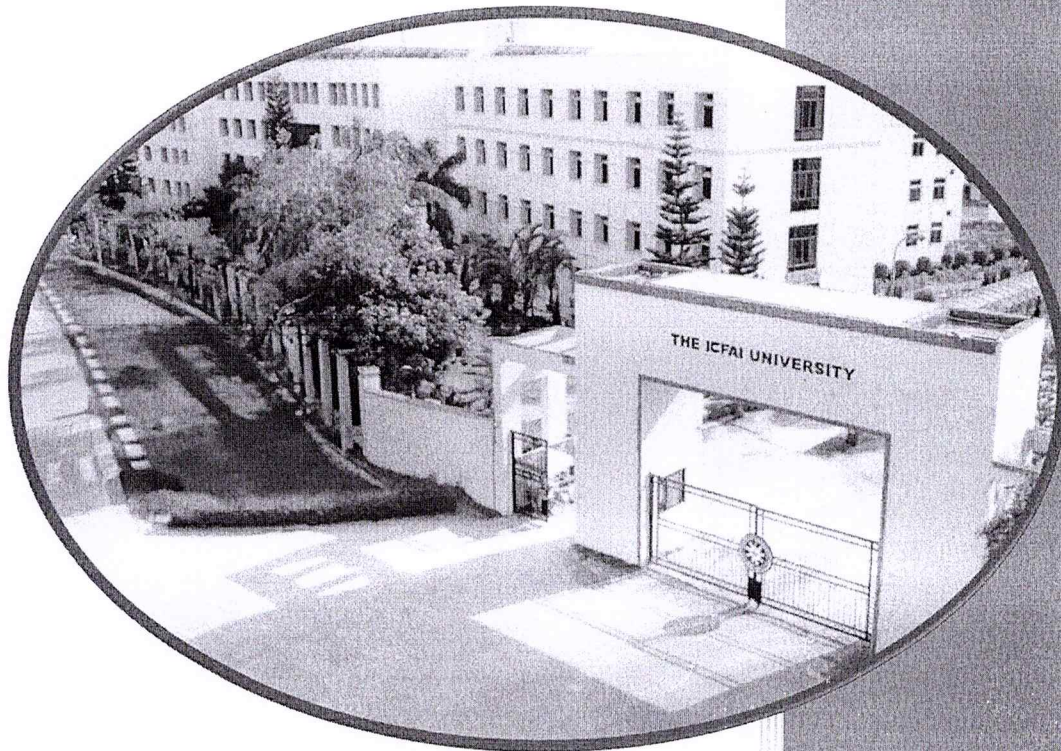
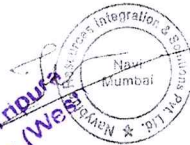


2024

Campus Environmental Audit-  
The ICFAI University Tripura  
Kamalghat, Agartala.



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Navy Blue Energy  
Navy Blue Resources Integration and  
Solutions Pvt Ltd



## ABBREVIATION


A- Ampere  
AC- Air Conditioner  
BEE – Bureau of Energy Efficiency  
BLDC- Brushless DC  
CFL – Compact Fluorescent Lamp  
CT- Current Transformer  
ECM – Energy Conservation Measures  
INR- Indian Rupees  
KL- Kilo Litre  
KW – Kilowatt  
kWp- Kilowatt Peak  
KVA – Kilo Volt Ampere  
LED – Light Emitting Diode  
MoU- Memorandum of Understanding  
PT- Potential Transformer  
PV- Photo Voltaic  
TR – Tonne of refrigeration  
UoM – Unit of Measurement  
UPS – Uninterrupted Power Supply  
V – Voltage  
WCM- Water Conservation Measures  
WEEE- Waste Electrical and Electronic Equipment



  
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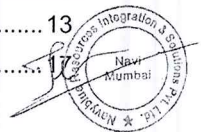
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ACKNOWLEDGEMENT

Energy Audit team of **M/s. Navy Blue Resources Integration & Solutions Pvt Ltd (NBRI)** conducted Campus Environmental Audit of **The ICFAI University Tripura, Kamalghat, Agartala, on 18<sup>th</sup>, October, 2024.**

We would like to thank Hon. Vice Chancellor for providing us an opportunity to carry out Campus Environmental Audit at your Facility and would also like to thank all other staff of facility for providing all the support during audit and report preparations.

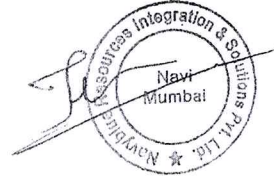
The purpose of this assessment is to conduct a complete energy performance assessment of Mechanical & Electrical Equipment, Water Audit, Renewable Energy Feasibility, Waste Management and Green Audit within the said site to identify whether the existing systems can sufficiently handle the loads required by your operations and seeking improved workplace efficiently.



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**CERTIFICATE**

We here by certify that we carried out Green Audit in **The ICFAI University Tripura, Kamalghat, Agartala**, on **18<sup>th</sup> October,2024** and following Observations were presented below. The Management is pro-active towards Green Initiative by Rainwater Harvesting, Solar Energy Project Planning, Planting Trees, Better Water Conservation, Waste Management, Carbon Footprint; A continual improvement in Green Initiative is appreciated. We appreciate the efforts of the campus management this regard.



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## INTRODUCTION

The ICFAI University, Tripura was established in 2004 through an Act of State Legislature (Tripura Act 8 of 2004). The University is located at Kamalghat, Agartala. The ICFAI University Tripura is a constituent university of Institute of Chartered Financial Analysts of India (ICFAI) group. Established in 2004, The ICFAI University Tripura is recognised by the UGC and accredited by NAAC. The University is presently offering 50+ numbers of Diplomas, Under-graduate, Post-graduates and Ph.D programmes in the fields of Engineering and Technology, Basic Science(Physics, Chemistry, Mathematics), Liberal Arts, English, Law, Management, Commerce, Education, Special Education, Physical Education, Yoga & Naturopathy, Psychology, Clinical Psychology, Library & Information Sciences, Allied Health Sciences ,Nursing, Hospital Administration, Laboratory Technology and about 6000 students pursued various programmes in the University.

Figure 1 Map Location



**AUDIT STUDY TEAM MEMBERS**

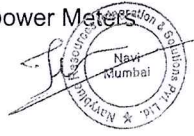
The Audit team comprised of following members from Navy Blue Energy.

**Table 1 Audit Team Members**

<b>Sr. No</b>	<b>Name of Members</b>	<b>Designation</b>
1	Tushar Harer CEA-30563	Team Leader-Energy Auditor
2	Dr Amol Mande EA- 26779	Energy Manager
3	Rajendra Waykar	Energy Engineer

**INSTRUMENTS USED FOR MEASUREMENTS AND ANALYSIS-**

1. Three Phase Load Manager- With CT, PT
2. Single phase Instantaneous power Meters
3. Lux Meter
4. Psychrometer



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## EXECUTIVE SUMMARY

### ENERGY AUDIT

Navy Blue Energy Audit team observed some energy conservation opportunity in the premises. Facility can minimize its energy consumption by executing following Energy Conservation measures.

