RNB GLOBAL UNIVERSITY
Educating stars for tomorrow

Self-Study Report

1st Cycle (Re-Assessment)

Matrix 7.1.4

Green Audit Report 2023-2024

RNB Global University
RNB Global City, Ganganagar Road,
Bikaner, Rajasthan 334601

EEPL
Empirical Exergy Pvt. Ltd.

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CIN No. : U74999MP2018PTC045751

Ref No: EEPL/2023-24/C-0145 **Date: - 26/03/2024**

GREEN AUDIT CERTIFICATE

This is certified that Empirical Exergy Private Limited (EEPL) Indore M.P. has conducted green audit at RNB Global University, RNB GLOBAL City, Ganganagar Road, Bikaner and audit report has been submitted.

The initiative taken by the university for green campus as a plantation, awareness program for student, faculty and staffs have been verified and were found to be satisfactory. The positive approach of the university management towards sustainable development is highly valued and commendable.

This certificate is being issued on the basis of the Green Audit conducted by EEPL.

For- **Empirical Exergy Private Limited**

26/03/2024

Rajesh Kumar Singadiya (Director)

M.Tech (Energy Management), PhD (Research Scholar)
Accredited Energy Auditor [AEA-0284]
Certified Energy Auditor [CEA-7271]
(BEE, Ministry of Power, Govt. of India)
Empanelled Energy Auditor with MPUVN, Bhopal M.P.
Lead Auditor ISO50001:2011 [EnMS) from FICCI, Delhi
Certified Water Auditor (NPC, Govt of India)
Charted Engineer [M-1699118], The Institution of Engineers (India)
Member of ISHRAE [58150]

RNB Global University • Registrar • Bikaner

GREEN AUDIT REPORT

RNB GLOBAL UNIVERSITY

RNB GLOBAL City, Ganganagar Road, Bikaner - 334601

PREPARED BY

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(2023-24)

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RNB Global University Registrar Bikaner

ACKNOWLEDGEMENT

We would like to thank the **RNB Global University (Bikaner).** Our appreciation and gratitude to the management for granting us permission to conduct green audit for the University

We are genuinely touched by the helpful attitudes and cooperation displayed by all the faculty members and technical staff involved in the audit. Their valuable assistance and cooperation significantly contributed to the successful execution of the audit.

For- Empirical Exergy Private Limited

Rajesh Kumar Singadiya

(Director)

M.Tech (Energy Management),
Accredited Energy Auditor [AEA-0284]
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CERTIFICATE OF ACCREDITATION

ENERGY IS LIFE
BEE
CONSERVE IT

BUREAU OF ENERGY EFFICIENCY

Examination Registration No.: EA- 7271

Accreditation Registration No.: AEA-284

Certificate of Accreditation

This is to certify that Mr./Ms. Shri. Rajesh Kumar Singadiya having its trade/registered office at ..... has been given accreditation as accredited energy auditor. The certificate shall be effective from 9th day of May, 2018

The certificate is subject to the provisions of the Bureau of Energy Efficiency (Qualifications for Accredited Energy Auditors and Maintenance of their List) Regulations, 2010.

This certificate shall be valid until it is cancelled under regulation 9 of the Bureau of Energy Efficiency (Qualifications for Accredited Energy Auditors and Maintenance of their List) Regulations, 2010.

On cancellation, the certificate of accreditation shall be surrendered to the Bureau within fifteen days from the date of receipt of order of cancellation.

Your name has been entered at AEA No. 284 in the register of list of accredited energy auditors. Your name shall be liable to be struck out on the grounds specified in regulation 8 of the Bureau of Energy Efficiency (Qualifications for Accredited Energy Auditors and Maintenance of their List) Regulations, 2010.

Given under the seal of the Bureau of Energy Efficiency, Ministry of Power, this 5th day of October, 2018

Secretary,
Bureau of Energy Efficiency
New Delhi

RNB Global University Registrar Bikaner

GREEN AUDIT TEAM

The audit team constituted by the following senior technical executives from the **Empirical Exergy Private Limited**

- **Mr. Rajesh Kumar Singadiya** [Director & Accredited Energy Auditor AEA-0284]
- **Ms. Laxmi Raikwar** [Energy Expert and Report Reviewer]
- **Mr. Charchit Pathak** [Sr.Project Engineer]
- **Mr. Praveen Punasiya** [Field Engineer]

EXECUTIVE SUMMARY

The executive summary of the green audit report presented in this section briefly outlines the statistics of plants, trees in the campus, and carbon foot print status of the University.

GREEN INITIATIVES TAKEN BY UNIVERSITY

- **Campaign of Plantation And Green Campus**

  The university has around 4507trees on campus. It is a good initiative taken by the management for creating a green campus under the plantation campaign. This effort is commendable.

- **Solar System**

  The university has 50 kWp solar roof top systems it is appreciable.

- **Compost pit**

  The university has a compost pit where all types of agricultural waste are disposed. It is commendable.

- **E-vehicle System**

  The management has used E-vehicles on the campus for internal movement of staff and students. This saves natural resources and improves the air quality of the campus. It is commendable.

GREEN AUDIT RECOMMENDATION

- **QR Code System on Tree**

  While the world seems to be going digital, people lack the time to read books and process the information they contain. Therefore, the university can provide QR codes on the trees to share information and leverage this rapidly growing platform for a unique purpose.

- **Installation Organic Waste Composting Machine**

  There is good potential for installation of organic waste composting machine to treat organic waste generated from trees and lawn area of the university campus. The output of

above organic waste composting machine is good manure for garden and plants in the campus.

- **Five Dust bin System**

  It is observed that the university has adopted a two dustbin system for all kinds of waste generated on campus. It is recommended to implement a five-dustbin system for the segregation of different types of waste.

Chapter-1
INTRODUCTION

1.1 About University

The RNB Global University has been established by Act no 20 of 2015 passed by the Rajasthan Vidhan Sabha and notified by state of Rajasthan on 27/04/2015. The degrees which will be awarded by RNB Global University, Bikaner (Rajasthan) are recognized by University Grants Commission (UGC).

RNB Global University is a leading university committed to experienced faculty, academic excellence & development of future leaders in different profession RNB Global University (RNBGU), set in the hinter heartlands of the royal city of Bikaner, stands as a shining edifice of quality education in a vast clean and green fully Wi-Fi enabled campus. The campus acts as a perfect backdrop for your pursuit of quality education with all modern educational facilities.

