SUSTAINABLE DEVELOPMENT GOALS

12. RESPONSIBLE CONSUMPTION AND PRODUCTION

Chennai Institute of Technology

Academic Year: 2023-2024

Waste Measurement and Treatment

12.3.1 Waste Measurement at the Institute

At Chennai Institute of Technology, we actively monitor and measure the various types of waste generated across campus to ensure effective waste management and sustainability practices. The institute follows a structured approach to track, quantify, and analyse waste under different categories, enabling informed decision-making for waste reduction, recycling, and resource optimization. The following section provides an overview of how waste is measured across these categories.

Parameter	July 23	Aug 23	Sep 23	Oct 23	Nov 23	Dec 23	Jan 24	Feb 24	Mar 24	Apr 24	May 24	June 24
Food Waste (Kg)	3326	3262	3218	3272	1986	1612	1768	3179	3203	3162	1932	1220
Paper waste (Kg)	715	698	465	639	1014	122	96	678	637	629	921	86
Leaf waste (Kg)	496	572	539	502	526	537	629	612	586	565	572	689
Soft plastic waste (Kg)	167	159	172	149	98	54	102	165	178	157	102	26
Hard plastic waste (Kg)	412	318	346	372	306	912	298	303	376	341	354	876
Energy Consumption (kWh)	69395	97268	87983	89727	90315	69687	70310	92530	100418	103567	49754	52523
Solar Power Generation (Units)	38514	38355	37987	36633	36379	36193	38724	37862	38447	39103	39106	39037
Water consumption (Litres)	3390600	4007072	3835830	3921451	3908608	3287854	3180828	4019915	4315308	4272498	3410237	1260400
STP Sludge generation (Kg)	159	143	166	128	135	116	121	147	163	155	132	87
E-waste (Kg)	127											

At **Chennai Institute of Technology**, systematic monitoring and measurement of various waste streams are conducted regularly to promote sustainable campus operations. The table above provides a detailed monthly record of waste generation, energy consumption, and water usage from **July 2023 to June 2024**.

Food Waste:

Food waste is primarily collected from the hostel mess, cafeterias, and dining halls. The collected waste is weighed daily using calibrated scales to determine the total quantity generated each month.

Paper Waste:
Paper waste is collected through designated dustbins placed across the campus. After each examination period, used answer scripts and paper materials from valuation are segregated and weighed to measure total paper waste.

Leaf Waste:
Leaf and garden waste are gathered from landscaped areas and gardens across the campus. These are collected separately, composted where possible, and recorded in kilograms each month.

Soft and Hard Plastic Waste:
Plastic waste generated within the campus is carefully segregated into soft plastics (such as wrappers and plastic covers) and hard plastics (such as computer keyboards, plastic chairs, and containers). Separate bins are provided for collection, and the total quantity of each category is measured monthly.

Energy Consumption:
Electricity consumption is monitored through monthly electricity bills provided by the utility service. The data is recorded in kilowatt-hours (kWh) to assess energy efficiency and identify reduction opportunities.

Water Consumption:
Water usage is measured by calculating the number of times water tanks are filled daily and multiplying by their respective capacities across various campus locations. The total water consumption is recorded in kilolitres (KL) per month.

E-Waste:
Electronic waste, such as old computer peripherals, cables, and electronic components, is collected periodically and weighed before being sent to authorized recyclers for safe disposal.

Waste Collection Images



Importance of Measuring Waste

At Chennai Institute of Technology, monitoring waste generation across various categories plays a vital role in enhancing campus sustainability. By assessing the quantity and types of waste produced, the institute can identify key areas for improvement and implement effective strategies to minimize its overall waste footprint. This data-driven approach supports the development of targeted initiatives such as recycling drives, food waste composting, and e-waste management, fostering a cleaner and more sustainable campus environment.

Future Plans

Chennai Institute of Technology plans to strengthen its waste management initiatives by implementing detailed tracking of waste that is recycled, reused, or diverted from landfills. This enhanced monitoring system will enable the institute to better evaluate the effectiveness of its sustainability measures and drive continuous improvement in waste reduction and resource conservation practices.

12.3.2 Proportion of waste recycled

At Chennai Institute of Technology, a comprehensive waste management system ensures that a significant proportion of the total waste generated is reused, recycled, or upcycled to support the institution's sustainability goals.

Type of waste	Produced (t)	Treated (t)		
		Reused	Down-cycled	Up-cycled
Food Waste	31.14	-	-	29.14
Leaf Waste	6.825	-	-	6.651
Paper	6.700	-	6.424	-
Soft plastic	1.529	-	-	1.429
Hard plastic	5.214	-	-	5.168
e-waste	0.127	-	0.127	-

Total Waste Produced (t)	Waste Recycled / Reused (t)	Landfill Waste (t)
51.52	48.93	2.58

During the academic year 2023–2024, a total of 51.52 metric tonnes of waste were generated at Chennai Institute of Technology. Out of this, 48.93 tonnes were recycled or reused through various waste management initiatives implemented across the campus. Only 2.58 tonnes of the total waste were sent to landfill, demonstrating the effectiveness of waste segregation, recycling, and minimization practices adopted within the institution. The high proportion of recycled and reused waste underscores the institute's dedication to responsible consumption and production, aligning with the principles of UN Sustainable Development Goal (SDG) 12.

Food Waste Treatment

At Chennai Institute of Technology, food waste management is carried out systematically to promote sustainability and resource recovery. Food waste generated from the hostel mess and cafeteria is collected in designated bins and carefully segregated to remove non-organic materials. The organic waste is then processed in the campus biogas plant, where it is converted into biogas used for cooking purposes. This initiative not only reduces the volume of waste sent to landfills but also supports clean energy generation and promotes a circular, eco-friendly waste management system on campus. In 2023–2024, 31.14 tonnes of food waste were processed, of which 29.14 tonnes were upcycled through the biogas plant.




Biogas Plant

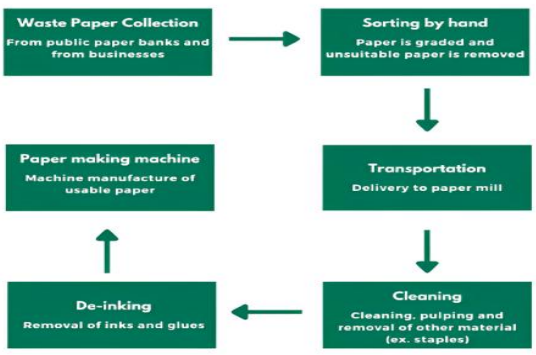
Leaf Waste Treatment

At Chennai Institute of Technology, leaf waste management is a key component of the institute's sustainability efforts. Fallen leaves and waste grass collected from planted and forested areas are properly segregated to remove plastics and other inorganic materials. The organic waste is then processed through vermicomposting in a designated area, where it is transformed into nutrient-rich organic manure. This compost is utilized to enhance soil fertility and support the growth of vegetation across the campus, creating a sustainable cycle of waste reuse and environmental care. A total of 6.825 tonnes of leaf waste were generated, and 6.651 tonnes were upcycled as compost.


Vermicomposting Unit

Paper Waste

At Chennai Institute of Technology, paper waste is managed efficiently through a well-structured collection and recycling system. Waste paper is collected in designated bins across the campus, and after offline examinations, evaluated answer scripts are submitted to the exam cell and then moved to the waste storage room. The collected materials are carefully segregated to remove non-paper and inorganic waste before being stored. The institute collaborates with ITC's "Well-being Out of Waste (WOW)" initiative, through which the stored paper is collected for recycling. In exchange, new paper materials are provided, reinforcing a sustainable paper usage cycle. The institute has also received recognition from ITC WOW for its active participation in paper recycling and contribution to environmental conservation. During the reporting period, 6.7 tonnes of paper waste were generated, of which 6.424 tonnes were downcycled through the ITC WOW program, thereby contributing to the circular economy.



Paper Exchange

Plastic Waste

At Chennai Institute of Technology, plastic waste is systematically managed to promote responsible disposal and recycling. Plastic waste is collected from designated bins placed across the campus. The collected plastic is carefully segregated from other materials and stored in a designated area for proper handling. The institute collaborates with Bisleri's "Bottles for Change" initiative, under which plastic waste from the campus is collected every Thursday and sent for recycling. Through this initiative, plastic waste is sorted based on type, processed by certified recyclers, and transformed into useful products such as benches, bags, and clothing. In 2023–2024, 1.529 tonnes of soft plastic and 5.214 tonnes of hard plastic were produced, of which 1.429 tonnes and 5.168 tonnes were upcycled respectively.

Plastic Waste Treatment

E-waste Management

Electronic waste, including cables, peripherals, and outdated devices, is collected and processed through authorized recyclers. During the reporting year, 0.127 tonnes of e-waste were generated, all of which were down-cycled for material recovery.

CHENNAI INSTITUTE OF TECHNOLOGY

SUSTAINABILITY REPORT

2023-2024

Institutional Profile

Chennai Institute of technology, the best engineering college in Chennai was established with the objective of providing quality technical education with adequate industrial exposure than any other engineering colleges in Chennai, caters the needs of the youth with its innovative teaching methods.

Apart from interactive classroom scenario, periodic guest lectures by experts from industries and academic background provides thirst to the students to learn and to prepare for the ready-to-serve industrial requirements with uncompromised professional ethics.

The campus is wi-fi enabled with highly sophisticated equipment's, state-of-the-art laboratories. CIT is equipped with 24 x 7 high speed internet facility, spacious and ventilated classrooms, laboratories with latest high configured equipment's, digitalized air-conditioned library with huge volumes of books, journals from national and international.

Apart from interactive classroom scenario, periodic guest lectures by experts from industries and academic background provides thirst to the students to learn and to prepare for the ready-to-serve industrial requirements with uncompromised professional ethics.

Overview of Institutional Sustainability Vision

Chennai Institute of Technology (CIT) envisions becoming a model of sustainable higher education, integrating environmental responsibility, social equity, and technological innovation into every facet of campus life. Its vision aligns with the United Nations Sustainable Development Goals (SDGs) and emphasizes reducing environmental impact, advancing renewable energy, and fostering a culture of sustainability among students, faculty, and the community. CIT's sustainability framework operates through the Green Campus Policy, Energy and Waste Management Programmes, and Sustainability Cell, ensuring continuous monitoring and improvement of campus performance. The institution's guiding principles are resource conservation, innovation in clean technology, and inclusive community engagement.

2023-2024: Sustainability Initiatives and Achievements

In 2023-2024, Chennai Institute of Technology strengthened its dedication to advancing the United Nations Sustainable Development Goals (SDGs), showcasing significant progress and innovation across all 17 goals. Building upon the strong foundation established in previous years, the institute has introduced a broader range of impactful initiatives that drive social, environmental, and economic transformation. Through collaborative partnerships, pioneering research, and active community participation, CIT has positioned itself as a frontrunner in promoting sustainability within higher education. This report highlights the institute's achievements and ongoing efforts toward each SDG, reflecting the vision, innovation, and commitment that define CIT's mission to create a sustainable and positive impact on society and the environment.

SDG 1: No Poverty

Chennai Institute of Technology has strengthened its support for economically disadvantaged students by broadening access to scholarships and introducing enhanced skill development programs. These initiatives aim to promote economic empowerment and create sustainable opportunities for students and their families, fostering long-term financial stability and upward mobility.

SDG 2: Zero Hunger

Comprehensive food security initiatives have been implemented, focusing on community food drives, reduction of food waste, and the promotion of sustainable farming practices on campus. These efforts contribute to responsible resource management while supporting the nutritional and environmental well-being of both the institution and the surrounding communities.

SDG 3: Good Health and Well-Being

Health and wellness initiatives have been strengthened with an expanded emphasis on mental health awareness, accessible counselling services, and improved fitness resources. These efforts promote holistic well-being and foster a supportive, healthy environment for both students and staff.

SDG 4: Quality Education

Innovative teaching methodologies and experiential research opportunities have been introduced across various disciplines to enhance learning outcomes and industry readiness. These initiatives aim to equip students with sustainable, future-focused skills and prepare them for globally relevant career pathways.

SDG 5: Gender Equality

Campus initiatives promoting gender equality have been further strengthened through targeted mentorship programs, awareness workshops, and training sessions on gender inclusivity.

These efforts foster an empowering, respectful, and safe educational environment for all members of the campus community.

SDG 6: Clean Water and Sanitation

Water conservation efforts have been enhanced through the installation of water-efficient devices and upgraded sanitation facilities. Alongside these infrastructure improvements, continuous awareness programs are conducted to encourage sustainable water management practices among students and staff.

SDG 7: Affordable and Clean Energy

The institution has increased its dependence on solar energy and other renewable sources, leading to a significant reduction in carbon emissions. These efforts highlight a strong commitment to sustainable, energy-efficient, and cost-effective power solutions that support a greener campus environment.

SDG 8: Decent Work and Economic Growth

Employment opportunities and vocational training programs have been strengthened on campus to promote economic growth and equip students with practical, real-world experience. These initiatives foster a progressive and inclusive work environment that supports skill development and career readiness.