Table 2 Executive Summary

Energy Conservation Measures (ECM)	Estimated Energy Saving	Estimated Monetary Saving	Estimated Investment	Simple Payback Period
	kWh/Year	INR/Year	INR	Months
Replace Conventional Fan with Energy Efficient BLDC Fans	171812	1560503	4112000	32
Replace Electric Geysers with Solar Water Heater	101498	921873	1200000	16
<b>Total</b>	<b>273310</b>	<b>2482376</b>	<b>5312000</b>	<b>26</b>

Navy Blue Energy Audit team has thoroughly assessed the complete facility Performance. It has been observed that there will be around **29%** of Energy Savings Can be Achieved further by implementing the above-mentioned ECM's.



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## WATER AUDIT

Table 3 Water Conservation Measures

Water Conservation Measures	Water savings Potential kL/Year
Water conservation potential by using water efficient taps	6753
Water saving opportunities with Dual flushing technique in toilet	9071
<b>Total</b>	<b>15825</b>

Navy Blue Water Audit team has thoroughly assessed the complete facility Performance, Team has been observed that there will be around **31%** of Water Savings Can be Achieved further by implementing the above-mentioned WCM's.

## WASTE DISPOSAL AUDIT

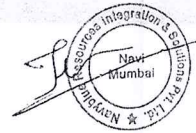
Presently University is practicing the waste segregation on site only- good practice.

## GREENERY-

Presently the campus has greenery is around the campus, more trees can be planted to increase the green cover further.

## CARBON FOOTPRINT-

Total **7436kg** of CO<sub>2</sub> is getting emitted by the campus per day.



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## OBJECTIVE OF AUDIT -

1. The objective of carrying out Green Audit is securing the environment and cut down the threats posed to human health.
2. To make sure that rules and regulations are taken care of
3. To avoid the interruptions in environment that are more difficult to handle and their correction requires high cost.
4. To suggest the best protocols for adding to sustainable development.

## SCOPE OF WORK-

Scope of Green Audit shall consider following steps;

### ENERGY AUDIT:

It deals with the energy conservation and methods to reduce its consumption and the related pollution. The auditor targets at the energy consuming methods adopted and find whether these methods are using the energy in a conservative way or not.

### WATER AUDIT:

Evaluating the facilities of raw water intake and determining the facilities for water treatment. Water harvesting is one of the best techniques that can be adopted by simply storing the water and using it at the time of scarcity. The concerned auditor investigates the relevant method that can be adopted and implemented to balance the demand and supply of water

### WASTE DISPOSAL AUDIT:

The waste clearance measures associated to hazardous wastes and recycling are reviewed. The auditor diagnoses the prevailing waste disposal policies and suggests the best way to combat the problems.

### ENVIRONMENTAL QUALITY AUDIT:

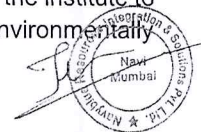
It analyses the air quality, noise level and the programs undertaken by the institute for plantation. The Green Belt should be maintained to reduce the pollution level by decreasing the Carbon dioxide level.

### RENEWABLE ENERGY FEASIBILITY

Resources which can be replenished should be used such as rain, sunlight, wind, tides, etc. These resources are more advantageous as they cause least pollution. The importance of these resources is explained by the Audit team.

### CARBON ACCOUNTING:

It undertakes the measure of bulk of carbon dioxide equivalents exhaled by the organization through which the carbon accounting is done. It is necessary to know how much the organization is contributing towards the sustainable development. The auditor considers several efforts practiced by the institute to lower the Green House Gases in the atmosphere in order to make the campus more environmentally friendly.



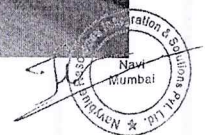
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## GOALS OF THE UNIVERSITY

In the effort to Enhancing an environmentally literate campus where students can learn the idea of protection of environment and stay healthy. The University is proactively working on the several facets of "Green Campus" including Plantation of more trees, Water Conservation, Efficient water usage by eliminating leaking water taps, Water Harvesting Pits and interconnecting them to Recharge the Ground Water table. Effective Waste Management which includes Food Waste, Plastic, Paper, Metal Work, Renewable Energy, carbon footprints etc.

1. To create a green campus with focus on above concepts
2. To Harness Solar Power
3. To Conserve Water by eliminating the water leakages, wastage, Rainwater Harvesting
4. To Reduce Waste management through reduction of Food waste generation, Plastic/Paper/Metal waste generation and effective disposal
5. To Reduce the Carbon Footprint
6. Enhancement of University profile



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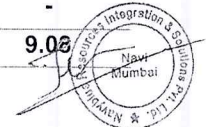
**ENERGY AUDIT**

**BILLING ANALYSIS-**

Audit team observed that the Electricity is supplied by state electricity board with **640 kW** of connected load and the average monthly billing is **INR 694067/-**. The average kVA demand for the institute is **634 kVA** and gross energy rate is **9.08 INR/kWh**.

**Table 4 Billing Analysis**

<b>Consumer Number</b>	<b>2035063101401311428</b>				
<b>Sanctioned Load</b>	<b>640 kW</b>				
<b>Month</b>	<b>Units (kWh)</b>	<b>Billed Demand (KVA)</b>	<b>Fixed Charge (INR)</b>	<b>Bill Amount (INR)</b>	<b>Energy Charges (INR)</b>
Apr-24	95790	640	51200	889883	9.29
Mar-24	69185	640	51200	638529	9.23
Feb-24	64396	640	51200	598163	9.29
Jan-24	59390	640	51200	590582	9.94
Dec-23	53859	576	46080	538463	10.00
Oct-23	88281	640	51200	799468	9.06
Sep-23	110715	640	48000	924398	8.35
Aug-23	106327	640	48000	889824	8.37
Jul-23	63623	640	48000	553329	8.70
Jun-23	52067	640	48000	462266	8.88
May-23	77899	640	48000	686277	8.81
Apr-23	86953	640	48000	757618	8.71
<b>TOTAL</b>	<b>928485</b>	<b>-</b>	<b>590080</b>	<b>8328800</b>	<b>-</b>
<b>Average</b>	<b>77374</b>	<b>634</b>	<b>49173</b>	<b>694067</b>	<b>9.08</b>



