

Quantum University Green Policy

(Including SOPs for Energy Conservation, Water Conservation, Waste Management, Environment Protection & Plastic Waste Management)

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Registrar
Quantum University

Quantum University, Roorkee

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GREEN POLICY

1. INTRODUCTION

Quantum University is dedicated to creating a sustainable ecosystem by addressing environmental challenges comprehensively. Through its Green Policy, the university actively involves stakeholders to enhance the environment, emphasizing the importance of collective expertise and resources. The policy guides practices for environmental preservation, resource conservation, and sustainable development. The Green Committee, supported by environmentally conscious groups, implements initiatives such as water and energy conservation, clean fuels, forestation, waste reduction, and recycling. By fostering a culture of environmental responsibility, Quantum University strives to mitigate the negative impacts of human activities and contribute to a greener future.

2. STATEMENT OF THE POLICY

The Green Policy of Quantum University aims to institutionalize best practices for environmental protection, natural resource conservation, and sustainable development through a human–environment co-existence model. The university is committed to sustainability through effective participation and supervision of institutional resources with the assurance of providing excellent teaching, learning, and research environment.

The goals to be achieved through this policy are -

- i) **Conservation and Resource Management:** To conserve the natural environment and resources, implementing measures for their preservation.
- ii) **Sustainable Solutions:** To develop sustainable solutions for environmental problems through innovation and support for startups in

this field.

- iii) **Rural Technologies:** To promote rural technologies and facilitate the development of newer technologies in rural India, contributing to inclusive growth.
- iv) **Energy Management:** To control energy consumption, implement energy conservation methods, and explore the generation of green energy.
- v) **Responsibility and Awareness:** To instill a sense of responsibility among students and stakeholders towards the conservation of natural resources and the development of a sustainable environment.
- vi) **Ethical Approach:** To adopt a fair, ethical, and environmentally friendly approach in all communications and functions of the university.
- vii) **Futuristic Technologies:** To evolve futuristic technologies and engineering designs that enable the sustainable utilization of augmented natural resources.
- viii) **Conservation-oriented Society:** To contribute to the development of a society with a conservation-oriented attitude that lives in harmony with nature.
- ix) **Awareness and Participation:** To create awareness about environmental issues through participation in activities and competitions within and outside the campus.
- x) **Green Audit and Collaborations:** To conduct environmental audits and sustainability assessments, implementing recommendations for improved systems and processes. Additionally, Quantum University aims to enter into partnerships and agreements with external agencies, organizations, and industries to acquire efficient technological solutions for environmental conservation, including renewable energy generation and waste management.

3. **SCOPE OF THE POLICY**

This policy is applicable to the entire Quantum University community, including staff,

faculty members, students, researchers, and others. It encompasses all natural resources, including water and energy, ensuring their responsible and sustainable use.

4. **POLICY OBJECTIVES**

As part of Quantum University's green policy, the university should manage its water and energy consumption in a wise, responsible, and efficient manner. It contributes to the university's commitment to addressing water and energy-related problems and maintaining environmental sustainability. This policy supports the change in individual actions and behaviors, and campus processes.

The objectives of Quantum University Green Policy are:

- i) **Education and Engagement:** To educate and engage students, faculty, and other stakeholders on environmental concerns and sustainability.
- ii) **Environmental Impact:** To minimize the direct environmental impact resulting from university campus activities and management to an appropriate level.
- iii) **Awareness and Participation:** To ensure wide visibility and knowledge of the Quantum University green policy among all stakeholders, fostering increased participation in initiatives related to the policy.
- iv) **Government Programs and Collaborations:** To actively participate in key government flagship programs and foster collaborations among academic institutions, knowledge partners, industry, and local communities.

5. **POLICY IMPLEMENTATION**

Quantum University commits to promoting efficient usage of water, energy, and natural resources among all members of its community. Through raising awareness

and adopting systematic practices, the university aims to minimize its carbon footprint and improve environmental performance. The implementation of the Quantum University Green Policy involves a stage-wise approach, guided and monitored by the Green Committee. The plan includes detailed components to achieve the policy's objectives.

