

SUSTAINABLE DEVELOPMENT GOALS



13. CLIMATE ACTION

13.2 Low-carbon energy use

Low carbon energy tracking

Chennai Institute of Technology actively promotes the use of low carbon and renewable energy sources such as solar power, biomass, and wind energy to create a sustainable and eco-friendly campus. The institute has installed solar panels to generate clean electricity for daily operations, while biomass systems and wind energy solutions further supplement power needs in an environmentally responsible way. In addition, energy-efficient practices such as LED lighting, smart energy management, and green infrastructure help reduce overall carbon emissions.



Roof Mounted Solar Panels (Chennai Institute of Technology)



Biomass and Wind (Chennai Institute of Technology)

The campus uses a total of 973,477 kWh of energy, with 456,342 kWh coming from renewable sources. This means about 53.6% of the campus's energy use is from renewable energy.

Low-carbon energy use

Chennai Institute of Technology is dedicated to minimizing its environmental impact by increasing the share of low carbon energy sources in its total energy consumption. Out of the total energy usage of 3504.51 GJ, the institute utilizes 1642.83 GJ from low carbon and renewable sources such as solar, biomass, and wind energy. By integrating clean energy solutions, the institute continues to move towards a low-carbon future, supporting global sustainability and climate action goals.

- Total energy used: 3504.51 GJ
- Total energy used from low carbon sources: 1642.83 GJ

Environmental education measures

Local education programmes on climate

Impact of the Industrial Revolution on Climate Change

Chennai Institute of Technology actively promotes climate change education and awareness through expert talks, workshops, and outreach programs aimed at students, faculty, and the local community. As part of this initiative, an Expert Talk on “Impact of Industrial Revolution on Climate Change” was organized, featuring Dr. G. Thiagu, Sustainability Scientist and Industrial Sustainability Strategic Advisor. The session focused on understanding climate change risks, its environmental and social impacts, and strategies for mitigation, adaptation, and sustainable industrial practices.



Local Environmental Awareness and Cleanup Campaign

Chennai Institute of Technology organized a Cleanup Drive at Puthuper Lake, located in Puthuper, as part of its ongoing commitment to environmental sustainability and community engagement. The event aimed to raise awareness about the importance of preserving natural water bodies, preventing pollution from plastics and other waste materials, and promoting collective responsibility toward a cleaner and healthier ecosystem. Through such environmental campaigns, CIT educates students and the local community on the impacts of pollution, the need for sustainable waste management, and the importance of protecting natural resources to mitigate the effects of climate change.



No Single Use Plastic

Chennai Institute of Technology, in collaboration with Bisleri, organized a “No Single-Use Plastic Awareness Program” to promote environmental sustainability and reduce plastic pollution. The campaign focused on educating students and the local community about the harmful environmental impacts of single-use plastics, emphasizing the importance of responsible consumption, waste segregation, and sustainable alternatives.





Solar Energy Awareness Program

Chennai Institute of Technology organized a Solar Energy Awareness Program at Puthu Nallur Village to promote the adoption of clean and sustainable energy solutions as part of its commitment to climate change mitigation and community education. The session, led by Mr. M. Ezhilmaran, focused on raising awareness about the benefits of solar energy, highlighting its cost-effectiveness, environmental advantages, and potential to reduce dependence on fossil fuels—a key factor in mitigating climate change impacts. He also provided insights into various government schemes and incentives that support renewable energy adoption among households and businesses, empowering participants to make informed and sustainable energy choices.



Environmental education collaborates with NGO

Climate Change – An Awareness Program

Chennai Institute of Technology actively collaborates with non-governmental organizations (NGOs) to promote environmental awareness and sustainability education among students and the local community. As part of this initiative, the institute organized a “Climate Change – An Awareness Program” in association with Exnora International, a leading environmental NGO. The session was conducted by Dr. M. Panneerselvam, Vice-President of Home ExNoRa, at Government Higher Secondary School, Somangalam, on 15th April 2024. The program aimed to educate students

about climate change, its risks, and mitigation strategies, while encouraging them to take part in community-based environmental conservation activities.