The university offers a wide range of undergraduate, postgraduate, integrated and diploma courses in various disciplines for educating stars for tomorrow. The degrees awarded are recognized by the UGC under Section 22 of UGC Act 1956. RNBGU is set to turn a new leaf in rendering quality education to the students by way of innovation in learning techniques, superior use of technology and a flexible credit system.

The university has explored all avenues of technology and logistics to render the very best of infrastructure in every realm for the students. The university offers some of the best logistics and technical aids to ensure hands on knowledge to the students as compared to a thorough academic approach. It features futuristic learning aids such as an advanced library and the high ended E-Learning Studio to generate a finer panache of learning in every student. The E-learning studio established within the university campus is a radical approach that stands to transform the education scenario. The university campus acts like the prolific exodus as long as you are a student at the RNB Global University since impetus will always be on the process of learning rather than the curriculum.

RNB Global University Registrar Bikaner

Figure1.1-Source: Satellite Image of RNB Global University

Vision

RNB Global University is conceptualized with a philanthropic vision into education given by Late Seth Sh. Jaganathji Bajaj, to be a globally recognized university committed to excellence in higher education with strong emphasis on knowledge sharing, multidisciplinary research, and entrepreneurial skills to produce professional leaders to serve the society and to bring better future for all. It aspires to be a reputed "Temple of Learning" to play a significant role in serving the higher educational needs of the state of Rajasthan, India and Global arena by emerging as a Centre of Academic Excellence, known for providing healthy learning environment, predominantly developing in every student a trait of Innovation, Leadership & Entrepreneurship skills so that they shine bright like a "Star" and be adjudged champion of humanity and a responsible citizen.

Mission

- To provide students with world class infrastructure, transformational educational environment with emphasis on leadership, innovation and entrepreneurial skills.
- To emphasize on intellectual growth, problem solving skills, professional grooming, ethical and human values among the students to be socially responsible global citizens.

- To practice high esteem of teaching and learning process with the accumulated & collective expertise of competent and experienced faculty.
- To empower the students with knowledge and information by providing technological enabled education with high emphasis on quality of education.
- To design and offer programs as per the national policies and to meet global challenges.
- To create a transparent, accountable and objective examination & evaluation system.
- To focus on deep disciplinary traits & to create holistic impression in society at regional, national and global level.
- To promote exchange of innovative ideas across the disciplines through effective use of tools and techniques in different fields of knowledge-domain for promoting inter-disciplinary research to generate, disseminate, preserve along with creation of pure source of knowledge and make significant contribution to nation building.
- To foster a collaborative academic environment through blended learning, professional grooming, corporate mentoring and healthy atmosphere based on co-curricular and extra-curricular activities.
- To provide continuous, experiential, delightful learning and growth for each student so as to meet their desired aspirations and give them wings to fly.
- To create collaborative environments open to free exchange of ideas to promote innovation, entrepreneurship, creativity and research in all respect.
- To stride toward rendering quality education and play an instrumental role for development of highly skilled and globally competent graduates to contribute to the world economy.
- To be a Student Centric University!!

University Population

Sr. No.	No. of Student	No. of Staff
1	320	80

1.2 About Green Audit

Eco campus is concepts implemented in many educational institutions, all over the world to make them sustainable because of their mass resource utilization and waste discharge in to the environment.

Green audit means to identify opportunities to sustainable development practices, enhance environmental quality, improve health, hygiene and safety, reduce liabilities achieve values of virtue. Green audit also provides a basis for calculating the economic benefits of resource conservation projects by establishing the current rates of resource use and their associated costs.

Green auditing of "**RNB Global University (Bikaner)**" enables to assess the life style, action and its impact on the environment. This green audit was mainly focused on greening indicators like utilisation of green energy (solar energy) and optimum use of secondary energy sources (petrol and diesel) in the University campus, vegetation, and carbon foot print of the campus etc. The aim of green auditing is to help the institution to apply sustainable development practices and to set examples before the community and young learners.

1.3 Objectives of Green Audit

The general objective of green audit is to prepare a baseline report on "Green campus" and alternative energy sources (solar energy), measures to mitigate resource wastage and improve sustainable practices.

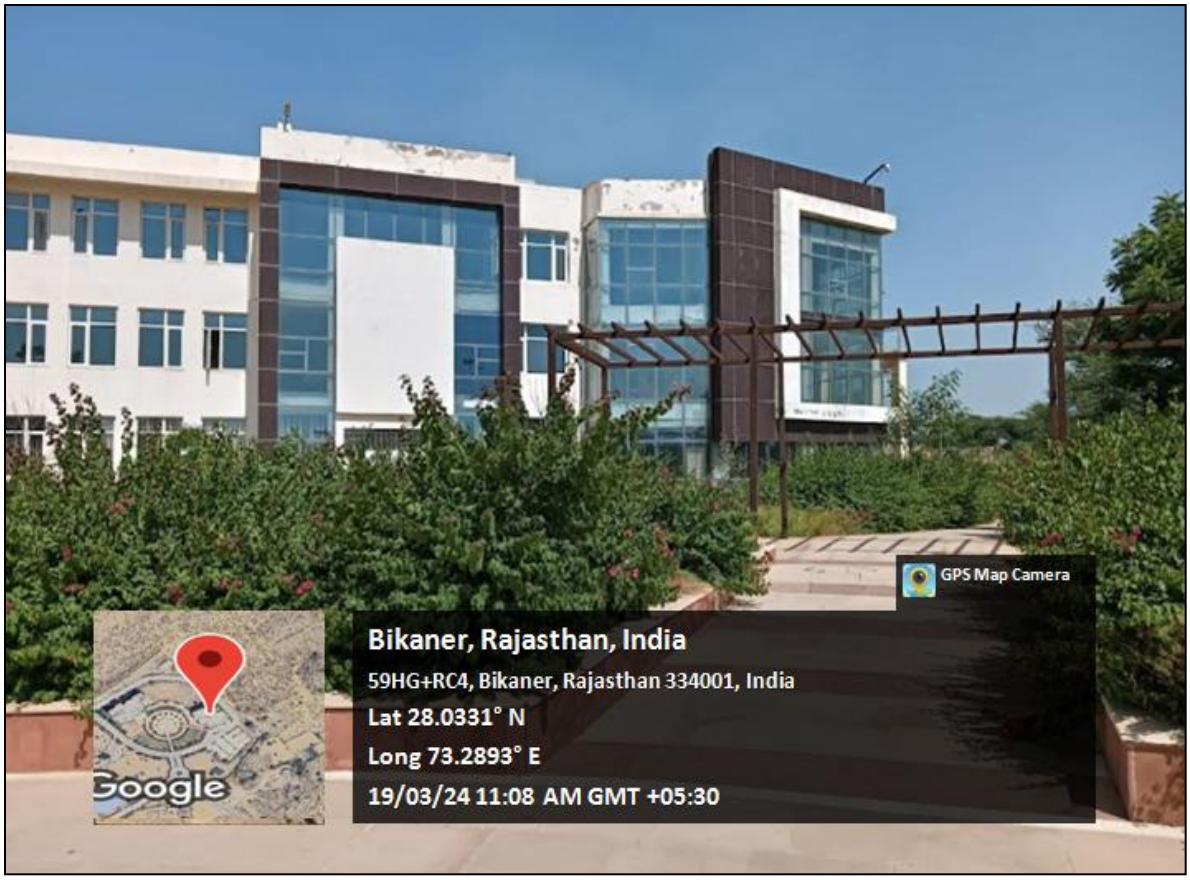
The specific objectives are:

- To inculcate values of sustainable development practices through green audit mechanism.
- Providing a database for corrective actions and future plans.
- To identify the gap areas and suggest recommendations to improve the green campus status of the University.

CHAPTER- 2
GREEN CAMPUS AND SUSTAINABLE DEVELOPMENT

2.1 Green Audit

In the survey, the focus has been given to the assessment of the present status of plants and trees on the university and efforts made by the management authorities for nature conservation. The campus is in the vicinity of approximately more than 4507 trees.



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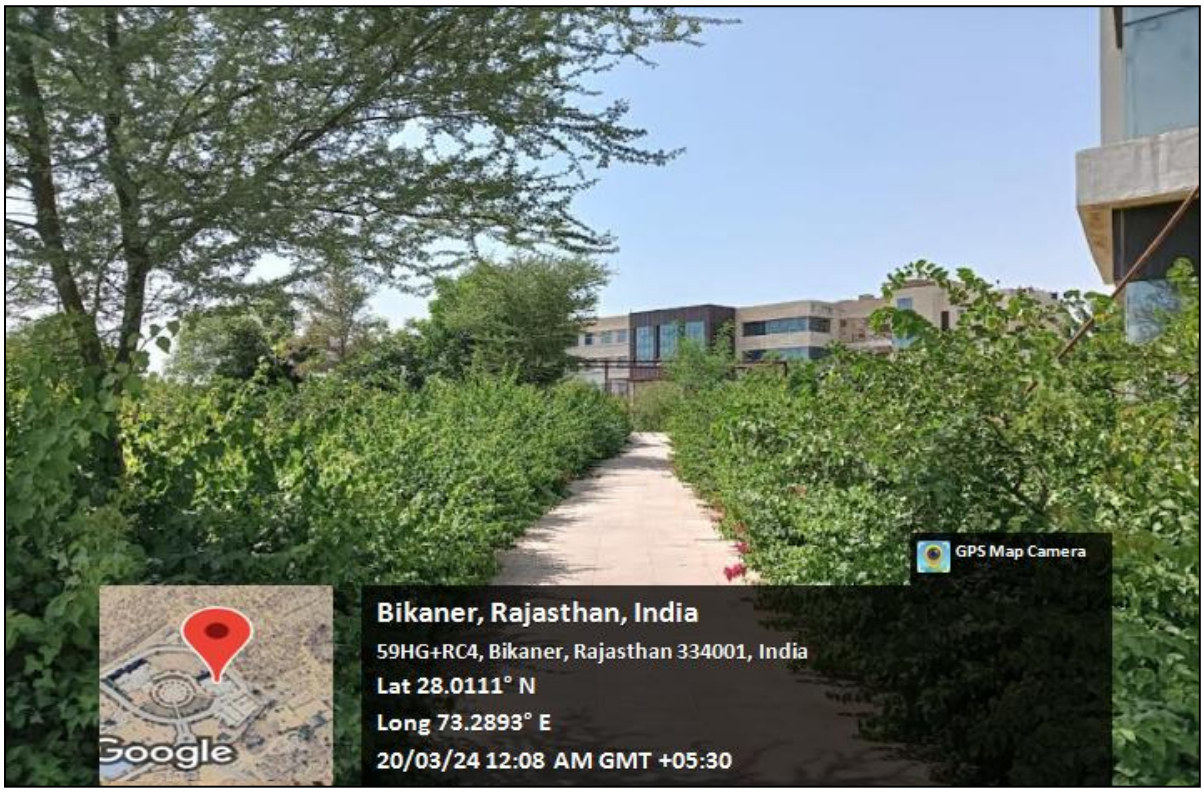

