

GREEN AUDIT REPORT
2021-22
BERHAMPUR UNIVERSITY



INTERNAL QUALITY ASSURANCE CELL (IQAC)
BERHAMPUR UNIVERSITY

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GREEN AUDIT REPORT

Generation of quality human capital being the a central policy for Government of Odisha, and the Govt. has devoted huge amounts of resources towards improving the educational standards of their citizens across the state, and in Particular Southern Odisha. The development of Berhampur University, during last 56 glorious year, is a testimony to that. Modernization and incubation of high end infrastructure structure in academic institutes has increased carbon dioxide emissions and subsequent global warming. Considering the present environmental scenario, University Grants Commission has launched “Green Campus, Clean Campus” mission for all higher educational institutes.. Keeping this into account, the sustainability and sustainable development policies are high on the agenda of Berhampur University. The green audit, therefore, becomes an integral part of academic environmental management and its implementation is crucial in various saspects of the functionalities of Berhampur University.

Green auditing is the process of identifying and determining whether institutions’ practices are eco-friendly and sustainable. It is an effective ecological tool that helps to create a culture of sustainability throughout an organization and is implemented through regular identification, quantification, documenting, reporting and monitoring of environmentally important components. Over the years, green auditing has helped the institute in preserving the rich floral and faunal diversity in and around the campus; garnering interest and creating awareness among the stakeholders.

Green Auditing at Berhampur University

Berhampur University is located in a serene environment near the sea coast of Bay of Bengal. The University is spreading over an area of about 250 acres and it is 12 kilometers and 5 kilometers away from the Berhampur City and Sea-beach of Gopalpur respectively. Due to its location, it is very often targeted by cyclones and super cyclones, causing massive destruction of all kind.

Keeping the Vision and Mission in hand, Berhampur University Green Audit Committee endeavours towards the following objectives:

- a. To identify current and emerging environmental issues and management practices.
- b. To examine the current practices (waste management, green canopy development) that can impact the environment.
- c. To create awareness among the various stakeholders of the University for reduction carbon footprint.

- d. To prepare a Green Audit Report on green practices followed by different Departments, support services and administration.

METHODOLOGY ADOPTED

The methodology adopted to conduct the Green Audit had the following components:

1. Onsite field visits were conducted by the Green Audit Team as and when necessary.
2. Questionnaires were circulated amongst different stakeholders to know about the various components in connection with water use, green campus, carbon footprint and waste disposal, etc.
3. The water quality analysis was done by the Department of Environmental Studies, Berhampur University.
4. GIS tools were used to prepare the map of the campus and its green canopy coverage.
5. Different standard protocols were followed to document and estimate the floral and faunal diversity in the university.

ACTIVITIES OF THE COMMITTEE AND ITS RECOMMENDATIONS

The University green audit committee meets at regular intervals to take the stock of the situation arising out of regular campus activities vis-à-vis natural disasters and also recommends the University authority to take effective steps to make the campus clean and green.

Some important recommendations of green audit committee, which are implemented in the University campus are as follows:

i) **Plantation:** Priority should be given for the maintenance of restoration of greenery in the campus through extensive plantation. The plantation drive was inaugurated by the Hon'ble Governor of Odisha, the Chancellor of Berhampur University. Under the auspices of the NSS Units of the University, steps were taken for planting a large number of trees (3000 plants) in and around the campus in collaboration with the Department of Forest, Government of Odisha. At present, the campus is surrounded by a large number of green plants of various kinds which ensures carbon neutrality. One Herbal Garden containing 108 herbal plants has been developed in the campus which is maintained by the Forest Department, Government of Odisha and the NSS units of the postgraduate Departments. The PG Dept. of Botany have also developed a botanical garden to cater the need of the academic requirement vis-à-vis enhancement of green canopy.

ii) Effort for Carbon Neutrality:

- There is a proposal to make the campus vehicle-free for one day every month to reduce burning of fossil fuels.
- There is a proposal to make the Campus smoke-free.
- Restrictions have been imposed in the use of air conditioners with a view to reducing the greenhouse gases.
- Proposal to plant more trees is in the pipe line with the help of the Department of Forest, Government of Odisha.

iii) Energy Conservation: The University takes cognizance of the current burning issue of energy conservation. The following activities have been initiated to ensure the best use of available energy:

- The classrooms, administrative cabins, labs & libraries have been equipped with sufficient natural ventilation facility and the means of adequate passage sunlight, which warrants the minimum use of electrical equipments.
- 50 number of streetlights and 20 number of Solar-LED has been installed at different places of the University from OREDA, Govt. of Odisha.
- The use of Compact Fluorescent Light (CFL) bulbs, Light Emitting Diode (LED) and less energy consuming electric equipments are in place.
- LCD monitors are used to operate the computers in all the departments, which result in minimum consumption of electricity.
- Recently UGC has sent letter to University for making alternative energy from Solar power to reduce the cost of electricity.



30 Kwp Roof Top Solar Plant (RTSP) installed successfully on the roof of Central Instrumentation centre, BU
120 Unit of Electricity per Day

iv) Water Management:

- Water tank and water pipe leakages in the departments and Hostels are frequently checked to prevent wastage of water.
- In all the departments and hostels, awareness is created among the students for judicious and rational use of water resources.
- Roof-Top Rain water harvesting has been installed at NEW CONFERENCE HALL for gardening, drinking and water recharging purpose. The project has been encouraged by department of water Resources, Govt. of Odisha.