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## ENERGY BALANCE

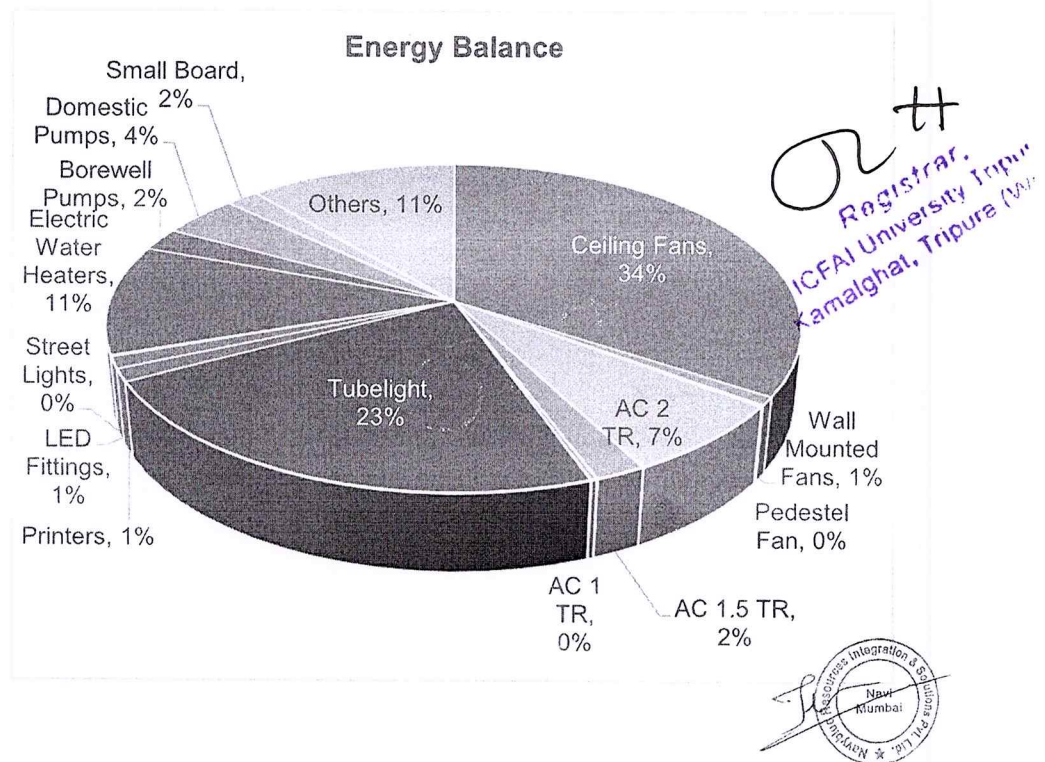
Audit team prepared the energy balance of the facility.

Table 5 Energy Balance

Load Details	QTY	Rated Wattage	Operating Hours	Usage Diversity	Energy kWh/Day
Ceiling Fans	2368	75	10	70%	1243
Wall Mounted Fans	96	55	8	70%	30
Pedestal Fan	12	75	8	70%	5
AC 2 TR	41	2000	4	80%	262
AC 1.5 TR	21	1500	3	80%	76
AC 1 TR	4	1000	3	80%	10
Tube Lights	2590	40	10	80%	829
Printers	63	350	5	40%	44
LED Fittings	880	12	8	50%	42
Street Lights	50	8	11	100%	4
Electric Water Heaters	74	2000	3	90%	400
Borewell Pumps	3	5500	10	50%	83
Domestic Pumps	4	7500	10	50%	150
Small Board	93	250	4	70%	65
Others					413
<b>Total</b>					<b>3655</b>

The major energy is consumed by the Ceiling fans followed by Air Conditioners.

Chart 1 Energy Balance





## ENERGY CONSERVATION MEASURES

### ENERGY CONSERVATION MEASURES TAKEN BY UNIVERSITY

1. This university has a 100 KW roof top on grid connected solar power plant at its campus. As per record this plant fulfils more than 11 % power requirements of this university related to total consumption of this university.
2. 23 nos. 40 W each, automatic solar lights are installed at different student resting rooms, open gymnasium, Main entrance gate, east side boundary wall and entrance of the boy's hostel.
3. 08 nos. 6 W each automatic solar lights are installed at electrical substations and pump house.
4. 04 nos. 300 W each automatic solar lights fixtures are installed at north and east site boundary wall in the ICFAI campus.
5. Replaced 70 nos. 150 W each sodium vapor light fixtures for area illumination purpose from various sites of campus with the 50 nos. 80 W LED Flood light fixtures and Post top light fixtures. Approximately 60 % electric consumption reduces than the previous consumption.
6. Hostels corridors, common space of the hostels, Mess and canteen sites blocks and partly main academic toilets blocks 36 W 560 nos. CFL lights replaced with (9- 12) W 300 nos. LED lamp. Approximately 80 % electric consumption reduce than the previous consumption
7. 140 no 36 W Compact fluorescent lamp (CFL) converted into 90 nos.20 W LED Fixtures in main Academic corridors. Approximately 64 % Electric consumption reduce by this.
8. 600 nos. 40 W conventional tubes light converted into 370 nos. 20 W LED T8 glass tube light fixtures in class room & hostels. Approximately 70 % electric consumption reduces than the previous consumption.
9. 90 nos. 40 W tubular fluorescent lamp converted into 36 no 9 W LED lamp .This electrical consumption of walk way illumination purpose approximately 90 % reduces by compared to the previous electrical consumption.
10. 103 nos. 80 w conventional ceiling fan converted into 103 no 28 W BLDC ceiling fan. Approximately 65 % electric consumption reduces than the previous electric power consumption.
11. 700 nos. 80 W conventional ceiling fans converted into 700 nos. 24 W BLDC ceiling fan. Approximately 65 % electric consumption reduces than the previous electric power consumption.
12. In three places human sensed LED lights are installed. This operates with human sensation.
13. This University always emphasizes on power savings and power conservation. In this process different awareness boards / signets are fitted in all the class rooms and other places directing all to switch off lights, fans and other electrical gadgets not in Use. The university given direction to all the maintenance and cleaning staff members to be an extra vigilant for switching off electrical gadgets when not in use.
14. This year university purchased a large numbers of LED light fixtures, LED lamps to replace conventional lights.
15. For power savings most of the Air conditioners installed in various places of the campus are now replaced with 5 star rating inverter AC.



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## ENERGY SAVINGS BY REPLACING EXISTING CEILING FAN BY BLDC FAN

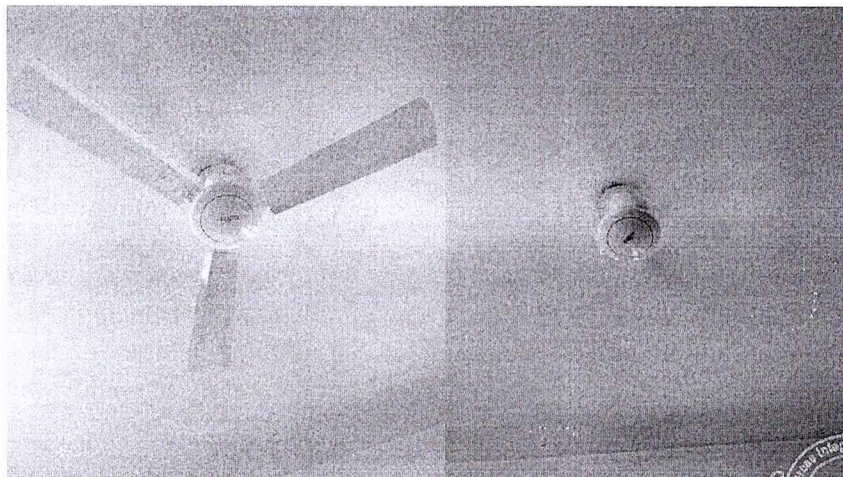
**Observation-** It is observed that at present facility have conventional Fans which consumes almost double the energy than energy efficient BLDC Fans.

**Recommendation-** it is recommended to replace the old fans with new energy efficient BLDC Fans, the energy savings potential along with cost benefit analysis mentioned in the table below.

