Indian Institute of Technology Kanpur
Sustainability Report 2025

Foreword from the Director

With immense pleasure, I present the IIT Kanpur Sustainability Report, a testament to our institution's steadfast dedication to fostering a sustainable future. At IIT Kanpur, we recognize the urgent challenges posed by climate change and environmental degradation, and we firmly believe that universities must take a leading role in addressing these pressing issues.

This report exemplifies the collective efforts of our faculty, researchers, students, and staff, who have tirelessly pursued pioneering research and innovative solutions in various sustainability-related domains. From developing cutting-edge sustainable technologies to advocating for responsible waste management practices, these endeavors showcase our unwavering commitment to positively impacting society and the planet. We are committing all our resources to making our IITK Campus a "**Carbon neutral**" campus by 2030.

Central to IIT Kanpur's ethos is the belief that knowledge and expertise must be leveraged to address real-world challenges. As we strive for academic excellence, we remain equally dedicated to contributing meaningfully to global efforts toward achieving sustainable development goals.

I commend the entire IITK community for their exceptional contributions and extend my heartfelt gratitude to all stakeholders who have supported and collaborated with us on this transformative journey. We will continue working to create a greener, more equitable, and sustainable world.

Prof. Manindra Agrawal
Indian Institute of Technology Kanpur

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Preamble

In our commitment to environmental stewardship and a sustainable future, the Indian Institute of Technology Kanpur (IITK) proudly presents this comprehensive Sustainability Report. Recognizing the significant impact of carbon emissions, water management, waste reduction, and energy efficiency, we endeavor to pave the way for a greener and more resilient tomorrow.

This report highlights IITK's efforts to assess and manage carbon emissions across its operations and activities, encompassing three crucial scopes: Scope 1, comprising direct emissions from sources like PNG usage, fuel consumption, and refrigerant leakages; Scope 2, covering indirect emissions from purchased electricity; and Scope 3, addressing indirect emissions related to procurement, travel, and waste management.

We acknowledge the role of academic institutions in contributing to global carbon emissions and affirm our dedication to driving positive change. By disseminating information on our current carbon footprint, we aim to raise awareness and foster a culture of sustainability within our institution.

Furthermore, this report delves into our initiatives to optimize energy consumption, harness renewable energy, and promote sustainable transportation. Our commitment to waste management is evident in various practices, including recycling, composting, and proper hazardous waste disposal. Moreover, we outline strategies to achieve water sustainability through conservation, recycling, and rainwater harvesting.

As an academic community, we recognize the significance of education and research in shaping a sustainable world. This report showcases our wide range of educational programs and research initiatives focusing on renewable energy, climate solutions, environmental engineering, and more.

We would like to acknowledge the support of the Chandrakanta Kesavan Centre for Energy Policies and Climate Solutions (CKCEPCS). Additionally, the active involvement of student bodies and startups underscores the dedication of the IITK community to promoting sustainable practices and innovative solutions. Through this report, we reaffirm our dedication to continuous improvement and accountability in our sustainability journey. IIT Kanpur strives to inspire and collaborate with other institutions, government agencies, and stakeholders to collectively drive positive change for a greener and more sustainable planet.

Current Carbon emission

IIT Kanpur is spread over an area of about 4.45 km^2 and like most of the lowland northern India, Kanpur has a monsoon-influenced hot semi-arid climate . The campus community consists of around 20,000 residents which includes current students, staff and their family members. Carbon emissions due to our institute come from various sources, including, but not limited to, energy procurement, lab equipment & teaching aids, travel, waste management, and construction activities.

These are the emissions we, the campus community, generate through our activities:

- **Scope 1 (Direct Emissions):** Includes the direct emissions from sources owned or controlled by the institute. These emissions result from burning fuels on-site, operating institute-owned vehicles, and refrigerant leakages.

- **Scope 2:** Includes indirect emissions associated with the generation, transmission and distribution of the purchased electricity consumed by the institute.

- **Scope 3 (Indirect):** Includes all other indirect emissions due to the institute's activities not classified under Scope 1 or 2. These emissions can be attributed to activities such as the extraction, production, and transportation of purchased goods or services, business travel, employee commuting, construction and maintenance work undertaken on the campus, and waste disposal.

Type	Data		Amount	Unit	Emissions (tonnes of Co2eq)
Scope-1	PNG		618114	cu m	1236.2
	Vehicle and DG	Diesel	8097.8	L	21.7
	Fuel for Institute	CNG	235.8	kg	0.6
	Refrigerent leakage (Excluding CPs)	R22	430	kg	778.3
		R32	55	kg	37.1
		R410	30	kg	62.6
		R134	155	kg	217.0
Scope-2	Electricity purchased		48163394	kWh	43347.1
	Onsite Solar Production		2453537	kWh	0.0
Scope-3	Procurement	Computers and peripherals	23,09,13,900	INR	1246.9
		UPS Batteries	1,87,95,560	INR	180.4
		LAN Cables	29,82,587	INR	12.5
		Scientific Goods	2,07,54,62,720	INR	12452.8
		Washer & Washing machines	4,23,762	INR	2.0
		Laboratory equipments	3,31,31,850	INR	218.7
		Laboratory furniture	1,18,000	INR	0.4
		Chemicals	3,22,244	INR	3.5
		Consumables	2,47,55,20,940	INR	8911.9
		Sport Items	2,09,92,500	INR	71.4
		Other Items	1,20,71,55,000	INR	4345.8
	Travel	Land Travel	Data currently not available (Could be updated once the data arrives)		
		Air Travel			
		Rail Travel			
	Waste	Solid/Cooked food	1984000	kg	1587.2
		Kitchen	537000	kg	1074
		Horticulture	4587000	kg	4587
		Chemicals	Data currently not available (Could be updated once the data arrives)		
		Construction	1478725000	Rs	14047.9
		Demolition	27.85	m^2	2.4

Table-1 Carbon emissions of institute for 2024-25

We adhere to the GHG protocol to calculate the institute's carbon emissions. Total carbon emissions for Scope 1 & 2 are estimated at 2,353 tonnes & 43,347 tonnes, respectively; Scope 3 emissions are still being assessed. A significant source of carbon emission for the institute is the electricity purchased.

Initiatives

Green Campus

To boost clean and green environment of IIT Kanpur, every year thousands of trees of various varieties are planted on the campus. Our community enjoys a green cover of approximately 85,000 trees including the 12,000 thick Miyawaki style plantations. Overall the campus benefits from 200 hectares of green area including lawns, trees, and hedges.

Aerial view of IIT Kanpur

Energy

Energy consumption is the most significant contributor to carbon emissions from IIT Kanpur. To significantly decrease its carbon footprint and promote sustainable practices, the institute has been actively promoting renewable energy and improving energy efficiency on its campus.

Current Initiatives

IIT Kanpur co-featured in the Guinness World Records for the largest electric bicycle delivery through the E-Cycle program, in collaboration with EMotorad, Kuppam Area Development Authority (KADA), District Collectorate of Chittoor, and the State Government of Andhra Pradesh.