5.1 Green Committee

The Green Committee of Quantum University will be as follows-

Chairman – The Registrar of the University

Members - Professors - 01
Associate Professors - 03
Assistant Professors - 03
Administrative Staff members - 03
Students - 05

Members from Industry/ Academia/ Parent community - 05

5.2 Roles and Responsibilities of the Quantum University Green Committee

- 1- Green Committee of Quantum University will be constituted with representatives from faculty, students, researchers, and staff, who will be the part of various environmental groups in the campus.
- 2- The committee will ensure the participation of the employees from all verticals, besides the faculty and students, such as administrative staff, engineering staff, housekeeping staff, and others as nominated by the Vice Chancellor.
- 3- The committee would be constituted for a period of five years.
- 4- The committee will create action plans in accordance with the green policy of Quantum University and would give necessary support to the various departments/ environmental groups in the university to implement the action plans.
- 5- The committee will be sensitive to the changing ecological needs of the

society and of the university campus and therefore will have the authority to modify the action plan after a thorough review, in order to comply with the Green policy.

6- The committee will ensure that the environmental sustainability will be considered as of utmost importance and will approve the university development plans only when found to comply with the Green policy.

7- The committee will support the green activities of the environmental groups like awareness campaigns and green drives to achieve sustainability goals.

8- The committee will ensure the inclusion and implementation of interdisciplinary courses that address environmental issues in the curricula of various programs at different levels.

9- The committee will promote beyond-campus environmental activities to enhance the participation of stakeholders and create awareness.

10- The committee will promote interdisciplinary research focused on bringing technological and innovative solutions to environmental problems.

11- The committee will conduct a Green audit/ Environment audit/ Sustainability/ Energy audit and implement the audit committee recommendations towards sustainability.

12- The committee will encourage the University to enter into MoUs and agreements with external agencies/ organizations/ industry for acquiring technological solutions for environmental problems.

5.3 Key Components of Policy Implementation

The implementation of Quantum University Green Policy will include a directional process in which stage-wise achievements of objectives will be planned and monitored by the Green Committee. The key components of the implementation plan are detailed further.

- i) **Conservation of Natural Flora and Fauna for Environment Protection** Quantum University always had been sensitive towards environmental conservation and has shown respect towards nature. All forms of life i.e. humans, animals, and plants are closely interlinked and disturbance

in one gives rise to an imbalance in others, therefore Quantum University shall endeavor to preserve, protect and improve the environment and to safeguard the forests and wildlife in our vicinity, and to have compassion for the living creatures.

ii) **Landscaping & Tree Plantation**

To maintain ecological balance and reduce its carbon footprint, Quantum University is committed to maintaining green cover on its campus. This will be achieved through aesthetic landscaping, including the creation of gardens, parks, and open spaces. Landscaping efforts will involve planting herbs, shrubs, trees, and grass, taking into consideration the region's climate and topography. Additionally, existing environmental features will be conserved to promote environmental consciousness and enhance the overall sustainability of the campus.

iii) **Preventing Pollution**

Quantum University is committed to reducing and preventing pollution in and around the campus through effective strategies employing conventional and innovative measures. Water, soil, or air pollution causes unsanitary conditions which lead to human health hazards and adversely affect the natural environment, perturbing the ecological balance. Some of the measures to curb pollution on the campus are-

Restricted Entry Of Automobiles

To mitigate pollution and reduce the emission of greenhouse gases and harmful pollutants, the movement of conventional fuel-driven vehicles such as cars and buses should be restricted within the campus of Quantum University. These vehicles are known to release pollutants such as polycyclic aromatic hydrocarbons, nitrogen oxides, carbon monoxide, volatile organic compounds, and particulate matter, which can have detrimental effects on both human health and the surrounding flora and fauna. By limiting their presence, the university aims to create a healthier and more environmentally friendly campus environment.

Use of Bicycles/Battery-powered vehicles

To foster sustainable and eco-friendly transportation options within the campus, Quantum University promotes the use of non-polluting vehicles such as bicycles and battery-powered vehicles like electronic carts. By reducing dependency on automobiles, the university aims to create a greener and healthier commuting environment. It is important to raise awareness among all stakeholders about these alternative transportation methods and ensure the effective implementation of these measures.