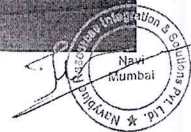
**Table 6 Energy Savings Calculations by replacing fan with BLDC Fans**

Parameter	UoM	Value
Present Fan Rated Capacity	W	75
Present Fan Energy Consumption	kWh/Year	274168
Total Number of fans	Nos.	2056
Proposed Capacity of fans	W	28
Energy savings Potential	kWh/Year	171812
Monetary savings Potential	Rs/Year	1560503
Estimated Investment	Rs.	4112000
Simple Payback Period	Months	32

**Site photograph 1 Classroom Conventional Fan**



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## REPLACE ELECTRIC GEYSER WITH SOLAR WATER HEATER

**Observation:** The Campus is using Electric Geyser as a source of Hot Water which consumes almost 11% of the electricity.

**Recommendation:** It is recommended to replace these electric geysers with Solar Water Heater to save energy cost as well as to reduce CO<sub>2</sub> emissions.

**Table 7 Replace Electric Geyser with Solar Water Heater**

Parameter	UoM	Value
Present Geyser Rated Capacity	kW	2
Number of Geysers	-	74
Total Electricity Consumed by Geyser	kWh	101498
Yearly Cost of Electricity	INR	921873
Solar Water Heater Cost	INR	1200000
Simple Payback Period	Months	16

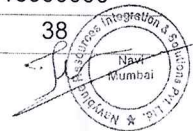
## ENERGY GENERATION BY INSTALLING SOLAR PV POWER PLANT

University has installed 100 kWp Rooftop Solar PV Plant in the campus during 2019-20. It is proposed to install a 400 kWp Grid Solar PV rooftop system to get green energy from solar. Here is the cost benefit analysis of the same.

**Table 8 Solar PV Feasibility**

Parameter	UoM	Value
Present Energy consumption	kWh/Year	928485
Proposed Solar capacity	kWp	400
Energy savings Potential	kWh/Year	560000
Monetary Energy Savings Potential	Rs./Year	5086276
Estimated Investment	Rs	16000000
Simple Payback Period	Months	38

  
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## WATER AUDIT

University Campus Consuming around 200m<sup>3</sup>/day water. The water is used for drinking, Toilets, Wash Basins, Urinals & Gardening and other purposes. Following is the water balance of the water used in the campus.

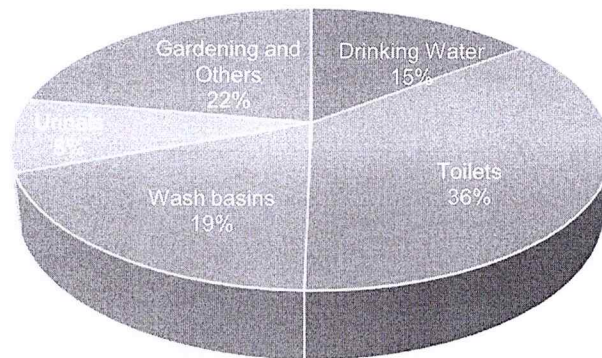
## WATER BALANCE

Table 9 Water Balance

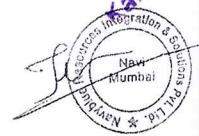
Consumption	Liters/Day
Drinking Water	29160
Toilets	71429
Wash basins	37983
Urinals	16786
Gardening and Others	44643
Total	200000

Chart 2 Water Balance

Water Balance

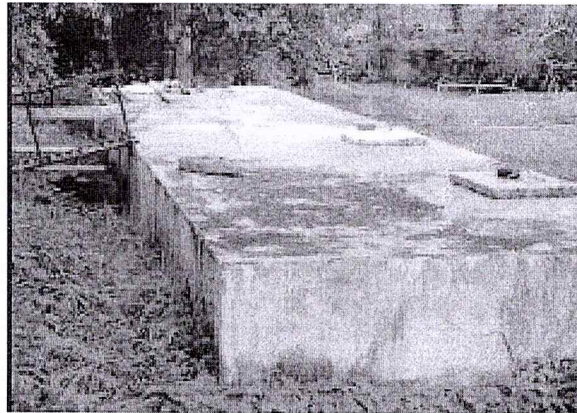


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The major water is used by toilets, following by gardening and others.

Site photograph 2 Water Storage Tank in Campus





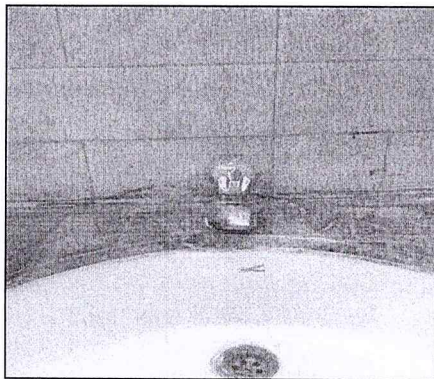
**WATER CONSERVATION OPPORTUNITIES**

**WATER SAVINGS BY CONVENTIONAL TAP REPLACEMENT WITH NEW EFFICIENT TAPS**

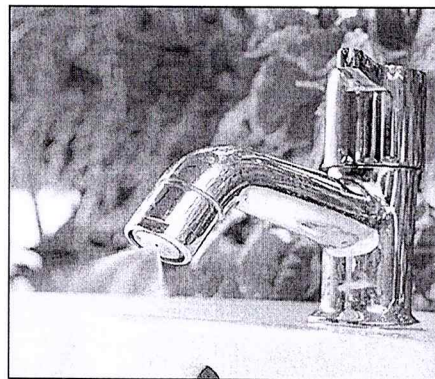
Conventional water taps consume more water than the new water efficient taps, it is recommended to replace conventional taps with new efficient taps. Here are the savings calculations.

Table 10 Water conservation opportunities by replacing taps.

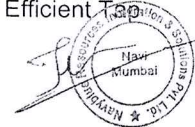
Parameter	UoM	Value
Present Tap Water Consumption	Liters/Day	37983
Proposed Water consumption	Liters/Day	11395
Savings potential	Liters/Day	26588
Savings potential	%	70%



Normal Tap



Water Efficient Tap



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## WATER SAVINGS WITH DUAL FLUSHING TECHNIQUE IN TOILET

Conventional water Flush consume more water than the new water efficient Flushing system, it is recommended to replace conventional Flush with new Double tap system. Here are the savings calculations.

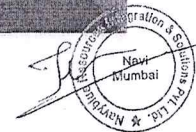
Table 11 Water conservation opportunity by replacing flush with dual flush system.

Parameter	UoM	Value
Present Toilet Water Consumption	Liters/Day	71429
Proposed Toilet Water consumption	Liters/Day	35714
Savings Potential	Liters/Day	35714
Savings Potential	%	50%

Site photograph 3 Campus Toilets



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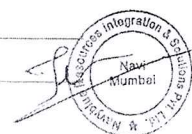


Campus having 974 number of various varieties of trees since a lot of plants are planted by the administration. Following are the details of the type of tree varieties available in the University Campus.