SDG 9: Industry, innovation and Infrastructure

Significant investments have been made in advanced campus infrastructure and research initiatives across emerging fields, fostering innovation and driving industry advancement in areas such as biotechnology, renewable energy, and sustainable development. These efforts strengthen the institution’s role as a hub for research-driven growth and technological progress.

SDG 10: Reduced Inequalities

Programs promoting equality have been further strengthened to ensure that students from diverse socio-economic backgrounds receive equal access to quality education, skill development, and career advancement opportunities. These initiatives foster inclusivity and empower every student to achieve their full potential.

SDG 11: Sustainable Cities and Communities

The campus has been further developed with a focus on eco-friendly infrastructure, including the expansion of green spaces, improved waste management systems, and the adoption of sustainable building practices. These initiatives aim to set a benchmark for community-driven sustainability and environmental responsibility.

SDG 12: Responsible Consumption and Production

A culture of mindful resource utilization and waste reduction has been actively promoted through initiatives such as minimizing single-use plastics and strengthening recycling practices. These efforts encourage responsible consumption habits among students and staff, reinforcing the commitment to environmental sustainability across the campus.

SDG 13: Climate Action

Proactive climate action initiatives have been undertaken through extensive tree plantation drives, climate awareness programs, and research focused on environmental conservation. These efforts reflect a strong commitment to mitigating climate change and promoting a sustainable, resilient ecosystem.

SDG 14: Life Below Water

Water conservation and plastic waste reduction have been actively promoted through educational outreach programs and research focused on freshwater management. These initiatives aim to raise awareness about the effects of human activities on aquatic ecosystems and encourage responsible environmental stewardship.

SDG 15: Life on Land

Conservation projects have been implemented to protect and enhance campus biodiversity through habitat restoration and extensive tree plantation efforts. These initiatives promote ecological balance and deepen awareness of the vital role ecosystem preservation plays in sustaining the natural environment.

SDG 16: Peace, Justice and Strong Institutions

Ethical governance and transparency have been strengthened through well-defined institutional policies that foster a respectful and peaceful campus environment. These measures promote justice, accountability, and integrity in all academic and administrative practices.

SDG 17: Partnerships for the Goals

Strategic collaborations with NGOs, academic institutions, and government organizations have been strengthened to enhance collective efforts toward achieving sustainable development goals. These partnerships enable knowledge sharing, resource optimization, and greater community impact through coordinated action.

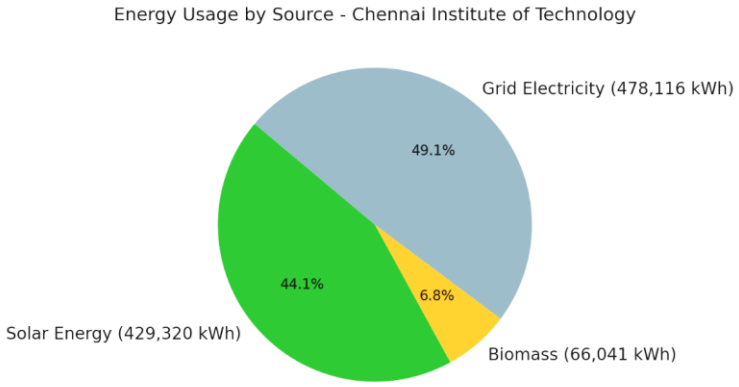
Environmental Sustainability

Energy Management

Chennai Institute of Technology is strongly committed to sustainable energy management and the promotion of renewable energy sources across the campus. The institute has strategically implemented solar and biomass energy systems to minimize dependence on conventional electricity and reduce its carbon footprint.

Energy Usage by Source

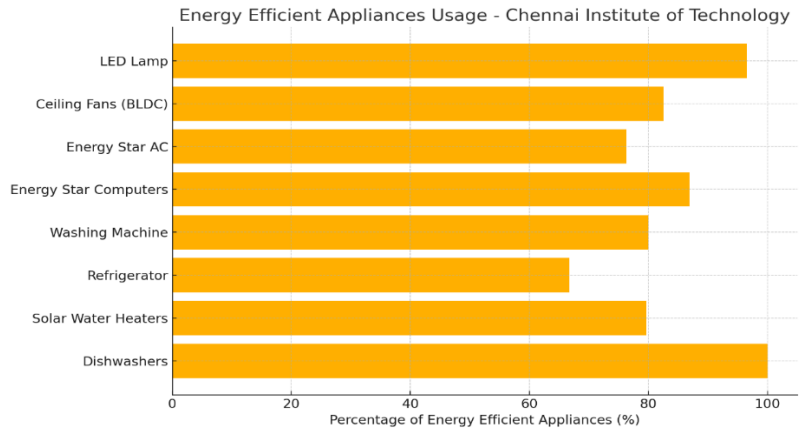
S. No	Source	Energy Usage (kWh)
1	Solar Energy	429,320
2	Biomass	66,041
3	Grid Electricity	478,116



The campus energy management strategy includes continuous monitoring of energy usage, promoting energy efficiency through LED lighting, energy-efficient appliances, and awareness programs for students and staff. These efforts are aligned with Sustainable Development Goal 7 (Affordable and Clean Energy) and reflect the institute's commitment to creating an energy-efficient and environmentally responsible campus.

Energy-Efficient Infrastructure

CIT has implemented an extensive energy efficiency program across campus buildings. As per the institutional audit, 89.15% of all appliances are energy-efficient models, including LED lamps, BLDC ceiling fans, Energy Star-rated computers, washing machines, and air conditioners. This transition to energy-efficient equipment has significantly reduced electricity consumption and operational costs.



Continuous Monitoring and Awareness

The energy management team at CIT conducts regular energy audits, monitors power usage across buildings, and promotes awareness campaigns among faculty, students, and staff. These initiatives instill a culture of energy consciousness and accountability within the campus community.

Water Management

Water Conservation

Chennai Institute of Technology (CIT) is equipped with a dual sewerage system that distinctly separates wastewater from rainwater. Rainwater harvested from the rooftops of campus buildings is directed into localized recharge pits and groundwater storage tanks, which subsequently discharge into a central recharge well. This integrated system facilitates groundwater recharge and promotes non-potable water reuse. The harvested rainwater is efficiently utilized for toilet flushing, landscape irrigation, and vehicle washing, thereby reducing dependence on municipal water supply.

The rainwater harvesting infrastructure includes one recharge well with a storage capacity of 1,140,000 litres, three groundwater tanks with capacities of 25,000 litres, 22,000 litres, and 18,000 litres, and two overhead storage tanks with 25,000 litres and 30,000 litres capacities, respectively. The total storage capacity amounts to 1,260,000 litres. Additionally, 14 recharge pits are established with a combined capacity of 174,000 litres to enhance percolation and groundwater recharge.

To promote water awareness, a Water Conservation Awareness Program was conducted with active participation from students and faculty members, encouraging conscious water usage across the campus.

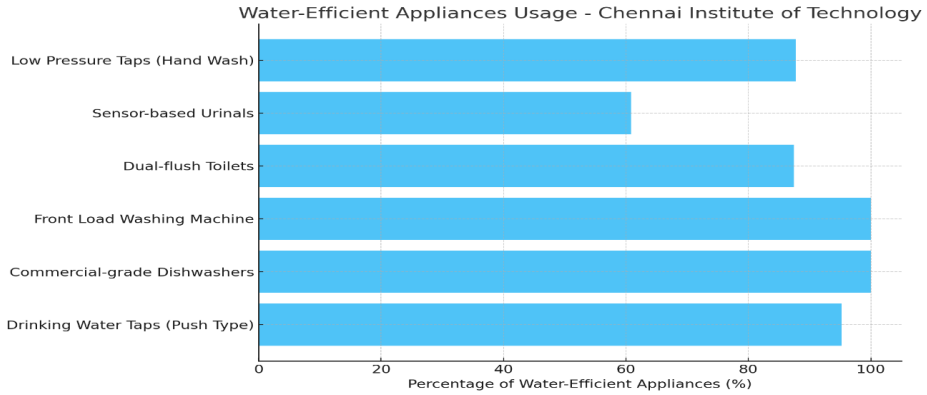
University	Number of Reservoirs and Water Tanks	Capacity of Reservoirs (litres)	Number of Recharging Pits	Capacity of Recharging Pits (litres)
Chennai Institute of Technology	6	12,60,600	14	1,74,000

Water Recycling

Wastewater from hostels, academic buildings, and canteens is conveyed to the Sewage Treatment Plant (STP). The process involves aeration, coagulation, flocculation, sedimentation, and pressure filtration to ensure effective treatment. Once the treated water meets quality standards, it is reused within the campus for non-potable purposes such as toilet flushing and gardening. This closed-loop recycling process minimizes environmental impact and reduces dependency on fresh water resources.

Water Efficient Appliances Usage

CIT prioritizes the use of water-efficient fixtures and appliances across all facilities, achieving an overall efficiency rate of 86.68%.



Each fixture is designed to minimize water wastage including low-pressure taps, sensor-based urinals, dual-flush toilets, and push-type drinking taps contributing to responsible water consumption across campus facilities.

Water pollution control in campus area

CIT has established a clear and comprehensive Water Pollution Control Policy. All wastewater, stormwater, and laboratory discharges are managed through well-designed systems that prevent contamination and maintain safe environmental standards.

Key measures include:

- Regular monitoring of physical, chemical, and biological parameters of water.
- Scheduled maintenance and cleaning of drainage and treatment systems.
- Color-coded pipelines distinguishing clean and wastewater lines for operational safety.
- RO and STP units installed with proper clearance for safe operation and maintenance.
- Gravity-based distribution for clean water and controlled collection for wastewater.

These integrated systems prevent mixing of clean and contaminated water, ensuring a pollution-free, safe, and sustainable water management environment across the campus.

Waste Management

Chennai Institute of Technology (CIT) is deeply committed to achieving environmental sustainability through effective waste management and the adoption of the 3R (Reduce, Reuse, Recycle) principles. The institute promotes responsible consumption and ensures that all waste generated on campus is properly segregated, treated, and either recycled or reused, thereby minimizing landfill contributions.

3R (Reduce, Reuse, and Recycle) Program

CIT has established a robust 3R framework supported by infrastructure, awareness programs, and partnerships to promote sustainable waste management.

- Segregation Infrastructure: Color-coded and clearly labelled dustbins are placed across the campus to facilitate effective waste segregation at the source.
- Institutional Policy: The institute's waste management policy encourages double-sided printing, the use of digital documentation, and strict avoidance of single-use plastics.
- Awareness and Engagement: Awareness programs and poster campaigns on the 3R principles are regularly conducted, with active participation from students and staff. Nearly 2,000 students participated in forming a large recycling symbol to raise awareness about recycling and environmental responsibility.
- Recognition: CIT received a memento from Bisleri's "Bottle for Change" initiative in recognition of its exceptional contribution to recycling.
- Integration with Wastewater Management: The campus also operates a Sewage Treatment Plant (STP) that treats and reuses wastewater, linking water recycling with broader sustainability initiatives.

Programs to Reduce Paper and Plastic Usage

CIT has taken significant steps to reduce its consumption of both paper and plastic, aligning with its zero-waste vision.

1. Regular awareness programs on "No Single-Use Plastics" are conducted in collaboration with Bottles for Change.
2. Campaigns such as "Plastic-Free World" and "Say No to Single-Use Plastic" are organized both on campus and in nearby schools and villages.
3. Digital transformation initiatives include the use of e-forms, digital notes, online submissions, and paperless meetings, drastically reducing paper consumption.
4. Reusable materials—such as stainless steel and glass tumblers in cafeterias—have replaced single-use plastic cups.
5. Collaboration with ITC WOW (Well-being Out of Waste) enables proper collection and recycling of paper waste, ensuring circularity.

6. A certified third-party agency collects and recycles plastic waste, ensuring environmentally safe disposal and promoting sustainable waste management.

These measures have resulted in a significant reduction in both paper and plastic usage, helping to cultivate an eco-conscious campus community.

Waste Generation and Treatment

CIT has implemented a comprehensive waste management system that ensures almost all waste generated is either reused, recycled, or upcycled.

Type of waste	Produced (KG)	Treated		
		Reused	Down-cycled	Up-cycled
Food Waste	31140	-	-	29140
Leaf Waste	6825	-	-	6651
Paper	6700	-	6424	-
Soft plastic	1529	-	-	1429
Hard plastic	5214	-	-	5168
e-waste	127	-	127	-

Total Waste Produced (t)	Waste Recycled / Reused (t)	Landfill Waste (t)
51.52	48.93	2.58

Through systematic segregation, treatment, and partnerships, CIT successfully recycles or reuses 94% of its total waste, sending only 6% (2.58 t) to landfill annually.

Waste Treatment

Leaf Waste

- Collection: Leaf waste is collected from green areas and gardens.
- Segregation: Workers separate leaf waste from plastic and other inorganic materials.
- Vermicomposting: The segregated leaf waste is processed in a dedicated vermicomposting unit, producing organic manure used to enrich campus vegetation and gardens.

