Environment and Energy Policy

Harcourt Butler Technical University, Kanpur

Kanpur

1. Summary

This document outlines the university's environment and energy policy. HBTU is committed to conservation of environment in a sustainable manner and reducing the carbon footprint in its campus. This policy outlines the university's objectives and targets for environmental conservation and pollution reduction, energy efficiency and the use of renewable energy and outlines the steps, the university is taking to meet these goals.

2. Policy Statement

The university is committed to managing energy and the environment in both, the east and west campuses of the university in an eco-friendly, cost-effective and timely manner. The university shall comply with the guidelines prescribed by the state of Uttar Pradesh (UP), Kanpur Nagar Nigam (KNN), UP State pollution control board and the ministry of energy issued from time to time.

3. Scope

This policy applies to all facilities, operations, and activities, including teaching, research, administration, residences, hostel inmates, and other student activities in the university. All university employees, students, contractual workers, and visitors are expected to comply with this policy.

4. Introduction

The goal of this policy is to demonstrate the university's commitment to implementing and delivering the best environment (air, water and land) and energy conservation and management strategies, as well as to ensure that energy and environmental aspects within the university are managed effectively and in conformance with the statutory guidelines prescribed by the regulatory bodies. The policy emphasizes the significance of taking into account the impacts on the environment and energy while making any decisions on the procurements and construction or renovation of facilities, which leads to degradation of the environment (air, water and land) or larger consumption of energy resources (in terms of fuels, power etc). The policy's main goals are to maintain livable and clean environment in a sustainable manner and improving the energy efficiency by reducing the adverse effect of energy usage in the HBTU East and West campuses.

5. Policy targets

Specifically, the university targets that by the year 2025,

a) the University shall safely treat and dispose off all the solid and liquid waste generated in both campuses of the university.
b) shall stop the use of plastics on the campus and substitute by biodegradable materials,
c) ban on the use/sale of plastic bottled water on campus
d) recovery of useful components/products from e-waste generated in the university and ensure proper disposal of e-waste.
e) treat the household/institutional wastewater produced in a small capacity wastewater plant before discharging into the public sewers, using the treated effluent for horticulture and effective electronic waste management
f) deploy solar panels as a source of clean and alternative source of energy for all hostels and office buildings

g) implement biogas generation
h) adopt electric vehicle transportation between the two campuses of the university.

6. Roles and Responsibilities

For effective implementation of the university's "Environment and Energy Policy", the roles and responsibilities of various stakeholders shall be as under:

a) Nodal officer, Environment and Energy Policy

A nominee of the Vice-Chancellor or the Pro-Vice Chancellor shall be the Nodal Officer. He/she shall have the overall responsibility to ensure the compliance of the environment and energy policy. He/she shall have to coordinate all the related activities and ensure the installation, execution and operation of infrastructure and logistics support for environmental conservation/pollution remediation and enhancing the energy efficiency by adopting the use of non-renewable energy sources in various energy generation facilities in the university.

b) ***Heads of Departments*** shall be responsible for ensuring,

i) Collection and segregation of papers, plastic, card boards, laboratory waste, hazardous waste in their respective departments.
ii) Segregation, safe storage and disposal of hazardous waste in accordance with relevant legislation in their respective department.
iii) Identification of competent/trained personal to implement the arrangements for management of hazardous waste.
iv) All wastewater infrastructure (toilets, urinals, sinks in laboratories etc) and other related appurtenances in their respective departments are in working condition so as to ensure smooth flow of sewage/wastewater to the sewers.
v) Lights, fans, and air conditioners and lab instruments in conference rooms, labs, offices are switched off when they are not in use.
vi) Procurement of laboratory equipment and devices that have good energy star ratings.
vii) Ensuring efficient functioning of the environmental and energy conservation devices installed in the department and reporting deficiency, if any to the Nodal officer.

c) Class Representative and Students of the class

The Class Representative shall be responsible for ensuring the cleanliness of the class rooms, laboratories, corridors, amenities and hostels and advise all students not to through papers, litter, plastic and other waste. He/she shall also be responsible for switching off fans, lights and ACs in the classrooms and labs after the classes are over. In case of any issue related to housekeeping or faults in lights or fans or lab equipment, they shall report immediately to their respective Heads of the department or directly to the concerned staff in the department.

