

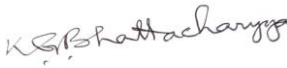



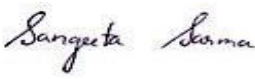
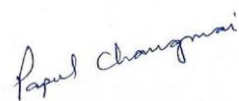

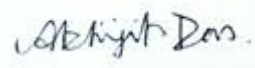



Green and Environmental Audit Report (2020-2021)

Assam Don Bosco University
Tapesia Gardens, Kamarkuchi,
Sonapur-782402
Assam-India

Green and Environmental Audit Team: A committee has been constituted to perform the task of ‘Green and Environmental Audit’ comprising the members of the following Faculty and Staff -

Green and Environmental audit Team

Name	Designation	Signatures
Prof. K.G. Bhattacharya, Advisor	NAAC Coordinator	
Dr. Monmoyuri Baruah, Team Leader	Director, SFAS	
Ms. Mebari Vanessa R Dorphang	Asst. Professor, Department of Zoology	
Ms. Sangeeta Das	Asst. Professor, Department of Zoology	
Dr. Sangeeta Sarma	Asst. Professor, Department of Botany	
Dr. Papul Changmai	Asst. Professor, Electrical and Electronics Engineering	
Dr. Akbar Ahmed	Asst. Professor, Civil Engineering	
Mr. Abhijit Das	Asst. Administrative Officer	
Dr. Nibedita kapil	HoD, Chemistry	

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1. Introduction

‘Green and Environmental Audit’ is a management tool which comprises systematic assessment of the different components of the ecosystem in which the establishments have been made. It is the process of identifying and determining whether the institution's practices are eco-friendly and sustainable.

With modernization, use of resources and chemicals have increased which have negatively impacted the environment creating an imbalance in nature. This is now a great matter of concern. Green and Environmental audit is a way to ensure that such negative impacts on the campus environment, due to the development and other activities, are kept at a minimum. Realising the importance of Green and Environmental audit, the Internal Quality Assurance Cell (IQAC) of the University has constituted a team to work towards such environment-related assessments on the Campus.

An Eco-Friendly University agenda for Assam Don Bosco University is its road map for building and operating a healthy and self-renewing vibrant Campus community. With an idea to create an environment where youth can be educated to live a sustainable life in harmony with nature, the University has formulated the eco-friendly policy with the following objectives-

- Creating a collaborative effort among the University fraternity in fostering an eco-friendly learning and working environment.
- Ensuring the sustenance of biodiversity by maintenance of the natural environment in addition to conservation, restoration, and remediation of existing land and water.
- Managing waste generated in the Campus through proper disposal and treatment.
- Commitment to sustainable management of land through agroforestry and kitchen gardening for meeting the food requirements in the Campus.
- Raising awareness of real-world issues affecting the rural communities living adjacent to the University Campus and working towards addressing these issues in partnership with the communities through teaching, research and extension activities.
- Encouraging students to participate in outreach education programmes as a part of Service Learning.
- Protecting, monitoring, and conserving flora and fauna of the Campus and preservation of their natural habitat.

- Identifying existing invasive species to reduce their negative impact on the indigenous flora and fauna.
- Involving local communities in the custodianship of natural resources and utilizing local resources for infrastructure construction purposes.

[Annexure I]

Link to the **Eco-friendly Campus Policy** of the University.

<https://www.dbuniversity.ac.in/pdfs/Eco-Friendly-Campus-Policy-2020.pdf>

The Green and Environmental audit report consists of five components- Land, Energy, Air, Waste and Water.

Objectives:

The major objectives of the green auditing are:

1. To document the land use patterns in the Campus
2. To estimate the energy requirements of the Campus
3. To estimate the water quality of the Campus
4. To inventorize the biodiversity of the Campus
5. To document the waste disposal system of the Campus

2. Land Use

Assam Don Bosco University is located in Tapesia Gardens, Sonapur, Assam with other two campuses in Azara and Kharguli, Assam.

2.1 Area Details

The land area details were extracted using Google Earth Pro. The total built-up area and area under natural vegetation and wetland were measured in sq. m.

[Annexure II]

Link to the document :

<https://drive.google.com/file/d/1AL1aRuo0pCgi418KWhGdjAb1sQxPL3zP/view?usp=sharing>

2.1.1 Academic Blocks

Sl. No.	Campus	Description	Area in (sqm)	Area in (Acre)
1	Azara	Total Area	15,314.00	3.784
2		Built-up Area: Area covered by each infrastructure	5,352.77	1.322
3		Area covered by any vegetation/waterbody in the campus	5,049.78	1.240
4	Tapesia	Total Area	48,460.8	11.97
5		Total Built up area	22,390.8	5.53
6		Area covered by any waterbody in the campus	26,070.0	6.44
7	Kharguli	Total Area	6,418.30	1.585
8		Built-up Area: Area covered by each infrastructure	4,773.53	1.179
9		Area covered by any vegetation/waterbody in the campus	340	0.084

2.1.2 Residential Area (Hostels and Staff Residence)

Sl. No.	Campus	Description	Area in (sqm)	Area in (Acre)
1	Azara	Total Area	9435.55	2.33
2		Built-up Area: Area covered by each infrastructure	4372.23	1.079
3		Area covered by any vegetation/waterbody in the Campus	2020.42	0.499
4	Tapesia	Total Area	7724	1904





