishankar Shukla University has **structured its offerings under 29 Major Sections** as follows:

1. **School of Studies in Ancient Indian History Culture & Tourism & Hotel Management**
2. **School of Studies in Anthropology**
3. **School of Studies in Biotechnology**
4. **School of Studies in Chemistry**
5. **Swami Vivekanand Memorial School of Studies in Comparative Religion , Philosophy and Yoga**
6. **School of Studies in Computer Science & IT**
7. **School of Studies in Economics**
8. **School of Studies in Electronics and Photonics**
9. **School of Studies in Environmental Science**
10. **School of Studies in Geography**
11. **School of Studies in Geology and Water Resource Management**
12. **School of Studies in History**

13. **School of Studies in Law**
14. **School of Studies in Library and Information Science**
15. **School of Studies in Life Science**
16. **School of Studies in Literature and Languages**
17. **Institute of Management**
18. **School of Studies in Mathematics**
19. **University Institute of Pharmacy**
20. **School of Studies in Physical Education**
21. **School of Studies in Physics and Astrophysics**
22. **School of Studies in Psychology**
23. **School of Regional Studies and Research**
24. **School of Studies in Sociology & Social Work**
25. **School of Studies in Statistics**
26. **Institute of Teachers Education**
27. **Centre for Women's Studies**
28. **Renewable Energy Technology & Management**
29. **Center for Basic Sciences (CBS)**

Each of these Schools is headed by highly experienced and competent Director/Deans along with H.O.Ds checking on the right academic progress of each faculty/department in the University.

The University strives for excellence in academics and makes an effort to induce passion for learning along with the inspiration for decisive thinking and assessment, thereby helping them to become the best professionals in their chosen careers.

1.4 Programs offered by the University

The University a wide range of courses for the students to upgrade their educational qualification. The details of each of these courses as per the School are as follows.

- **Post-Doctoral** – It offers the following courses.

1. Doctor of Science Chemistry
2. Doctor of Science/ Doctor of Literature Anthropology
3. Doctor of Literature Sociology
4. Doctor of Literature Linguistics
5. Doctor of Science/ Doctor of Literature Geography
6. Doctor of Literature Psychology
7. Doctor of Literature Economics
8. Doctor of Science Physics
9. Doctor of Literature History
10. Doctor of Science Zoology
11. Doctor of Science Botany
12. Doctor of Science Bioscience
13. Doctor of Science Statistics
14. Doctor of Law
15. Doctor of Literature Philosophy
16. Doctor of Science Geology
17. Doctor of Literature Physical Education
18. Doctor of Literature Library & Information Sciences
19. Doctor of Science Mathematics
20. Doctor of Science Microbiology
21. Doctor of Science Electronics
22. Doctor of Literature Hindi
23. Doctor of Science Computer Science

24. Doctor of Literature Ancient Indian History
25. Doctor of Literature English
26. Doctor of Science Pharmacy
27. Doctor of Literature Management
28. Doctor of Science Biochemistry
29. Doctor of Science Biotechnology

- **Doctoral** – It offers the following courses.
    1. Doctor of Philosophy - Chemistry
    2. Doctor of Philosophy - Anthropology
    3. Doctor of Philosophy - Sociology
    4. Doctor of Philosophy - Linguistics
    5. Doctor of Philosophy - Geography
    6. Doctor of Philosophy - Psychology
    7. Doctor of Philosophy - Economics
    8. Doctor of Philosophy - Physics
    9. Doctor of Philosophy - History
    10. Doctor of Philosophy - Zoology
    11. Doctor of Philosophy - Botany
    12. Doctor of Philosophy - Bioscience
    13. Doctor of Philosophy - Statistics
    14. Doctor of Philosophy - Law
    15. Doctor of Philosophy - Comparative Religion and Philosophy
    16. Doctor of Philosophy - Geology
    17. Doctor of Philosophy - Physical Education
    18. Doctor of Philosophy - Library Science
    19. Doctor of Philosophy - Mathematics
    20. Doctor of Philosophy - Microbiology

21. Doctor of Philosophy - Regional Studies
22. Doctor of Philosophy - Electronics
23. Doctor of Philosophy - Hindi
24. Doctor of Philosophy - Computer Science & IT
25. Doctor of Philosophy - Ancient Indian History, Culture & Archaeology
26. Doctor of Philosophy - English
27. Doctor of Philosophy - Pharmacy
28. Doctor of Philosophy - Management
29. Doctor of Philosophy - Biochemistry
30. Doctor of Philosophy - Biotechnology
31. Doctor of Philosophy Environmental Science

- **Post Graduate -** It offers the following courses

1. Master of Science - Chemistry
2. Master of Arts - Sociology
3. Master of Arts - Psychology
4. Master of Arts - Linguistics
5. Master of Arts/Master of Science - Geography
6. Master of Arts/ Master of Science - Anthropology
7. Master of Arts - History
8. Master of Arts – Economics
9. Master of Science – Physics
10. Master of Arts/Master of Science - Statistics
11. Master of Science - Bioscience
12. Master of Law - Constitutional and Administrative Law, Crime and Torts
13. Master of Science - Geology
14. Master of Library Science - Library and Information Science
15. Master of Science/Master of Arts - Mathematics

16. Master of Science - Microbiology
17. Master of Physical Education
18. Master of Business Administration
19. Master of Arts - English
20. Master of Science - Electronics
21. Master of Arts - Hindi
22. Master of Computer Applications
23. Master of Arts - Ancient Indian History, Culture & Archaeology
24. Master of Science - Information Technology
25. Master of Science - Biochemistry
26. Master of Science - Biotechnology
27. Master of Education
28. Master of Science - Pharmacy Pharmaceutics
29. Master of Arts - Applied Philosophy & Yoga
30. Master of Technology - Optoelectronics & Laser Technology
31. Master of Social Work
32. Master of Science - Environmental Science
33. Master of Arts - Rural Development Master of Arts - Chhattisgarhi
34. Master of Science Integrated [Physics/ Mathematics/ Chemistry/Biology]

- **Under Graduate** – It offers the following courses.

1. Bachelor of Library Science Library and Information Science
2. Bachelor of Physical Education
3. Bachelor of Pharmacy
4. Bachelor of Arts - Bachelor of Legislative Law
5. Bachelor of Education
6. Bachelor of Vocation in Renewable Energy Technology and Management

- **Post-Graduation diploma** – It offers the following courses.

1. P.G. Diploma in Guidance and Counselling
2. P.G. Diploma in Yoga Education & Philosophy
3. P.G. Diploma in Tourism & Hotel Management
4. P.G. Diploma in Regional Planning & Development
5. P.G. Diploma in Forensic Science
6. P.G. Diploma in Rehabilitation Psychology
7. P.G. Diploma in Applied Hydrogeology
8. P.G. Diploma in Remote Sensing & GIS

- **Diploma Programs -** It offers the following courses
    1. Diploma in European and Asian Languages English
    2. Diploma in European and Asian Languages French
    3. Diploma in National Language Sindhi

1.5 Assessment of the University

1.5.1 Establishment

Pt. Ravishankar Shukla University, has been established as a State University at Raipur, vide Chhattisgarh Act of 1973.

1.5.2 Recognition

The University is recognised by **University Grant Commission (UGC)** under section 2 (f) and 12 (b) of the UGC Act, 1956 vide by University Grants Commission, New Delhi.

1.5.3 Accreditation

NAAC - The following are details of the reaccreditation of the University.

Cycle	First	Second	Third
CGPA	75.1	2.62	3.02
Grade	B+	B	A
Year	2003	2011	2016

Table 1: NAAC Accreditation details of the Institute

The University is due to enter its Fourth cycle of NAAC soon.

1.5.4 Approval

The University has received the following significant approvals for the various courses.

S. No.	Course	Approval
1	B. Pharm and M. Pharm	**Pharmacy Council of India (P.C.I)** A statutory body of government of India constituted under the Pharmacy Act, 1948, responsible for regulation of pharmacy education and practice of profession in the country for registration as a pharmacist.
2	BA LLB (Five Years)	**Bar Council of India (B.C.I)** A statutory body established under the section 4 of Advocates Act 1961 that regulates the legal practice and legal education in India.

3	Teacher courses (B. Ed)	**National Council for Teacher Education (N.C.T.E)** A statutory body in pursuance of the National Council for Teacher Education Act, 1993
4	Diploma in rehabilitation psychology	**Rehabilitation Council of India (RCI)** The apex government body, set up under an Act of Parliament, to regulate training programmes and courses targeted at disabled, disadvantaged, and special education requirement communities.
5	Technical courses	**All India Council for Technical Education (AICTE)** A national-level Apex Advisory Body to conduct a survey on the facilities available for technical education and to promote development in the country in a coordinated and integrated manner.

Table 2: Details of the various Approvals of the Institute

1.5.5 Certification

The institute has received the following Certifications

- **The National Institutional Ranking Framework (NIRF)** - Ranked between 150 and 200 in the latest rankings.
- **All India Survey of Higher Education (AISHE)** – As per latest documents the reference number is U-0093-2019 for 2019-20

1.6 Affiliated colleges

The PRSU is one of the premier centers of higher education & learning in Chhattisgarh, India. It caters to the needs of the youths of Chhattisgarh and adjoining States, namely Madhya Pradesh, Maharashtra, Odisha, Jharkhand, Andhra Pradesh, as well as from West Bengal and Andaman & Nicobar Islands in the realm of higher education and research.

Chhattisgarh was carved out of Madhya Pradesh on the 1st November, 2000 as a new political entity. Pt. Ravishankar Shukla University, being the oldest university, is leaving no stone unturned to cater to the needs of the society. **The university has grown enormously over the last 57 years** in terms of number of students or disciplines, viz., humanities, natural science, law, education, pharmacy, management, physical education, library science and computer science & IT etc.

In 29 Schools of Studies (SoS) and 149 affiliated colleges spread over five districts of the Chhattisgarh State.

2. Institution overview

2.1 Populace analysis for Academic year 2019-20

2.1.1 Students data

The student data (shared by the University) shows there were a total of **16,500 Boys and 10,092 Girls** students thus **a total of 26,592 students** in the premises.

2.1.2 Staff data

Type	Total
Admin Staff	**4**
Teaching Staff	**120**
Non-Teaching Staff	**302**
Total Staff Members	**426**

Table 3: Staff data of the Institution for 2019-20

The staff data shows the premises had a total of **426** Staff Members.

2.2 Populace analysis for Academic year 2020-21

2.2.1 Students data

The student data (shared by the University) shows there were a total of **17,113 Boys and 11,091 Girls** students thus **a total of 28,204 students** in the premises.

2.2.2 Staff data

Type	Total
Admin Staff	**4**
Teaching Staff	**115**
Non-Teaching Staff	**288**
Total Staff Members	**407**

Table 4: Staff data of the Institution for 2020-21

The staff data shows the premises had a total of **407** Staff Members.

2.3 Total University Area & Building Spread Area

The **total site area is 300.17 Acres** and the **total Built-up area of University is 2,87,751 sq. ft.** for **a total of 28,611 footfalls.**

2.4 University Infrastructure

The Buildings are made of Reinforced Cement Concrete (RCC) framework. These are equipped with modern amenities. It facilitates the students with a good environment for studies and stays true to its aim of providing Holistic development. The Residential and Academic buildings amalgamate smoothly with the open space in order to stand out as one of the most premier Institutes in the country.

Overall the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premises covers most of the requirements for a Green Habitat. It continues to upgrade itself in terms of the facilities and makes sure that there is no compromise on the quality of services towards Building requirements. The cooperative teamwork and the leadership of the Hon'ble dignitaries are one of the main reasons for achieving success in providing quality education with an advanced and up-to date premises.

2.4.1 Spatial Organisation

2.4.1.1 Architectural Design

The overall ambience of the University is warm and inviting. The courtyards, educational spaces, learning spaces, residential spaces and recreational spaces have ample natural ventilation in the form of clear glass windows with fresh air ventilation. The architecture of the buildings are quite well designed. The colour palette not just helps the buildings to stand out as per respective typology of the Building be it Educational or Residential but also provides an Institutional arena. There are provisions for lifts, CCTV, Fire extinguishers, first aid box and much more.

2.4.1.2 Landscape design

The built-form balances with the local architecture and amalgamates very well with the natural landscapes in form of open ground, designed landscape spaces, streetscape

elements such grounds, designed gardens, greenhouse, botanical gardens and huge trees all around. There are provisions for ramps, open ground, courtyards, designated landscape areas, signages, Utility Boxes, Parking, Sidewalk Furniture and Utility Poles.

2.4.2 Building and Block wise details

The Building & Block wise details on the Pt. Ravishankar Shukla University premises are mentioned below:

S. No.	Branch name	Floor
1	Admin Building	G+2
2	Arts Building	G+3
3	Library Building	G+3
4	Electronic Building.	G+1
5	Science Block	G+1
6	B.ED Building	G+1
7	USIC	G
8	M.B.A. Building	G+1
9	New NCNR Building	G+1
10	HRDC Building	G+1
11	Computer Science Building	G+1
12	Biotechnology Building	G+1
13	Physical Education	G+1
14	Student Recreation	G
15	Pharmacy Building	G+1
16	Law Building	G+1
17	Maths/ Statistics Building	G+1
18	Geology Building	G+1
19	Bio Science Building	G+1
20	Regional study/ IQAC	G+1

21	CBS Building	G+2
22	Auditorium Building	G+1
23	Guest House Building	G+1
24	Teacher Hostel Building	G+1
25	Geography Building	G+1
26	Anthropology Building	G+1
27	Physics Dom Building	G+1
28	Health Center	G
29	Utility Center	G+1
30	old NCNR Building	G
31	Press Building	G+1
32	Community hall	G+1
33	Gym Building	G+1
34	Power gird Hostel	G+2
35	Gandhi Hostel	G+1
36	Azad Hostel	G+1
37	Boys Research Hostel	G
38	Navin Kanya Hostel	G+1
39	Professional Girls Hostel	G+1
40	Research Girls Hostel	G+1
41	PG Girls Hostel	G+1

Table 5: Block and department wise details of the University premises

2.4.3 Salient features

The University had the best State of the art Infrastructure in the Country. Some of the best features available are as follows:

1. *ERP System for monitoring administration /academics*
2. *Wi-Fi enabled premises*

3. *Modern infrastructure with well-equipped laboratories*
4. *Guest Lectures by Eminent Scholars*
5. *Ragging free environment*
6. *Hostels for Girls and Boys*
7. *24 x 7 Power and RO water supply*
8. *State of art Library*
9. *Canteen Facility*
10. *Medical Facility (Health Centre)*
11. *Auditorium with all ultra-modern facilities.*
12. *Multipurpose Hall*
13. *Landscaped Gardens*
14. *On premises Residential Facilities for faculties and employees.*
15. *Community development programs*
16. *Arrangement for physically Challenged persons/students.*

The University endeavours at training young women to be competent, committed and compassionate and lead in all walks of life.

2.4.5 Operation and Maintenance of the premises

The interview session with the staff regarding the operation and working hours is summarized in the table. The Institutions are open Monday to Friday for full day. Saturday, Sunday is an off for all. Below mentioned in the table are the average working hours. The detail wise timing for each is mentioned below the table.

S. No.	Section	Spaces	Time	Hours / day	Days in a year
1	Main Institutional University	Student areas and Teaching faculty	10:00 a.m. to 5:30 p.m.	7.5	280
2	General areas	Admin areas and library, Passage, staircase, toilet	09:30 a.m. to 5:30 p.m.	8	300

Table 6: Schedule of the timings of the premises


INDIAN
HOUSE

3. Green Building Audit Study

3.1 About the Green Building Study Audit

It is a systematic study of the aspects which make the Institution a sustainable and healthy premises for its inhabitants.

3.2 Analysis for the Green Building Study Audit

The procedure included detailed verification for the following:

Energy Audit

- Analysis of the Lights, Fans, AC, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the premises

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of premises; Scope to include Rain water harvesting and Waste water treatment in premises
- Waste Audit - Current waste produced, its segregation and usage; Strategies to be adopted for waste management and awareness

Environmental Audit

- Analysis of the current landscape + hardscape of premises
- Analysis of the flora and fauna of campus
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

3.3 Strategy adopted for Green Building Study Audit

The strategies included data collection from admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collected and preparation of the Report.

3.4 Timeline of the activities for Green Building Study Audit

- 01 January 2022 – Discussion with the University
- 13 January 2022 – Allotment and Initiation by the University
- 12 February 2022 – Survey of the Student and staff submitted
- 24 February 2022 – Discussion for review of data collection
- 08 March 2022 – Site visit
- 10-21 March 2022 – Data submitted by University
- 23 March 2022 – Submission of the Report

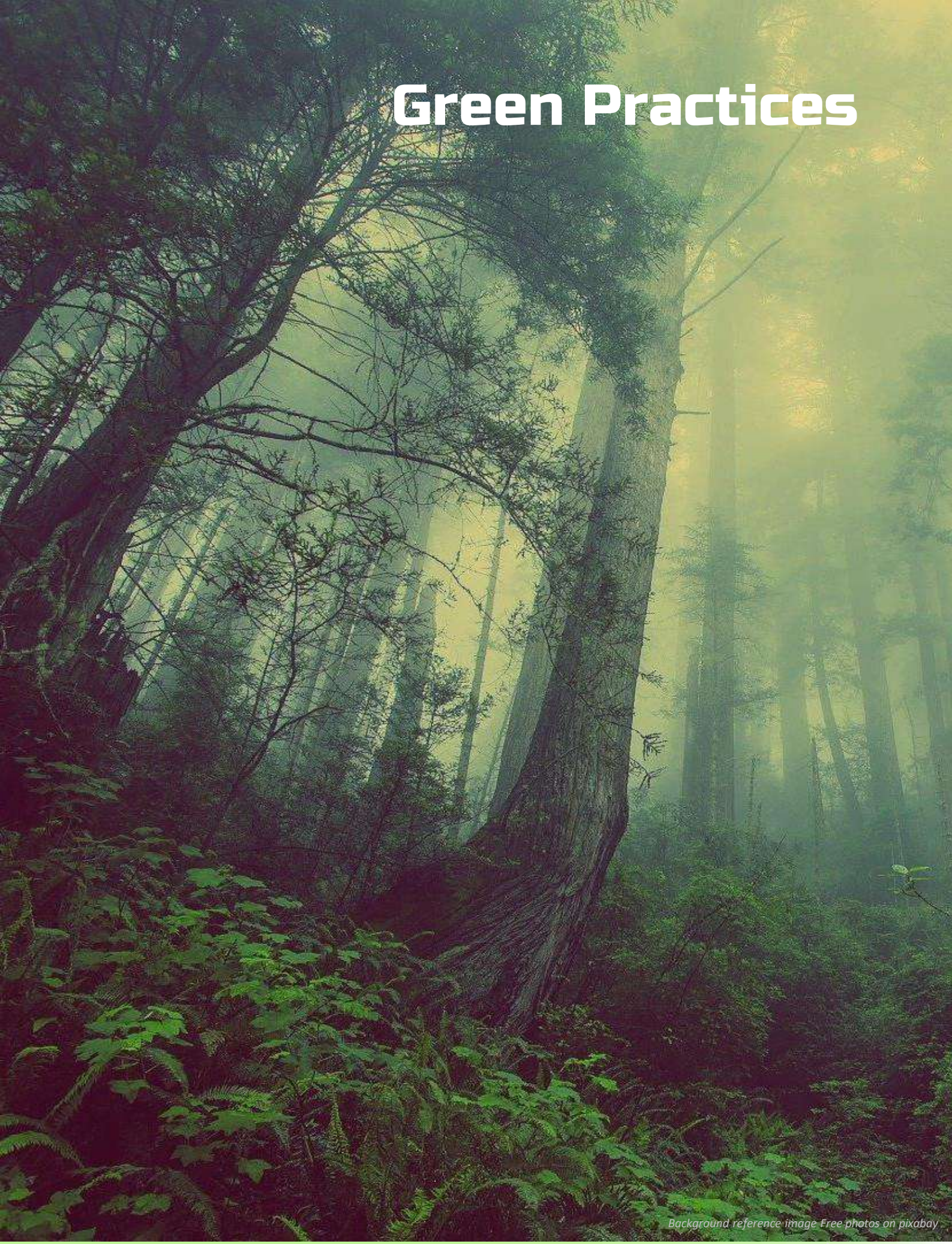
Meeting with Vice Chancellor Sir during the Audit visit

Discussion meeting with Prof. Girish Kant Pandey Sir, Registrar

Induction meeting with Mr. Kuldeep Bhupendra, Incharge Engineering section

On-site External Team with the University representatives

Green Practices



Background reference image Free photos on pixabay

Greenvio Solutions

4. Green Practices Audit

The increasing global warming and climate change have made us realise that apart from the enormous strategies the individual small efforts need to be taken by individuals and Educational Institutes as the younger generations are the future of the world and once they are taught about these practices only then can we assume a better future.

4.1 Green practices

We observed the following points during the Site investigation:

- There is **availability of open space in the premises in addition to the provision of the multiple varieties of flora.**
- **The ample vegetation benefit the users by providing shade.**
- **Self-sustaining premises has provision for organic composting and waste water contain organic nutrients which do not require additional nutritioning. These are utilised in the gardens of the premises.**
- There is **organic composting process carried out for decomposition of organic matter of plants and it is used as an organic fertilizer and increase ecology, this is done through Vermiculture.**
- The Students, University authorities **jointly conduct initiatives for upgrading of the premises from environmental view.**
- **The trees are well planned and organised this makes the ambience very refreshing.**
- **We would like to specially mention about the staff, though the University's provision for staff, personal housekeeping their co-operation and dedication towards maintaining the premises has lead to it being one of the most clean premises in the city of Raipur.**
- **The Teaching staff too is very cautious about eco-friendly initiatives and have ample knowledge about systems which is commendable.**

4.2 Survey results

An online survey was conducted to analyse the student and staff views about the premises, following are some of the reviews. (Note - Responses have been rounded off keeping in the population study)

4.2.1 Participation

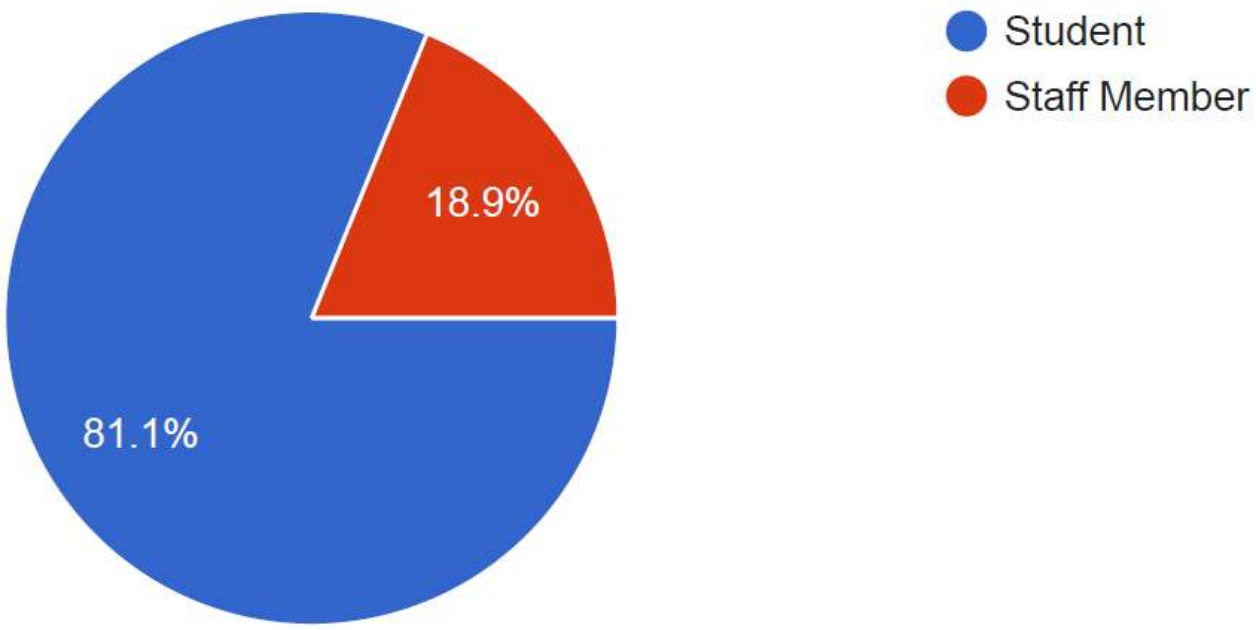


Figure 1: Participation analysis in the survey

A total of **122 responses** were received out of which 81% were students.

4.2.2 Schools (Dept./ Faculty)

The Students and staff from almost all the schools and departments had participated in the survey.

The enthusiastic participation and the coordination of the University towards encouraging the students to participate in the same are quite commendable.

4.3 Survey Ratings

Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good
- Scale 4 – Very good
- Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

Rate the Green awareness practices in University

An online survey was conducted to analyse the student and staff views

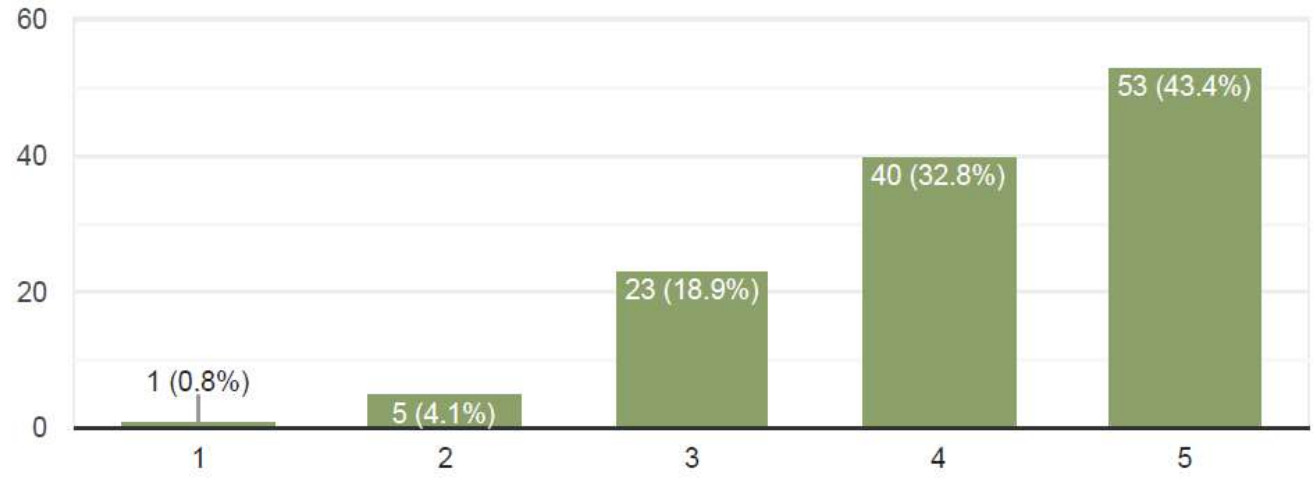


Figure 2: Participation analysis in the survey

There were mixed responses received the equal also the highest was for **rating 5 (Excellent) at 43% (which is a very good point to be noted) and rating 4 (Very good) at 33%** followed by **19% for rating 3 (Good).**

4.4 Community Development

4.4.1 About the initiative and concept

The various community development programs conducted include Tree Plantation, Life Learning, Employability Skill program introduced for the youth, Blood Donation Camp, Food Kit Distribution Program to the neighbourhood community, Relief fund programs. **The most special part is the Unnat Bharat Abhiyan initiative which are conducted by the University for generating awareness. A lot of efforts get involved right from planning to execution. The main motive behind these is social welfare. This kind of a though process is highly admirable. We respect and congratulate the University for the same.**

4.4.1.1 Unnat Bharat Abhiyan

The conceptualization of UBA started with the initiative of a group of dedicated faculty members of Indian Institute of Technology (IIT) Delhi working for long in the area of rural development and appropriate technology. The concept was nurtured through wide consultation with the representatives of a number of technical Universitys, Rural Technology Action Group (RuTAG) coordinators, voluntary organizations and government agencies, actively involved in rural development work, during a National workshop held at IIT Delhi in September, 2014. The workshop was sponsored by Council for Advancement of People's Action and Rural Technology (CAPART), Ministry of Rural Development, Govt. of India. The program was formally launched by the Ministry of Education (MoE) (formerly Ministry Human Resource Development (MHRD)) in presence of The President of India on 11 November, 2014.