Table 12 List of Plant Species in Campus

S.No.	List of Plant Species in Campus
1	Aegle marmelos (L.) Corrêa
2	Polyalthia longifolia (Sonn.) Thwaites
3	Mesua ferrea L.
4	Albizia procera (Roxb.) Benth.
5	Ziziphus jujuba Mill.
6	Michalia champaca
7	Psidium guajava L.
8	Averrhoa carambola L.
9	Delonix regia (Hook.) Raf.
10	Syzygium cumini (L.) Skeels
11	Mangifera indica L.
12	Terminalia arjuna (Roxb. ex DC.)
13	Araucaria sp
14	Bougainvillea sp.
15	Caesalpinia pulcherrima (L.) Sw.
16	Thuja sp
17	Roystonea regia (Kunth) O.F.
18	Ptychosperma sp.
19	Dypsis sp.
20	Cocos nucifera (L.)
21	Plumeria alba L.
22	Artocarpus heterophyllus Lam.
23	Syzygium sp.
24	Moringa olifera
25	Parkia javanica (Lam.) Merr.
26	Litchi chinensis Sonn.
27	Swietenia mahagoni (L.) Jacq.
28	Azadirachta indica A.Juss
29	Pongamia pinnata (L.) Pierre
30	Cinnamomum sp.
31	Bauhinia variegata L.
32	Mimusops elengi L.
33	Pyrostegia venusta (KerGawl.)Miers

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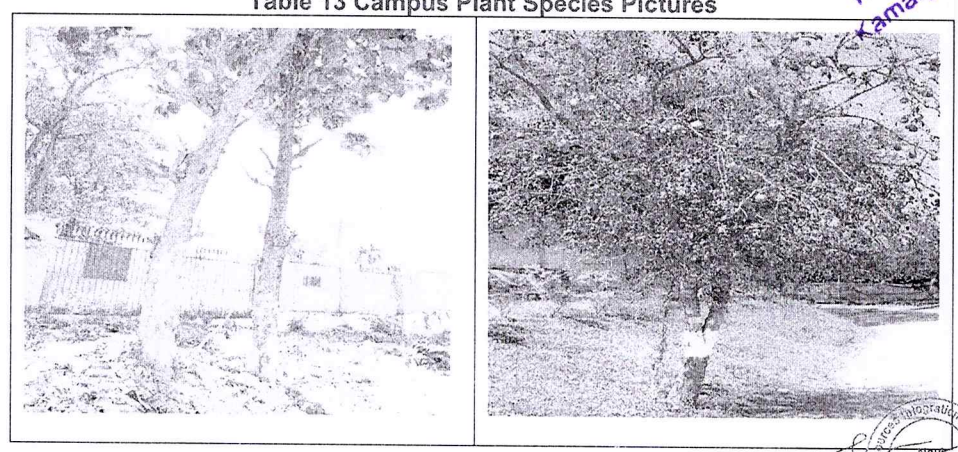


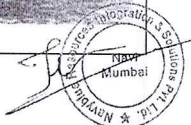


34	Toona ciliata M.
35	Tamarindus indica L.
36	Phyllanthus emblica L.
37	Ficus religiosa L.
38	Terminilia chebula
39	Eucalyptus sp.
40	Ficus benghalensis L.
41	Acacia auriculiformis A.
42	Thevetia peruviana (Pers.) K.Schum.
43	Melia azedarach L.
44	Aquilaria malaccensis Lam.
45	Bombax ceiba L.
46	Trema orientalis (L.) Blume
47	Eleoacarpus florisa
48	Terminalia bellirica
49	Ficus hispida L.f.
50	Cassia fistula L.
51	Borassus flabellifer L.
52	Dillenia indica L.
53	Syzygium cerasoides (Roxb.) Chatterjee & Kanjilal
54	Murraya koenigii
55	Citrus maxima (Burm.) Osbeck
56	Nyctanthes arbor- tricstis

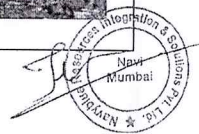
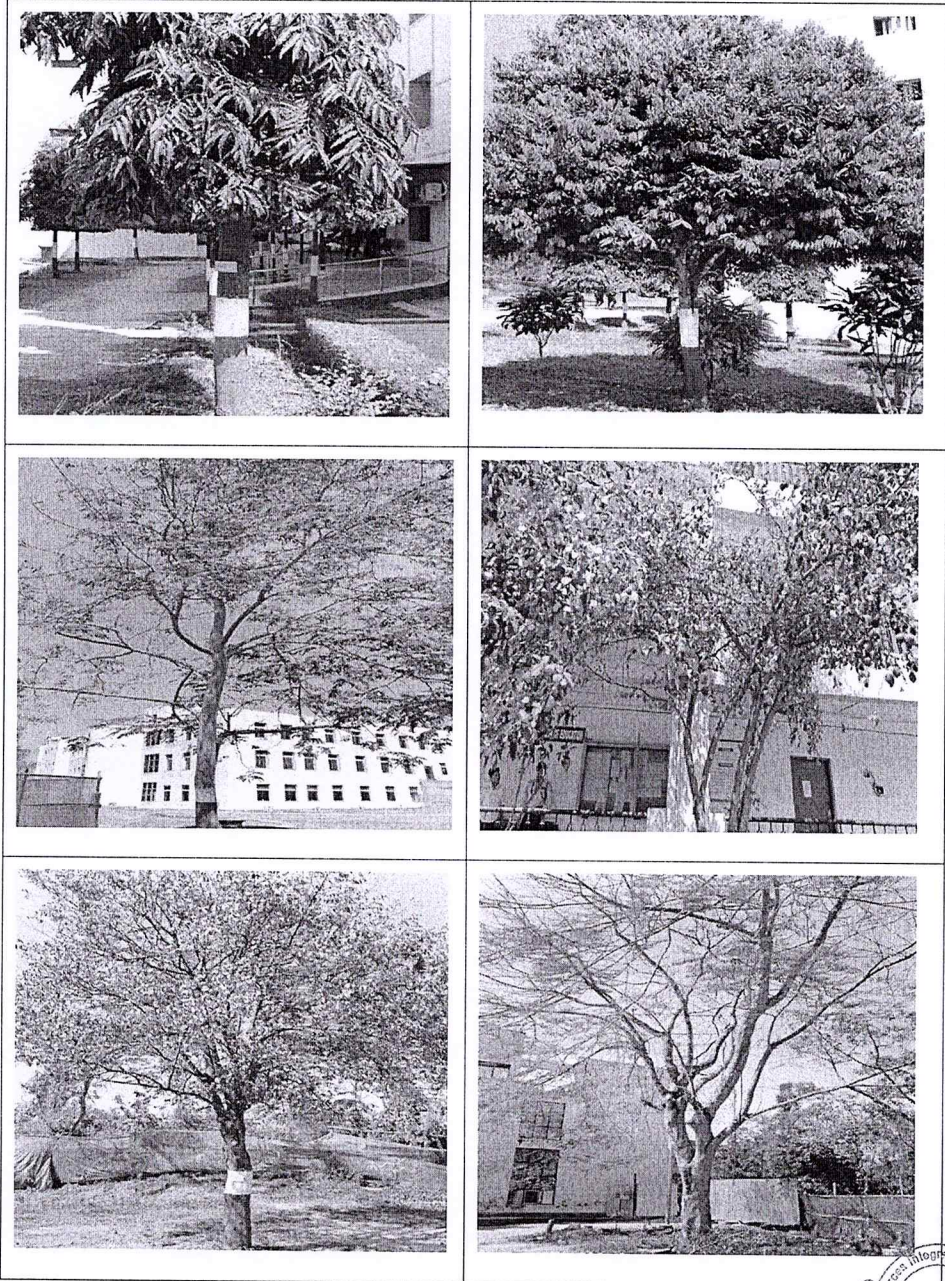
  
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**Table 13 Campus Plant Species Pictures**