In its effort towards creating an eco-friendly campus, the University encourages its Faculty and Students to engage in conserving the Campus environment, its flora and fauna, through activities that include individual and collaborative research, conservation practices, activities and initiatives of the Eco Club and the University as a whole. The Tapesia Campus is home to 296 species of fauna and 38 species of flora. Among the animal species, of mention is the incredible arachnid *Lyrognathus* species, Tarantula, which is found nesting among our vast expanse of greens. These numbers reveal the rich biodiversity of the Campus which summon for both admiration as well as protection and conservation. The name “Tapesia” itself comes from the fungus *Tapesia* which is characteristic of the tea plantations in the Tapesia region and yet another interesting area of research.

Owing to this rich diversity in flora and fauna and as we strive towards sustainability, the University makes an effort to ensure the sustainable use of its land. They encourage a walkable, gracious and sustainable Campus environment based on merging with its natural surroundings and mesh the University with its surrounding neighbourhood.

[Annexure III]

Link to Campus Environment and Biodiversity:

https://drive.google.com/file/d/1TqIRm2Z4C-8yfXzvHzxujNLgj1FJl_5U/view?usp=sharing

2.2 Sustainable land use activities

- 1. Landscaping** – The campus has patches of its land with pervious open surfaces and infiltration trenches which can decrease volume and speed of stormwater runoff. The water seeps into the ground and has the capacity to recharge the groundwater as well as for filtration.
- 2. Plantation Drives** – With an aim to increase tree density and minimize soil erosion, Plantation Drives are held annually particularly on three occasions, National Science Day (28 February), World Environment Day (5 June), and World Animal Day (4 October). In 2019, an event “Nurturing Nature Through the Power of Green” was held where the University took upon a massive tree plantation drive along the Poet’s Lane and the Dreamer’s lane based on the theme of friendship.
- 3. Agroforestry** - Agroforestry provides a different land use option as compared with traditional arable and forestry systems. It is a practice that supports the environment and makes better use of environmental resources. Due to the increase in population of humans and domestic cattle in developing countries like India, there is a corresponding increase in the demand for food and fodder. The burden of an increasing population further puts pressure on cultivable land leading to a decline in the cropland per head thereby lowering the scope of food production by increasing the area under cultivation. Assam Don Bosco University has adopted Agroforestry since it is more supportive of biodiversity than mono crop systems and is a means to produce food from marginal agricultural land and to also maintain and improve the conservation of biodiversity.

In its endeavour for conservation of healthy ecosystems, the University has embarked on a plantation drive spread over 190 acres of its Campus at Tapesia. The variegated cropping of tea, coconut, rubber, cocoa, cashew-nut, agar, ginger, and turmeric have been established as livelihood projects within the scope of demonstration farms and seed gardens to demonstrate and promote scientific research in crop development and inter-cropping. Once they start yielding, the University will promote such plantations in the villages and facilitate Farmers’ Cooperatives providing them with the

managerial and marketing expertise needed for their success. Marginal strips of unused land at the Azara Campus are used for a small kitchen garden, and for planting bananas and papayas. The University has its own Mushroom Cultivation Unit which cultures Oyster Mushrooms for the purposes of research, consumption, and revenue generation.

4. **Green Gardening** – The University has adopted green gardening by ensuring that any activities on land, which include plantation activities, do not affect the natural ecosystem of the Campus. To maintain a green organic garden, the dependence on synthetic fertilizers is reduced by an increased dependence on organic manure (vermicompost) which is prepared in the Campus.
5. **Wastewater treatment** - The University has undertaken planting of water purifying plants such as Tulsi (Indian 6 Basil), Moringa and Prickly Pear Cactus for environment friendly treatment of wastewater. The University also uses mycoremediation as a tool to treat sewage water.
6. **Kitchen Gardens** – The residential staff of the University are encouraged to maintain kitchen gardens which will not only boost self-sufficiency but will also increase diversity of fauna.
7. **Mushroom cultivation** - The location of Assam Don Bosco University allows for the maintenance of strong ties with neighbouring village communities. Self-sustenance is a key survival skill. With this in mind, the socio-economic benefits of practising mushroom cultivation were shared with the local community members, particularly the women-folk, through a training and demonstration programme “Mushroom for the people: Issues and opportunities”.

[Annexure I]

Land Use details in Eco-friendly Campus Policy of the University:

<https://www.dbuniversity.ac.in/pdfs/Eco-Friendly-Campus-Policy-2020.pdf>

3. Energy

The University's commitment to affordable and clean energy is manifested in the architectural design of campus buildings compliant with ECBC 2017 and is manifested in its policies of Energy Efficiency and Carbon Reduction. The "Green Pledge" signed by the University in partnership with the European Union in 2020 curbs the use of single use plastics, reducing water and electricity consumption, segregating waste before disposal and other sustainability measures as agreed.