d) Students

All students of the university shall ensure cleanliness of their respective classrooms, laboratories, streets, corridors, amenities and hostels in the campuses. They shall also be responsible for switching off fans and lights in

classrooms and labs after the classes are over. In case of any issue related to housekeeping or faults in lights or fans or lab equipment, they shall report immediately to the Class Representative or the Warden or directly to the concerned staff in the department/hostel.

e) Dean of Student Welfare (DSW)

The DSW shall ensure and coordinate the cleanliness of all the hostels and compliance of this policy through the respective hostel wardens.

f) Hostel Wardens

i) The wardens shall ensure the cleanliness of all the hostels and compliance of this policy.

ii) They shall ensure that all treatment/disposal arrangements installed in their respective hostels are operational all the time.

iii) They shall ensure that all the wastewater infrastructure (toilets, urinals, sinks in laboratories etc) and appurtenances in their respective hostels are in working condition so as to ensure smooth flow of sewage/wastewater to the sewers.

iv) They shall ensure and encourage the use of energy-efficient compact fluorescent lamps (CFLs) and light-emitting diode (LED) bulbs in their respective hostels.

v) They shall ensure solar water heating system in their respective hostels is operational and used for hostel bathrooms and other purposes.

vi) They shall ensure fans and lights are switched off when not in use.

g) Professor In charge, Civil Maintenance

He/she shall be responsible for arranging and implementing all possible infrastructure and logistics needed for ensuring full compliance of the policy. This infrastructure/includes procurement/purchase of bins, brooms, wipers/moppers, phenyl/disinfectant, vehicle/trolley to transport the waste (in both campuses), workers, compost plant, solar panels, landfill, safety of workers and liaisoning with the vendors/contractors/Kanpur Nagar Nigam etc. He/she shall also be responsible for arranging O&M/AMC of all waste collection/transport and disposal infrastructure and the transport of waste to the biogas generation plant.

h) Head, Mechanical Engineering

He/she shall ensure the arrangements for installing the waste to energy plant- in form of biogas/compost plant, incinerator, boilers etc including the requisite designs of the same in accordance with the environmental and energy legislations.

i) Head, Electrical Engineering

He/she shall ensure installation and operation of solar panels in the university premises. He/she shall also ensure that the energy audit is conducted at regular interval.

j) Head, Computer Science and Engineering

He/she shall ensure identification, collection, segregation, reuse and safe disposal of e-waste generated in the university.

k) Head, Civil Engineering

He/she shall ensure the coordination of safe disposal of wastewater, solid waste (including plastics, paper, card board etc) generated in the university including the requisite designs in line with the environmental legislation.

l) Head, Chemical Engineering Department

He/she shall ensure the coordination of the safe disposal of hazardous waste generated in the university in line with environmental legislation. He/she shall also assist the Head, Mechanical Engineering in ensuring that the arrangements for installing the waste to energy plant- in form of a biogas/compost plant, incinerator, boilers etc including the requisite designs of the same in accordance with the environmental and energy legislations are in place.

Lastly, all the university employees, students, contractors, and visitors are responsible for following this policy for promoting a sustainable and environmentally responsible culture. The university management shall be responsible for ensuring the policy is effectively implemented and regularly reviewed.

7. Operational methodology

7.1 Environmental aspects

These aspects can be covered for solid waste, liquid waste and air pollution. These are discussed herein.

a) Solid waste

This can be categorized into collection, segregation, transport, and disposal.

Primary Collection

The university shall,

a) ensure source segregation of waste, to channelize the waste to wealth by recovery, reuse and recycle. This shall be done at the level of each academic department, laboratories, hostels, administrative block, main building, canteen, hostel mess etc.

b) ensure three coloured bin system (for Green Waste, Dry Waste, Hazardous Waste).

c) make arrangement for door-to-door collection of segregated solid waste from all households including hostels and academic area.

d) establish a system to identify organisations of waste pickers or informal waste collectors to facilitate their participation in solid waste management.