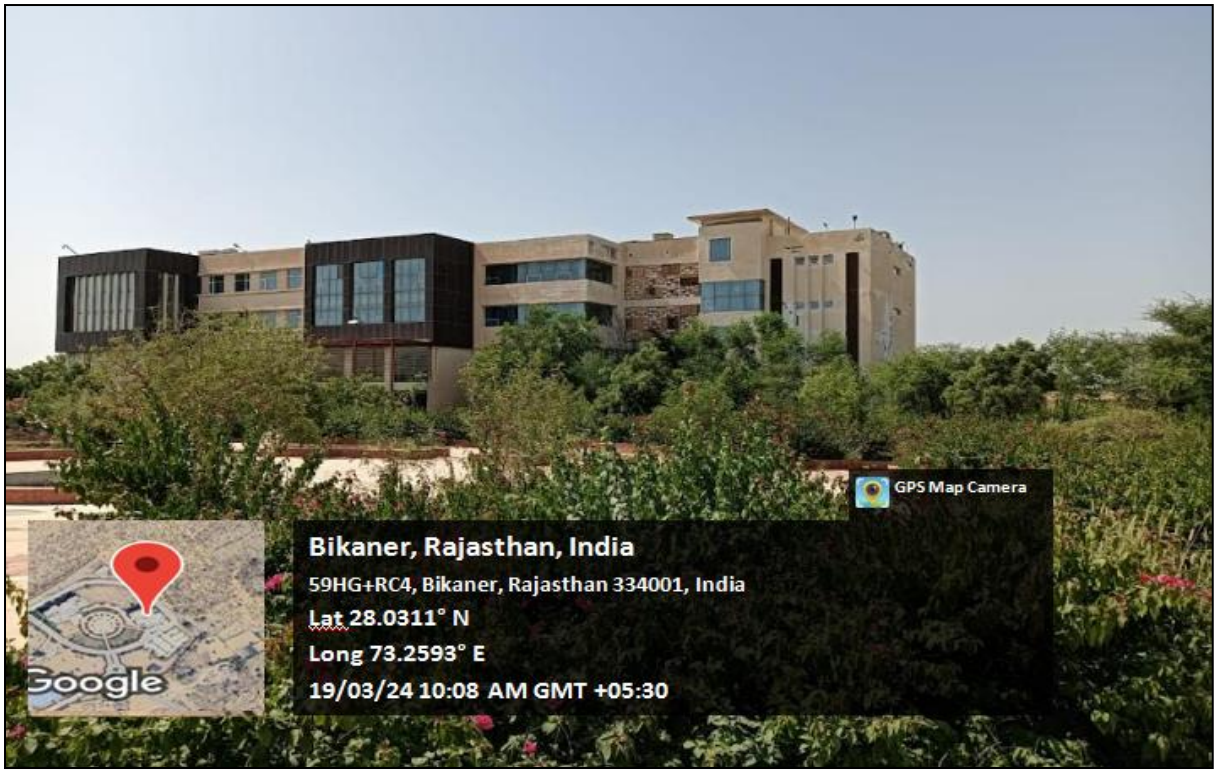

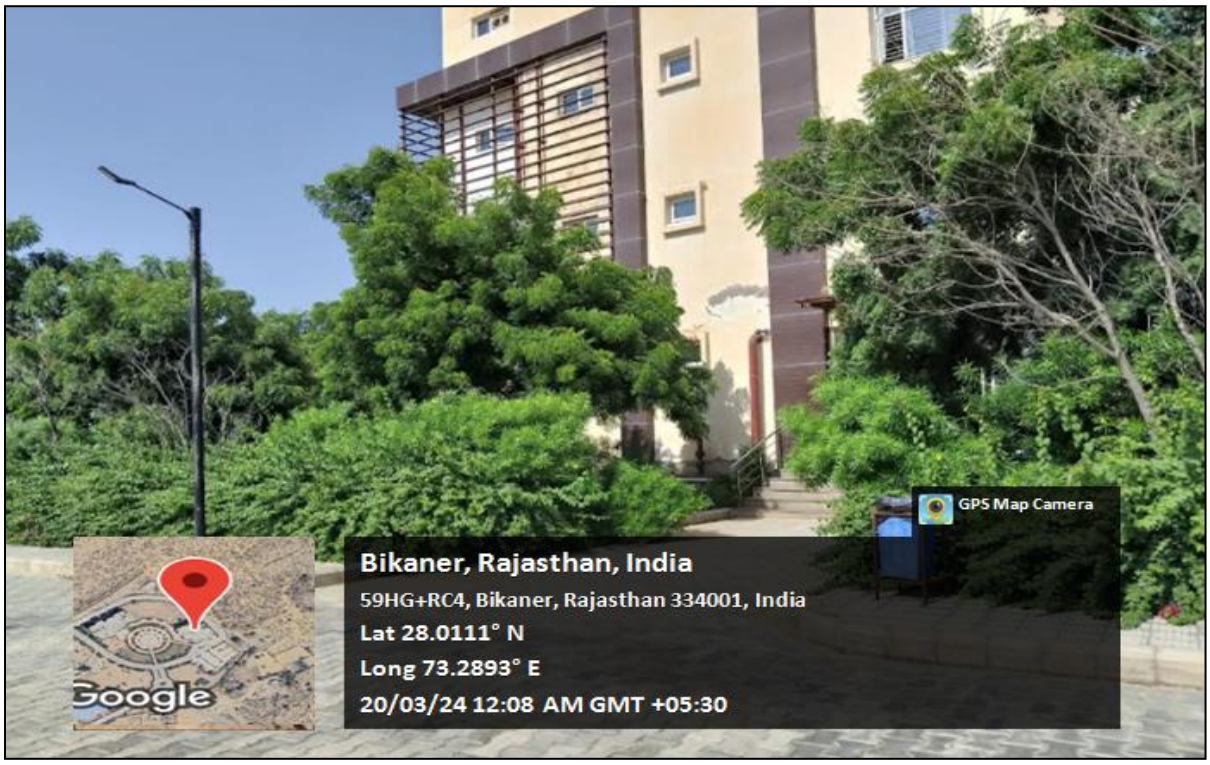

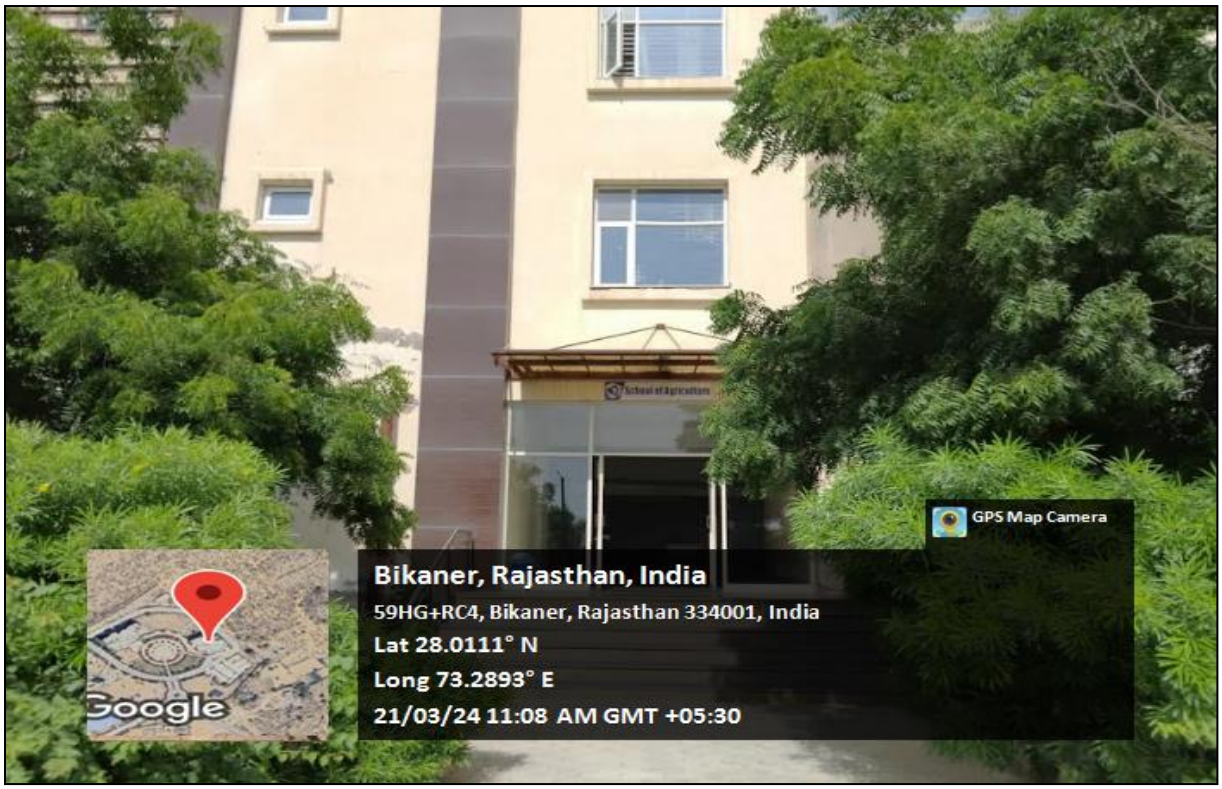

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2.2 List of trees

University has **4507 trees** in the campus. This is good initiative taken by management for green campus under the campaign of plantation. **It's appreciable.**

Sr.No.	Tree name	No. of tree
1	Arimed	100
2	DesiBabool	100
3	Adusa	30
4	Beal/ Belpatra	20
5	Siris	50
6	Mahaneem	5
7	Satpatti	10
8	Sitafal	10
9	Neem	400
10	Hingot	10
11	Nakli kali mirch	10
12	Kachnar	10
13	Kagaj fool	600
14	Dhak, Plash	0
15	Bottle brush	20
16	Aak	100
17	(Keli)	10
18	Jaal	10
19	Karonda	30
20	Amaltash	5
21	ShyamAmaltash	2
22	Jhau	5
23	(Sadabahar)	50
24	Jangliangoor	0
25	(Cock's comb)	0
26	Rat ka Raja	0
27	(Raat Rani)	10
28	Kandoori	10
29	Jal –jamni	0
30	Varun	0
31	Shisam	40
32	Dhatura	0
33	Datura	0
34	Flame Tree	0
35	Areca Pam	10
36	Amla	50
37	Safeda	10
38	Pedilanthus/Nagfan	30

Sr. No.	Tree name	No. of tree
39	Thor	40
40	Bargad	4
41	Pipal	10
42	China rose	0
43	Churel	10
44	akoda	10
45	(Chamali)	0
46	Mehandi	300
47	Rani	0
48	Aal	0
49	Shatut	30
50	Bux/ Kamini	0
51	Banana	1
52	Oleander / Kaner	200
53	HarsingarParijat	30
54	(Marva)	40
55	(Tulsi)	50
56	Utaran	0
57	Date Palm/ Khajur	40
58	DeshiChampa	20
59	Karang	400
60	(Maltibel)	4
61	Tin patti	0
62	Arandi	10
63	Ashok	50
64	Jamun	10
65	Chandni	0
66	Pilikaner	20
67	Vidhya	0
68	Giloye	50
69	Nirgundi	0
70	Ber	150
71	Amaltash	200