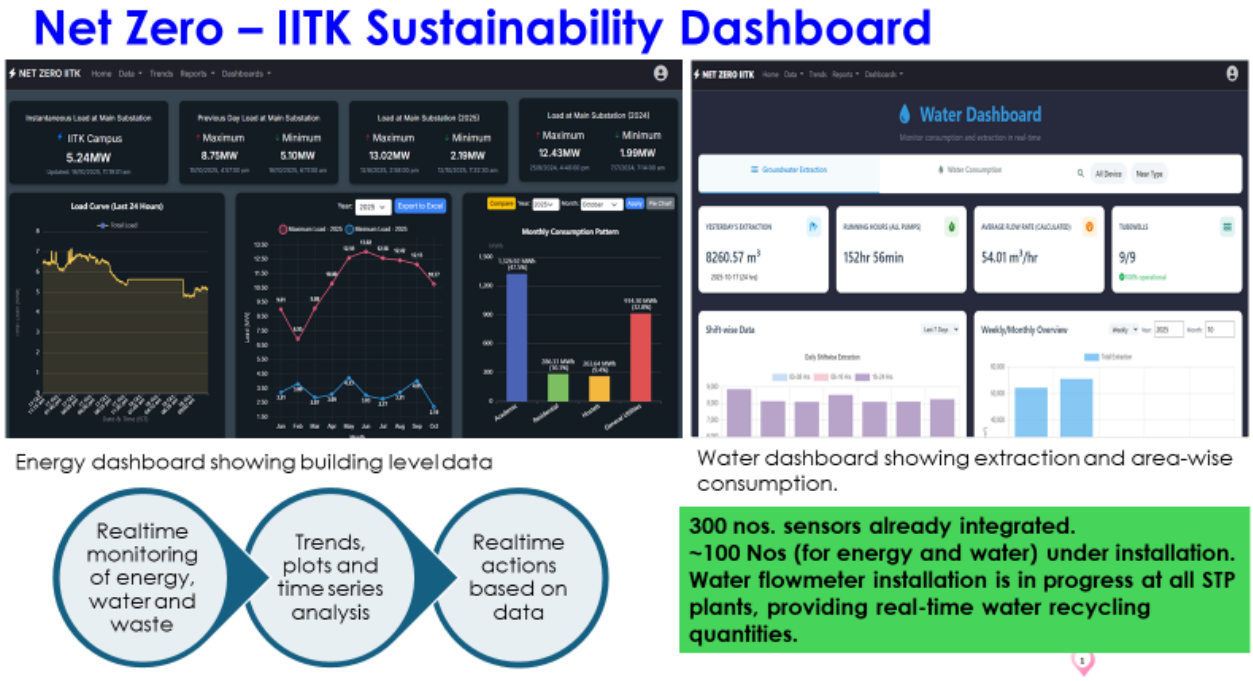
Replacing conventional fans with BLDC fans

The institute has successfully initiated the process of replacing the conventional fans with energy-efficient BLDC (Brushless Direct Current) fans.

Smart Grid Dashboard

A real-time Smart Grid Dashboard enabling feeder-wise energy monitoring has been deployed. A unified dashboard integrating energy, water, and waste systems has also been developed.

Sustainability Dashboard



Energy dashboard showing building level data

Water dashboard showing extraction and area-wise consumption.

Energy Audit Committee

The Energy Audit Committee was constituted in 2024. The committee will prepare energy audit report and monitor the sustainability status of the campus. The Committee will also develop a roadmap for achieving net zero campus.

Environmental Advisory Committee (EAC) is a policymaking body on environmental issues and was constituted at IIT Kanpur in 2013.

Centralized Air Conditioning in Academic Area

The buildings in academic area are cooled through the centralized air conditioning. It saves energy by optimizing cooling distribution, reducing redundant cooling units, and improving temperature control. It allows for efficient energy use by using advanced technology and proper maintenance, resulting in a **40%** reduction in energy consumption and reduced greenhouse gas emissions.

Solar Water Heaters

Many Residential halls have installed solar water heaters. This renewable and sustainable technology reduces reliance on fossil fuels and significantly lowers energy consumption and associated carbon emissions.

Rooftop Solar

The campus presently has a Solar generation installation of capacity of 1 MW under CAPEX mode and 1.21 MW under RESCO Mode through Renew Power. Furthermore, a 0.4 MW PV system is being installed.


Solar Panel installation at the roof tops

Tentative assessment has been completed for additional in-house solar capacity, targeting a total installed capacity of 10 MW, comprising:

- Rooftop solar: 2.33 MW
- Floating solar: 1 MW
- Ground-mounted solar: 6.6 MW

Promoting bicycles for daily commute

The well-marked cycle paths run parallel to the roads and help in easy commute. Also, to commute within the campus the residents can avail a low-cost E-Rickshaw service.

Outside Lecture Hall

Low-cost E-Rickshaw service for campus residents

Electric golf carts

IITK has introduced 12 electric golf carts, these eco-friendly vehicles are used to transport students/staff/visitors around the campus, reflecting the institute's commitment to green initiatives. The service operates daily from 6:30 AM to 10:30 PM.

Planned Initiatives

Replacing CFL tube lights

Many Lighting fixtures, especially in residential halls, use CFL tube lights. Recently the "Maintenance department" has decided on replacing the old CFLs, with new

LED tube lights, on a maintenance priority basis. The replacement will help achieve about a **30-40%** reduction in lighting energy consumption across the campus.

Expanding Rooftop Solar

The installed Solar PV capacity is expected to increase significantly (**about 2-3 MW more**) as PV systems are planned to be installed in many rooftop spaces and other locations across the campus.

NetZero Energy Building

We plan to convert one of our existing buildings on campus to Net zero energy; this building will be off-grid and will be able to produce enough energy to complete its regular operation.

Waste

A sustainable and healthy environment requires effective waste management. It encourages the wise use of resources, reduces the negative environmental impact, and promotes responsible consumption and production patterns. The objectives of IIT Kanpur's waste management techniques are to effectively manage waste, minimise waste generation, promote recycling and reuse, and ensure proper waste disposal.

Current Initiatives

Waste Segregation: Solid waste, food waste, horticulture & kitchen waste, chemical waste, and E-waste are segregated across the campus. Door-to-door waste segregation awareness campaigns are being conducted on a fortnightly basis across the campus.

Waste monitoring dashboard: The dashboard is now fully developed and is used for real-time waste monitoring.

Plastic waste: Segregation of single-layer plastic has been initiated, and the material is being sent for recycling. Segregation of multi-layer plastic has also commenced and the institute is in discussions with vendors for the purpose of recycling.

Solid Waste/Cooked Waste: As per the recent statistical data for 2022, this mode of waste collected from households, hostels, and the rest of campus is about **4,200 tonnes**. The solid waste is given off to ***M/s. JTM Services Pvt. Ltd***, a government-approved vendor.

Kitchen Waste: This mode of waste is about **100 tonnes** from households and **325 tonnes** from hostels, as per the 2022 data. ***Agnys Waste Management***, an IIT Kanpur incubated startup***,*** composts the kitchen waste using **t**he drum composting method. Each drum has a capacity of 200 kg, and it takes 20-22 days to complete one cycle. The compost thus generated is distributed free of cost among the campus residents.

Horticulture Waste: This mode of waste is about **3,470 tonnes** per year. IIT Kanpur produces vermin compost and leaf manure by collecting dry leaves, roots, grass, stems, kitchen waste, etc. The compost and manure are used in the institute nursery to nurture the soil. The tree woods are collected, segregated by the nursery, and auctioned by the State Office. The Institute has one of the finest nurseries in the town that meets the requirement of the campus for seasonal as well as all-season flowers, bushes, hedges and shady trees of all verities etc.

IIT Kanpur nursery

Agnys Waste Management Plant

E-Waste and hazardous waste: Various departments and halls collect and auction e-waste from academic areas and hostels, respectively. For residential areas, collection drives are held on every second Saturday of the month, in which

residents can submit their hazardous waste items - like bulbs, batteries, electronics, broken glass, blades, scissors, mobiles, etc. - to the counters at a designated place which is then accumulated together and given to an authorised recycler once it reaches 2 tonnes.

Chemical Waste: Chemical waste is divided into three categories: *Chlorinated, Non-Chlorinated, and Solid*. Chlorinated and non-chlorinated liquid waste is collected in canes and later transferred to Master Bins kept at a Chemical Shed on the campus. Solid waste is also collected and dumped there. Later this waste is outsourced to ***Ranky Enviro Engineers Ltd.***, which works under the UP-Waste Management Project.

Project Bhoomi: In a significant development towards efficient waste management, Agnys Waste Management Private Limited, a SIIC (Startup Incubation and Innovation Centre), IIT Kanpur-incubated company, developed an automatic composting machine known as 'BHOOMI,' in collaboration with Imagineering Lab, IIT-Kanpur.

BHOOMI stands for Bio-composting of Horticulture and Organic waste into Manure Indigenously. Engineers India Limited supported the Research & Development of the device. The device has advanced features like carbon filters, shredders, air pumps, and solar panels, which systematically convert waste into manure in just 10-20 days. The process is more convenient and rapid than the conventional technologies.

Planned Initiatives

Zero Landfill campus: This initiative aims to convert our campus into a zero-landfill campus through a comprehensive and sustainable waste management initiative.

Key components of the plan include:

1. Waste Segregation and Collection: While segregating most wet and dry waste across the campus, we plan to further segregate plastics, glass, metals, and other materials at the source. This measure will lead to proper waste management and reduce human efforts.

