SUSTAINABLE DEVELOPMENT GOALS

SDG 12-RESPONSIBLE CONSUMPTION AND PRODUCTION

12.Policy for Responsible Consumption And Production

1.Environmental Impact and Resource Conservation Focus

The institution is keen to implement ethical procurement methods that put preservation of natural resources first and reduce supply chain environmental impact. Choosing suppliers who value sustainability and create materials with little environmental impact is a major priority. This involves making sure that every stage of the supply chain helps to lessen environmental harm by sourcing goods made from recycled, renewable, or ethically sourced materials. Throughout the production and distribution processes, attempts are made to minimise waste formation, improve resource efficiency, and lower carbon emissions in accordance with sustainability goals. The organization seeks to decouple economic growth from the depletion of natural resources by adopting the ideas of the circular economy, which promote a system in which things are continuously recycled, repurposed, and reused.

Policy created on	24-06-2021
Policy reviewed on	23-03-2022

2.Environmental Protection and Safety Focus

To ensure the safe and responsible handling, storage, and disposal of hazardous items, the organization upholds a written waste disposal policy. By ensuring that all substances are maintained in accordance with environmental rules, this strategy lessens the possibility that they will negatively impact ecosystems and human health. The institution reduces its environmental impact and promotes responsible production and consumption by placing a high priority on safety during the disposal process. In order to guarantee that all operations adhere to pertinent legal and environmental norms, the policy also specifies precise protocols for the containment, treatment, and disposal of waste.

Policy created on	25-06-2021
Policy reviewed on	24-03-2022

3.Policy on waste disposal – to measure the amount of waste sent to landfill and recycled

The institution has implemented a waste disposal strategy that places a high priority on trash reduction, recycling, and resource efficiency in order to conform to the principles of responsible consumption and production. With an emphasis on preventing materials from ending up in landfills through better recycling techniques and resource recovery, this policy guarantees consistent monitoring and reporting of the quantity of trash produced. In order to achieve a substantial decrease in landfill trash over time, the organisation will put in place a

continuous measuring procedure to track the amount of garbage that is dumped in landfills in comparison to recycled materials. In order to support a circular economy model where waste is reduced, resources are reused, and sustainability is encouraged at every stage of the supply chain, efforts will be made to improve the lifecycle of products and materials.

Policies around use minimization of plastic

The institution is committed to minimizing the use of plastic in all operations, in alignment with Sustainable Development Goal 12 (responsible consumption and production). This policy outlines a comprehensive approach to reducing plastic consumption by prioritizing the use of alternative, sustainable materials, reducing single-use plastics, and promoting the reuse and recycling of plastic products where applicable. The institution will work to eliminate plastic packaging, encourage the use of biodegradable or recyclable alternatives, and engage employees, suppliers, and stakeholders in efforts to reduce plastic waste. Regular audits will be conducted to assess plastic usage, and measurable targets will be set to continuously decrease the institution's plastic footprint, contributing to a cleaner environment and a more sustainable future.

Policy created on	22-06-2021
Policy reviewed on	21-03-2022

4.Policy for minimization of disposable items

The institution is committed to the minimization of disposable items in all aspects of its operations to support Sustainable Development Goal 12 (Responsible Consumption and Production). This policy focuses on reducing reliance on single-use products by prioritizing reusable, durable, and sustainable alternatives. All departments and operations will be encouraged to adopt practices that reduce waste, such as using reusable containers, cutlery, and office supplies, and eliminating disposable items where feasible. The institution will also promote a culture of responsible consumption among employees, stakeholders, and suppliers through training and awareness campaigns. Regular monitoring and reporting will track progress toward reducing disposable item use, and targets will be set to continuously minimize the environmental impact of disposables across the organization. This policy aims to reduce waste, conserve resources, and foster a more sustainable and circular approach to consumption and production.

Policy created on	23-07-2021
Policy reviewed on	14-04-2022

Solid Waste Management:

The institute has dustbins for all floors, all the departments, common areas, canteen, mess and every other open area. The institute segregates recyclable and biodegradable waste. The copies and other papers are recycled and made available to students as laboratory record books at a very nominal rate. The other biodegradable dry solid waste such as dead leaves, papers etc. are not allowed to burn or dump in the ground, rather they are converted into compost Use of plastics is strictly banned inside the premises. Use of papers is highly discouraged in all departments and only urgent and unavoidable works are paper dependent. Broken glassware is collected in a separate bin over a week and then submitted for the solid waste disposal.

Waste Collection

Waste Treatment

Bio gas Production:

The institution takes biogas initiative aimed towards reducing waste, generating renewable energy, and promoting sustainable practices on campus, helping to create a greener and more eco-friendly environment. Biogas which generates 22,775 kWh of power per year.

Biogas plant – 100 kg capacity

Waste Water Treatment:

The Chennai Institute of Technology is mindful of the need to conserve society and water for the safety of the environment. The institute follows the full method of water recycling and the steps involved are as follows.

Plant Description

Initially, the excess water is stored in the storage tank and aired in the aeration tank. After the aeration process, the coagulant is flocculated and sent to the sedimentation tank. And then the water is filtered by the pressure and sent to the distribution tank. Water is used for gardening and irrigation of plants.

E-Waste Management

Minister of State (Independent Charge) for Environment, Forestry and Climate Change said that the E-Waste Management Standards have been stricter and reflect the government's commitment to environmental governance. The rules would put the producers under the Expanded Producer Obligation with the goals. Producers have been made liable for storing and exchanging e-waste.

The majority of customers must gather the products and hand them over to the approved recyclers. The Ministry stresses that different producers should have a specific Producer

Accountability Organization to ensure that e-waste is processed and disposed of in an environmentally sound manner.