Energy Management Practices:

- **Use of Renewable Energy and Energy Conservation initiatives:**
 1. **Grid-connected rooftop solar photo-voltaic power projects:** The University's roof-top solar installations at its Azara and Tapesia campuses have an installed capacity of 320 Kilowatts. An MOU has also been signed with North-East Electric Power Corporation (NEEPCO), India to set up a solarfarm in the campus to generate 2 Megawatts of electricity for domestic consumption and to feed the surplus to the national grid.
 2. **Micro-hydel Power Project:** A check dam has been constructed to study the possibility of a micro-hydel power plant. A major reservoir was spread over 10 acres, by tapping a small stream passing through the campus. 3,60,000 cubic metre of water is available on average in that lake. Micro Hydel Plant of 10 kW generation is possible with the existing dam.
 3. **Energy Conservation measures:** Passive architectural design of the buildings has contributed to the University's low dependency on artificial lighting and cooling systems. Use of LED lamps and low energy consuming appliances. Internal Energy Audit is periodically done for the buildings. The Administrative blocks, classrooms, faculty rooms have LED tube lights installed. Lighting is generally not required in the day time as the buildings have been designed to allow for maximum penetration of natural light.

4. **Passive architectural design:** The passive designs of the buildings in the Campus have contributed to the University's low dependency on artificial light sources.
5. **Dependence on artificial heating and cooling systems:** The University's dependence on Air Conditioners (ACs) is negligible. ACs have been installed in 10 rooms only. All other rooms (classrooms, faculty rooms, offices) have ceiling fans for cooling. An experimental feature to minimize the use of air-conditioning is built into the design of the Academic Blocks at Tapesia Campus, an imitation of a German model using underground air tunnels connected to air flow ducts in the building. If found to be beneficial, this model will be replicated all through the campus.

- **Control on use of motor vehicles:**

- The use of motor vehicles is restricted inside the Campus.
- All faculty and staff members possessing vehicles are issued a car-pass by the University.
- Hostel students are not encouraged to keep any motor vehicle with them on Campus.
- Day scholars are encouraged to commute through common transport facilities arranged by the University.

[Annexure IV] :

Link to Energy Audit Report:

<https://dbuniversity.ac.in/pdfs/Internal-Energy-Audit-Report-2020.pdf>

[Annexure V] :

Link to Restricted use of Motor vehicles in the campus:

https://drive.google.com/file/d/1OeWOFJL_GnIvh49mH3cQ70Oz5-WBksoj/view?usp=sharing

4. Air

4.1 Carbon Footprint Analysis

To study the carbon footprint of members of the University, a questionnaire survey was performed.

Questionnaire:

1. Name
2. Department and School
3. Contact number
4. Address of current residence
5. Are you – Faculty/Staff?
6. Your office is in which campus of the ADBU?
7. Do you stay in the Campus? yes/No
8. What is the approximate distance from your residence (both for residential students and non-residential students/day scholars) to your workplace? (express in average kilometers travelled. You can check it in Google Maps the distance between your residence and University/Department). In case you hold office in all three campuses with a daily travelling routine, please mention the average distance travelled.
9. Average kms travelled per litre of fuel-
10. Which of the following do you use for travelling to your workplace?
 - University Bus
 - University Winger/ Magic
 - Personal Car / other Four-wheeler
 - Personal Two-wheeler
 - Cycle
 - Other Public transport
11. If you use a personal vehicle, do you commute on a shared basis? If yes, how many passengers share your vehicle on an average?
12. Which fuel are you dependent on for transportation? Petrol/Diesel/ No fuel used
13. Does your Laboratory use any LPG cylinders? If yes, state the number of cylinders, Volume/ weight of cylinders and rate of refilling. (For example: 5 cylinders in each Laboratory of a department, say if there are 2 laboratories, the total cylinder is 10 units, each of volume or weight = x ltr or x kg and it is refilled at the rate of

once/month.

14. Does your Laboratory use any heavy machinery that has considerable emissions into the air? If Yes, specify in detail.
15. Any initiative/ research work taken by your department to assess or improve the quality of air in your campus? If yes please mention in details, please send the link to the proof documents (if any).

4.2 Results

Out of 122 respondents, it was found that 34.4% of the University members reside within the Campus and 65.6% are non-residential (Fig.1). 52.5% of the total members travel to University using their personal vehicle, 17.2% by shared Winger service provided by the University, 10.75% by their personal two-wheeler vehicle, 16.4% travel through other means of public transport and 3.3% use bicycles to commute to their workplace (Fig.2).

The carbon footprint calculated for the respondents –

People travelling via personal vehicles emit approximately 208.23 kg of CO₂/day and an average of 3.653±2.87 kg of CO₂/individual/day (Table 5.1). 20 respondents avail the shared University Winger service. If each of these respondents would have travelled using their personal vehicle, it would have generated 115.212 kg of CO₂ /day with an average of 5.760 2.12 kg of CO₂/individual/day. With the sharing system, a total of 36.156 kg of CO₂/day is emitted from both the Winger vehicles, thereby reducing the emission of approximately 79.05 kg of CO₂ /day. The University has started encouraging the faculty and staff for more shared communication wherein many faculties and staff who use their personal vehicles provide pooling services for other members.