Rain water harvesting Unit



Water Conservation Facilities and Landscapes



v) **Hazardous Waste management:** The University and its departments have an excellent solid waste management system with Green, Yellow and Red dustbins for collecting Solid, Liquid and glass/plastic/ hazardous waste separately. The hazardous chemical wastes generated particularly from science departments are collected periodically and buried in an isolated place far away from the departments. Steps have been taken to create awareness against careless disposal of hazardous wastes, polythene, plastics etc. For above purpose the waste dustbins have been installed at different places of University and wastes are managed with the help of Berhampur Municipality Council.



Recently a waste to compost machine was installed to create compost wealth from the household waste.

Waste to Compost Machine



vi) **E-waste management:** The University administration has nominated a centralized team to look after the obsolete items from the University campus, and supervise their proper disposal. The **e-waste** generated from different departments, centers and offices are collected periodically and are disposed through tender.

Suggested Steps

Green Audit Committee has met several times and discussed on various issues and aspects relating to environmental awareness/problems. Out of the discussion the following suggestions have been recommended.

- i. Installation of more **rain water harvesting system** in each and every building of the University including hostels
- ii. Status of **solar gread system** should be updated and upgraded and additional installations should be made particularly in science departments for Green Alternative Energy.
- iii. An area should be identified for the disposal of **Solid Waste Garbage** inside the campus.
- iv. Necessary steps and efforts should be made by the authority to stop selling of tobacco items inside the campus to make the campus **Tobacco Free and Smoke Free**.
- v. Necessary steps should be taken to make **Polythene/Plastic Free** campus.
- vi. Observation of “**No Vehicle day**” should be followed strictly on Saturday of every week in the campus.
- vii. Formation of Green Club in the name of “**Green Brigade**” consisting of Teachers, Employees, students and scholars of the University.
- viii. **Vehicle pool** system should be introduced to minimize pollution in the campus.
- ix. Sewerage line of all the buildings including hostels should be investigated as well as renovated and measures should be taken for **proper disposal of waste**.
- x. **Massive plantation and proper care of the plants** should be done by NSS/ volunteers of the University.
- xi. Botany Department should maintain the **botanical garden**.
- xii. Implementation of **e-governance** may be adopted by the University for reducing paper waste.
- xiii. **Green park** cum Children’s park should be developed inside the University campus.





Green Campus Initiatives



Landscaping with trees and plan



Prof. Chandrasekhar from IICT Prof Renee gree from France



Dr Asoka Das OSHEC



Prof Chary FROM IISER



Vana Mohotsav by Forest Officer



Ban on use of Plastic



landscape



Green Medical



Health Camp



Use of Bicycles/ Battery powered vehicles



Use of battery powered electric vehicle



Our Green Campus...



Celebrating 56 Years of Academic Journey

ENERGY AUDIT REPORT: 2021-22



Berhampur University, Bhanjabihar, Odisha-76007



Background

Availability and utilization of energy drives the growth of economy and advancement of any country and thus, the demand of energy is increasing day by day. The worldwide mounting energy crisis with galloping cost hike, concern for environmental protection and open market competitive economy possesses serious challenge to Indian University to survive and grow. One of the easier available options for survival is '*Energy Conservation*' thereby saving environment and cost reduction through strategic energy management. It also gives a positive orientation to energy cost reduction, preventive maintenance and quality control programs. This is the translation of conservation ideas into reality by blending techno-economically feasible solutions within a specified time frame. Energy conservation is a worldwide objective. The energy policy of the Government of India calls for conservation of energy. With the enactment of Energy Conservation Act 2001 amongst others has emphasized upon the power of the appropriate Govt. to enforce efficient use of energy and its conservation. This study has mapped power system parameters at the source, Distribution Panels and various equipment's. It has also mapped illumination level at various activity areas in the University, where the team was permitted to enter for the study. The study could identify concerned problem areas, barriers towards maintaining right use of available facilities and come out with cost effective solutions. It also recommends cost effective and fast pay back solutions for performance improvement of all the systems.

Objective of the Study:

The objective of the study is to assess overall efficiency of the various systems and defined specific energy consumption of the public building of Berhampur University and make recommendations about potential energy saving opportunities, based on the observation of energy audit.

- Electrical Structural details
- Use & occupancy of the building
- Energy supply features
- Details of systems/equipment's/appliance etc.
- Quality of power

Methodology for Energy Audit:

Detail energy audit of Berhampur University consists of evaluation of the present trend of energy consumption. Energy Audit activities, in general, includes following.

- a) The activity starts with collection of basic information and general overview of the Berhampur University.
- b) Berhampur University was requested to provide the electricity bills for last 3 years.
- c) At incomer panel, locating all energy sources coming into a facility.
- d) Identification of energy streams.
- e) Quantification of energy streams into discrete functions (system/ equipment's/ appliances etc.)
- f) Identification of energy and cost savings opportunities.
- g) Establish measurement and verification protocol i.e., objective measurement through meters by identifying measurement points.
- h) Required data collection, field measurements and analysis of data, etc.

The Deliverables are a report consisting of following:

- a) Performance of major energy consuming equipments
- b) Energy saving measures recommendation.
- c) The financial calculation for the investment involved and the return on investment.
- d) Evaluate the use and occupancy of the building and the condition of the building and building systems equipment.