Pedestrian Friendly pathways

Quantum University prioritizes the construction and maintenance of safe and pedestrian-friendly walkways throughout the campus. These pathways are designed to be transit-friendly and include features such as appropriate dimensions, strategic placement, comfortable slopes, proper lighting, marked crosswalks, wheelchair accessibility, and tactile paving for visually impaired individuals.

iv) Water Conservation & Management

Quantum University realizes that water is a valuable resource and all possible measures should be taken for its conservation. There should be discipline on water usage, and the consumption of water should be economized. Water is to be recycled and reused as much as possible aiming towards zero discharge.

v) Energy Conservation & Management

Quantum University promotes the implementation of efficient energy management and conservation processes. This includes the encouragement of using clean fuels, clean technologies, energy-efficient devices, and non-conventional energy sources. The university aims to enhance the utilization of environmentally friendly energy systems.

vi) Waste Management

Quantum University strives to minimize the generation of all forms of waste at the individual or community level. There should be stringent preventive measures for indiscriminate disposal of solid wastes, effluents, and hazardous

substances on land and water in and around the campus. The principle of the 3Rs i.e. Reduce, Reuse and Recycle should be followed by all associates of Quantum University.

vii) **Plastic Usage and Plastic Waste Management**

While plastics have contributed to our lives in many ways, it is the environment that has been hit the most by the impact of their being non-degradable. Keeping that in mind, it is the responsibility of every person, to not only say a “No to Plastic”, but also to create and raise awareness about the ills of the use of plastics and to save our environment. Therefore, the Quantum University community has consciously chosen to **REDUCE, REUSE, RECYCLE, REPAIR, and REPLACE** the plastic and implement a ban on ‘single-use plastics’.

The plastic products that need a conscious decision for their usage, disposal, and management include but are not limited to-

Carry bags made of polyethylene, polypropylene, polystyrene resins, or any similar material.

Packaging material made from plastic or polyethylene for the purpose of carrying or dispensing commodities.

Single-use plastic utensils or products made by shaping the polymer.

Any polymeric fragments or micro-plastics, which arise due to disintegration and physic-chemical breakdown of the plastic material.

There should be a complete ban on the use of non-biodegradable materials such as polythene and plastic and any kind of waste generation should be minimized at the individual and organizational levels.

viii) **Campus Operations**

Quantum University emphasizes sustainable practices in all campus operations, including construction, repairs, and maintenance. The aim is to minimize the exploitation of natural resources and have a restorative impact

on the surrounding environment. Measures are taken to reduce air, water, and soil pollution. Additionally, the adoption of sustainable transportation means is encouraged.

ix) **Emissions & Footprint**

The University should be well aware of its contribution to global climate change by estimating its own carbon footprint. Conscious steps should be taken to reduce greenhouse gas emissions and per-capita carbon footprint.

x) **Environmental Audits**

A green audit is a management tool that evaluates the sustainability of organizational processes with minimal harm to the environment. It identifies and monitors sources of environmental pollution, and provides recommendations and methods for environmental protection. The audit focuses on waste management, energy consumption, water quality and quantity, hazard management, stakeholder safety, and disaster management.

xi) **Health & Well-Being**

At Quantum University, the health, and well-being of our community members are paramount. Our green initiatives are geared towards enhancing the health and productivity of the university community. We strive for a pollution-free campus environment and aim to minimize exposure to toxic chemicals. To achieve this, we promote the reduction of chemical pesticides, food colorants, preservatives, sanitizers, and cleaning agents, replacing them with non-toxic materials of biological origin. We also incorporate air-purifying plants to improve indoor air quality and enhance the aesthetics of our indoor spaces.

xii) **Inclusion in Curriculum**

The courses that enhance awareness about Environmental issues and impart knowledge for Environment protection, conservation, and management should be included in the curricula of all undergraduate and postgraduate programs. Environment awareness activities should be conducted in the student induction program. Research and innovation that could bring technological solutions to environmental problems should be promoted.