Few laboratories use Air Conditioning, Deep freeze; AC in the sound studio, AC in editing studio, Diesel Engine in the I. C. Engine lab, Welding shop in the Mechanical workshop and 16 kg of commercial cylinders @ 6 units/year is utilized.

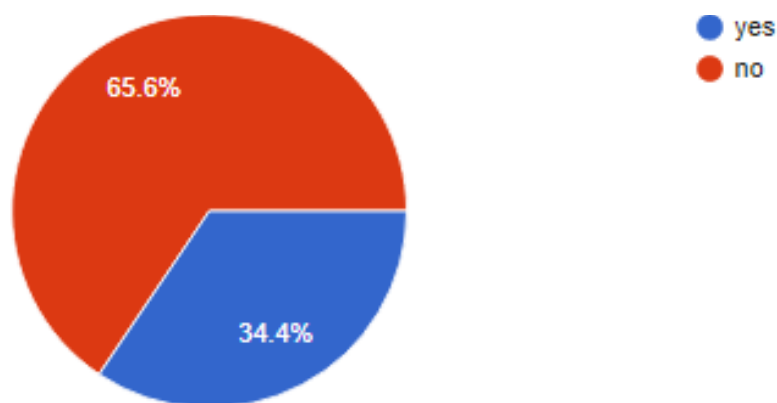


Figure 1: Relative percentage of residential and non-residential members

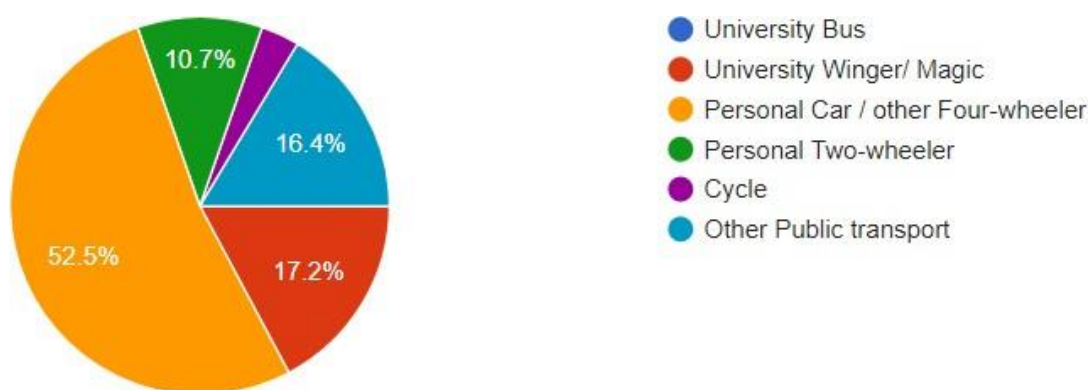


Figure 2: Relative percentage of different modes of travel to work place

Table 5.1: Carbon footprint of respondents travelling through personal vehicle			
Average distance travelled by all respondents (kilometers)	Average fuel consumed per respondents using personal vehicles to reach to their workplace (litre)	Average CO ₂ emission in kg/person/day (for Personal vehicle)	Total CO ₂ emission in kg/person/day (for Personal vehicle)
28.677±26.0	1.50±1.18	3.653±2.87	208.2344

[Annexure V]

Link to Restricted use of Motor vehicles in the campus-

https://drive.google.com/file/d/1OeWQFJL_GnIvh49mH3cO70Qz5-WBksoj/view?usp=sharing

5. Water

5.1 Water Analysis of the Water Bodies in the Campus

Drinking water samples were collected from Tapesia Campus, Assam Don Bosco University and analyzed for their quality parameters. The samples were collected, preserved, and transported to the Office of the State Public Health Laboratory, Assam and analyzed for Chemical and Biological parameters.

Chemical parameters include physico-chemical, metallic, non-metallic parameters. The major parameters analyzed under Chemical parameters are Appearance, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chlorides, Residual free Chlorine, Fluoride, Dissolved Oxygen, Calcium, Magnesium, Sulphate, Nitrates, Phenolic Compounds, Mineral Oil, Alkalinity. Biological parameters include Coliform MPN and *E. coli* MPN.

It was concluded from the detailed result obtained from the analysis that the water samples are bacteriologically satisfactory for use for drinking purpose but chemically unsatisfactory with respect to turbidity and iron content. The water sample needs proper treatment /filtration with respect to these two chemical parameters.

5.2 Water management Practices:

- Rain Water Harvesting (RWH) is practiced by means of recharge wells, recharge bore, and water tanks (for storage of rainwater). The Tapesia Campus is independent of the city water supply system as it relies on three bore wells and four natural ponds, present in the Campus, to cater to the water requirements. Bore wells were made to help with the construction as well as to ensure drinking water for the campus. Three Bore Wells and Four natural ponds which helps with the construction as well as to ensure drinking water for the campus.
- The University has created a major reservoir spread over 10 acres with an average depth of 30 feet by tapping a small stream passing through the Campus and the natural springs in the adjoining creeks. 5 minor reservoirs have been created, each of an acre or more in area and 15 to 20 feet in depth by the creation of bunds around existing, permanent springs. The reservoirs aid in water harvesting, stormwater management and replenishment of groundwater tables. The University has four fresh water bodies covering 4 acres, which also serve as fish ponds for *Labeo rohita*(Rohu), Amur carp (a variety of *Cyprinus carpio*), Common Carp and *Channa*

punctatus (Goroi). The natural water bodies are conserved keeping in mind the role of water bodies as reservoirs for holding excess water during periods of flood. The University depends on the water from boring therefore, it maintains the water bodies for proper ground water recharge. The use of natural topography for designing and construction of the buildings in the Campus has created an uninterrupted flow of water to the streams.