Steps have been taken by Berhampur University for energy audit. The audit team comprising of following members are reporting and creating awareness among the employees and stakeholder of Berhampur University from time to time.

- 1. Professor Ganesh Sethi**
- 2. Dr. P. K Dixit**
- 3. Dr. Bandita Panda**
- 4. Dr. Mrutyunjoy Jena**
- 5. Er. Utpal Acharya, Electrical JEE.**

Summary of recommendations for performance enhancement and energy cost reduction of Berhampur University are:

1. Replacement of Old Tube Lights with LED Bulbs
2. Saving on replacement of Old Fans in BLDC fans

3. Installation of Solar Power generation system (Wheeling of Grid)
4. Installation of Motion Sensor/Occupancy Sensor
5. Awareness for no vehicle day inside the campus
6. The use of Compact Fluorescent Light (CFL) bulbs, Light Emitting Diode (LED) and less energy consuming electric equipments are in place.
7. LED monitors are used to operate the computers in all the departments, which result in minimum consumption of electricity.
8. The classrooms, administrative cabins, labs and libraries have been designed with
9. Sufficient natural ventilation facility with the means of adequate passage of sunlight, which warrants the minimum use of electrical equipments.
10. Provision of open Sun Light in Hostel room
11. Provision of Solar Light in Hostel
12. Provision of open Sun Light in academic and administrative building
13. Provision of Solar Light in Hostel academic and administrative building
14. Timer based street light control panels were installed.
15. Use of Air conditioner with not below 24 °C restrictions.



Use of Air conditioner with not below 24 °C restrictions



- University has 72 Solar Energy Street Lamps, which lights the campus through out the night.
(Project Cost: Rs 30.75 Lakh)



.University has 20 LED High max Street Lamps, which lights the campus through out the night.



30 Kwa Roof Top Solar Plant (RTSP) installed successfully on the roof of Central Instrumentation centre, Berhampur University, 120 Unit of Electricity per Day. The Odisha Renewable Energy Development Agency (OREDA) (Project Cosrt 17.5 lakh)



Use of Bicycles/ Battery powered vehicles

Critical Comment:

- a) Main incomer supply panel must be located in a separate area/ room with appropriate ventilation and warning symbol.
- b) The University Campus requires to install fire extinguisher at the premises.
- c) The power availability in the University building is fairly regular with hardly any power cuts. Thus, the DG set is seldom used, no record is maintained for power generation to DG set, the Log Book maintains only show the Diesel consumption record. Use the separate sub meter to record output of the DG set and maintain the power generation in Log Book.
- d) Isolation switches to cut-off the supply at the main input panel and each of the rooms (staff room, per floor wise all class room, per floor wise corridor etc.) for switching off electrical supply.
- e) Regular earth testing is not carried out. Which is required to insured safety of the electrical circuits and use of the appliances.
- f) Water Tank Overflow Alarm Wired Sensor Security System is required for all water supply tank.
- g) In University campus switch off the light & fan in all washroom, when not in use; occupancy sensors may be installed.

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25/03/23
Professor Ganesh Sethi

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25/03/2023
Dr. P. K Dixit

Bandita Panda
25/03/23
Dr. Bandita Panda

M
25/03/2023
Dr. Mrutyunjay Jena

U
25/03/2023
Er. Utpal Acharya
(Electrical JEE)

ENVIRONMENTAL AUDIT REPORT

2021-22

BERHAMPUR UNIVERSITY



INTERNAL QUALITY ASSURANCE CELL (IQAC)

BERHAMPUR UNIVERSITY

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Team Members of Environmental Audit Committee

Dr B. Anjan Kumar Prusty, P.G. Department of Environmental Studies (Convener)

Dr Rachna Panda, P.G. Department of Environmental Studies

Dr Manoj Kumar Panda, P.G. Department of Biotechnology

Dr Biswaranjan Meher, P.G. Department of Botany

Er Sarojini Kar, Junior Engineer, PHD



Handwritten signatures of the team members in blue ink, including 'Manoh', 'Prusty', 'Panda', and 'Rachna'.

ENVIRONMENTAL AUDIT REPORT

An audit an evaluation of a person, organization, system, process, enterprise, project or product. It is performed to ascertain the validity and reliability of information; also, to provide an assessment of a system's internal control. Being a higher educational institution, Berhampur University considers it as an obligation at its part to undertake internal audits to ascertain that it's functioning are in line with its mission, goal and policy with a participatory approach. Thus, BU periodically reviews the status and performances of different sections and/or units. The environmental status and performances are an integral part of such assessments and reviews.

An Environmental Audit is essentially a management tool comprising a systematic, documented, periodic and objective evaluation of the performance of the organization, management system and processes designed to protect the environment. It aims at:

- i. facilitating management control of practices which may have an impact on the environment,
- ii. assessing the compliance with the University Policies, and
- iii. systematic examination of the interaction between University's activities and its surrounding.

This includes all emissions to air, land and water; the effects on natural resources, the neighbouring community, landscape and ecology; and the stakeholder's perception of the activities carried out in the University and beyond. It also envisages examining the potential impacts of University's activities and associated risks.

Environmental Audit reflects various types of evaluations intended to identify environmental compliance of the different stakeholder, implementation of existing gaps, along with related corrective actions. Environmental Audit was founded in 1990s as a mechanism of environmental assessment and compliance of activities and/or performances.