6. Standard Operating Procedures

SOPs for Energy Conservation, Water Conservation, Waste Management, Environment Protection, and Plastic Waste Management have been laid down for the effective implementation of the Policy across the University.

STANDARD OPERATING PROCEDURES **FOR** **ENERGY CONSERVATION**

AIM AND SCOPE

This SOP outlines detailed rules, timelines, and responsibilities with regard to Energy Conservation on Quantum University's campus. These SOPs will govern all conventional energy sources, renewable energy systems, and energy management.

USAGE OF ELECTRICAL AND ELECTRONIC ITEMS

Energy-consuming equipment like lights, and window air conditioners when not in use can be switched off.

Use devices that power down or switch off automatically when not in use

Close doors and windows of air-conditioned rooms in the building to prevent loss of warm/ cool air and conserve energy.

Use day lighting and task lighting in rooms and offices during work rather than constant overhead lighting.

Prohibit the use of personal electric heaters in offices or any other areas of the building.

ACs should be operated only when necessary.

BUILDINGS AND CONSTRUCTIONS

In order to prioritize energy efficiency, decisions and processes regarding new building construction and renovation should incorporate energy life cycle costing and analysis. Emphasis should be placed on maximizing energy efficiency in these projects. Energy consumption can be reduced by promoting the use of alternative energy sources like solar water heaters, solar lights, and daylighting. Whenever feasible, centralizing utility systems for heating, cooling, and other mechanical processes is recommended. Additionally, strategic metering throughout the campus can be implemented to facilitate effective energy management.

LIGHTING

When possible, maximize natural daylight and minimize indoor lighting.

Minimize the use of exterior decorative lights.

Encourage the use of highly efficient lighting systems and lighting controls.

Use a sensor-based lighting system to reduce energy consumption.

Make use of energy-efficient LEDs instead of conventional CFLs.

HEATING AND COOLING

Set heating and cooling set points to minimize energy usage while ensuring occupant comfort.

Adjust temperatures in occupied spaces to ambient levels for cooling purposes.

Shut down cooling systems in unoccupied areas to conserve energy.

Schedule HVAC occupancy based on minimum energy consumption objectives.

Limit exceptions to HVAC occupancy schedules to areas with specific temperature requirements.

Use the most energy-efficient means for heating and cooling supply.

Avoid heating or cooling during off-hours and holidays to reduce energy waste.

Install window air conditioners only in areas without central cooling or proper air balance.

Report areas that are excessively hot or cold to the central facilities controller to prevent energy wastage.

PURCHASES & PROCUREMENTS

Star-rated electrical and electronic equipment and appliances to be purchased to conserve energy.

Procure energy-efficient electronic office equipment, including but not limited to computers, monitors, printers, scanners, photocopy machines, and other such items.

TRANSPORTATION

Promote the use of University bus service or public transportation among students and employees to minimize single-occupancy vehicle trips to and from the campus.

Encourage alternative modes of transportation such as biking, walking, and carpooling within the campus to reduce reliance on single occupancy vehicles.

Prioritize the safety and accessibility of pedestrians, cyclists, and visitors within the campus as part of sustainability efforts.

Reduce the consumption of petroleum products within the University by utilizing low-emission vehicles.

Integrate alternative fuel options and advanced vehicle technologies into the transportation fleet.

Maintain and operate cost-effective transportation modes like electrified transportation or battery-operated carts to reduce dependence on petroleum fuels.

STANDARD OPERATING PROCEDURES

FOR

WATER CONSERVATION

AIM AND SCOPE

The purpose of this Standard Operating Procedure (SOP) is to provide comprehensive guidelines, timelines, and assigned responsibilities for effective water conservation practices within the Quantum University campus. These SOPs will govern all aspects of water sources, distribution systems, disposal and recycling facilities, and overall water management.

