



भारतीय प्रौद्योगिकी संस्थान गांधीनगर  
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IITGN

No. IITGN/CD/2024/02

Date: 18 October 2024

**Mr. Arvind Kavia**  
**National Institute of Disaster Management**  
Ministry of Home Affairs, Government of India  
Plot No. 15, Pocket-3, Block-B, Sector-29  
Rohini, Delhi - 110042

**Subject: Submission of entry for NIDM "Call for Best Practices for Knowledge Platform on Urban Resilience"**

Dear Mr. Kavia,

I am pleased to submit the application of IIT Gandhinagar for the NIDM Best Practices initiative under the theme **Sustainable Urban Development** and sub-theme **Solid Waste Management and Sanitation**. The enclosed documents highlight our initiatives in promoting sustainable waste management and improved sanitation practices.

In case any further details are required from our side, we will be happy to provide the same.

Sincerely,

Prof Gaurav Srivastava  
Dean, Campus Development  
IIT Gandhinagar

Encl.: As above.

**Thematic Area:** Sustainable Urban Development

**Sub Thematic Area:** Solid Waste Management & Sanitation



**Title:** IIT Gandhinagar's "Green Initiatives at its Campus"

**Name:** Indian Institute of Technology Gandhinagar

**Location:** IIT Gandhinagar, Palaj, Gandhinagar – 382055, Gujarat

**Before Situation:**

Before the establishment of its permanent campus, IIT Gandhinagar had a strong vision of becoming a zero discharge, zero waste campus. With this goal in mind, the institute planned to implement sustainable practices like eco-friendly sewage treatment, proper solid waste disposal, and recycling systems. However, these systems were yet to be put in place. The campus was eager to introduce initiatives that would involve the community in promoting sanitation and waste management, while also providing a clean living environment for construction workers and integrating these values into its academic programs.

### **Implemented Measures:**

- a. **Sewage Treatment Plant (STP):** A fully functional STP of 1.2 MLD is operational at the campus. It is treating about 5.5 lakh litres of sewage every day and giving 5 lakh litres of recycled water which is used for horticulture. The STP is designed to use an eco-friendly root-zone treatment system using a planted gravel filter with Canna plants. This avoids use of any inorganic chemicals and the treatment process remains completely organic. The treated water is directly used for horticulture across the campus and the leftover solids are utilized as manure within the campus. This makes the Indian Institute of Technology (IITGN) a zero-discharge campus.
- b. **Dual Plumbing System:** A dual plumbing system has been implemented to facilitate the use of treated water for toilet flushing. Treated water from the Sewage Treatment Plant (STP) is specifically directed for flushing purposes, ensuring water conservation. Each unit is equipped with two separate plumbing lines: one dedicated to toilet flushing and the other for general water use.
- c. **Waterless Urinals:** Waterless urinals have been installed in hostels, effectively eliminating the need for water during use. This system conserves approximately 2 liters of water per flush, significantly reducing water consumption.
- d. **Waste segregation practice:** Proper waste segregation practices are being followed within the housing and hostel areas and by all the campus eateries since early 2016. Waste is being segregated into five primary categories – bio waste, recyclable paper/plastic waste, landfill waste, sanitary waste, and e-waste. Green, blue and red bins have been placed throughout the campus, including the hostels, academic buildings, and housing areas. Specific locations have bins of other colors (yellow and black) meant to collect specific kinds of waste. Green bins collect organic wet waste, such as vegetable peels and food scraps. Blue bins collect recyclable paper/plastic material and red bins collect materials that need to go to the landfill. An external specialized Solid Waste Management (SWM) consultant supports the campus in managing the SWM program by conducting regular staff training, overseeing the implementation of initiatives, and educating the campus community on the importance and benefits of waste reduction.
- e. **Sanitary waste management:** Sanitary waste is being sent for incineration through a certified external agency. This ensures that sanitary waste does not end up clogging water/wastewater ways and has the least risk of contaminating the environment.

- f. **Bio-waste management:** Bio-waste is being treated in several ways. The laboratory bio-waste (which can be toxic) is being disposed through certified external agency. Horticulture waste (fallen leaves, cut grass) is being sent to composting pits. Food waste is being sent to a biogas plant, which digests the waste and produces gas through which, electric energy is generated using a generator.
- g. **Collection of expired/unused medicines:** The Institute dispensary has a dedicated bin to collect expired and unused medicines which is being disposed through specialised agency.
- h. **Cleanliness drives:** The Institute organizes cleanliness drives and awareness programs from time to time within the campus. Such drives educate the residents about the importance of waste segregation.
- i. **Engagement in nearby villages:** The Institute actively engages in the two nearby villages to promote waste segregation and disposal practices. The Institute works with the schools of the villages to disseminate information regarding sanitation.
- j. **Inclusion of cleanliness in curriculum:** The 'Foundation Program', a flagship induction program of IITGN, started in 2011, has imbibed the practice and education of cleanliness drive, segregation and sanitation. All first year undergraduate students are required to undergo this five-week program during which, they engage for cleaning of a pre-defined area. Such areas in past have included the Ahmedabad railway station and areas inside nearby villages.

**Significant effect after implementation:**

Following the implementation of sustainable initiatives, IITGN has successfully become a zero discharge campus, with all sewage being treated in its eco-friendly sewage treatment plant (STP). The STP processes approximately 5.5 lakh liters of sewage daily, producing 5 lakh liters of recycled water and organic manure, both of which are utilized for campus horticulture, significantly contributing to the campus's green landscape.

Solid waste segregation and disposal practices have been effectively introduced, leading to a notable shift in the behavior and attitudes of residents towards responsible waste management. The active involvement of students in social outreach activities, such as awareness campaigns and cleanliness drives, has been highly appreciated by the local community. Their participation has strengthened the culture of sustainability within the campus and beyond.

Additionally, the combined use of the STP, biogas plant, and compost pits has resulted in the production of organic manure, further supporting horticultural efforts. From Apr 2023 - Mar 2024, 49,567 kg of manure was supplied for horticulture, which was made from organic waste through the on-campus biogas plant and compost pits. These eco-friendly systems have not only enhanced the green infrastructure but also fostered a culture of environmental responsibility throughout the IITGN community.

**Financial Details:**

Sr. No.	Innovative Solutions	Capital Cost in Rupees	Operation & Maintenance Cost in Rupees (per year)
1	Sewage Treatment Plant (STP)	Approx. 7 crores	39.93 lakhs
2	Biogas Plant	28 lakhs	9.5 lakhs

**Awards Conferred to IITGN for Sustainable Development:**

- Five Star rating for Masterplan (Design) under GRIHA LD.
- Five Star rating for Phase - IA constructions under GRIHA LD.
- First prize in HUDCO Design Award for staff housing & student hostels.
- First prize in HUDCO Design Award for Green buildings.
- Yes Bank Natural Capital Award under the Eco Campus category
- Three Star GRIHA rating for Housing Buildings.
- Three Star GRIHA rating for Academic Block and Student Dining Hall.
- HUDCO Award for “Best Practices to Improve the Living Environment 2013-14” under the category of "Housing, Urban Poverty and Infrastructure"
- “One District One Green Champion” Award by MGNCRE.
- GRIHA Exemplary performance award for Integrated Water Management.
- National Water Award in the category of Best Institution in the area of water conservation.
- International Green University Award 2023.
- Star Campus Award 2024 for Water Conservation & Management
- HUDCO Award for “Best Practices to Improve the Living Environment 2023-24” under the theme of "Sanitation"