Types of Environmental Audit

Owing to the broad areas/aspects to be covered, environmental audits are generally of following eight types:

- i. compliance audit - the most common type of audit consisting of checks against environmental legislation and company policy;
- ii. issues audit - an evaluation of how an organization's activities relate to an environmental issue or (e.g., global pollution, energy use) or an evaluation of a specific issue (e.g., buildings, supplies);
- iii. health and safety audit - an assessment of risks and contingency planning (sometimes merged with environmental auditing because of the interconnected impacts of industrial processes and hazards);
- iv. site audit - an audit of a particular site to examine actual or potential environmental problems;

- v. corporate audit - an audit of the whole organization and its policies, structures, procedures and practices;
- vi. due diligence audit - an assessment of potential environmental and financial risks and liabilities carried out before a company's merger or site acquisition or divestiture (e.g., contaminated land remediation costs);
- vii. activity or operational audit - an assessment of activities that may cross organization's departments or units (e.g., energy or waste management) and
- viii. product or life cycle audit - an analysis of environmental impacts of a product throughout all stages of its design, production, use and disposal, including its reuse and recycling (cradle to grave).

Need Assessment

Environment auditing is the process of identifying and determining whether institution's practices are eco-friendly and sustainable. Traditionally, we are good and efficient users of natural resources. But over the period of time excess use of resources like water become habitual for everyone especially, in common areas. Now, it is necessary to check whether we are handling resources carefully? Environment audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion it is necessary to verify the processes and convert it in to green and clean one. Environment audit provides an approach for it. It also increases overall consciousness among the people working in institution towards an environment.

Benefits of Environmental Auditing

While environmental audits are designed to identify environmental problems, there may be widely differing reasons for undertaking them: compliance with legislation, pressure from suppliers and customers, requirements from insurers or for capital projects, or to demonstrate environmental activities to the public. The benefits of environmental auditing include:

- Ensuring compliance, not only with laws, regulations and standards, but also with the University policies and the requirements of an Environmental Management System (EMS) standard;
- Enabling environmental problems and risks to be anticipated and responses planned;
- To demonstrate that the University is aware of its impact upon the environment through providing feedback;
- Increased awareness amongst stakeholders; and
- More efficient resource use and financial savings.

Environmental Auditing Practices and Procedures

The more specific type of environmental audit involves the collection, collation, analysis, interpretation, and presentation of information which is used to:

- assess performance against a set of requirements or targets, related to specific issues;
- evaluate compliance with environmental legislation and corporate policies; and
- measure performance against the requirements of an environmental management system standard.

One of the best practices, which is often considered as a prerequisite to environmental auditing is to develop/frame Environmental Policy of the University. The itemized details are described as under:

Goals Of Environment Audit

The University has conducts environment audits on annual basis with specific goals which are as under:

- i. Identification and documentation of environment practices followed by the University.
- ii. Identification of strengths and weaknesses in environment practices.
- iii. Analysis of the identified problems and suggested solutions.
- iv. Assessment of the facilities for different types of waste management.
- v. Increase in environmental awareness throughout the campus
- vi. Identification and assessment of environmental risks.
- vii. Motivation of staff for optimizing the sustainable utilization of available resources.
- viii. The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issue before they become problem.

Environmental Auditing at Berhampur University

Berhampur University, a state-run Public University, was established on 2nd January 1967 by the Odisha Act 21 of 1966 as an affiliating University. With a geographical area of around 250 acres, the Berhampur University campus (19°18'01" – 19°17'24" N and 84°52'48" – 84°52'12" E) at Rangeilunda, Berhampur is bestowed with mosaic habitats, viz., inland water bodies, freshwater marshes, agricultural lands, plantation area, grassland, open field, moderate forest patches, and human habitations and road networks. The University campus is around 05 km from the Gopalpur-on-Sea, and due to its proximity to the coast, the University campus is often hit by tropical cyclones and super cyclones, causing massive destruction of all kind. The university campus is represented by abundant natural resources, especially its inland water bodies, woodlands, and *Casuarina* patches. There are around eight water bodies present in and around the university campus. An airstrip namely Rangeilunda Airstrip is an open field with small herbs, shrubs and fewer trees. The University campus is represented by its rich flora and fauna. More than 100 species of birds seen in the Campus add to the rich faunal resources of the campus. The woodlands and shrub patches of the University have been known to be an abode for around 50 Spotted deer (*Axes axes*), popularly known as deer park (with an area of 2.61 acres). However, last year the deer park was closed down by the state forest department,

and the deers (antelopes) were translocated to Lakhari Valley Wildlife Sanctuary (LVWS) in the Gajapati district in Odisha. Further, flying fox roosting colonies in the woodland patches of the campus have been the most sought-after sites for animal lovers in the campus.