WATER DISTRIBUTION AND EFFICIENT UTILIZATION

Implement water recycling and reuse systems, such as stormwater collection and HVAC condensate recovery, to utilize non-potable water for various purposes. Install water-efficient fixtures, such as low-flow fittings, water-saving flush valves, sensors, and flow restrictors, in shower facilities, laboratories, and restrooms. Avoid using single-pass or one-way flow cooling water systems for mechanical equipment. Promptly report any water leakages, dripping faucets, malfunctioning fixtures, or repairable fittings to the facilities administrator for timely repairs. Regularly clean water reservoirs of refrigerated water coolers and replace filters as per the recommended schedule.

WATER QUALITY MONITORING

Drinking Water Inspection

Inspection of Drinking Water for its physicochemical characteristics as mentioned below will be done by the supervisor on a daily basis, and will be informed immediately to the university administration if any discrepancy is observed:

The Physical characteristics of Water to be inspected are as follows -

Turbidity

It is the non-transparent appearance, cloudiness or haziness of water caused by particulate matter or suspended solids present in water as impurities, that make it to appear turbid.

Color

Water should be colorless. Dissolved organic matter from decaying vegetation or other soluble inorganic impurities can provide certain color to water and make it unsuitable for drinking purposes.

Taste and Odour

Any organic or inorganic compounds which contaminate the water and impart taste and odor to the water making it unfit for human consumption.

Temperature

The appropriate temperature of water for drinking, purposes is 5 to 12 °C. Water temperature above 25 °C is not recommended for drinking.

Sanitary inspections

The supervisor will conduct weekly sanitary inspections of the water supply distribution system, covering all components from the source to the storage reservoirs. The inspections will focus on qualitative parameters to identify deficiencies, inadequacies, and potential hazards that may lead to water contamination. This comprehensive approach ensures the ongoing safety and quality of the water system.

Repair and Maintenance

The general issues of repair and maintenance of the water distribution system should be immediately addressed by the facility administrator. These include cleaning and de-silting the water tanks and chlorination of water on a regular basis.

Cleaning and De-Silting of the Water Tanks

The water tanks should undergo monthly de-silting, with the frequency potentially increasing during the rainy season or in the event of any incident requiring immediate cleaning. After de-silting, the water should regain its color and odor, and undergo inspection to ensure its suitability for drinking purposes. This regular maintenance ensures the cleanliness and quality of the water supply.

Chlorination

It is the process of water purification by killing certain bacteria and other microbes in water through addition of chlorine. Chlorination is also an effective way to prevent the spread of many waterborne diseases such as cholera, dysentery, and typhoid. The chlorination schedule should be followed strictly. During summers chlorination of the water should be done on a monthly basis, while during the winter season chlorination of the water will be done less frequently.

WASTE WATER RECYCLING

Implement a wastewater treatment system to treat and reuse domestic wastewater for non-potable applications.

Operate a sewage treatment plant to effectively treat domestic wastewater.

Install signs and symbols indicating that the recycled water is not suitable for drinking at outlets and other prominent locations.

Prevent cross-connections between recycled water and potable water supply to avoid contamination.

Establish quality standards to ensure that recycled water does not contaminate other water sources.

Regularly monitor wastewater quality and take remedial actions for any deviations from compliance.

Collect rainwater and runoff through rainwater harvesting systems to recharge groundwater.

STANDARD OPERATING PROCEDURES **FOR** **WASTE MANAGEMENT**

AIM AND SCOPE

The objective of this SOP is to specify detailed rules, timelines, and responsibilities related to waste generation, identification, handling, storage, transport, and disposal within the Quantum University campus.

WASTE CLASSIFICATION

- i) **Non-hazardous waste:** Wastes that are not hazardous or harmful to the environment, such as domestic waste, food waste, etc.
- ii) **Hazardous waste:** These wastes are categorized as special wastes due to some characteristics such as toxicity, corrosiveness, flammability, and reactivity as they contain certain chemicals, metals, and pathogenic organisms that cause severe damage to the environment even at low levels of concentration.
- iii) **Biomedical Waste:**
 - Human anatomical waste (excluding teeth, hair, and nails)
 - Cultures of humans and animals
 - Animal waste, stocks, or specimens
 - Cell lines and live or attenuated vaccines
 - Microbiological waste and materials contaminated with them
 - Human blood and body fluids
 - Items contaminated with blood and body fluids
 - Biologically contaminated sharps, such as needles and blades
 - Pathogenic or transgenic plants and plant parts, including plant pests
- iv) **E-Waste:** Waste electrical and electronic equipment, whole or in part or rejects from their repair process, which are intended to be discarded, is called e-waste.