Food Waste

- Collection: Approximately 31.14 tons of food waste are collected annually from hostel messes and cafeterias.
- Segregation and Processing: After removing non-organic impurities, the food waste is processed in a biogas plant, and the generated biogas is used for cooking within the campus.
- This not only reduces waste but also contributes to renewable energy generation.

Paper Waste Treatment

- Waste paper is collected through designated bins and transferred to the storage room after academic use (e.g., exam scripts).
- CIT collaborates with ITC WOW, which collects and recycles the stored waste paper.
- In return, new recycled paper is supplied to the institute, promoting a circular material flow.
- This year, 6.7 tons of waste paper were collected and recycled, earning CIT an appreciation certificate from ITC WOW.

Plastic Waste Treatment

- Collection and Segregation: Plastic waste is collected through labelled bins and segregated from other waste streams.
- Recycling Partnership: The institute collaborates with Bisleri's Bottles for Change program, which collects plastic waste weekly.
- The collected plastic is sorted, sent to certified recyclers, and transformed into useful products like benches, bags, and clothing, promoting a circular economy.
- CIT receives an official acknowledgment slip for each collection, ensuring transparency and accountability in the recycling process.

E-Waste and Toxic Waste Management

- E-Waste: A total of 0.12 tons of e-waste (batteries, lamps, electronic devices) was generated and safely disposed of through authorized recyclers.
- Toxic Waste: The institute practices responsible disposal through certified vendors and encourages buy-back agreements for computers and lab equipment.
- Minimal laboratory chemical waste is generated, and all hazardous waste is handled in compliance with environmental standards.

Impact and Outcome

- Total Waste Produced: 51.52 tons
- Total Waste Recycled and Reused: 48.93 tons
- Waste Diverted from Landfill: 96%
- Student Participation in Awareness Programs: ~2,000
- Recognition: Certificates from ITC WOW and Bottles for Change for outstanding contribution to recycling.

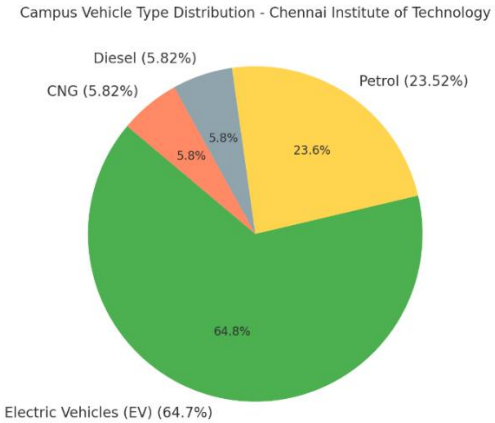
Sustainable Transportation and Mobility

Chennai Institute of Technology (CIT) prioritizes sustainable mobility as a key component of its environmental strategy, focusing on reducing carbon emissions, minimizing parking space, and promoting zero-emission transportation.

Transportation Overview

The ratio of private vehicles to total campus population is 0.03 (3.06%), with 146 private vehicles serving a population of 4,762. This low ratio reflects the institute's strong commitment to sustainable mobility.

Campus vehicles consist predominantly of Electric Vehicles (EVs), which account for 64.70% of total vehicles, followed by Petrol (23.52%), Diesel (5.82%), and CNG (5.82%) vehicles.



The campus currently maintains 482 eco-friendly transportation facilities, including bicycles, electric two-wheelers, an electric passenger vehicle, and electric load-carrying vehicles. These vehicles are available free of charge to students and staff for internal commuting, encouraging sustainable, pollution-free travel.

Parking Area Optimization

Over the past three years, CIT has implemented multiple measures to reduce parking demand, resulting in parking areas occupying only 1.33% of the total campus area.

- Carpooling initiatives and bike-sharing systems have been established to reduce individual vehicle usage.
- Free access to bicycles and electric two-wheelers further supports zero-emission commuting.

Transportation Initiatives to Reduce Private Vehicles

- Car & Bike Free Day (Every Wednesday): Staff and students are encouraged to walk, cycle, or use public transport.
- Campus Shuttle Service: An internal electric shuttle operates to minimize the use of private vehicles.
- Carpooling Programs: Faculty and students share rides to reduce vehicular congestion and emissions.
- Bike-Sharing Program: A free-to-use bicycle system operates throughout the campus to promote healthy mobility.

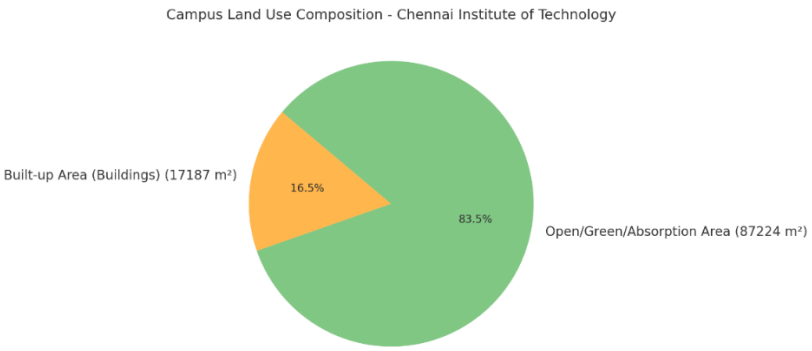
Green Infrastructure and Sustainable Campus Development

Chennai Institute of Technology (CIT) demonstrates a strong commitment to environmental sustainability through the adoption of green infrastructure principles that promote biodiversity, energy and water efficiency, safety, inclusivity, and long-term ecological balance. The campus integrates built and natural environments harmoniously, ensuring a sustainable and resilient academic ecosystem.

Campus Profile and Building Infrastructure

- Total Campus Area: 0.1044 km² (104,411.08 m²)
- Total Ground Floor Area of All Buildings: 17,087 m²
- Total Built-up Area (All Floors Combined): 71,182.16 m²
- Open Space Ratio: 83.63% of the total campus area

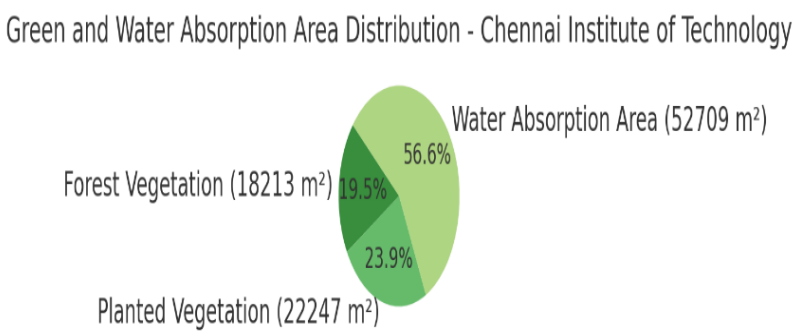
The campus includes academic blocks, hostels, laboratories, administrative buildings, and facilities such as the auditorium and cafeteria. Building design promotes natural ventilation and optimal daylight use to minimize reliance on artificial lighting and air-conditioning systems.



Vegetation and Green Cover

CIT has made substantial progress in preserving and enhancing its green landscape.

- Forest Vegetation Area: 18,213 m² (17.44% of total campus area)
- Planted Vegetation Area: 22,247.15 m² (21.30%)
- Total Water Absorption Area: 52,709 m² (50.48%)



Together, these areas support ecological balance, groundwater recharge, and carbon sequestration. The campus is home to 1,357 trees, and the surrounding air quality remains excellent with a maximum AQI of 48 and a minimum AQI of 39, indicating clean and healthy air.

Conservation of Flora and Fauna

CIT actively contributes to biodiversity conservation and sustainable agriculture:

- Conservation of 27 Pekin Ducks and 17 Helmeted Guineafowls within the campus.
- Establishment of a Fish Conservation Area.
- Organic Farm cultivating vegetables for campus use.
- Implementation of Hydroponic Farming Systems to support research and sustainable food production.

These efforts promote hands-on environmental education and contribute to maintaining the ecological integrity of the campus ecosystem.

Facilities for Differently-Abled and Special Needs

CIT ensures that all facilities are inclusive and accessible to all members of the community.

- Ramps and lifts designed for wheelchair accessibility.
- Accessible toilets available in all major buildings.
- Wheelchair-accessible vending machines and wide pedestrian paths.
- A Lactation Room for staff, providing privacy and support for breastfeeding mothers.

These facilities ensure equal access and participation for people with disabilities and special needs, promoting inclusivity and well-being.

Health Infrastructure and Wellbeing

The institute provides comprehensive healthcare services to support students, faculty, and staff.

- A Health Centre equipped with a first-aid unit, emergency room, and medical oxygen cylinders.
- A qualified medical doctor available for regular consultations.
- Ambulance services available 24/7 for emergencies.

These facilities ensure immediate medical attention and foster a healthy campus environment.

Security and Safety Systems

CIT prioritizes the safety of its students and staff through robust surveillance and emergency systems:

- 526 CCTV cameras are installed across the campus for continuous monitoring.
- 45 security officers and 5 office rooms dedicated to campus safety operations.
- Visitor entry registry system to monitor and record all incoming and outgoing individuals.

- Fire hydrants, extinguishers, and alarm systems installed on every floor as per fire safety standards.

These comprehensive measures ensure the well-being and security of the campus community.

Green Building and Sustainable Design Practices

CIT's infrastructure embodies the principles of green building design, integrating sustainable technologies and eco-friendly operational strategies.

Water Efficiency

- Rainwater harvesting systems connected to recharge wells and groundwater tanks.
- On-campus RO and STP plants ensure wastewater is treated and reused for non-potable purposes such as flushing and irrigation.
- Use of water-efficient fixtures and appliances (average efficiency: 86.68%).

Energy Efficiency

- Solar panels and solar water heaters installed on building rooftops.
- Maximized use of natural ventilation and daylight reduces dependency on artificial systems.
- All buildings equipped with energy-efficient appliances (average efficiency: 89.15%) and continuously monitored for optimal performance.

Air Quality and Environment

- Smoke-free campus policy strictly enforced.
- Air quality monitoring devices installed in academic and residential areas.
- Strategic building placement and open spaces ensure natural airflow and thermal comfort.

Waste Management

- Implementation of an efficient waste segregation and recycling system.
- Collaboration with ITC WOW (for paper recycling) and Bisleri's "Bottles for Change" (for plastic recycling).
- All hazardous and electronic waste is disposed of through authorized recyclers, supported by buy-back agreements for electronic equipment.

Sustainable Transportation

- Availability of electric vehicles, bicycles, and carpooling programs to reduce emissions.
- Parking areas restricted to 1.33% of total campus land, supporting land conservation.
- Dedicated pedestrian paths and shaded walkways to encourage walking.

Integrated Green Campus Management

A dedicated sustainability team, led by a campus sustainability coordinator, ensures regular maintenance, audits, and improvement of green practices. The team oversees:

- Waste reduction, water and energy monitoring, and landscape maintenance.
- Implementation of sustainable procurement and operations policies.
- Awareness and capacity-building programs for students and staff.

Education, Research, and Innovation for Sustainability

Chennai Institute of Technology (CIT) integrates sustainability deeply into its academic, research, and community engagement frameworks. Through education, innovation, and international collaboration, the institution fosters a culture of environmental responsibility, social awareness, and technological advancement aligned with the United Nations Sustainable Development Goals (SDGs).

Sustainability-Focused Curriculum

CIT offers a diverse range of academic programs that emphasize sustainability principles and practices across disciplines.

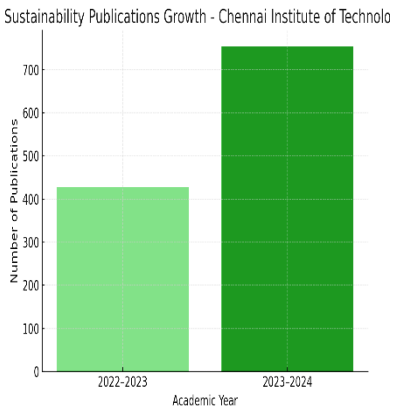
- Total Number of Sustainability-Related Courses: 151 courses
- Departments Offering Courses: 14 academic departments

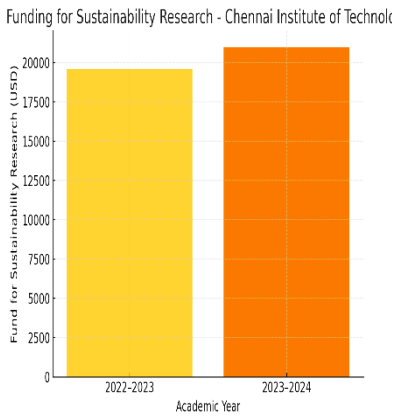
These courses incorporate topics such as renewable energy, sustainable materials, water and waste management, green technology, and environmental ethics. The curriculum ensures that every student gains awareness of sustainability concepts and practical applications in their field of study.