The University has an environmental audit committee which provides feedback to the University administration in the matters environmental management in the University Campus. Thus, as mentioned in the earlier sections, the University Environmental Policy (UEP) was framed during the current assessment year, and brief of the same is given below:

University Environmental Policy: Berhampur University framed the “University Environment Policy (UEP) 2022” (Annexure-I). It is a document that provides a base to develop strategies and action plans for sustainable management of the natural resource base of the University Campus, seeks to extend the coverage, and fill in existing gaps, in light of present knowledge and accumulated experience. It does not displace, but builds on the earlier plans and programs, if any, and is essentially an inclusive document to be referred by all potential stakeholders. The UEP is a response to our national commitment to a clean environment, mandated in the Constitution in Articles 48 A and 51 A (g), strengthened by judicial interpretation of Article 21. A glimpse of the UEP is as under:

- Motto: **Sustainable utilization, Management and Conservation of natural resources** in the Campus.
- Basis: **Sound Ecological Approach and Principles of Inclusivity**
- **Directive strategies and action plans** for natural resource management
- **Tapping the resources and potentials:**
 - Vast area for **groundwater recharge**
 - Availability of big buildings for **rainwater harvesting** and **rooftop solar panels**
 - Availability of **intellectual pool** and **technical know-how** for waste management
 - Solid waste (through eco-friendly techniques, e.g., **vermicomposting**)
 - Liquid waste management
 - Popularization of Natural Resources and Biodiversity Heritage of the campus: **Extension and Outreach activities; Environmental Education**

Some important milestones were proposed and/or achieved by the University in matters of Environmental Management and Safeguarding. Thus, in line with the action plan as articulated in the UEP, the following activities were undertaken and/or envisaged to be carried out:

- 1) **Plantation:** After the lush green campus of Berhampur University witnessed wide-spread devastation caused by earlier episodic cyclonic events, priority has been given

Manish *Pranav* *Rajon* *Rohit*

to restoration of greenery in the campus through extensive plantation. Under the auspices of the NSS Units of the University, steps were taken for planting a large number of trees in and around the campus in collaboration with the Department of Forest, Government of Odisha. At present, the campus is surrounded by a large number of green plants of various kinds which ensures carbon neutrality. One Herbal Garden containing 108 herbal plants has been developed in the campus which is maintained by the Forest Department, Government of Odisha and the NSS units of the postgraduate Departments.

2) **Initiatives for Carbon Neutrality:**

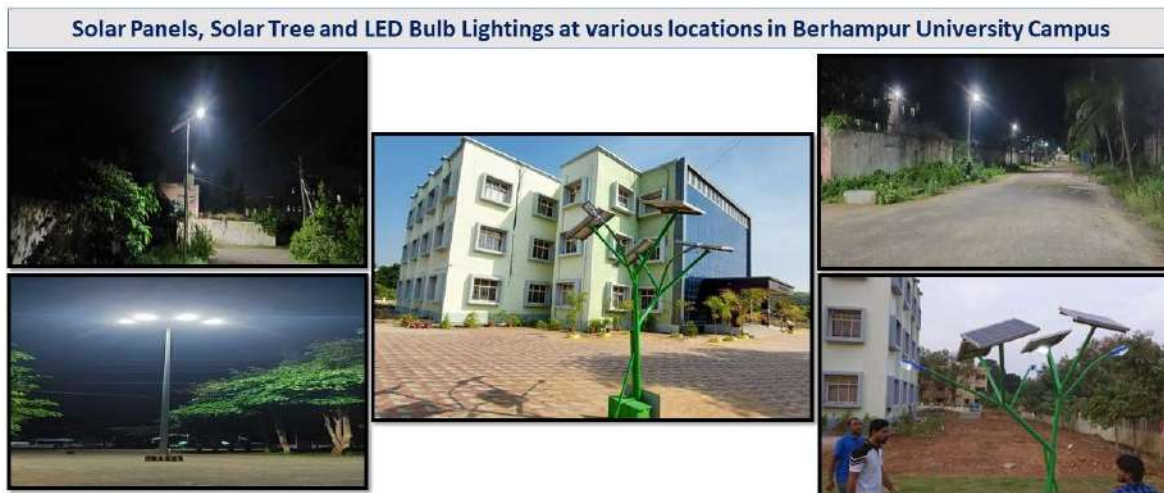
In line with the India's Nationally Determined Emissions Reduction policy, the University also initiated its plans for emission reduction and carbon sequestration, for which the following action plans were envisaged:

- To make the campus vehicle-free for one day every month to reduce burning of fossil fuels.
- To make the Campus smoke-free.
- To impose restrictions on the use of air conditioners aiming at emission (of greenhouse gases) reductions
- To intensify plantation activities for facilitating more Carbon sequestration.

3) **Energy Conservation:** The University takes note of the global calls for environmental sustainability, wherein energy conservation has been an integral part. The following activities have been initiated to ensure the best use of available energy:

- The classrooms, administrative cabins, labs & libraries have been equipped with sufficient natural ventilation facility and the means of adequate passage sunlight, which warrants the minimum use of electrical equipment.
- The street lights of the campus have been converted to Solar powered with support of Odisha Renewable Energy Development Agency (OREDA), Govt. of Odisha.
- The CFL lamps/lights in all the old buildings have been replaced by LED lights.
- The conventional computer monitors were replaced with LCD monitors in all the departments, thereby resulting in reduced energy consumption.
- As a step towards self-determined actions for GHG emission reduction and energy consumption, following steps were undertaken:
 - 72 Solar Energy Street Lamps were installed, which lights the campus throughout the night (**Project Cost: Rs 30.75 Lakh**)
 - Sensor-based Street Lights and Use of LED bulbs/power efficient equipment were installed to save energy.