HANDLING AND TRANSPORTATION OF WASTE

Waste should be handled in such a way that it does not pose any threat to human health and the environment.

Proper precautions should be taken in order to avoid accidents that could lead to soil or water pollution, fire or explosion, and element generation.

Internal transportation of waste should be done properly. Containers with liquid waste should always be closed. Containers carrying solid or liquid waste should also be secured in order to avoid any spills.

WASTE STORAGE

Proper planning and design of storage areas for waste should be ensured.

Measures should be taken to minimize or prevent spills and leakages.

Hazardous waste sites should be covered and equipped with appropriate containment and drainage systems.

Spills should be prevented or contained and collected to prevent soil or water contamination.

Waste storage areas should be clearly isolated and labeled.

Each waste unit should be clearly marked, and all operators involved in waste collection and transportation should be knowledgeable about the contents.

Hazard risks, such as flammability or toxicity, should be clearly labeled and easily identifiable.

Chemical wastes that are incompatible should be segregated accordingly.

Adequate access to first aid and emergency equipment should be available in case of fires or spills.

Safety Data Sheets for hazardous waste should be readily accessible.

PROCEDURE FOR NON-HAZARDOUS WASTE

Waste under three separate streams should be segregated and stored in three separate bins namely bio-degradable, non-biodegradable, and domestic hazardous wastes.

Sanitary waste should be wrapped in a suitable wrapping material and disposed of in the bin meant non- bio-degradable waste.

Construction and demolition waste, as and when generated, on campus should be disposed of separately.

Most of the horticulture waste and garden waste generated from the campus should be used mostly for composting. Remaining horticulture waste should be collected as bio-degradable waste.

The solid waste generated on the campus, on streets, or public spaces outside the campus should not be thrown, burnt, buried, or disposed of in the drain or water bodies.

Handover segregated wastes to authorized waste collector as per the direction or notification by the authorities from time to time.

Waste Segregation

Waste should be segregated in 2 dustbins.

Green bin for Wet waste - Dispose of wet waste, which consists of cooked and uncooked food waste (including eggshells and bones), flowers, fruit and vegetable peels, garden or plant waste, and soiled paper, in the designated green bin.

Blue for dry waste- Dispose of dry waste, which includes paper, cardboard, cartons, plastics, wood, containers, and packaging (excluding hazardous materials and compound packaging like Tetra Pak), in the designated blue bin.



PROCEDURE FOR HAZARDOUS WASTE

In case of hazardous waste, each container having the waste should be labeled with the words “Hazardous Waste.”

Containers having chemical waste should be clearly labeled with the full name of the chemical and concentration if known.

When using a container that differs from the original chemical to collect waste, always obliterate the original label to avoid confusion, then re-label as hazardous waste and list the contents.

Unused chemical reagents, in original containers, with intact labels that are deemed waste, only need to be labeled Hazardous Waste as the original label has all other required information.

Hazardous waste should not be combined with any other materials or wastes. If so, the entire mixture should be classified as hazardous waste. Non-hazardous or less hazardous materials should be used in place of hazardous ones wherever possible.

Disposal of hazardous waste actually occurs only at permitted Treatment, Storage, and Disposal Facilities.

PROCEDURE FOR BIOMEDICAL WASTE

Properly segregate biomedical waste within the lab for correct disposal.

Ensure that biomedical waste is not contaminated with radioactive materials or chemicals.

Collect and store biomedical waste in approved clear autoclave bags labeled as "Biohazardous Waste" within designated bins.

Minimize the use of general lab waste like paper towels and bench coverings.

Avoid using autoclave bags with biohazard symbols.

