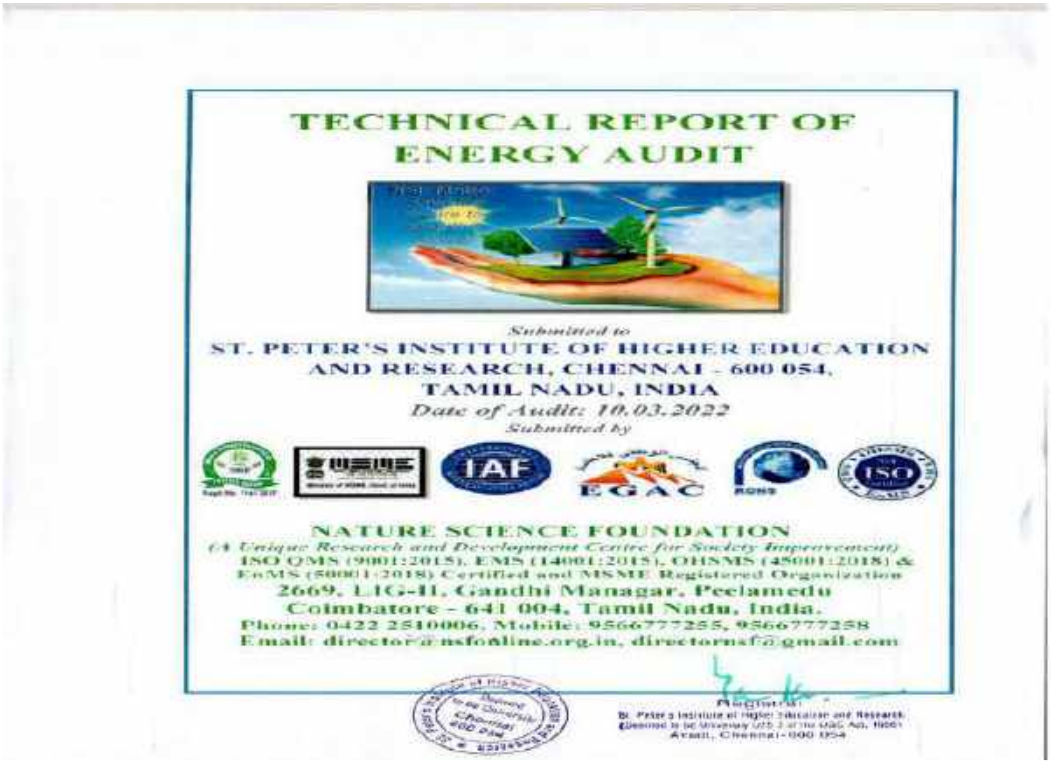
SUSTAINABLE DEVELOPMENT GOAL

7

Affordable and Clean Energy

7.2.2 Does your university as a body have plans to upgrade existing buildings to higher energy efficiency?

Yes. Our university has a formal, institution-wide plan to upgrade all existing buildings to higher levels of energy efficiency. This plan is part of our long-term campus sustainability strategy and aligns directly with **SDG7 Target 7.3** on improving energy efficiency. The university conducts systematic **ISO 50002–based energy audits** across academic, administrative, and residential buildings to identify inefficiencies in building envelopes, HVAC systems, lighting, and controls. Based on audit results, phased retrofit programs are implemented, including improved insulation, high-performance glazing, LED lighting upgrades, efficient HVAC modernization, building automation systems, and installation of renewable-energy solutions where feasible. All renovation projects must demonstrate measurable reductions in energy consumption compared to baseline performance. A dedicated **Sustainability and Energy Committee** oversees prioritization, budgeting, project execution, and verification of energy savings through post-retrofit monitoring. This structured approach ensures continuous improvement, reduced operational energy intensity, and alignment with institutional commitments to low-carbon development.



