



NATIONALENGINEERING COLLEGE
(An Autonomous Institution – Affiliated to Anna University Chennai)
K.R.NAGAR, KOVILPATTI – 628503

SUSTAINABLE DEVELOPMENT GOALS – 15

LIFE ON LAND



Protect, Restore, and Promote Sustainable Use of Terrestrial Ecosystems, Manage Forests Sustainably, Combat Desertification, Halt Land Degradation, and Halt Biodiversity Loss



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15.1 Overview

Terrestrial ecosystems underpin food security, climate stability, and a substantial share of global economic activity, yet land degradation, deforestation and biodiversity loss continue to accelerate driven in large part by agricultural expansion and unsustainable land use. Reversing this trend requires a fundamental shift in how human activity interacts with the natural environment, recognizing ecosystems as the foundation of life rather than a resource to be depleted.

15.2 Direction for a Sustainable Land Use, Conservation, and Restoration Policy

National Engineering College, Kovilpatti (autonomous) is working toward a policy framework to guide its approach to land use and environmental stewardship on campus, to be built around the following objectives:

- Encouraging sustainable land-use practices that support food security and livelihoods while protecting ecosystem health.
- Applying sustainable land-management techniques to prevent soil erosion, desertification, and deforestation in vulnerable areas.
- Preserving natural habitats and restoring damaged ecosystems including green spaces, wetlands, and vegetated areas to strengthen biodiversity and ecological services.
- Building climate resilience into land management through approaches such as afforestation and agroforestry.
- Ensuring fair and inclusive access to green spaces and natural resources for the surrounding community.

Strategic actions supporting these objectives include making efficient use of land through technology, expanding tree cover with native species, protecting biodiversity-sensitive areas, empowering local communities in sustainable land stewardship, and integrating ecological principles into all land-use decisions on campus.



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15.3 Land Ecosystem Education

The Civil Engineering department offers a set of elective courses that collectively address multiple targets under SDG 15: Life on Land. The table below maps each course to its corresponding SDG 15 target(s).

S.No	Course Title	Corresponding Target SDG Description	Course-SDG Alignment
1	Municipal Solid Waste Management	Ensure conservation, restoration, and sustainable use of terrestrial and inland freshwater ecosystems	Trains students to design safe collection, treatment, and disposal systems that prevent land contamination from unmanaged waste
2	Industrial Waste Management	Take urgent action to reduce degradation of natural habitats and halt biodiversity loss	Builds competence in handling hazardous and industrial residues responsibly to reduce degradation caused by industrial pollutants
3	Air and Noise Pollution Control Engineering	Take urgent action to reduce degradation of natural habitats and halt biodiversity loss	Equips students to mitigate pollutants that degrade terrestrial habitats and disturb wildlife
4	Environment Policy and Legislations	Integrate ecosystem and biodiversity values into national and local planning and development processes	Develops understanding of regulatory frameworks that embed ecosystem protection into governance and planning
5	Hydrology	Ensure conservation, restoration, and sustainable use of terrestrial and inland freshwater ecosystems	Provides knowledge of water systems and freshwater resource behavior essential to ecosystem conservation
6	Environment Impact Assessment	Integrate ecosystem and biodiversity values into national and local planning and	Trains students to evaluate ecological consequences of development projects before implementation



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S.No	Course Title	Corresponding Target SDG Description	Course-SDG Alignment
		development processes	
7	Climate Change Adaptation, Mitigation and Management	Combat desertification, restore degraded land and soil, and strive for a land degradation-neutral world	Addresses land degradation and ecosystem stress caused by climate change, and builds adaptation strategies
8	Soil Pollution Engineering	Combat desertification, restore degraded land and soil, and strive for a land degradation-neutral world	Focuses directly on preventing and remediating soil contamination to restore degraded land
9	Environment, Health and Safety	Take urgent action to reduce degradation of natural habitats and halt biodiversity loss	Integrates ecosystem health with human well-being, ensuring practices safeguard both terrestrial ecosystems and public health

This curriculum mapping reflects the department's deliberate effort to integrate sustainability principles into its technical education framework, ensuring that students not only gain domain-specific expertise but also develop a strong sense of environmental and societal responsibility.