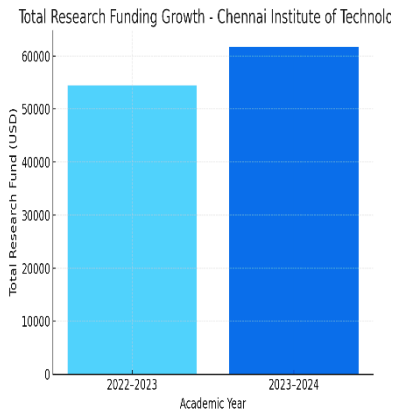
Sustainability Research and Publications

Research on sustainability is one of the core pillars of CIT's institutional strategy. Faculty members and students actively engage in innovative projects addressing global environmental and social challenges.

Academic Year	Publications on Sustainability	Total Research Fund (USD)	Fund for Sustainability Research (USD)
2023–2024	754	61,750	20,995
2022–2023	427	54,444	19,599







- The number of sustainability-related publications increased by 76.5% between 2022–23 and 2023–24.
- Approximately 34% of total research funding is dedicated to sustainability projects, reflecting the institution's strong research alignment with global environmental goals.

These research efforts span key domains such as renewable energy systems, sustainable construction, climate change mitigation, waste valorisation, and green manufacturing technologies.

International Collaboration and Academic Partnerships

CIT fosters global collaboration to promote cross-border innovation and sustainable solutions.

The institute's international sustainability initiatives include:

1. Memorandums of Understanding (MoUs) with international universities and industries
2. Joint Research Initiatives and co-publications
3. International Internships for students
4. Hosting of International Conferences and Seminars
5. Faculty and Student Exchange Programs
6. Leadership Talk Series and Global Competitions
7. Integrated Academic Programs with sustainability components
8. International Alumni Engagement in sustainability mentoring and networking

These partnerships strengthen CIT's global academic presence and contribute to advancing sustainable technologies and practices.

Student Engagement and Sustainability Events

CIT places strong emphasis on student-led initiatives to promote environmental and social awareness.

- Number of Sustainability Events (2023–2024): 48
- Student Organizations Involved:
    - SDG Team
    - NSS (National Service Scheme)
    - Youth Red Cross
    - Unnat Bharat Abhiyan
    - National Cadet Corps (NCC)
    - Various Student Clubs

Key Events and Campaigns:

- Debate on "Resource Consumption: Then vs Now"
- Energy and Water Conservation Awareness Drives
- Plastic-Free and Lake Cleanup Campaigns
- Tree Plantation and Organic Farming Programs

- Climate Change and Biodiversity Awareness Seminars
- Mental Health and Gender Equality Programs
- Eco-cleanup drives, blood donation camps, and rural outreach programs

These activities actively involve students in sustainability advocacy, community service, and experiential learning.

Community Service and Societal Impact

The institute actively integrates sustainability into community engagement activities to create meaningful social impact.

- Number of Sustainability Community Service Projects: 22
- Major Focus Areas:
  - Water conservation and rainwater harvesting in villages
  - Organic manure and vermicomposting workshops
  - Health and hygiene awareness camps
  - Food waste reduction and recycling programs
  - Environmental awareness campaigns in schools

Through these projects, students and faculty collaborate with local communities to promote sustainable practices, bridging academic learning with real-world application.

Entrepreneurship and Innovation for Sustainability

CIT supports innovation-driven startups focused on sustainability challenges.

- Number of Sustainability-Related Startups: 18

These startups focus on domains such as renewable energy, waste recycling, biodegradable materials, sustainable agriculture, and green product design.

The institution provides incubation support, mentorship, and access to research facilities, encouraging students and alumni to develop sustainable solutions for societal and industrial needs.

Summary of Sustainability Impact (2023–2024)

Indicator	Value
Sustainability-related courses offered	151
Departments integrating sustainability	14
Sustainability-focused publications	754
Research funding for sustainability	USD 20,995
Sustainability events organized	48
Community service projects	22
Sustainability-related startups	18

Carbon Mapping and Greenhouse Gas (GHG) Emission Analysis

Chennai Institute of Technology (CIT) recognizes the critical role of higher education institutions in addressing climate change. As part of its sustainability framework, CIT systematically tracks, manages, and mitigates its carbon footprint through detailed carbon mapping, GHG emission assessments, and carbon offset initiatives. The institute's carbon strategy integrates renewable energy adoption, sustainable mobility, waste minimization, and green infrastructure to reduce total emissions and enhance natural carbon sinks within the campus ecosystem.

Institutional Carbon Mapping Framework

The carbon mapping framework at CIT follows internationally recognized protocols (aligned with ISO 14064-1 and GHG Protocol Corporate Accounting Standards). It categorizes emissions into three scopes:

Scope	Description	Sources at CIT
Scope 1 – Direct Emissions	On-site fuel combustion and institutional vehicle use	Diesel generators, campus vehicles (petrol, diesel, CNG), biomass boilers
Scope 2 – Indirect Emissions	Purchased electricity from external sources	Grid electricity used in academic and hostel buildings
Scope 3 – Other Indirect Emissions	Emissions from supply chain, commuting, waste disposal, and water treatment	Staff/student transportation, waste decomposition, outsourced materials, wastewater treatment

This categorization enables transparent measurement and targeted reduction of emissions across operational levels.

Carbon Footprint Calculation and Energy Contribution

CIT's carbon footprint is primarily influenced by electricity use, transport, and waste management activities. The institute's commitment to renewable energy substantially offsets potential emissions.
Annual Energy Profile (2023–2024):

Energy Source	Annual Use (kWh)	Contribution (%)
Solar Energy	429,320	44.1%
Biomass Energy	66,041	6.8%
Grid Electricity	478,116	49.1%

Total Renewable Energy Share: 50.9%

This means that over half of CIT's energy consumption is met through renewable sources, significantly reducing Scope 2 emissions and grid dependency. The combined use of solar photovoltaic panels and biomass systems prevents approximately 390 metric tons of CO_2 emissions annually, based on standard conversion factors (0.9 kg CO_2/kWh for grid power).

Greenhouse Gas (GHG) Emission Scopes

CIT's carbon emissions are distributed across three key scopes:

Scope 1: Direct Emissions

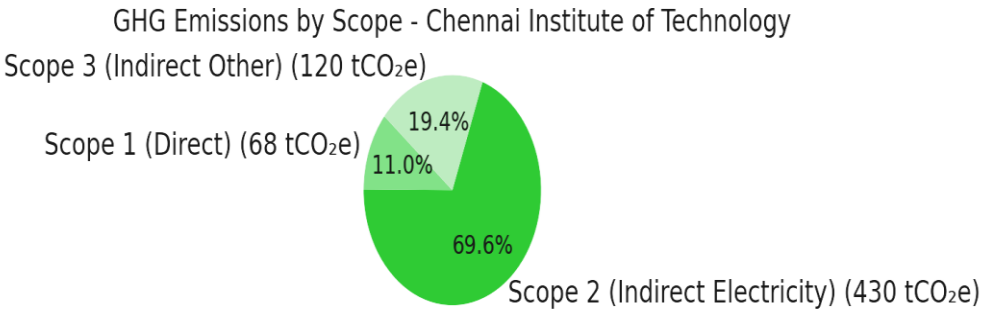
- Sources include campus vehicles, biogas systems, and standby diesel generators.
- The use of electric vehicles (64.7% of campus fleet) and biogas for cooking reduces direct fuel combustion and CO_2 emissions.
- Estimated annual Scope 1 emissions reduction: ~68 tons CO_2e.

Scope 2: Indirect Emissions (Electricity Use)

- Grid electricity consumption (478,116 kWh) corresponds to approximately 430 tons CO_2e.
- However, renewable sources (solar and biomass) offset nearly 400 tons CO_2e, reducing Scope 2 emissions by >90%.

Scope 3: Indirect Emissions

- Includes commuting, waste disposal, paper usage, and water treatment.
- Adoption of carpooling, EVs, digital documentation, and waste recycling significantly minimizes Scope 3 emissions.
- Over 99% waste diversion from landfill reduces methane generation (CH_4), contributing further to emission reduction.

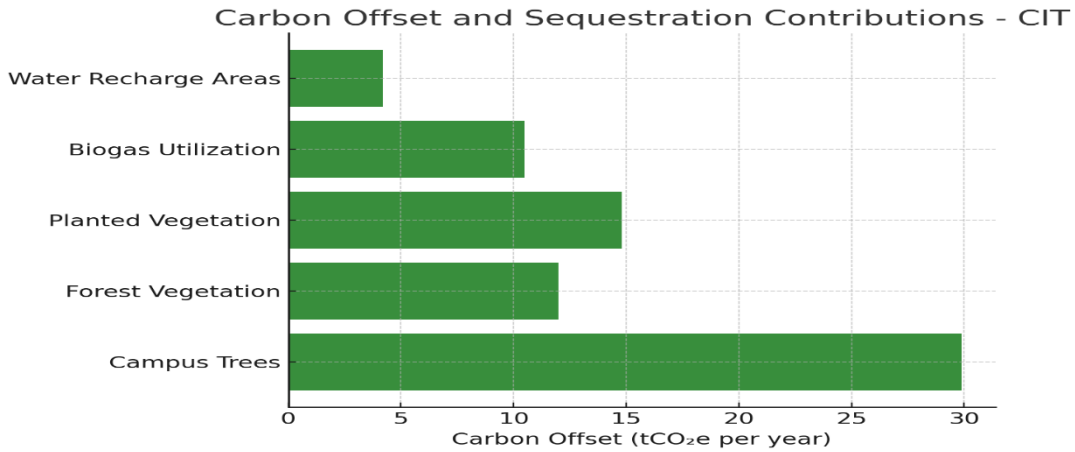


Carbon Offset and Sequestration Initiatives

CIT has implemented extensive green infrastructure and ecological restoration projects that naturally offset and sequester carbon from the atmosphere.

Offset Category	Description	Estimated Annual Carbon Sequestration (tCO_2e)
Campus Trees (1,357 trees)	Sequestration through photosynthesis (average 22 kg CO_2/tree/year)	29.9
Forest Vegetation (18,213 m^2)	Natural forest area supporting soil carbon storage	12.0
Planted Vegetation (22,247 m^2)	Managed green cover improving carbon uptake	14.8

Biogas Utilization	Reduction in methane release through anaerobic digestion	10.5
Rainwater Recharge and Green Roofs	Enhanced soil carbon retention	4.2



Total Estimated Annual Carbon Offset: ~71.4 tons CO_2e

These offsets complement renewable energy adoption, contributing to CIT's carbon neutrality roadmap.

Carbon Neutrality and Future Action Plan

CIT's long-term goal is to achieve net-zero carbon emissions by 2035 through the following strategic actions:

1. Expansion of Solar Energy Capacity to meet 75% of campus electricity demand.
2. Transition to 100% Electric Campus Fleet for internal mobility.
3. Increased Tree Plantation Program targeting 500 new trees annually.
4. Enhanced Waste-to-Energy Conversion via upgraded biogas systems.
5. Comprehensive Carbon Inventory updated annually using digital monitoring systems.

The institute plans to adopt carbon accounting software for real-time tracking and verification of emissions reduction progress.

Conclusion

Through its integrated approach to energy efficiency, renewable energy generation, sustainable transportation, and ecosystem conservation, Chennai Institute of Technology effectively manages and mitigates its carbon footprint. By combining carbon reduction strategies with natural sequestration efforts, CIT demonstrates measurable progress toward a low-carbon, climate-resilient, and sustainable campus aligned with SDG 7, SDG 11, SDG 12, and SDG 13.

Chennai Institute of Technology – Official Signatory of the SDG Accord

Chennai Institute of Technology is proud to be an official signatory of the Global SDG Accord, a worldwide initiative coordinated by the EAUC – The Alliance for Sustainability Leadership in Education. By signing the SDG Accord, CIT has formally committed to embedding the United Nations Sustainable Development Goals (SDGs) into its core strategies, operations, teaching, research, and community engagement. As a signatory, CIT submits an annual SDG progress report to the Accord, demonstrating its measurable contributions towards achieving sustainability targets in alignment with the UN 2030 Agenda. This commitment reflects the institute's ongoing efforts to foster environmental responsibility, social inclusion, and economic sustainability within and beyond the campus community.

2023-2024: Sustainability Initiatives and Achievements

SDG 1: No Poverty

Chennai Institute of Technology has strengthened its support for economically disadvantaged students by broadening access to scholarships and introducing enhanced skill development programs. These initiatives aim to promote economic empowerment and create sustainable opportunities for students and their families, fostering long-term financial stability and upward mobility.

Research and Publications

Chennai Institute of Technology is actively involved in research activities that support SDG 1 – No Poverty, focusing on reducing poverty and improving the quality of life for underprivileged communities. The institution promotes inclusive education, rural development, and sustainable livelihood opportunities through innovative and interdisciplinary research. Faculty and students work together on projects that address social and economic challenges, aiming to create practical solutions for poverty alleviation. By fostering collaborations and applying technology-driven approaches, the institute contributes to empowering communities and building a more equitable society.