Pt. Ravishankar Shukla University, Raipur, Chhattisgarh became a participating institute of UBA with AISHE CODE: 0093. As a part of Unnat Bharat Abhiyan, Pt. Ravishankar Shukla University, Raipur, Chhattisgarh is acting as representative of UBA in their area for promoting & facilitating UBA network. The University is responsible for conducting cluster activities in their own adopted village under UBA. The University is consistently work on the overall development of adopted villages through various innovative ideas and trying to identify the problems and need of the village peoples. The institute will also responsible to solve the problems and helps them to raise the standard of living of villagers.

To full fill the requirement of the adopted villages related to their socioeconomic development and to conduct the activities, disseminate the new technologies the UBA team of our institution is actively involved and is trying to improve the quality of rural life through innovative and affordable technological interventions.

4.4.1.2 Villages adopted

There are a total of five villages adopted by the Pt. Ravishankar Shukla University, Raipur, Chhattisgarh in this context. The details of the same are as follows.

- **Telnisatti gram – Zilla Dhamtari**
- **Baronda gram – Zilla Mahasamund**
- **Mund gram – Zilla Baloda Bazar- Bhatapara**
- **Gomchi gram – Zilla Raipur**
- **Supebeda gram – Zilla Gariaband**

4.4.2 Survey reviews

An online survey was conducted to analyse the student and staff views about **the Rural community programs undertaken by the Institute?**

Some of the key responses are noted below as a result of Online survey.

- Excellent
- NSS and few other departments are doing good activities.
- **University is continually working for uplifting the education standards and facilities in nearby government schools.**
- Impressive but need to be updated time to time
- Very good initiative by Pt.S.R.U. NSS team to take a camp in rural areas to awareness about swachh Bharat Abhiyan and also aware from Covid-19, to protect him or her self planting trees.
- They organize seminars to awre us about rural problems and their solution
- **The Program is very good and helpful for the rural community nearby University.**

4.5 Eco-friendly initiatives undertaken

The University has undertaken the following initiatives through **excellent efforts** towards save environment measures and conduct various activities like tree plantation, nature cleanliness, visits to nearby flora and fauna, rural development initiatives.

4.5.1 Environment initiatives

There are National Service Scheme units in the College. The N.S.S Programme Officers of the College have been working as a team with dedication for the following activities.

- Cleaning campaign in the society.
- Afforestation through tree plantation.
- Creating awareness of such issues as social problems, education and cleanliness.
- Awareness Rallies about environment, cleanliness
- Organization of health camps, Street plays.
- Fund raising for the Armed forces.

4.5.2 Survey results

4.5.2.1 Does your University conduct environment awareness programs/ webinars/ plantations/ cleanliness or similar programs?

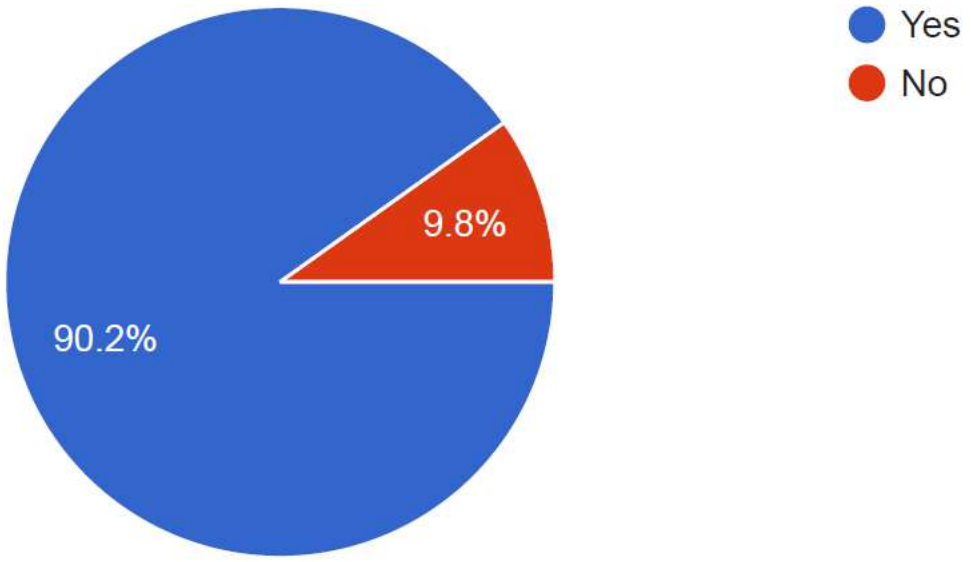


Figure 3: Green awareness practices in University

The students, staff **(almost 90%)** of responses confirmed activities are conducted which is very excellent.

4.5.2.2 Do you participate is such events?

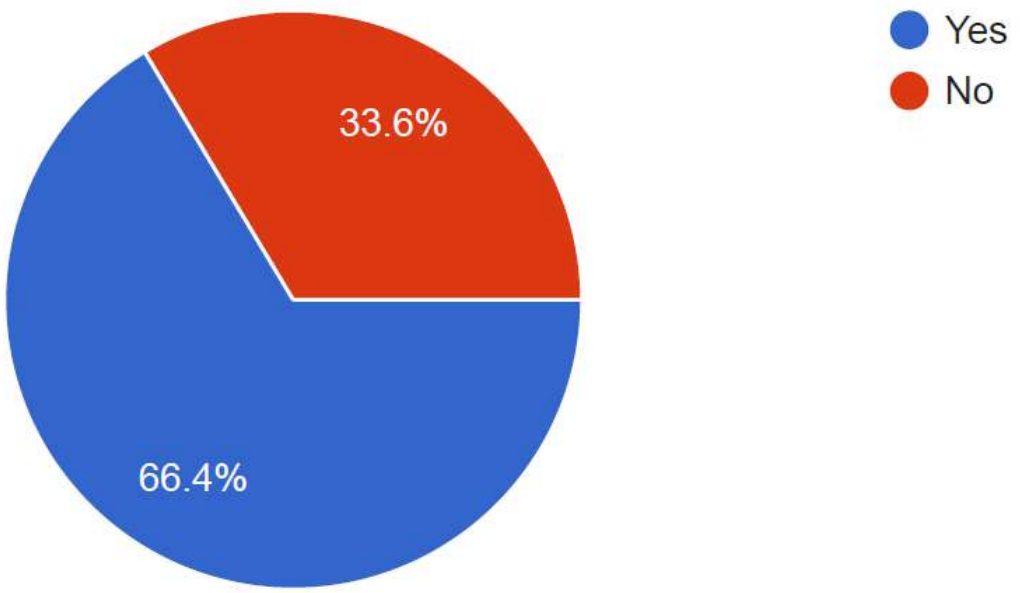


Figure 4: Green awareness practices in University

The students, staff **(almost 66%)** of the responses confirmed their participation, **this is a good number however it can be increased in future.**

4.5.3 Survey review

4.5.3.1 If yes, what has been your experience about the program?

We have listed some of the key responses below.

- It's very good and informative.
- Pleasant experience
- **It was really very nice experience and to experience and I also aware people in the society regarding same.**
- It tries to educate the people regarding issues of environment.
- Very valuable and knowledgeable to maintain our environment clean and green.
- **It was great, we came to know about many species of plants and their uses.**
- Informative and good step towards our future.
- Good as it creates awareness and social interaction.
- Good and qualitative information collected.

- Programs were well organized and impactful.
- Under the University Green Program Awareness, we got to know about our ecological balance and control of environmental balance.
- **Traffic rule awareness, overall the experience is good, learned about the importance of following traffic rule as it not only safe our life's but also prevent others life too.**
- It is nice to experience of doing such work for our environment.

4.6 Recommendations for a Sustainable Habitat

We have found that the current practices are very excellent and thus there are only minimal recommendation with respect to this section.

a) Beautification of the plantations in the premise

There can be provision for more plantations in the premise may be even Kitchen garden facility, the existing plantations and open unsused areas such as backyards require upgradation through proper landscape architecture interventions. Though, duing the site visit we observed this activity has begun to be implemented there is scope for improvement.

b) Plant as a gift

As a kind gesture the guests visiting the premise can be asked to plant a small plant in the premise itself and they can be even given plants/ bouquet from the flowers of the plants in the premise as a gift.

c) Environmental awareness

There can be various artworks on compound wall giving message of saving environment through the joint efforts of the students and staff thereby making the student socially and environmentally responsible citizen.

d) Tree adoption scheme

The college can adopt One Faculty – One tree adoption scheme which is one of its kind practice, this can be very beneficial especially during the summer season.

e) No vehicle day

Once in a while a No vehicle day can be adopted by students and staff to promote the use of eco-friendly vehicles in the premise.

f) Signages on the plants mentioning scientific names

The practice of having the names of each plant and tree will provide awareness among the staff and students.

राष्ट्रीय सेवा योजना

स्थापना दिवस एवं सम्मान समारोह

23 एवं 24 सितम्बर 2018

प्रशस्ति-पत्र

प्रमाणित किया जाता है कि श्री एल. एस. गजपाल, पं. रविशंकर शुक्ल विश्वविद्यालय अध्ययन

शाला, रायपुर (छ.ग.) ने सत्र 2017- 2018 में राज्य स्तरीय राष्ट्रीय सेवा योजना के श्रेष्ठ कार्यक्रम अधिकारी

के रूप में सम्मानित किया जाता है।

इन्हें उज्जवल भविष्य की कामना करते है।

कार्यक्रम समन्वयक (रासेयो)
पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छ.ग.)

राज्य एन. एस. एस. अधिकारी
राष्ट्रीय सेवा योजना छ.ग. शासन
रायपुर (छ.ग.)

कुलपति
पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छ.ग.)

राष्ट्रीय सेवा योजना

स्वर्ण जयंती वर्ष 1969-2019

राज्य स्तरीय स्थापना दिवस एवं सम्मान समारोह

23 एवं 24 सितम्बर 2019

प्रशस्ति पत्र

प्रमाणित किया जाता है कि श्री कौशल गजेन्द्र

महाविद्यालय समाजशास्त्र एवं समाजकार्य, अध्ययनशाला, पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर (छ.ग.)

को सत्र 2018-19 में राष्ट्रीय सेवा योजना के श्रेष्ठ स्वयं सेवक के रूप में सम्मानित किया जाता है।

डॉ. नीना बाजपेयी
कार्यक्रम समन्वयक (रासेयो)
पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छ.ग.)

डॉ. समरेन्द्र सिंह
राज्य एन. एस. एस. अधिकारी, पदेन उपसचिव
राष्ट्रीय सेवा योजना छ.ग. शासन
रायपुर (छ.ग.)

प्रो. केशरी लाल वर्मा
कुलपति
पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छ.ग.)

नेहरू युवा केन्द्र, रायपुर

NEHRU YUVA KENDRA, RAIPUR

नेहरू युवा केन्द्र संगठन
विश्व का सबसे बड़ा युवा नेटवर्क
कोड-7206

स्वायत्तशासी संस्था
युवा कार्यक्रम एवं खेल मंत्रालय
भारत सरकार

an autonomous Body under the Ministry of Youth Affairs & Sports Government of India

साथ साथ
चलने की ओर...

क्र: NYK/Rpr/SBSI-2/2019 / 2020-21/ 158

06.01.2021

कार्यक्रम अधिकारी (NSS)
पं रवि शंकर विश्वविद्यालय
रायपुर छ.ग

विषय- स्वच्छ भारत समर इंटर्नशिप 2019 प्रतियोगिता के पुरस्कार राशि बाबत ।

महोदय ,

नेहरू युवा केंद्र , रायपुर छ.ग अत्यंत हर्ष के साथ आपको सूचित करना चाहता है की स्वच्छ भारत समर इंटर्नशिप 2019 में NSS ईकाई , पं रवि शंकर विश्वविद्यालय, रायपुर छ.ग को जिला स्तर पर द्वितीय पुरस्कार मिला है।

इस पुरस्कार की राशि ₹ 20,000 माह हमें नई दिल्ली मुख्यालय से प्राप्त हो चुकी है। अतः आपसे निवेदन है कि उक्त पुरस्कार राशि का भुगतान करने हेतु आपके पं रवि शंकर विश्वविद्यालय के NSS ईकाई का बैंक खाता क्रमांक, पासबुक की छायाप्रति एवं मैंडेट फॉर्म (Mandate Form) भरकर 07.01.2021 तक देने का कष्ट करें जिससे उक्त पुरस्कार राशि आपके खाते में भेजी जा सके।

धन्यवाद।

भवदीय
06.01.2021
अंकित तिवारी
जिला युवा अधिकारी
नेहरू युवा केंद्र रायपुर
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एवं
रा.से.यो. राज्य स्तरीय सम्मान समारोह

दिनांक : 12 जनवरी 2021

{ प्रशस्ति पत्र }

प्रमाणित किया जाता है कि श्री / कु. / डॉ. / श्रीमती अध्ययन शाला इकाई

संस्था पं. रविशंकर शुक्ल विश्वविद्यालय, विश्वविद्यालय पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर

को राष्ट्रीय सेवा योजना के श्रेष्ठ 'संस्था कार्यक्रम इकाई' के रुप में सम्मानित किया जता है।

हम इनके उज्जवल भविष्य की कामना करते है।

डॉ. समरेन्द्र सिंह
राज्य एन. एस. एस. अधिकारी, पदेन उपसचिव
राष्ट्रीय सेवा योजना छ.ग. शासन

धनंजय देवांगन (IAS)
सचिव
उच्च शिक्षा विभाग

Waste Audit

Background reference image Polina Tankilevitch on pexels

Greenvio Solutions

5. Waste Audit

Waste is an inevitable part of our lives. Over the years as the awareness about waste management techniques has given a rise to rethink how the waste can be avoided form being sent to the landfills. The audit provides an approximation of the types of waste generated, location of waste collections, disposal techniques used, waste segregation methodologies adopted, waste management strategies that are and implemented in addition to the newer ways the can be adopted aiming to make the premises clean and sustainable. Here sustainable refers to a broader aspect to analyse whether the current techniques are having positive or negative effect on the stakeholders of the premises.

5.1 Waste produced

5.1.1 Types and disposal of waste in Premises

The types of waste collected in the premises are as follows, these are separated before processing.

S. No.	Type of waste	Source and quantity	Current Disposal method	Can be treated/ recycled?	Methodology
1	Solid waste	Toilets–Biodegradable waste of 100-200 kg per week	Led in to storm water drain	Yes	Biogas plant/ Sewage treatment plant
2	Paper waste	Newspaper and other paper	Given to vendor	Yes	CONTINUE - with the current practice
3	E-waste	Computers - Non-biodegradable waste as per the annual year usage	Given to vendor	Yes	CONTINUE - with the current practice
4	Dry waste in form of leaves	Open space & plantations, papers - Non biodegradable waste of 500-1,000 kg per week	Partial compost and partial handed over to municipality	Yes	Large size dedicated compost pit can be constructed.
5	Liquid waste	Toilets, washbasins – Around 100 – 120 litres per week during general times and 50 litres at present	Led in to storm water drain	Yes	Water treatment plant
6	Organic regular waste	Dust, dirt usually dry waste from Canteen and all sources – approx. 3 to 5 kg	Partial compost and partial handed over to municipality	Yes	Large size dedicated compost pit can be constructed.

Table 7: Summary of the types of waste produced in the premises

5.1.2 Bins summary

As per our analysis we found that there are 379 dusbins in the entire premise. the only defect is that all of these are made up of plastic, in future the Univerity may adopt dustbins made of eco-friendly materials.

5.2 Waste handling

Quantification wise as per Interview and survey it was found that the Solid, Dry leaves collected is approximately 500 kg per week. The liquid and hazardous waste (septic tanks) is approximately 1,00,000 litres per week. The waste produced on the premises is segregated. The staffs are very well trained and do an excellent job. **Further the Team has shared the following strategy which is adopted for waste management.**

Presently solid waste and waste from trees is being dealt by making pits at one place. Leaves and waste of tree is dumped in pits for making compost manure. Similarly, solid waste is collected from residences, hostels, offices and departments.

The same is segregated and accordingly solid waste is lifted by municipality and garbage is dumped in the pits for preparing compost manure. Further proposal for installation of solid waste treatment and waste water treatment plant is underway.

During on interaction with the Team we observed the concern and dedication the entire Team shows towards the University management aspect. We highly appreciate these efforts and way of working.

5.3 Waste management

The University reuses the papers. It was informed newspapers were given in bulk to Vendor who shreds and converts it into new paper, thereby not sending it to Municipal Corporation **and not adding to landfill site.** Ample measures are taken to maintain hygiene. **No smell problem or health related issues were observed.**

There are adequate numbers of bins present in all parts of building. **The waste does not pollute the ground or surface water.** The wastes from toilets are discharged to main drains through underground covered channels (Safety Tanks) thus avoiding any incident. **There is no problem of air, dust pollution from waste.**

5.4 Survey Ratings

Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good
- Scale 4 – Very good
- Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

Rate - Usage of waste saving practices adopted in Institute premises

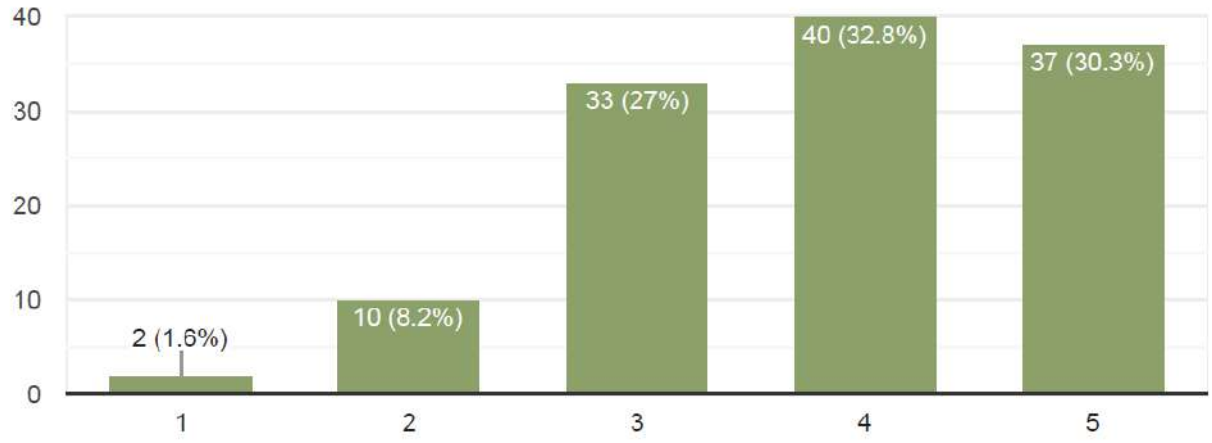

Figure 5: Waste management practices in University

There were mixed responses received the highest was for **rating 4 (Very good) at 33%** followed by **30% for rating 5 (Excellent).**

5.5 Survey Results

Is there any Waste pollution in the premises?

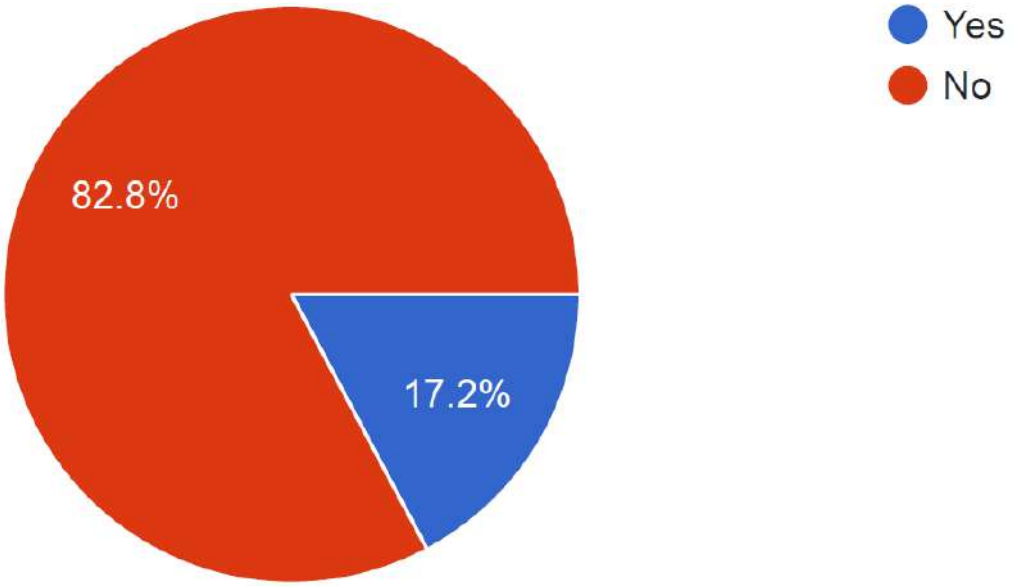

Figure 6: Participants response in survey

The students, staff **(almost 83%)** of responses confirmed there is no waste pollution

5.6 Survey review

According to your observation what are the simple steps adopted by the Institute towards waste conservation?

Some of the key responses are noted below as a result of Online survey.

- Dustbins for the bio and non biodegradable waste
- **Moving towards becoming paperless.**
- **Dustbins are installed in nearly every corridor.**
- Encouraging students for minimising use of plastic bottles and plastics
- They have put dustbins everywhere and have good workers for the cleaning work
- For the sanitary pads disposal, the pads burning machines have been provided to the girls hostel. But the same machine provided to different dipartments do not work properly which is very disappointing. There are dustbins everywhere inside the campus, but the same dustbins are used for dry waste and wet waste.

5.7 Recommendations for a Sustainable Habitat

As per our verification for this audit the efforts of the University are highly appreciable as they are very well maintained hence additional recommendations are excluded for this section.

a) Zero Waste practice adoption

The college can undertake a zero organic waste protocol. The following practices can be adopted as part of the same.

- The food waste generated by the students and staffs are taken by them to their own home, so that, minimum waste is generated inside the premises.
- The organic waste generated in the canteen is used as feed for a biogas plant and the biogas is used as fuel in college canteen.
- Vegetable waste and other leaf litters can be used to fed in the vermi-compost pit and the resulting vermin-cast is used as manure in the garden.
- The chemicals from the laboratories be disposed in a sealed tank along with water, so that the chemicals undergo neutralization with the water.

As part of the above there will be a requirement for a Biogas plant, vermin-compost pit, awareness signages, sealed tank for waste water from chemical laboratory.

b) Signages

Message about avoiding wastage should be placed at appropriate locations.

c) Compost pit

There can be provision for a compost pit

d) Dustbins at every 100m

There should be dustbin at every 50-100 in the open spaces

e) Material of the dustbin

The current plastic dustbins should be replaced with an eco-friendly material.

f) Sanitary vending machine and incinerators

There should be increased provsiisons for vending and incinerator machines in every building.


KLEENO
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USE ME


नहीं मिलेगा जीवन दोबारा,
प्रदुषण मुक्त हो पर्यावरण हमारा.
Green Campus, Clean Campus
Pt. Ravishankar Shukla University, Raipur

Water Audit

Background reference image Vlad Chetan on pexels

Greenvio
Solutions

6. Water Audit

Water is one of the basic needs. Pure drinking water is a resource which needs to be preserved efficiently. Water audit helps to identify the sources of water consumption, the water requirement by the campus met by these sources. The points and effective usage of without any wastage. Understanding the techniques which are best suited to the site to increase water conservation in terms of awareness and practice.

6.1 Water availability and consumption

6.1.1 Sources of Primary water supply

The Borewell is the main source of water in the premises. The are 31 wells and borewells locatd at multiple places in the premises.

6.1.2 Source of Secondary water supply

The University requires water from the Local Municipality for drinking purpose. The total water consumption through the tanks on site at multiple locations is 1,11,000 litres.

As per the investigation and data collection shared we found that there are total of 5 tanks in the premises. There is no issue with respect to cleanliness and hygiene. The areas are kept clean. There is periodic maintenance carried out.

6.1.3 Sources of Tertiary water supply

Natural Rainwater harvesting – It is done through the ground water recharging and upgrading the water quantity for bore well recharging. The water gets recharged and water table is maintained well naturally. The areas of gardens, tracks do not hav any kind of flooding and water is percolated on its own. Though, there can be provision of water tanks to store the water in future. At present the requirements are met within the limits.

Rain water harvesting has been done to recharge the rain water of roof and parking in the premises. **During the time of induction meeting with Mr. Bhupendra on site we were informed that every building has pit for rain water harvesting.** The rain water of roof and parking is directly recharged through these bore wells.

6.2 Water requirement

The main areas of water requirement and type of usage is as follows

- **Drinking water –** Consumption of around 70,000 litres of water through Water cooler, stabilizer, starter & Aquaguard with filter is available in premises.
- **Toilet blocks**– General usage by occupants in toilets, urinals, bathrooms, wash basins using approx. 80,000 - 1,00,000 litres of water daily
- **Cleaning of the premises –** The entire University is very well maintained with respect to hygiene and cleaning is one of the major uses of water requirement. **The toilet areas are cleaned twice on a daily basis.**
- **Garden and surrounding open space**
    - Cleaning, watering the plants requires approximately more than good amount of water.
    - Keeping in mind the scale of the open spaces there is supply system connected directly and the plants, trees are hardly watered regularly.
    - Though, they are watered on alternate days in winter season and about 2-3 times a day in summer season.
    - On a regular climate day it is watered 3 days a week and in rainy season it is dependent on the monsoon showers.

6.3 Areas of water usage

Based on the inventory done - data shared by the staff it was found that the premises has the following facilities.

- No. of Urinals - 341
- No. of Toilets - 548
- No. of Wash Basins - 726
- No. of Taps in Indoors - 1,015
- No. of Taps in the Outdoors - 84

As per on site observation, it was noted that there is no water wastage of water in the form of Cleanliness of toilets.

6.4 Site investigation about water management.

The University has an excellent management system which is very appreciable. We have observed the following points.

- There was **no water leakage in the entire premises.** The **pipes are well maintained with adequate hygiene.**
- **The premises has an efficient water management in terms of operations and maintenance.** The toilets were kept very tidy and are cleaned every day.
- The **waste water does not mix with ground water and gets directed to storm water drains.**
- **The University has natural rainwater harvesting system which is very useful.** There are **sufficient number of taps** in the premises.

6.5 Survey Ratings

Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good
- Scale 4 – Very good
- Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

Rate - Usage of water saving practices adopted in Institute premises

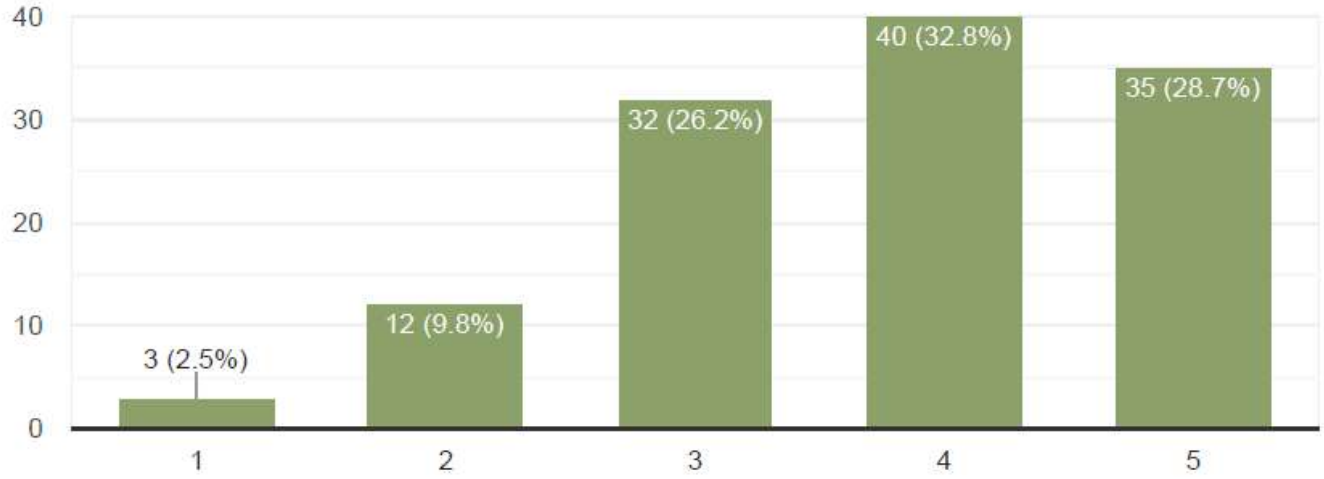

Figure 7: Water management practices in University

There were mixed responses received the highest was for **rating 4 (Very good) at 33%** followed by **29% for rating 5 (Excellent).**

6.6 Survey Results

Is there any Water pollution in the premises?

