NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL

SUSTAINABILITY REPORT 2024

1. Institutional Overview

National Institute of Technology Warangal (NITW), established in 1959, is a premier institution among India's NITs. The 237.8 acre campus supports over 6500 students, 1000+ research scholars, and 330 faculty members. NITW emphasizes academic excellence alongside environmental stewardship and sustainable growth.

Vision:
To be a globally recognized institution nurturing technically competent and socially responsible professionals.

Mission:
To provide quality education, promote innovation, and adopt sustainable practices.
Core Values:
Integrity, Excellence, Inclusivity, Sustainability, and Social Responsibility.

Sustainability at NITW is guided by the Environment (Protection) Act 1986, the Water (Prevention and Control of Pollution) Act 1974, and the institutional Environmental Management Plan (EMP).

2. Strategic Framework

NITW's sustainability strategy is rooted in the Circular Economy and the United Nations Sustainable Development Goals (SDGs). It aligns with national programs like Swachh Bharat Abhiyan, Unnat Bharat Abhiyan, and the National Mission for Sustainable Habitat.

Governance Structure:
- Dean (Planning & Development): Overall coordination
- Estate Office: Operational management
- Academic Departments: Research and curriculum integration
- Committees: Campus Water, Waste, and Energy Management

3. Key Focus Areas

A. Setting and Infrastructure

86.84% open space with 22.2% planted vegetation and 11.1% forest area. A 6,344 m^2 Miyawaki forest and 30% area dedicated to water absorption. Inclusive design with accessible infrastructure and comprehensive safety systems. 2% of the annual budget allocated to sustainability.

B. Energy and Climate Responsibility

999.7 kWp rooftop solar PV system supplies 16.42% of total power. 67% energy-efficient appliances; 100% LED lighting. Annual carbon footprint: 3,561.96 metric tons of CO_2. Active research on hydrogen energy and battery materials at the SHEFT Centre of Excellence.

C. Water Conservation

15 rainwater harvesting pits and a recharge pond (capacity: 481,250 L). 600 KLD STP with MBBR technology treats all campus sewage; treated water reused for irrigation. 54% of total water demand met through internal conservation. Smart water meters ensure real-time monitoring.

4. Waste Minimization and Circular Economy

3R Principle (Reduce, Reuse, Recycle) applied with 70% implementation. Organic waste (160 tons/year) treated via biomethanation and composting. Plastic waste reduced due to single-use plastic ban. E-waste & biomedical waste handled by authorized agencies. e-Office system reduced paper consumption.

5. Sustainable Transportation

0.044 vehicle-to-population ratio promotes low-emission mobility. 2 electric vehicles, 2000 student bicycles, and 234 shared cycles. Dedicated pedestrian pathways, limited parking (2.1% area), and shuttle services.

6. Education, Research, and Community Engagement

"Out of a total of 1,216 courses, 108 are dedicated to sustainability, and there are 45 programmes with a sustainability focus. Research funding allocates 4.2 % to sustainability-related projects. There are more than 741 publications on sustainability out of a total of 1,475, and 123 events are held annually. The Unnat Bharat Abhiyan brings sustainable, eco-friendly technologies to nearby villages."

7. Performance and Achievements

NITW follows the UI GreenMetric framework for benchmarking. Key contributions to SDGs include: SDG 4 (Quality Education), SDG 6 (Clean Water & Sanitation), SDG 7 (Clean Energy), SDG 9 (Innovation), SDG 11 (Sustainable Communities), SDG 12 (Responsible Consumption), SDG 13 (Climate Action), and SDG 15 (Life on Land).

8. Challenges and Future Goals

Challenges: Integrating renewables further into energy mix, improving waste segregation, balancing infrastructure with ecology.

Future Goals: Achieve Carbon Neutrality by 2035, adopt Green Building standards, establish Zero-Waste Campus by 2030, become a Water-Positive Institution, and introduce a mandatory sustainability course for all UG students.

9. Conclusion

NIT Warangal is committed to building a resilient, low-carbon, and inclusive campus. Through policy, innovation, and community engagement, the institute continues to lead by example in advancing sustainability across education, infrastructure, and society.