

INDIAN INSTITUTE OF TECHNOLOGY GANDHINAGAR

Submitted to the IIT Council

GREEN POLICY

Towards a Sustainable, Resource-Efficient, and Biodiverse Campus

2026

Table of Contents

Table of Contents.....	2
Preamble.....	3
1. Energy Conservation and Management.....	3
1.1 Objective.....	3
1.2 Policy Measures.....	3
2. Solid Waste Management.....	4
2.1 Objective.....	4
2.2 Policy Measures.....	4
3. Water Management.....	6
3.1 Objective.....	6
3.2 Policy Measures.....	6
4. Green Cover and Biodiversity.....	7
4.1 Objective.....	7
4.2 Policy Measures.....	7
5. Conclusion.....	7

Preamble

Indian Institute of Technology Gandhinagar (IITGN) is committed to fostering a sustainable, resource-efficient, and ecologically responsible campus. This Green Policy consolidates the Institute's ongoing initiatives and future commitments across the domains of Energy Management, Solid Waste Management, Water Management, and Green Cover & Biodiversity, and is presented to the IIT Council as a record of the Institute's environmental stewardship and its roadmap for continued sustainability.

1. Energy Conservation and Management

1.1 Objective

To reduce overall energy consumption across the campus through efficient technology adoption, renewable energy generation, and intelligent building management systems, in line with the sustainability goals of the Institute and the IIT Council's green campus initiatives.

1.2 Policy Measures

1.2.1 Energy-Efficient Lighting and Ventilation

- Astronomical timer (astro-timer) switches are installed for street lighting and corridor lighting to ensure automatic operation synchronized with sunrise and sunset timings, eliminating manual intervention and energy wastage.
- Sensor-based lighting and exhaust fan systems are deployed in lavatories across academic buildings to ensure energy is consumed only when spaces are occupied.
- All lighting fixtures across the campus have been converted to LED technology, and BEE 5-star rated fans are used institution-wide to minimize electricity consumption without compromising performance.

1.2.2 Renewable Energy Generation

- A 500 KWp solar power plant has been commissioned on campus, contributing to the Institute's renewable energy portfolio and reducing dependence on grid electricity. Further capacity expansion is under active planning to increase the share of solar energy in overall campus consumption.
- Solar water heating systems have been installed across residential and institutional buildings, substantially reducing electrical load associated with water heating.

1.2.3 Efficient Cooling and Climate Control

- A central chilling plant serves the campus-wide air-conditioning requirement, offering higher efficiency compared to distributed conventional AC units.
- Variable Refrigerant Volume/Variable Refrigerant Flow (VRV/VRF) systems are employed for standalone air-conditioning requirements, ensuring optimized energy use based on actual load demand.

- Passive Downdraft Evaporative Cooling (PDEC) systems have been incorporated in dining halls, providing natural and energy-efficient thermal comfort without reliance on mechanical cooling.

1.2.4 Passive Building Design

- Building designs across the campus incorporate cross-ventilation and natural lighting strategies to reduce dependence on artificial lighting and mechanical ventilation, thereby lowering overall energy demand.

1.2.5 Building and Power Management Systems

- A Building Management System (BMS) is deployed to monitor and control HVAC operations across campus buildings, enabling optimized energy usage through centralized automation and real-time monitoring.
- The campus maintains a power factor in the range of 0.99 to 1.0 through Automatic Power Factor Correction (APFC) panels installed at distribution substations, ensuring efficient utilization of electrical infrastructure and minimizing transmission losses.

2. Solid Waste Management

2.1 Objective

To implement a comprehensive, zero-waste approach to solid waste management across the campus through source segregation, systematic collection, and environmentally sound processing of all waste streams, minimizing landfill dependency and maximizing resource recovery.

2.2 Policy Measures

2.2.1 Source Segregation — Colour-Coded Bin System

Segregation at the point of generation forms the foundation of the Institute's waste management approach, supported by a dual-tier, colour-coded bin system tailored to the context of each campus location.

Indoor/Building Level — Three-Bin System: Every building on campus, including academic blocks, hostels, housing, dining halls, and the Research Park, is equipped with a three-bin set:

- **Green Bin** – Organic waste (food waste, kitchen scraps, and other biodegradable material)
- **Blue Bin** – Recyclables (paper, plastic, metals, and other dry recyclable materials)
- **Red Bin** – Landfill waste (waste that is neither recyclable nor compostable/biodegradable)

Outdoor/Common Areas — Two-Bin System: Bins placed across open and common areas of the 400-acre campus follow a simplified format:

- **Green Bin** – Organic/biodegradable waste
- **Red Bin** – All remaining non-organic waste

All bins are labelled with informative posters to guide correct disposal by campus users.

2.2.2 Special Waste Channels

Dedicated, colour-coded channels are maintained for hazardous and specialised waste streams requiring controlled handling:

- **Yellow Bags** – Sanitary and biomedical waste
- **Red Bags** – Laboratory consumables waste
- **Blue Bags** – Broken glass material

These streams are routed separately from general waste and handled exclusively by an authorized third-party agency for compliant treatment and disposal, ensuring hazardous, biomedical, and sanitary waste never enters the general waste stream.

2.2.3 Collection Operations

Waste collection is carried out by a dedicated Solid Waste Management (SWM) team of 13 personnel, organized daily into four zone-based operational teams covering the housing area, hostel area, dining halls/Research Park/Central Arcade/Sports Complex/Guest House/Security Residence (tempo-based route), and the biogas plant. The workflow is structured to ensure full coverage of housing, hostel, academic, and common-area zones through a coordinated morning and post-lunch rotation, while dedicated staff maintain continuous, all-day operations at the biogas plant and the tempo-based collection circuit. All SWM staff are provided with personal protective equipment (PPE), including gloves and masks, for all collection and handling activities.