- Arrangements have been made throughout the Campus to supply purified and filtered water. The terraces of the buildings have been designed for Rain Water Harvesting (RWH) – to be made operational when necessary. An artificial freshwater lake covering 10 acres was created by building a dam across a permanent small stream flowing through the campus and tapping several perennial springs in the adjacent creeks.
- The practice of agroforestry further enhances the scope of ensuring that there is recharge of ground water and prevention of excess water flow during the monsoon season.
- The pavement designs of the University allow water percolation for ground water recharge.
- The University installed 12 Solar Powered Water Purifiers in the nearby Villages of Jogdal, Upper Tapesia, Patarkuchi, Medhikuchi, Nam Tapesia, Goriaghili, Nazirakhat, Morangabari, Kalitakuchi, Jargaon, Chagoligaon and Hatimora, under the Bishuddha Jal Asoni initiative.

[Annexure VI]

Link to Water Analysis Report:

https://drive.google.com/drive/folders/1YBeLP3NI657cvvW5L3weWNnFw0y_FNv-?usp=sharing

6. Waste

The campus has adopted several practices for waste management. Beginning from segregation of waste at point source to convert the organic waste into useful vermicompost and encouraging zero-waste practice, the University constantly improves its efforts to deal with the waste generated in each of the Campuses. From the year 2020, the University has also started the e-waste management practice, thereby trying to reduce waste in a sustainable manner.

6.1 Waste Composition

- Approximately 15kg/ day of organic waste for 300 individuals is generated in TapesiaCampus.
- Segregation is done at point source.
- Waste composition includes – Organic waste, Paper Waste, Plastic waste, Glass wasteand Metal waste.

6.2 Waste Management

- The tea plantation of 120 acres on the campus is organically nurtured from the Vermicompost produced from the biowaste of the University campus.
- To encourage a zero-waste culture, events are organized each year. In the annual cultural event Boscosiad 2018, a DIY competition was organized (Craft from Waste) by the Art and Craft club of the University. In 2019, on 14th February, students of the Department of Zoology, EcoClub had organized a sale of flowers and cards made out of waste materials. The fund generated is kept as seed money for the next event from EcoClub.
- On the occasion of Valentine's Day 2020, tokens of love, which included, paper roses, other paper flowers, heart cutouts with catchy messages, bouquets of flowers, bouquets of hearts, among several others were handcrafted by all the first year students of the department of Zoology, which were later sold, for nominal amounts, ina makeshift stall put up by the students themselves. Majority of the raw materials primarily included any waste material which could possibly be recycled.

- The first-year students of the Department of Zoology created a wall magazine with waste materials based on the IUCN Congress, 2020, theme, 'One Nature, One Future', on the occasion of National Science Day. The students built a cogent case for their message and intent by constructing every bit of the wall magazine solely with waste material.
- Water purifiers and dispensers have been installed at several places so as to discourage the purchase of plastic bottles for water. During University events and competitions, panel members are given water in Glasses covered with coasters.
- The canteens are discouraged from using single-use plastics. Reusable cutleries are used in lieu: a step towards making the Campus a plastic-free zone. Food wastes are segregated at point source. The practice of self service in canteens is adopted so as to reduce the generation of waste in a way and also as a means to sensitize about proper waste disposal.
- Waste bins of different colours - red, blue, and green - have been placed in select places to ensure proper disposal of waste in their respective bins.

6.2.1 Practices adopted for proper waste disposal at Assam Don Bosco University, Tapesia campus:

Assam Don Bosco University understands the need to protect and preserve our mother nature with utmost sincerity. To go along with our motto of sustainable development the institute encourages the use of standard protocols to prevent the laboratory waste from polluting the environment. The chemistry lab experiments generate a great variety of waste, including used disposable laboratory glassware, filter media and similar materials, aqueous solutions, and hazardous and nonhazardous chemicals. Although the syllabus and various research projects require the use of various toxic as well as hazardous chemicals the following are some of the steps taken for the standard disposal of the waste materials.

- The experiments are designed to minimize the use of chemicals.
- The labs are properly ventilated and have Fume-hoods.
- The Chemical stock is maintained properly to minimize unnecessary buying and stockpiling.

- The solvents used in the laboratories are reused after distillation to minimize the use of solvents. The waste solvents are separated as halogenated and non-halogenated and transferred to plastic containers.
- To prevent heat generation and gas evolution or other reaction, compatibility of the waste is checked carefully.
- Solid waste such as silica gel for Column and Thin layer chromatography are put in an appropriately labeled closed lid container.
- Broken glassware is also segregated separately and recycled.
- To prevent accidental spillage of chemicals the laboratory wastes are subjected to process through three stages of waste management. Stage-I gravel, Stage-II sand, Stage-III coal. The three chambers are replenished with new materials after a period of six months.