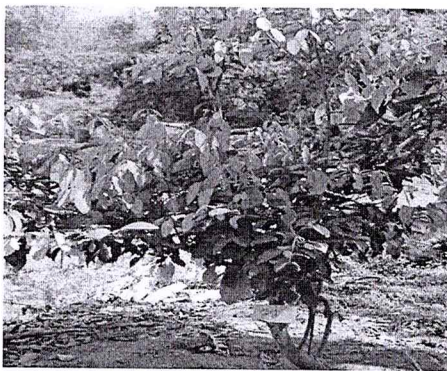
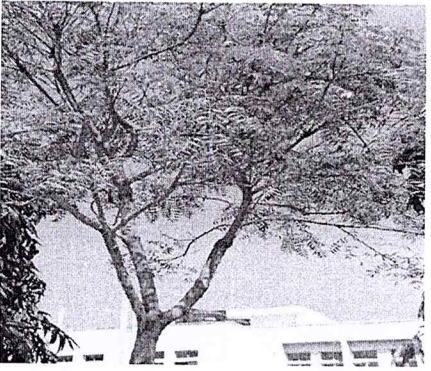
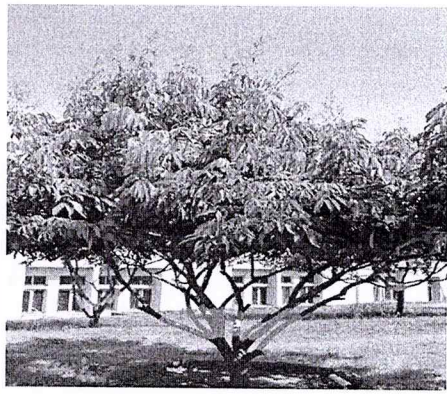
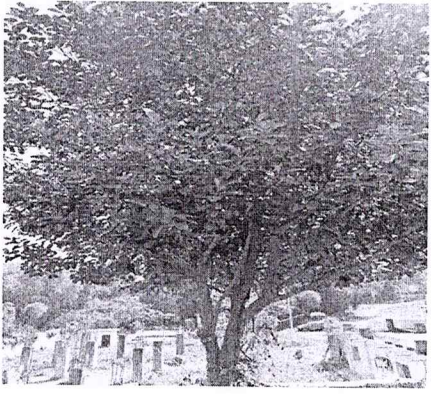
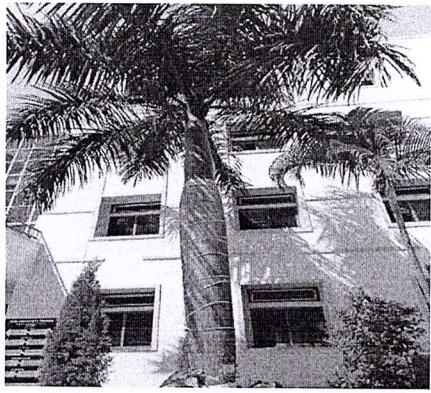
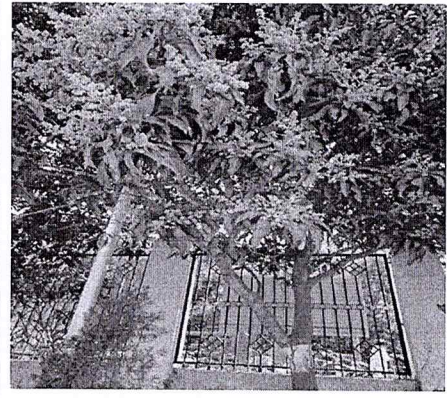
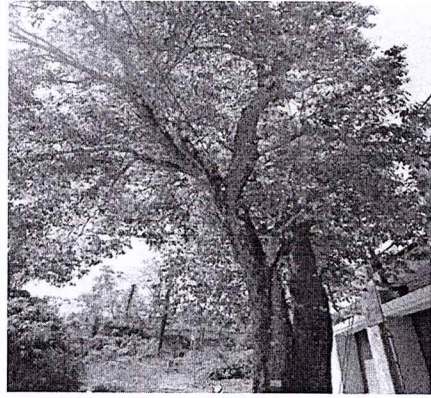
  
 Navy Blue Energy Pvt. Ltd.  
 Mumbai



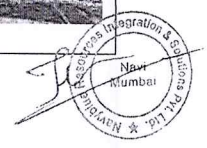


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**Waste Management:**

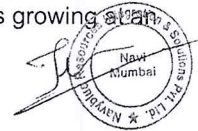
1. **Bio Waste** – Mostly Food Waste is generated from the cooked food at the campus in the canteen. It is proposed to install Bio Gas plant in the campus to generate Bio Gas from the food waste, which can be used in the Food Cooking
2. **Non-Bio Waste** – Plastic Bottles / Waste Paper / Cardboards/ Batteries etc.
3. **Biomedical Waste-** The University has MoU with M/S MEDICARE ENVIRONMENTAL MANAGEMENT PVT. LTD., Agartala which is collecting the biomedical wastes from the University for necessary disposal or recycling.

Non- biodegradable waste, which cannot be decomposed by biological processes, is called non-biodegradable waste. These are of two types - Recyclable: waste having economic values but destined for disposal can be recovered and reused along with their energy value. e.g. Plastic, paper, old cloth etc. Non-recyclable: waste which do not have economic value of recovery. e.g. Carbon paper, thermo coal, tetra packs etc. Disposal of non-biodegradable waste is a major concern, not just plastic, a variety of waste being accumulated. There are a few ways to help non-biodegradable waste management. The impact of non-biodegradable waste on the environment and also focus on its safe disposal for sustainable environment.

Present Status: Dust bins were provided for the waste disposal the same is collected daily once and handed over the Municipal corporation.

**4. E Waste Management**

Waste Electrical and Electronic Equipment (WEEE) or E-waste is one of the fastest growing waste streams in the world. In developed countries, it equals 1% of total solid waste on an average. In developing countries, it ranges from 0.01% to 1% of the total municipal solid waste generation. In countries like China and India, though annual generation per capita is less than 1 kg, it is growing at an exponential pace.



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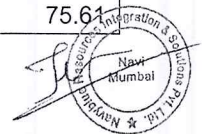
Table 14 Carbon Footprint

Emission Source	Quantity	CO2 Emission Factor	Total Emission per Day (kg)
Teaching and Non-teaching	294	700 gram/person/day	206
Two Wheelers	150	5 gram/km	15
Students	6046	700 gram/person/day	4232
Four-Wheeler	45	130 gram/km	59
Electricity Consumer	3655	800 gram/kWh	2924
<b>Total kg/Day</b>			<b>7436</b>

Mode of Transit	CO <sub>2</sub> released (per km driven per person)	CO <sub>2</sub> released during production of vehicle
Car	271 g	313 g
Bus	101 g	---
Bicycle	16 g (This is from the fuel of the rider – food)	16 g