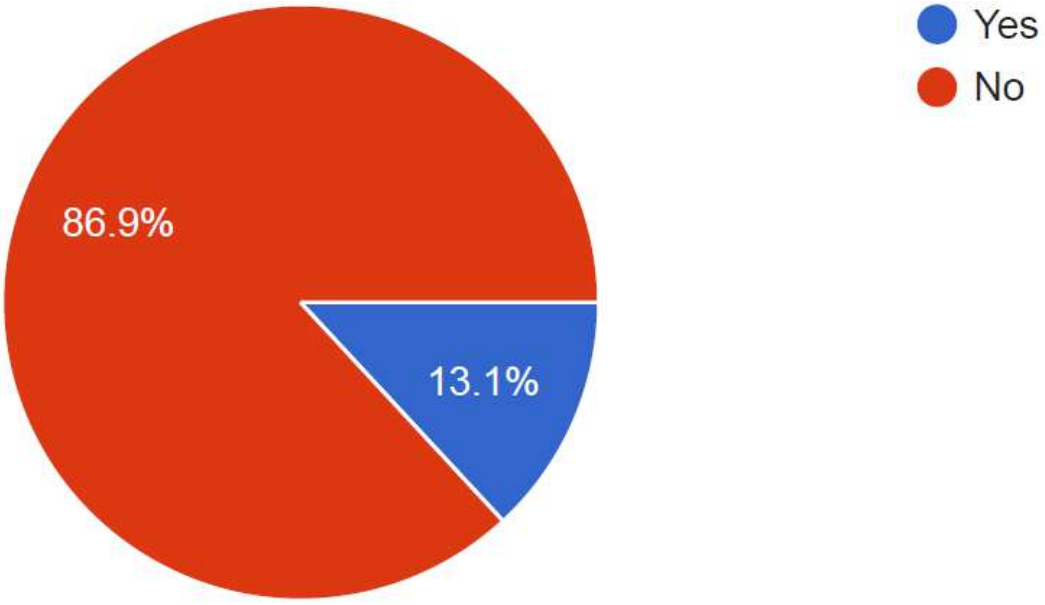

Figure 8: Participants response in survey

The students, staff **(almost 87%)** of responses confirmed there is no water pollution

6.7 Survey review

According to your observation what are the simple steps adopted by the Institute towards water conservation?

Some of the key responses are noted below as a result of Online survey.

- **Rainwater harvesting, maintenance of water bodies, minimize water wastage.**
- The water supply are monitored and overflow are taken care.
- There should be proper maintenance of plumbing system, waste water should be used for irritation purpose, it will decrease the usage of potable water.
- Soak peats, construction of reservoirs.
- **There's no overflowing of water. The waster which is of no use is discarded in the garden so it isn't wasted.**
- They never waste water as they use water very carefully.
- **They don't waste water and all water supply pipes work properly so no leakage is there so it helps to conserve water.**
- **University has been conducting awareness programs and they are encourage more on rain water harvesting at homes.**

6.8 Recommendations for a Sustainable Habitat

Below mentioned are few suggestions for better water management practices in the premises.

a) Universal Toilet

At least 1 toilet should be made for specially abled as per universal design norms in every building

b) Waste water from toilets

This should be collected and a waste water treatment plant can be installed in the open space wherein this water can be treated and reused for gardening and toilet flushing.

c) Signages

Message about avoiding water wastage should be placed at appropriate locations.

d) Waterless urinals

There can be provision of waterless urinals as a Green Building initiative in the premise, either the existing ones can be replace with such a facility of new toilets can be constructed in this manner.


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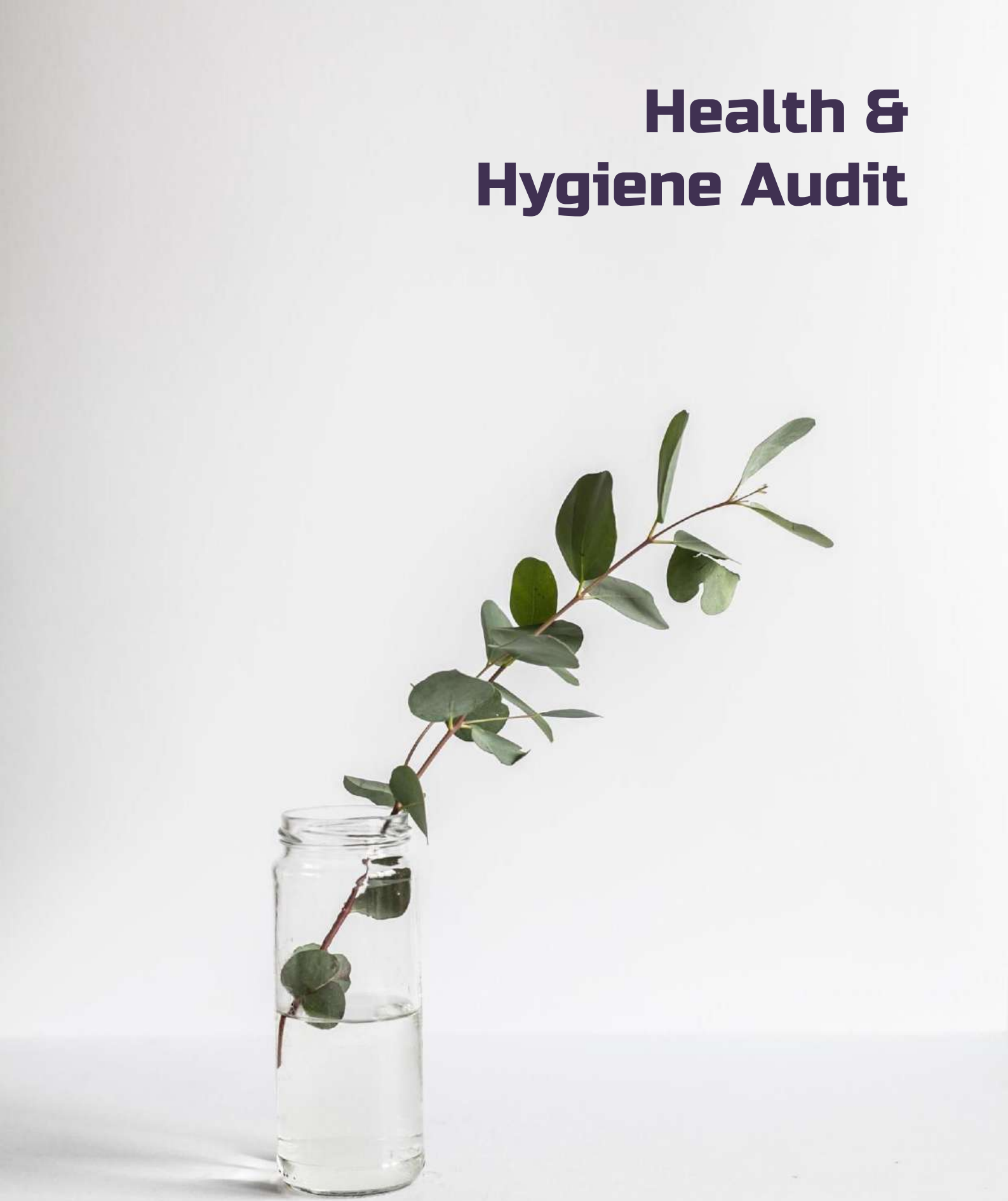
Health & Hygiene Audit



Background reference image Curology on unsplash

Greenvio Solutions

7. Health and Hygiene Audit

The hygiene is a part and parcel of our daily life. It is extremely essential to keep the surroundings clean in the same manner as we would want our houses to be. Educational Institutes have a bigger role to play in order to affect the young minds in the positive manner through better hygienic practices.

7.1 Facilities available

The University has the following facilities as part of the premises.

- Washroom facility in each of the Building.
- Hand wash facility
- Drinking water facility in the form of Water coolers and taps
- Ample number of dustbins in the premises

7.2 Smoke Exposure

As per the Site visit the following analysis **has a positive impact on premises.**

- The University has No Smoking messages as part of the awareness.
- Canteen uses Gas cylinders for cooking, there is no utilisation of fire wood. Thus **there is no smoke from burning of fire wood and any health issues related to the same.**
- The **garbage in premises is not burnt and there is no air pollution because of it**.
- The University is a tobacco and smoke free premises which helps in adapting to a Healthy University
- There is parking provision inside the premises there is slight issue of dust owing to the same but it is **balanced with the good vegetation in the premises.**

7.3 Hygiene

As per our analysis the following points **has a positive impact on premises.**

- For overall hygiene of the students and staff there are facilities such as Washroom

facility on ground floor, hand wash. The hygiene of toilet areas is well maintained. **The entire premises is cleaned twice on a daily basis. It is very appreciating that there are sufficient numbers of Maintenance staff who strive their best to take care of the entire premises in the most excellent way possible.**

- There staff keep a regular check about the operation and maintenance of the equipments each floor.
- Water management initiative with appropriate hygiene is undertaken. The areas of water tanks in site on ground floor are clean and no mosquito breeding spots are there.
- There are pest controls program practiced with appropriate sanitation facilities and Annual Maintenance Contract for pest control is done once a year by professional Pest control units
- The food premises and equipments are cleaned as per schedule with special care taken to avoid any water stagnation. The food waste and other refuse are removed periodically from food handling areas to avoid accumulation.
- As part of Tree Plantation programme the initiative of **Swachh Bharat Abhiyan of Govt. of India** is undertaken during various occasions.
- There are appropriate storage areas which are well maintained.

7.4 Site investigation

During the physical verification of the site, the following points were noted.

- All the facilities are cleaned on a daily basis.
- The Maintenance staffs are allotted the responsibility of the washroom hygiene and they do a very commendable and excellent job to maintain hygiene of the premises.

7.5 Recommendations for a sustainable habitat

As per out physical site verification for this audit the efforts of the University are highly appreciable as they are very well maintained and no new recommendation with respect to this aspect is required.

7.6 Survey ratings

Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good
- Scale 4 – Very good
- Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

An online survey was conducted to analyse the student and staff views about **Rate - Hygiene practices in Institute premises**

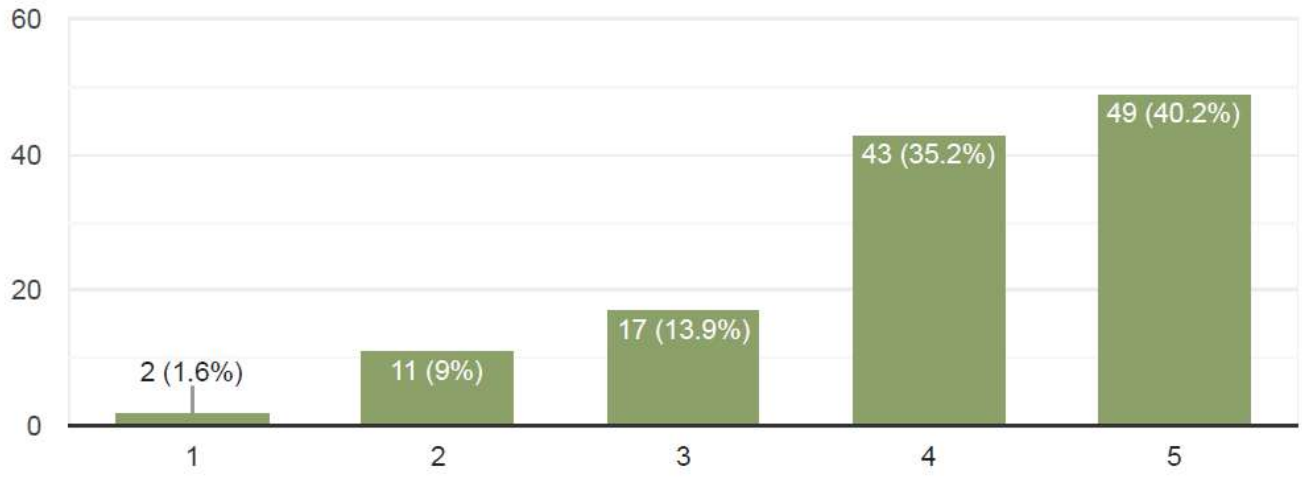


Figure 9: Participation analysis in the survey

There were mixed responses received the equal also the highest was for **rating 5 (Excellent) at 40% and rating 4 (Very good) at 35%** followed by **14% for rating 3 (Good).**

7.7 Survey review

Some of the key responses are noted below as a result of Online survey.

7.7.1 According to your observation what are the simple steps adopted by the Institute towards cleanliness of the premises?

- Sometimes department organise those swaach bharat abhiyaan programs.
- Proper waste disposal. No plastic usage. Dustbins at all points.
- Regular dusting and cleaning of the building along with provision of hand sanitizers.
- Regular cutting of overgrown grass and proper maintenance of waste.
- **Floors and classrooms are cleaned on regular basis. Dustbins are emptied everyday. Proper cleaning of washrooms are done time to time.**
- **Cleanliness of different dipartments on the daily basis, hostel floor are cleaned by the workers everyday, dustbins inside the campus wherever needed, this all contribute to the University's steps toward the cleanliness of the campus.**
- Engineering section of the university take care about the cleanliness.
- University have lots of cleaning workers who work very hard to keep premise clean.

8. Survey review of Positive steps

What according to you are the positive steps taken by the Institute towards Green Building/ Good maintenance?

We have listed some of the key responses below.

- **Solar projects and installation of solar at rooftop for green power supply.**
- **To plant more or more trees and maintain the ecosystem.**
- **Minimal waste generation and maintenance of the green campus by good upkeep. There is a restriction on the entry of the automobiles in the campus during the morning hours, since the campus attracts a large number of morning walkers and joggers due to its greenery.**
- **Initiative of creating awareness about Green Energy and Green Building. Induction of Renewable Energy based courses.**
- **Managing our playground properly and also making new courts for other games.**
- **Fertilizers are provided to the plants from time to time, and green houses have also been made for the maintenance of plants in our departmental schools.**
- **All the plants that have been planted are taken care on regular basis.**

9. Towards a Healthy & Sustainable University

9.1 Inputs by Greenvio Solutions

Based on the analysis of the study of premises in addition to the recommendations provided in each section of Ecological, Water, Waste and Energy Audit the University can adopt the following strategies towards a Healthy and Sustainable Institution practices.

a) **Cutlery in the Canteen –** The regular plastic and steel plates, spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straw, disposable plates, edible spoons and tables made out of sugarcane waste or bamboo. This will be first of its kind initiative to be adopted and practiced thus also inculcating the healthy practices in students.

b) **Waste vio –** Stepping up a little further an initiative can be undertaken wherein University can tie up with an organisation and students can be encouraged to collect dry waste and electronic waste such as newspapers, old computers and others and hand over to organisation on a weekly or monthly basis thereby making a waste reduction approach in the community. This has benefits such as awareness, eco-friendly habits in becoming a responsible citizen.

c) **Signages –** In addition to the signages being in regular language there can be additional signages in braille language for the specially abled students.

d) **Environment Certificate Courses –** The University could begin courses such as Bachelor's, Diploma or Certificate courses with National and International Collaboration related to Environment as part of the courses provided. Though, this is not a requisite or compulsion.

9.2 Survey Results

An online survey was conducted to analyse the student and staff views about what changes according to you can be undertaken for Green audit improvement in University premises and activity, some of the key responses are listed below.

Some of the suggestions by the Students and staff are listed below:

- Cleanliness should be given first, plantation of need full plants to make the environment more eco-friendly. And renewable project for the power supply systems
- Parking sheds could be replaced by solar modules
- Proper recognition for Green belt and yearly audit should be there.
- Proper maintenance of all the present facilities with positive monitoring system in each 3 months.

However, it should be noted that the University has taken up multiple initiatives and because of Pandemic the students have not practically visited the campus so many of these points are not mandatory at the moment.

10. References

- Uniform Plumbing Code – India, 2008
- IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
- IGBC Green Landscape Rating system, March 2013
- BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST – Canada
- Climate data https://www.indianclimate.com/show-data.php?request=FDCRNM6Z6Y
- Used only for understanding Universal design - Universal accessibility Guidelines for Pedestrian, Non-motorizes vehicle and Public Transport Infrastructure – Report guidelines by Samarthyam (National centre for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.
- City of Cheyenne, Streetscape/ Urban Design elements - Wyoming Planning Association, Gillette, Wyoming, United States


स्वर्ण जयंती वर्ष २०१३-१४
पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर

ENERGY AUDIT

2019-20 & 2020-21

AUDIT REPORT

Studied for

Pt. Ravishankar Shukla University

Amanaka G.E.Road, Raipur,
Chhattisgarh (India) - 492010

Analysed by

Greenvio Solutions

23 March 2022

Background reference image Janko Ferlic on pexels

Letter and Certificate of Consent

ENERGY AUDIT

This is to certify that the Green Audit for 2019-20 and 2020-21
has been conducted for

Pt. Ravishankar Shukla University

Amanaka G. E. Road, Raipur, Chhattisgarh (India) - 492010

The Study observed the following:

The Premises is an energy efficient Institution.

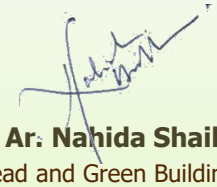
It has facilities such as renewable energy which were observed during investigation.

The Architectural design of the Buildings reduces the load of artificial energy consumption to a great extent.

Overall the study concludes:

The Energy Audit & its management practices undertaken by the Institution are excellent.

Study and Audit done by:



Ar. Nahida Shaikh
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Sustainable Academe – Greenvio Solutions
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sustainableacademe@gmail.com I **greenviosolutions@gmail.com**

About the Project Head - Ar. Nahida Shaikh has completed audits of multiple Institutes including Technical, State University, Private University and Single Faculty Colleges for a total of more than **50 lakhs+ sq. ft. of Built-up area audited till date** Pan India as an Accredited Green Building Professional-Architect.

She has **authored over 6 books** for Colleges in India titled *Towards a Healthy & Sustainable Institute, An Ecologically Sound Institution, Education amidst the nature, Micro efforts towards a Green Institution leading to Macro Results, An Eco-friendly Developed Institutions* f these are published with ISBN Number as Paperback and the book titled *An Urban Green Habitat* published with ISSN Number.

She is a Registered Licensed **Architect** with the Council of Architecture, India an **Indian Green Building Council Accredited Professional** (IGBC AP), an **Assocham GEM Certified Professional** (Regn. No. GEM CP 22/718) and she has completed her Lead Auditor Course on Environment Management System, Green Campus Audit, Energy Audit and Hygiene Audit to Educational Institutions and Industries.

Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing e[illegible] services within the stipulated time frame.

GREENVIO SOLUTIONS SUSTAINABLE ACADEME

(Valid till March 2023)

Disclaimer

The Audit Team has prepared this report for the **Pt. Ravishankar Shukla University** located at *Amanaka G.E.Road, Raipur, Chhattisgarh (India) - 492010* based on input data submitted by the University analysed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the Hon'ble Management and University. The warranty or undertaking, expressed or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

The audit is a thorough study based on the inspection and investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm with the Project Head - Ar. Nahida Shaikh who has completed audits of multiple Institutes including Technical, State University, Private University and Single Faculty Universities of more than 50 lakhs+ sq. ft. of Built-up area audited till date Pan India as an Accredited and Certified Green Building Professional-Architect. Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing excellent quality services within the stipulated time frame.

The Study is conducted in capacity of Accredited & Certified Green Building Professional with extensive experience.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting Audits

Palghar District, Maharashtra- 401208

sustainableacademe@gmail.com

Acknowledgement

The Audit Assessment Team thanks the **Pt. Ravishankar Shukla University, Raipur, Chhattisgarh** for assigning this important work of Environment Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to Hon'ble **Prof. Keshari Lal Verma Sir, Vice Chancellor** and **everyone from the University.**

Our heartfelt thanks to Chairpersons of the entire process **Prof. Girish Kant Pandey Sir,** Registrar for the valuable inputs.

The kind gesture for the inventory and data collection of **and Mr. Kuldeep Bhupendra,** Incharge - Engineering Section is quite commendable.

We are also thankful to **University's Task force the faculty members - Audit Coordinators** who have collaborated to collect data required **Dr. Sanjay Tiwari,** Professor, Coordinator: M.Tech. in Optoelectronics & Laser Technology, Coordinator: Institute of Renewable Energy Technology & Management, S.O.S. in Electronics & Photonics; **Prof. Arti Parganiha,** Professor of Bioscience.

We highly appreciate the assistance of the **entire Teaching, Non-teaching and Admin staff** for their support while collecting the data.

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

Contents

Greenvio Solutions

Hereby presents

An Environment & Ecological friendly premise

Established as a State Private University at Raipur

vide Chhattisgarh Act of 1973

The prestigious

Pt. Ravishankar Shukla University

Amanaka G.E.Road, Raipur, Chhattisgarh (India) - 492010

1. Introduction

1.1 About Pt. Ravishankar Shukla University

An educational institute is beyond than being just a building. It helps one in acquiring knowledge which is a gateway to being successful and a good human.

"A good education is the best gift you can give yourself or anyone else"

- Mahtab Narsimhan

Pt. Ravishankar Shukla University is Chhattisgarh's largest and oldest institution of higher education, founded in 1964, and named after the first chief minister of erstwhile Madhya Pradesh. The University has a sprawling campus in the western part of the capital of Chhattisgarh, Raipur. The campus of University is spread in 300.17 acres of land. There are Twenty-Nine teaching departments in the University. Out of which six departments buildings have been constructed recently. A variety of self-financed courses have been initiated in some departments. The total number of employees is 700, who provide the administrative support at different levels.

Attracted by the opportunity to study and conduct advanced research with renowned professors and fellow scholars in one of the Chhattisgarh's most dynamic cities, students also come from the neighbouring States. There are 5000 students enrolled for variety of courses offered by the departments who are steered under the guidance of more than 100 faculty members. Jurisdiction of RSU covers entire central and southern part of Chhattisgarh. There are 180 educational institutions affiliated to the University. In the academic year 2005-06, about 1,25,000 students were enrolled, both for undergraduate and postgraduate courses. The University plays a major role in the educational, cultural and economic life of the region.

"There is no school equal to a decent home and no teacher equal to a virtuous parent."

- Mahatma Gandhi

It is one of the premier State Educational University providing quality education with best state of the art facility & Infrastructure to the students.

1.2 Statement, Section of University

1.2.1 Vision towards the future

- To **make quality higher education accessible to all sections of society,** including the tribal population of Chhattisgarh.
- To **provide quality education in the disciplines** of arts, humanities, social sciences, natural sciences and other disciplines of learning.
- To **develop human resource with world class competence and skills** in the respective disciplines.

1.2.2 Mission for achieving benchmarks

- To develop the university as a centre of excellence for higher education and knowledge resource
- To promote understanding the value of self-learning, creativity and competence building:
  - By providing world-class education through university-teaching departments and schools.
  - By promoting quality research in university schools and affiliated colleges.

1.2.3 About the Engineering section

Engineering section is an important component of the administrative infrastructure of Pt. Ravishankar Shukla University. The section mainly works on all matters subject to the control of the Building Committee.

The Building committee advises the Executive Council on all matters related to construction of buildings, repairs, alteration, additions to existing buildings, select and recommend site or acquisition, accord technical sanction to the plans and estimates, and expenditure.

The composition of the Building Committee is such that the members are nominated for the period of two years, as per additional Statute 3 of the University Act

1.2.4 About the Development section

The Development section is an important component of the administrative structure of the University. It periodically performs work related to all type of purchase proposals i.e. inviting quotations, preparation and floating tenders for the purpose of purchase, organizes the meeting of Central Purchase Committee duly constituted as per provisions of the University Act, preparation and floating the expression of interest, disposal of waste material such as used answer books etc.

The section also supervises works related to the printing of various documents, proforma, Degree & preparation of gold medal etc.

1.3 Institutions in the premises

The aim of the University is to continuously enhance the teaching methods in order to provide students with an opportunity for their all-round development. In order to manage the programme offerings in a much better way, Pt. Ravishankar Shukla University has **structured its offerings under 29 Major Sections** as follows:

1. **School of Studies in Ancient Indian History Culture & Tourism & Hotel Management**
2. **School of Studies in Anthropology**
3. **School of Studies in Biotechnology**
4. **School of Studies in Chemistry**
5. **Swami Vivekanand Memorial School of Studies in Comparative Religion , Philosophy and Yoga**
6. **School of Studies in Computer Science & IT**
7. **School of Studies in Economics**
8. **School of Studies in Electronics and Photonics**
9. **School of Studies in Environmental Science**
10. **School of Studies in Geography**
11. **School of Studies in Geology and Water Resource Management**
12. **School of Studies in History**

13. **School of Studies in Law**
14. **School of Studies in Library and Information Science**
15. **School of Studies in Life Science**
16. **School of Studies in Literature and Languages**
17. **Institute of Management**
18. **School of Studies in Mathematics**
19. **University Institute of Pharmacy**
20. **School of Studies in Physical Education**
21. **School of Studies in Physics and Astrophysics**
22. **School of Studies in Psychology**
23. **School of Regional Studies and Research**
24. **School of Studies in Sociology & Social Work**
25. **School of Studies in Statistics**
26. **Institute of Teachers Education**
27. **Centre for Women's Studies**
28. **Renewable Energy Technology & Management**
29. **Center for Basic Sciences (CBS)**

Each of these Schools is headed by highly experienced and competent Director/Deans along with H.O.Ds checking on the right academic progress of each faculty/department in the University.

The University strives for excellence in academics and makes an effort to induce passion for learning along with the inspiration for decisive thinking and assessment, thereby helping them to become the best professionals in their chosen careers.

1.4 Programs offered by the University

The University a wide range of courses for the students to upgrade their educational qualification. The details of each of these courses as per the School are as follows.

- **Post-Doctoral** – It offers the following courses.

1. Doctor of Science Chemistry
2. Doctor of Science/ Doctor of Literature Anthropology
3. Doctor of Literature Sociology
4. Doctor of Literature Linguistics
5. Doctor of Science/ Doctor of Literature Geography
6. Doctor of Literature Psychology
7. Doctor of Literature Economics
8. Doctor of Science Physics
9. Doctor of Literature History
10. Doctor of Science Zoology
11. Doctor of Science Botany
12. Doctor of Science Bioscience
13. Doctor of Science Statistics
14. Doctor of Law
15. Doctor of Literature Philosophy
16. Doctor of Science Geology
17. Doctor of Literature Physical Education
18. Doctor of Literature Library & Information Sciences
19. Doctor of Science Mathematics
20. Doctor of Science Microbiology
21. Doctor of Science Electronics
22. Doctor of Literature Hindi
23. Doctor of Science Computer Science

24. Doctor of Literature Ancient Indian History
25. Doctor of Literature English
26. Doctor of Science Pharmacy
27. Doctor of Literature Management
28. Doctor of Science Biochemistry
29. Doctor of Science Biotechnology

- **Doctoral** – It offers the following courses.
    1. Doctor of Philosophy - Chemistry
    2. Doctor of Philosophy - Anthropology
    3. Doctor of Philosophy - Sociology
    4. Doctor of Philosophy - Linguistics
    5. Doctor of Philosophy - Geography
    6. Doctor of Philosophy - Psychology
    7. Doctor of Philosophy - Economics
    8. Doctor of Philosophy - Physics
    9. Doctor of Philosophy - History
    10. Doctor of Philosophy - Zoology
    11. Doctor of Philosophy - Botany
    12. Doctor of Philosophy - Bioscience
    13. Doctor of Philosophy - Statistics
    14. Doctor of Philosophy - Law
    15. Doctor of Philosophy - Comparative Religion and Philosophy
    16. Doctor of Philosophy - Geology
    17. Doctor of Philosophy - Physical Education
    18. Doctor of Philosophy - Library Science
    19. Doctor of Philosophy - Mathematics
    20. Doctor of Philosophy - Microbiology

21. Doctor of Philosophy - Regional Studies
22. Doctor of Philosophy - Electronics
23. Doctor of Philosophy - Hindi
24. Doctor of Philosophy - Computer Science & IT
25. Doctor of Philosophy - Ancient Indian History, Culture & Archaeology
26. Doctor of Philosophy - English
27. Doctor of Philosophy - Pharmacy
28. Doctor of Philosophy - Management
29. Doctor of Philosophy - Biochemistry
30. Doctor of Philosophy - Biotechnology
31. Doctor of Philosophy Environmental Science

- **Post Graduate -** It offers the following courses

1. Master of Science - Chemistry
2. Master of Arts - Sociology
3. Master of Arts - Psychology
4. Master of Arts - Linguistics
5. Master of Arts/Master of Science - Geography
6. Master of Arts/ Master of Science - Anthropology
7. Master of Arts - History
8. Master of Arts – Economics
9. Master of Science – Physics
10. Master of Arts/Master of Science - Statistics
11. Master of Science - Bioscience
12. Master of Law - Constitutional and Administrative Law, Crime and Torts
13. Master of Science - Geology
14. Master of Library Science - Library and Information Science
15. Master of Science/Master of Arts - Mathematics

16. Master of Science - Microbiology
17. Master of Physical Education
18. Master of Business Administration
19. Master of Arts - English
20. Master of Science - Electronics
21. Master of Arts - Hindi
22. Master of Computer Applications
23. Master of Arts - Ancient Indian History, Culture & Archaeology
24. Master of Science - Information Technology
25. Master of Science - Biochemistry
26. Master of Science - Biotechnology
27. Master of Education
28. Master of Science - Pharmacy Pharmaceutics
29. Master of Arts - Applied Philosophy & Yoga
30. Master of Technology - Optoelectronics & Laser Technology
31. Master of Social Work
32. Master of Science - Environmental Science
33. Master of Arts - Rural Development Master of Arts - Chhattisgarhi
34. Master of Science Integrated [Physics/ Mathematics/ Chemistry/Biology]

- **Under Graduate** – It offers the following courses.