Figure 3: Halogenated and non-halogenated waste solvent drums



Figure 4: Three stage treatment of laboratory waste

Solid waste management

- The general solid waste from the university is segregated into non-biodegradable and biodegradable using different colored dustbins, which are then given to Guwahati Municipality Corporation for proper disposal and reuse.
- Broken glassware is also segregated separately and kept for recycling.

Liquid waste management

- The waste from the canteens and other areas are channeled into a reservoir where they are treated biologically before the water goes out into river bodies.
- The solvents used in the laboratories are reused after distillation to minimize the use of solvents. The waste solvents are separated as halogenated and non-halogenated and transferred to plastic containers. To prevent heat generation and gas evolution or other reaction, compatibility of the waste is checked carefully.
- To prevent accidental spillage of chemicals the laboratory wastes are subjected to process through three stages of waste management. Stage-I gravel, Stage-II sand, Stage –III coal. The three chambers are replenished with new materials after a period of six months.

Hazardous chemicals and radioactive waste management

- There is a separate room for the Nuclear Laboratory where radiation hazard is displayed for safety measures. The harmful radiations are radiated by appropriate routes. Containers containing radioactive elements are properly lead sealed.
- Wearing appropriate lab coats, gloves and face shields while working with nanomaterials. The hazardous chemical wastes are kept in separate containers. Later they are filtered and drained out.

6.3 Waste Recycling

- Mr. Babul Gogoi of Rongjeng Technologies conducted an e-waste awareness programme for the School of Technology on 16th August 2018 from 9 AM-9:45 AM. The programme was coordinated by Dr. Rupam Sharma, Department of Computer Applications. The programme consisted of a short film on e-waste management for 15 minutes, a power point presentation of 15 minutes, and a Q&A round of 10 minutes.

- E-waste management with Karo Sambhav Pvt. Ltd. A list of the e-waste materials submitted to Karo Sambhav for recycling by the university, e-waste manifest and the enrollment form of Karo Sambhav have been attached herewith.

6.4 Education and Communication

- The Department of Mass Communication, Assam Don Bosco University, carried out street play performances on 18 May 2019 in Sonapur under the supervision of Assistant Professors Mr. Kaushik Bhuyan and Mr. Jai Kishan. The play was performed by the BA students of the Department and it was focused on cleanliness and the detrimental effects of littering.



- As part of the International Volunteer Student Exchange Programme 2019, a cleanliness drive was organized in Gojaigoan Village on 5th July 2019 wherein the children of the lower primary school were asked to come together and clean the school ground as well as the nearby area within the community. The session focused on inculcating in the students the concept of cleanliness and maintaining proper hygiene. The students were also encouraged to wash their hands with soap before eating and after using the toilet.





- Under the International Volunteer Student Exchange Programme 2019, a workshop was conducted with the children of the lower primary school on "**Recycling through Arts and Crafts**" by using waste materials in Gojaigoan Village. The workshop was conducted on the 8th July 2019. The focus of the session was to inculcate in them the idea of reusing materials and recycling them for various purposes instead of littering. It encouraged the children to use their creativity to do something with the waste bottles, newspapers, etc. that they picked up from their homes or nearby shops, etc. This gives them the idea that they should keep their environment clean and use waste products sensibly in a creative manner. All the items were made by the students themselves and were kept in the Anganwadi Centers for use.



- The Unnat Bharat Abhiyan, Assam Don Bosco University Unit (UBA-ADBU Unit) conducted a Focused Group Discussion on the “Use of Plastics” on the 5th September 2019 as part of the 'Swachhata Hi Sewa Campaign' with the involvement of village women. The Group Discussion was conducted with the following objectives:
 1. To understand the everyday use of plastics by the community people.
 2. To gather information on how to reduce the use of plastic in the villages.

During the discussion the women told how ignorant they were on plastic use and their disposal. They suggested the University conduct programmes on the negative impacts of the plastic in the environment in the schools and to teach them creative ways on what they can do with the plastics that they have in their homes. They also said that if the children learn about these things their parents also will follow. Thus, this will, in turn, reduce the use of plastic in the whole village. Another suggestion was to impose a fine for loitering of plastic. This helped the university in formulating ideas for a “plastic-free-village”.



- The Unnat Bharat Abhiyan, Assam Don Bosco University Unit conducted an Awareness Programme on the “*Negative Impacts of Plastic*” under “Swachhata Ki Sewa Campaign” in Arabari Lower Primary School. The programme was conducted on 6th September 2019 with the following objectives:
 1. To sensitize the students about the negative impact of plastic,
 2. To discourage the use of single-use plastic, and encouraging them to use cloth bags.



- **Stage**, a theatre group of Unnat Bharat Abhiyan, Assam Don Bosco University Unit (UBA-ADBU Unit) which was launched on 16th September 2019 organized its first play on the theme “Negative Impacts of Plastics”. The street play was conducted on 28th September 2019 in Sonapur with the following objectives:

1. To sensitize the larger public on the negative impacts of the use of plastics.
2. To promote the use of cloth bags.
3. Using street play as a tool to effectively advocate for plastic-free-village.



