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IIT BOMBAY SUSTAINABILITY POLICY

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Preamble

IIT Bombay is among the leading technical Institutes in India. The institute is a residential campus with a **current population of almost 25000 (including floating mass)**. The campus is a habitat of several native and seasonal biological species. The campus is spread over a **large biodiverse area**. Due to **increase in demand for hostels, housing and academic facilities, construction activities** are also going on. In order to ensure sustainable development, the current policy document is prepared.

Title and Application

The policy shall be named as *IIT Bombay Sustainability Policy*. The policy shall apply to the institution and all its Students, Post-docs, Staff, and Faculty. The sustainability policy is aligned with the sustainable development goals (SDGs) suggested by United Nations. There are seventeen verticals in SDGs which consider technical, environmental and social aspects. By implementation of this policy, IIT Bombay is firmly determined to achieve sustainability in all domains of life at campus. Further, it will contribute definitely to spread of sustainability principles out of the campus.

Purpose and Aspects Covered in the Policy

The purpose of the sustainable policy is to adopt green practices which promote environment friendly ambience in the campus and develop sense of responsibility among the residents towards environmental conservation. In summary, the policy is committed to have high environment & social impact and excellent Governance in the Institute. In addition, IIT Bombay considers 'safety at working place' as an important aspect to achieve sustainability. Various sections/ departments across the Institute participate actively in the above domains. To accomplish the purpose, following activities have to be performed under different domains.

(A) Environmental Education and Research

IIT Bombay has a Green Office Committee which is Chaired by Director IIT Bombay which looks after the environmental aspects. To ensure environmental sustainability, a dedicated administrative position, Associate Dean-III (Infrastructure Planning & Support) was created by the Institute administration. The office of Associate Dean-III(IPS) is expected to plan, implement and monitor the green initiatives in the campus. The proposed initiatives are discussed in Green Office Committee for inputs.

(i) Environment education

Among higher Education technical Institutions, IIT Bombay is among the few Institutes which started study and research on environment in late seventies and established a separate academic entity in the form of Centre for Environmental Science & Engineering. Since then, the Centre is offering M.Tech. and Ph.D. programmes. The 'Centre' has been upgraded as 'Department' almost five years ago since the inception of dual degree programmes (B.Tech.-M. Tech. & MSc-PhD). In addition, other academic units (such as Department of Energy Science and Engineering, Centre for Climate Studies, Centre for Technology Alternatives for Rural Areas (CTARA), Department of Humanities & Social Sciences and Centre for Policy Studies) also offer several relevant courses related to environmental and social aspects for the students admitted in different programmes.

Apart from this, all the undergraduates must study a basic course on Environment Studies which is mandated by Supreme Court of India, which also covers sustainability concepts. The mandatory course is jointly offered by Environmental Science & Engineering Department and Department of Humanities & Social Sciences at IIT Bombay. Further, the online course content will be made available for all campus residents.

(ii) Environmental research

IIT Bombay research community is committed to perform research in national and global environmental issues. The faculty from different departments are conducting research on various key issues such as waste and wastewater minimization, treatment & recycling, climate change, use of sustainable construction materials, renewable energy (such as biomass, and solar), batteries, Sustainable transport planning and Efficient traffic management. The major purpose should be to develop low cost products which are affordable, durable and efficient to use. In order to invent sustainable products, inter-department collaborations are highly encouraged.

(iii) Awareness programmes



The awareness drives will be organized time to time by public health office, students' groups, and volunteers to inculcate importance of environmental conservation and harmful impacts of unsustainable practices (such as consumption and over-exploitation of resources, food wastage, littering and dumping of waste, wastage of water and electricity etc) to the residents.

1. Some of the awareness activities include collection of plastics and glass from various locations in the campus, zero waste days in messes, display of posters, plays/ skits on the roads or hostels. These activities should essentially be organized in the months of September and October (generally during Swachhta Pakhwada) in addition to other period during the year.
2. Apart from this, IIT Bombay is determined to promote environmental education among kids via competitions, cleaning drives and plantation activities.
3. Besides, the professionals working in diverse fields or similar disciplines to improve awareness at National level are also trained through short courses and hands-on training programmes.
4. To motivate the students for waste minimization and its proper disposal, competitions among hostels will be planned particularly for food waste minimization.
5. Environmental awareness programmes will be organized for the campus residents to adopt sustainable consumption practices and reducing overall carbon footprints.

(B) Environmental Conservation and Management

For the conservation of environment, reduction in use of non-renewable sources and decarbonization, several measures will be taken in different domains. Monitoring of relevant environmental parameters will be done on regular basis with the involvement of all stakeholders in the campus.

(i) Approaches towards zero carbon emissions



(a) Sustainable transport



1. The increasing adoption of sustainable transport (such as walking, bicycles etc.) within the campus will contribute towards achieving zero carbon emissions.
2. The institute will aim to eliminate gasoline and diesel operated vehicles in a phase-wise manner.
3. Public transport at the campus will be strengthened by taking suitable measures.
4. Apart from this, bicycle lanes will be constructed to allow safe travel and encourage use of unpowered mode of transport.
5. Additional footpaths are being constructed for pedestrians for easy access to the academic area from hostels.
6. The campus land use plan envisages the concept of making it self-sustainable reducing the need for travelling outside the campus for routine purposes

(b) Water conservation and wastewater recycling



For water conservation and wastewater recycling, following measures will be taken:

1. Rainwater harvesting programmes will be executed. Some of the examples may include construction of check dams (at feasible locations) at storm water drains, groundwater recharging etc.
2. Grey water from residential buildings will be treated and recycled as much as possible.
3. The stored rainwater and treated grey water will be used for various purposes including horticulture activities, vehicle washing and toilet flushing, depending upon the quality.