Plastic Free World – Awareness Program

The institute organized a “Plastic Free World – Awareness Program” on 13th June 2024 at Maharishi Vidya Mandir, Tiruvottiyur. The session was conducted by Dr. M. Panneerselvam, Vice-President of Home ExNoRa, Exnora International, who highlighted the adverse impacts of plastic pollution on the environment and emphasized the importance of reducing single-use plastics. The program aimed to educate school students and the community about adopting sustainable practices, promoting waste reduction, and protecting natural ecosystems. Through this partnership, CIT strengthens its role in fostering environmental responsibility and sustainable living among the younger generation.



Awareness Program on Sustainable Use of Land

CIT organized an “Awareness Program on Sustainable Use of Land” on 28th June 2024 at Poonthandalam, in association with the Suzhal Arivom Team. The session focused on the importance of soil conservation, responsible land utilization, and sustainable agricultural practices to protect natural resources and maintain ecological balance. Through this collaborative effort, the institute encouraged participants to adopt eco-friendly land management techniques and understand the vital role of land in achieving the United Nations Sustainable Development Goals (SDGs) related to climate action, life on land, and responsible resource use.



Vermicomposting and Organic Manure Workshop

The institute, in association with Exnora International, organized a “Climate Change – An Awareness Program” on 15th March 2024. The session featured Dr. M. Panneerselvam, Vice-President, and Mr. L. Indrajithu, General Secretary of Home ExNoRa, who shared valuable insights on the causes and impacts of climate change, as well as effective mitigation and adaptation strategies. The program aimed to educate students and the local community on the importance of sustainable living, waste management, and carbon footprint reduction, fostering collective responsibility toward environmental protection.





To extend the impact beyond the campus, the same program was also conducted in a local village, reaching the community and spreading awareness about sustainable practices, waste management, and carbon reduction.



13.4 Commitment to carbon neutral university

Transportation Initiatives to reduce Carbon footprint

Chennai Institute of Technology actively promotes eco-friendly and sustainable transportation within the campus by supporting the use of Zero Emission Vehicles (ZEVs). The institution provides university-owned bicycles, electric two-wheelers, an electric passenger vehicle, and electric load-carrying vehicles for internal transport and operational purposes. These vehicles are made available free of charge to students and staff, encouraging a shift toward pollution-free mobility and reducing the campus's overall carbon footprint. Through this initiative, CIT reinforces its commitment to sustainability, clean energy adoption, and green campus development.



Zero Emission Vehicles (ZEV) (Chennai Institute of Technology, India)

Solar panels are used on the campus to generate renewable energy that meets the institution's energy needs.

On average, the 300 kW solar energy systems installed on the roofs of residence halls and academic buildings generate 35,800 kWh of electricity per month and 1,140 kWh per day, reducing the campus's dependence on purchased electricity through renewable energy generation.



Solar Plant



Solar Water Heater

300 kWp Solar Panel Power Plant – Generation from 2018 - 2024			
S. No	Year	Units Generated	Amount Saved
1	2018	3,76,589	28,17,230
2	2019	3,84,068	31,86,784
3	2020	3,90,078	33,34,167
4	2021	4,05,678	34,69,541
5	2022	3,94,265	33,70,466
6	2023	4,17,573	35,69,047
7	2024	4,29,600	36,72,180
Total		27,97,851	234,19,415

By generating 27,97,851 units (kWh) from the solar power plant, CIT has prevented approximately 2,294 tonnes of CO₂ emissions from entering the atmosphere.