- The student volunteered to enact a play with an objective to sensitize the public about the negative impacts of plastic in their daily lives and to reduce the use of single-use of plastic and promote the use of cloth bags. The student volunteers conducted the play in two areas, after the first play they walked to the second place shouting different slogans to sensitize the people about plastics and its impact.



- Unnat Bharat Abhiyan, Assam Don Bosco University Unit (UBA-ADBU) Unit conducted a Creative Session on “Recycling Used-Plastics” on 12th September 2019 in Arabari Lower Primary School with the following objectives:
 1. To encourage the segregation of waste.
 2. To promote an environmentally friendly way of utilizing single-use plastics. to educate
- The programme was conducted under 'Swachhata Hi Sewa Campaign'. For this activity, the children were asked beforehand to collect used plastics from their home.

In this way, the children learned to segregate the plastics from other biodegradable waste. In a way the children learned to do something creative with the plastics that they usually carelessly burn or just loiter around the compound. They are motivated to save the environment in any small way that they can.



- The Awareness Programme on Recycling Plastics was conducted on 15th September 2019 by the students of Don Bosco Institute of Management for the local kids of Joypur, Kharguli. The Programme was specially organized to educate them about “Recycling Plastics”. The main objectives of this programme were:
 1. To sensitize the children on the impacts of plastic.
 2. To promote recycling plastics and cloth bags.



- A “Workshop on Cloth Bag Making” was organized by Unnat Bharat Abhiyan, Assam Don Bosco University Unit on 26th and 27th September 2019 in Ural Basti Village and Mahilapara Village to make the people aware of the negative effects of plastic and to promote cloth bags as an alternative to plastic/ polythene bags. The workshop started with a brief introduction about the program and a discussion on the effects of plastic. The volunteers showed videos on how to make cloth bags using different designs and styles. The UBA-ADBU Unit team along with the participants made a bag each with different designs.



Cloth Bag Making Workshop in Ural Basti

Through this program the participants learned how to make cloth bags with clothes they don't use anymore and this made the participants more interested because they don't have to throw away their old clothes, and instead of buying the cloth bags they can stitch it at home which is very cost-effective. This definitely promoted the use of cloth bags instead of plastic bags.



7. Green Campus Initiatives

- To commemorate the Feast day of St. John Bosco, the Centre for Development Studies and Initiatives (CDSI) in collaboration with the Eco Club organized a programme “Nurturing Friendship through the Power of Green” in the campus based on the theme of Friendship and Sustainability on 31st January, 2019 at Assam Don Bosco University, Tapesia Campus. There was a plantation drive alongside the “Dreamer’s Lane” and “Poet’s Lane” which witnessed enthusiastic participation of faculty members, staff, and students of the University and neighbouring villages. To make the Programme more memorable, each of the trees was befriended by a group of students or faculty or staff, who adopted the tree and will nurture the tree, and pass it on to another group to continue nurturing it. Against each sapling is a name tag of the students, faculty and staff to symbolize an acknowledgement of the special relationship of FRIENDSHIP fostered here at Assam Don Bosco University. Approximately 115 trees were planted in the Dreamer’s Lane and Poet’s Lane by 406 (130 males and 276 females) faculty and students.
- On the occasion of World Environment Day, the Department of Zoology initiated a Plantation Drive in the Tapesia Campus of the University in the presence of the Vice-Chancellor, Fr. Stephen Mavelly; Director, School of Life Sciences, Professor J. N. Vishwakarma; Administrative Officer, Mr. Wilson Matthews, and a few faculty and staff. Fourteen fruit tree saplings of fruits which included Pomegranate, Guava, Plum, were planted in the area of the Campus envisioned “Village Green”. The aim of the Plantation Drive is to make available Plants that will serve as food reserves for the Campus fauna.
- The Centre for Science and Environment (CSE), New Delhi launched its Green Campus Initiative in 2017. CSE had identified Assam Don Bosco University as one of the Institutions with good practices under its Green Campus Initiative. It was included in CSE’s publication - *A Green Campus Compendium: Incubation, Experimentation and Demonstration of a Green Future* (Available at <https://www.cseindia.org/a-green-campus-compendium-9902>), along with other campuses having distinct characteristics. The Compendium was launched at CSE’s 5th National Knowledge Conclave organized at the Anil Agarwal Environment Training Institute (AAETI) on 31 January 2020. In this regard, with Assam Don

Bosco University as its flag-bearer for the Northeast region of the country, CSE and Assam Don Bosco University jointly organized a Webinar on the theme '*North-East Regional Dialogue on Green Campus*' for faculty, students and those involved in education campuses. The hour-long webinar was held on 5 June 2020. The aim of the Webinar was to highlight the potential of Campuses to promote environmentally responsible practices and behaviour, and encourage low-carbon emitting, energy efficient, water prudent, less wasteful, greener practices in the campuses. CSE introduced its green audit and rating system that recognizes Campus' efforts better than the check-box type audit instruments of the Government which would, in a way, strengthen our understanding on green audits and will take us through the efforts of other campuses in this regard in a bid to enable mutual learning. Fr. Joseph Nellanat, Pro Vice-Chancellor, Assam Don Bosco University, inaugurated the programme and welcomed the participants. This was followed by a presentation "*SDGs and How Green is your Campus*" by Mr. Rajneesh Sareen, Programme Director, Sustainable Building and Habitat Programme, CSE. A presentation on "Green Initiatives of Assam Don Bosco University" was then delivered by Dr. Bikramjit Goswami, Assistant Professor, Department of Electronics and Electrical Engineering (EEE). There were questions from the participants to the Panelists, who included members from the CSE and DBU, on several aspects related to the ways and means to become a Green Campus. A total of 400 participants representing the students and academics of North-East India as well as the rest of the country registered for and participated in the Webinar.