Financial Support

Chennai Institute of Technology provides strong financial assistance to students from economically weaker backgrounds through government, institutional, and private scholarships. During 2023–24, 784 students benefited from State and Central Government schemes, 1,849 from institutional scholarships, and 37 from private or CSR-funded aid. In total, 2,846 students from the bottom financial quintile received support, ensuring access to quality education without financial barriers.

Inclusive Education

The institution ensures equal opportunities for all by following the government's reservation policy, admitting students from various social and financial categories. In 2023–24, 782 students from the bottom financial quintile were admitted, with a 98% graduation success rate. Additional support such as book banks, placement training, and language courses helps students succeed academically and professionally.

Entrepreneurship Development

To promote self-reliance and job creation, CIT organizes entrepreneurship sessions such as "How to Start a STARTUP/SHG" to guide students and local communities in building sustainable businesses and Self-Help Groups.

Community Outreach and Awareness

The institute conducted the TNEA Counselling Awareness Programme – "Vazhikaatti 2023" in Cuddalore to help rural students and parents understand engineering admissions and career options, promoting equal access to higher education.

Promoting Sustainable Entrepreneurship

Events like National Entrepreneurship Day 2023 and "Role of Innovative Young Minds in Nation Building" encouraged innovation, leadership, and sustainable business models. These initiatives inspire students to become future entrepreneurs contributing to national growth.

SDG 2: Zero Hunger

Comprehensive food security initiatives have been implemented, focusing on community food drives, reduction of food waste, and the promotion of sustainable farming practices on campus. These efforts contribute to responsible resource management while supporting the nutritional and environmental well-being of both the institution and the surrounding communities.

Research and Publications

Chennai Institute of Technology carries out extensive research aligned with Sustainable Development Goal 2 – Zero Hunger, focusing on advancing agricultural productivity and promoting food security through innovation and technology. The institution's research emphasizes smart farming, precision agriculture, and sustainable water management to enhance crop yield and reduce resource wastage. By integrating artificial intelligence, IoT, and machine learning in agricultural practices, the institute contributes to efficient food production and rural development. These initiatives aim to support farmers, improve agricultural resilience, and ensure access to safe and nutritious food for all.

Campus Food Waste Management

Chennai Institute of Technology has implemented a comprehensive food waste tracking system across the hostel mess, dining hall, and cafeteria to monitor and reduce food waste. Collected waste is weighed daily, documented, and analyzed for trends to improve inventory and resource planning. In 2023–24, around 12.14 tonnes of food waste were generated, all of which were processed in the campus biogas plant and converted into clean energy for cooking, ensuring zero landfill contribution and promoting sustainable waste management.

Student Hunger and Nutritional Food Access

The institution provides organic, nutritious, and pesticide-free meals to ensure students' health and well-being. Food served on campus is sourced from sustainable organic farms, promoting both healthy living and environmental conservation. A student council meets monthly to plan menus that

suit diverse dietary needs, while surprise menus are introduced weekly to encourage engagement and minimize food waste.

Sustainable Food Production

CIT promotes sustainable agriculture through on-campus hydroponic and organic farming practices. The hydroponic system minimizes water use and eliminates chemical fertilizers, while the organic farm produces fresh vegetables using natural methods. These initiatives support self-sufficiency, reduce environmental impact, and provide students with hands-on learning about eco-friendly food production.

Events for Local Farmers and Food Producers

The institute regularly conducts community outreach programs to support farmers and promote sustainable agriculture. The "Farm2Plate" awareness program connected local farmers, students, and food producers to share knowledge on organic farming and farm-to-table concepts. A One-Day Training Program for Farmers equipped participants with modern and sustainable cultivation techniques. These programs help improve local livelihoods and encourage environmentally responsible farming.

Food Waste Awareness

To promote responsible consumption, CIT organized an event titled "Awareness on Importance of Food and Reducing Food Waste" in December 2023. The program educated students and faculty on mindful eating, the environmental impact of food waste, and strategies to minimize wastage both on campus and in the community.

SDG 3: Good Health and Well-Being

Health and wellness initiatives have been strengthened with an expanded emphasis on mental health awareness, accessible counselling services, and improved fitness resources. These efforts promote holistic well-being and foster a supportive, healthy environment for both students and staff.

Research and Publications

Chennai Institute of Technology actively promotes research supporting Sustainable Development Goal 3 – Good Health and Well-Being, with a strong focus on healthcare innovation, medical technology, and disease prevention. The institution's research integrates artificial intelligence, data science, and biotechnology to enhance early diagnosis, treatment, and monitoring of various diseases. Studies also address public health challenges, environmental health, and the development of eco-friendly biomedical materials. Through interdisciplinary collaborations and advanced

technological solutions, the institute contributes significantly to improving health outcomes and ensuring well-being for all.

Collaborations and Health Services

Chennai Institute of Technology (CIT) ensures quality healthcare for students, staff, and the local community through a well-equipped Health Centre. The facility includes separate inpatient areas for male and female students, an emergency room, and medical oxygen support. A certified medical officer and assistant provide round-the-clock care, supported by ambulance services for emergencies. The Health Centre is accessible to both the campus community and nearby residents, ensuring continuous health support for all.

Health Outreach Programmes

CIT actively promotes community health through collaborations with reputed medical institutions. In partnership with Apollo Hospitals, a Cardiac Screening Camp was held on June 19, 2024, offering BMI checks, ECGs, and consultations. Similarly, a Speciality Health Camp with Madha Medical College provided free medical consultations for faculty and staff in General Medicine, ENT, Dermatology, and Orthopaedics. These initiatives highlight CIT's commitment to preventive healthcare and community well-being.

Blood Donation and Social Responsibility

Under the theme "Anyone Can Be a Superhero," CIT, in association with the Lions Blood Bank and the NSS Unit, organized a Blood Donation Camp on March 5, 2024. The event encouraged voluntary blood donation among students and staff, promoting social responsibility and compassion. It reinforced the institute's dedication to SDG 3 by saving lives and strengthening community health awareness.

Mental Health Support

CIT prioritizes mental wellness through regular awareness sessions and counseling programs for students and staff. An interactive session on "Mental Health and Stress" was organized, featuring professionals who discussed coping mechanisms, emotional balance, and maintaining psychological health. These programs foster a supportive environment that promotes holistic well-being and academic performance.

SDG 4: Quality Education

Innovative teaching methodologies and experiential research opportunities have been introduced across various disciplines to enhance learning outcomes and industry readiness. These initiatives aim to equip students with sustainable, future-focused skills and prepare them for globally relevant career pathways.

Research and Publications

Chennai Institute of Technology is deeply committed to advancing Sustainable Development Goal 4 – Quality Education through impactful teaching, research, and community outreach. The institution focuses on inclusive and equitable education by integrating technology-driven learning, skill-based programs, and innovative teaching methodologies. Research initiatives aim to enhance educational quality, bridge learning gaps, and promote lifelong learning opportunities. Through collaborations, workshops, and rural education programs, the institute works to empower students and communities with knowledge, digital literacy, and sustainable career skills, ensuring education for all.

Inclusive and Equitable Education

Chennai Institute of Technology (CIT) is committed to providing inclusive and equitable quality education that nurtures lifelong learning opportunities for all. The institution admits students from diverse economic, social, and cultural backgrounds, ensuring equality in education without discrimination. Value-based teaching, personalized learning support, and life skills development help every student achieve academic and personal growth.

Lifelong Learning Opportunities

The institute actively promotes lifelong learning through open access to educational materials, training programs, and online learning modules. Through a well-structured Learning Management System (LMS), TCS iON, and MOODLE platforms, CIT provides flexible, technology-driven education that supports skill enhancement and professional growth for students, alumni, and the public.

Public Access to Resources

CIT hosts over 30 Centres of Excellence in diverse fields such as Robotics, Renewable Energy, and Mechanical Design, which are open to the public for training and workshops. The central library also offers free access to school students and community members, encouraging reading, research, and knowledge sharing beyond the campus.

Educational Outreach and Community Engagement

The institution extends its educational services beyond campus through awareness and guidance programs like the Vazhikaatti Counselling Series conducted in various districts. These initiatives guide students in career choices, promote higher education awareness, and bridge educational gaps in rural areas. Programs like Inspiring Young Innovators nurture entrepreneurial mindsets among school students and young learners.

Hands-On Learning and Workshops

CIT regularly conducts practical workshops open to students, faculty, professionals, and the public. Workshops on Industrial Robotics, IoT & Embedded Systems, and Drone Building provide hands-on exposure to emerging technologies and enhance industry readiness. These programs bridge the gap between theory and practice, supporting lifelong and experiential learning.

Student Support and Welfare

CIT maintains a student-friendly campus with dedicated cells for grievance redressal, anti-ragging, gender equality, and caste discrimination prevention. These initiatives ensure a safe, inclusive, and supportive learning environment for all students, reflecting the institution's commitment to equality and well-being.

SDG 5: Gender Equality

Campus initiatives promoting gender equality have been further strengthened through targeted mentorship programs, awareness workshops, and training sessions on gender inclusivity. These efforts foster an empowering, respectful, and safe educational environment for all members of the campus community.

Research and Publications

Chennai Institute of Technology actively advances Sustainable Development Goal 5 – Gender Equality through impactful research and innovation focused on women's empowerment and safety. The institution encourages studies that address gender-related challenges and promote equal participation in education, research, and technology. Research initiatives include the development of smart security systems for women, stress analysis models, and inclusive workplace strategies.

Women's Access and Representation

Chennai Institute of Technology (CIT) strongly promotes gender equality and women's empowerment across all levels of academic and administrative engagement. In the academic year 2023–24, out of 1,440 new admissions, 678 were women, including 61 first-generation learners. The institution ensures equitable participation of women in education and leadership, with 125 female academic staff members, including 21 in senior roles such as Dean, Professor, and Head of Department.

Women's Access Measures

To create a safe, inclusive, and supportive environment for women, CIT provides multiple facilities and programs. These include professional counseling and mental wellness services, a gym and yoga room with exclusive timings for women, and dedicated ladies' common rooms in every building. The Women in Science and Engineering (WISE) forum actively engages women students and

faculty in academic, social, and leadership activities. Leadership training sessions and celebrations such as International Women's Day are held annually to foster confidence and empowerment among women.

Support for Transgender Inclusion

CIT upholds inclusivity for all genders through its Non-Discrimination Policy for Transgender Individuals. The policy recognizes gender identity based on self-identification and ensures equal access to education, employment, and healthcare. Awareness and training programs are organized to promote transgender inclusion and respect within the academic and social environment.

Maternity and Paternity Policies

To support work–life balance and family welfare, CIT provides six months of paid maternity leave for faculty members with over five years of service and unpaid leave for others. A two-week paid paternity leave is granted to eligible male employees. Both policies ensure job protection, non-discrimination, and equal opportunities for career progression after returning from leave.

Awareness and Empowerment Events

CIT organizes multiple programs to promote gender equality and women's empowerment. The Equal Wings initiative educated rural women on leadership and entrepreneurship, while Pink Power provided self-defense and safety training for female students. Girls Talk 2024 served as a platform for young women to share ideas on gender inclusivity and leadership. Additionally, the institution celebrated women achievers in engineering, recognizing their success in core technical placements, symbolizing empowerment through excellence.

SDG 6: Clean Water and Sanitation

Water conservation efforts have been enhanced through the installation of water-efficient devices and upgraded sanitation facilities. Alongside these infrastructure improvements, continuous awareness programs are conducted to encourage sustainable water management practices among students and staff.

Research and Publications

Chennai Institute of Technology actively contributes to Sustainable Development Goal 6 – Clean Water and Sanitation through research focused on sustainable water management, pollution control, and water purification technologies. The institution's research emphasizes innovative methods for wastewater treatment, groundwater monitoring, desalination, and smart irrigation using IoT and AI-based systems. Studies also promote efficient water usage and environmental conservation to ensure access to clean water for all. Through interdisciplinary collaboration and eco-friendly technological

advancements, the institute plays a vital role in promoting water sustainability and safeguarding natural water resources.

Sustainable Water Consumption and Management

Chennai Institute of Technology ensures responsible water usage across its campus through efficient tracking systems. Water is sourced from private supply, borewells, and harvested rainwater, amounting to 50,814 m^3 annually—significantly below national consumption norms. The institute's water management practices emphasize conservation, sustainability, and accountability in resource utilization.

Wastewater Treatment and Reuse

The institute operates two Sewage Treatment Plants (STP) with a combined capacity of 625 KLD. Treated wastewater undergoes multi-stage purification and is reused for gardening, toilet flushing, and maintenance. This initiative supports zero discharge operations and demonstrates CIT's dedication to circular water use.

Rainwater Harvesting Systems

CIT has implemented a comprehensive rainwater harvesting network across all buildings. Rooftop rainwater is collected through pipelines and directed to recharge pits and storage tanks with a total capacity exceeding 50,000 litres. The system helps replenish groundwater, reduces dependence on external water sources, and ensures water availability year-round.