1. Bachelor of Library Science Library and Information Science
2. Bachelor of Physical Education
3. Bachelor of Pharmacy
4. Bachelor of Arts - Bachelor of Legislative Law
5. Bachelor of Education
6. Bachelor of Vocation in Renewable Energy Technology and Management

- **Post-Graduation diploma** – It offers the following courses.

1. P.G. Diploma in Guidance and Counselling
2. P.G. Diploma in Yoga Education & Philosophy
3. P.G. Diploma in Tourism & Hotel Management
4. P.G. Diploma in Regional Planning & Development
5. P.G. Diploma in Forensic Science
6. P.G. Diploma in Rehabilitation Psychology
7. P.G. Diploma in Applied Hydrogeology
8. P.G. Diploma in Remote Sensing & GIS

- **Diploma Programs -** It offers the following courses
    1. Diploma in European and Asian Languages English
    2. Diploma in European and Asian Languages French
    3. Diploma in National Language Sindhi

1.5 Assessment of the University

1.5.1 Establishment

Pt. Ravishankar Shukla University, has been established as a State University at Raipur, vide Chhattisgarh Act of 1973.

1.5.2 Recognition

The University is recognised by **University Grant Commission (UGC)** under section 2 (f) and 12 (b) of the UGC Act, 1956 vide by University Grants Commission, New Delhi.

1.5.3 Accreditation

NAAC - The following are details of the reaccreditation of the University.

Cycle	First	Second	Third
CGPA	75.1	2.62	3.02
Grade	B+	B	A
Year	2003	2011	2016

Table 1: NAAC Accreditation details of the Institute

The University is due to enter its Fourth cycle of NAAC soon.

1.5.4 Approval

The University has received the following significant approvals for the various courses.

S. No.	Course	Approval
1	B. Pharm and M. Pharm	**Pharmacy Council of India (P.C.I)** A statutory body of government of India constituted under the Pharmacy Act, 1948, responsible for regulation of pharmacy education and practice of profession in the country for registration as a pharmacist.
2	BA LLB (Five Years)	**Bar Council of India (B.C.I)** A statutory body established under the section 4 of Advocates Act 1961 that regulates the legal practice and legal education in India.

3	Teacher courses (B. Ed)	**National Council for Teacher Education (N.C.T.E)** A statutory body in pursuance of the National Council for Teacher Education Act, 1993
4	Diploma in rehabilitation psychology	**Rehabilitation Council of India (RCI)** The apex government body, set up under an Act of Parliament, to regulate training programmes and courses targeted at disabled, disadvantaged, and special education requirement communities.
5	Technical courses	**All India Council for Technical Education (AICTE)** A national-level Apex Advisory Body to conduct a survey on the facilities available for technical education and to promote development in the country in a coordinated and integrated manner.

Table 2: Details of the various Approvals of the Institute

1.5.5 Certification

The institute has received the following Certifications

- **The National Institutional Ranking Framework (NIRF)** - Ranked between 150 and 200 in the latest rankings.
- **All India Survey of Higher Education (AISHE)** – As per latest documents the reference number is U-0093-2019 for 2019-20

1.6 Affiliated colleges

The PRSU is one of the premier centers of higher education & learning in Chhattisgarh, India. It caters to the needs of the youths of Chhattisgarh and adjoining States, namely Madhya Pradesh, Maharashtra, Odisha, Jharkhand, Andhra Pradesh, as well as from West Bengal and Andaman & Nicobar Islands in the realm of higher education and research.

Chhattisgarh was carved out of Madhya Pradesh on the 1st November, 2000 as a new political entity. Pt. Ravishankar Shukla University, being the oldest university, is leaving no stone unturned to cater to the needs of the society. **The university has grown enormously over the last 57 years** in terms of number of students or disciplines, viz., humanities, natural science, law, education, pharmacy, management, physical education, library science and computer science & IT etc.

In 29 Schools of Studies (SoS) and 149 affiliated colleges spread over five districts of the Chhattisgarh State.

2. Institution overview

2.1 Populace analysis for Academic year 2019-20

2.1.1 Students data

The student data (shared by the University) shows there were a total of **16,500 Boys and 10,092 Girls** students thus **a total of 26,592 students** in the premises.

2.1.2 Staff data

Type	Total
Admin Staff	**4**
Teaching Staff	**120**
Non-Teaching Staff	**302**
Total Staff Members	**426**

Table 3: Staff data of the Institution for 2019-20

The staff data shows the premises had a total of **426** Staff Members.

2.2 Populace analysis for Academic year 2020-21

2.2.1 Students data

The student data (shared by the University) shows there were a total of **17,113 Boys and 11,091 Girls** students thus **a total of 28,204 students** in the premises.

2.2.2 Staff data

Type	Total
Admin Staff	**4**
Teaching Staff	**115**
Non-Teaching Staff	**288**
Total Staff Members	**407**

Table 4: Staff data of the Institution for 2020-21

The staff data shows the premises had a total of **407** Staff Members.

2.3 Total University Area & Building Spread Area

The **total site area is 300.17 Acres** and the **total Built-up area of University is 2,87,751 sq. ft.** for **a total of 28,611 footfalls.**

2.4 University Infrastructure

The Buildings are made of Reinforced Cement Concrete (RCC) framework. These are equipped with modern amenities. It facilitates the students with a good environment for studies and stays true to its aim of providing Holistic development. The Residential and Academic buildings amalgamate smoothly with the open space in order to stand out as one of the most premier Institutes in the country.

Overall the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premises covers most of the requirements for a Green Habitat. It continues to upgrade itself in terms of the facilities and makes sure that there is no compromise on the quality of services towards Building requirements. The cooperative teamwork and the leadership of the Hon'ble dignitaries are one of the main reasons for achieving success in providing quality education with an advanced and up-to date premises.

2.4.1 Spatial Organisation

2.4.1.1 Architectural Design

The overall ambience of the University is warm and inviting. The courtyards, educational spaces, learning spaces, residential spaces and recreational spaces have ample natural ventilation in the form of clear glass windows with fresh air ventilation. The architecture of the buildings are quite well designed. The colour palette not just helps the buildings to stand out as per respective typology of the Building be it Educational or Residential but also provides an Institutional arena. There are provisions for lifts, CCTV, Fire extinguishers, first aid box and much more.

2.4.1.2 Landscape design

The built-form balances with the local architecture and amalgamates very well with the natural landscapes in form of open ground, designed landscape spaces, streetscape

elements such grounds, designed gardens, greenhouse, botanical gardens and huge trees all around. There are provisions for ramps, open ground, courtyards, designated landscape areas, signages, Utility Boxes, Parking, Sidewalk Furniture and Utility Poles.

2.4.2 Building and Block wise details

The Building & Block wise details on the Pt. Ravishankar Shukla University premises are mentioned below:

S. No.	Branch name	Floor
1	Admin Building	G+2
2	Arts Building	G+3
3	Library Building	G+3
4	Electronic Building.	G+1
5	Science Block	G+1
6	B.ED Building	G+1
7	USIC	G
8	M.B.A. Building	G+1
9	New NCNR Building	G+1
10	HRDC Building	G+1
11	Computer Science Building	G+1
12	Biotechnology Building	G+1
13	Physical Education	G+1
14	Student Recreation	G
15	Pharmacy Building	G+1
16	Law Building	G+1
17	Maths/ Statistics Building	G+1
18	Geology Building	G+1
19	Bio Science Building	G+1
20	Regional study/ IQAC	G+1

21	CBS Building	G+2
22	Auditorium Building	G+1
23	Guest House Building	G+1
24	Teacher Hostel Building	G+1
25	Geography Building	G+1
26	Anthropology Building	G+1
27	Physics Dom Building	G+1
28	Health Center	G
29	Utility Center	G+1
30	old NCNR Building	G
31	Press Building	G+1
32	Community hall	G+1
33	Gym Building	G+1
34	Power gird Hostel	G+2
35	Gandhi Hostel	G+1
36	Azad Hostel	G+1
37	Boys Research Hostel	G
38	Navin Kanya Hostel	G+1
39	Professional Girls Hostel	G+1
40	Research Girls Hostel	G+1
41	PG Girls Hostel	G+1

Table 5: Block and department wise details of the University premises

2.4.3 Salient features

The University had the best State of the art Infrastructure in the Country. Some of the best features available are as follows:

1. *ERP System for monitoring administration /academics*
2. *Wi-Fi enabled premises*

3. *Modern infrastructure with well-equipped laboratories*
4. *Guest Lectures by Eminent Scholars*
5. *Ragging free environment*
6. *Hostels for Girls and Boys*
7. *24 x 7 Power and RO water supply*
8. *State of art Library*
9. *Canteen Facility*
10. *Medical Facility (Health Centre)*
11. *Auditorium with all ultra-modern facilities.*
12. *Multipurpose Hall*
13. *Landscaped Gardens*
14. *On premises Residential Facilities for faculties and employees.*
15. *Community development programs*
16. *Arrangement for physically Challenged persons/students.*

The University endeavours at training young women to be competent, committed and compassionate and lead in all walks of life.

2.4.5 Operation and Maintenance of the premises

The interview session with the staff regarding the operation and working hours is summarized in the table. The Institutions are open Monday to Friday for full day. Saturday, Sunday is an off for all. Below mentioned in the table are the average working hours. The detail wise timing for each is mentioned below the table.

S. No.	Section	Spaces	Time	Hours / day	Days in a year
1	Main Institutional University	Student areas and Teaching faculty	10:00 a.m. to 5:30 p.m.	7.5	280
2	General areas	Admin areas and library, Passage, staircase, toilet	09:30 a.m. to 5:30 p.m.	8	300

Table 6: Schedule of the timings of the premises


INDIAN
HOUSE

3. Green Building Audit Study

3.1 About the Green Building Study Audit

It is a systematic study of the aspects which make the Institution a sustainable and healthy premises for its inhabitants.

3.2 Analysis for the Green Building Study Audit

The procedure included detailed verification for the following:

Energy Audit

- Analysis of the Lights, Fans, AC, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the premises

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of premises; Scope to include Rain water harvesting and Waste water treatment in premises
- Waste Audit - Current waste produced, its segregation and usage; Strategies to be adopted for waste management and awareness

Environmental Audit

- Analysis of the current landscape + hardscape of premises
- Analysis of the flora and fauna of campus
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

3.3 Strategy adopted for Green Building Study Audit

The strategies included data collection from admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collected and preparation of the Report.

3.4 Timeline of the activities for Green Building Study Audit

- 01 January 2022 – Discussion with the University
- 13 January 2022 – Allotment and Initiation by the University
- 12 February 2022 – Survey of the Student and staff submitted
- 24 February 2022 – Discussion for review of data collection
- 08 March 2022 – Site visit
- 10-21 March 2022 – Data submitted by University
- 23 March 2022 – Submission of the Report

Meeting with Vice Chancellor Sir during the Audit visit

Discussion meeting with Prof. Girish Kant Pandey Sir, Registrar

Induction meeting with Mr. Kuldeep Bhupendra, Incharge Engineering section

On-site External Team with the University representatives

4. Energy Audit

4.1 Sources of Energy consumption

The premise uses following sources of energy consumption.

4.1.1 Primary sources

1. **Electrical (Metered) –** Light, Fans, air conditioners, Equipments, Pumps consume approximately 1,39,138 units per month for Rs. 9,05,778/- per month (average).
2. **Renewable energy –** There are 99 kW Solar panels, 38 Solar Hot water heaters (In all the residential areas), 36 Solar lamps, 3,864 Energy efficient fans and 462 Energy efficient air conditioners, solar cooking system available in premise.

4.1.2 Secondary sources

There are UPS, gas cylinders generators, inverters and batteries in the premises.

4.2 Site investigation analysis

The Site investigation observations and interviews with the Maintenance staff, Electrical department in charge are summarised below:

- The **switch-off drills are practised at present,** the maintenance staff and Lab Attendants put off switches of all equipments regularly.
- All the **computers are shut-off after use** and also put on power saving mode.
- There are **display boards encouraging staff and students to save energy are put up in the classrooms and laboratories**.
- There are **no Ultra-violet lights and any other harmful lights used** in the premise.

4.3 Actual Electrical Consumption as per Bills

The admin department had shared the bills for Meter which is connected to all Buildings and is main source of energy supply. The supplier is Chhattisgarh State Power Distribution Company Limited. The analysis of actual electrical energy consumption is summarised below. The solar panels were installed in recently post which the cost of electricity has been reduced. The details of unit consumption meter wise is as follows.

S. No.	Month	Year	Meter 1		Meter 2	
			University		Education Society	
			Units	Amount	Units	Amount
1	June	2019	84,206	12,22,375	78,192	6,22,375
2	July	2019	80,100	5,93,485	75,200	5,87,485
3	August	2019	75,200	4,32,395	71,250	4,26,395
4	September	2019	76,001	6,93,590	70,250	6,37,590
5	October	2019	70,010	5,49,230	65,002	5,43,230
6	November	2019	68,250	6,53,130	63,300	6,47,130
7	December	2019	67,200	4,71,680	61,200	4,65,680
8	January	2020	65,150	4,81,005	60,250	4,75,005
9	February	2020	60,250	5,31,840	56,300	5,25,840
10	March	2020				
11	April	2020	95,250	4,64,500	85,320	4,58,500
12	May	2020	98,300	5,08,510	90,690	5,02,510
13	June	2020	85,150	4,10,440	76,200	4,04,440
14	July	2020	79,200	3,45,865	74,250	3,39,865
15	August	2020	76,150	3,95,475	72,600	3,89,470
16	September	2020	75,020	5,52,030	69,250	5,46,030
17	October	2020	73,200	3,77,485	65,250	3,71,480
18	November	2020	69,150	3,40,550	63,140	3,34,520
19	December	2020	65,250	3,58,810	61,230	3,52,815
20	January	2021	64,150	4,17,750	59,321	4,11,740
21	February	2021	60,351	3,80,730	58,230	3,74,370
22	March	2021	62,300	1,04,795	59,630	98,790
23	April	2021	84,012	7,06,510	82,000	7,00,520
24	May	2021	96,150	2,68,361	91,250	2,62,350

Table 7: Study of the electricity consumption of the meters in premise

The summary of the above study shows the average consumption varies for each month.

4.4 Survey

4.4.1 Results

An online survey was conducted to analyse the student and staff views about the Energy management practices adopted in University, following is the result received.

Participation

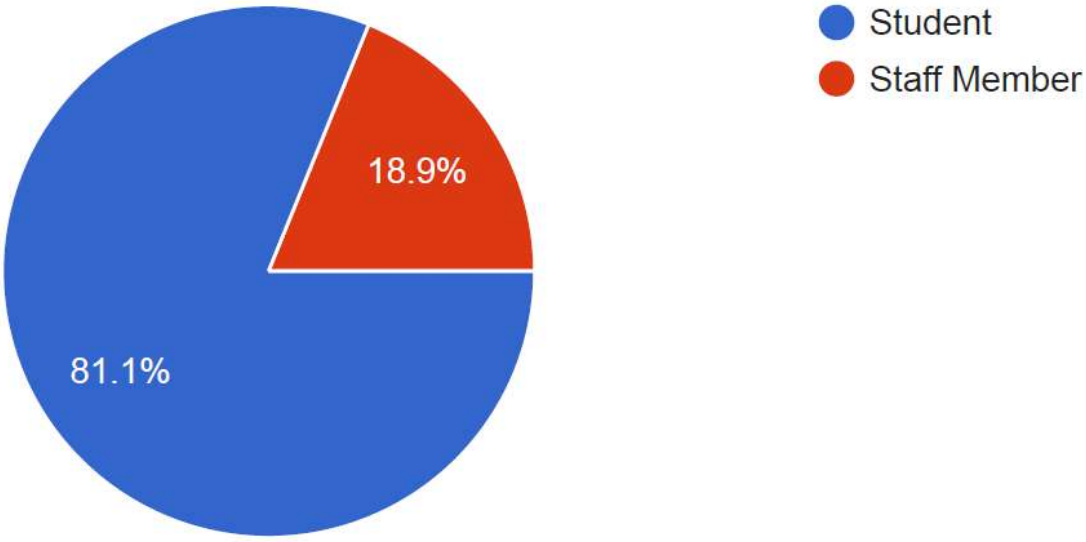


Figure 1: Participation analysis in the survey

A total of **122 responses** were received out of which 81% were students.

4.42 Survey ratings

Review of the Energy management practices in the premises

Note: The Participants were asked to review the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good
- Scale 4 – Very good
- Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

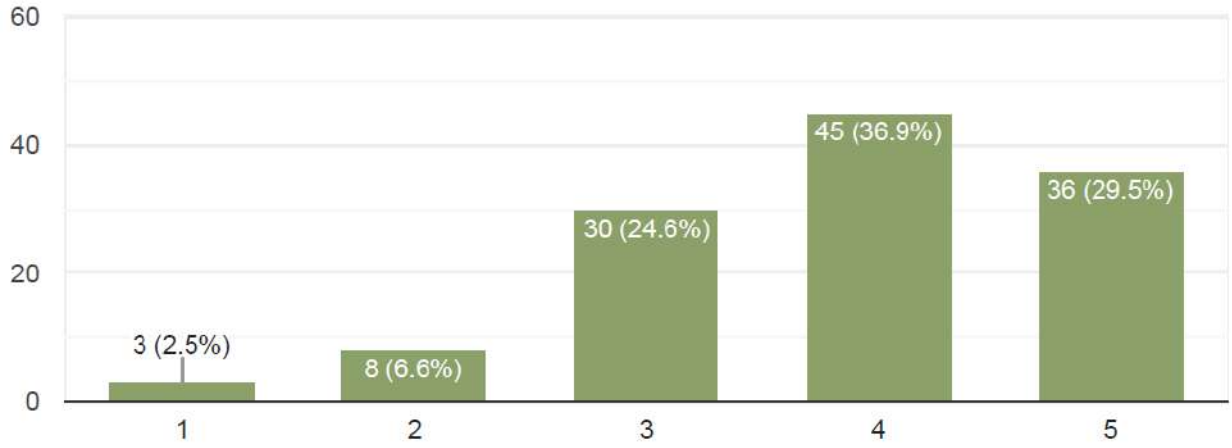


Figure 2: Energy Management practices in University

The students, staff **(almost 37%)** of the responses found the practices to be very good.

4.4.3 Survey review

Some of the key responses are noted below as a result of Online survey.

What is the best environmental feature you find about the Institute site?

1. Awareness program for save the energy
2. Usage of Solar energy. Solar panels on roof top of building. LED lights.
3. Renewable energy department doing a great job in that field
4. Automatic relay system for power management, solar system installation.

4.5 Calculated Electrical Consumption as per inventory

4.5.1 Main study

The electricity bills provide actual consumption data. The following is the calculated consumption. It is done to understand the percentage of energy usage in the premises by various applications. It is based on the inventory collected and interviews with the staff. The additional data such as wattage is taken from market research. In terms of electrical consumption, the main sources are lights, fans, air conditioners, equipment. The inventory and data collection for sources of energy consumed in the premise in summarised in the following sections. Note: The following analysis is combined for entire premise taking into considerations the duration before pandemic to understand the consumption pattern as post pandemic the premise is used only for a few hours.

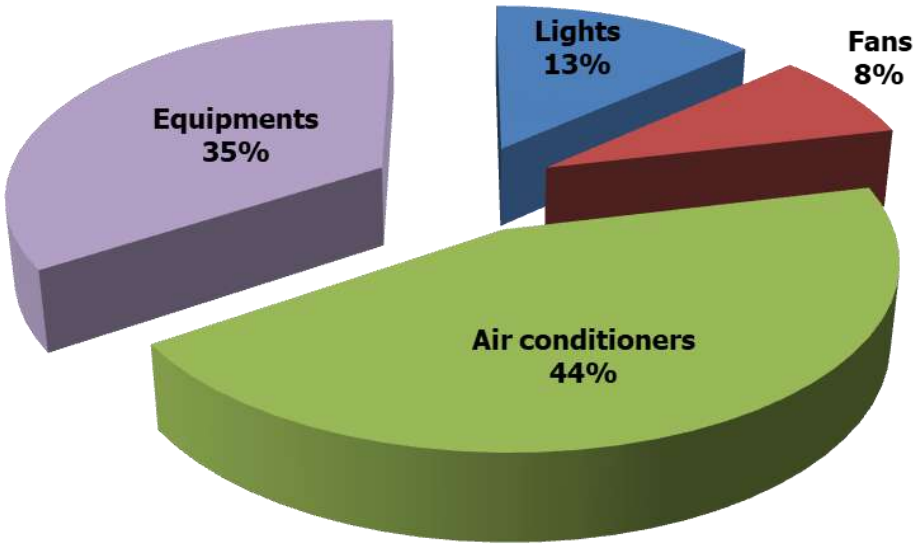


Figure 3: Summary of the Calculated Electrical Consumption as per data

The above graph shows that air conditioners consume 44% followed by equipment at 35% the lights at 13% and the fans at 8% of the total calculated electrical energy.

4.5.2 Sectors study

For study purpose of lights, fans and air conditioners, the premises was divided into following blocks:

- Administrative – Considered for the admin section.
- Educational - Considered for all the buildings of various schools.
- Recreational - Considered for the Health section.
- Residential - Considered for the hostels and guest house.

4.6 Lights

4.6.1 Types of lights

There are a total of **9,293 lights in the premises;** the following table shows the various types of lights in the premises.

S. No.	Type	Nos.
1	CFL	882
2	LED	5,042
3	Non-LED	3,347
3	Solar lamp	22
Total		**9,293**

Table 8: Summary of the types of lights in premise

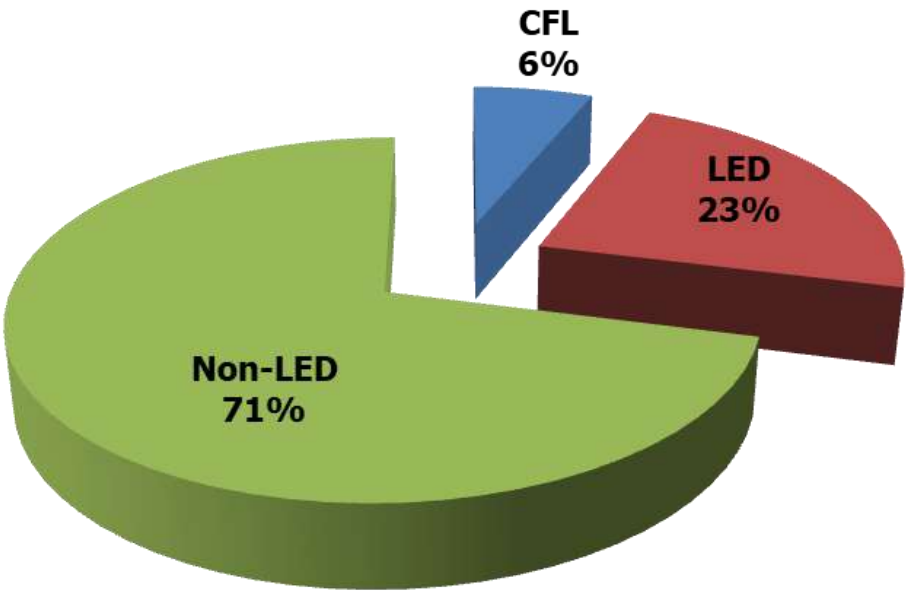


Figure 4: Energy consumed by types of lights in the premise based on the usage study

The analysis of the types of Lights in premises shows **Non-LED lights 71%** followed by **LED lights consuming 23%** and **CFL lights consume 6%** (The solar lights are connected to the system and hence excluded for this artificial lights calculation)

4.6.2 Block-wise consumption analysis

The energy consumption of Lights is **4,18,918 kWh** of energy; the following graph shows the block wise consumption.

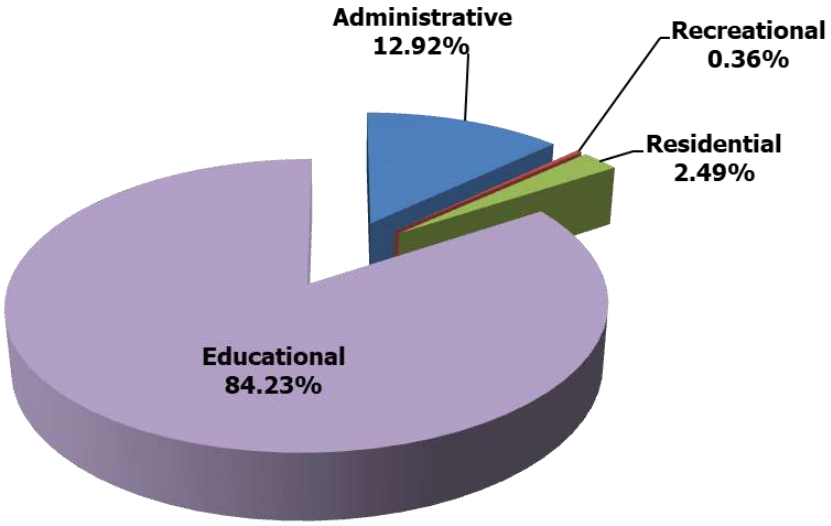


Figure 5: Energy consumed by lights block wise

The above analysis shows the lights in the **Educational blocks consume 84.23% the Administrative blocks consume 12.92%, the Residential blocks consume 2.49% and the Recreational blocks consume 0.36%**

4.6.3 Requirement of NAAC

4.6.3.1 Alternative Energy Initiative

Percentage of power requirement met by renewable energy sources – 100% of the energy produced is utilised in the premises which 300 kW, since the requirement of the premises is 1 megawatt, thus *30% of the power requirement is met and utilized in the premises. External agency in*

4.6.3.2 Percentage of lighting power requirement met through LED bulbs

The premise has LED Lights contribute to 54% in terms of number and **23% of the power requirement** is met through the same. As per our study we could conclude that both of these are highest contributions among all the types of lights.

4.6.4 Site investigation observations

Some of the points noticed are as follows:

1. All lights are in working conditions
2. Daily monitoring and check is done by the maintenance staff.
3. There was no fuse defect observed.

4.7 Fans

4.7.1 Types of fans

There are a total of **4,212 fans** in the premises. The following table shows the various types of fans in the premises.