- Installation of Roof-top Solar Plant with the help of OREDA has been finalized and installations under progress (**Project Cost: Rs 30.88 Lakh**)



iv) Water Management:

One of the basic and foremost steps towards water conservation is to reduce the wastage of water, and accordingly several rounds of sensitization meetings were held amongst the stakeholders of the University. According,

- Water tank and water pipe leakages in the departments and hostels were frequently checked to prevent wastage of water.
- In all the departments and hostels, awareness is created among the students for judicious and rational use of water resources.
- Initially, a Roof-Top Rain water harvesting system was installed at the NEW CONFERENCE HALL for gardening, drinking and water recharging purpose. The project has been encouraged by department of water Resources, Govt. of Odisha. Based on the encouraging results, later-on similar systems were installed at various other buildings in the University.



M. Manoh *Prady* *Sajon* *Alkanda*

Further, to facilitate various other modes of water management, several initiatives were undertaken, e.g., renovation of existing open-wells, rejuvenation of existing waterbodies inside the University campus, construction of tanks and bunds. A glimpse of the same is presented as below:



v) **Waste management:** The University has clear-cut mechanism for segregation of waste at source is promoted by the University through adequate representation of female teaching, non-teaching and students in all Committees. The University has an excellent solid waste management system with Green, Red and Yellow Colour Dustbins for collecting solid, liquid and glass/plastic waste. The hazardous chemical wastes generated particularly from science departments are collected periodically and buried in an isolated place far away from the departments. Steps have been taken to create awareness against careless disposal of hazardous wastes, polythene, plastics etc. For above purpose the waste dustbins have been installed at

different places of the University and wastes are managed with the help of Berhampur Municipality Council.



Further, to accelerate the biodegradable solid waste management, Vermicomposting Unit and an Organic Waste Converter were installed.



Vermicomposting Unit-I (inside Ladies Hostel Complex)



Installation of Organic Waste Converter

vi) **E-waste management:** Being a Higher Educational Institution, the University generates a sizeable quantity of electronic waste annually. Thus, the administration has nominated a centralized team to look after the obsolete items from the University campus, colleges and supervise their proper disposal. The **e-waste** generated from different departments, centres and offices are collected periodically and are disposed off appropriately. However, based on the concept of waste-to-wealth, it is planned to sign a Memorandum of Understanding (MoU) with the Government Industrial Training Institute (ITI), Berhampur for disposal of the e-waste, so that the ITI team can make appropriate recovery of materials as appropriate.

vi) **Youth Involvement for Environmental Issues:** The University facilitates an enabling environment wherein the youth, particularly the students participate and deliberate on various issues pertaining to environmental protection. During the assessment year **five students** (being the finalists from the eastern zone) of the University participated in the National Environmental Youth Parliament (NEYP) – 2022 held in Sansad Bhawan, New Delhi.

Manoh *Pranj* *Rajon* *Rande*



Further, students of the University have also undertaken beach cleaning activity at Gopalpur beach.

Suggested Steps

The Environmental Audit Committee has deliberated on various issues and aspects relating to environmental awareness/problems. Accordingly, the followings have been suggested:

- i. Installation of more **rain water harvesting system** in each and every building of the University including hostels
- ii. Status of **solar greeed system** should be updated and upgraded and additional installations should be made particularly in science departments for Green Alternative Energy.
- iii. Authority shall take necessary steps to supply **Community Dustbin**, which will be installed in each Department, Administrative block, Hostels, Guest House, Library, Market place and selected sites in the campus.
- iv. An area should be identified for the disposal of **Solid Waste dumping** inside the campus, and further segregation.
- v. Necessary steps and efforts should be made by the authority to stop selling of tobacco items inside the campus to make the campus **Tobacco Free and Smoke Free**.
- vi. Necessary steps should be taken to make **Polythene/Plastic Free** campus.
- vii. Observation of “**No Vehicle Day**” should be followed on every Saturday inside the campus.
- viii. Formation of Green Club in the name of “**Green Brigade**” consisting of Teachers, Employees, students and scholars of the University.
- ix. **Vehicle pool** system should be introduced to minimize pollution in the campus.
- x. Sewerage line of all the buildings including hostels should be investigated as well as renovated and measures should be taken for **proper disposal of waste**.

- xi. **Massive plantation and proper care of the plants** should be done by NSS/ volunteers of the University.
- xii. Implementation of **e-governance** may be adopted by the University for reducing paper waste.
- xiii. **Energy, water and waste auditing** should be undertaken on regular basis.
- xiv. **Observation of environmental days** should be intensified to create increased awareness among the stakeholders.

UNIVERSITY ENVIRONMENT POLICY 2022

Department of Environmental Studies



BERHAMPUR UNIVERSITY
Bhanja Bihar – 760007
Odisha, India

UNIVERSITY ENVIRONMENT POLICY 2022

A document that emphasizes sustainable utilization, management, conservation, and prevention of degradation of natural resources based on a sound ecological approach and principles of inclusivity.

Department of Environmental Studies



BERHAMPUR UNIVERSITY
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1. About the Policy Document

1.1. Background

The conceptualization of University Environment Policy (UEP) is based on the creation of the Department of Environment Studies (DES) at Berhampur University (BU). The history of the DES goes back to 2018 when its earlier avatar – the Department of Natural Resources Management and Geoinformatics (NRMG) was established in the erstwhile Khallikote University, Berhampur. Initially, the department had an interdisciplinary focus offering Master's (M.A./M.Sc.) and Ph.D. degrees at Khallikote University. After the amalgamation of Khallikote University with Berhampur University (BU), a major academic restructuring exercise was carried out, and in Berhampur University while maintaining the interdisciplinary nature, the present Department of Environment Studies was created in the year 2021. Presently, this is the only University in the state which offers Post Graduate and Doctorate degrees in the subject of Environment Studies. The genesis for such a department was to produce quality manpower in the field of Environment and Sustainability both through teaching and R&D activities, to meet the aspirations of the state as well as the country. In addition to imparting quality education, the Department initiated proactive steps to draft a policy document that will be the guiding force for the management and conservation of the natural resource base of BU Campus.

