



Water Policy

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Sustainability is a key focus at IIT Gandhinagar (IITGN), which encompasses a broader perspective, in addition to incorporating sustainability components in campus design and development. The campus has been conceptualized keeping in mind the long-term objectives as well as present and future needs.

The master plan complied with the National Building Code 2009 of India, including the 'Approach to Sustainability'. The buildings have been built to Green Rating for Integrated Habitat Assessment (GRIHA) for green buildings and large area developments and Energy Conservation Building Code (ECBC) standards. The guiding principles of the master plan included the following: a) complete and absolute respect for the environment at both micro and macro levels and b) respect, conserve and where possible, recycle resources.

The original master plan of the institute states that for making the campus truly green, the institute would have a Sustainable Development Policy and inculcate sustainable practices through its action plans. The Sustainable Development Policy covers three broad areas, water, energy, and solid waste management.

IIT Gandhinagar campus is committed to the maximisation of water reuse across the university. It has several water-saving and recycling features that promote sustainability. The Master Plan emphasised sustainability in campus water management adopted several innovative water management practices

All water use is designed with and must conform to the following guidelines:

Freshwater, wastewater, and rainwater

- Water and wastewater management systems developed for the Institute campus include drawing water from the Narmada Canal as well as harvesting rainwater. The wastewater is treated in a sewage treatment plant that includes a root zone treatment system (environment-friendly treatment) and the recycled water is then used for irrigation purposes.
- The campus has zero discharge — all water is ultimately recycled.
- A flow meter is installed at the campus, which measures the total volume of water extracted from the Narmada canal.
- Freshwater is piped from the Narmada Canal directly to the Water Treatment Plant (WTP) on campus, where it is treated and then distributed to one of three Water Service Centres (WSC).
- The wastewater is piped to the Sewage Treatment Plant (STP) where it is treated by feeding the collected waste to a bacterial mass that converts the decaying matter into a stabilised basic

mixture of water, carbon dioxide, and mineral-rich residue. This process is completed by passing the effluent through a settlement tank, an anaerobic baffled reactor including anaerobic filters, and through the roots of *Canna indica* in a process known as root zone treatment. The resulting treated water is primarily used for irrigation purposes.

- The campus uses an innovative sewage treatment system, called a Decentralised Wastewater Treatment System (DEWATS), which features root zone treatment of the sewage. The sewage treatment system is based on the following four principles: resource efficiency and low energy consumption, minimum use of chemicals, ease of operation and maintenance, ability to withstand variations inflows (vacation-time flows are less).
- The effluent from the anaerobic reactors is collected in a sump and pumped to the root zone treatment system. The treated effluent from the root zone treatment is pumped to the water distribution centers for irrigation in the campus.
- In addition to the direct benefit through saving the operational cost of the sewage treatment system, further advantages in this technology include lesser carbon footprint due to lower power and chemical consumption and hence, can be termed as a 'Green STP Technology'. The technology contributes to reducing the demand for freshwater supply and the load on the city's treatment system.
- Rainwater from rooftops throughout the campus is collected and stored in large underground tanks placed strategically across the campus for rainwater harvesting, called Jal Mandaps (water pavilions). This water is piped to the WTP where it is treated and mixed with the Narmada Canal water.
- Surface runoff of rainwater is captured through a series of drainage pipes leading to intake wells for feeding the two natural lakes (known as Mirror Lake), with surplus water (overflow) sent to the Sabarmati River.

Water quality and management

- The water quality parameters of the freshwater for domestic use shall be in compliance with IS:10500 – Drinking Water Standard. However, it is suggested that the hardness of this water shall be kept around 82-100 ppm (as per IS:10500 the limit is 300 ppm) to prevent scaling of sanitary fixtures and faucets, heating apparatus, piping system, etc.
- The basic water quality parameters, including pH, turbidity, TDS and Chlorine are monitored and documented regularly by the Institute Works Department. Samples of water are collected and sent to laboratories for analysis to ensure compliance with the state and national level pollution control regulatory framework. This exercise helps in assessing and preventing any polluted water from entering the water distribution system.
- The Institute Works Department carries out periodic maintenance to prevent water loss or leakages in the water system.
- Performance monitoring and validation is conducted through the implementation of operation and maintenance protocol.
- Water dispensers for drinking are available at different parts of the campus to provide free drinking water for students, staff, and visitors.
- The filling of overhead water tanks is automated, with 24x7 monitoring of water levels and pumps on/ off to prevent overflow of water. All the overhead tanks are provided with float valves

which shut automatically once the tank is filled to a predefined level. Any overflow (eg. due to a temporarily dysfunctional valve) is collected in Jalmandap.

- Surfaces such as open grid pavements and planting beds (shrubs) have been used throughout the campus to reduce the imperviousness factor.
- The housing (for campus residents), academic and hostel areas have applied the following building standards to minimise water use: low-flow taps and showerheads, dual flush toilet tanks in washrooms, waterless urinals (in hostels), drip irrigation system, etc.
- Throughout the campus water-saving aerators are used in all the washbasins, sink taps and faucets. These dispense water at a controlled rate by mixing air with the stream of water. This results in lesser water consumption compared to the taps and faucets that do not have such regulators installed.
- The landscaping plan of the campus has emphasised using native species of trees and plants to minimise water usage.
- Various sustainable interventions at the IITGN campus are explained through placards and posters, which are installed at suitable locations on the campus, to generate a better understanding and awareness of these measures amongst community members and visitors.
- During ongoing construction activities, the contractors are responsible for providing clean drinking water and a minimum level of safety and sanitation facilities for all the workers.

Public Advocacy, Communication, and Campaigns

- Organise activities and take initiatives to promote water conservation, raise awareness on conscious water usage among the community members on the campus and in the neighbourhood
- Circulate communications through Green Office for efficient water management among the IITGN community members

पा. सुधीर कृ. जैन
Prof. Sudhir K. Jain

निदेशक
Director

भारतीय प्रौद्योगिकी संस्थान गाँधीनगर
Indian Institute of Technology Gandhinagar
पालज, गाँधीनगर - ३८२ ३५५
Palaj, Gandhinagar - 382 355