Solar Water Heater

Men's Hostel		
Block	No of tanks	Capacity in litres
Podhigai Hostel	14	3,500
Bhavani Hostel	20	10,000
Ladies Hostel		
Amaravathi Hostel	20	10,000
Kaveri Hostel	13	3,250
Total	67	26,750

Electricity Usage per Year (in Kilowatt hour)

The campus uses a total of 973,477 kWh of energy, with 456,342 kWh coming from renewable sources. This means about 53.6% of the campus's energy use is from renewable energy.

Biogas Plant

The biogas plant converts food waste into renewable energy through anaerobic digestion. This process prevents methane emissions from decomposing waste and produces clean energy for use on campus. By replacing fossil fuels and reducing greenhouse gases, the biogas system helps in carbon and emission reduction.



Effective implementation of Rainwater harvesting system

The institute has a dual sewerage system that separates rainwater from wastewater. Harvested rainwater is stored and reused for toilet flushing, irrigation, and vehicle washing, reducing dependence on municipal water. This process conserves energy used for water supply and treatment, contributing to carbon and emission reduction.



**Rainwater Harvesting
(Pipes)**



Recharge Pit



Ground Water Tank

Green Landscaping with Trees and Plants

The Chennai Institute of Technology campus is home to 1,357 trees comprising 31 different varieties, along with 815 bamboo plants. These green assets play a vital role in enhancing the campus ecosystem by improving air quality, providing shade, and promoting biodiversity. The trees and bamboos act as natural carbon sinks, absorbing carbon dioxide from the atmosphere and releasing oxygen, thereby contributing significantly to carbon reduction and emission reduction efforts.

Tree plantation



Total Carbon Footprint

CO₂ (electricity)

$$\begin{aligned} &= \frac{\text{electricity usage per year (kWh)}}{1000} \times 0,84 \\ &= \frac{670,087 \text{ kWh}}{1000} \times 0,84 \\ &= 562.87 \text{ metric tons} \end{aligned}$$

CO₂ (bus)

$$\begin{aligned} &= \frac{\text{number of shuttle bus in your university} \times \text{total trips for shuttle bus service each day} \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0,01 \\ &= \frac{0 \times 0 \times 0 \times 240}{100} \times 0,01 \\ &= 0 \text{ metric tons} \end{aligned}$$

CO₂ (cars)

$$\begin{aligned} &= \frac{\text{number of cars entering your university} \times 2 \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0,02 \\ &= \frac{39 \times 2 \times 0.1 \times 240}{100} \times 0,02 \\ &= 0.37 \text{ metric tons} \end{aligned}$$

CO₂ (motorcycle)

$$\begin{aligned} &= \frac{\text{number of motorcycle entering your university} \times 2 \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0,01 \\ &= \frac{210 \times 2 \times 0.1 \times 240}{100} \times 0,01 \\ &= 1.008 \text{ metric tons} \end{aligned}$$

CO₂ (total)

$$\begin{aligned} &= 562.87 + 0 + 0.37 + 1.008 \\ &= 564.24 \text{ metric tons} \end{aligned}$$

Carbon footprint = 564.24 metric tons

Carbon footprint per person: 0.11

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 ₂ e)
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

Green Building Construction

- Building powered entirely by rooftop solar energy.
- Sewage Treatment Plant installed for 100% wastewater treatment.
- Treated and recycled water used for 100% landscaping.
- Rainwater harvesting system implemented to conserve water.
- Low-pressure taps installed to reduce water use.
- Waste collection and recycling programs implemented across campus.
- Energy-efficient appliances used to minimize power consumption.
- Smoking strictly prohibited within the campus.
- Indoor and fresh air quality maintained in good condition.
- Energy-efficient glass used to reduce heat gain.
- Low-VOC materials improve indoor air quality and reduce health risks.
- Tree plantations help reduce heat and enhance green cover.



13.4.2 Achieve by

Target Date: 2035

Chennai Institute of Technology is committed to developing a carbon-neutral campus and has a well-defined zero-emission policy aimed at achieving this goal by 2035.