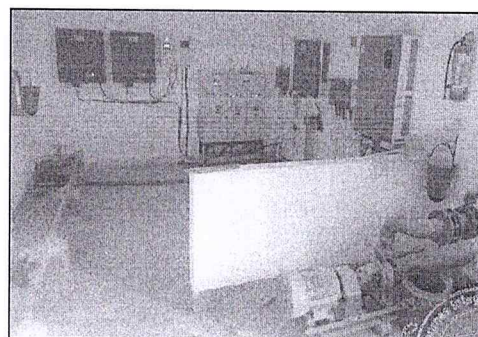
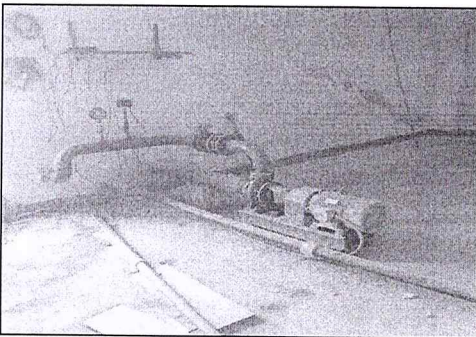
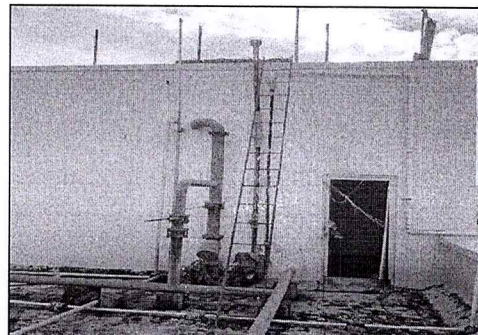
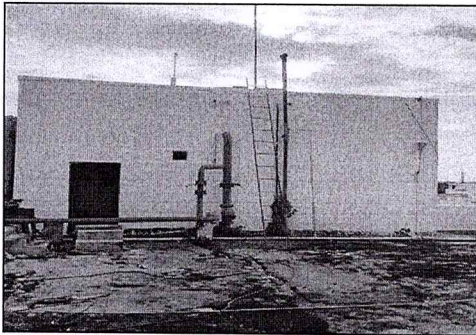
	Pounds CO <sub>2</sub>	Kilograms CO <sub>2</sub>	Pounds CO <sub>2</sub>	Kilograms CO <sub>2</sub>
Carbon Dioxide (CO <sub>2</sub> ) Factors:	Per Unit of Volume or Mass	Volume or Mass	Million Btu	Million Btu
<b>FOR HOMES AND BUSINESSES</b>				
Propane	12.70/gallon	5.76/gallon	139.05	63.07
Butane	14.80/gallon	6.71/gallon	143.2	64.95
Butane/Propane Mix	13.70/gallon	6.21/gallon	141.12	64.01
Home Heating and Diesel Fuel (Distillate)	22.40/gallon	10.16/gallon	161.3	73.16
Kerosene	21.50/gallon	9.75/gallon	159.4	72.3
Coal (All types)	4,631.50/short ton	2,100.82/short ton	210.2	95.35
Natural Gas	117.10/thousand cubic feet	53.12/thousand cubic feet	117	53.07
Gasoline	19.60/gallon	8.89/gallon	157.2	71.3
Residual Heating Fuel (Businesses only)	26.00/gallon	11.79/gallon	173.7	78.79
<b>OTHER TRANSPORTATION FUELS</b>				
Jet Fuel	21.10/gallon	9.57/gallon	156.3	70.9
Aviation Gas	18.40/gallon	8.35/gallon	152.6	69.2
<b>INDUSTRIAL FUELS AND OTHERS NOT LISTED ABOVE</b>				
Flared natural gas	120.70/thousand cubic feet	54.75/thousand cubic feet	120.6	54.7
Petroleum coke	32.40/gallon	14.70/gallon	225.1	102.1
Other petroleum & miscellaneous	22.09/gallon	10.02/gallon	160.1	72.62
<b>NONFUEL USES</b>				
Asphalt and Road Oil	26.34/gallon	11.95/gallon	166.7	75.61

  
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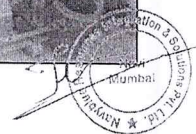


Lubricants	23.62/gallon	10.72/gallon	163.6	74.21
Petrochemical Feedstocks	24.74/gallon	11.22/gallon	156.6	71.03
Special Naphthas (solvents)	20.05/gallon	9.10/gallon	160.5	72.8
Waxes	21.11/gallon	9.57/gallon	160.1	72.62
<b>COAL BY TYPE</b>				
Anthracite	5,685.00/short ton	2,578.68/short ton	228.6	103.7
Bituminous	4,931.30/short ton	2,236.80/short ton	205.7	93.3
Subbituminous	3,715.90/short ton	1,685.51/short ton	214.3	97.2
Lignite	2,791.60/short ton	1,266.25/short ton	215.4	97.7
Coke	6,239.68/short ton	2,830.27/short ton	251.6	114.12
<b>OTHER FUELS</b>				
Geothermal (average all generation)	NA	NA	16.99	7.71
Municipal Solid Waste	5,771.00/short ton	2,617.68/short ton	91.9	41.69
Tire-derived fuel	6,160.00/short ton	2,794.13/short ton	189.54	85.97
Waste oil	924.0/barrel	419.12/barrel	210	95.25
Source: U.S. Energy Information Administration estimates.				
Note: To convert to carbon equivalents multiply by 12/44. Coefficients may vary slightly with estimation method and across time.				
Carbon Dioxide Emissions Coefficients by Fuel				
Detailed factors (discontinued)				

Site photograph 4 Fire Safety Pipeline

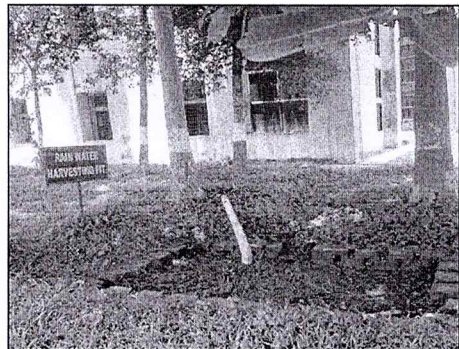
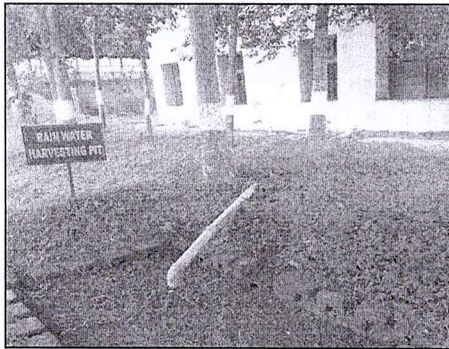
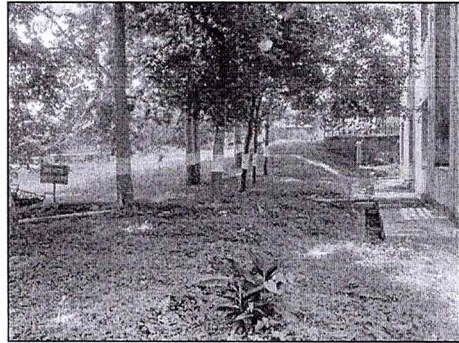