S. No.	Type	Nos.
1	Wall mounted fans	5
2	Room Cooler	280
3	Exhaust fans	148
4	Ceiling fans	3,779
Total		**4,212**

Table 9: Summary of the types of fans in premise

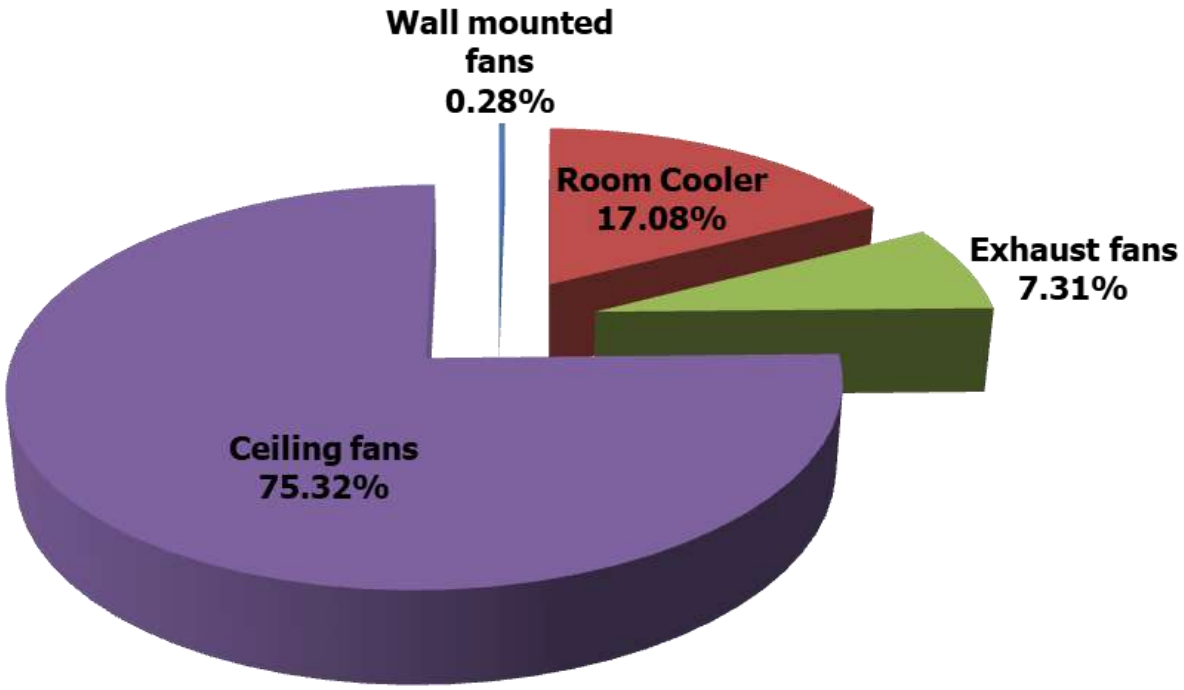


Figure 6: Energy consumed by types of fans in the premise based on the usage study

The analysis of the types of fans in premises shows **Ceiling fans consume 75.32%** the **Room coolers consume 17.08%** the **Exhaust fans consume 7.31% and the Wall mounted fans consume 0.28%**

4.7.2 Block-wise consumption analysis

The energy consumption of fans is **2,49,288 kWh** of energy; the following graph shows the block wise consumption.

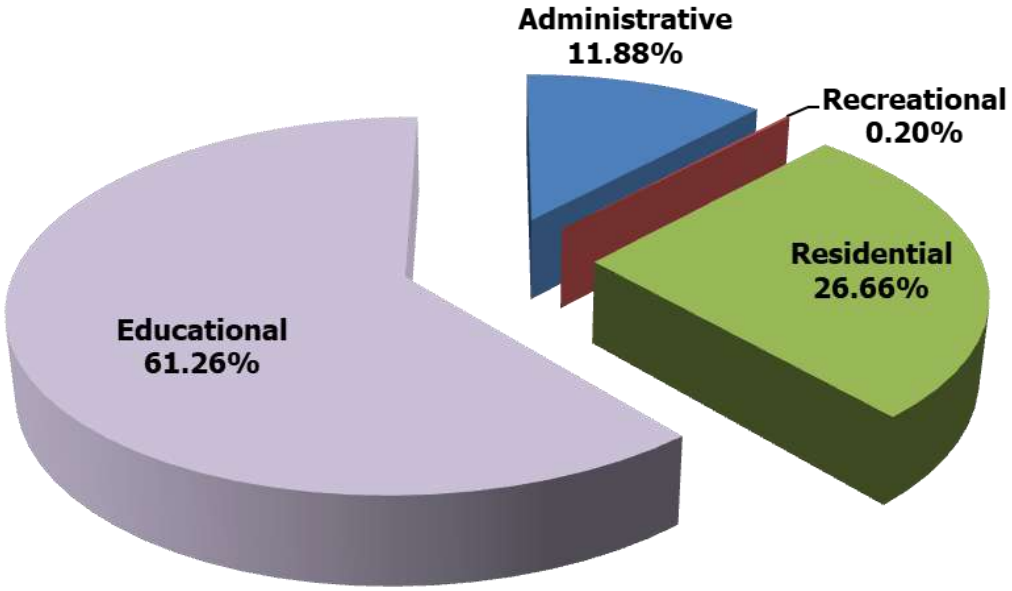


Figure 7: Energy consumed by fans block wise

The above analysis shows the fans in the **Educational blocks consume 61.26% the Residential blocks consume 26.66%, the Administrative blocks consume 11.88% and the Recreational blocks consume 0.20%**

4.7.3 Site investigation observations

Some of the points noticed are as follows:

1. All fans are in working conditions
2. Daily monitoring and check is done by the maintenance staff and admin staff in an excellent manner.
3. **87% of the fans in the premises are energy efficient fans consuming almost 47% less energy as compared to regular fans.**

4.8 Air conditioners

4.8.1 Types of air conditioners

There are **39 air conditioners** in the entire premise. The details mentioned as follows.

Sr. No	Room Name	Nos
1	DWS Counter	1
2	Finance Deptt	2
3	Gereral Deptt	1
4	DCDC	2
5	Registar office	3
6	E.C. Meeting Hall	4
7	Kulpati Eatrance Barmdada	2
8	VC office	4
9	VC Chamber	3
10	Acadmic section	1
11	DATA Center	5
12	Confidential Room	1
13	Confidential section office No-1	2
14	Confi. Room Strong room hall	4
15	Confi. Computer Centre Corrido.	3
16	Development sec. Hall+ Corri.	1

Table 10: Details of the air-conditioner in premise

The architectural design of the University is such that most of the buildings do not require artificial ventilation in the form of air conditioner. Thus, there are very less spaces where the air conditioners are required in the premises.

4.8.2 Block-wise consumption analysis

The energy consumption of air conditioners is **1,23,728 kWh** of energy; the following graph shows the block wise consumption.

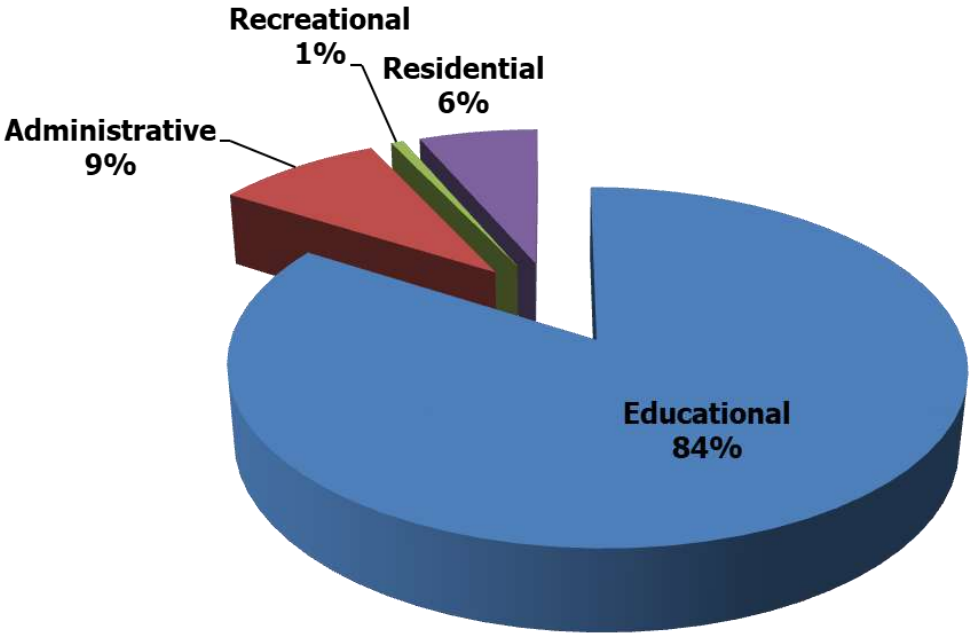


Figure 8: Energy consumed by air conditioners block wise

The above analysis shows the equipment in the **Educational blocks consume 84% the Administrative blocks consume 9%, the Residential blocks consume 6% and the Recreational blocks consume 1%**

4.8.3 Site investigation observations

Some of the points noticed are as follows:

1. Daily monitoring and check is done by the maintenance staff and admin staff in an excellent manner.
2. The Outdoor Unit is properly cleaned and maintained well.
3. The Outdoor Unit does not have any dust collection problem.

4.8.4 About the replacement of Current AC

The current air conditioners are well maintained, through there is not an immediate requirement for replacement however, whenever the University undergoes redevelopment or a new block is constructed there can be provisions for replacement with energy efficient appliances or new air conditioners that require less power consumption. **The University has already begun the replacement along with many other measures and is heading towards becoming a 100% energy efficient premises soon.**

4.9 Equipment

4.9.1 Sector wise allocation study

There are **more than 1,326 equipment considered for study** in the entire premises. For study purpose the entire premises was divided in **2 sectors – Residential and Educational.**

4.9.2 Residential Sector study

The equipment comprises of Mixer Grinder, TV, Wifi Router, Chimney, Desktop Computer, Aatamixer, CCTV, Water Plant with 2 Motors, Geysers, water pumps, Refrigerator and Water Cooler.

4.9.3 Educational Sector study

The educational sector was briefly subdivided into for major subsectors depending on their usage these are listed as follows along with the type of equipment which fall under this category.

- **Infrastructure mandatory usage** – Water pumps, submersible pumps, motors.
- **Scientific usage** – All the equipment used in various laboratories.
- **Administrative and regular usage** - Scanner, Bio Metric, Telephone, Wifi Router, Water Dispensers, Laptop, DVR, Water Purifier, Xerox Machine, Water Cooler, Intercom, Internet Hub, PA Systems, Refrigerator, CCTV, Desktop Computer, Printer
- **Occasional usage -** Amplifier, LED TV, Computer Home Theatre, Washing Machine, TV, Heater, Projector, Microwave Ovens, Mixer Grinder, Tread Mills, NVR

4.9.4 Equipment and usage consumption

The energy consumption of air conditioners is **10,78,356 kWh** of energy.

4.9.5 Site investigation observations

Some of the points noticed are as follows:

1. All equipments are in working conditions and daily monitoring and check is done by the maintenance staff and admin staff in an excellent manner.
2. No defect was found in any equipment of electrical consumption.

4.10 Positive aspect of Energy Efficiency Management

(Based on the Green Building system requirements for Electro mechanical Systems)

Electromechanical systems are related to Energy, waster and waste.

A. Electrical & lighting - Solarisation of the premises

- Availability of Solar hot heaters in Residential sections (Hostels)
- Provision of a solar plant, solar lamps in the Residential and Educational sections.
- Facilities to the make the premises automated and smart premises.
- Institute of Renewable Energy Technology & Management (IRETM) in the premises, the activities carried out by the Institute are as follows:
    - Training for solar based LED lamps.
    - Training for Home energy audit by Chattisgarh Govt. and Bureau of energy efficiency (BEE), Govt. of India.

B. Water management

Suitable ground water recharge through rainwater harvesting

C. Waste management

- Sustainable integrated waste management practices through anaerobic process.

D. Future proposals

- The University will go for 100% solar panels in the entire premise.
- Planning is underway to make the prmeises a carbon net zero energy premises.

4.11 Recommendations for a Sustainable Habitat

Over the time energy efficient appliances have been a boon not only to the energy saving parameters they adhere to but also the eco-friendly habits it helps to inculcate. The Institution such as Schools and Universitys are the best way to implement these initiatives. It creates awareness among the students at a young age. The Institutions also act as a symbol and representative of being an energy efficient premise. Following the analysis we found are some of the suggestions which can be implemented for an energy efficient Institution. This would help in reduction of the current electrical consumption by a major percentage. **As per our analysis the premises has a lot of posistive aspects as far as Energy audit is concerned, hence the number of recommendations are extremely less in this aspect.**

Electromechanical systems - Electrical and Lighting

Section 1 - Lights

Non-LED and CFL Lights

The current light analysis shows that Non-LED tube lights consume anywhere between 24W, 36W and 40W when in use; similarly the CFL lights consume more than 25 to 28W when is use; these should be replaced with LED lights which consume on an average 16-20W when in use. Our technical analysis shows that there would be a reduction of an average of **79% reduction** in energy consumption through lights specifically as a part of the electro -mechanical system if all **Non-LED and CFL lights on all floors and blocks** are replaced with an energy efficient appliance whenever the University undergoes renovation. The University has already begun the replacement.

Section 2 - Fans

Ceiling fans

87% of the fans in the premises are energy efficient fans consuming almost 47% less energy as compared to regular fans. The remaining fans can be replaced with energy efficient fans. The current Fans are in proper working conditions and maintained well. This will result in a reduction of average of **47% reduction** in energy consumption if replaced with energy efficient appliance. It will be suggested to either replace these now if University can have certain plans else the replacement can be done when fans get damaged or are not in working condition.

Section 3 – Equipment

Desktop computers to laptops

Among all equipment it suggested to replace the desktop computers with laptops as this would be energy efficient. A normal desktop computer consumes on an average 250W and it is to be connected all time when it has to be used. On the contrary a laptop consumes 40W and has a battery backup which lasts up to 4 hours.

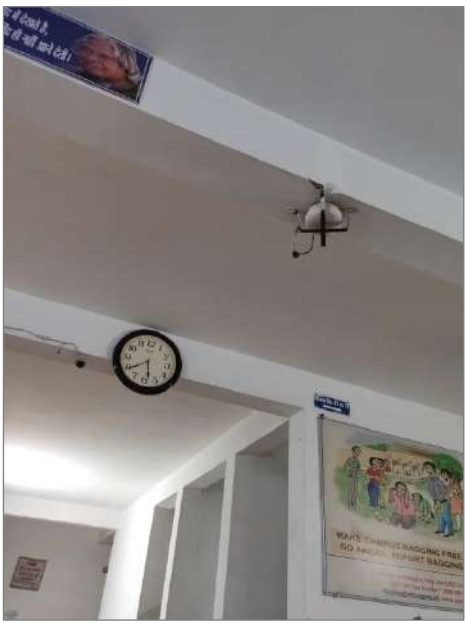
There is **an average 84% reduction** in energy consumption if replaced with energy efficient appliance which is a laptop in all the areas of Educational and Residential areas.

This replacement is however is dependent on a variety of factors as follows.

- Some of the senior staff members may be more convenient with computers, replacement with laptop might result in a change of the working patterns and hours which may affect the productivity.
- Laptops – in case are not handled with care such as if dropped unintentionally might result in data imbalance.
- Students who are not day scholars can use laptop as per their own convenience, whereas in common areas there can a monitoring about the usage hours hence computers may be a preferable option then laptop in certain spaces.
- Similarly depending on the pandemic situation in case it might be possible due to irregular usage the device might have issues while functioning.

Thus the University should analyse the above points and then devise a strategy about the replacement, essentially when the devices get damaged or are not in working condition they can surely be replaced.

As well as once they are not in working condition the proposed strategy should be linked towards e-waste management as well.




GreenSol

5. Towards a Healthy & Sustainable University

5.1 Inputs by Greenvio Solutions

Based on the analysis of the study of premises in addition to the recommendations provided in each section of Ecological, Water, Waste and Energy Audit the University can adopt the following strategies towards a Healthy and Sustainable Institution practices.

a) **Cutlery in the Canteen –** The regular plastic and steel plates, spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straw, disposable plates, edible spoons and tables made out of sugarcane waste or bamboo. This will be first of its kind initiative to be adopted and practiced thus also inculcating the healthy practices in students.

b) **Waste vio –** Stepping up a little further an initiative can be undertaken wherein University can tie up with an organisation and students can be encouraged to collect dry waste and electronic waste such as newspapers, old computers and others and hand over to organisation on a weekly or monthly basis thereby making a waste reduction approach in the community. This has benefits such as awareness, eco-friendly habits in becoming a responsible citizen.

c) **Signages –** In addition to the signages being in regular language there can be additional signages in braille language for the specially abled students.

d) **Environment Certificate Courses –** The University could begin courses such as Bachelor's, Diploma or Certificate courses with National and International Collaboration related to Environment as part of the courses provided. Though, this is not a requisite or compulsion.

5.2 Survey Results

An online survey was conducted to analyse the student and staff views about what changes according to you can be undertaken for Green audit improvement in University premises and activity, some of the key responses are listed below.

Some of the suggestions by the Students and staff are listed below:

- Cleanliness should be given first, plantation of need full plants to make the environment more eco-friendly. And renewable project for the power supply systems
- Parking sheds could be replaced by solar modules
- Proper recognition for Green belt and yearly audit should be there.
- Proper maintenance of all the present facilities with positive monitoring system in each 3 months.

However, it should be noted that the University has taken up multiple initiatives and because of Pandemic the students have not practically visited the campus so many of these points are not mandatory at the moment.

6. References

- Uniform Plumbing Code – India, 2008
- IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
- IGBC Green Landscape Rating system, March 2013
- BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST – Canada
- Climate data https://www.indianclimate.com/show-data.php?request=FDCRNM6Z6Y
- Used only for understanding Universal design - Universal accessibility Guidelines for Pedestrian, Non-motorizes vehicle and Public Transport Infrastructure – Report guidelines by Samarthyam (National centre for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.
- City of Cheyenne, Streetscape/ Urban Design elements - Wyoming Planning Association, Gillette, Wyoming, United States


स्वर्ण जयंती वर्ष २०१३-१४
पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर

CREDA
CHHATTISGARH STATE RENEWABLE ENERGY DEVELOPMENT AGENCY
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क्रः 3184 /क्रेडा/GRID/2016-17 दिनांक 30/03/2017

प्रति,

कुलसचिव
पंडित रविशंकर शुक्ल विश्वविद्यालय
रायपुर, (छ.ग.)

विषयः–पंडित रविशंकर शुक्ल विश्वविद्यालय परिसर में ग्रिड कनेक्टेड सौर संयंत्रों की स्थापना किए जाने के संबंध में।

संदर्भः–दिनांक 22.03.17 को विश्वविद्यालय परिसर में हुई समीक्षा बैठक में हुई चर्चानुसार।

महोदय,

विषयांतर्गत विश्वविद्यालय परिसर मे ग्रिड कनेक्टेड सौर संयंत्रों की स्थापना के संबंध में क्रेडा द्वारा किए गए सर्वेक्षण के आधार पर परिसर के विभिन्न भवनों की छतों पर निम्नानुसार संयंत्र स्थापना किया जाना प्रस्तावित हैः–

स क्र.	प्रस्तावित स्थल	प्रस्तावित क्षमता कि.वॉ. में
01	प्रशासनिक भवन	70 कि.वॉ.
02	विज्ञान भवन	50 कि.वॉ.
03	कम्प्यूटर प्रयोगशाला	50 कि.वॉ.
04	पुस्तकालय	50 कि.वॉ.
05	एकेडमिक स्टॉफ कॉलेज	10 कि.वॉ.
06	कुलपति भवन	15 कि.वॉ.
	कुल क्षमता	**245 कि.वॉ.**

- उपरोक्त क्षमता का निर्धारण भवन पर उपलब्ध छत एवं भवन में स्थापित विद्युत मीटरों की खपत के अनुरूप किया गया है।
- कुछ भवनों पर छत उपलब्ध है, किंतु भवन में स्थापित विद्युत मीटर के अनुसार खपत कम है।
- वर्तमान में छ.ग. राज्य विद्युत नियामक आयोग द्वारा 50 कि.वॉ. से कम क्षमता के ग्रिड कनेक्टेड सौर संयंत्रों की कनेक्टिविटी की अनुमति नही दी जा रही है। अतः सरल क्र. 01,02,03 एवं 04 में ही प्रस्तुत स्थलों पर संयंत्र स्थापना की जा सकती है। तद्नुसार प्रस्ताव प्रपत्र-अ पर संलग्न है।
- यह भी अवगत होना चाहेगें कि इन संयंत्रों में बैटरी बैकअप नही होता है एवं संयंत्र के संचालन हेतु विद्युत की अपूर्ति होना आवश्यक है। परंपरागत विद्युत अपूर्ति ना होने की दशा में सौर संयंत्र से विद्युत अपूर्ति बाधित रहेगी।

निरंतर.....

पूर्व पृष्ठ से निरंतर.....

- ग्रिड कनेक्टेड सौर संयंत्रों के समुचित Captive Consumption हेतु उचित होगा कि परिसर में स्थापित विविध एनर्जी मीटर के स्थान पर एकल बाईडायरेक्शनल एनर्जी मीटर की स्थापना की जावे। एकल मीटर ना होने की दशा में विश्वविद्यालय की विद्युत खपत में कमी नही आ पाएगी। यदि पूरे परिसर हेतु एक एनर्जी मीटर स्थापित नहीं हो पाता है तो कम से कम एक ही भवन में स्थापित एक से अधिक एनर्जी मीटरों को एक बाईडायरेक्शनल एनर्जी मीटर में बदलवाया जाना आवश्यक होगा।

संलग्नः- उपरोक्तानुसार।

30/8/17

(राजीव ज्ञानी)
कार्यपालन अभियंता

स.क्र.	संयंत्र क्षमता	छायामुक्त स्थल की आवश्यकता (वर्ग मीटर में)	अनुमानित औसत विद्युत खपत (दिन के समय युनिट में)	संयंत्र प्रदाय एवं स्थापना लागत (रू. में)	05 वर्षीय एएमसी लागत (रू.में.)	कुल परियोजना लागत * (3+4) (रू.में.)	केंद्र अनुदान (रू. 18750 प्रति कि.वा. या कुल परियोजना लागत का 30 प्रतिशत जो भी कम हो) (यदि उपलब्ध हो तो राशि रू. में)	प्रचलित दर के मान से हितग्राही अंशदान राशि रू. में (यदि अनुदान उपलब्ध है)
1	2	3		4	5	6	7	
1	10 KW	120	1200	615000.00	55000.00	670000.00	187500.00	**482500.00**
2	20 KW	240	2400	1240000.00	90000.00	1330000.00	375000.00	**955000.00**
3	25 KW	300	3000	1540000.00	122500.00	1662500.00	468750.00	**1193750.00**
4	30 KW	360	3600	1850000.00	145000.00	1995000.00	562500.00	**1432500.00**
5	50 KW	600	6000	3050000.00	225000.00	3275000.00	937500.00	**2337500.00**
6	100 KW	1200	12000	6100000.00	450000.00	6550000.00	1875000.00	**4675000.00**
7	500 KW	6000	60000	30100000.00	1400000.00	31500000.00	9375000.00	**22125000.00**

बाईडायरेक्शनल मीटर न होने की दशा में मीटर प्रदाय की लागत पृथक से देय होगी। छ.ग. राज्य विद्युत वितरण कंपनी/स्टेट लोड डिस्पेच सेंटर को 100 कि.वा. क्षमता तक के सौर संयंत्र की कनेक्टिविटी हेतु देय प्रोसेसिंग फीस रू. 11000.00 (दस हजार + एक हजार), एवं 101 से 500 कि.वा. क्षमता के सौर संयंत्रों हेतु रू. 21000.00 (बीस हजार +एक हजार)भी हितग्राही संस्थान को व्यय करना होगी। यह परियोजना लागत में सम्मिलित नहीं है। संबंधित भवन में यदि एक से अधिक एनर्जी मीटरों की स्थापना है तो उक्त भवन में विभिन्न मीटरों को विस्थापित कर सिर्फ एक बाईडायरेक्शनल मीटर में स्थापना आवश्यक होगी। उपरोक्त लेखनुसार हितग्राही अंशदान क्रेडा में जमा करने के पश्चात् क्रेडा द्वारा स्थलवार निविदा जारी की जावेगी निविदा के माध्यम से अनुमोदित दरों पर कार्य सम्पादित किया जावेगा।

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क्रमांक- 17029 /टी-1/क्रेडा/एसएमडी/16-17

रायपुर,दिनांक: 07.10.2016

प्रति,

कुलसचिव
पंडित रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छ.ग.)