15.4 Land Ecosystem Conservation

National Engineering College actively promotes research and innovation aimed at land ecosystem conservation and sustainable resource utilization, in alignment with SDG 15. Various student and faculty-driven projects focus on eco-friendly construction materials, soil erosion monitoring, and the utilization of agro-waste and recycled materials, thereby reducing environmental degradation and promoting sustainable land use practices. These initiatives, several of which are patentable, reflect the institution's commitment to developing innovative, environmentally responsible technologies that contribute to ecosystem conservation and sustainable development. In line with its commitment to environmental sustainability and SDG 15, the institution is currently undertaking the following environmental research projects



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PROJECT TITLE	PROJECT OUTCOME
Aeromarine Geoblocks	Development of a sustainable, patent-protected construction block with enhanced structural performance for marine and aeronautical applications
Biomass Agro-Waste Ash-Derived Sodium Silicate Solution	A cost-effective, eco-friendly sodium silicate alternative derived from agricultural waste, promoting waste valorization and sustainable construction chemistry Initial trial works carried out; suggested to continue as a long-term project
Sustainable Bio-Adsorptive Multilayer Air Filter	An efficient, biodegradable air filtration system offering improved air quality with reduced environmental impact, ready for patent filing
Sensor-Based Soil Erosion Monitoring System for Slope Stability Assessment	A reliable, sensor-integrated early-warning system for real-time monitoring of soil erosion and slope stability, aiding disaster risk reduction
Carbon Sequestration Paver Block	A carbon-negative paver block capable of sequestering CO ₂ , contributing to sustainable urban infrastructure and climate change mitigation works carried out; continue to Phase I for further experimental validation. Patentable
Impact Resistant Enhancement of Paver Blocks Using Recycled Plastic Scraps and Recycled Cotton Fibers	A durable, impact-resistant paver block utilizing recycled waste materials, supporting circular economy practices in construction
Hybrid Fiber Reinforced Concrete Using Natural and Recycled Synthetic Fibers	A high-strength, self-healing concrete formulation reinforced with natural and recycled fibers, enhancing durability and



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	reducing material wastage works carried out; continue to Phase I for further experimental validation. Self-healing type of concrete could also be developed
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National Engineering College extends its technical expertise beyond academics through consultancy services that support responsible land use and construction practices. Faculty members undertake consultancy assignments such as structural design vetting, soil investigation, standard penetration tests, and compressive strength assessments for various government and private organizations, ensuring that construction and infrastructure development activities are carried out on scientifically assessed and stable land. By promoting geotechnically sound and sustainable construction practices, these consultancy initiatives contribute to minimizing land degradation and support land ecosystem conservation.

2025-26		
Organization	Nature of Work	Total amount after deduction in Rs.
District Rural Development Agency, Thoothukudi.	Verification Report on Construction of Bridge	158000
SIDONE Infrastructure Pvt. Limited	Structural Consultancy Report on Steel stability in terms of strength and corrosion for Proposed apartment construction at Tirunelveli	22000
Block Development Officer, Kovilpatti, Kayathar&Vilathikulam	Soil Consultancy by Conducting Standard Penetration Test and Recommendation for Foundation	310300
2024-25		
Organization	Nature of Work	Total amount after deduction



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District Rural Development Agency, Thoothukudi.	Verification Report on Construction of Bridge	550000
SIDONE Infrastructure Pvt.Limited	Construction of Multi-speciality Hospital	5000
District Rural Development Agency, Thoothukudi	Comprehensive Strength test	25300
2023-24		
Organization	Nature of Work	Total amount after deduction
Rural development & Panchayat Raj (RD&PR), Panagal Building, Saidapet, Chennai-15	Structural Design vetting for the Proposed Construction of Bridge	480000
The Ramco Cements Limited, Kovilpatti, Rohini Brick Manufacturer & several other concerns	Compressive Strength Test	47150
R.Maheshwaran ,BDO,Sattur.	TMT -ROD TEST	19000
Ms.Hariram Constructions, Erode SP Construction ,Kovilpatti	Water Test	3300
We Are Entertainment Block Development Officer from Kayathar, Pudur & Vilathikulam	Standard Penetration Test	52000

National Engineering College, Kovilpatti (Autonomous) maintains dedicated policies addressing land-sensitive waste disposal, plastic waste reduction, and hazardous waste management, aimed at minimizing the institution's environmental footprint and ensuring that waste generated on campus does not contribute to land or ecosystem degradation.

The institute maintains an active waste segregation and composting system, handles hazardous



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waste responsibly, and runs an e-waste management along with initiatives to reduce single-use plastics. Solid waste generation is monitored regularly, with wet waste forming a significant share, while electronic waste is managed through dedicated disposal channels. These practices directly reduce the amount of waste reaching landfills and open land, thereby supporting on land degradation neutrality.