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1.3. About the University

Berhampur University, a state-run Public University, was established on 2nd January 1967 by the Odisha Act 21 of 1966 as an affiliating University. With a geographical area of around 250 acres, the Berhampur University campus (19°18'01" – 19°17'24" N and 84°52'48" – 84°52'12" E) at Rangeilunda, Berhampur is bestowed with mosaic habitats, viz., inland water bodies, freshwater marshes, agricultural lands, plantation area, grassland, open field, moderate forest patches, and human habitations and road networks. The university campus is represented by abundant natural resources, especially its inland water bodies, woodlands, and *Casuarina* patches. There are around eight water bodies present in and around the university campus. An airstrip namely Rangeilunda Airstrip is an open field with small herbs, shrubs and fewer trees. The University campus is represented by its rich flora and fauna. More than 100 species of birds seen in the Campus add to the rich faunal resources of the campus. The woodlands and shrub patches of the University have been known to be an abode for around 50 Spotted deer (*Axes axes*), popularly known as deer park (with an area of 2.61 acres). However, last year the deer park was closed down by the state forest department, and the deers (antelopes) were translocated to Lakhari Valley Wildlife Sanctuary (LVWS) in the Gajapati district in Odisha. Further, flying fox roosting colonies in the woodland patches of the campus have been the most sought-after sites for animal lovers in the campus.

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The University Environment Policy (UEP) 2022 is a document that provides a base to develop strategies and action plans for sustainable management of natural resource base of the University Campus, seeks to extend the coverage, and fill in existing gaps, in light of present knowledge and accumulated experience. It does not displace, but builds on the earlier plans and programmes, if any, and essentially an inclusive document to be referred by all potential stakeholders.

1.4. Preamble

A vibrant University Campus, such as that of BU provides numerous challenges in the management of natural resources and making the campus self-reliant in many aspects, w.r.t. utilization of natural resources. Presently, more than half a dozen of national policies is available providing operational guidelines for the management of natural resources of the country as a whole, viz., National Forest Policy, 1988; National Conservation Strategy and Policy Statement on Environment and Development, 1992; Policy Statement on Abatement of Pollution, 1992; National Agriculture Policy, 2000; National Water Policy, 2002; National Environment Policy, 2006. Being guided by such policy documents and in sync with Sustainable Development Goals, and various national missions/targets, the Department of Environment Studies strives to prepare the University Environment Policy (UEP) – 2022, which can be a guiding document to develop strategies for sustainable management of natural resources, facilitate a reduction on the dependence on non-renewable energy resources, and waste management with a focus on resource recovery. Thus, the University Environment Policy (UEP) 2022 is a document that provides a base to develop strategies and action plans for sustainable management of the natural resource base of the University Campus, seeks to extend the coverage, and fill in existing gaps, in light of present knowledge and accumulated experience. It does not displace, but builds on the earlier plans and programs, if any, and is essentially an inclusive document to be referred by all potential stakeholders.

The UEP is a response to our national commitment to a clean environment, mandated in the Constitution in Articles 48 A and 51 A (g), strengthened by judicial interpretation of Article 21. In the Directive Principles of State Policy, Article 48A says "the state shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country"; and Article 51-A states that "it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures". Thus, it is recognized that maintaining a healthy environment is not the state's responsibility alone, but also that of every citizen. The University Campuses can be microcosms for such participatory approaches to natural resources management and conservation. Thus, a spirit of partnership should be realized throughout the spectrum of environmental management in the university campus. While the

University administration must galvanize its efforts, it should also be recognized by each individual/stakeholder, of its responsibility towards maintaining and enhancing the quality of the environment in the University.

1.5. Principles

The UEP – 2022 is governed by certain principles that emphasize the

- Role of stakeholders in the sustainable development processes of BU campus
- The non-negotiability and incomparable value of environmental resources in the campus
- Potential of renewable and perpetual resources to augment campus functioning
- Right to sustainable development for all stakeholders
- Equity in the use of environmental resources and
- The need for a decentralized and multisectoral approach in dealing with environmental issues.

1.6. Objectives

The UEP – 2022 provides guiding principles to accomplish the following objectives:

- Conservation of critical environmental resources in the campus and beyond
- Intra-generational equity
- Integration of environmental concerns in economic and social development (reduction of pressure on BU's financial resources)
- Efficiency in environmental resource use
- Environmental governance
- Enhancement of resources for environmental conservation
- Promoting Environmental Education

2. Key Environmental Issues, Challenges and Potentials

With 250 acres of area, the BU campus has its share of issues, challenges and opportunities w.r.t. natural resources and the potential to tap them. The major prevailing issues and challenges in the BU campus are:

- Conservation of water resources
- Tapping of various renewable and perpetual resources
- Waste management (solid and liquid waste)

- Lack of interest among stakeholders in realizing the natural resource potential of the campus
- Ever increasing financial burden to meet the energy demands of this vibrant university

Thus, to address these issues and challenges, the existing potential to tap the natural resources must be realized which will facilitate in reduction of the financial burden and environmental costs of functioning of this University. Some of the relevant points are enumerated as under:

- Vast area (open/forested) available to facilitate groundwater recharge
- Availability of many big buildings (administrative and academic blocks) for
 - Structured rainwater harvesting
 - Installation of rooftop solar panels
- Availability of intellectual pool and technical know-how for management of
 - Solid waste (through eco-friendly techniques, e.g., vermicomposting)
 - Liquid waste management (availability of low-lying area for a constructed treatment wetland system designed for biofiltration and treatment of liquid waste)

3. Strategy and Action Plan

Having realized the issues and challenges, and the available potential for management of environmental resources base and potential for sustainable development, the following strategies are developed:

- Rainwater Harvesting System:** With an annual rainfall of around 1400 mm, the buildings on the BU campus provide sufficient space to install rainwater harvesting systems. The structured and organized rainwater harvesting systems may be installed in a phased manner covering all the buildings of the university campus. This may be achieved in the next 05 years with the following (tentative) plan:
 - Phase-I: Administrative Building & 1-2 Academic Blocks
 - Phase-II: All the departments/academic blocks
 - Phase-III: All the hostels & residential blocks
- Roof Top Solar Panel:** Presently, the BU campus has a huge administration building, more than 20 academic buildings, nearly 17 hostels, and several staff quarters (residential buildings). Thus, the roof area available from these buildings would be adequate to install roof-top solar panels, which may help in making the University Campus self-reliant w.r.t. energy demands and consumption. Thus, roof-top solar panels can be installed appropriately. The available schemes and subsidies of different line departments of the Government of Odisha and the Government of India may be

availed in this endeavour. The proposed plan can be executed in a phased manner in the next 05 years:

- Phase-I: Administrative Building & 1-2 Academic Blocks
- Phase-II: 50% of the departments/academic blocks
- Phase-III: Rest 50% of the departments/academic blocks
- Phase-IV: All the hostels
- Phase-V: All the residential blocks

iii. **Waste Management:** A functional and vibrant university campus will end up generating waste (solid and liquid) from its daily and routine activities. Thus, necessary plans are to be developed for the management of both solid and liquid waste. Some of the proposed strategies are as under:

- **Solid Waste Management:** This will include the followings:
 - segregation of waste at source into biodegradable and non-biodegradable categories (in separate bins at respective offices and other locations)
 - Coordination with the Municipal authorities for the collection of non-biodegradable waste for further treatment and processing
 - Organized collection of biodegradable waste by BU assigned team for relevant treatment methods. Owing to the type of biodegradable waste in the camps (e.g., food waste, flowers), Vermi-technology can be a potential option.
 - **Vermi-technology:** Vermi-composting units may be established for the treatment of biodegradable waste, and conversion to organic manure on the campus. For the ease of scaling-up and replication, and to address the operational challenges, it is planned to be developed in a phased manner:
 - Phase-I: A captive vermicomposting unit in girls' hostel premises
 - Phase-II: Replication in Boys' hostel premises
 - Phase-III: Further scaling up to include all the residential blocks, and office complex.

The Department of Environment Studies can provide the technical-knowhow and all the necessary intellectual support in the functioning and management of such units, with necessary financial and human resource support from BU authorities.

- **Liquid Waste Management:** Owing to the large volume of wastewater that is generated from various buildings, an appropriate level of treatment must be

offered to the wastewater before its release into the municipal sewerage system. Thus, the following action plan is developed:

- **Segregation of waste collection:** Being a University campus, most of the wastewater that is generated from various buildings will be a largely organic waste. However, owing to functional laboratories in different science department buildings, chemical waste is also generated. Thus, it is essential that for those departments, a separate wastewater collection system has to be developed without mixing them with routine wastewater (generated from canteen, office, washrooms, etc.).
- **Disposal of unused chemicals and reagents:** BU can register with accredited agencies dealing with hazardous waste collection and treatment. The said agency can periodically come to the BU campus and collect the hazardous waste (unused chemicals and chemical waste) from the Science departments, for their further treatment and safe disposal. This will help in reducing surface and groundwater contamination in the area.
- **Constructed Wetland System:** Since the wastewater generated from the campus will have high organic loading and nutrients, the necessary system can be developed for offering a certain degree of treatment (preliminary, primary and secondary). Although engineering treatment methods prove useful, a well-developed ecological engineering method can be sustainable, environment friendly and cost-effective. Thus, a constructed treatment wetland system can be developed on the campus, which can offer biological treatment and biofiltration systems to the wastewater released from the campus. However, appropriate preliminary treatment is to be offered to the wastewater (bar screens) to remove large solids, and suspended and floatable substances, before their release into the treatment wetland system.

The Department of Environment Studies can provide the technical-knowhow and all the necessary intellectual support in the functioning and management of such units, with necessary financial and human resource support from BU authorities. However, for some of the specific issues, in the initial stage, external collaboration may be required.

- iv. **Environmental Education:** The success of all the aforementioned plans depends solely on the perception, attitude, practice, and acceptability of all the stakeholders in the


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BU Campus. Thus, periodic extension, outreach and education programs need to be organized, to ensure all-round involvement of all the stakeholders in the University.

proposed endeavors. Efforts have to be made to induce the element of acceptability in the stakeholders.

The above-mentioned strategic plans, if implemented by letter and spirit, can facilitate the BU campus to become and green campus and make it self-reliant on energy utilization.


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