2.2.4 Multi-Stage Segregation

Segregation is reinforced through three progressive stages:

- **Primary Segregation (At Source):** Colour-coded bins and informative signage enable correct segregation by campus users at the point of disposal.
- **Secondary Segregation (At Collection Point):** Collection teams correct any residual mixing on the spot before transport.
- **Tertiary Segregation (Central Facility):** All waste is brought to a central waste segregation facility for final, detailed sorting — dry waste into multiple recyclable categories, and wet waste routed directly to the biogas plant.

2.2.5 Waste Processing

- **Dry Waste Recycling:** Dry waste is sorted into distinct categories at the central facility to maximize the proportion sent for recycling; non-recyclable material is disposed of through appropriate channels.
- **Source-Reduction — Plastic Ban:** All eateries, shops, and outlets on campus are strictly prohibited from using plastic for packaging, food delivery, or cutlery, reducing non-recyclable dry waste at the point of generation.
- **Wet Waste — Biogas Generation:** A major share of organic waste is processed at the campus biogas plant, converting food and biodegradable waste into renewable biogas.
- **Wet Waste — Aerobic Composting:** Remaining wet waste is processed through aerobic composting pits to produce compost for campus use.

- **Horticulture Waste Management:** Given the scale of the 400-acre campus, horticulture waste is stored near the biogas plant, sun-dried, and shredded. A portion is blended with food waste during composting to optimize the carbon-to-nitrogen (C/N) ratio and improve compost quality, while the remainder is used for mulching across the campus.

3. Water Management

3.1 Objective

To work towards achieving "Water Positive" status for the campus through a combination of demand reduction, rainwater harvesting, groundwater recharge, wastewater recycling, and preservation of natural water bodies, with the long-term goal of ensuring that the volume of water returned to the local water table exceeds the campus's total water consumption.

3.2 Policy Measures

3.2.1 Water Positive Aspiration

IIT Gandhinagar is pursuing an integrated water management strategy aimed at progressively balancing water sourcing, consumption, treatment, and recharge across the 400-acre campus, with the objective of moving towards a net-positive water balance over time.

3.2.2 Rainwater Harvesting and Groundwater Recharge

The campus incorporates rainwater harvesting structures and percolation systems designed to capture stormwater runoff and direct it back into the ground, supporting recharge of the local aquifer and helping reduce dependence on external water sources as part of the Institute's broader water conservation efforts.

3.2.3 Natural Water Bodies and Biodiversity

Natural topographical depressions on campus have been converted into seasonal surface-water storage lakes. Stormwater from surface runoff is collected by gravity into these ponds via intake wells, with overflow discharged into the Sabarmati River. These lakes have become a habitat for several migratory bird species, significantly enriching campus biodiversity while contributing to the campus's water retention and recharge efforts.

3.2.4 Wastewater Treatment and Recycling

Wastewater generated across the campus is treated at an on-site Sewage Treatment Plant (STP), with treated/recycled water directed to non-potable applications such as flushing, landscaping/gardening, and construction activities, thereby reducing freshwater withdrawal for these purposes and supporting the Institute's progress towards its water positivity goal.

3.2.5 Water-Efficient Landscaping

Landscaping practices across the campus prioritize native and drought-tolerant plant species along with efficient irrigation methods, to reduce outdoor water demand while maintaining green cover.

3.2.6 Water Monitoring and Demand Management

Water usage across the campus is monitored through metering and tracking systems, enabling data-driven identification of consumption patterns and leakages, an essential step in the Institute's roadmap towards water positivity.

4. Green Cover and Biodiversity

4.1 Objective

To preserve, expand, and enrich the campus's green cover and natural ecosystem through continuous plantation efforts, conservation of indigenous flora, and protection of the diverse fauna that inhabit it, fostering a biodiverse and ecologically sustainable environment.

4.2 Policy Measures

4.2.1 Expanding Green Cover

IIT Gandhinagar maintains a vast green cover across its campus, which continues to increase year on year through ongoing tree plantation drives. This sustained afforestation effort reflects the Institute's long-term commitment to enhancing ecological density and environmental quality on campus.

4.2.2 Indigenous and Naturalised Plant Species

The campus hosts a wide variety of indigenous plant species, supporting the local ecosystem and preserving native biodiversity. In addition, select naturalised species are planted to enhance campus aesthetics and to enable faster growth for avenue plantations, ensuring a balance between ecological authenticity and visual landscaping needs.

4.2.3 Miyawaki Forest

A Miyawaki forest has been established on campus, employing this dense, fast-growing afforestation technique to create a compact, multi-layered native forest ecosystem that supports rapid biomass growth and enhanced biodiversity within a limited land area.

4.2.4 On-Campus Nursery

A dedicated nursery is maintained on campus by the horticulture team to support continuous greening efforts, ensuring a steady supply of saplings for ongoing plantation drives and landscape maintenance across the Institute.

4.2.5 Rich Faunal Biodiversity

The extensive green cover has enabled IIT Gandhinagar to become home to a rich and diverse ecosystem of fauna. The campus hosts a variety of animal species, including nilgai, monitor lizards and other lizard species, porcupines, monkeys, peacocks, snakes, and other birds, reflecting the ecological richness fostered by the Institute's sustained green initiatives.