Secondary Collection

In this, the university shall,

a) ensure three bins at every Secondary Collection Point.

b) setup secondary storage facilities in east and west campuses of the university, with sufficient space for sorting of recyclable materials to enable informal or authorised waste pickers and waste collectors to separate recyclables from the waste.

c) provide easy access to waste pickers and recyclers for collection of segregated recyclable waste such as paper, plastic, metal, glass, and textile from the source of generation or from material recovery facilities.

Transportation of Waste

In this, the university shall,

a) transport segregated bio-degradable waste to the processing facilities like compost plant, bio-methanation plant or any such facility.
b) make arrangement for in-house and on-site processing of such waste.
c) transport non-bio-degradable waste to the respective processing facility or material recovery facilities or secondary storage facility;
d) ensure transport of waste in segregated form in covered vehicles.

b) Liquid waste /wastewater

Collection, transport and treatment of Wastewater and safe disposal of treated effluent

In this, the university shall,

a) facilitate the construction, operation and maintenance of requisite infrastructure for collection, transport of wastewater,
b) ensure safe disposal of treated sludge.
c) ensure safe disposal of treated effluent or re-use the same for gardening and horticulture purpose within the university.

c) Air pollution

For this the university has the following mechanism/measures in place:

i) Majority of the unpaved footpaths along the roads in the academic campus i.e. east campus have been paved so as to reduce the particulate matter.
ii) All the laboratories have exhaust fans so that the ambient air is free from harmful gases.
iii) Appropriate openings in form of doors, windows ana ventilators have been provided.

Specific tasks are undertaken on an immediate basis.

The university shall implement the following on immediate basis:

- Proper collection and Segregation of domestic and institutional waste
- Timely transportation.
- Daily Road sweeping-of roads, class room, departments and hostels.
- 100% collection at fixed time 365 days in a year
- Penalize the polluters/defaulters through a monetary fine.
- Ban the sale and use of plastic carry bags (of thickness less than 50 microns) within the university premises.
- Encourage students to develop eco-friendly products in the project work.
- Organize effective “Information, Education and Communication (IEC)” and “Capacity Building” programmes.

7.2 Energy aspects

The specific mechanism/practices and steps for energy conservation in the university are identified as:

- Switching to energy-efficient light systems: Switch to energy-efficient lighting systems such as LED lights, which can reduce energy consumption and costs.
- Installation of energy-efficient equipment in laboratories, hostels and offices of the university. : This includes replacing older equipment with more energy-efficient alternatives and making sure that new equipment meets energy-efficiency standards.
- Implement energy-saving behavior: Encourage staff, students, and other members of the university community to adopt energy-saving behavior, such as turning off lights and equipment when not in use.
- The university has a plan to implement a building management system that will help to control and monitor energy consumption in real-time and can be used to identify areas where energy consumption can be reduced.
- The university is in the process of installation of solar energy systems: Installing renewable energy systems such as solar panels can help to reduce the university's dependence on fossil fuels and contribute to a cleaner energy future.
- Increase insulation and air sealing: Increasing insulation and air sealing can help to reduce heating and cooling costs, and can make buildings more comfortable for occupants.
- The university has adopted conservation measures in the context of energy-water systems. For example, conservation measures such as low-flow showerheads and toilets can help to reduce water consumption and costs and save associated energy requirements.
- The university encourages a sustainable transport system. Recently it has adopted a energy-saving e -rickshaw and nonmotorized transport in form of bicycles. It encourages alternative transportation such as cycling, walking, or taking public transit can help to reduce the university's carbon footprint.
- It monitors energy consumption: Regular monitoring of energy consumption can help to identify areas where energy consumption can be reduced, and can be used to evaluate the effectiveness of the energy-saving measures.
- Continuously review and update energy-saving measures: Energy-saving measures should be reviewed and updated on an ongoing basis to reflect changes in technology and energy consumption patterns, and to ensure that they continue to be effective.

The university lays specific emphasis on clean energy systems and energy conservation methods on the university campus.