Water-Conscious Infrastructure and Appliances

The campus integrates water-saving technologies such as sensor-based urinals, dual-flush toilets, low-pressure taps, and water-efficient washing machines. With over 90% efficiency in water usage, CIT buildings exemplify sustainable infrastructure design that reduces overall water consumption and supports long-term environmental goals.

Eco-Friendly Landscaping and Water-Conscious Planting

CIT promotes sustainable landscaping through drought-tolerant plant species and eco-zones such as the Beema Bamboo Grove. Covering over 38,000 m^2 of green area, the campus plantation reduces water demand, supports biodiversity, prevents soil erosion, and enhances carbon sequestration.

Community-Based Water Conservation Programs

The institution actively engages in community outreach through initiatives like Rainwater Harvesting Awareness Programs, Water Management Workshops, Water Audit Programs, and Water Quality Testing in nearby villages such as Puthuper and Amerambedu. These programs educate the public on sustainable water use and pollution prevention.

Off-Campus Water Conservation and Lake Restoration

Through activities like the Clean Lake, Green Future campaign at Chembarambakkam Lake and cleanup drives at Puthuper and Puduppair Lakes, CIT demonstrates leadership in water ecosystem restoration. These events combine student participation with community involvement to enhance local water quality and groundwater recharge.

Water Education and Conscious Usage Campaigns

CIT promotes water awareness through educational events like Every Drop Matters, Water Art Competitions, and on-campus campaigns encouraging responsible usage. Posters and pledges reinforce water-saving habits among students, faculty, and local residents, strengthening collective responsibility toward sustainable water management.

SDG 7: Affordable and Clean Energy

The institution has increased its dependence on solar energy and other renewable sources, leading to a significant reduction in carbon emissions. These efforts highlight a strong commitment to sustainable, energy-efficient, and cost-effective power solutions that support a greener campus environment.

Research and Publications

Chennai Institute of Technology is deeply engaged in research that supports Sustainable Development Goal 7 – Affordable and Clean Energy. The institution focuses on developing renewable energy solutions such as solar, wind, and bioenergy systems to promote sustainable power generation. Research projects include solar desalination, hybrid energy systems, biodiesel development, and smart energy management using IoT and AI. These studies aim to enhance energy efficiency, reduce carbon emissions, and create affordable energy technologies. Through innovation and collaboration, the institute contributes significantly to the global transition toward clean and sustainable energy sources.

Renewable Energy Generation and Carbon Reduction

Chennai Institute of Technology meets 53.6% of its annual energy demand through renewable sources such as solar, wind, and biomass. A 300-kW rooftop solar power plant generates an average of 35,800 kWh per month, preventing approximately 2,294 tonnes of CO_2 emissions since installation. This initiative significantly reduces the campus's dependence on fossil fuels and supports carbon neutrality goals.

Net Zero Energy Building

The main academic block at CIT has achieved Net Zero Energy Building status by balancing its total annual energy consumption with renewable generation. Energy-efficient architectural design,

solar energy integration, and natural lighting systems ensure sustainability while reducing operational costs and carbon emissions.

Energy-Efficient Infrastructure and Appliances

CIT has upgraded its campus with over 4,000 energy-efficient appliances, including 1,765 LED lamps, 1,132 BLDC fans, 989 Energy Star-rated computers, and 67 solar water heaters. Motion-sensor lighting, low-energy AC units, and high-efficiency washing machines further enhance conservation, contributing to reduced power usage and improved system efficiency.

Internal Energy Audit and Certification

The institution conducts quarterly internal energy audits and annual external audits to identify and implement energy-saving measures. CIT has been certified by IGNITE Engineering for compliance with ISO 14001:2015 and ISO 50001:2018 standards, validating its strong environmental and energy management systems.

Biogas and Waste-to-Energy Initiatives

A biogas plant on campus converts food waste into renewable energy through anaerobic digestion. The generated biogas replaces fossil fuel-based cooking energy while preventing methane emissions, contributing to carbon reduction and resource circularity.

Transportation and Low-Carbon Mobility

To reduce transport-related emissions, CIT promotes electric vehicles, bicycles, and pedestrian-friendly mobility within campus premises. Private vehicle entry is restricted, and zero-emission electric load carriers and passenger vehicles are made available for internal transit, cutting fuel use and minimizing the carbon footprint.

Community and Industry Outreach for Clean Energy

CIT extends its expertise to the local industrial community through energy efficiency workshops, awareness programs, and direct services such as energy audits and renewable energy assessments. Programs like Expert Talk on Energy Efficiency for Industry and Solar Energy Awareness at Puthu Nallur Village educate industries and communities on energy conservation and clean technology adoption.

Research and Innovation in Renewable Energy

During 2023–2024, CIT published 616 research papers focusing on renewable energy, sustainable technologies, and clean power solutions. Through CITIL (CIT Incubation Lab), the institute supports startups in solar energy, electric vehicles, and low-carbon innovation. Collaborations with SOOORYA (Singapore) and Festa Solar Pvt. Ltd. further enhance research, development, and commercialization of green technologies.

SDG 8: Decent Work and Economic Growth

Employment opportunities and vocational training programs have been strengthened on campus to promote economic growth and equip students with practical, real-world experience. These initiatives foster a progressive and inclusive work environment that supports skill development and career readiness.

Research and Publications

Chennai Institute of Technology actively supports Sustainable Development Goal 8 – Decent Work and Economic Growth through innovative research promoting sustainable industrial practices, entrepreneurship, and technological advancement. The institution focuses on developing smart systems, automation, and AI-driven models to enhance productivity and safety in various sectors. Research initiatives address challenges in renewable energy, agriculture, and manufacturing to drive economic resilience and employment opportunities. Through collaborations, industry partnerships, and skill development programs, the institute contributes to creating inclusive, sustainable, and growth-oriented economies.

Financial Support

Chennai Institute of Technology provides targeted financial assistance through merit scholarships, fee waivers, and need-based support to ensure that talented but economically disadvantaged students can complete their studies. The Trust evaluates applications transparently and offers full or partial fee waivers based on academic merit and income certificates, helping remove financial barriers to education and employment readiness.

Inclusive Education

CIT promotes inclusive access by offering concessions, counselling, and special considerations for underprivileged and single-parent students, and by encouraging female participation with a 10% relaxation in eligibility where applicable. These measures, paired with counselling and academic support, help widen participation and prepare diverse learners for decent work opportunities.

Skill Development & Employability

Through mandatory internships, industry-aligned training, and placement support, the institute equips students with practical skills and workplace exposure. Regular workshops, soft-skills training, and programs under the Centres of Excellence ensure graduates meet employer requirements and enhance their employability outcomes.

Mandatory Internships & Campus Placements

All students undergo a minimum three-month industry placement as part of their curriculum, ensuring hands-on experience. The 2023–24 academic year saw strong placement figures driven by

active industry engagement. This structured approach builds student confidence, practical competence, and direct pathways into the labour market.

Entrepreneurship & Innovation

CIT fosters entrepreneurship through workshops, incubation support, and events under initiatives such as the Self-Reliant Bharat movement, inspiring students to create sustainable enterprises that generate jobs. Mentorship, idea-validation sessions, and innovation challenges connect learners to local ecosystems for startup creation.

Industry Collaboration & Global Partnerships

International research collaborations and MoUs, such as visiting research roles at Kyushu Institute of Technology, transfer global expertise and create R&D linkages that enhance regional technology adoption and job creation. Industry tie-ups for internships, projects, and Centre of Excellence activities strengthen the talent pipeline and employer trust.

Employee Welfare & Decent Work Policies

Comprehensive service rules—transparent recruitment, probation norms, leave policies, maternity benefits, PF/insurance, patent support, and revenue-sharing—promote fair working conditions and staff development. These policies contribute to decent work conditions for faculty and staff, supporting institutional stability and quality education delivery.

Patent, IPR & Innovation Incentives

The institute funds patenting and shares revenue from commercialization, encouraging publications and conference participation while rewarding research outputs. These incentives promote innovation that can generate new enterprises and jobs, reducing barriers for academic commercialization.

Community Outreach & Local Economic Impact

By running training programs, rural outreach activities, and community workshops, CIT helps build local skills, promotes entrepreneurship, and increases employability in nearby communities. These initiatives multiply the social and economic benefits beyond the campus environment.

SDG 9: Industry, innovation and Infrastructure

Significant investments have been made in advanced campus infrastructure and research initiatives across emerging fields, fostering innovation and driving industry advancement in areas such as biotechnology, renewable energy, and sustainable development. These efforts strengthen the institution’s role as a hub for research-driven growth and technological progress.

Research and Publications

Chennai Institute of Technology plays a key role in advancing Sustainable Development Goal 9 – Industry, Innovation, and Infrastructure through pioneering research in engineering, manufacturing, and smart technologies. The institution focuses on sustainable industrial development by promoting innovations in additive manufacturing, smart materials, renewable energy integration, and automation. Research also explores eco-friendly composites, AI-driven design optimization, and sustainable construction materials. By fostering innovation-driven learning, collaborating with industries, and nurturing entrepreneurship, the institute contributes to strengthening industrial infrastructure and driving technological progress for sustainable growth.

Fostering Innovation and Entrepreneurship

Chennai Institute of Technology drives innovation through the Chennai Institute of Technology Business Incubation Forum (CITBIF) and CIT Innovation Lab (CITIL). These platforms nurture entrepreneurial talent among students and faculty by offering mentorship, pre-incubation programs, and startup bootcamps. Over 100 startups have been incubated in areas such as robotics, healthcare, renewable energy, and deep-tech innovations, contributing to the growth of sustainable industries.

Industry-Supported Centers of Excellence

CIT has established more than 30 Centers of Excellence (CoEs) in collaboration with leading industrial and research partners. These include the KUKA Center for Industrial Robotics, WABCO–CIT–KYUTECH Center for IoT, Bonfiglioli Cutting-Edge Academy, Center for Semiconductor Design Hub, and Center for Additive Manufacturing. These facilities provide hands-on training, industry exposure, and opportunities for applied research, strengthening the link between academia and industry.

Research Collaboration and Industry Partnership

The institute collaborates with over 40 industrial partners such as Accenture, TCS, TVS, Daimler India, and Bonfiglioli to develop real-world solutions. Projects cover areas like artificial intelligence, IoT, material science, and automation. During 2023–2024, these collaborations generated ₹4.23 crores in research income, demonstrating CIT's impact on industrial innovation and sustainable technology transfer.

Incubation, Patents, and Technology Commercialization

CIT actively supports patent filing and intellectual property protection for student and faculty innovations. The institution provides legal and financial assistance for IP registration, ensuring innovators retain ownership of their work. With over 285 patents published and 810 research publications in 2024, CIT continues to expand its role in technology commercialization and applied research.

Skill Development and Industry 4.0 Readiness

Through initiatives like Smart Industry 4.0 Hackathons, Launch Pad Hackathon, and CITIL SDG Hackathon, students develop skills in AI, robotics, automation, green tech, and IoT. Programs such as the Minor Degree in Innovation and Entrepreneurship and PMKVY Skill Development Center prepare students for modern industrial challenges, aligning education with the needs of a rapidly evolving global workforce.

Sustainable and Smart Infrastructure Ecosystem

Strategically located amidst major industrial zones such as SIPCOT Sriperumbudur and Oragadam, CIT's infrastructure supports innovation and collaboration. The 10,000 sq. ft incubation center, 30+ CoEs, and state-of-the-art research labs create an ecosystem that promotes design thinking, manufacturing excellence, and sustainability. These facilities embody CIT's commitment to building resilient infrastructure that fuels industrial growth and innovation.

SDG 10: Reduced Inequalities

Programs promoting equality have been further strengthened to ensure that students from diverse socio-economic backgrounds receive equal access to quality education, skill development, and career advancement opportunities. These initiatives foster inclusivity and empower every student to achieve their full potential.

Research and Publications

Chennai Institute of Technology promotes Sustainable Development Goal 10 – Reduced Inequalities through inclusive research and innovation aimed at bridging social and economic gaps. The institution focuses on creating equitable opportunities in education, technology, and employment for all, regardless of background. Research initiatives explore financial inclusion, digital accessibility, and healthcare equity using advanced technologies like AI and blockchain. By encouraging diversity, supporting rural education, and fostering inclusive growth, the institute actively contributes to reducing inequalities and ensuring social and economic participation for underrepresented groups.

First-Generation Student Support

Chennai Institute of Technology promotes social mobility by providing opportunities for first-generation learners. In the academic year 2023–24, 169 of the 1440 students admitted were first-generation students. The institute ensures they receive guidance, mentorship, and academic support to help them adapt to the higher education environment and pursue successful careers.

Accessible Campus Facilities

CIT has developed an inclusive infrastructure to ensure equitable access for individuals with disabilities. The campus includes dedicated ramps, elevators on every floor, wheelchairs at key locations, and accessible toilets strategically placed across buildings. These facilities empower students and staff with mobility challenges to move freely and safely within the institution.

Inclusive Amenities

Snack and beverage vending machines are installed at wheelchair-accessible heights throughout the campus, ensuring ease of use for all. Clear and visible signboards guide persons with disabilities to essential areas like classrooms, hostels, and food courts, promoting independence and confidence in navigation.