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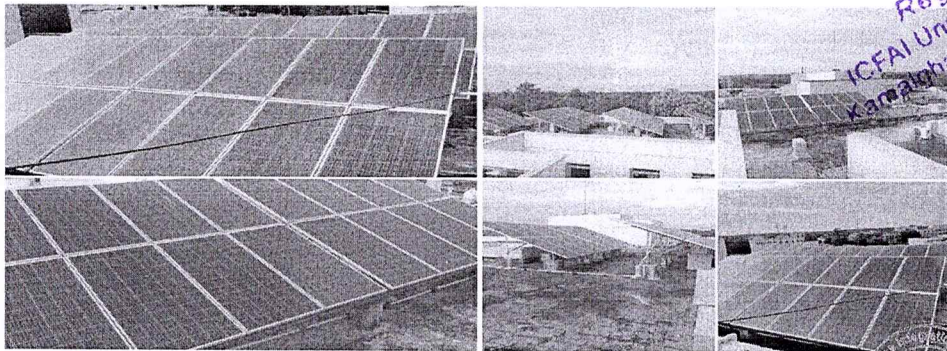




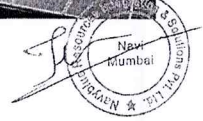
Site Photograph 5 Rain Water Harvesting



Site Photograph 6 Solar PV Rooftop Plant 100 kWp



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### Memorandum of Understanding (MOU)

Between

**The ICFAI University, Tripura**  
Agartala-Simna Road, PO: Kamalghat, West Tripura-799210

And

**M/S MEDICARE ENVIRONMENTAL MANAGEMENT PVT. LIMITED**  
Debendra Chandra Nagar, West Tripura - 799210

This memorandum of understanding is made on 10<sup>th</sup> day of September, 2024

BETWEEN

The ICFAI University Tripura, a University established under Section 4(2) of The Institute of Chartered Financial Analysts of India University Tripura Act of 2004, enacted by the State of Tripura, having its Campus at Village Kamalghat under Mohanpur Sub Division in West Tripura district-799210 (hereinafter called as "IUT"), represented by Registrar Dr. A Ranganath, which expression shall, unless repugnant to the context or meaning thereof, be deemed to mean and include its successors and assigns as Party No.1 and The Generator.

AND

M/S MEDICARE ENVIRONMENTAL MANAGEMENT PVT. LIMITED, Company registered under the Companies Act, 1956 having its registered office at Aurobindo Galaxy, Hyderabad Knowledge City, Hitech City Road, Hyderabad 500081 and state office, Common Bio-Medical Waste Treatment, Storage & Disposal Facility at Debendra Chandra Nagar, West Tripura - 799120 represented by its Executive namely Mr. Aniket Chanda S/o Lt Biswajit Chanda having Aadhaar No- 6945 5055 9396, by faith -Hindu by profession - Private Job , by nationality - Indian (hereinafter referred to as "Operator" which expression unless repugnant to the subject or context thereof, shall include its administrators, successors and permitted, assigns) as Party No.2 and The Operator.

PREAMBLE

The ICFAI University, Tripura is a University approved, recognized and listed by the UGC, under Section 2(f) of the UGC Act, 1956. The University is accredited by "National Assessment & Accreditation Council (NAAC). A present the University is offering total 57 numbers of

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**Kamalghat, Tripura (West)**

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**ICFAI University Tripura**  
**Kamalghat, Tripura (West)**

Medicare Enviro.  
Management Pvt. L.  
West Tripura.

*Aniket chanda*  
Authorised Signat





Diplomas, Under-graduate, Post-graduates and Ph.D. Programs in the field of Engineering and Technology, Basic Science (Physics, Chemistry, Mathematics), Liberal Arts, English, French, Law, Management, Commerce, Education, Special Education, Physical Education, Yoga & Naturopathy, Psychology, Clinical Psychology, Library & Information Sciences, Allied Health Sciences, Nursing, Hospital Administration, Laboratory Technology etc. Around 6000 students are pursuing various programs in the University.

**M/s. MEDICARE ENVIRONMENTAL MANAGEMENT PVT. LIMITED**, Company registered under the Companies Act, 1956 having its registered office at Aurobindo Galaxy, Hyderabad Knowledge City, Hitech City Road, Hyderabad 500081 and state office, Common Bio-Medical Waste Treatment, Storage & Disposal Facility at Debendra Chandra Nagar, West Tripura - 799120.

### PURPOSE & SCOPE


The discussions and interactions between The **ICFAI University Tripura** and **M/s. MEDICARE ENVIRONMENTAL MANAGEMENT PVT. LIMITED** indicates that the Bio-medical waste generated by Allied Health Science, Nursing Laboratories of the The ICFAI University Tripura will be collected by **M/s. MEDICARE ENVIRONMENTAL MANAGEMENT PVT. LIMITED** for necessary disposal or recycling.


### OUTLINE OF COLLABORATION

Under the aegis of this memorandum of understanding, the parties shall jointly explore the possibilities of working in the following areas:-

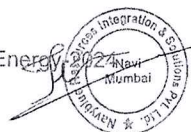
- i. The Operator will collect the Bio-medical waste generated Allied Health Science, Nursing Laboratories of the The ICFAI University Tripura (The Generator) for necessary disposal/recycling.
- ii. Both the parties will work for the promotion of environment management and environmental sustainability management.
- iii. Mutual help in organizing Community Outreaches & conducting awareness programme.
- iv. Planning and organizing seminar, conference, workshop, training and capacity building programmes in environmental sustainability and to conduct joint extension activities, projects, consultancy etc.

The separate Terms of reference (ToR), deliverables, and sharing of the credits including IPRs will be laid down with mutual consensus at the beginning of the activities.

  
Registrar,  
ICFAI University Tripura  
Kamalghat, Tripura (West)

  
For, Medicare Environmental  
Management Pvt. Ltd.  
West Tripura.

Aniket Chandra  
Authorized Signatory



**PERFORMANCE STANDARD**

The parties shall perform their respective roles and responsibilities under this MoU with highest standards of professional and ethical competence and integrity. Both Parties shall also respect rules, regulations and policies of both organizations.

**ARBITRATION**

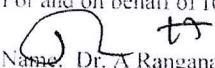
Dispute arising out of this MoU, if any, shall be amicably settled by both the parties.

**VALIDITY OF THE MEMORANDUM OF UNDERSTANDING**

The Memorandum of Understanding will come into force from the date of signing and will be valid for a period of 1 (One) year. During this period, either party will be free to terminate the MoU with one month's notice in writing.

IN WITNESS WHEREOF, the Parties hereby execute the MoU in two original copies in English language. The MoU shall be effective on the date it is signed.

For and on behalf of IUT

  
Name: Dr. A Ranganath  
Designation: Registrar

Place: Kamalghat

Date: 10/09/2024

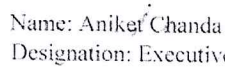
Witnesses:



Mr. Santibrata Saha  
Manager (Admin), IUT




For and on behalf of Medicare Company

  
Name: Aniket Chanda  
Designation: Executive

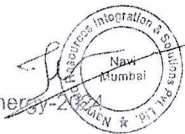
Place: Kamalghat

Date: 10/09/2024

Witnesses:

  
Mr. Deb Kumar Sarkar  
Senior Executive, Medicare

  
Registrar,  
ICFAI University Tripura  
Kamalghat, Tripura (West)







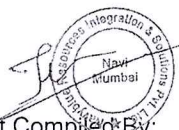
Report Compiled By:

Energy Audit Team,

M/s. Navy Blue Resources Integration and Solutions Pvt Ltd.

B-46- 1<sup>st</sup> Floor MIDC- Airoli Navi Mumbai-400708

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