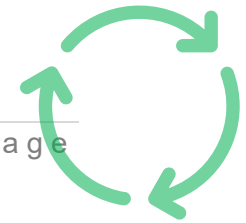
2. Waste-to-Energy Technologies: We plan to set up a BIOGAS Plant on a zonal or central level on the campus to deal with all kinds of organic waste effectively. Until now, organic waste goes to composting, and the cooked food waste is handled in an unorganized and inefficient way. Installed effectively at various levels in IITK, we can use the biogas released from the BIOGAS plant as an energy resource and by-products of the treatment can be used as compost or manure.

3. Collaborations and Partnerships: We look forward to potential collaborations with NGOs that can help us recycle and reuse our dry waste to the maximum extent, such as discarded shoes, cardboard, tin boxes, etc., that usually go into the waste stream.

Water

The water requirement for our campus is solely fulfilled by groundwater. We have ten tube wells, each approximately 1000 feet deep. The water is pumped from a depth of around 100 feet, as the groundwater level is reasonably good due to the amount of rainfall in Kanpur and the influence of the nearby River Ganges. This ensures a sufficient water supply for the campus. Considering the large population of our campus (~20,000 residents), the water demand is high. The estimated consumption is **4 million liters per day (MLD)**.

To achieve water sustainability, it is essential to focus on water conservation. This involves practicing responsible water consumption, implementing water recycling and reuse practices, and adopting strategies that minimize water waste.



Current Initiatives

Water monitoring dashboard: The dashboard is operational and is capturing 100% of groundwater extraction data (through 32 flow meters) and approximately 15% of consumption data.

Water-saving fixtures: Water-saving fixtures like aerators, low-flow taps, dual-flush systems have been installed in common washrooms and water outlets.

Wastewater management: IIT Kanpur has a network of Sewage Treatment Plants (STPs) having a total treatment capacity of **1.35 MLD**. These plants play a crucial role in reducing the discharge of untreated water from the main campus. However, at present, we do not segregate greywater for recycling. The treated wastewater from the STP is currently utilized for horticultural purposes, such as irrigation & gardening.

Oxidation Pond is a great place to spot birds.

Rainwater Harvesting: The existing rainwater harvesting infrastructure on campus has a capacity of 52 million Liters.

Planned Initiatives

The existing water supply network at IITK is being analyzed to identify areas where improvements must be made. This analysis involves assessing the efficiency of the network, identifying any bottlenecks or areas of water loss, and exploring ways to optimize the system.

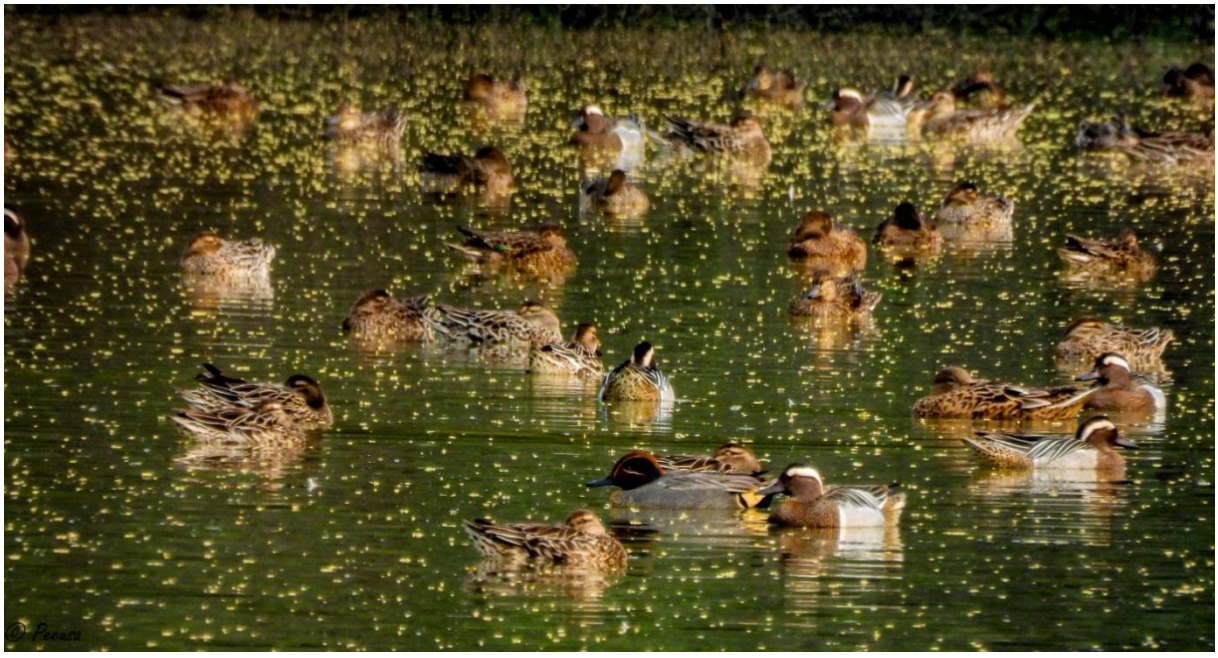
Greywater Segregation: The institute plans to implement the greywater segregation method from wastewater to promote water sustainability. Greywater refers to domestic wastewater generated from laundry, showers, and handwashing. This type of wastewater can be treated and reused for various purposes, including irrigating gardens and flushing toilets. Greywater typically makes up **50% to 80% of the total wastewater** produced by a building. Greywater is generally safer and easier to treat for non-potable uses than blackwater.

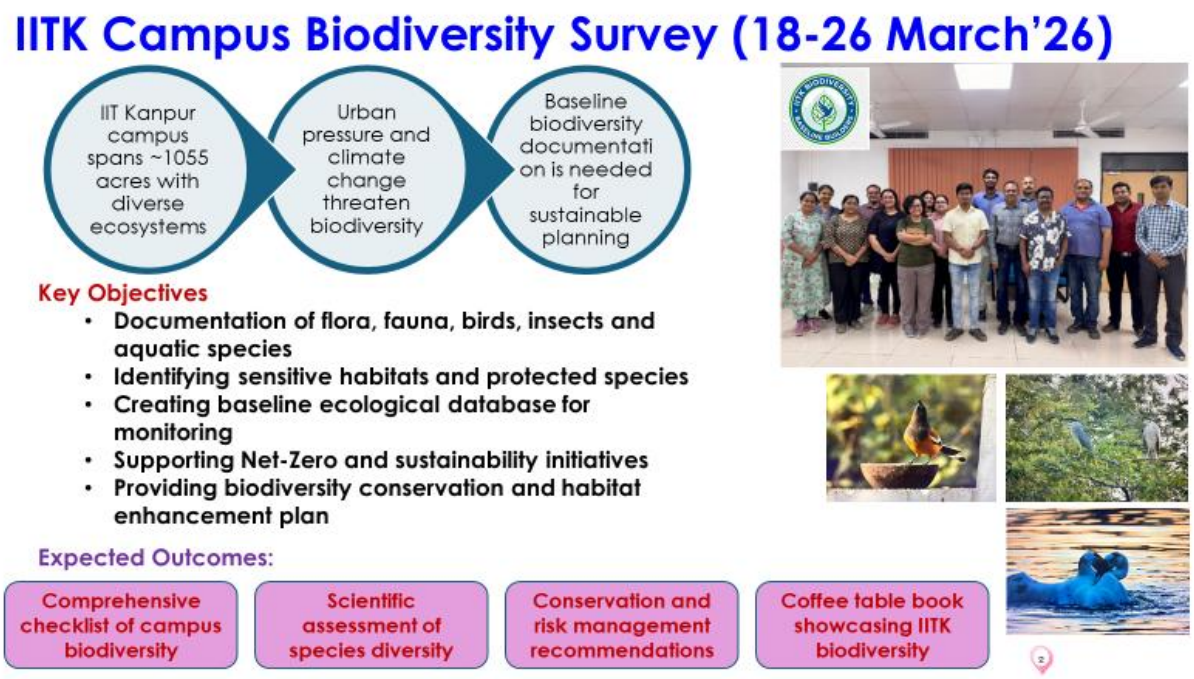
Rainwater Harvesting: The institute plans to expand the existing rainwater harvesting infrastructure on campus.

Waterless Urinals: Traditional urinals contribute significantly to water wastage, causing environmental, social, and economic problems. The institute plans to study the feasibility of water-less urinals and implement them. These urinals operate without water and utilise a special liquid or cartridge as a sealant to trap urine and prevent odours.