The Ministry noted that the role of state governments has also been developed to ensure the safety, health and skills development of workers engaged in dismantling and recycling operations.

Knowledge is developed among students regarding the management of e-waste. E-waste from the laboratories is appropriately gathered and given to the certified recycler, reused whenever possible, donated and sold as much as possible. Non-working machines, displays, and printers are destroyed and scrapped on a systematic basis. Any pieces that are suitable for other systems are set aside for potential use. The E-waste garbage box has been deposited and the e-waste materials are collected and disposed of by recycling vendors.

Pursuant to the new regulations, it has been instructed that biodegradable waste should be handled, treated and disposed of as far as possible inside the premises by a compost or bio-meth nation and that residual waste should be disposed of by a waste collector or entity as regulated by the local authority.

CIT also launched a full bio-waste management scheme by building a bio-gas generation facility on campus to represent the nation on energy saving grounds. A awareness-raising initiative, in collaboration with local governments, NGOs and students, has been organized to push for better adoption of these waste management tools. Tools need to work on making solid waste management a people's campaign by discussing challenges, complaints and management of solid waste to residents and grassroots.

Waste Management

Amount of waste generated

Type of waste	Total Produced (Metric tons)
Food waste	15.12
Leaf	18.25
Paper	15.4
Soft Plastic	0.01
Hard Plastic	0.12
Electronics	0.12
Total	**49.02/32.35**

Amount of waste recycled

Type of waste	Amount (Metric tons)	
	Total	**Recycled/Reused**
Food waste	15.12	14.78
Leaf	12.25	11.06
Paper	10.7	10.7
Soft Plastic	0.01	0.01
Hard Plastic	0.14	0.12
Electronics	0.12	0.12
Total	**49.02**	**36.79**

Amount of waste sent to landfill

Type of waste	Amount (Metric tons)		
	Total	**Recycled/ Reused**	**Waste sent to landfill**
Food waste	9.13	9.11	0.34
Leaf	12.25	12.06	0.19
Paper	10.7	10.7	-
Soft Plastic	0.01	0.01	-
Hard Plastic	0.14	0.12	0.02
Electronics	0.12	0.12	-
Total	**32.35**	**32.12**	**0.55**

Other details:

1.Research works Contributing to SDG 12

1. Integrated an efficient E-Waste Management using Deep Learning and web Based platform
2. A comparative study of municipal solid waste treatment methods using LCA approach
3. Experimental Investigation on partial replacement of cement with coconut sheel ash and sand with glass powder in concrete
4. Sustainable Eco friendly concrete using plastic Bottles and polypropylene Fibers
5. Method of improving mechanical properties of recycled course Aggregate concrete through partial replacement of glass waste aggregate
6. Mechanical,Physical,and Microstructural Characterization of Aluminum Hybrid Composites with Agro Industrial Wastes as Reinforcements

2.SDG 12 Publication Details:

[1] Louw, A. S., & Avtar, R. (2025). Methodology for measuring landfill dumping statistics globally using Digital Elevation Change maps. *Resources, Conservation and Recycling*, *212*, 107924.

[2] Bharadwaj, A. S., Rego, R., & Chowdhury, A. (2016, December). IoT based solid waste management system: A conceptual approach with an architectural solution as a smart city application. In *2016 IEEE annual India conference (INDICON)* (pp. 1-6). IEEE.

[3] Rosana, N. T., Joseph, K. L., & Sowmiya, S. (2018). Health Care Waste Management in India-Towards a Healthier Environment. *Research Journal of Pharmacy and Technology*, *11*(12), 5687-5690.

[4] Srinivasan, M., Sudharsan, J. B., & Fujiwara, K. (2024). Computational analysis on novel half Heusler alloys XPdSi (X= Ti, Zr, Hf) for waste heat recycling process. *Materials Science in Semiconductor Processing*, *180*, 108524.

[5] Balasubramanian, S., Srinivasan, M., & Perumalsamy, R. (2023). An ab initio study of novel quaternary Heusler alloys for spin polarized and waste heat recycling systems. *Journal of Magnetism and Magnetic Materials*, *571*, 170541.

[6] Raman, R., Rawandale, C. J., Meenakshi, R., Jayaprakash, S., Latha, R., & Srinivasan, C. (2023, August). Real-Time Video Management System for Robotic Waste Sorting and Recycling Using IoT and Machine Learning. In *2023 Second International Conference On Smart Technologies For Smart Nation (SmartTechCon)* (pp. 227-232). IEEE.

[7] Bommi, R. M., Rajeev, S. V. S., Navya, S., Teja, V. S., & Supriya, U. (2023). Smart health care waste segregation and safe disposal. *Mathematics and Computer Science Volume 2*, 205-221.

[8] Dutta, H., Bora, D., Chetia, P., Bharadwaj, C., Purbey, R., Bohra, R. C., ... & Jayaramudu, J. (2024). Biopolymer composites with waste chicken feather fillers: A review. *Renewable and Sustainable Energy Reviews*, *197*, 114394.

[9] Hemamalini, R. R., Vinodhini, R., Shanthini, B., Partheeban, P., Charumathy, M., & Cornelius, K. (2022). Air quality monitoring and forecasting using smart drones and recurrent neural network for sustainable development in Chennai city. *Sustainable Cities and Society*, *85*, 104077.

Patents Contributing to SDG 12

1. Agricultural Innovation:IOT-Enhanced smart Irrigation System with crop protection-202341073935A
2. Intensification of oil yield from kokum seeds:An energy-Efficient extraction using Ultrasonication Technique-202341067795
3. Comprehensible AI to assess corporate security operations using EEG Data within IoT Framework-202311016212 A
4. Agriculture crop insurance policy using Block chain Technology-202241075331 A