विषयः- पंडित रविशंकर शुक्ल विश्वविद्यालय परिसर, रायपुर में स्थित छात्रावासों में खाना बनाने हेतु स्टीम कुकिंग संयंत्र की स्थापना बाबत्।

विषयांतर्गत् लेख है कि, पंडित रविशंकर शुक्ल विश्वविद्यालय परिसर, रायपुर में स्थित छात्रावासों में खाना बनाने हेतु बड़ी मात्रा में एलपीजी/लकड़ी का उपयोग किया जाता है, जिससे न सिर्फ विश्वविद्यालय का वित्तीय भार बढ़ता है अपितु पर्यावरण भी प्रदूषित होता है। अतः मान्य हो तो पंडित रविशंकर शुक्ल विश्वविद्यालय परिसर, रायपुर में स्थित छात्रावासों में खाना ,बनाने हेतु स्टीम कुकिंग संयंत्र की स्थापना किया जाना प्रस्तावित है।

इस संयंत्र की स्थापना पर कुल लागत ₹27,50,000/-आती है जिसमें से ₹5,18,400/-केन्द्रीय मंत्रालय (एमएनआरई) एवं ₹3,45,600/-यूएनडीपी द्वारा अनुदान के रूप में देय होगा अर्थात परियोजना पर पंडित रविशंकर शुक्ल विश्वविद्यालय, रायपुर को हितग्राही अंश के रूप में ₹18,86,000/-देय होगा। उल्लेखनीय है, कि इस परियोजना पर यूएनडीपी द्वारा निर्धारित अनुदान केवल जनवरी 2017 से पहले स्वीकृत संयंत्रों पर ही देय होगा।

उक्त प्रस्ताव आपके सुलभ सन्दर्भ हेतु प्रेषित किया जा रहा है। कृपया प्रस्ताव पर विचार कर स्वीकृति प्रदान करते हुए संलग्न प्राक्कलन के अनुसार परियोजना के क्रियान्वयन हेतु कुल हितग्राही अंश ₹18,86,000/- इस कार्यालय को क्रेडा, रायपुर के नामे चेक अथवा डिमाण्ड ड्राफ्ट के माध्यम से उपलब्ध कराने का कष्ट करेंगे।

संलग्नः- उपरोक्तानुसार।

7/10/16.
(एस.एम.देशपांडे)
मुख्य अभियंता,क्रेडा

Solar Steam Cooking System

Cooking / Session	Space in Sq. Mt.	Dish Area	Total no. of Parabolas	Parabolas size	R.C. Price	MNRE Subsidy	UNDP Support	Net cost to Client	LPG Cyl. Saved	Savings per day	Savings 300 days	Payback in years	Depreciation	Inv. With Dep.	Payback with Dep.
100 - 200	105	48	3	16	1,475,000.00	259,200.00	172,800.00	1,043,000.00	1.00	1,230.00	369,000.00	2.83	303,950.00	739,050.00	2.00
201 - 350	140	64	4	16	1,945,000.00	345,600.00	230,400.00	1,369,000.00	1.50	1,845.00	553,500.00	2.47	399,850.00	969,150.00	1.75
351 - 500	210	96	6	16	2,750,000.00	518,400.00	345,600.00	1,886,000.00	2.00	2,460.00	738,000.00	2.56	557,900.00	1,328,100.00	1.80
700 - 800	280	128	8	16	3,610,000.00	691,200.00	460,800.00	2,458,000.00	2.80	3,444.00	1,033,200.00	2.38	729,700.00	1,728,300.00	1.67
1,000	350	160	10	16	4,352,000.00	864,000.00	576,000.00	2,912,000.00	4.00	4,920.00	1,476,000.00	1.97	872,000.00	2,040,000.00	1.38
1,500	490	224	14	16	6,010,000.00	1,209,600.00	806,400.00	3,994,000.00	6.00	7,380.00	2,214,000.00	1.80	1,200,100.00	2,793,900.00	1.26
2,000	630	288	18	16	7,725,000.00	1,555,200.00	1,036,800.00	5,133,000.00	8.00	9,840.00	2,952,000.00	1.74	1,542,450.00	3,590,550.00	1.22
2,500	770	352	22	16	8,890,000.00	1,900,800.00	1,267,200.00	5,722,000.00	10.00	12,300.00	3,690,000.00	1.55	1,747,300.00	3,974,700.00	1.08
3,000	910	416	26	16	9,850,000.00	2,246,400.00	1,497,600.00	6,106,000.00	12.00	14,760.00	4,428,000.00	1.38	1,900,900.00	4,205,100.00	0.95
5,000	1,470	672	42	16	17,200,000.00	3,628,800.00	2,419,200.00	11,152,000.00	20.00	24,600.00	7,380,000.00	1.51	3,392,800.00	7,759,200.00	1.05
10,000	2,730	1,248	78	16	32,555,500.00	6,739,200.00	4,492,800.00	21,323,500.00	40.00	49,200.00	14,760,000.00	1.44	6,454,075.00	14,869,425.00	1.01
15,000	3,780	1,728	108	16	44,820,000.00	9,331,200.00	6,220,800.00	29,268,000.00	60.00	73,800.00	22,140,000.00	1.32	8,872,200.00	20,395,800.00	0.92
20,000	4,900	2,240	140	16	56,700,000.00	12,096,000.00	8,064,000.00	36,540,000.00	80.00	98,400.00	29,520,000.00	1.24	11,151,000.00	25,389,000.00	0.86

Solar Termic Fluid Heated Cooking System

Cooking / Session	Space in Sq. Mt.	Dish Area	Total no. of Parabolas	Parabolas size	R.C. Price	MNRE Subsidy	UNDP Support	Net cost to Client	LPG Cyl. Saved	Savings per day	Savings 300 days	Payback in years	Depreciation	Inv. With Dep.	Payback with Dep.
100-200	100	64	2	32	2,625,000.00	345,600.00	230,400.00	2,049,000.00	1.33	1,640.00	492,000.00	4.16	569,850.00	1,479,150.00	3.01
201-350	200	128	4	32	3,810,000.00	691,200.00	460,800.00	2,658,000.00	2.33	2,870.00	861,000.00	3.09	779,700.00	1,878,300.00	2.18
301-500	300	192	6	32	5,090,000.00	1,036,800.00	691,200.00	3,362,000.00	2.86	3,514.29	1,054,285.71	3.19	1,013,300.00	2,348,700.00	2.23
501 - 700	400	256	8	32	6,810,000.00	1,382,400.00	921,600.00	4,506,000.00	4.00	4,920.00	1,476,000.00	3.05	1,356,900.00	3,149,100.00	2.13
701 - 900	500	320	10	32	8,295,000.00	1,728,000.00	1,152,000.00	5,415,000.00	5.14	6,325.71	1,897,714.29	2.85	1,641,750.00	3,773,250.00	1.99
901 - 1000	600	384	12	32	9,550,000.00	2,073,600.00	1,382,400.00	6,094,000.00	5.71	7,028.57	2,108,571.43	2.89	1,869,100.00	4,224,900.00	2.00
1,001 - 1,200	700	448	14	32	11,100,000.00	2,419,200.00	1,612,800.00	7,068,000.00	6.86	8,434.29	2,530,285.71	2.79	2,170,200.00	4,897,800.00	1.94
1,201 - 1,500	800	512	16	32	12,450,000.00	2,764,800.00	1,843,200.00	7,842,000.00	8.57	10,542.86	3,162,857.14	2.48	2,421,300.00	5,420,700.00	1.71
1,501 - 1,700	900	576	18	32	14,120,000.00	3,110,400.00	2,073,600.00	8,936,000.00	9.71	11,948.57	3,584,571.43	2.49	2,752,400.00	6,183,600.00	1.73
1,701 - 2,000	1,000	640	20	32	15,100,000.00	3,456,000.00	2,304,000.00	9,340,000.00	11.43	14,057.14	4,217,142.86	2.21	2,911,000.00	6,429,000.00	1.52

Note: The Subsidy and UNDP incentives may change with any change in Govt. policy

The above cost includes Tax, Cooking Vessels (3 Nos.) of suitable sizes, on site erection & commissioning charges, Transportation and trial runs of the system. Not included in the above price are any Back-up system, Hot Water storage tanks, special material handling equipments like crane etc., operational spares, dish cleaning pipe line and AMC.

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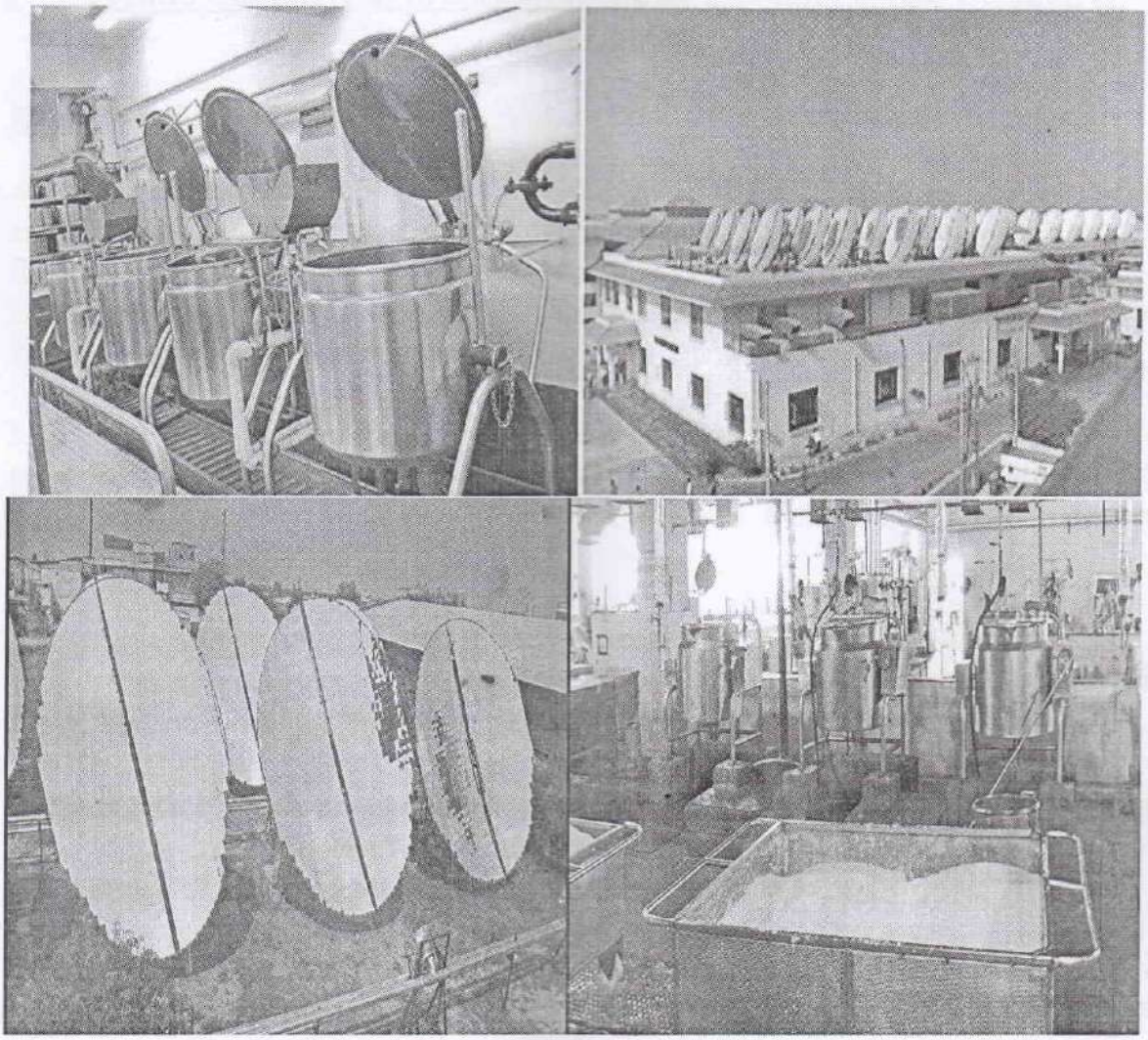
Techno-Commercial Proposal



Steam Cooking System
at Pt. Ravi Shankar shukla University
Cooking purpose of 500 children

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Techno-Commercial proposal for Steam Cooking, Direct Cooking & Dish Cooker

Executive Summary

Among various renewable energy resources, India possesses a very large solar energy resource which is seen as having the highest potential for the future. The first, recently announced, Jawaharlal Nehru National Solar Mission with a target of 20,000 MW grid solar power, and 20 million sq.m. Solar thermal collector area by 2022 is under implementation.

Ministry is also launching a new initiative for household cook stoves. Meanwhile, large Solar cooking systems for institutions and have plans to install at least 1000 large solar cooking systems by 2022 and solar dish cookers are also being encouraged.

Renewable energy is experiencing new enthusiasm and vibrancy all across, and the foundation of a new economy is being laid that is inclusive, sustainable and aspires for de-carbonization of energy in a definite time frame.

Solar cooking is an area which has been getting attention but perhaps requires more focus. India has been a pioneer in using solar concentrating technologies for the purpose of steam generation for various applications.

Ministry would like to cover at least all institutions including large institutions like Jails, Hostels, Hospitals/Medical colleges, Military/Para-Military Establishments, Industrial Organizations, wherever large number of meals is cooked, are the targets. Essentially, these will reduce the consumption of cooking gas to great extent.

MNRE gives a subsidy of 30% to promote Solar Cooking system and also State nodal agency provides additional subsidy.

In various Ashrams, Schools, Hostels of India maximum daily expenses is of cooking food for the Guests and Devotes, This can be reduced by more than 60 to 70% by installing Solar Steam Cooking and Direct Cooking Systems in India. *The Paybacks of all Solar cooking systems of are very attractive.*

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Introduction:

We, **Chhattisgarh Renewable Energy Development Agency (CREDA)** is State Nodal Agency for implementing Renewable Energy Projects. The team of CREDA is having experience and knowledge of various Solar Steam Generating systems for various applications, solar direct and indirect cooking /heating systems etc. for more than 10 years.

The advantage of using solar energy instead of fossil base sources is the prevention of CO_2 emission and in medium / long term cost savings compared to rapidly rising cost for conventional energy-fuels.

Solar cooking is an area which has been getting attention but perhaps requires more focus. India has been a pioneer in using solar concentrating technologies for the purpose of steam generation, direct cooking and dish cookers for various applications.

Ministry would like to cover at least all institutions including large institutions like Educational Institutes and Universities, Residential Schools & Colleges, MDM Schemes, State and District Jails, Hostels, Hotels, Canteens, Hospitals/Medical Colleges, Military/Para-Military Establishments, Industrial Organizations, Religious organizations and all other wherever large number of meals is cooked. Essentially, these will reduce the consumption of cooking gas or fire wood, subsidy burden on Government to great extent.

At CREDA, we offer various applications:-

- Dish Cooker of 1 m^2 , 1.4m^2 and 4m^2
- Direct Cooking of 10m^2 and 16m^2
- Steam Cooking for 100 to Thousands of People
- Solar Crematorium
- Solar Thermal Air-Conditioning
- Process Heat / Pressurized Hot water for Industrial Applications
- Space Heating and Hot air application
- Solar Power Plant
- Waste Water Evaporation/Solar Desalination
- Pasteurization of Water/Milk or any other Liquid

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Solution to Current Challenges

We are responsible for all type of Pollutions and health related problems, which are on the rise and are becoming unstoppable and controllable. The main cause of all these is fossil fuel which generates CO_2 emissions. The way we are using all our natural resources, it is clear that our Next Generation will have huge problems. For fighting the global warming and to save fuel for future, Solar Thermal Parabolic Concentrating Technology is one of the fastest growing and widely accepted technologies and promoted in big way by MNRE.

The amount of energy falling on earth surface is 1373 w/m^2 which is sufficient to boil whole water on earth. In many regions of the world one square kilometer of land is enough to as much as 100 to 120 Giga Watt hours (GWH) of electricity per year using solar thermal technology. This is equivalent to the annual production of a 50 MW conventional coal or gas fired mid load power plant. As India fortunately has large potential of solar energy, the purpose of this proposal is to introduce the utility of Solar Thermal Energy for all types of community and family cooking.

Working Principle of Solar Concentrator:

Solar dish concentrator concentrates radiations of Sun on receiver through all the day from 9 a.m. to 6 p.m. It tracks the radiations of Sun through automated tracking device, which rotates the parabolic dish along axis of rotation of Sun.

Parabolic dish consists of set of large Aluminum mirrors of rectangular shape or high reflective Aluminum sheet. Normally, parabolic dish has an area of 16m^2 of elliptical shape. It can be of 8 M^2, 9m^2, 10m^2 or 32 m^2 also depending on the application and customer's requirement.

Technology – Parabolic Concentrators:

Each parabolic concentrator of the system has a reflector frame fitted with reflecting Aluminum mirrors, rotating support and a stand. The concentrators are installed in such a way that they focus the Sunlight on to the receivers while in operation which will be attached to a steam header/ tank. The concentrators are tracked automatically with the help of suitable tracking arrangement. The concentrators are installed in series and parallel combination connected to different

steam headers/ tanks depending on the size of the system. Each unit of concentrators is connected in series and has its own tracking arrangement. The stands of the concentrators are properly grouted. The tracking arrangement is such that once adjusted in the morning with the help of drive motor, the concentrators will automatically track the Sun at least in one direction i.e. in E-W, thereby focusing all the Sun light exactly on the receivers connected to the header.

Solar Steam Cooking System:

Steam Header Assembly and Instrumentation:

Each steam header assembly is connected to a group of concentrators that consists of a steam header/ tank connected to receiver (circular in shape), pressure reducing station, steam and feed water pipelines and necessary valves. The designs of the receivers are such that they work on thermo- siphon principle and the water stored in the header is slowly converted into steam when the system is put into operation. It has a drain arrangement for cleaning against scale formation. The pressure reducing station is so designed that it reduces the pressure of steam generated in the header from 10 Kg/cm2 to 1-2 Kg/cm 2 so as to ensure safety of the user while using the steam. The system pipelines, receivers and steam header are insulated with glass wool/ rock wool covered by aluminum cladding to minimize heat losses. The system is hydro tested for any leaks before insulating its various components. Feed water tank of suitable capacity, instrumentation e.g. pressure gauze and water level and temperature indicators, level controller, safety valves, steam separators are installed with the system for safety and measuring different parameters.

Support Structure and Civil Work:

Necessary steel structures are provided to support steam header/ tank, stands for Concentrators, steam and feed water pipelines, pressure reducing valves, feed water tank etc.

Technical Specifications of Steam Cooking System:

Concentrators:	
Shape & make of each Concentrator	Of parabolic shape made of reflecting mirror(s) fixed to a supporting frame / structure
Aperture area	16 sq. m. or 32 Sq.m (for Scheffler dishes, it will be $\pi/4$ x lengths of major & minor axes of the ellipse).

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Reflecting Mirrors:	
i) Material	**i)** Bright Solar grade Aluminum mirrors* especially developed for outdoor use is used with reflectivity of over 90%.
ii) Reflectivity	**ii)** 90% minimum with a maximum degradation of 10% over its life span.
iii) Mirror fixing	**iii)** With positive locking or sticking by good quality adhesives. Due protection of mirror coatings is taken while fixing the mirrors.

* The benefit from this breakthrough is that the glass becomes the part of the anodic surface and has reflectivity equal to conventional specular anodized finishes; the final product has a glass-like surface, and is resistant to ultraviolet light. It has

- Outstanding reflectance (Solar reflectance 90% minimum as per ASTM E1331-96 and E 903-96)
- Superior corrosion resistance
- Drains moisture and dries faster than conventional reflector surfaces
- Available in patented composite panels that are easy to fabricate and install
- Reflectance and Corrosion-Resistance warranties up to 30 years based on application and location.
- It functions like glass, but without the weight and without the brittleness
- It functions like glass, but without the weight and without the brittleness

Though there may be increase in the cost of the Parabola but looking to the above advantages it makes an ideal choice for our solar parabolic concentrators. The price increase is justified as the life of the reflectors are more than three times compared to mirrors, there are no breakages and saves replacement cost which is more than the price increase.

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Concentration Ratio:
More than 80%
Tracking Arrangement:
• The system has reliable D.C automatic tracking mechanism. It is made of standard components and is protected from rain, dust & outside environment.
Heat receivers, Headers/ Drums and Piping:
• Tested steam pressure: 1.5 times of designed pressure (15-20 kg / cm^2) • Receivers : of boiler quality material to sustain required temperature and pressure • Header material and piping: Designed & manufactured as per IBR/ standard industry quality.
Insulation:
• All hot water and steam piping, interconnecting piping from header to receivers, are insulated with minimum thickness of 50 mm of PUF or rock wool as per requirement and weather conditions. Headers or water-steam tank should have minimum insulation of 75 mm. • All insulated components will have Al sheet or powder coated steel sheet cladding as per industrial practices so as not to allow rain water to sip in the insulation
Frame and Supporting Structure:
• Is strong enough to avoid any deformation of the reflector dish during manhandling / tracking/under wind pressure of 200 km per hour. • Of mild steel and Aluminum bars which are strong enough and painted with epoxy/anti-rust coating.
Instrumentation & Controls:
• Complete system comes with all instrumentation such as pressure gauge, temperature indicator, fluid level indicators, safety valves etc. • All parts/components are weather resistant. The complete system is designed to withstand natural weathering outdoors under local climatic conditions, for a minimum period of 25 years.

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Warranty: The system carries a performance warranty of 5 years.

- Necessary spares for smooth operation are provided on request, so that the users do not face any problems at least during the warranty period.
- The complete steel structures provided to support various components of the system are fabricated in such a way that they are capable to take load (both wind load and static dead load) of the whole system.
- The personnel of the buyer/user institution are trained by CREDA in the operation and maintenance of the system and its back-up system. Proper manuals are prepared and handed over to the user.

The other important features of system are:

i) It will be designed to have easy access to the user and proper walkway and platforms will be supplied for easy operation and maintenance of the system wherever necessary.

ii) Safety features such as safety valves etc. will be incorporated in the system.

iii) Proper instrumentation as mentioned above will be provided so that user could see the status of system and take precautions /corrective steps if the system does not behave as expected.

CREDA reserves the rights for any improvements in the above specifications, which can lead to higher efficiency and cost reduction of the system.

Applications:

Solar Steam Cooking	From 200 to more than 50,000 meals / day	Boiling of rice, dal, vegetables , milk etc.	In the comfort of the kitchen.	Residential schools, mid-day meal program, defense teams deployed in remote and urban areas, hotels, Jails, institutions, industries providing canteen facilities to employees, temples and many more catering to more than 200 to thousands persons daily

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Components in the System:

1. Parabolic Concentrators
2. Receivers
3. Central Automatic Tracking System
4. Steam Header
5. Steam Pipe Line (branch) & feed water pipe line
6. Back-up system for whole year operation – Option available at extra cost.

Silent features of Steam Cooking System:

- Complete system designed as per MNRE specifications and guide lines.
- Specialized Al. mirrors with 90% reflectivity with a life of more than 30 years.
- The system can sustain wind velocity of 200 Km./Hr.
- We provide AMC for the system after warrantee period.

Price of the systems and Related information for 351-500 Persons:

Sr. No	Description	Details
1	Solar Steam Cooking System / Session	351 – 500 persons
2	Total Space Required for Installation	210 Sq. M
3	Total Reflective Area required	96 Sq M
4	Total Parabolas to be installed	6 Nos
5	Size of Parabola	16 M^2
6	Subsidy from MNRE (in ₹)	518400.00
7	UNDP Support (in ₹)	345600.00
8	Proposed Cost of System (in ₹)	2750000.00
9	Net cost to Client after MNRE and UNDP support(in ₹)	1886000.00
10	LPG Cylinders saved per day(in Nos.)	2.00
11	Cost of one Cylinder (14.2 Kg) in (in ₹)	1230.00
12	Savings per day in (in ₹)	2460.00
13	Savings in 300 days (in ₹)	738000.00

The above cost includes Tax, Cooking Vessels (3 Nos.) of suitable sizes, on site erection & commissioning charges, Transportation and trial runs of the system.

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Not included in the above price are any Back-up system, Hot Water storage tanks, **special** material handling equipments like crane etc., operational spares, dish **cleaning** pipe line and AMC.

Pay-back on Investment Steam Cooking:

With MNRE subsidy and UNDP-GEF support the return on investment are less than three years in any of Solar Steam Cooking System.

General Terms of Payment:

After deduction of MNRE & UNDP-GEF .Support, the cost of system borne by beneficiary organization is to be deposited in CREDA in form of Demand Draft, address to The Director, CREDA payable at Raipur.

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Environment Audit

2019-20 & 2020-21

AUDIT REPORT

Studied for

Pt. Ravishankar Shukla University

Amanaka G.E.Road, Raipur,
Chhattisgarh (India) - 492010

Analysed by

Greenvio Solutions

23 March 2022

Background reference image Nic Y C Gua on unsplash

Letter and Certificate of Consent

ENVIRONMENT AUDIT

This is to certify that the Environment Audit for 2019-20 and 2020-21 has been conducted for

Pt. Ravishankar Shukla University

Amanaka G. E. Road, Raipur, Chhattisgarh (India) - 492010

The Study observed the following:

The Premises is an eco-friendly Institution which is pollution free and has a fresh ambience.

There are ample of vegetation and tree covers in and around each Building of the premises.

Adequate facilities are provided for user benefit for all stakeholders.

The Institutions efforts of having facilities for Universal Design are appreciable.

Overall the study concludes:

The Environmental Audit & its management practices undertaken by the Institution are excellent.

Study and Audit done by:

Ar. Nahida Shaikh

Project Head and Green Building Consultant

Sustainable Academe – Greenvio Solutions

Sustainability Department of Greenvio Solutions, Naigaon

An environment Design and Consultancy developing Healthy and Sustainable Environments

sustainableacademe@gmail.com I greenviosolutions@gmail.com

About the Project Head - Ar. Nahida Shaikh has completed audits of multiple Institutes including Technical, State University, Private University and Single Faculty Colleges for a total of more than **50 lakhs+ sq. ft. of Built-up area audited till date** Pan India as an Accredited Green Building Professional-Architect.

She has **authored over 6 books** for Colleges in India titled *Towards a Healthy & Sustainable Institute, An Ecologically Sound Institution, Education amidst the nature, Micro efforts towards a Green Institution leading to Macro Results, An Eco-friendly Developed Institutions* f these are published with ISBN Number as Paperback and the book titled *An Urban Green Habitat* published with ISSN Number.

She is a Registered Licensed **Architect** with the Council of Architecture, India an **Indian Green Building Council Accredited Professional** (IGBC AP), an **Assocham GEM Certified Professional** (Regn. No. GEM CP 22/718) and she has completed her Lead Auditor Course on Environment Management System, Green Campus Audit, Energy Audit and Hygiene Audit to Educational Institutions and Industries.

Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing excellent quality services within the stipulated time frame.

(Valid till March 2023)

Disclaimer

The Audit Team has prepared this report for the **Pt. Ravishankar Shukla University** located at *Amanaka G.E.Road, Raipur, Chhattisgarh (India) - 492010* based on input data submitted by the University analysed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the Hon'ble Management and University. The warranty or undertaking, expressed or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

The audit is a thorough study based on the inspection and investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm with the Project Head - Ar. Nahida Shaikh who has completed audits of multiple Institutes including Technical, State University, Private University and Single Faculty Universities of more than 50 lakhs+ sq. ft. of Built-up area audited till date Pan India as an Accredited and Certified Green Building Professional-Architect. Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing excellent quality services within the stipulated time frame.

The Study is conducted in capacity of Accredited & Certified Green Building Professional with extensive experience.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting Audits

Palghar District, Maharashtra- 401208

sustainableacademe@gmail.com

Acknowledgement

The Audit Assessment Team thanks the **Pt. Ravishankar Shukla University, Raipur, Chhattisgarh** for assigning this important work of Environment Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to Hon'ble **Prof. Keshari Lal Verma Sir, Vice Chancellor** and **everyone from the University.**

Our heartfelt thanks to Chairpersons of the entire process **Prof. Girish Kant Pandey Sir,** Registrar for the valuable inputs.

The kind gesture for the inventory and data collection of **and Mr. Kuldeep Bhupendra,** Incharge - Engineering Section is quite commendable.

We are also thankful to **University's Task force the faculty members - Audit Coordinators** who have collaborated to collect data required **Dr. Sanjay Tiwari,** Professor, Coordinator: M.Tech. in Optoelectronics & Laser Technology, Coordinator: Institute of Renewable Energy Technology & Management, S.O.S. in Electronics & Photonics; **Prof. Arti Parganiha,** Professor of Bioscience.

We highly appreciate the assistance of the **entire Teaching, Non-teaching and Admin staff** for their support while collecting the data.

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

Contents

Greenvio Solutions

Hereby presents

An Environment & Ecological friendly premise

Established as a State Private University at Raipur

vide Chhattisgarh Act of 1973

The prestigious

Pt. Ravishankar Shukla University

Amanaka G.E.Road, Raipur, Chhattisgarh (India) - 492010

1. Introduction

1.1 About Pt. Ravishankar Shukla University

An educational institute is beyond than being just a building. It helps one in acquiring knowledge which is a gateway to being successful and a good human.

"A good education is the best gift you can give yourself or anyone else"

- Mahtab Narsimhan

Pt. Ravishankar Shukla University is Chhattisgarh's largest and oldest institution of higher education, founded in 1964, and named after the first chief minister of erstwhile Madhya Pradesh. The University has a sprawling campus in the western part of the capital of Chhattisgarh, Raipur. The campus of University is spread in 300.17 acres of land. There are Twenty-Nine teaching departments in the University. Out of which six departments buildings have been constructed recently. A variety of self-financed courses have been initiated in some departments. The total number of employees is 700, who provide the administrative support at different levels.

Attracted by the opportunity to study and conduct advanced research with renowned professors and fellow scholars in one of the Chhattisgarh's most dynamic cities, students also come from the neighbouring States. There are 5000 students enrolled for variety of courses offered by the departments who are steered under the guidance of more than 100 faculty members. Jurisdiction of RSU covers entire central and southern part of Chhattisgarh. There are 180 educational institutions affiliated to the University. In the academic year 2005-06, about 1,25,000 students were enrolled, both for undergraduate and postgraduate courses. The University plays a major role in the educational, cultural and economic life of the region.

"There is no school equal to a decent home and no teacher equal to a virtuous parent."

- Mahatma Gandhi

It is one of the premier State Educational University providing quality education with best state of the art facility & Infrastructure to the students.

1.2 Statement, Section of University

1.2.1 Vision towards the future

- To **make quality higher education accessible to all sections of society,** including the tribal population of Chhattisgarh.
- To **provide quality education in the disciplines** of arts, humanities, social sciences, natural sciences and other disciplines of learning.
- To **develop human resource with world class competence and skills** in the respective disciplines.

1.2.2 Mission for achieving benchmarks

- To develop the university as a centre of excellence for higher education and knowledge resource
- To promote understanding the value of self-learning, creativity and competence building:
  - By providing world-class education through university-teaching departments and schools.
  - By promoting quality research in university schools and affiliated colleges.

1.2.3 About the Engineering section

Engineering section is an important component of the administrative infrastructure of Pt. Ravishankar Shukla University. The section mainly works on all matters subject to the control of the Building Committee.

The Building committee advises the Executive Council on all matters related to construction of buildings, repairs, alteration, additions to existing buildings, select and recommend site or acquisition, accord technical sanction to the plans and estimates, and expenditure.

The composition of the Building Committee is such that the members are nominated for the period of two years, as per additional Statute 3 of the University Act

1.2.4 About the Development section

The Development section is an important component of the administrative structure of the University. It periodically performs work related to all type of purchase proposals i.e. inviting quotations, preparation and floating tenders for the purpose of purchase, organizes the meeting of Central Purchase Committee duly constituted as per provisions of the University Act, preparation and floating the expression of interest, disposal of waste material such as used answer books etc.

The section also supervises works related to the printing of various documents, proforma, Degree & preparation of gold medal etc.