4. Provisions will be made to reduce water consumption. Some examples may include installation of low water flush tanks and water less urinals in rest rooms, regular monitoring of water consumption etc.
5. The supply pipes will be maintained and repaired to eliminate loss of water due to leakages.
6. Water audits will be performed once in a year to identify the limitations and overcome the issues.

(c) Solid waste treatment and recycling



Municipal solid waste collection and disposal will be performed in scientific manner.

1. At source, waste segregation into dry and wet waste fractions is mandatory.
2. All the wet biodegradable waste produced from houses and hostels is processed using appropriate biological processes.
3. The hostels' messes have to reduce food wastage by taking suitable measures.
4. The not-readily biodegradable woody material may be processed to form pellets within the campus if it is found feasible.
5. The recyclable dry household waste will be recycled either in-house or through an authorised recycler.
6. Sanitary waste will be collected separately and disposed off through an authorized biomedical waste collection agency.
7. Single use plastics is banned in the campus. The buyers are encouraged to carry recyclable bags.
8. Waste plastic will be collected and recycled in proper manner.
9. Biomedical waste from hospitals is being handled and stored as per Biomedical Waste Management Rules (2016) before disposal through an official agency.
10. E-waste and discarded scrap material (such as old equipment, and their parts, unusable furniture etc.) is being recycled and disposed by auctioning through approved vendors only.
11. The excavated soil from various construction sites will either be reused at the same site or will be utilised for horticulture activities in different grounds.
12. Waste audits will be performed on regular basis to understand the performance of existing practices and taking appropriate measures for further improvement.

(d) Energy conservation

At IIT Bombay, appropriate measures will be taken to conserve energy.

1. Increasing the contribution of solar photovoltaic power will be one of the main energy-saving measures.
2. Some examples for energy conservation may include replacement of CFL by LED, use of motion sensor activated lights and exhausts in toilet blocks and installation of BLDC fans. etc.
3. Further, the new buildings will be constructed in such a way that the natural light is sufficient in day time.
4. Energy audits will be performed periodically for continual improvement in energy systems and their usage.

These initiatives will significantly contribute to IITB's goal of achieving a net zero campus.

(e) Sustainable infrastructure development

The infrastructure will be developed to provide good and healthy working environment to the building occupants.

1. Its features include energy and water saving fixtures, proper ventilation (i.e., air exchange with the outside environment), and natural lighting.
2. The new buildings will be built to target GRIHA four-star rating criteria.
3. Renewable energy through wind and solar PV may be installed and green power will be wheeled for campus use.
4. The new construction will be planned in a manner to reduce land footprint and conserve greenery.

(f) Road cleaning

Suitable measures will be taken to prevent dust suspension in air during road cleaning in the campus. Hence, vehicle mounted road sweeper having a provision for water spray will be used for cleaning of the roads.

(ii) Creation and maintenance of green cover and landscaping



1. The Institute will make all efforts to conserve greenery in the campus by compensatory tree plantation, growing grass and native shrubs.
2. In addition, more playfields will be developed for students, staff and family members. Kid's parks will also be developed at various locations.
3. Landscaping projects of different sizes will be undertaken at roadsides and open spaces with native plant species, and seasonal flowers.

(iii) Biodiversity management



Due to increasing development activities, suitable measures will be taken to maintain biodiversity in the campus:

1. Butterfly gardens, medicinal plants and exotic flora & fauna will be conserved as well as created within the campus.
2. Biodiversity audits will be conducted periodically.
3. IIT Bombay has created a protected no-construction zone next to the Powai lake, protecting the natural flora and fauna both on land, and in the wetlands leading to the lake. The zone of wilderness (no construction, parks etc) has been marked on the masterplan of IIT Bombay which is attached in the end of the document.
4. Biodiversity lab will be established in the campus. This area will become a hotspot of biodiversity with a very large number of birds, across a large number of species being spotted in this area.

(iv) Handling, storage and disposal of hazardous materials and wastes



1. The hazardous chemicals or materials used in research activities should be stored in the appropriate material storage cabinets. Proper ventilation should be provided wherever necessary.
2. The proper disposal of hazardous liquid and solid waste will be ensured. Proper storage of waste should be the responsibility of waste generators.
3. These types of wastes have to be stored in leak proof containers with all precautions before handing over to the vendor. Suitable labels should be put on the containers to prevent any mishandling.

(C) Improved Housekeeping Activities



Better housekeeping practices will be adopted to maintain clean and healthy indoor environment in the campus.

1. Use of mechanized equipment and ensuring avoidance of direct human contact with solid and liquid waste will not only improve the cleanliness but also protect the health of housekeeping workers.
2. For their safety and health, the workers will be provided the personnel protective equipment (PPE).
3. In addition, proper training will be organized for the housekeeping workers so that cleaning activities are performed efficiently.

(D) Safety Aspects



IIT Bombay's sustainability policy includes safety aspects to ensure health and environmental safety.

1. The Fire & Safety Section (FSS) of IIT Bombay will prepare a comprehensive document containing Standard Operating Procedures (SOPs) for various types of safety such as lab safety, hospital safety, hostels & residences safety, road safety and construction safety.
2. Proper measures will be taken to ensure campus safety from above activities.
3. The students will be educated through sessions to be organized by Safety Officer, FSS.
4. Mock drills will be performed at least once in a year to train volunteer staff and students.
5. Internal safety audits will be conducted twice a year whereas external audits will also be conducted once in two years.

(E) Governance



Various academic as well as administrative sections are responsible for the implementation and monitoring of different activities described above.

The above policies will be reviewed periodically to ensure meeting the sustainability goals in timely manner.

Image of Master Plan Showing Wilderness zone near lake fringe road