72	Gulmohar	120
73	Sehjan	70
74	Neem	180
75	Tamarind	14
76	Karanj	250
77	Sadabahar	100
78	Lemon	40
79	Sweet Orange	40
80	Kinnow	25

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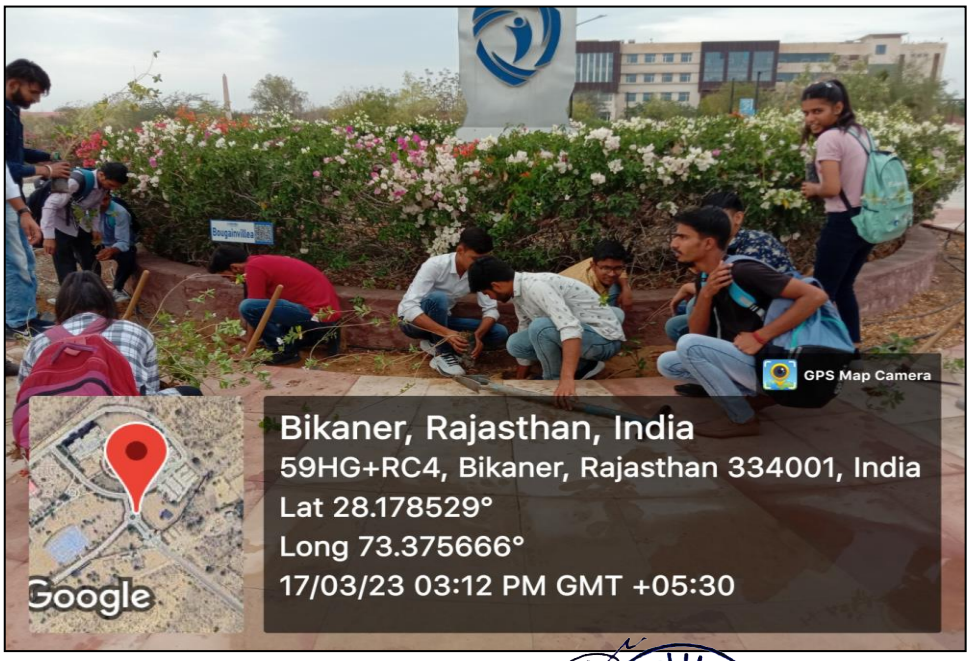
Sr.No.	Tree name	No. of tree
81	Jamun	49
82	Karonda	26
83	Mulberry	46
84	Phalsa	26
85	Pomegranate	40
86	Ber	55
		4507

Images of Plantation



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CHAPTER-3
CARBON FOOT PRINT ASSESSMENT

3.1 About Carbon Foot Print

Climate change is one of the greatest challenges facing nations, governments, institutions, business and mankind today.

Carbon footprint is a measure of the impact your activities have on the amount of carbon dioxide (CO_2) produced through the burning of fossil fuels and is expressed as a weight of CO_2 emissions produced in tones.

We focus on consumption in each of our five major categories: housing, travel, food, products and services. In addition to these we also estimate the share of national emissions over which we have little control, government purchases and capital investment.

For simplicity and clarity all our calculations follow one basic method. We multiply a use input by an emissions factor to calculate each footprint. All use inputs are per individual and include things like fuel use, distance, calorie consumption and expenditure. Working out your inputs is a matter of estimating them from your home, travel, diet and spending behaviour.

