University : Karunya Institute of Technology and Sciences
Country : India
Web Address : www.karunya.edu

[2] Energy and Climate Change (EC)

[2.10] Greenhouse gas emission reduction program

Karunya Institute of Technology and Sciences (KITS) is deeply committed to environmental sustainability and climate action, aligning its initiatives with the United Nations Sustainable Development Goals (SDG 7, 11, 12, and 13)**.** To mitigate the campus's carbon footprint and reduce greenhouse gas (GHG) emissions, the university has launched several integrated programs focusing on energy efficiency, renewable energy adoption, sustainable transport, and waste management**.**

Solar Water Heating System

Roof-top Solar PV Power Plant

Biogas Plant

Sewage Treatment Plant

Description:

1. **Solar Water Heaters**
    - KITS has installed solar water heaters across various hostels.
    - GHG Reduction Mechanism: Lower reliance on electric or fossil-fuel-based water heating.
    - Installed Capacity: 87600 liters/ day
    - Annual Energy Saving: 1545718 kWhr

2. **Roof-top Solar PV Power Plant**
    - KITS has deployed rooftop solar PV systems to offset grid electricity usage.
    - GHG Reduction Mechanism: Displace high-carbon grid electricity, reducing CO_2 emissions.
    - 95 kW Grid Tied Solar Power Plant in the Main Building
    - 20 kW Grid Tied Solar Power Plant In Ladies Hostel [EVR Block] Building
    - Installed Capacity: 115 kW
    - Annual Energy Production: 148756 kWhr

3. **Biogas Plant**
    - KITS has established an institutional-scale biogas digester using kitchen and organic waste.
    - CHG Reduction Mechanism: Capture methane for energy use, replacing conventional fuel (LPG), and preventing methane release from waste.
    - Organic Waste Treated : 1.2 tonnes/day (Kitchen and Hostel Waste)
    - Biogas Yield: 40 m3 / tonne 48 m3/day = 17520 m3/year
    - 1 m3 of biogas replaces 0.45 kg of LPG
    - LPG avoided : 17520×0.45 = 7884 kg of LPG /year

4. **Sewage Treatment Plant**
    - KITS has implemented an on-site sewage treatment system with biogas capture or reuse of treated water.
    - GHG Reduction Mechanism: Treat wastewater to prevent methane emissions from open discharge and water reusage.
    - Waste Water Treated : 1300 kl/day = 1300 m3/day =474500 m3/year
    - Chemical Oxygen Demand (COD) load avoided in methane generation : 0.25 kg CH4 / m3
    - Methane avoided: 474500 m3/year × 0.25 kg CH4 / m3 = 118625 kg CH4 / year

5. Save Energy Badge

"Save Energy" Badges

6. Tree Plantation Drive

Tree Plantation Drive

7. Solar Awareness Program in Villages

Solar Awareness Program in Villages

8. Green Energy Technology Mission

Green Energy Technology Mission

Fossil fuels, such as coal, oil and gas that account for nearly 80% of the primary energy consumption in the world, are being depleted day by day. This has compelled us to focus our attention towards renewable energy sources and technologies, such as solar, wind, geothermal, ocean, biomass, electrochemical power sources and fuel cells to provide clean & green energy with low emissions. The mission incorporates modern tools like Machine Learning and Artificial Intelligence along with nanotechnology to re-engineer the Green Energy Technology program.

9. Smart Vehicle Mission

Smart Vehicle Mission

10. Sustainable Farming Practices

At Karunya University, sustainable agriculture on a 329-acre instructional farm involves diverse crop systems of 129-acre North farm with horticultural crops and a 200-acre South farm for cereals, pulses, and millets, along with a 50-acre agroforestry plantation with IFGTB. Efforts to reduce greenhouse gas emissions include cover cropping with green manure like Sesbania aculeata to sequester carbon, minimizing soil disturbance to curb carbon dioxide release, and reducing synthetic fertilizer to limit nitrous oxide emissions. Focus is also shifting toward non-submerged rice cultivation, which emits lesser greenhouse gases.

11. Energy Audit

NATURE SCIENCE FOUNDATION

Inspection Certificate

This is to certify that Karunya Institute of Technology and Sciences, Coimbatore - 641 114, Tamil Nadu, India has implemented ecofriendly sustainability practices in line with National Building Code of India, Part 11 (Approach to Sustainability) which covers the following areas,

1. Green Audit
2. Environment Audit
3. Energy Audit
4. Waste Management Audit
5. Soil and Water Audit
6. Air Quality Audit
7. Hygiene Audit

Date of Inspection: 06.05.2025 & 07.05.2025
Date of Issue: 15.05.2025
Date of Validity: 05.05.2027

Cross Reference & Traceability - File No: 59
Certificate No: NSF/PR/7.4.2 /01
Datasheet No: NSF/PR/F/7.1.3/01 – 07
Non-Conformities Sheet No: NSF/PR/7.8
Report No: NSF/PR/7.5 /02
Checklist No: NS/PR/F/7.1.7

Dr. D. Vinoth Kumar
Director (Audits)

Dr. S. Rajalakshmi
Chairman

Energy Audit

Description:

Karunya University has implemented a comprehensive Greenhouse Gas Emission Reduction Program to minimize carbon emissions across the campus. As part of this initiative, an additional battery-operated electric car has been introduced for campus tours, reducing reliance on fossil fuels. This aligns with SDG 7: Affordable and Clean Energy, SDG 11: Sustainable Cities and Communities, and SDG 13: Climate Action, contributing to sustainable transportation and eco-friendly mobility.

1. **Green Energy Technology Mission {Scope 1 and 2}**
   The university launched the Green Energy Technology Mission to enhance energy sustainability through innovative and renewable energy solutions. This initiative reflects Karunya's commitment to reducing its carbon footprint and promotes cleaner energy use, aligned with SDG 7 and SDG 13.

2. **"Save Energy" Badges {Scope 1,2,3}**
   To foster energy conservation, "Save Energy" badges have been placed near switchboards across classrooms, offices, and hostels, encouraging responsible energy usage among students and staff. This awareness initiative supports SDG 12: Responsible Consumption and Production and SDG 13.

3. **Energy Audit {Scope 2, 3}**
   Karunya University conducted an energy audit to assess energy consumption patterns and identify areas for optimization. This ensures efficient energy management and aligns with SDG 7 and SDG 9: Industry, Innovation, and Infrastructure, promoting sustainable practices across the campus.

4. **Tree Plantation Drive {Scope 1,2,3}**
   As part of environmental sustainability efforts, the university regularly plants new saplings to enhance green cover, absorb carbon dioxide, and support biodiversity. This initiative aligns with SDG 13: Climate Action and SDG 15: Life on Land.

5. **Sustainable Farming Practices {Scope 2, 3}**
   The university applies sustainable farming techniques in its agricultural fields, promoting eco-friendly agriculture and biodiversity. These practices reduce environmental impact, contributing to SDG 2: Zero Hunger, SDG 12, and SDG 15.

6. **Solar Awareness Program in Villages {Scope 1,2}**
   Karunya University extends its sustainability efforts to nearby villages by organizing orientation programs on the use of solar energy. The program includes the servicing of solar lights to ensure functionality, promoting renewable energy and supporting SDG 7, SDG 11, and SDG 17: Partnerships for the Goals.

Additional Evidence
https://www.karunya.edu/iqac/ranking/UIGreenMetric