Fill autoclave bags up to half capacity only; overfilled bags or bags exceeding half capacity will be returned for repackaging.

Securely tie half-filled autoclave bags using biomedical/biohazardous waste tags that provide a detailed description of the waste.

Dispose of sharps in appropriate solid containers, not in autoclave bags.

Use approved chemical decontaminants like chlorine, iodine, and alcohols for general surface decontamination and decontamination of solutions containing microbes and toxins, following approved methods by the Institutional Biosafety Committee.

Autoclaving is an effective method for decontaminating infectious materials, toxins, and associated waste.

PROCEDURE FOR E-WASTE MANAGEMENT

Proper management of electronic equipment is crucial due to the presence of hazardous substances and toxic metals like lead, mercury, cadmium, nickel, PCB oils, and radioactive materials.

Electronic waste should never be disposed of in the solid waste bin; it requires special handling.

If the equipment is still functional, other University departments should be contacted to determine if they can make use of it.

In case another department can utilize the equipment, University Inventory

Services should be informed about the transfer.

If no University department can use the equipment, University Inventory Services should be contacted to remove it from the inventory system.

The e-waste should be directed to an authorized collection center, registered dismantler, or recycler, or returned to the pick-up or take-back services provided by the producers.

It is important to maintain records of generated e-waste and ensure their availability for scrutiny by relevant authorities.

STANDARD OPERATING PROCEDURES **FOR** **ENVIRONMENT PROTECTION**

AIM AND SCOPE

With an aim to protect the environment in and around the University campus, the usage, management, conservation and preservation of all kinds of natural resources are done through these SOPs.

ENVIRONMENT PROTECTION

Human activities whether direct or indirect have some influence on the environment. The excessive utilization of resources has resulted in the rapid depletion of natural resources such as water, forests, traditional energy sources like coal and petroleum, minerals, and more. The developmental endeavors of humanity, such as urbanization and industrialization, have emerged as significant contributors to environmental pollution, the greenhouse effect, and consequently, climate change.

Therefore, the Standard Operating Procedures (SOPs) for Environmental Protection should include thorough measures aimed at safeguarding all aspects of the environment, encompassing both non-living (abiotic) and living (biotic) factors.

The measures are as follows-

Encourage and support afforestation initiatives within and around the campus to maintain a healthy green cover.

Minimize resource exploitation from natural sources by avoiding activities such as groundwater extraction, tree cutting, and mining.

Practice water conservation by conserving fresh water and implementing rainwater harvesting techniques.

Conserve conventional energy by reducing electricity and fossil fuel consumption.

Utilize renewable resources like solar energy to generate power.

Minimize pollution to safeguard air, water, soil, and human health.

Preserve biodiversity by refraining from encroaching upon natural habitats.

Adopt the principles of reducing, reusing, and recycling to manage waste effectively.

Limit the use of automated and technology-intensive products and processes to mitigate their impact on the environment.

Take measures to reduce personal carbon footprint.

Regularly assess the environmental impact of personal and organizational activities, identify areas for improvement, and implement sustainability measures.

Embrace an eco-friendly lifestyle that supports environmental well-being.

Raise awareness about environmental protection among all stakeholders and encourage them to adopt environmentally sustainable practices.

STANDARD OPERATING PROCEDURES **FOR** **PLASTIC WASTE MANAGEMENT**

AIM AND SCOPE

This SOP focuses on specific detailed rules and responsibilities regarding ban on use and management of plastic and similar material within Quantum University campus.

ABOUT PLASTICS

Due to the unavoidable and widespread nature of plastics, there is a broad variety of plastic materials and products commonly used by people. Among these, only a few are recyclable, while the majority are non-biodegradable. The term "**plastic**" encompasses any chemically composed polymer that is non-biodegradable, including materials such as high or low-density polyethylene, multi-materials like acrylonitrile butadiene styrene (ABS) or polycarbonate (PC), or similar compositions that are harmful to the environment.

Single-use plastics, in particular, pose a significant threat to the environment as their degradation in landfills can take hundreds of years, releasing potentially toxic and hazardous microplastics. Therefore, it is imperative to impose a complete ban on the usage, production, and disposal of single-use plastics.