Biodiversity

At IIT Kanpur we share space with wildlife. The campus is home to 100s of species of birds, butterflies, insects and snakes. The campus is also home to Nilgay, Asia's largest antelope and Indian Peafowl, country's national bird. The most recent biodiversity survey was conducted in campus from 18th March – 26th March by a team of 9 experts and 15 volunteer students and staff.





More on the survey will be updated soon on the website of [Kotak School of Sustainability](), IIT Kanpur.

Sustainable Education

Along with becoming a more sustainable and carbon-neutral campus, IIT Kanpur also aims to educate its students, staff, and the community about the social,

environmental, and governance aspects of sustainable development. Many of the institute's departments and centers are collaboratively working towards this aim.

Department of Sustainable Energy Engineering

The Department aims to contribute to the national vision of energy sustainability of meeting a large proportion of the nation's energy needs through new and renewable energy technologies in the future for better health of its citizens and energy security. It has partnered with Mehta Family Foundation (USA) and Rice University (USA) to achieve excellence in energy sustainability education, research, and technology development. Cutting-edge research is being done on various topics like Solar Photovoltaics, Solar Thermal, Wind Energy, Batteries and Supercapacitors, Fuel Cells, Electric Vehicles, Hydrogen and Alternative Fuels, Carbon Capture and Utilization, Smart Grids and Renewables Integration, Energy Policy, and Regulation, etc.

Chandrakanta Kesavan Centre for Energy Policies and Climate Solutions (CKCEPCS)

This centre was established to assist policymakers with practical solutions to the problems of climate change. As a signatory to the Paris Climate Agreement, India must develop, adapt, and implement technologies to reduce emissions and grow sustainably. The centre aims to spearhead the development of technology and policy solutions to help India and the world combat climate change.

The Kotak School of Sustainability

The school opened in partnership with Kotak Mahindra Bank in December 2023 aims to excel in sustainability education, research and innovation, technology development, entrepreneurship, and outreach. The school will spearhead the development of holistic end-to-end technology solutions for sustainable development for a healthy planet and species.

Centre for Environmental Science and Engineering

The mission of this center is to carry out high-quality, interdisciplinary research, leading to technology development and competency building in various areas

related to environmental problems, thereby providing solutions to the Indian industry, medical professionals, and policymakers. Broad research areas include Water and Wastewater Treatment, Aerosol Properties and Regional Climate Change, Air Quality Modelling, and Management.

National Aerosol Facility

The National Aerosol Facility is a multi-purpose facility for studying aerosol behavior under simulated conditions. IIT Kanpur successfully conducted its first artificial rain test under the supervision of this facility.

AI Centre of Excellence (CoE) on Sustainable Cities

The AI Centre of Excellence on Sustainable Cities, led by IIT Kanpur, will leverage artificial intelligence for smart city planning, traffic management, and efficient resource distribution. By integrating data from sensors, GIS maps, and satellite feeds, it will predict resource needs and enhance public space design. With shared infrastructure across Agriculture, Health, and Sustainable Cities the CoE will further optimize costs and resources.

Just Transition Research Centre (JTRC)

Just Transition Research Centre (JTRC) leverages high quality academic environment to conduct cutting edge research to address the academic and policy requirements of the national and sub-national levels. The center's aim is aligned primarily with the seventh sustainable development goal of the United Nations: affordable and clean energy.

Academic Programs

1. Master of Technology (M.Tech.) in Sustainable Energy Engineering
2. Master of Science by Research (M.S.R) in Sustainable Energy Engineering
3. Ph.D. in Sustainable Energy Engineering
4. M.Tech. in AI for sustainability

Academic Courses covering various topics related to sustainable growth

#	Topic of the course	Department	Level (UG/ PG)	Code	SDGs aligned
1	HEALTHCARE VENTURES & ENTERPRISES II	Biological Sciences & Bioengineering	PG	BSE798A	3
2	ENVIRONMENT AND SUSTAINABILITY	Civil Engineering	UG/PG	CE212	12, 13, 15
3	ENVIRONMENTAL QUALITY AND PROCESSES	Civil Engineering	PG	CE311	13, 15
4	AIR POLLUTION AND ITS CONTROL	Civil Engineering	UG/PG	CE666	3, 11, 13
5	SURFACE WATER QUALITY MODELING	Civil Engineering	PG	CE760M	6
6	ENVIRONMENTAL FLUID MECHANICS	Civil Engineering	PG	CE656	13, 15
7	HUMANS, ENVIRONMENT AND SUSTAINABLE DEVELOPMENT	Civil Engineering	PG	CE663	13, 15
8	ENVIRONMENTAL QUALITY & POLLUTION MONITORING TECHNIQUES	Civil Engineering	PG	CE668	13, 15
9	WATER RESOURCES SYSTEMS ANALYSIS	Civil Engineering	UG/PG	CE718	6
10	ENVIRONMENT TOXICOLOGY AND RISK ASSESSMENT	Civil Engineering	PG	CE764M	13, 15
11	INDUSTRIAL WASTE MANAGEMENT	Civil Engineering	PG	CE765M	4
12	TOWARDS SUSTAINABLE MANAGEMENT OF PLASTIC POLLUTION	Civil Engineering	PG	CE768M	4
13	PRACTICAL ETHICS		UG/PG	ETH111	4
14	TOPICS IN INNOVATION AND ENTREPRENEURSHIP		UG/PG	SEP698	4
15	INTRODUCTION TO CLIMATE CHANGE ECONOMICS AND POLICY	Management Sciences	PG	MBA667	4
16	INTRODUCTION TO POLICY MAKING	Management Sciences	PG	MBA669	4
17	RENEWABLE ENERGY - ECONOMICS POLICY AND REGULATION	Management Sciences	PG	MBA782M	7
18	DERIVATIVES & RISK MANAGEMENT FOR THE ENERGY AND ENVIRONMENTAL MARKETS	Management Sciences	PG	MBA784M	7, 13, 15
19	SOCIO-POLITICAL AND ETHICAL ASPECTS OF BUSINESS	Management Sciences	PG	MBA617	4
20	INTRODUCTION TO UNIVERSAL HUMAN VALUES AND ETHICS	Management Sciences	PG	MBA618	4
21	SUSTAINABLE DEVELOPMENT FOR BUSINESSES	Management Sciences	PG	MBA725M	4
22	ECONOMICS AND POLICY FOR INDUSTRIAL DECARBONISATION	Management Sciences	PG	MBA726M	4
23	EMPIRICAL METHODS IN HEALTH ECONOMICS AND PUBLIC POLICY	Economic Sciences	PG	ECO717	3
24	ENVIRONMENTAL ECONOMICS: POLICY AND TRADE	Economic Sciences	PG	ECO725	13, 15
25	ECONOMY, SOCIETY & PUBLIC POLICY	Economic Sciences	PG	ECO111	4
26	SMART GRID TECHNOLOGIES	Electrical Engineering	UG/PG	EE679	4
27	POWER CONVERTERS FOR EV CHARGING	Electrical Engineering	UG/PG	EE698E	4
28	SOLAR PHOTOVOLTAIC TECHNOLOGIES	Electrical Engineering	UG/PG	EE615	4
29	SMART GRID TECHNOLOGY APPLICATIONS	Electrical Engineering	UG/PG	EE698B	4
30	NANOPHOTONICS	Electrical Engineering	UG/PG	EE798I	4
31	UAV COMMUNICATIONS	Electrical Engineering	UG/PG	EE798T	4
32	CLIMATE FICTION AND FILMS	Humanities & Social Sciences	UG/PG	ENG456	4
33	FEMINIST THEORY AND LITERATURE	Humanities & Social Sciences	UG/PG	ENG743	4
34	PSYCHOLOGY OF WELLBEING	Humanities & Social Sciences	UG/PG	PSY470	4
35	ENVIRONMENTAL SOCIOLOGY	Humanities & Social Sciences	UG/PG	SOC475	13, 15
36	SOCIOLOGY OF ENVIRONMENT	Humanities & Social Sciences	UG/PG	SOC742	13, 15