Although working out our inputs can take some investigation on your part the much more challenging aspect of carbon calculations is estimating the appropriate emissions factor to use in your calculation. Where possible you want this emissions factor to account for as much of the relevant life cycle as possible.

We all have a carbon footprint…

3.2 Methodology and Scope

The carbon footprint gives a general overview of the University greenhouse gas emissions, converted into CO_2 -equivalents and it is based on reported data from internal and external systems. The purposes of the carbon indicators are to measure the carbon intensity per unit of product, in addition to showing environmental transparency towards external stakeholders. The carbon footprint reporting approach undertaken in this study follows the guidelines and principles set out in the "Greenhouse Gas Protocol Corporate Accounting and Reporting Standard" (hereafter referred to as the GHG Protocol) developed by the Greenhouse Gas Protocol Initiative and international standard for the quantification and reporting of greenhouse gas emissions -ISO 14064. This is the most widely used and accepted methodology for conducting corporate carbon footprints. The study has assessed carbon emissions from the university Campus. This involves accounting for, and reporting on, the GHG emissions from all those activities for which the company is directly responsible. The items quantified in this study are as classified under the ISO 14064 standards: The report calculates the greenhouse gas emissions from the university. This includes electricity, as well as emission associated with diesel consumption in the university vehicle. The emission associated with air travel, waste generation, administration, and marketing related activities has been excluded from the current study. Emissions from business activities are generally classified as scope 1, 2 or 3 areas classified under the ISO 14064 standards.

3.3 Carbon emission from electricity

Direct emissions factors are widely published and show the amount of emissions produced by power stations in order to produce an average kilowatt-hour within that grid region

Unlike with other energy sources the carbon intensity of electricity varies greatly depending on how it is produced and transmitted. For most of us, the electricity we use comes from the grid and is produced from a wide variety of sources. Although working out the carbon intensity of this mix is difficult, most of the work is generally done for us.

Electricity used in the site is the significant contributors towards GHGs emission from the unit. Electricity used onsite is the most direct, and typically the most significant, a contributor to a unit's carbon footprint. Thus, using an average fuel mix of generating electricity, carbon dioxide intensity of electricity for national grid is assumed to be 0.9613 $KgCO_2/kWh$

Table 3.1: Emission due to Electricity from Grid Unit

Sr. No.	Year	Total Unit Consumption	Unit	Emission Factor kg CO_2e/kWh	Emission ton CO_2e/ year
1	2023-24	204720	kWh	0.9613	196.79

Table3.2: Emission due to Electricity from Solar Unit

Sr. No.	Year	Solar Unit	Unit	Emission Factor kg CO_2e/kWh	Emission reduction Ton CO_2e/ year
1	2023-24	64360	kWh	0.9613	61.86

3.4 Carbon emission from DG set

The University has one DG set use for emergency power supply. Annual diesel consumption for year 2023-24 was 130 lit.

- CO_2 Emissions from a Lit. of diesel = 2689.56 grams CO_2/ lit.
- Diesel consumption Year 2023-24 = 130 Lit.
- Diesel consumption Year 2023-24 = 130 x 2689 =0.34 Ton /Year

3.5 Biomass Calculation and CO_2 Sequestration of the Trees

1. Estimation of above-ground biomass (AGB)

$$K= 34.4703 – 8.0671D + 0.6589 D^2$$

Where = K is above-ground biomass.

D is Breast height diameter in (cm)

2. Estimation of below ground biomass (BGD) = AGB x 0.15

3. Total Biomass (TB) = AGB + BGB

4. Calculation of carbon dioxide Weight sequestered in the tree in Kg.

$$C = W \times 0.50$$

5. Calculation the weight of CO_2 sequestered in the tree per year in Kg.

$$CO_2 = C \times 3.666$$

Where: -

AGB = above ground biomass.
D = Diameter of tree breast height.
BGB = Below Ground Biomass.
C = Carbon
TB = Total Biomass.

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Table: 3.3 CO_2 Sequestered Calculation of tree (Year 2023-24)

Sr. no.	Tree Name	Average Diameter CM (10 to 100)	AGB	BGB	Total	Carbon Storage	Amount of CO_2 Sequestered	Total	Total Amount of CO_2 Sequestered	Annually CO_2 Sequestered amount (Ton/year)
1	Arimed	44	993.9	149.1	1143.0	571.5	2095.0	100	209503	2.86
2	DesiBabool	34	545.0	81.8	626.8	313.4	1148.8	100	114883	1.57
3	Adusa	30	403.5	60.5	464.0	232.0	850.5	30	25515	0.35
4	Beal/ Belpatra	40	798.0	119.7	917.7	458.9	1682.2	20	33644	0.46
5	Siris	32	471.5	70.7	542.2	271.1	993.9	50	49697	0.68
6	Mahaneem	38	708.3	106.2	814.5	407.2	1493.0	5	7465	0.10
7	Satpatti	30	403.5	60.5	464.0	232.0	850.5	10	8505	0.12
8	Sitafal	34	545.0	81.8	626.8	313.4	1148.8	10	11488	0.16
9	Neem	42	893.2	134.0	1027.2	513.6	1882.9	400	753158	10.27
10	Hingot	32	471.5	70.7	542.2	271.1	993.9	10	9939	0.14
11	Nakli kali mirch	10	21.7	3.3	24.9	12.5	45.7	10	457	0.01
12	Kachnar	28	340.9	51.1	392.0	196.0	718.5	10	7185	0.10
13	Kagaj fool	12	35.4	5.3	40.7	20.4	74.7	600	44808	0.61
15	Bottle brush	10	21.7	3.3	24.9	12.5	45.7	20	914	0.01
16	Aak	16	79.2	11.9	91.1	45.5	166.9	100	16694	0.23
17	Keli	12	35.4	5.3	40.7	20.4	74.7	10	747	0.01
18	Jaal	42	893.2	134.0	1027.2	513.6	1882.9	10	18829	0.26
19	Karonda	24	231.9	34.8	266.7	133.3	488.9	30	14666	0.20
20	Amaltash	40	798.0	119.7	917.7	458.9	1682.2	5	8411	0.11