Solar energy

The university aims to incorporate solar energy in various facilities:

- Solar photovoltaic (PV) systems: Solar PV systems convert sunlight into electricity, which can be used to power buildings, lighting, and equipment in the university.
- Solar water heating systems: Solar water heating systems use the sun's energy to heat water, which can be used for a range of purposes including showers, laundry, and cleaning.

- Solar-powered outdoor lighting: Solar-powered outdoor lighting can provide light in outdoor areas without relying on grid-connected electricity, reducing energy costs and contributing to a cleaner energy future.
- Solar-powered educational resources: Solar energy can be used as an educational resource, with universities incorporating solar energy into curricula, research, and student projects.
- By incorporating solar energy into their energy mix, the university can reduce energy costs, contribute to a cleaner energy future, and provide valuable educational opportunities for students. Additionally, the use of solar energy shall establish university's reputation as a leader in sustainability and contribute to a positive public perception of the institution.

Figure: Solar panels for water heating in hostels

Implementation

In view of identified measures, the university shall

- Strive to reduce energy consumption through the implementation of energy-efficient practices and technologies.
- Actively promote the use of energy-saving devices, such as CFL and LED lights, and practices such as turning off lights, fans, air conditioners, computers, and other equipment when not in use.
- Encourage use of solar energy-based heating devices and biogas.
- Encourage the use of eco-friendly public transportation such as E-rickshaws for commuting between campuses, and alternative modes of transportation, such as cycling.
- Regularly review and update its energy consumption data and targets to ensure continuous improvement.

Specific tasks be undertaken on immediate basis.

The university shall implement the following on an immediate basis:

- Monitoring the energy usage
- Switching off electrical equipment, fans, and lights after classes
- Periodic maintenance of air conditioners
- E-rickshaws for commuting between campuses
- Availability of bicycles for students

- Penalize the defaulters through a monetary fine
- Encourage students to develop alternate energy-based and environmentally friendly devices

8. Capacity Building and Training through IEC (Information, Education and Communication)

The success of any "Environment and Energy Policy" depends upon the extent of public/community participation. Thus, the university shall undertake capacity building by training students, housewives and other staff of the university. It shall also organize Information, Education and Communication (IEC) activities. The main objectives of IEC shall be to make people understand and become aware of energy and environmental concerns. Specifically, these include,

- Realize the concept and need for segregation of solid waste at the source
- Understand the need to waste storage at the source in separate receptacles - one for biodegradable and another for recyclable.
- Encourage citizens in the primary collection of waste from the household and handing over to waste collectors,
- Promote the need to use litter bins on roadsides and public places.
- Increase awareness of the impact of waste on public health and the environment
- Increase public understanding of the benefits of energy conservation, including reduced energy costs and a reduction in greenhouse gas emissions.
- Encourage the use of energy-efficient technologies, such as LED lighting and Energy Star-rated appliances.
- Educate the public on simple energy-saving habits
- Encourage individuals, businesses, and organizations to adopt energy-saving practices and make energy conservation a part of their daily routine.
- Raise awareness of the environmental and economic impacts of energy production and consumption, and the importance of transitioning to renewable energy sources.
- Provide information on government and private sector programs and incentives for energy-saving measures and the installation of renewable energy systems.
- Promote community-wide efforts to reduce energy consumption and increase the use of clean, renewable energy.
- Engage student community in energy conservation efforts, to foster a culture of sustainability and encourage environmentally responsible behaviour.

To this end,

- The university shall promote environmental and energy usage awareness through education and training programs for employees, students, and visitors.
- The university shall actively participate in environmental and energy conservation initiatives and encourage its community to do the same.
- The university shall conduct energy and green audits in periodic manner.
- The university shall regularly review and update its environmental and energy policies and procedures to ensure continuous improvement.

9. Implementation Committee

For effective implementation of the "Environment and Energy Policy", there shall be an Environment and Energy Policy Implementation Committee. The committee shall review the policy and update it annually or as necessary to ensure its continued relevance and effectiveness in promoting sustainability and reducing the environmental impact of the university.

The constitution of the same shall be as follows:

a) Nodal Officer, Environment and Energy Policy
b) All Heads of Departments
c) Dean (Student Welfare)
d) All Hostel wardens
e) Professor In charge, Civil Maintenance
f) Dean of all Schools of the university