37	MORAL THINKING	Humanities & Social Sciences	UG/PG	PHI447	4
38	MORAL JUDGEMENT	Humanities & Social Sciences	UG/PG	PHI757	4
39	ENERGY SYSTEMS	Mechanical Engineering	UG/PG	ME301	7
40	SOLAR ENERGY TECHNOLOGY	Mechanical Engineering	UG/PG	ME645	7
41	MECHANICS OF ENERGY MATERIALS	Mechanical Engineering	PG	ME698S	7
42	ELECTRONIC AND METALLURGICAL WASTE RECYCLING	Materials Science & Engineering	PG	MSE662	4
43	PHOTONIC DEVICES	Physics	UG/PG	PHY690V	4
44	PHYSICS OF ENERGY MATERIALS	Sustainable Energy Engineering	UG/PG	SEE602	7
45	ELECTROCHEMICAL ENERGY SYSTEMS	Sustainable Energy Engineering	UG/PG	SEE606	7
46	INTRODUCTION TO BIOENERGY AND BIOFUELS	Sustainable Energy Engineering	UG/PG	SEE608	7
47	SUSTAINABLE ENERGY AND ENABLING NET ZERO EMISSIONS	Sustainable Energy Engineering	UG/PG	SEE622	7
48	DESIGN STRATEGIES FOR NET-ZERO ENERGY BUILDINGS	Sustainable Energy Engineering	UG/PG	SEE624	7
49	ELECTRIC VEHICLES	Sustainable Energy Engineering	UG/PG	SEE624	4
50	ECOLOGY, EQUITY AND THE ECONOMY	Sustainable Energy Engineering	UG/PG	SEE624	4
51	ENERGY, CLIMATE CHANGE & SUSTAINABILITY	Sustainable Energy Engineering	UG/PG	SEE211	7, 12, 13
52	AN INTRODUCTION TO SUSTAINABLE ENERGY TECHNOLOGIES	Sustainable Energy Engineering	UG/PG	SEE605	7
53	HYDROGEN ENERGY: PRODUCTION STORAGE AND UTILIZATION	Sustainable Energy Engineering	UG/PG	SEE607	7
54	SOLAR PHOTOVOLTAICS	Sustainable Energy Engineering	UG/PG	SEE613	4
55	WIND ENERGY	Sustainable Energy Engineering	UG/PG	SEE614	7
56	SOLAR THERMAL ENGINEERING	Sustainable Energy Engineering	UG/PG	SEE615	4
57	RENEWABLES INTEGRATED SMART POWER SYSTEMS	Sustainable Energy Engineering	UG/PG	SEE616	4
58	INTRODUCTION TO SUSTAINABLE ENERGY POLICY	Sustainable Energy Engineering	UG/PG	SEE617	7
59	ECOLOGICAL PRINCIPLES AND BIODIVERSITY FOR SUSTAINABILITY	Sustainable Energy Engineering	UG/PG	SEE626M	12, 13
60	POLICY PROCESSES AND ANALYTICAL METHODS: APPLICATION TO CLIMATE POLICIES	Sustainable Energy Engineering	UG/PG	SEE628	4
61	POWER ELECTRONICS FOR ELECTRIC VEHICLES	Sustainable Energy Engineering	UG/PG	SEE633	4
62	MORNING EXERCISE	Sports & Physical Education Committee	UG/PG	PE111	4

Workshops/ conferences/ FDPs on topics related to sustainable development

#	Title of workshop	Date	SDGs aligned
1	International Symposium on Materials Innovation and Technologies for Clean Energy & Sustainability	11.03.2026 - 12.03.2026	7, 9, 12, 13
2	Thermodynamics for Climate, Water and Urban Systems Sustainability (TheSyS-2026)	09.03.2026 - 11.03.2026	6, 11, 13
3	Net Zero Pathways Event	16.02.2026 - 21.02.2026	7, 13
4	Sustainability in Steel and Refractory Industry	15.12.2025 - 16.12.2025	9, 12, 13
5	Regulatory Certification Program on Renewable Energy: Economics, Policy and Regulation	10.12.2025 - 04.01.2026	7, 13, 16
6	10th India Water Impact Summit 2025	09.12.2025 - 11.12.2025	6, 11, 13
7	Certificate Course on Just Transition	06.12.2025 - 28.12.2025	8, 10, 13
8	Indigenous Air Quality Sensor and Open Access Data Portal	02.12.2025	11, 12, 13
9	International Conference on Sustainability, Circularity, Outreach and Policy for Environment (SCOPE)	20.11.2025 - 22.11.2025	12, 13, 17
10	Just Transition Knowledge Network (JETNET) Annual Conference 2025	07-08.10.2025	7
11	Sustainable Agricultural Practices for Developing Nations	25.08.2025 - 28.08.2025	2, 12, 13, 15
12	TRIPS-2025 (Technology, Research, Innovation & Policy Summit)	21.08.2025 - 23.08.2025	13, 17
13	Inheritance, Economy and Law: A Sociological Inquiry	12.08.2025	8, 17
14	International Conference on Air Pollution and Climate Change	01.08.2025 - 02.08.2025	13, 15
15	Certificate Course on Just Transition	12.07.2025 - 10.08.2025	8, 17
16	Good Governance and Leadership, Participatory Planning and Resource Management	02.07.2025 - 01.07.2026	11, 17
17	Hydraulics and Soil Testing Techniques for Sustainable Agriculture	01.07.2025 - 25.08.2025	1, 2, 3, 4, 17
18	Environment and Sustainability	05.06.2025	13
19	Life of Waste	29.05.2025	3, 13, 15
20	Sustainability of Digital-cyber world	14.05.2025	17
21	Launching event of an advanced urban flood disaster response system	02.05.2025	3, 11, 17
22	One Day Workshop on Watershed Development Component under PMKSY- 2.0	04.04.2025	6, 11, 17
23	Material innovations in energy and environmental technologies for a sustainable future	27.03.2025 – 28.03.2025	9, 13
24	Shaping the Next Era of Power Sector Reforms in India	25.03.2025	7, 17
25	Industry Academia Symposium 2025 (IAS 2025)	22.03.2025 - 23.03.2025	9, 17
26	Designing and Building a Net-Zero Home: A Step Towards India's Sustainability Goals	19.03.2025	9, 11, 12
27	Sustainable Water Harvesting: Principles and Technologies	10.03.2025 – 11.03.2025	6, 11, 12
28	Energy Transition and Renewable Purchase Obligation	13.03.2025	7, 17
29	ITEC course on Industrial and Electronic Waste Recycling Management	10.03.2025 – 15.03.2025	11, 12, 17
30	Building Climate Resilient Coal Communities: Youth-Centric Economic Diversification and Sustainable Development in the Coal Belt of Uttar Pradesh	27.02.2025	5, 8 ,17
31	Communicators' Workshop on Renewable Energy in India	20.02.2025 – 22.02.2025	12
32	Resource Adequacy Framework for Distribution Utilities: Methodological and Implementation Issues	19.02.2025	12

33	Civil Societies and Climate Change: An India-Australia Dialogue.	17.02.2025 – 19.02.2025	13
34	Transforming Indian Army with new construction technologies, green initiative & climate resilient infrastructure	10.02.2025	12, 17
35	Climate Justice and Climate Policy	05.02.2025 - 07.02.2025	13, 17
36	National Conference on AI Solutions for Sustainable Cities	03.02.2025 - 04.02.2025	11
37	Universal Human Values (UHV) Workshop	27.01.2025- 03.02.2025	4
38	Annual Day of Cell for Differently Abled Persons (CDAP)	13.01.2025	3
39	The Geospatial Technologies and Smart Cities Workshop	20.01.2025	11
40	Just Transition Knowledge Network (JETNET)	20.01.2025 - 19.01.2026	5, 8, 17
41	Evonik Sustainability Challenge 2025	15.01.2025	4
42	Agriculture Practice Using Drones: Plan, Design, Build, and Fly	13.11.2024 – 23.11.2024	2, 12, 13, 15
43	Schmidt Sciences conference on "Energy Technologies for India's Decarbonization"	05.11.2024 - 06.11.2024	7, 13
44	International Conference on Energy Technologies	05.11.2024 - 07.11.2024	7
45	ESG and Business Sustainability	02.11.2024 - 12.01.2025	11, 12, 17
46	H2O & Climate: Hydraulics, Hydrology & Climate Conference	26.10.2024 - 27.10.2024	6, 13
47	India Just Transition Summit Navigating a People-Centered Low-Carbon Transition for India	16.10.2024 - 17.10.2024	5, 8, 17
48	Sustainable Production of Green Steel	16.09.2024 - 19.09.2024	12
49	Design and Implementation of Smart Water Systems	30.08.2024 - 31.08.2024	6
50	ASIAN CONFERENCE ON GAS TURBINES 2024	21.08.2024 - 23.08.2024	7
51	Smart Transportation for Reducing Emissions and Congestion in Indian Cities (STREC)	20.07.2024	11, 12, 15
52	Transition of Indian Metros: Automated, Intelligent and Sustainable Solutions for Energy Savings	03.07.2024 - 05.07.2024	7, 11, 17