RNB Global University Registrar Bikaner

Sr. no.	Tree Name	Average Diameter CM (10 to 100)	AGB	BGB	Total	Carbon Storage	Amount of CO_2 Sequestered	Total	Total Amount of CO_2 Sequestered	Annually CO_2 Sequestered amount (Ton/year)
21	ShyamAmaltash	40	798.0	119.7	917.7	458.9	1682.2	2	3364	0.05
22	Jhau	18	109.2	16.4	125.6	62.8	230.2	5	1151	0.02
23	Sadabahar	36	623.9	93.6	717.5	358.7	1315.2	50	65759	0.90
27	Raat Rani	20	144.7	21.7	166.4	83.2	305.0	10	3050	0.04
28	Kandoori	30	403.5	60.5	464.0	232.0	850.5	10	8505	0.12
31	Shisam	42	893.2	134.0	1027.2	513.6	1882.9	40	75316	1.03
35	Areca Pam	52	1450.7	217.6	1668.3	834.2	3058.1	10	30581	0.42
36	Amla	34	545.0	81.8	626.8	313.4	1148.8	50	57442	0.78
37	Safeda	30	403.5	60.5	464.0	232.0	850.5	10	8505	0.12
38	Pedilanthus/Nagfan	10	21.7	3.3	24.9	12.5	45.7	30	1372	0.02
39	Thor	50	1328.4	199.3	1527.6	763.8	2800.1	40	112006	1.53
40	Bargad	62	2144.0	321.6	2465.6	1232.8	4519.5	4	18078	0.25
41	Pipal	34	545.0	81.8	626.8	313.4	1148.8	10	11488	0.16
43	Churel	20	144.7	21.7	166.4	83.2	305.0	10	3050	0.04
44	Akoda	16	79.2	11.9	91.1	45.5	166.9	10	1669	0.02
46	Mehandi	18	109.2	16.4	125.6	62.8	230.2	300	69074	0.94
49	Shatut	16	79.2	11.9	91.1	45.5	166.9	30	5008	0.07
51	Banana	54	1578.5	236.8	1815.3	907.7	3327.5	1	3327	0.05
52	Oleander / Kaner	20	144.7	21.7	166.4	83.2	305.0	200	61000	0.83
53	HarsingarParijat	30	403.5	60.5	464.0	232.0	850.5	30	25515	0.35

RNB Global University Registrar Bikaner

Sr. no.	Tree Name	Average Diameter CM (10 to 100)	AGB	BGB	Total	Carbon Storage	Amount of CO_2 Sequestered	Total	Total Amount of CO_2 Sequestered	Annually CO_2 Sequestered amount (Ton/year)
54	Marva	20	144.7	21.7	166.4	83.2	305.0	40	12200	0.17
55	Tulsi	14	54.6	8.2	62.8	31.4	115.1	50	5754	0.08
57	Date Palm/ Khajur	58	1850.4	277.6	2128.0	1064.0	3900.6	40	156022	2.13
58	DeshiChampa	32	471.5	70.7	542.2	271.1	993.9	20	19879	0.27
59	Karang	30	403.5	60.5	464.0	232.0	850.5	400	340198	4.64
60	Maltibel	34	545.0	81.8	626.8	313.4	1148.8	4	4595	0.06
62	Arandi	28	340.9	51.1	392.0	196.0	718.5	10	7185	0.10
63	Ashok	34	545.0	81.8	626.8	313.4	1148.8	50	57442	0.78
64	Jamun	32	471.5	70.7	542.2	271.1	993.9	10	9939	0.14
66	Pilikaner	36	623.9	93.6	717.5	358.7	1315.2	20	26304	0.36
68	Giloye	16	79.2	11.9	91.1	45.5	166.9	50	8347	0.11
70	Ber	40	798.0	119.7	917.7	458.9	1682.2	150	252331	3.44
71	Amaltash	42	893.2	134.0	1027.2	513.6	1882.9	200	376579	5.14
72	Gulmohar	42	893.2	134.0	1027.2	513.6	1882.9	120	225948	3.08
73	Sehjan	22	185.6	27.8	213.4	106.7	391.2	70	27384	0.37
74	Neem	46	1099.9	165.0	1264.9	632.5	2318.6	180	417351	5.69
75	Tamarind	48	1211.4	181.7	1393.2	696.6	2553.7	14	35751	0.49
76	Karanj	40	798.0	119.7	917.7	458.9	1682.2	250	420552	5.74
77	Sadabahar	30	403.5	60.5	464.0	232.0	850.5	100	85049	1.16
78	Lemon	36	623.9	93.6	717.5	358.7	1315.2	40	52607	0.72

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Sr. no.	Tree Name	Average Diameter CM (10 to 100)	AGB	BGB	Total	Carbon Storage	Amount of CO_2 Sequestered	Total	Total Amount of CO_2 Sequestered	Annually CO_2 Sequestered amount (Ton/year)
79	Sweet Orange	36	623.9	93.6	717.5	358.7	1315.2	40	52607	0.72
80	Kinnow	34	545.0	81.8	626.8	313.4	1148.8	25	28721	0.39
81	Jamun	36	623.9	93.6	717.5	358.7	1315.2	49	64444	0.88
82	Karonda	14	54.6	8.2	62.8	31.4	115.1	26	2992	0.04
83	Mulberry	28	340.9	51.1	392.0	196.0	718.5	46	33051	0.45
84	Phalsa	34	545.0	81.8	626.8	313.4	1148.8	26	29870	0.41
85	Pomegranate	40	798.0	119.7	917.7	458.9	1682.2	40	67288	0.92
86	Ber	40	798.0	119.7	917.7	458.9	1682.2	55	92521	1.26
Total CO_2 Sequestered amount										65.67

- University has 4507 trees on campus. This is a good initiative taken by the management for a green campus under the campaign of the plantation. It is commendable. There are total CO_2 sequestered of 65.67 Tons /Year. It's appreciable.

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Table 3.6: Total CO_2 Emission by the University

Sr. No.	CO_2 (Emission &Neutralized) Sources	CO_2 Emission Ton/year (2023-24)
1	Electricity	196.79
2	DG set Diesel	0.34
3	Total CO_2 Emission	197.13
4	CO_2Emission Neutralized by Tree	65.67
5	CO_2 Emission Neutralized by Solar	61.87
6	Net CO_2 Emission of the University	69.59

Observation:

- Net CO_2 Emission of the university is increase of the organization

3.6 Other Emissions Excluded

This study did not evaluate the carbon sequestration potential of existing from the staff commuting, food supply, official flights, paper products, water supply, and waste disposal and recycling due to limited data availability. The current study identifies areas where data monitoring, recording and archiving need to be developed for enlarging the scope of mapping of GHGs emission in the future years. Accordingly, a set of tools and record keeping procedure will be developed for improving the quality of data collection for the next year carbon foot print studies.