Support for Women and Nursing Mothers

Private and hygienic lactation rooms are available in all major buildings, providing comfort and privacy for staff and visitors. This initiative supports nursing mothers and ensures a workplace culture of dignity, inclusivity, and care.

Disability Support Services – Promoting Inclusion and Equal Opportunities

The Women Empowerment Cell (WISE) at CIT leads efforts to create an inclusive and supportive learning environment for all. Disability Support Services include assistive infrastructure, academic counselling, and awareness programs promoting empathy and inclusion. By embedding accessibility into its culture, CIT ensures equal opportunities for every student, fostering a campus where diversity is valued and no one is left behind.

SDG 11: Sustainable Cities and Communities

The campus has been further developed with a focus on eco-friendly infrastructure, including the expansion of green spaces, improved waste management systems, and the adoption of sustainable building practices. These initiatives aim to set a benchmark for community-driven sustainability and environmental responsibility.

Research and Publications

Chennai Institute of Technology actively supports Sustainable Development Goal 11 – Sustainable Cities and Communities through advanced research focused on urban development, smart infrastructure, and environmental sustainability. The institution's research explores innovative technologies such as IoT, AI, and GIS for improving urban planning, air quality monitoring, waste management, and disaster resilience. Projects also address smart transportation, renewable energy integration, and sustainable construction practices. By combining technology with sustainability

principles, the institute contributes to developing safer, greener, and more resilient cities and communities for future generations.

Public Access to Learning and Research Facilities

Chennai Institute of Technology hosts over 30 Centres of Excellence, including those focused on Robotics, Coding, Renewable Energy, and Advanced Mechanical Systems. These centres are accessible not only to students but also to the wider public through training programs and workshops. This initiative provides free access to advanced learning resources, helping community members enhance their knowledge and skills beyond the campus.

Public Access to Libraries

The central library at CIT is open to the public, offering books, journals, and digital resources across multiple disciplines. By welcoming school students and community members, the library fosters a culture of continuous learning, research, and collaboration. Visitors can access reading rooms, reference materials, and digital facilities, strengthening the bond between education and community development.

Free Access to Open and Green Spaces

CIT provides open access to its green spaces and recreational areas, including the cricket ground, park, volleyball court, and open-air theatre. The public can use these facilities for relaxation, sports, and cultural events. By maintaining a green and inclusive campus environment, the institute contributes to community well-being and urban sustainability.

Promotion of Arts and Heritage

The annual Arts and Heritage Festival at CIT celebrates local traditions through music, dance, theatre, and visual arts. This event provides a vibrant platform for students, faculty, and local artists to share their talents, preserving cultural heritage while promoting creativity and community engagement.

Sustainable Transportation

CIT encourages sustainable mobility by providing Zero Emission Vehicles (ZEVs), including electric bicycles, passenger vehicles, and load carriers. These are available free of cost for students and staff, promoting green commuting and reducing the campus's carbon footprint.

Affordable and Sustainable Housing for Students

CIT offers safe and well-equipped hostels with modern amenities, ensuring affordability and comfort for students. The hostels feature solar water heaters, power backup, Wi-Fi, reading rooms, and a smart laundry system. This initiative supports sustainable living and contributes to energy efficiency within the campus.

Pedestrian-Friendly and Accessible Campus

The campus features well-designed pedestrian pathways separated from vehicle roads to ensure safety. Equipped with LED lighting, ramps, and shaded walkways, these paths promote walking and ensure accessibility for persons with disabilities, reflecting CIT's commitment to inclusive infrastructure and sustainable urban design.

Energy Efficiency and Net Zero Building

CIT incorporates water-efficient appliances, sensor-based utilities, and energy-efficient washing systems to reduce consumption. The main building has achieved Net Zero Energy status by balancing total energy use with renewable energy generation, marking a milestone in sustainable campus operations.

Waste Management and Circular Economy Practices

CIT implements an integrated waste management system covering food, leaf, paper, plastic, and e-waste. Food and leaf waste are converted into biogas and compost, while paper and plastics are recycled through ITC's WOW and Bisleri's Bottles for Change initiatives. These practices reduce landfill use and promote a circular economy mindset.

Student Projects for Sustainable Communities

Students contribute innovative solutions through projects like Geopolymer Concrete Using Waste Tyre Rubber and Flexural Behaviour of Reinforced Concrete with Cable Wire and Cullet Glass, advancing sustainable construction practices. The Lane Link Carpooling App promotes green commuting, and Lens Rivals fosters a global photography community that celebrates creativity and cultural exchange.

SDG 12: Responsible Consumption and Production

A culture of mindful resource utilization and waste reduction has been actively promoted through initiatives such as minimizing single-use plastics and strengthening recycling practices. These efforts encourage responsible consumption habits among students and staff, reinforcing the commitment to environmental sustainability across the campus.

Research and Publications

Chennai Institute of Technology contributes significantly to Sustainable Development Goal 12 – Responsible Consumption and Production through innovative research focused on sustainable materials, waste management, and green technologies. The institution's studies emphasize recycling, bio-based materials, renewable energy, and eco-friendly industrial processes. Research includes sustainable manufacturing, waste-to-energy conversion, and the development of biodegradable composites. These efforts promote efficient resource utilization, pollution reduction,

and circular economy practices. By fostering sustainable engineering and production models, the institute plays a vital role in building an environmentally conscious and resource-efficient future.

Comprehensive Waste Measurement and Monitoring System

Chennai Institute of Technology has established a systematic process to monitor and record all waste streams generated across the campus. The institute tracks food, leaf, paper, plastic, and e-waste monthly, alongside water and energy consumption data. This data-driven approach enables the identification of trends, supports informed decision-making, and promotes a culture of accountability in waste reduction and sustainable consumption practices.

Waste Segregation and Recycling Efficiency

The institute follows an advanced segregation system that separates food, plastic, paper, and e-waste at the source. During 2023–2024, a total of 32.535 tonnes of waste were generated, of which 31.939 tonnes (98.2%) were recycled, reused, or upcycled. Only 1.8% of the total waste went to landfill, demonstrating CIT's commitment to achieving near-zero waste operations and responsible resource management.

Food Waste to Biogas Energy Initiative

CIT effectively converts all organic food waste from hostels and cafeterias into clean energy through its on-campus biogas plant. In 2023–2024, 31.14 tonnes of food waste were processed and fully upcycled into biogas used for cooking, replacing conventional LPG and minimizing methane emissions. This initiative creates a circular waste management system that aligns with the principles of clean energy and resource efficiency.

Leaf Waste Composting through Vermicomposting

Leaf and garden waste collected from across the campus are processed through a vermicomposting unit. In 2023–2024, 6.825 tonnes of leaf waste were collected, and 6.651 tonnes were successfully upcycled into nutrient-rich compost. The compost is used to enrich campus soil, supporting green landscaping and reducing dependence on chemical fertilizers.

Paper Waste Recycling through ITC WOW Program

CIT collaborates with ITC's "Well-being Out of Waste (WOW)" initiative for efficient paper recycling. Waste paper, including answer scripts and administrative materials, is collected, segregated, and sent for recycling. During the year, 6.7 tonnes of paper waste were generated, and 6.424 tonnes were recycled, creating a sustainable paper usage cycle and earning institutional recognition from ITC for contribution to environmental conservation.

Plastic Waste Recycling under "Bottles for Change"

Through collaboration with Bisleri's "Bottles for Change" program, CIT ensures responsible plastic management by collecting, segregating, and recycling both soft and hard plastics. In 2023–2024, 1.529 tonnes of soft plastic and 5.214 tonnes of hard plastic were generated, with over 99% upcycled into reusable products such as benches, bags, and clothing, reinforcing a circular economy approach.

E-Waste Recovery and Authorized Recycling

All electronic waste, including old peripherals, cables, and devices, is processed through authorized e-waste recyclers to ensure safe and responsible disposal. During 2023–2024, 0.127 tonnes of e-waste were generated and fully downcycled for material recovery, preventing environmental contamination and promoting sustainable electronic waste management.

SDG 13: Climate Action

Proactive climate action initiatives have been undertaken through extensive tree plantation drives, climate awareness programs, and research focused on environmental conservation. These efforts reflect a strong commitment to mitigating climate change and promoting a sustainable, resilient ecosystem.

Research and Publications

Chennai Institute of Technology demonstrates strong commitment to Sustainable Development Goal 13 – Climate Action through impactful research on renewable energy, pollution reduction, and carbon management. The institution's studies focus on sustainable energy systems, biofuel optimization, emission reduction in engines, and solar energy advancements. Researchers also explore smart grid technologies, electric vehicle integration, and climate-resilient energy models. By developing eco-friendly technologies and promoting awareness on climate sustainability, the institute actively contributes to mitigating climate change and fostering a greener, low-carbon future.

Low-Carbon Energy Use

Chennai Institute of Technology demonstrates a strong commitment to sustainability by integrating renewable energy sources like solar, biomass, and wind into its operations. Approximately 53.6% of the total campus energy is derived from renewables, reflecting significant progress toward a low-carbon future. Energy-efficient systems, LED lighting, and smart energy management further reduce carbon emissions and environmental impact.

Renewable Energy and Carbon Reduction

The campus utilizes a 300-kW solar power plant that generates over 27 lakh units of electricity annually, preventing nearly 2,300 tonnes of CO_2 emissions. Solar water heaters with a combined

capacity of 26,750 litres serve both men's and women's hostels, promoting clean energy use and reducing dependence on grid power.

Environmental Education and Awareness

CIT actively organizes awareness initiatives on climate change, renewable energy, and sustainable practices. Programs such as the Expert Talk on Impact of the Industrial Revolution on Climate Change and the Cleanup Drive at Puthuper Lake educate students and the local community on climate resilience, pollution prevention, and responsible environmental behavior.

No Single-Use Plastic Campaign

In collaboration with Bisleri, CIT launched the "No Single-Use Plastic" awareness program to educate students and local communities on the adverse effects of plastic pollution. The initiative encourages the use of sustainable alternatives, promoting eco-conscious habits and reducing waste generation.

Solar Energy Awareness Program

A Solar Energy Awareness Program was conducted at Puthu Nallur Village to promote the adoption of renewable energy solutions. The session highlighted the benefits of solar power, government incentives, and the role of clean energy in mitigating climate change. This outreach strengthened rural engagement and environmental literacy.

Collaboration with NGOs for Climate Education

CIT collaborates with Exnora International to conduct climate change awareness programs and sustainability workshops in schools and villages. These sessions encourage community-based conservation, waste management, and carbon footprint reduction, extending environmental education beyond the campus.

Sustainable Land Use and Waste Management

The institute promotes sustainable land practices through awareness programs on soil conservation and eco-friendly agriculture. Additionally, the biogas plant converts food waste into renewable energy, preventing methane emissions and supporting a circular, low-waste campus model.

Rainwater Harvesting and Green Infrastructure

CIT's dual drainage system separates rainwater from wastewater, allowing for effective storage and reuse in irrigation, sanitation, and maintenance. This system conserves water and minimizes energy use, contributing to emission reduction.

Green Landscaping and Tree Plantation

With 1,357 trees and 815 bamboo plants across the campus, CIT enhances carbon sequestration and biodiversity. The greenery improves air quality, provides shade, and contributes to an annual carbon offset through natural absorption.

Carbon Footprint and Neutrality Commitment

CIT's total carbon footprint is 564.24 metric tons, with an annual per-person emission of 0.11 tons. Through renewable energy use, biogas generation, and tree plantations, the institute offsets a significant portion of its emissions. CIT has adopted a Carbon Neutrality Target for 2035, supported by a comprehensive zero-emission policy and sustainable campus practices.

Green Building Initiatives

CIT's infrastructure incorporates solar power, water recycling, rainwater harvesting, energy-efficient appliances, and low-VOC materials to maintain superior indoor air quality. The campus also enforces no-smoking policies, uses sustainable construction materials, and maintains 100% wastewater recycling for landscaping—making it a model for climate-resilient infrastructure.

SDG 14: Life Below Water

Water conservation and plastic waste reduction have been actively promoted through educational outreach programs and research focused on freshwater management. These initiatives aim to raise awareness about the effects of human activities on aquatic ecosystems and encourage responsible environmental stewardship.

Research and Publications

Chennai Institute of Technology actively supports Sustainable Development Goal 14 – Life Below Water through research initiatives focused on marine conservation, aquatic ecosystem monitoring, and pollution control. The institution's studies address issues such as ocean health, marine biodiversity, and water contamination using advanced technologies like IoT and data analytics. Research also promotes sustainable aquaculture practices and the reduction of coastal pollution. By integrating innovative scientific methods and environmental awareness, the institute contributes to preserving marine life and promoting sustainable use of ocean resources.