PLASTICS CAN BE BROADLY CATEGORIZED AS-

1. Polyethylene Terephthalate (PET or PETE)

It is used commonly as water bottles and carbonated drink packaging bottles.

2. High-Density Polyethylene (HDPE)

It is thick, durable, opaque plastic used as containers for chemicals, juice, milk, as shampoo bottles and medicine bottles.

3. Polyvinyl Chloride (PVC)

It is used to make pipes, toys, detergent bottles, blister wrap, cling wrap, and tubings.

4. **Low-Density Polyethylene (LDPE)**

It is most widely occurring form of plastic, used in grocery bags, garbage bags, agriculture bags, bread packagings, frozen food bags, plastic wraps and lining or coatings for paper cartons and cups for hot & cold beverages.

5. **Polypropylene (PP)**

It is strong, stiff and heat resistant, and is widely used as containers for hot food, as tiffins and water bottles.

6. **Polystyrene (PS)**

It is commonly known as the Styrofoam and is widely used as disposable food containers, egg cartons, disposable cups and bowls and packaging material.

7. **Others-** This category includes plastics composed of more than one form of plastic mentioned above or made of alternative material known as bioplastics. Polycarbonates (PC) also appear in this category, which is used to make baby feeding bottles, sipper cups, water bottles and ketchup bottles.

GUIDE TO USAGE OF PLASTICS IN QUANTUM UNIVERSITY CAMPUS

- a. Encourage individuals to minimize their daily use of plastics, reducing dependence on them and ultimately decreasing overall plastic production.
- b. Promote the generation of less plastic waste at both individual and organizational levels.
- c. Instruct canteens to exclusively use and serve food in eco-friendly packaging.
- d. Discourage littering, dumping, and burning of plastics to prevent pollution of air, soil, and water.
- e. Implement color-coded garbage bins for the segregation of plastic waste at its source.
- f. Train housekeeping staff on waste segregation methods and emphasize the importance of proper waste management.

- g. Ensure segregated storage of waste at its source and hand over segregated waste to authorized recycling agencies or the urban local body.
- h. Replace plastics with eco-friendly alternatives such as reusable cotton bags, recycled paper products, wooden or pulp utensils, and plant-based packaging materials.
- i. Transition to biodegradable and compostable plastics.
- j. Conduct awareness campaigns to educate people about the harmful impacts of single-use plastics.
- k. Encourage every member of the Quantum University community to take a pledge to make their households plastic-free.
- l. Install alternative facilities like water units to discourage the purchase and use of plastic water bottles.
- m. Discourage all stakeholders of Quantum University and nearby communities from using plastics.
- n. Intensively promote awareness about plastic alternatives such as paper bags, cloth bags, and kulhars (earthen cups) instead of plastic containers.
- o. Ensure strict adherence to these guidelines by all messes, food joints within the campus, and hostels.

RULES FOR BAN ON PLASTICS IN QUANTUM UNIVERSITY CAMPUS

The following are completely banned for usage in the University campus-

1. Disposable Polyethylene Terephthalate (PET) water bottles
2. Disposable Plastic cutlery, plates and cups
3. Garbage bags made of polythene
4. Shopping bags and carry bags made of polythene
5. Plastic straws
6. Plastic trays
7. Plastic food containers
8. Food packaging film;
9. Plastic ice cream tubs or containers
10. Hot and cold drink cups

11. Insulated food packaging
12. Protective packaging for fragile items
13. Chips bags
14. Bottle caps
15. Juice/milk packets/tetra-packs with plastic lining
16. Single-use plastic sheet banners and posters
17. All single use plastic products

The following items are restricted for usage in the University campus, should be reused and/ or recycled to the maximum extent-

1. Dispensing containers for water
2. Dispensing containers for cleaning fluids
3. Microwave dishes
4. Cutlery - Trays, plates, bowls, cups, glasses for repeated use
5. Refillable pens
6. Plastic-ware used in laboratories
7. Plastic bins and buckets
8. Biodegradable plastic

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Registrar
Quantum University