Webinars/ talks on topics related to sustainable growth

#	Title of talk	Date	Speaker
1	Blue Economy: India's Opportunities & Challenges	23.03.2026	Dr. M. Ravichandran, Ministry of Earth Sciences, GoI
2	Putting equity and justice at the center of global energy transition cooperation - the proposal of a fossil fuel treaty	12.03.2026	Mr. Alex Rafalowicz, Fossil Fuel Non-Proliferation Treaty Initiative
3	Bridging the Gap from Regional Air Quality to Molecular Mitigation Strategies	10.03.2026	Dr. Dhawal Shah, Nazarbayev University (NU), Kazakhstan
4	Whose Transition? From Coal to What? Just Transitions and Livelihoods in Coal Regions	20.01.2026	Dr. Alexandra Krumm, EUROPA-Universität Flensburg (EUF)
	Feeding India while Protecting Nature	13.01.2026	Prof. Ashok Gulati
5	Advance in Inorganic perovskite solar cells	13.10.2025	Prof. Vikram Dalal, Iowa State University
6	The curious case of missing RE PPAs	11.09.2025	Ms. Shreya Jai, Climate Trends
7	Understanding & Predictions of climate extremes for Sustainability	12.08.2025	Prof. V. Ramaswamy, Princeton University
8	AlmaKonnect session: Leading with purpose across sustainable sectors	25.07.2025	Mr. Sunil Khanna (MT/EE/1978)
9	Automotive sector transitioning toward sustainability while addressing business continuity, skill development and employment generation	20.06.2025	Mr. Vinkesh Gulati, United Automobiles
10	AlmaKonnect session: Unleashing Renewable Energy to Transform India's Energy Landscape	27.05.2025	

11	A People-centred Approach to Climate Finance	11.04.2025	Prof. Runa Sarkar, Indian Institute of Management, Calcutta
12	Water, Droplets and Ice, Examples of Science for Sustainability	25.03.2025	Prof. Thalappil Pradeep, IITM
13	Panel discussion on "Well-being as an Advantage: Including Mental Health & DEI in Strategy" as part of Prabandhan'25 (Department of Management Sciences Annual Fest)	22.03.2025	
14	Driving Change for Clean Air and Climate: Interlinking Solutions for Scalable Transformation	20.03.2025	Ms. Anumita Roychowdhury, Centre for Science and Environment
15	Uncertain Futures: How to Unblock the Climate Impasse	13.02.2025	Mr. Alexander F. Gazmararian, Princeton University
16	Sustainability in Power Utility Sector	11.02.2025	Mr. Manojit Sengupta, Tata Consultancy Services
17	Ferrates in Water, Energy, Food, and Human Health	29.01.2025	Dr Virender K. Sharma, University of Miami, Florida
18	Towards a Unified Field Theory of Socio politics: Explaining the Political Process	24.01.2025	Dr. Jeffrey Broadbent, University of Minnesota
19	Designing classrooms of the future - Sustainability, resilience, and health	03.01.2025	Dr Asit Kumar Mishra, , Marie Sklodowska-Curie fellow
20	Addressing the Material Challenges for Photoelectrochemical Solar Fuels Generation: Lessons from Photovoltaics	19.12.2024	Dr. Sudhanshu Shukla, Interuniversity Microelectronics Centre (IMEC), Belgium
21	Climate Justice - The Scales Must Be Balanced by	04.12.2024	Mr. Rajan Mehta, Harvard University
22	The Carbon Challenge: Background, Current Status and Evolving Carbon Capture Technologies	08.11.2024	Dr. Ramesh Gupta
23	What does coal phasedown even mean for different Asian countries?	19.10.2024	Mr. Aditya Lolla, Ember
24	Coal Phase out and Job Displacement: Lessons from the UK	17.09.2024	Prof. Juan Pablo Rud, University of London
25	Water Security in the Era of Climate Change	06.09.2024	Mr. Bishwadeep Ghose, Water for People India Trust
26	Energy Transition, challenges and opportunities	29.08.2024	Mr. Ajay Phatak, The Ecological Society, Pune, India
27	An Indian pathway to shared, sustainable prosperity	26.08.2024	Mr. Hisham Mundol, Environmental Defense Fund
28	Navigating Climate Finance: Empowering Future Leaders for Sustainable Change	14.08.2024	Mr. Manish Chourasia, Tata Cleantech Capital

Outreach Events

#	Name of the event	Date	Organized by
1	Science Popularization & Communication Program for school students	22.03.2026	Ranjit Singh Rozi Shiksha Kendra, IITK
2	A 5-day jewelry-making workshop to explore creative skills through 2 parallel workshops: Clay & Thread-based Crochet Jewelry	03.2026	Ranjit Singh Rozi Shiksha Kendra, IITK
3	Honoring the services of 555 sanitation workers	16.03.2026	Women's Association, IITK
4	5 km run & walk by Gender Cell	14.03.2026	Gender Cell, IITK
5	Gen-Der Quiz	27.01.2026	Gender Cell, IITK
6	3 km Swadeshi Sankalp Run (Run for Swadeshi)	14.01.2026	IIT Kanpur
7	International Day of Persons with Disabilities (IDPD)	13.01.2026	Cell for Differently Abled Persons (CDAP), IITK
8	Sensitization session on respect & personal safety	10.01.2026	Center for Mental Health and Wellbeing, IITK
9	A large-scale Cleanliness Drive at #Ganga Barrage, reinforcing IIT Kanpur's commitment to social responsibility and environmental sustainability	21.11.2025	Student Gymkhana, IITK

			
10	Mental Health Day	10.10.2025	Center for Mental Health and Wellbeing, IITK
11	Workshop on Substance and Behavioral Addiction	09.10.2025	Center for Mental Health and Wellbeing, IITK
12	Swachchata hi seva (Cleanliness drive)	02.10.2025	IIT Kanpur
13	Suicide Prevention Day	10.09.2025	Center for Mental Health and Wellbeing, IITK
14	Cross Country Race	29.08.2025	IIT Kanpur
15	A 6-day Pottery Workshop, led by renowned ceramic artist Prof. Mangesh Afre, embracing the philosophy of "One Artisan, One Product," the workshop empowered traditional potters from Kanpur's rural areas to create high-value, sustainable clay products through modern design techniques.	9–15.06.2025	Ranjit Singh Rozi Shiksha Kendra, IITK 
16	Yoga for Environment and Health	06.06.2025	Sports & Physical Education Committee, IITK
17	WA's GBM and Kotak School's Waste Management Session	07.05.2025	Women's Association, IITK
18	Autism Awareness Day	02.04.2025	Cell for Differently Abled Persons (CDAP), IITK
19	A Gender Cell talk by Ms. Seema Kushwaha, an advocate at the Supreme Court of India and Founder of Samridhi Bharat Trust	08.03.2025	Gender Cell, IITK
20	Unnati Utsav (A vibrant artisan haat, where visitors enjoyed unique handcrafted products, terracotta pottery, and organic food, along with the tasty and delicious chulha roti and other local delicacies—celebrating the rich traditions of rural India)	05.03.2025	Ranjit Singh Rozi Shiksha Kendra, IITK
21	Farmers workshop: Participants were introduced an innovative solar dehydration technique	14.02.2025	Ranjit Singh Rozi Shiksha Kendra, IITK
22	Terracotta Pottery Workshop: Design Development Program with aim to introduce new design thinking and improved processes that will help the potters create products that are more attractive to consumers.	6-11.01.2025	Ranjit Singh Rozi Shiksha Kendra, IITK
23	Integrating sustainability into curriculum. A talk delivered to schoolteachers	13.12.2024	Prof. S. N. Tripathi
24	A 6-day Workshop on home furnishing products with a mission to preserve traditional craftsmanship and connect it with modern design	12.2024	Ranjit Singh Rozi Shiksha Kendra, IITK
25	SolarButterfly - the largest solar-powered vehicle - comes to IITK!	04.11.2024	
26	Bridging Gaps: Student-Level Sessions for Freshers'24 to increase awareness about sexual harassment, gender biases, and the available methods for filing complaints.	30.09.2024–01.10.2024	Center for Mental Health and Wellbeing, IITK
27	Art Appreciation: Blockmaking and Printing	07.07.2024	Prof. Shatrupa Thakurta Roy

Sustainable Research

IIT Kanpur's research publications on sustainability span diverse disciplines, addressing climate change, renewable energy, waste management, and

sustainable technologies. These cutting-edge studies offer innovative solutions to global challenges, fostering a greener and more sustainable future.