1.3 Institutions in the premises

The aim of the University is to continuously enhance the teaching methods in order to provide students with an opportunity for their all-round development. In order to manage the programme offerings in a much better way, Pt. Ravishankar Shukla University has **structured its offerings under 29 Major Sections** as follows:

1. **School of Studies in Ancient Indian History Culture & Tourism & Hotel Management**
2. **School of Studies in Anthropology**
3. **School of Studies in Biotechnology**
4. **School of Studies in Chemistry**
5. **Swami Vivekanand Memorial School of Studies in Comparative Religion , Philosophy and Yoga**
6. **School of Studies in Computer Science & IT**
7. **School of Studies in Economics**
8. **School of Studies in Electronics and Photonics**
9. **School of Studies in Environmental Science**
10. **School of Studies in Geography**
11. **School of Studies in Geology and Water Resource Management**
12. **School of Studies in History**

13. **School of Studies in Law**
14. **School of Studies in Library and Information Science**
15. **School of Studies in Life Science**
16. **School of Studies in Literature and Languages**
17. **Institute of Management**
18. **School of Studies in Mathematics**
19. **University Institute of Pharmacy**
20. **School of Studies in Physical Education**
21. **School of Studies in Physics and Astrophysics**
22. **School of Studies in Psychology**
23. **School of Regional Studies and Research**
24. **School of Studies in Sociology & Social Work**
25. **School of Studies in Statistics**
26. **Institute of Teachers Education**
27. **Centre for Women's Studies**
28. **Renewable Energy Technology & Management**
29. **Center for Basic Sciences (CBS)**

Each of these Schools is headed by highly experienced and competent Director/Deans along with H.O.Ds checking on the right academic progress of each faculty/department in the University.

The University strives for excellence in academics and makes an effort to induce passion for learning along with the inspiration for decisive thinking and assessment, thereby helping them to become the best professionals in their chosen careers.

1.4 Programs offered by the University

The University a wide range of courses for the students to upgrade their educational qualification. The details of each of these courses as per the School are as follows.

- **Post-Doctoral** – It offers the following courses.

1. Doctor of Science Chemistry
2. Doctor of Science/ Doctor of Literature Anthropology
3. Doctor of Literature Sociology
4. Doctor of Literature Linguistics
5. Doctor of Science/ Doctor of Literature Geography
6. Doctor of Literature Psychology
7. Doctor of Literature Economics
8. Doctor of Science Physics
9. Doctor of Literature History
10. Doctor of Science Zoology
11. Doctor of Science Botany
12. Doctor of Science Bioscience
13. Doctor of Science Statistics
14. Doctor of Law
15. Doctor of Literature Philosophy
16. Doctor of Science Geology
17. Doctor of Literature Physical Education
18. Doctor of Literature Library & Information Sciences
19. Doctor of Science Mathematics
20. Doctor of Science Microbiology
21. Doctor of Science Electronics
22. Doctor of Literature Hindi
23. Doctor of Science Computer Science

24. Doctor of Literature Ancient Indian History
25. Doctor of Literature English
26. Doctor of Science Pharmacy
27. Doctor of Literature Management
28. Doctor of Science Biochemistry
29. Doctor of Science Biotechnology

- **Doctoral** – It offers the following courses.
    1. Doctor of Philosophy - Chemistry
    2. Doctor of Philosophy - Anthropology
    3. Doctor of Philosophy - Sociology
    4. Doctor of Philosophy - Linguistics
    5. Doctor of Philosophy - Geography
    6. Doctor of Philosophy - Psychology
    7. Doctor of Philosophy - Economics
    8. Doctor of Philosophy - Physics
    9. Doctor of Philosophy - History
    10. Doctor of Philosophy - Zoology
    11. Doctor of Philosophy - Botany
    12. Doctor of Philosophy - Bioscience
    13. Doctor of Philosophy - Statistics
    14. Doctor of Philosophy - Law
    15. Doctor of Philosophy - Comparative Religion and Philosophy
    16. Doctor of Philosophy - Geology
    17. Doctor of Philosophy - Physical Education
    18. Doctor of Philosophy - Library Science
    19. Doctor of Philosophy - Mathematics
    20. Doctor of Philosophy - Microbiology

21. Doctor of Philosophy - Regional Studies
22. Doctor of Philosophy - Electronics
23. Doctor of Philosophy - Hindi
24. Doctor of Philosophy - Computer Science & IT
25. Doctor of Philosophy - Ancient Indian History, Culture & Archaeology
26. Doctor of Philosophy - English
27. Doctor of Philosophy - Pharmacy
28. Doctor of Philosophy - Management
29. Doctor of Philosophy - Biochemistry
30. Doctor of Philosophy - Biotechnology
31. Doctor of Philosophy Environmental Science

- **Post Graduate -** It offers the following courses

1. Master of Science - Chemistry
2. Master of Arts - Sociology
3. Master of Arts - Psychology
4. Master of Arts - Linguistics
5. Master of Arts/Master of Science - Geography
6. Master of Arts/ Master of Science - Anthropology
7. Master of Arts - History
8. Master of Arts – Economics
9. Master of Science – Physics
10. Master of Arts/Master of Science - Statistics
11. Master of Science - Bioscience
12. Master of Law - Constitutional and Administrative Law, Crime and Torts
13. Master of Science - Geology
14. Master of Library Science - Library and Information Science
15. Master of Science/Master of Arts - Mathematics

16. Master of Science - Microbiology
17. Master of Physical Education
18. Master of Business Administration
19. Master of Arts - English
20. Master of Science - Electronics
21. Master of Arts - Hindi
22. Master of Computer Applications
23. Master of Arts - Ancient Indian History, Culture & Archaeology
24. Master of Science - Information Technology
25. Master of Science - Biochemistry
26. Master of Science - Biotechnology
27. Master of Education
28. Master of Science - Pharmacy Pharmaceutics
29. Master of Arts - Applied Philosophy & Yoga
30. Master of Technology - Optoelectronics & Laser Technology
31. Master of Social Work
32. Master of Science - Environmental Science
33. Master of Arts - Rural Development Master of Arts - Chhattisgarhi
34. Master of Science Integrated [Physics/ Mathematics/ Chemistry/Biology]

- **Under Graduate** – It offers the following courses.

1. Bachelor of Library Science Library and Information Science
2. Bachelor of Physical Education
3. Bachelor of Pharmacy
4. Bachelor of Arts - Bachelor of Legislative Law
5. Bachelor of Education
6. Bachelor of Vocation in Renewable Energy Technology and

Management

- **Post-Graduation diploma** – It offers the following courses.
    1. P.G. Diploma in Guidance and Counselling
    2. P.G. Diploma in Yoga Education & Philosophy
    3. P.G. Diploma in Tourism & Hotel Management
    4. P.G. Diploma in Regional Planning & Development
    5. P.G. Diploma in Forensic Science
    6. P.G. Diploma in Rehabilitation Psychology
    7. P.G. Diploma in Applied Hydrogeology
    8. P.G. Diploma in Remote Sensing & GIS
- **Diploma Programs -** It offers the following courses
    1. Diploma in European and Asian Languages English
    2. Diploma in European and Asian Languages French
    3. Diploma in National Language Sindhi

1.5 Assessment of the University

1.5.1 Establishment

Pt. Ravishankar Shukla University, has been established as a State University at Raipur, vide Chhattisgarh Act of 1973.

1.5.2 Recognition

The University is recognised by **University Grant Commission (UGC)** under section 2 (f) and 12 (b) of the UGC Act, 1956 vide by University Grants Commission, New Delhi.

1.5.3 Accreditation

NAAC - The following are details of the reaccreditation of the University.

Cycle	First	Second	Third
CGPA	75.1	2.62	3.02
Grade	B+	B	A
Year	2003	2011	2016

Table 1: NAAC Accreditation details of the Institute

The University is due to enter its Fourth cycle of NAAC soon.

1.5.4 Approval

The University has received the following significant approvals for the various courses.

S. No.	Course	Approval
1	B. Pharm and M. Pharm	**Pharmacy Council of India (P.C.I)** A statutory body of government of India constituted under the Pharmacy Act, 1948, responsible for regulation of pharmacy education and practice of profession in the country for registration as a pharmacist.
2	BA LLB (Five Years)	**Bar Council of India (B.C.I)** A statutory body established under the section 4 of Advocates Act 1961

		that regulates the legal practice and legal education in India.
3	Teacher courses (B. Ed)	**National Council for Teacher Education (N.C.T.E)** A statutory body in pursuance of the National Council for Teacher Education Act, 1993
4	Diploma in rehabilitation psychology	**Rehabilitation Council of India (RCI)** The apex government body, set up under an Act of Parliament, to regulate training programmes and courses targeted at disabled, disadvantaged, and special education requirement communities.
5	Technical courses	**All India Council for Technical Education (AICTE)** A national-level Apex Advisory Body to conduct a survey on the facilities available for technical education and to promote development in the country in a coordinated and integrated manner.

Table 2: Details of the various Approvals of the Institute

1.5.5 Certification

The institute has received the following Certifications

- **The National Institutional Ranking Framework (NIRF)** - Ranked between 150 and 200 in the latest rankings.
- **All India Survey of Higher Education (AISHE)** – As per latest documents the reference number is U-0093-2019 for 2019-20

1.6 Affiliated colleges

The PRSU is one of the premier centers of higher education & learning in Chhattisgarh, India. It caters to the needs of the youths of Chhattisgarh and adjoining States, namely Madhya Pradesh, Maharashtra, Odisha, Jharkhand, Andhra Pradesh, as well as from West Bengal and Andaman & Nicobar Islands in the realm of higher education and research.

Chhattisgarh was carved out of Madhya Pradesh on the 1st November, 2000 as a new political entity. Pt. Ravishankar Shukla University, being the oldest university, is leaving no stone unturned to cater to the needs of the society. **The university has grown enormously over the last 57 years** in terms of number of students or disciplines, viz., humanities, natural science, law, education, pharmacy, management, physical education, library science and computer science & IT etc.

In 29 Schools of Studies (SoS) and 149 affiliated colleges spread over five districts of the Chhattisgarh State.

2. Institution overview

2.1 Populace analysis for Academic year 2019-20

2.1.1 Students data

The student data (shared by the University) shows there were a total of **16,500 Boys and 10,092 Girls** students thus **a total of 26,592 students** in the premises.

2.1.2 Staff data

Type	Total
Admin Staff	**4**
Teaching Staff	**120**
Non-Teaching Staff	**302**
Total Staff Members	**426**

Table 3: Staff data of the Institution for 2019-20

The staff data shows the premises had a total of **426** Staff Members.

2.2 Populace analysis for Academic year 2020-21

2.2.1 Students data

The student data (shared by the University) shows there were a total of **17,113 Boys and 11,091 Girls** students thus **a total of 28,204 students** in the premises.

2.2.2 Staff data

Type	Total
Admin Staff	**4**
Teaching Staff	**115**
Non-Teaching Staff	**288**
Total Staff Members	**407**

Table 4: Staff data of the Institution for 2020-21

The staff data shows the premises had a total of **407** Staff Members.

2.3 Total University Area & Building Spread Area

The **total site area is 300.17 Acres** and the **total Built-up area of University is 2,87,751 sq. ft.** for **a total of 28,611 footfalls.**

2.4 University Infrastructure

The Buildings are made of Reinforced Cement Concrete (RCC) framework. These are equipped with modern amenities. It facilitates the students with a good environment for studies and stays true to its aim of providing Holistic development. The Residential and Academic buildings amalgamate smoothly with the open space in order to stand out as one of the most premier Institutes in the country.

Overall the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premises covers most of the requirements for a Green Habitat. It continues to upgrade itself in terms of the facilities and makes sure that there is no compromise on the quality of services towards Building requirements. The cooperative teamwork and the leadership of the Hon'ble dignitaries are one of the main reasons for achieving success in providing quality education with an advanced and up-to date premises.

2.4.1 Spatial Organisation

2.4.1.1 Architectural Design

The overall ambience of the University is warm and inviting. The courtyards, educational spaces, learning spaces, residential spaces and recreational spaces have ample natural ventilation in the form of clear glass windows with fresh air ventilation. The architecture of the buildings are quite well designed. The colour palette not just helps the buildings to stand out as per respective typology of the Building be it Educational or Residential but also provides an Institutional arena. There are provisions for lifts, CCTV, Fire extinguishers, first aid box and much more.

2.4.1.2 Landscape design

The built-form balances with the local architecture and amalgamates very well with the natural landscapes in form of open ground, designed landscape spaces, streetscape

elements such grounds, designed gardens, greenhouse, botanical gardens and huge trees all around. There are provisions for ramps, open ground, courtyards, designated landscape areas, signages, Utility Boxes, Parking, Sidewalk Furniture and Utility Poles.

2.4.2 Building and Block wise details

The Building & Block wise details on the Pt. Ravishankar Shukla University premises are mentioned below:

S. No.	Branch name	Floor
1	Admin Building	G+2
2	Arts Building	G+3
3	Library Building	G+3
4	Electronic Building.	G+1
5	Science Block	G+1
6	B.ED Building	G+1
7	USIC	G
8	M.B.A. Building	G+1
9	New NCNR Building	G+1
10	HRDC Building	G+1
11	Computer Science Building	G+1
12	Biotechnology Building	G+1
13	Physical Education	G+1
14	Student Recreation	G
15	Pharmacy Building	G+1
16	Law Building	G+1
17	Maths/ Statistics Building	G+1
18	Geology Building	G+1
19	Bio Science Building	G+1
20	Regional study/ IQAC	G+1

21	CBS Building	G+2
22	Auditorium Building	G+1
23	Guest House Building	G+1
24	Teacher Hostel Building	G+1
25	Geography Building	G+1
26	Anthropology Building	G+1
27	Physics Dom Building	G+1
28	Health Center	G
29	Utility Center	G+1
30	old NCNR Building	G
31	Press Building	G+1
32	Community hall	G+1
33	Gym Building	G+1
34	Power gird Hostel	G+2
35	Gandhi Hostel	G+1
36	Azad Hostel	G+1
37	Boys Research Hostel	G
38	Navin Kanya Hostel	G+1
39	Professional Girls Hostel	G+1
40	Research Girls Hostel	G+1
41	PG Girls Hostel	G+1

Table 5: Block and department wise details of the University premises

2.4.3 Salient features

The University had the best State of the art Infrastructure in the Country. Some of the best features available are as follows:

1. *ERP System for monitoring administration /academics*
2. *Wi-Fi enabled premises*

3. *Modern infrastructure with well-equipped laboratories*
4. *Guest Lectures by Eminent Scholars*
5. *Ragging free environment*
6. *Hostels for Girls and Boys*
7. *24 x 7 Power and RO water supply*
8. *State of art Library*
9. *Canteen Facility*
10. *Medical Facility (Health Centre)*
11. *Auditorium with all ultra-modern facilities.*
12. *Multipurpose Hall*
13. *Landscaped Gardens*
14. *On premises Residential Facilities for faculties and employees.*
15. *Community development programs*
16. *Arrangement for physically Challenged persons/students.*

The University endeavours at training young women to be competent, committed and compassionate and lead in all walks of life.

2.4.5 Operation and Maintenance of the premises

The interview session with the staff regarding the operation and working hours is summarized in the table. The Institutions are open Monday to Friday for full day. Saturday, Sunday is an off for all. Below mentioned in the table are the average working hours. The detail wise timing for each is mentioned below the table.

S. No.	Section	Spaces	Time	Hours / day	Days in a year
1	Main Institutional University	Student areas and Teaching faculty	10:00 a.m. to 5:30 p.m.	7.5	280
2	General areas	Admin areas and library, Passage, staircase, toilet	09:30 a.m. to 5:30 p.m.	8	300

Table 6: Schedule of the timings of the premises


पं.रविशंकर शुक्ल प्रेक्षागृह


भूगोल अध्ययन शाला


आजाद हास्टल
AZAD HOSTEL


INDIAN
HOUSE

3. Green Building Audit Study

3.1 About the Green Building Study Audit

It is a systematic study of the aspects which make the Institution a sustainable and healthy premises for its inhabitants.

3.2 Analysis for the Green Building Study Audit

The procedure included detailed verification for the following:

Energy Audit

- Analysis of the Lights, Fans, AC, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the premises

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of premises; Scope to include Rain water harvesting and Waste water treatment in premises
- Waste Audit - Current waste produced, its segregation and usage; Strategies to be adopted for waste management and awareness

Environmental Audit

- Analysis of the current landscape + hardscape of premises
- Analysis of the flora and fauna of campus
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

3.3 Strategy adopted for Green Building Study Audit

The strategies included data collection from admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collected and preparation of the Report.

3.4 Timeline of the activities for Green Building Study Audit

- 01 January 2022 – Discussion with the University
- 13 January 2022 – Allotment and Initiation by the University
- 12 February 2022 – Survey of the Student and staff submitted
- 24 February 2022 – Discussion for review of data collection
- 08 March 2022 – Site visit
- 10-21 March 2022 – Data submitted by University
- 23 March 2022 – Submission of the Report

Meeting with Vice Chancellor Sir during the Audit visit

Discussion meeting with Prof. Girish Kant Pandey Sir, Registrar

Induction meeting with Mr. Kuldeep Bhupendra, Incharge Engineering section

On-site External Team with the University representatives

4. Site Study

4.1 On-site observations study

The following listed are some of the positive site elements which are beneficial to the University in terms of tangible and intangible benefits.

- **Location -** The Pt. Ravishankar Shukla University is located at Amanaka G.E.Road, Raipur - 492010 and falls under *the Raipur Municipal Corporation (Raipur Nagar Nigam) in the capital city of Chhattisgarh state in central India.*
- **Neighbourhood context -** The premises is surrounding by open spaces and Residential, Educational, Recreational spaces on the immediate surroundings of the site, there are educational institutes and the site is adjacent to the Great eastern road, it is situated in the Raipur city which is famous for *vibrant steel plants, over 200 steel mills and a slew of coal and aluminium industries.*
- **Natural physical features –** The premises includes a rich biodiversity and huge number of plants in the open space. The site does not have major different in the land levels (contours). The rainwater is diverted through pipes into ground and it has helped ground water recharge for the well water over the years and treated waste water is used as a source of organic fertilizer in the premises.
- **Manmade features –** The premises is situated in an urban area amidst residential areas and open spaces with appropriate proximity to necessary amenities. There is sufficient appreciation space for entrance. The materials used for construction are RCC and the landscaping includes in potted plants.
- **Circulation –** There is a smooth transition of pedestrian traffic inside the premises due to the large entrance gate and the huge open space where vehicles of students and staff is parked.
- **Climate –** The average wind speed in Raipur is 2.6 m/s with the maximum wind speed of around 8 m/s. The average ambient temperature remains 26.4°C, varies from 9.5°C to 42.4°C. The average reletive humidity remains around 62%, varies from 16.8% to 99.9%. The station pressure varies from 972 hPa to 959 hPa, averaged around 985 hPa. Windrose of Raipur shows that predominantly wind blow from the WSW - about 15.65% of all wind directions.

(Source: https://www.indianclimate.com/show-data.php?request=FDCRNM6Z6Y)

4.2 Survey results

An online survey was conducted to analyse the student and staff views about the premises, following are some of the reviews. (Note - Responses have been rounded off keeping in the population study)

4.2.1 Participation

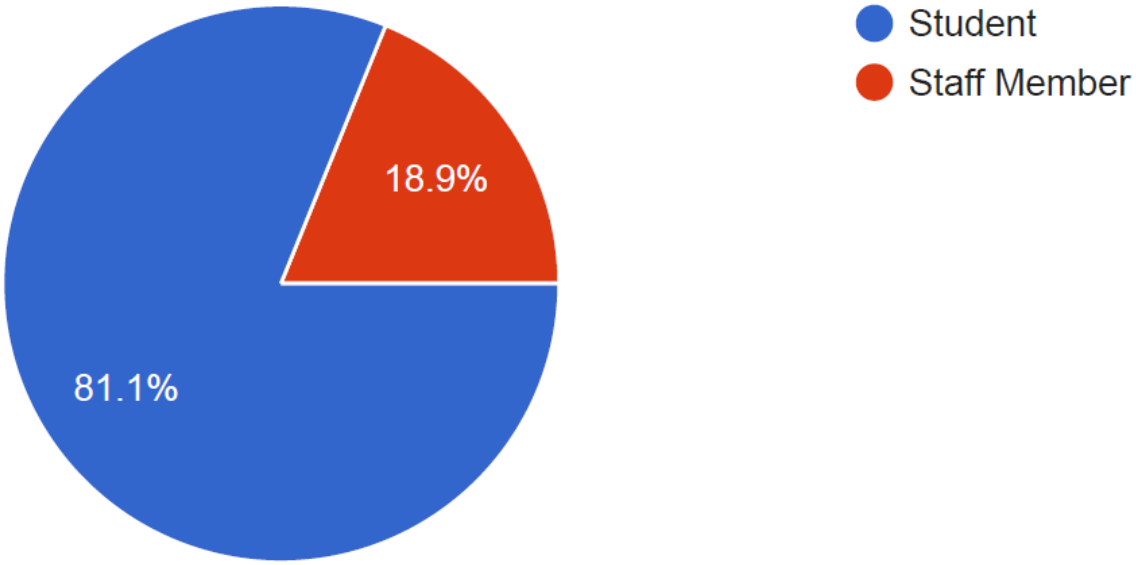


Figure 1: Participation analysis in the survey

A total of **122 responses** were received out of which 81% were students.

4.2.2 Schools (Dept./ Faculty)

The Students and staff from almost all the schools and departments had participated in the survey.

The enthusiastic participation and the coordination of the University towards encouraging the students to participate in the same are quite commendable.

4.2.3 Is there any Dust pollution in the premises?

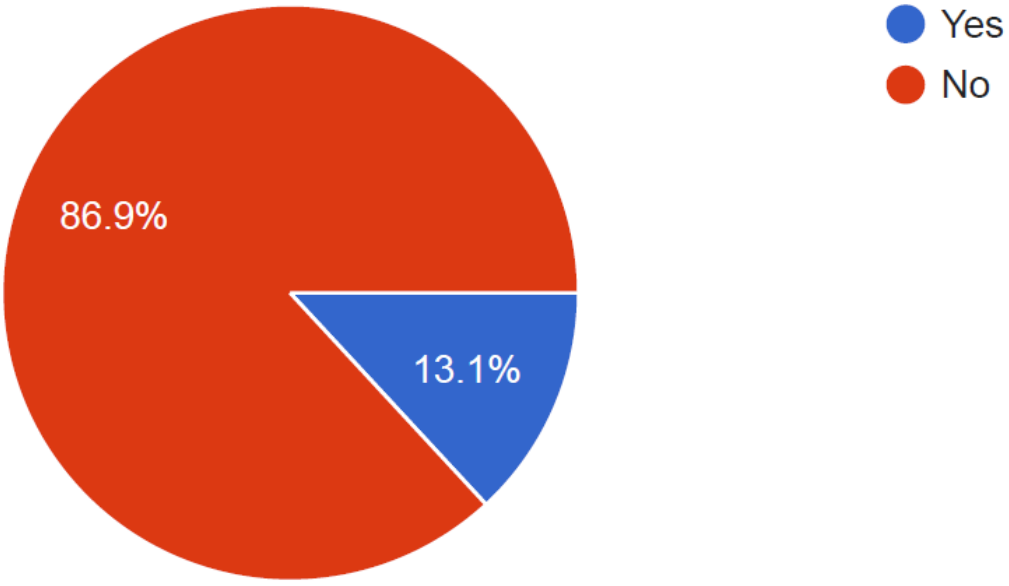


Figure 2: Participation analysis in the survey

The students, staff **(almost 87%)** of responses confirmed that there is no dust pollution. **This justifies the fresh environment in the premises.**

4.2.4 Is there any Air pollution in the premises?

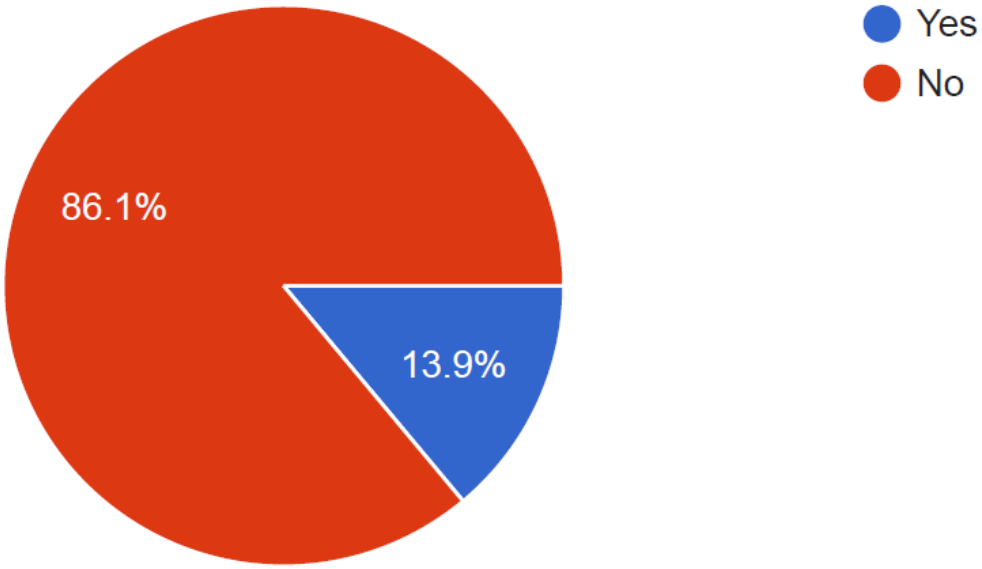


Figure 3: Participation analysis in the survey

The students, staff **(almost 87%)** of responses confirmed that there is no air pollution. **This justifies the appropriate measure adopted by the engineering and planning department to ensure movability of vehicles within the premises to ensure fresh environment.**

4.3 Survey ratings

Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good
- Scale 4 – Very good
- Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

4.3.1 Rate - Location of the Institute premises with respect to surrounding context

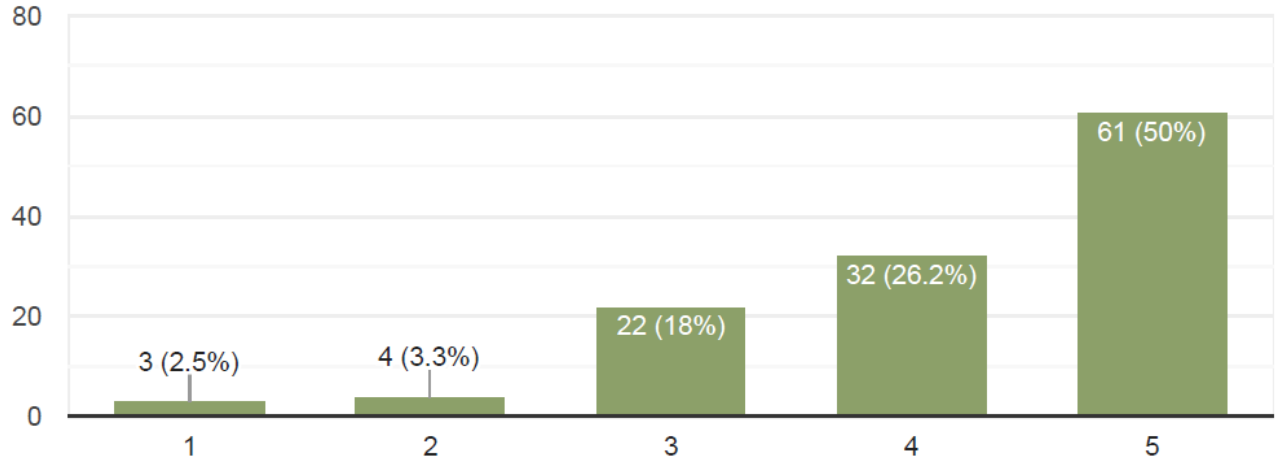


Figure 4: Participation analysis in the survey

There were mixed responses received the equal also the highest was for **rating 5 (Excellent) at 50% and rating 4 (Very good) at 26%**

This study positively highlights the Sustainable Site Planning strategies adopted by the Institute.