National Engineering College maintains detailed records of its total land area, green area, and tree population, and undertakes regular sapling plantation drives across the campus. With a substantial green cover maintained within its campus land area and a consistent tree population, the institution continues to strengthen its terrestrial ecosystem through ongoing plantation activities. These efforts directly support expanding green cover and promoting afforestation within the campus.



Green Cover and Landscaped Open Area, CSE Block Surroundings



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15.5 Land Ecosystem Partnership

National Engineering College, Kovilpatti, has entered into a Memorandum of Understanding with the National Highways Authority of India (NHAI), signed on August 27, 2020, under the Institutional Social Responsibility (ISR) initiative. Through this collaboration, the institution has adopted stretches of national highways under the Regional Office, Madurai, undertaking responsibilities such as landscaping, green cover development, and maintenance of the adopted highway sections. This partnership reflects the institution's commitment to environmental stewardship and sustainable land management beyond the campus, contributing to greener and well-maintained public infrastructure. The initiative aligns with SDG Target 15.a, which emphasizes mobilizing resources and fostering partnerships for the conservation and sustainable use of terrestrial ecosystems.

15.6 Water Quality Standards

Water quality forms a critical, land-linked concern for National Engineering College, given its location in the drought-prone Kovilpatti belt, where groundwater is a precious and heavily used resource. The college's Civil Engineering and Environmental Engineering laboratories are equipped to test water samples for parameters such as pH, turbidity, hardness, dissolved solids, and microbial contamination, giving students hands-on exposure to the standards used to judge whether water is fit for drinking, irrigation, or industrial use.

The institution's rainwater harvesting structures and on-campus water recycling or treatment facilities serve as living demonstrations of water quality management in practice, allowing students to see the relationship between land management, groundwater recharge, and water quality first-hand. Faculty-led research projects often examine groundwater quality trends in the surrounding villages, feeding findings back to local communities and, where relevant, to local governing bodies.

By grounding water quality education in both rigorous laboratory standards and the lived reality of a water-stressed region, National Engineering College ensures that its engineering graduates understand water not merely as a resource to be engineered but as a shared, land-linked asset



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whose quality must be actively protected. This orientation reflects the close connection between healthy land ecosystems and the water they sustain.

15.7 Land Ecosystem Outreach

National Engineering College organizes a range of student-led environmental initiatives to build awareness and encourage active participation in conservation, including tree-plantation drives to promote green cover and combat climate change, eco-friendly transportation campaigns to reduce carbon emissions, and workshops on renewable energy and sustainable practices conducted in partnership with technical and government bodies. The institution has also invested in renewable infrastructure, such as rooftop solar installations, as part of its broader commitment to becoming a more eco-centric campus.

The Eco Club of National Engineering College, Kovilpatti, in association with the Climate Action Unit, organized a series of activities to promote environmental awareness both on campus and through community outreach. Within the college, initiatives such as Eco Meme Creation, Poster Creation, Voice Decode Challenge, Sudoku Puzzle, and Spark Art Challenge were conducted to engage students creatively on themes of sustainability and conservation. Extending this effort beyond campus, an outreach program was held at Government Higher Secondary School, Sippiparai. The event aimed to educate students on pollution, deforestation, climate change, and sustainable practices. Activities included a welcome address, an informative speech on environmental importance, an awareness skit, a video screening, a student contribution activity (charts/posters), and a quiz competition. The program concluded with a tree plantation drive and a prize distribution ceremony for quiz winners. Students, faculty, and Eco Club volunteers participated enthusiastically throughout. The event successfully raised environmental awareness and inspired participants to adopt eco-friendly habits.



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ECO Club in Association with Climate Action Unit

POSTER COMPETITION

Venue: Seminar Hall, Civil Department

Time : 3.30PM

Date : 14.02.2026

Competition Criteria:

- 1** No AI tools allowed – originality matters!
- 2** Posters must be strictly theme-based (theme will be given on the spot).
- 3** Two topics will be provided, and time will be allotted on the spot.
- 4** Laptop and mobile phones are allowed - bring your own equipment.
- 5** Posters must be created with good quality and clear presentation.

Register here:



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ECO CLUB OF NEC



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**ECO Club in Association with
Climate Action Unit**

**OUTREACH PROGRAM ON ENVIRONMENTAL
AWARENESS**

DATE : 20.03.2026

PLACE : Government high secondary school, Sippiparai



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Environmental Awareness Skit



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Tree Plantation Activity



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Member


Coordinator


Principal
Dr. K. Kalidasa Murugavel, M.E., Ph.D.,
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