Some of the research areas are listed below.

- Scientific study on the geomorphic & ecological impacts of sand mining in India's major rivers in collaboration with Namami Gange (National Mission for Clean Ganga under the Ministry of Jal Shakti, Government of India).

- Developing multifunctional hybrid nanostructures for energy and environmental applications; synthesizing nanomaterials through eco-friendly methods. Explore the charge transport properties of semiconducting materials to design efficient photocatalysts for wastewater treatment and investigate the potential of nanostructured metal oxides as electrode materials for high energy/power density energy storage systems.

- Exploration of perovskite materials for photovoltaic applications, focusing on understanding film formation, composition/interface engineering, and device degradation to optimize the performance and reliability of perovskite solar cells.

- Developing sustainable energy conversion systems, including electrolysis, fuel cells, and batteries. Efforts revolve around enhancing these technologies' efficiency, durability, and cost-effectiveness to make them mainstream solutions for the future.

- Work on innovations like solar reflector/concentrator and PV panel dust deposition, heat transfer fluids for solar thermal systems, and simulations for turbulent fluid flow.

- Harit Arohi Kutir—a sustainable hut built entirely with local wild cane grass and agricultural waste. The hut has superior compressive strength and is fire resistance (tested up to 1100°C). The innovative eco-bricks and sandwich panels are made from crop residue, lime, jaggery & lentils. The load-bearing capacity of the structure is up to 1300 kg—ideal for 2-3 story structures. The kutir is resistant to termites, moisture, and weather effects and supports rural employment & waste valorization.

Publications

Every year the institute publishes 100s of papers in the field of energy materials, wind energy, solar energy, green solutions, photovoltaics, smart grids, waste management, renewable energy, climate & policy, and various other topics covering environmental, social and governance aspects of sustainable development.

Student bodies at IITK

1. **Sustainability Cell:** The Sustainability Cell, founded in early 2023, is an independent student body mentored by the Department of Sustainable Energy Engineering and supported by the Chandrakanta Kesavan Centre for Energy Policy and Climate Solutions.

   The primary aim of the cell is to work in close collaboration with the institute's administration and the campus residents to make the campus more sustainable and healthier to live, study & work in. Also, the cell aims to

educate & engage the community on various issues and foster a culture of debate & discussion on the global polycrisis. (Website: Sustainability Cell)

2. **Prakriti:** Prakriti is dedicated to the environment and sustainability as a part of the Community Welfare Cell. Their mission is to inspire EcoEngineers, drive sustainable innovation, and raise climate change awareness for a greener future. (Website: Prakriti)

Prakriti organized a Cleanliness drive on 9th April, 2023

Startups incubated at IITK

IIT Kanpur's sustainability-driven startups showcase innovation and commitment to a greener future, inspiring positive change, and impactful solutions for environmental challenges.

In a major step towards sustainable innovation, Startup Incubation and Innovation Centre (incubator@IITK) in partnership with the Pernod Ricard India Foundation has launched Advaya – The Plastic Circularity Innovation Launchpad. Implemented under Pernod Ricard India Foundation's CSR initiative, Advaya aims to accelerate technology-driven solutions promoting circularity in the plastics sector. The program will support 10 startups with incubation and grants worth INR 20 lakhs each to develop scalable technologies for plastic waste management, recycling, and value recovery.

List of some of the Startups at IITK

AACGF Solutions Private Limited is working on IoT-enabled carbonizers to convert biomass including agricultural waste into clean energy (bio/torrefied char).

Agnys Waste Management Private Limited is making BHOOMI (Bio-composting of Horticulture & Organic waste into Manure Indigenously) composter. The composter has Carbon filters, Solar panels, Air pumps, Shredders, Mixers, and Separate liquid & solid waste compartments to ensure odourless, aerobic, eco-friendly, and rapid composting.

Agrosil Private Limited is developing micro silica by converting agricultural waste into premium-grade products through green technology.

Apeiro Energy Private Limited is developing a full stack wind turbine technology for micro-grid and mini-grid scale energy projects for C&I and community applications.

Baud Resources Private Limited is Working on two proprietary products (A) deepstorage, a non-battery solution for bulk energy storage; (B) wind-train – a breakthrough technology that enhances wind turbine efficiency and energy capture.

Bastar Se Bazar Tak Private Limited is working with tribal women farmers to build natural forest products and create flexible and supportive local employments through collective action.

Bhojpatta Agripreneur Private Limited is developing zero carbon emission solar dryer machine.

Carbontrace Private Limited is a Web3 platform that streamlines carbon tracking and offsetting through blockchain, channeling climate funds to Indigenous communities driving sustainability.

Carrus Mobility Private Limited is working towards developing renewable energy-powered (battery + solar) zero-emission truck refrigeration containers.

C-Disc Technologies Private Limited is working on modular Net-Zero homes structure.

Celligo Natural Fibres Private Limited is producing super-absorbent and compostable cloth for sanitary pad makers which reduces 90% of single-use plastics and increase the productivity by 2X.

Climec Labs Private Limited is a climate tech-based startup trying to revert and fix the damage caused to our environment due to Climate change and Global warming. They specialise in carbon capture and have made a unique domestic air purifier which creates a hyperlocal clean air zone by not only filtering air off its harmful components like bacteria, viruses, particulate matter 2.5 and 10, VOC and other pollutants but at the same time produces oxygen worth of 22 trees and sequesters six trees worth of carbon-dioxide and holistically ameliorates the quality of air inside your house.

Cultech Wave Private Limited is a creative and cultural enterprise that aims to strengthen heritage education through content, Olympiad, excavation kits and virtual experiences.

Crop Domain Private Limited is developing bio-agricultural inputs derived from agricultural waste, including broad-range biopesticides; biofertilizers; and decomposers.

Cycle Spirit Private Limited is building low-cost, affordable electric bi-cycle and tricycles.

Deusent Energy Private Limited is Designing, building, implementing and maintaining integrated solutions in Green Hydrogen domain for multiple industry applications.

Dgrakshak Private Limited is creating a portable, non-invasive breast cancer screening device using a blood flow biosensor, providing accurate tumor depth and size measurement with multi-modal classification.

Driblet Private Limited is creating sustainable robotic solutions to tackle urban challenges like cleaning, monitoring, and automation. Notably, KRAIT—a snake-like robotic scavenger—clears debris from transport lines without human intervention.

Earthface Analytics Private Limited has developed a device for analysing and monitoring water quality through an easy-to-use colorimetric test strip based on smartphone technology that screens multiple important water quality parameters in less than 2 minutes.

Eleqzee Energy Solutions Private Limited is designing, engineering and assembling retrofitted electric vehicles which are safe, certified and tested by agencies like ICAT/ARAI etc.

Ensect Farm Private Limited is developing an efficient process for the mass degradation of segregated organic Municipal Solid Waste (MSW) and bioremediation of leachate from conventional composting using Hermetia illucens.

Ensoverse Private Limited is working on developing indigenized sustainable fibre from biomass which will be an entirely novel product with inherent fire-resistant capabilities.

Ereky Labs Private Limited is producing commercially viable emulsion paint from recycled plastic, which can be used as paint filler.

Green Trek Research & Development Private Limited is an eco-friendly brand focusing on resource efficiency. It strives to positively impact the planet through smart ways of recycling steel waste. It does this through innovative melting processes where GHGs are minimised, the environment is safeguarded, and a circular economy is implemented.

Gusteau Foods Private Limited is creating food colours inspired by nature's purity and vibrance, thereby blending science and sustainability to deliver natural, health-conscious color solutions.

H2 Power Energy Private Limited is developing advanced green hydrogen solutions like HydroGENIE and HydroMEGA to improve fuel efficiency, cut emissions, and enable safe, costeffective on-site hydrogen generation.