Water Conservation and Community Awareness Programs

Chennai Institute of Technology actively promotes water conservation and sustainable management through extensive community engagement initiatives. The institution organized multiple awareness programs, including the Rainwater Harvesting Awareness Program and Water Management Session at Puthuper, educating the local community about sustainable rainwater collection, groundwater recharge, and household water conservation methods. Programs such as the Water Audit Program

and Water Quality Testing at Amerambedu Village encouraged efficient water usage, greywater reuse, and maintenance of safe drinking water practices. CIT also reached out to schools through Every Drop Matters event, inspiring students to adopt responsible water habits, and the Water Art Competition, which creatively engaged young participants to express the importance of clean and sustainable water through art. These initiatives reflect the institute's strong commitment to environmental education, sustainable resource use, and long-term community empowerment.

Aquatic Ecosystem Restoration and Protection Initiatives

In line with its mission to protect marine and freshwater ecosystems, Chennai Institute of Technology has implemented impactful field activities focused on ecosystem restoration and pollution reduction. The Beach Cleanup Drive at Elliot's Beach and the Clean Lake, Green Future campaign at Chembarambakkam Lake, conducted in collaboration with Bisleri's Bottles for Change and Arogya Bharathi Tamil Nadu, mobilized students, faculty, and volunteers to remove plastic waste and promote responsible waste disposal. These events fostered community participation and awareness about the importance of maintaining clean water bodies and protecting aquatic biodiversity. Through such sustainable action programs, CIT continues to strengthen its role in marine conservation, aligning with the global goal of preserving life below water.

Fish Conservation Area

The institute established a dedicated Fish Conservation Area on its campus to preserve native aquatic biodiversity. Regular monitoring and sustainable management ensure a balanced aquatic ecosystem, contributing to biodiversity protection and environmental education.

Water Recycling and Reuse

CIT operates advanced Sewage Treatment Plants (STP) with a combined capacity of 625 KLD for wastewater recycling. Treated water is reused for landscaping, toilet flushing, and cooling systems, minimizing freshwater consumption. This initiative demonstrates CIT's dedication to resource efficiency and sustainable water management.

Plastic Waste Reduction Initiatives

CIT conducts regular "No Single-Use Plastic" campaigns with Bottles for Change and Exnora International. Stainless steel and glass alternatives are used in cafeterias, and banners encourage plastic reduction. These actions reduce pollution and promote eco-friendly campus operations.

Preventing Water System Pollution

The campus follows strict measures to prevent contamination between clean and wastewater systems. Separate pipelines, color-coding, and regular maintenance ensure water safety. Safe storage

in rooftop and underground tanks, along with monitored RO systems, upholds the institute's high water quality standards.

Water Quality Monitoring

Using digital pH meters and testing systems, CIT regularly assesses water quality to detect and prevent pollution. Continuous monitoring allows early identification of issues and ensures compliance with environmental standards, maintaining a safe and sustainable campus water ecosystem.

SDG 15: Life on Land

Conservation projects have been implemented to protect and enhance campus biodiversity through habitat restoration and extensive tree plantation efforts. These initiatives promote ecological balance and deepen awareness of the vital role ecosystem preservation plays in sustaining the natural environment.

Research and Publications

Chennai Institute of Technology is strongly committed to Sustainable Development Goal 15 – Life on Land, focusing on research that promotes biodiversity conservation, sustainable land use, and ecosystem restoration. The institution's studies address deforestation control, groundwater management, and soil quality improvement using advanced technologies like IoT and GIS. Research also emphasizes phytoremediation, pollution reduction, and environmental monitoring to protect terrestrial ecosystems. Through sustainable engineering practices and awareness initiatives, the institute contributes to preserving natural habitats and promoting the responsible management of land resources.

Farm2Plate Awareness Program

Chennai Institute of Technology, in collaboration with the NGO Streetlight, conducted the Farm2Plate Awareness Program at Nallur to promote sustainable agriculture and responsible land utilization. The session, led by organic farmer and YouTuber Mr. S. Gokul, emphasized eco-friendly farming practices, soil health management, and organic cultivation techniques that protect biodiversity and reduce the use of harmful chemicals.

Awareness on Sustainable Use of Land

In partnership with the Suzhal Arivom Team, CIT organized an Awareness Program on Sustainable Use of Land at Poonthandalam. The program educated students and the local community on soil conservation, land degradation prevention, and sustainable farming techniques. It encouraged participants to adopt eco-friendly methods to preserve land fertility and biodiversity.

Hydroponic and Organic Farming on Campus

CIT practices sustainable food production through hydroponic and organic farming within the campus. The hydroponic system cultivates plants using nutrient-rich water instead of soil, reducing water consumption and eliminating harmful chemicals. The organic farm produces fresh vegetables using natural fertilizers, promoting healthy eating habits and self-sustainability among campus residents.

Biodiversity and Wildlife Conservation

The institute actively works to protect biodiversity through designated conservation areas on campus. Dedicated facilities such as the Pekin Duck and Helmeted Guineafowl Conservation Farm and the Fish Conservation Area ensure the preservation of native species and support a balanced ecosystem. These initiatives enhance ecological awareness and promote respect for nature among students.

Policy for Sustainable Land Use and Restoration

CIT has implemented a comprehensive Policy for Sustainable Use, Conservation, and Restoration of Land. The policy outlines strategies for preventing soil erosion and deforestation, restoring degraded ecosystems, and promoting afforestation using native species. It also emphasizes empowering local communities in sustainable land management and supports integrated ecological approaches to adapt to climate change.

Plastic-Free and Eco-Conscious Campus

The institution promotes a plastic-free culture through regular “No Single-Use Plastic” awareness campaigns in collaboration with Bisleri’s Bottles for Change. Stainless steel and glass alternatives are used in cafeterias and messes to eliminate plastic waste. Awareness labels and eco-instructions are displayed across the campus to foster responsible behavior.

Food and Leaf Waste Management

CIT manages organic waste effectively by converting food waste from hostels and canteens into biogas used for cooking. Leaf and grass waste are processed through vermicomposting to produce organic manure, which is reused in campus gardens and plantations. These practices support resource recovery and minimize waste sent to landfills.

Paper and Plastic Waste Recycling

Paper waste is collected and recycled through ITC’s Well-being Out of Waste (WOW) program, promoting a circular economy model. Plastic waste is segregated and recycled under Bisleri’s Bottles for Change initiative, where it is converted into reusable products such as benches and bags, reducing pollution and landfill burden.

E-Waste Disposal and Material Recovery

Electronic waste, including old devices and cables, is safely collected and processed through authorized recyclers to recover valuable materials. This ensures environmentally responsible disposal and reduces the risks associated with hazardous waste.

Waste Reduction Achievements

During the 2023–24 academic year, CIT produced a total of 32.53 tonnes of waste, of which 31.93 tonnes (over 98%) were recycled, reused, or upcycled. Through its comprehensive waste management system, the institution demonstrates leadership in sustainability, contributing to a cleaner, greener, and more resilient campus ecosystem.

SDG 16: Peace, Justice and Strong Institutions

Ethical governance and transparency have been strengthened through well-defined institutional policies that foster a respectful and peaceful campus environment. These measures promote justice, accountability, and integrity in all academic and administrative practices.

Research and Publications

Chennai Institute of Technology contributes to Sustainable Development Goal 16 – Peace, Justice, and Strong Institutions through research that promotes transparent governance, technological ethics, and social equity. The institution's studies focus on using digital technologies like blockchain, AI, and IoT to enhance public systems, prevent corruption, and ensure secure data management. Research also explores policy frameworks, environmental governance, and community safety innovations. By integrating technology with social responsibility, the institute fosters peace, justice, and strong institutional frameworks that support sustainable and inclusive societal development.

Academic Freedom and Institutional Integrity

Chennai Institute of Technology upholds academic freedom as a fundamental value that ensures open dialogue, transparency, and ethical research practices. The Academic Freedom Policy guarantees that faculty, students, and staff can engage in research, discussions, and debates without censorship or fear of backlash. The institution encourages critical inquiry into issues such as corruption, human rights, and peace-building while protecting independence from political or corporate influence. Transparent governance structures and fair procedures are maintained to handle conflicts, promoting justice and ethical decision-making in all academic and administrative functions.

Inclusive Governance and Global Collaboration

CIT promotes an inclusive academic environment where diverse perspectives, especially from underrepresented groups, are acknowledged and valued. The institution integrates SDG 16 themes

into its curriculum, ensuring that students understand the importance of peace, justice, and strong institutions in sustainable development. Through international partnerships and research collaborations, CIT contributes to global knowledge-sharing and fosters institutional resilience aligned with the principles of good governance and social justice.

Digital Governance, Democracy, and Information Integrity

Chennai Institute of Technology fosters innovation in digital governance and truth-based communication through student-led projects that promote transparency and accountability. The Fake News Detection System uses machine learning and natural language processing to identify and classify misinformation with an accuracy of 97%, ensuring reliable access to factual information. Similarly, the Truth Track Project, powered by Recurrent Neural Networks (RNNs) and Natural Language Processing (NLP), verifies the authenticity of news articles through an AI-enabled chatbot that guides users toward credible sources, enhancing digital literacy. The Digital Poll – E-Democracy Initiative enables secure, transparent online voting for educational institutions, strengthening participatory governance and trust in democratic systems. Students also developed VoteChain, a blockchain-based electoral mechanism using the Ethereum network and Federated Byzantine Agreement (FBA) algorithm to ensure tamper-proof, transparent elections. Together, these projects demonstrate CIT's commitment to responsible digital innovation, media integrity, and institutional accountability aligned with SDG 16.

Cybersecurity, AI Innovation, and Digital Justice Systems

To advance secure and just digital ecosystems, CIT students have developed cutting-edge technologies that enhance privacy, safety, and resilience. The Blockchain-Based Identity Management System empowers individuals with decentralized control of their digital identities, minimizing privacy risks and promoting ethical data governance. The Global Threat Monitoring System, integrating Azure Sentinel and GeoMapping, enables real-time cyberattack detection and response, strengthening institutional cybersecurity. In the field of safety and justice, projects like the Digital Counter-Terrorism System utilize web and data mining techniques to identify and curb extremist content online, while the Lost Child Recognition System uses deep learning (CNN and SVM models) to identify missing children through facial recognition, aiding law enforcement. Additionally, AI-driven projects such as Credit Card Fraud Detection and Sentiment & Opinion Analysis Tools contribute to digital ethics by detecting financial fraud, filtering hate speech, and promoting peaceful online discourse. Collectively, these initiatives reflect CIT's vision for a secure, transparent, and justice-oriented digital future.

SDG 17: Partnerships for the Goals

Strategic collaborations with NGOs, academic institutions, and government organizations have been strengthened to enhance collective efforts toward achieving sustainable development goals. These partnerships enable knowledge sharing, resource optimization, and greater community impact through coordinated action.

Strategic Collaborations with NGOs and Government Bodies

Chennai Institute of Technology has established impactful partnerships with various NGOs and government agencies to advance the Sustainable Development Goals (SDGs). Collaborations with organizations such as Arogyabharathi Tamil Nadu, ExNoRa International, Suzhal Arivom, Ooruni Foundation, and Bisleri's Bottles for Change enable joint initiatives in health, environment, water management, and rural development. These partnerships promote policy alignment, knowledge sharing, and sustainable action for community betterment.

Cross-Sectoral Dialogue for Sustainable Innovation

CIT actively fosters collaboration among academia, industry, and government through conferences, hackathons, and workshops. Events such as the International Conference on Sustainable Materials and Technologies (ICSMT 2025), Smart Industry 4.0 Hackathon 2024, and ATAL FDP on Power Engineering and E-Vehicle Technology create interdisciplinary dialogue on clean energy, climate action, and innovation. These initiatives strengthen partnerships and encourage collective contributions to SDG implementation.

Global Research and Academic Partnerships

The institute has signed 21 international MoUs with universities in countries including Taiwan, USA, Malaysia, Thailand, and the UK to promote SDG-focused research and data collection. Collaborations with institutions like the University of Strathclyde, Dongguk University, and National Chung Cheng University enhance global research exchange, joint publications, and innovation projects that address pressing global challenges.

International Collaboration for SDG Data and Best Practices

CIT participates in global sustainability initiatives such as the SDG Accord, UI GreenMetric, Race to Zero, and Sustainability Exchange, contributing institutional data and adopting best practices in energy, waste, water, and climate action. These engagements promote benchmarking, transparent reporting, and continuous improvement in campus sustainability aligned with international standards.

Community-Based Partnership Programs

Through joint efforts with partner NGOs, CIT conducts impactful community initiatives such as Clean Lake, Green Future (with Bisleri and Arogyabharathi), Roots for the Future Tree Plantation

Drive (with Ooruni Foundation), and Bio-Training on Solid Resource Management (with ExNoRa). These programs empower local communities, students, and volunteers to engage in sustainability, waste management, and climate resilience actions.

Education and Capacity Building for the SDGs

CIT integrates SDG-focused education through courses such as NGOs and Sustainable Development, Environmental Sustainability and Impact Assessment, and Green Supply Chain Management. In addition, awareness programs on gender equality, energy conservation, and climate change are regularly organized in collaboration with NGOs and schools. These academic and outreach activities build a generation of socially responsible citizens equipped to lead sustainable change.