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CHAPTER- 4
WASTE MANAGEMENT

4.1 About Waste

Human activities create waste, and it is the way these wastes are handled, stored, collected and disposed of, which can pose risks to the environment and to public health waste management is important for an eco-friendly campus. In university different types of wastes are generated, its collection and management are very challenging.

Solid waste can be divided into three categories: bio-degradable, non-biodegradable and hazardous waste. A bio-degradable waste includes food wastes, canteen waste, wastes from toilets etc. Non-biodegradable wastes include what is usually thrown away in homes and schools such as plastic, tins and glass bottles etc. Hazardous waste is waste that is likely to be a threat to health or the environment like cleaning chemicals, acids and petrol.

Unscientific management of these wastes such as dumping in pits or burning them may cause harmful discharge of contaminants into soil and water supplies, and produce greenhouse gases contributing to global climate change respectively. Special attention should be given to the handling and management of hazardous waste generated in the University. Bio-degradable waste can be effectively utilized for energy generation purposes through anaerobic digestion or can be converted to fertilizer by composting technology. Non-biodegradable waste can be utilized through recycling and reuse. Thus, the minimization of solid waste is essential to a sustainable university. The auditor diagnoses the prevailing waste disposal policies and suggests the best way to combat the problems.

Table 4.1 Different types of waste generated in the university campus

Sr. No.	Types of Waste	Particulars
1	Solid waste	Damaged furniture, paper waste, paper plates, food wastes etc.
2	Plastic waste	Pen, Refill, Plastic water bottles and other plastic containers, wrappers etc.
3	E-Waste	Computers, electrical and electronic parts etc.
4	Glass waste	Broken glass wares from the labs etc.
5	Chemical wastes	Laboratory waste etc.
6	Bio-medical waste	Sanitary Napkin etc.

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4.2 Waste management Practices adopted by the University

Audit team visited various departments, classroom and other areas, to find out waste generation area and waste collection points for further improvement. Details are given in the table.

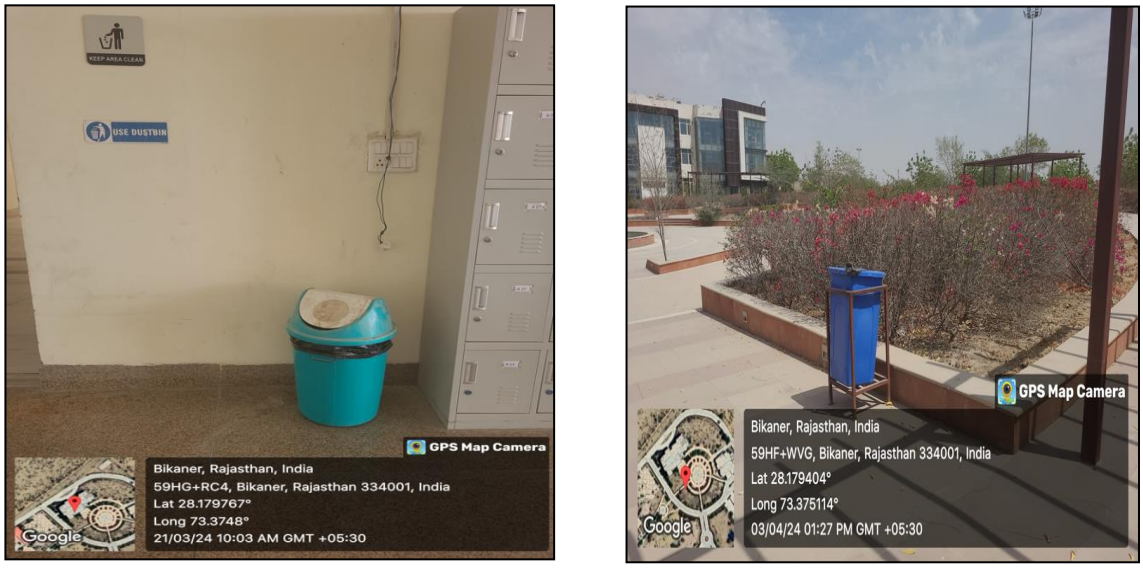

Figure 4.1Waste collection bin in the university campus

Recommendation

It is recommended adopted **"5 Bin Waste Collection System"** for collect different type of waste generated in university premises. At present university uses 2 dustbin systems.

Fig. 4.2 Recommended 5 Dust Bin waste collection System

4.3 Waste Collection Points

Audit team visited various departments, class rooms, staff rooms, laboratories to find out waste generation area and waste collection points for further improvement. It was observed that university has 2 dustbins System. There is 60 no. of dustbins placed at different location in the university.

4.4 Compost Pit

The university has compost pit, all types of agriculture and organic waste will be disposed of in this pit, and generated manure will utilized in plant and trees in the campus. It's appreciable.

Figure 4.3 Compost pit in the University campus

4.5 Organic Waste Composting Machine

The audit team visited in various department and garden and discussion with the management the waste collection process. After audit we recommended for organic waste composting machine for university per day waste generated.

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Fig.4.4 Organic Waste composting machine

About Composting Process

An organic waste composting machine is an independent unit that facilitates the composting process and provides better compost. It takes waste as its input and provides manure as its output. Composting without an organic waste composting machine will take a considerable amount of time.

Highly compact composting machine, which uses special microorganisms to break down and decompose all kinds of organic waste into compost within 24 hrs with a volume reduction of 85-90% when organic waste is added to it, moisture is sensed by the humidity sensor, heater, mixing blades, and an exhaust system.

Recommendation

University has a good potential to install an organic waste composting machine

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CHAPTER- 5
QR CODE SYSTEM

5.1 QR Code System

While the world seems to be going digital, people lack the time to read books and process the information they contain. Hence, University can be provided QR codes on the trees for its information and to exploit the rapidly growing platform for a unique purpose.

Fig: 5.1 QR Code System for plants

These codes can give students all the information they need to know about the trees from its scientific name to its medicinal value. They only need to put their smart-phones to use. QR codes to them, making it easier for everybody to learn about a plant or a tree at the tip of their fingers," If any app generating a QR code, which is available for free on the online stores, can be used to avail the information of the trees.

- **Eco-restoration programmes**

  Frame long-term eco-restoration programmes for replacing exotic Acacia plantations with indigenous trees and need of the hour is to frame a holistic campus development plan.

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END OF THE REPORT

THANKS