IAP Media Private Limited is a collection of young Indians trying to unlock Bharat's social, economic, and political potential. The civic-tech startup is on a mission to solve the most pressing issues using technology and data. The entity developed a Jan Sampark App, with the help of which they are trying to make public welfare schemes accessible and hassle-free for all.

Industill Farmtech Private Limited is revolutionizing agro-utility solutions like TracTill, a multipurpose mechanization vehicle, and AutoFarm, a solar-powered irrigation system.

Invoviron Industries Trading Private Limited focusses on developing compostable polymer resin as a sustainable alternative to certain single-use plastic applications. The innovative polymer is synthesized using chicken feather keratin, resulting in a hydrophobic, non-burning, biodegradable, and durable material similar to nylon.

Jalconserve Technologies Private Limited has developed an on-site, low-cost, sustainable solution for recycling residential greywater.

Jivoule Biofuels Private Limited is a leading biofuels provider that utilizes multi-feedstock technology, tech-enabled operations and a team of world-class technocrats to optimize every single process.

Jetsons Robotics Prayogik Private Limited is developing innovating solutions for revolutionizing solar plant maintenance. Its Type Z is a fully autonomous robot built for solar rooftop installation.

JustDataAnalytics Private Limited employs cutting-edge methodologies to monitor field dynamics, policy developments, and technological innovations, providing timely and insightful analyses related to energy transition and other environment-related issues.

Kritsnam Technologies Private Limited has developed a cost-effective infrastructure for low-power, long-range RF-based wireless communication systems that will enable continuous real-time monitoring in the rural landscape for smart irrigation, education, health, smart grids and hydrological research and efficient water resource management.

LCB Fertilizers Private Limited is a farming company. Their flagship project is NavyaKosh, a high yield organic fertilizer. Farmers using this fertilizer need less water and fertilizer to grow their crops, which reduces investment and increases farmer revenue.

Lenek Technologies Private Limited is creating an affordable, AI-enabled, battery-powered, handheld X-ray device for detection of TB.

Meraki Ecosolutions Private Limited is developing packaging material made from crop waste (rice straw), thereby providing a sustainable alternative to single-use plastics. Their products decompose back into soil within just 90 days.

Offgrid Energy Labs Private Limited is building novel, cost-efficient & sustainable batteries for utility & mobility markets. Its first product, 'ZincGel battery', is packed

with breakthrough innovations that enable it the performance of lithium-ion at one-third the cost, creating a disruptive impact on target markets.

Oxy Neuron India Private Limited made “The Lipon Inverter,” a new and innovative device that helps store electricity and reduce carbon footprint. The company manufactures an optimum quality assortment of Solar AC, Solar Wate geysers, Solar fridges, Solar Water pumps, and Solar generators.

Pacing Grass Private Limited is on mission to replace plastics and metals with eco-friendly sustainable alternatives that drive a transformative shift across industries. They are dedicated to developing cutting-edge materials that not only meet the demands of modern production but also contribute positively to the environment.

Pheromone Research Private Limited is developing sustainable pheromone-based solutions for pest management - pheromone traps and lures for houseflies, apple fruit borer etc., trapping both male & female.

Pi Hemp Private Limited provides zero-waste, sustainable alternatives to petrochemical plastics using the power of industrial hemp. Being anti-bacterial and biodegradable, it has potential applications in medical devices, healthcare products, dental office equipment, packaging solutions, the sports industry, and 3D printing filaments.

Planterra Banana Fibres Private Limited is making biodegradable banana leather derived from waste banana stems, offering a sustainable alternative to leather that reduces water consumption and carbon footprint.

Prayas Environmental Services Private Limited focuses on applying technical expertise, innovation, and problem-solving skills to address environmental challenges.

Radongrow Private Limited is developing advanced vertical aeroponics and hydroponics systems for efficient urban farming, thereby revolutionizing agriculture with soil-less, space-saving solutions for sustainable food production.

Recyteq Organic Private Limited is developing a process to convert human hair waste into a sustainable biostimulant 'Plant booster', an ecofriendly alternative to synthetic nitrogen fertilizers.

Royal Bengal Greentech Private Limited is developing a patented bio-plastic that is cost effective, biodegradable, heat-resistant, and water resistant. This innovative material is derived from agricultural waste and serves as an alternative to traditional plastic.

Saptkrishi Scientific Private Limited is an agritech startup determined to solve the problem of the perishability of fruits and vegetables for street hawkers, and small & marginal farmers. Saptkrishi has developed one of its kind affordable storage named SABJIKOTHI which maintains freshness and extends the shelf-life of fruits and vegetables anywhere around 3 to 30 days without using any chemicals, preservatives or refrigerants.

Sarvshixiit Private Limited is innovating ways to implement NEP 2020 in remote villages by providing job-oriented, skill-based education, through hands-on learning, local language curriculum, and practical training, students gain real-world skills.

Shhroomi Farms Private Limited is driving sustainable mushroom cultivation through innovative solutions and community empowerment by blending technology and social impact to transform mushroom farming into a scalable, eco-friendly livelihood.

Shiniunicorns Solar Technologies Private Limited is manufacturing renewable energy equipment like solar heaters and dryers that enhance efficiency and significantly reduce operational costs.

Solvo Celltech Private Limited is specializing in manufacturing battery active materials for next-generation sodium-ion and lithium-ion batteries, developed using earth abundant materials.

Su-Eng Tech Private Limited is creating an AI-driven SaaS platform for end-to-end sustainable infrastructure solutions, covering energy efficiency, green building, and renewables like solar, wind, and green hydrogen.

Terracarb Private Limited is working on democratizing the use of graphene to decarbonize the USD 10 trillion, global construction segment enabling the production of graphene in a metric ton scale.

Thinkraw Innovative Solutions Private Limited is creating a solar-powered, IoT-enabled floating system for fish and prawn farming which ensures uniformity in feed distribution and maintains optimal levels of dissolved oxygen and pH levels in the water body.

Uneako Green Earth Private Limited is redefining sustainability with innovative, ecofriendly products. From reducing plastic waste to empowering communities, the startup is on a mission to make the planet happy.

Vamanie Paramita Energy Private Limited is developing a wave energy-based desalination technology for harvesting wave energy for sea water desalination (producing freshwater).

Vasundhara Biofibers Private Limited is focused on developing biodegradable packaging materials using Agricultural Wastes like Rice Straw, Kans, Bagasse.

Vivifica Sustainable Solutions Private Limited is manufacturing 'WENERATOR', a compact, automated biogas system for mixed organic waste, offering efficient semi-indoor waste management and savings in cooking fuel.

Zbee Technologies Private Limited is manufacturing smart water management devices and offers FLOTAA Live, a digital app to monitor, track, and analyze water usage and quality for efficient, sustainable water use.

Policy

Sustainable procurement policy

IIT Kanpur is an Institute of national importance and is funded by the Government of India. So, all procurements of Goods, Services and Works, are done following the

guidelines of the GoI. A detailed manual from the Department of Finance, GoI on procurement of goods can be found here.
The manual emphasizes on strengthening of local industry, make-in-India, Ease of Doing Business, job, and employment creation (Section 1.8.3 of the manual).

Equality, Diversity and Inclusion (EDI) policy

Indian Institutes of Technology (IITs) are institutions of national importance established through Acts of Parliament for fostering excellence in education. Admission to undergraduate courses is offered through Joint Entrance Exam (JEE) and admission to postgraduate courses is offered through Graduate Aptitude Test in Engineering (GATE) or Joint Admission Test for Masters (JAM). All these exams are conducted nationwide.
To offer equal opportunity to students of all castes, communities, religions, gender and economic backgrounds, IIT Kanpur follows reservation of seats format as prescribed by the GoI, which is as given below.

Section of society	% of seats reserved for students
Economically weaker section (EWS)	10%
Other Backward Castes (OBC)	27%
Scheduled Caste (SC)	15%
Scheduled Tribe (ST)	7.5%
Supernumerary female students	20%

The Cell for Differently Abled Persons (CDAP), IIT Kanpur challenges the status quo in higher education by fostering the inclusion of students with both visible and invisible disabilities. As a central resource hub, it provides essential information and services tailored to specific needs while promoting inclusive practices across the campus.

Anti-Bribery and Anti-Corruption Policy

As part of the IIT system, IIT Kanpur strictly follows the guidelines of the Central Vigilance Commission (CVC), GoI. The Chief Vigilance Officer, IIT Kanpur functions as per the guidelines provided by the CVC on the matters pertaining to vigilance.