8. Recommendations

8.1 Internal Audit Team:

The Internal Audit Team recommends the following:

1. Implementation of Xeriscaping in areas where water availability is low.
2. Construction of Bioswales for groundwater recharge.
3. Monitoring changes in landscape use with biodiversity over the years in order to study the impact of developmental activities.
4. Minimizing the dependency on paper by shifting to paperless digital work mode.

QUESTIONNAIRE

S/N	Items	Responses
1	Institutional Strength in terms of Student, faculty & employees	933 individuals as per 2019 report (students+faculty+administration+housekeeping)
2	Physical Structure in terms of total no of class room, Staff room, laboratories, conference hall, Libraries, Auditorium, Gym, Canteen, common room, administrative office, hostel	Tapesia campus Total built up area: 44,584 sq.m Classrooms: Staff rooms: NA Laboratories: Auditorium: 1 Gym: 1 Canteen: 2 Common Room: NA Administrative office: Hostels:
	Energy Management	
3	Is college utilizing any incandescent lights? Can they be replaced with compact fluorescents (energy saving bulbs)?	LED bulb
4	Are the light switched duly label led to make more obvious which switches relate to which appliances?	No
5	Are the lights switched off to make use of daylight? (e.g. lights parallel to windows or in corridors)	Yes. Passive design of buildings makes the building less external light dependent
6	For the spaces like store rooms, toilets, kitchen areas, copying rooms, corridors, etc., is there scope for automatic lighting controls?	No
7	Are the light fittings clean?	-
8	Do windows and sky lights need cleaning to allow in more natural light?	Yes
9	How are the Air Conditioning Controls? For the local controls, how it is ensured that AC is working only ON when necessary. What is temperature setting of the AC?	ACs have been installed in 10 rooms only in Tapesia campus. All other rooms (classrooms, faculty rooms, offices) have ceiling fans for cooling.
10	Are all external doors and windows closed when air conditioning is on?	Yes

11	Are computers, printers, photocopiers and other equipment switched off at the end of the day?	Yes
12	The annual consumption of electric power in KW	621 kw (connected load at Azara – 207 kw, Tapesia – 214 kw, Kharguli – 200 kw)
13	Are all external doors and windows closed when air conditioning is on?	Yes
14	Are computers, printers, photocopiers and other equipment switched off at the end of the day?	Yes
	Water Management	
15	Are any water leaks identified?	Yes, done on regular intervals
16	Are taps left running? Are there any dripping taps? Do taps need maintenance?	No
17	Is water escaping from overflows either inside or outside buildings?	-
18	Has the college collected rainwater for onsite watering needs	Yes
19	Is the college campus maintained clean to minimize litter polluting water table?	Yes
20	Is the college monitoring drinking water quality regularly? If yes, what is the frequency	Yes. it has been started this a year ago
21	Do students and staff know where their water comes from?	Yes
	Organizational effort	
22	Is the college having campus green team?	Yes
23	Have you established an environmental mission/vision for your campus	Yes
24	College initiates any tree plantation programme	Yes. Every year either during Don Bosco Feast day or World Environment Day or World Animal Day
25	How many numbers of existing tree, shrubs, herbs and climber species	Tea (122 acres), Agar (10 acres; 4000 saplings), Lemon (500 sapling), Turmeric and Ginger (4 tonnes each)
26	How many numbers of existing full grown tree, semi grown trees and bushes	Coconut (10 acres; 600 saplings), Rubber (10 acres; 2000 saplings), Neem (1500 sapling), Cashew (400 sapling), Ficus (800 Saplings)

27	Is there any lawn in the college campus? If yes what is area	Yes
28	Is the college encouraging sustainable behaviour via: Education campaigns? Such as Posters, placards, messages, incentives? Contests? Awards?	Yes. EcoClub of the University gives away plant sapling as awards for various competitions to encourage students to plant and maintain the saplings.
29	Is the college staff modelling sustainable behaviour for students, peers, and community?	Yes, the University has Environmental Sciences as a mandatory subject for Bachelor students and for Masters, students are involved in project based work that encourages sustainability.
30	Is the college having solar, wind, or other forms of renewable energy?	Solar Roof top panels
31	What are the good practices pertaining to Transport?	Shared vehicle practice
32	What is the average number of vehicle movements in terms of two & Four wheelers	One University bus, Four University winger for Teaching and non-teaching staffs and a few personal vehicles. Students live in hostels and commute on foot for class. Outside university students travel via University Bus
33	What are the good practices pertaining to Transport?	Shared Vehicle for commuting. No honking within Campus. Well maintained Parking areas
34	Has the college calculated its carbon footprint	Yes