4.3.2 Rate - Circulation of students and staff within the Institute premises with respect to mobility (Travel)

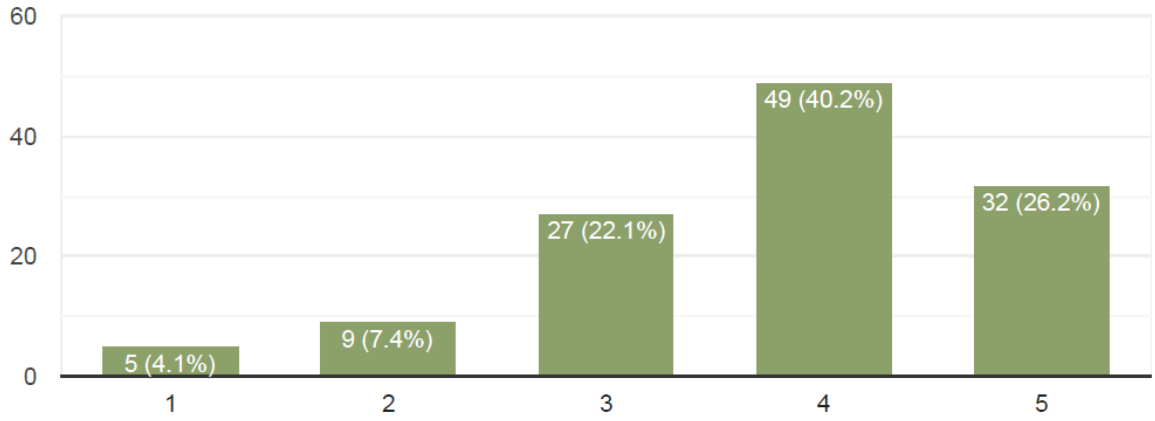


Figure 5: Participation analysis in the survey

There were mixed responses received the equal also the highest was for **rating 4 (Very Good) at 40% and rating 5 (Excellent) at 26%**

Though the Sustainable Site Planning strategies have been adopted by the Institute, during the interview session with the Mr. Kuldeep Bhupendra, Incharge - Engineering Section we understood the progressive steps adopted by the University towards reworking the master plan in order to incorporate the subsequent internal traffic management to ensure smooth circulation and control in mobility traffic for user benefit.

4.4 Survey review

Some of the key responses are noted below as a result of Online survey.

What is the best environmental feature you find about the Institute site?

- That all the department students gathers at their own department to celebrate plant and tree plantation day.
- **It is a green belt full of trees, shrubs and herbs with lot of bird variety. It has a natural forest in some area.**
- There's no air and noise pollution. Peaceful environment
- **Still un-used place contains lots of old plants make us feel like this university is situated in mid of forest.**

4.4 Sampling results

The external audit team had done physical verification of the data shared by the Team. An on-site investigation of the various parameters related to the site using scientific instruments was carried out at various times of the day. Some detail sampling was undertaken at key locations in the premises. The results of these are summarised below:

S. No.	Location	Zone	Indoor Temp.	Comfort	Noise (db.) Min	Noise (db.) Max
1.	Admin block	Administrative	28.6	47%	46.3	70.6
2.	B. Ed block	Administrative	31.2	31%	37.1	75.0
3.	CBS Block	Educational	32.5	32%	70.9	52.6
4.	Biotechnology block	Educational	32.5	32%	36.2	56.9
5.	Pharmacy block	Educational	33.2	30%	7.7	72.5
6.	Power grid hostel	Residential	32.5	27%	44.8	75.0
7.	Gandhi hostel	Residential	31.5	32%	45.3	39.0

Table 7: Details of the sampling using Scientific Instruments at Pt. Ravishankar Shukla University, Raipur

As per our study and observations we found the sampling results to be positive.

Ecological (Environment) Audit

Background reference image Yugal Shrivastava on pexels

Greenvio Solutions

5. Ecological (Environmental) Audit

Environment is an essential part for human survival. We co-exist with the environment and it cannot be termed as a separate entity. The Ecological audit helps to understand the flora, fauna that exists and steps that can be taken to improve the same. To denote if there are problems related to sound in and around the surrounding. In terms of the carbon footprint it helps in keeping a tab on the eco-friendly habits incorporated by the inhabitants of the premises. Health today is the topmost priority, a general understanding of the initiatives undertaken along with sufficient hygiene practices adopted. Universal design is applicable to all built and unbuilt spaces.

As part of our study we could state that the University has developed eco-friendly practices and sustainable solutions which are well reflected in the rich biodiversity of the Premises. Being situated near the city the appreciation space towards the main entrance provides a welcoming approach to the University.

The University has huge open space used by all. The students use it for as a leisure place for study and University ground is used for sports activities. There are ample resting spaces as part of building design which provide a resting and warm welcoming approach in the premises.

5.1 Open Spaces

There is a beautiful balance of natural and open spaces in the premises and the open/ vegetation spaces are balanced overall. The Ground is used by students at present for sports as it has outdoor sports facility in the premises. **There are provisions for natural plantations which have enhanced the beauty of the space.**

There are sufficient numbers of Maintenance staff allotted for the open spaces and they have done an excellence job in terms of the duty allotted. The infrastructure committee too is involved in this process. The traditional tap and pipe facility is adopted for watering and the University has taken special provisions for the same. The spaces are watered daily in summer. T**he efforts to maintain the existing space are commendable.**

5.2 Flora and Fauna Audit

Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good
- Scale 4 – Very good
- Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

5.2.1 Survey Ratings

An online survey was conducted to analyse the student and staff views about **Rate - The existing flora and fauna and efforts taken by the Institute towards it preservation?**

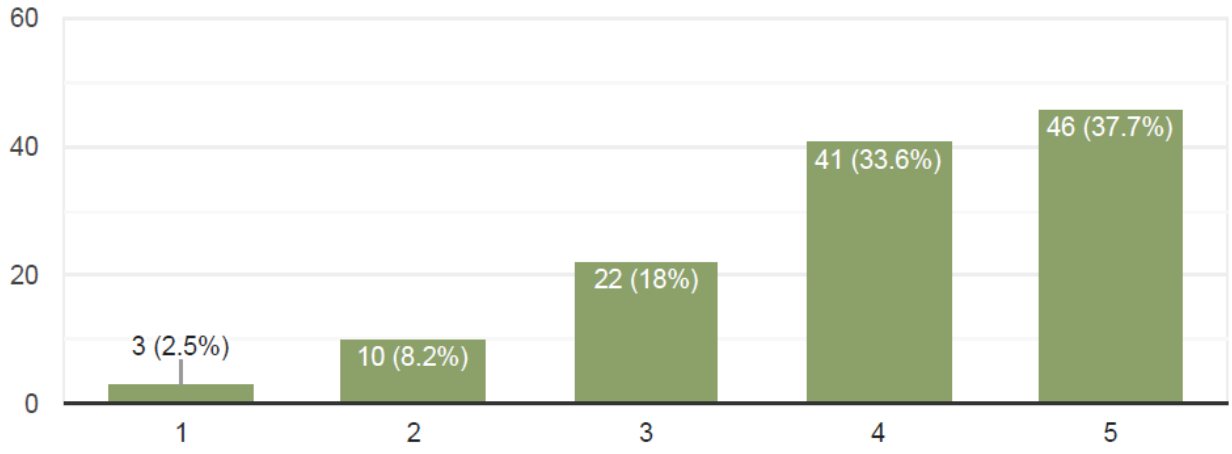


Figure 6: Participation analysis in the survey

There highest response was for **rating 5 (Excellent) at 38%; rating 4 (Very good) at 34%** and **18% for rating 3 (Good).**

The on-site visit was held on Tuesday, 8 March 2022. During this visit a physical verification was undertaken by the Team, we found out the

University along with the Engineering section and State Horticulture department has implemented excellent architecturally designed landscape gardens. These include multiple types of botanical and flower gardens and have thus upgraded the local ecological footprint to a great extent in a positive manner.

5.2.2 Flora Audit

A flora survey was carried out to identify the plantations. The premises have huge open areas. The University officials undertake various plantation and beautification projects to enhance the landscape. **There are more than 10,000+ plantations in the premises.** There are provisions for landscaped gardens, floral gardens, botanical gardens in the premises. These have been meticulously planned with native species of plantations and have been well maintained on a regular basis. All of these species are either planted by students and staffs on multiple occasions or have grown naturally.

5.2.3 Fauna Audit

It is a beautiful site to have the birds chirping around the University premises. It highlights the ecological co-existence concept in the most beautiful way. The University being located in the East-central part of the country has multiple varieties of fauna which enhance the ecological footprint of the premises in a positive manner.

5.2.4 Survey reviews

Some of the key responses are noted below as a result of Online survey.

5.2.4.1 Name some of the Flora (Plants) and Fauna (Birds) you have observed in the premises

- Sparrows and Mango tree
- Sahib, sal, flowering plants, Gauraiya,Myna
- Azadirecta Indica, Catharanthus Roseus, Embelica Officinalis, Mangifera Indica, Acacia, Aegle Marmelos, Mimosa Pudica, Ocimum Sanctum
- Neem, Peepal, Mango, Bargad, Sal, Teak, Crow, Sparrow, Eagle, Maina, Parrot

- Rose, Marigold, Parrots, Nightingale
- Shorea Robusta, Bengalensis Indica, Neem, Bee eater, crow,
- Neem, Ashok, Gulmohar, Parrot, Neelkanth
- Guava, Neem, Karanj, Aam, Bel, Mayna, Koyal,
- Flora: Neem, Arjuna, Karanj, Mango, Khamar, Seesham; Fauna: Sparrow, Crow, Kingfisher, Sparrow Hawk, Crane
- Guava, banana, neem, tulsi and small woodpeckers, parrots etc.
- Cestrum nocturnum (Night blooming Jasmine) and House sparrow
- Shorea robusta, Tictona grandis, Ruffled tightarse (Birds)
- Tulsi Aloevera tomatao, Sparrows
- **Neem and we have some medicinal herbs in our department.**
- Banana tree, Banyan tree,Mango, guava tree, papaya plant, aleovera
- **A rich collection of biodiversity exists ranging from forest trees to medicinal plants. Presence of tall sal, Arjuna,teak trees ,wild brown rabbits large variety of snakes and water body with egrets within the premises.**

5.2.4.2 Name some of the trees you would like to plant in the premises in future.

- Medicinal plants
- Fruit bearing trees mango, guava, Chikoo.
- Neem, Mango, Banyan, Pipal
- Mango, Palm and maybe some small shrubs.
- Palm trees, Almond trees and Kadam's tree .
- Fruit and flower plants
- Teak, Gulmohar

5.3 Noise Audit

5.3.1 Macro level

On a macro level there are open grounds in the site. The approach road too has very minimal traffic. As the University is oriented amidst the residential areas with immense vegetation the noise levels do not affect the students and staff in their day to day functioning. The approach road too is pretty away. **Overall the noise level in terms of bad effect is low and there are positive outcomes as per our analysis on macro level.**

5.3.2 Micro level

The University has an adequate open space covered with huge trees prevailing naturally in the premises. There are bare minimum parking provisions provided in the premises which causes bare minimum noise as they are situated near the entrance which is a bit away. The University has Substation facility but there is no inconvenience or sound problem caused due to the same. There are no particular equipments which cause any noise effect. **Overall the noise levels inside the premises are low which is a good approach.**

5.3.3 Survey Result

An online survey was conducted to analyse the student and staff views about **any Noise pollution in the premises?**

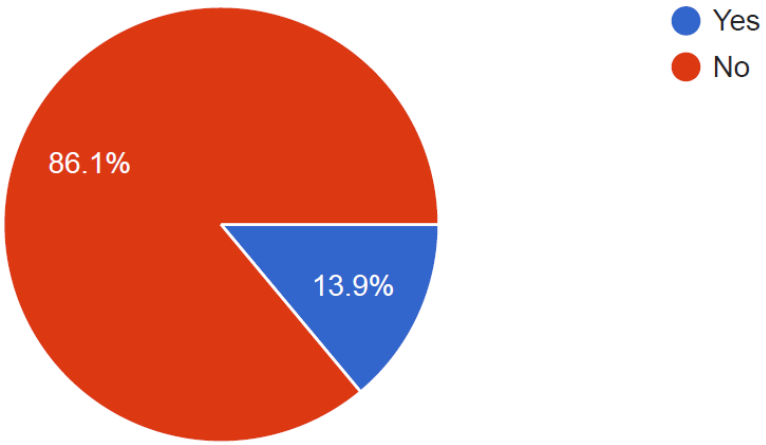


Figure 7: Participation analysis in the survey

The students, staff **(almost 86%)** of responses confirmed that there is no Noise pollution. **During the visit, samplings were undertaken, the noise levels were found to be very low thus making it suitable for educational premises.**

5.4 Carbon Footprint Audit

5.4.1 Eco-friendly Commuting Practices

Based on data collection and discussion with staff the following points were noted:

- **Ease of commuting –** Owing to close proximity to public transport the access is very feasible and walk able.
- **Area** – Sufficient area is designated for overall parking including the ones for 250+ residences in the premises.
- **Vehicles details** – The provision provided by University for Educational facilities includes Parking facilities for 200+ cars, 200+ cycles, 800+ bikes, 3 electric vehicles. In the residential areas there are additional provisions for parking.
- **Visitors vehicle** – There are adequate number of visitors parking for 100 cars in the premises.
- **Commute details** – The students and staff commute from quite a lot of places. However, the premise has a Hostel facility for around 600+ students thus the external commute is comprehensively low. The internal roads and wide enough.

Being situated in Raipur (Urban) City area the load-frequency on travelling by private vehicles by students and staff is however very less thus there is less or negligible air pollution caused within and around the premises.

5.4.2 Heat Island Reduction

The University has **adopted the following practices which are yielding positive results** in terms of Urban Heat Island Effect which refers to increase in temperature of the surrounding because of ineffective strategies.

5.4.1 Exposed roof areas

The terrace is flat roof covered with solar panels. The current practices are clean and well maintained.

5.4.2 Exposed non-roof hardscape areas

The following were the main observations:

- There are 6-8 feet wide pathways on all sides of the premises. These include some natural and potted plantations. There are huge numbers of trees planted on both sides of the roads. These provide immense shade to the sun-exposed

roads. Moreover sitting areas are provided at multiple locations in the premise.

- The University has multiple types of open spaces in the form of lush green carpet; gardens available. The overall temperature in these areas is cool.

There are adequate measures adopted in the premises to reduce heat island effect of Building roofs and in site.

5.4.3 Outdoor Light Pollution Study

5.4.3.1 Investigation observation

The University compound lights are not upward looking thus, these do not cause light pollution. The flood lights are facing towards specific boards but not causing and environmental degradation.

5.4.3.2 Survey results

An online survey was conducted to analyse the student and staff views about **Is there any Light pollution in the premises?**

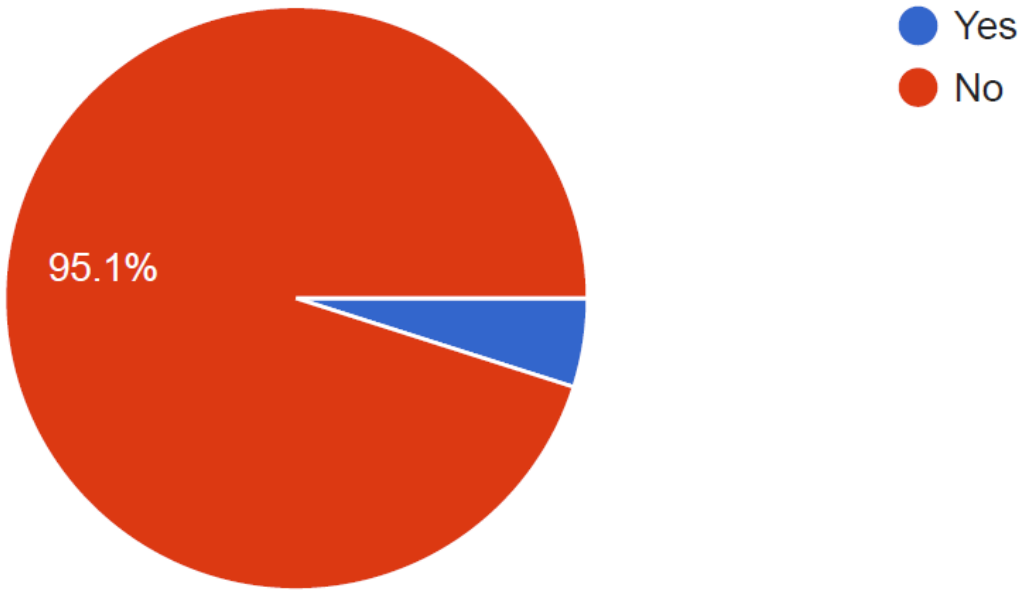


Figure 8: Participation analysis in the survey

The students, staff **(almost 95%)** of responses confirmed that there is no light pollution. **This states the necessary practices adopted by the University towards Energy Optimization.**

5.5 Universally accessible premises

5.5.1 On-site observations

As per World Report on Disability, 2011 there are 180 million approx. Persons with Disabilities that makes it 15% of total population of India.

There are Handrails along staircase, ramps, lifts, Universal toilets, low height risers in the Staircases as part of universally accessible premises initiatives. The design of the premises is appropriate for access with passages and corridors being wide enough in size and naturally ventilated. The doubly and singly loaded corridors are safe from fire safety aspect. The University has resting places (seating areas) in the outdoor along the trees thereby making it user friendly for the specially abled students.

5.5.1.1 Features for user benefit

The below mentioned are details of the Universal Design and Additional features for user benefit in the premise.

- Ramp
- Staircase
- Wheelchair
- Sanitary vending machine
- Lift

The existing facilities are very well maintained was the on-site observation and at present there is not much requirement to increase these numbers. However, post the site visit and interaction with the University officials during Induction and exit meeting we would suggest the University to have provisions for 100% lifts, wheelchairs and sanitary vending as well as incinerator machines in all the buildings.

5.5.2 Survey results

An online survey was conducted to analyse the student and staff views about **Do you find the facilities for the Physically challenged people sufficient in the premises?**

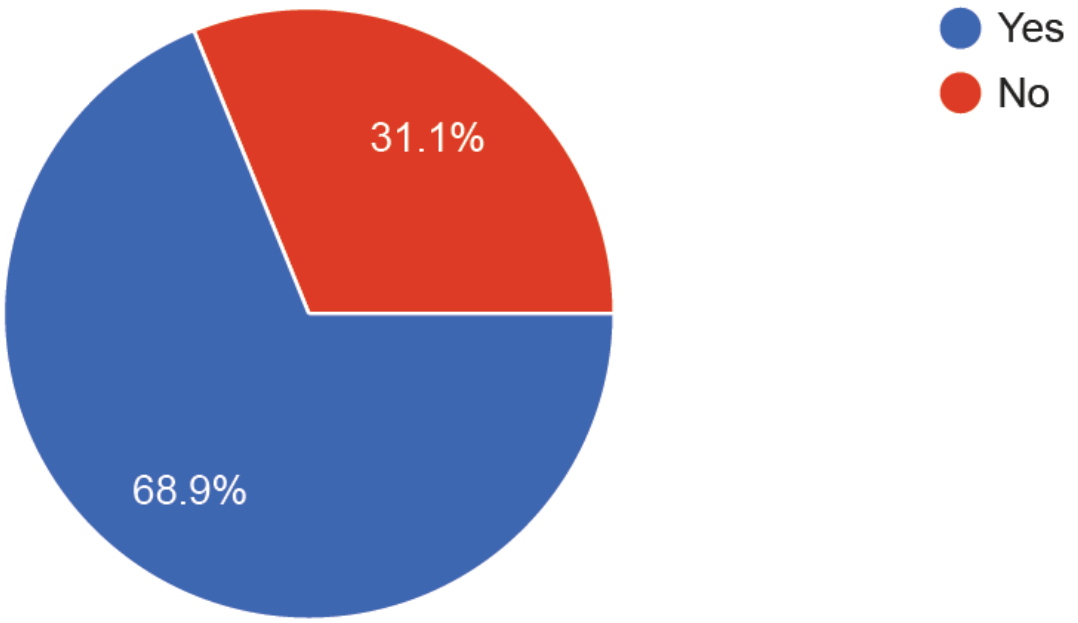


Figure 9: Participation analysis in the survey

The students, staff **(almost 65%)** of responses confirmed activities conducted are sufficient. **However, our analysis states that there is scope for improvement.**

5.6 Fire Safety

The University has taken care for adequate fire safety measures to be adopted. Each floor has an open staircase without any barriers for fire safety measures & is free of any kind of storage or combustible material. The University has adopted additional fire safety practices such as signages, Fire hydrant cabinets. The current facilities are quite well maintained.

At present as per Fire norms there are equal number of extinguishers present in all the buildings. However, there can be additional provisions of sand buckets and increased number of extinguishers. Also, there should be at least 1 fire extinguisher in every space which has an air conditioner.

5.7 Survey review for the Site features study

Some of the key responses are noted below as a result of an online survey is summarised as follows:

What can be additional features you would want in terms of Institute premises in terms of accessibility, open spaces, site features and neighbourhood?

- Add more landscape elements, flower gardens/beds and establish more theme gardens
- Internship programme for students, helpdesk or student zone, special classes and programme for physical challenged for students and more equipment for students.
- There should be No Motor Vehicle Zone and electric cycle should be available to move with university. The whole tree side area should be planted with grass instead of wild grass.
- There should be transportation facilities inside the premises for students. WiFi in Teachers Colony.
- Play ground is required; beautification of the university premise is required. Proper lighting to ensure safe premises. Good canteen accessible only to university staff and students. Bookstore and essential commodities must be within premises. A safe and dignified neighbourhood. The university entrance must have a police post

5.8 Positive site features as per our study

a) Cool rooftops

The University has the Terrace roofs painted with white cover it helps reduce the temperature of the spaces.

b) User friendly movability in premises

There are provisions of Kerb Ramp in the Building premises, also low height hand rail for ease of access in all the buildings of the premises.

c) Avoid using plastic in premises

There are provisions for ban on the use of plastic bags or products in the Premises for office purpose as well eco-friendly materials area used.

d) OPAC system

The system in the library is beneficial for the students.

e) Cleanliness and regular maintenance

There are ample provisions to maintain the site, cleanliness of the premises, regular maintenance and infrastructure up gradation.

f) Vehicle usage

There are restrictions on the speed limit of vehicles in the premises limited to 10 km per hour in addition to facilities for not horning on the premises.

g) Community gardening.

There are provisions for community gardening in addition to allowing the general public to use the parks in the premises for walk and jogging.

h) Paperless technologies and digitalisation

The University has adopted technology friendly practices and has been observing paperless measures in the functioning to a certain extent.

5.9 Recommendations for a Sustainable Habitat by Greenvio Solutions

Site beautification

a) Low VOC Paints and Adhesives

Whenever the University undergoes repairs or renovations there should be use of materials with low emissions so as to reduce the adverse health impacts on workmen and the students occupying the space thereafter.

b) Additional facilities for birds

There can be provision for drinking water and food facility in multiple locations for birds visiting in the University premise.

c) Nutrition pits

Certain pits can be demarcated as 'Nutrition pits' where the organic food from kitchen and Canteen fruit peels and fruits or vegetables can be degraded for making nutrition rich soil

Heat island reduction

a) Grass pavers in the setback areas

The college can have grass pavers for in replacement to existing paving for further heat island reduction on exposed non-roof areas

Universally accessible premises

a) Universal Toilet

There should be minimum 1 toilet for the specially abled people as per guidelines prescribed by National Building Code 2016 in every building.

b) Provision of wheelchair

There should be provision of wheelchair in every building for specially abled, senior citizens it is very beneficial facility.

Pollution Control

Although the pollution is extremely less and equivalent to nil however, the following can be additional provisions which can be undertaken.

a) Bicycles as a gift

As an appreciation gesture may be the students toppers/ staff best performers can be awarded with a bicycle occasionally.

b) Electric charging points

The University can introduce electric vehicles and have provision for charging points in future.

c) Pollution Meter

There can be a provision of Pollution Meter to check the Air Quality Index in the premises, the results of which can be sent to Government, this can be installed after permission from the local Government.

a) Avoid burning of waste

The waste produced in premises (Hostel areas as observed during the visit) should not be burned as it is dangerous towards health of students and staff

Smart and responsible environment systems

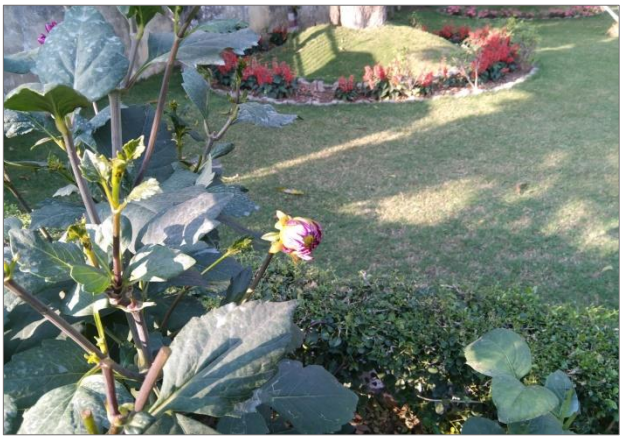
a) Smart Gardening System

The College can undertake Smart Gardening system using IoT Technology such as an automated watering system. This will result in saving time by scheduling time for watering; Saving money and water as smart irrigation systems have automated water schedules in addition to tracking dampness of soil which helps the irrigation system know when and how much the garden needs. It also helps in healthier plants as with the help of apps, smart irrigation systems, or even smart growing containers, these tasks can be provided evenly and allow the plants to be healthier and more productive. More information on this system can be checked here https://www.happysprout.com/inspiration/what-is-smart-gardening/

Additional Facilities

As the premises is a mixed use Institution (Residential + Educational use), the following facilities can be adopted for user benefit

- Route maps for all places in the premises.
- Land can be properly utilized to grow different flowering plants.
- Walking tracks (Beautification projects can be taken up)
- Post Office
- Small fountains



6. Towards a Healthy & Sustainable Institution

6.1 Inputs by Greenvio Solutions

Based on the analysis of the study of premises in addition to the recommendations provided in each section of Ecological, Water, Waste and Energy Audit the University can adopt the following strategies towards a Healthy and Sustainable Institution practices.

a) **Cutlery in the Canteen –** The regular plastic and steel plates, spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straw, disposable plates, edible spoons and tables made out of sugarcane waste or bamboo. This will be first of its kind initiative to be adopted and practiced thus also inculcating the healthy practices in students.

b) **Waste vio –** Stepping up a little further an initiative can be undertaken wherein University can tie up with an organisation and students can be encouraged to collect dry waste and electronic waste such as newspapers, old computers and others and hand over to organisation on a weekly or monthly basis thereby making a waste reduction approach in the community. This has benefits such as awareness, eco-friendly habits in becoming a responsible citizen.

c) **Signages –** In addition to the signages being in regular language there can be additional signages in braille language for the specially abled students.

d) **Environment Certificate Courses –** The University could begin courses such as Bachelor's, Diploma or Certificate courses with National and International Collaboration related to Environment as part of the courses provided. Though, this is not a requisite or compulsion.

6.2 Survey Results

An online survey was conducted to analyse the student and staff views about what changes according to you can be undertaken for Green audit improvement in University premises and activity, some of the key responses are listed below.

Some of the suggestions by the Students and staff are listed below:

- Cleanliness should be given first, plantation of need full plants to make the environment more eco-friendly. And renewable project for the power supply systems
- Parking sheds could be replaced by solar modules
- Proper recognition for Green belt and yearly audit should be there.
- Proper maintenance of all the present facilities with positive monitoring system in each 3 months.

However, it should be noted that the University has taken up multiple initiatives and because of Pandemic the students have not practically visited the campus so many of these points are not mandatory at the moment.

7. References

- Uniform Plumbing Code – India, 2008
- IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
- IGBC Green Landscape Rating system, March 2013
- BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST – Canada
- Climate data https://www.indianclimate.com/show-data.php?request=FDCRNM6Z6Y
- Used only for understanding Universal design - Universal accessibility Guidelines for Pedestrian, Non-motorizes vehicle and Public Transport Infrastructure – Report guidelines by Samarthyam (National centre for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.
- City of Cheyenne, Streetscape/ Urban Design elements - Wyoming Planning Association, Gillette, Wyoming, United States


स्वर्ण जयंती वर्ष २०१३-१४
पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर

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(A State Govt. University)

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As part of the Institution's initiatives for a Healthy & Sustainable University the audit was conducted.
We appreciate the immense efforts taken by Staff and students towards the Energy Management and Conservation.

Issued on **Wednesday, 23 March 2022** valid till **March 2023**

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Greenvio Solutions

Clean and green campus recognitions


भारत सरकार युवा कार्यक्रम एवं खेल मंत्रालय

Beyond the campus environmental promotional activities