TECHNICAL REPORT OF
ENERGY AUDIT

Submitted to
ST. PETER'S INSTITUTE OF HIGHER EDUCATION
AND RESEARCH, CHENNAI - 600 054,
TAMIL NADU, INDIA
Date of Audit: 10.03.2022
Submitted by

NATURE SCIENCE FOUNDATION
(A Unique Research and Development Centre for Society Improvement)
ISO QMS (9001:2015), EMS (14001:2015), OHSMS (45001:2018) &
EnMS (50001:2018) Certified and MSME Registered Organization
2669, LIG-II, Gandhi Managar, Peelamedu
Coimbatore - 641 004, Tamil Nadu, India.
Phone: 0422 2510006, Mobile: 9566777255, 9566777258
Email: director@nsfonline.org.in, directornsf@gmail.com

Energy audit report conducted in our campus for every three year time period deploying third party auditors

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Policy on High Energy Efficiency and Reduced Energy Consumption

Policy Created on:	**01/07/2020**	**Approved by:**
Revision 1	**10/02/2024**	**REGISTRAR**

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St. Peter's Institute of Higher Education and Research
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Directly supported SDGs

- **SDG 7 Affordable and Clean Energy**
- **SDG 13 Climate Action**

Indirectly supported SDGs

- **SDG 9 Industry, Innovation and Infrastructure**
- **SDG 11 Sustainable Cities and Communities**
- **SDG 12 Responsible Consumption and Production**

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Policy on High Energy Efficiency and Reduced Energy Consumption

Introduction

St. Peter's Institute of Higher Education and Research (SPIHER)affirms its long-standing commitment to sustainable infrastructure development through this Energy Efficiency Upgradation Policy. This policy integrates modern technologies, recent regulatory developments, and global best practices to ensure that SPIHER's existing buildings achieve optimal energy performance and environmental sustainability. The policy supports the Institute's broader goal of attaining carbon neutrality by 2035, in alignment with the United Nations Sustainable Development Goals (SDG 7 and SDG 13).

Purpose

This policy aims to strengthen SPIHER's initiatives for energy-efficient retrofitting, refurbishment, and modernization of all existing campus structures. It emphasizes measurable improvements in energy performance, resource optimization, and integration of renewable energy systems. The purpose is to ensure that every building upgrade contributes to a reduction in overall energy consumption, carbon footprint, and operational costs, while maintaining comfort, functionality, and academic excellence.

Scope

This policy applies to all existing buildings within SPIHER's academic, administrative, residential, and laboratory facilities. It covers renovation, retrofitting, maintenance, and modernization works undertaken directly by SPIHER or through partnerships with private contractors. The scope also includes smart energy management systems, renewable integration, and digital energy monitoring platforms.

Updated Policy Standards

- Energy Conservation Building Code (ECBC 2017, amended 2023) – Bureau of Energy Efficiency (BEE), Government of India.

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- ISO 50001:2018 – Energy Management Systems for continuous energy performance improvement.
- ASHRAE Standard 90.1-2022 for benchmarking building energy efficiency.
- National Building Code (NBC 2016) – Energy Efficiency and Sustainability Provisions.
- IGBC/GRIHA 4-Star Rating System for institutional retrofitting projects.

Implementation Framework

- Comprehensive Energy Audits: SPIHER will conduct third-party certified energy audits periodically to identify performance gaps and prioritize retrofit interventions.
- Retrofitting and Modernization: All existing structures will be upgraded using high-performance materials and low-embodied energy technologies, including advanced insulation, daylight harvesting systems, and automated building controls. Outdated electrical and HVAC systems will be replaced with equivalent energy-efficient units.
- Renewable Energy Integration: SPIHER will expand the installation of rooftop solar photovoltaic systems and hybrid energy storage systems to ensure at least 20% renewable energy contribution to the total electricity demand by 2025.
- Sustainable Construction and Material Management: Renovation works will emphasize eco-certified materials, rainwater harvesting integration, and construction waste recycling.

Governance and Accountability

The construction section will coordinate the implementation of this policy, supported by the Energy Efficiency Monitoring Cell under the SPIHER Sustainability Committee.

Performance will be evaluated through key indicators such as Energy Use Intensity (EUI), renewable energy share, and carbon emission reduction per square meter.

Monitoring, Reporting, and Review

SPIHER will conduct periodic reviews to assess progress and identify emerging technologies for adoption. Findings from the reviews will feed into

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the institution's Green and Energy audit Sustainability Report and the Green Campus 2035 Plan. The policy will undergo a major review every two years, incorporating new amendments in ECBC and ISO standards, or as mandated by national energy authorities.

Through this policy, SPIHER continues to demonstrate leadership among Higher Education Institutions in India in promoting energy-efficient modernization and climate-resilient infrastructure. The Institute's systematic approach ensures that every upgrade not only enhances energy efficiency but also contributes meaningfully to a greener, more sustainable future for the SPIHER community.

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8.4. Walk-through Audit Process

Simple audit, screening audit or visual audit are the other names, by which walk-through audits are addressed. The main purpose of the walk-through audit is to obtain general information about the sites in which electrical energy is being used at the maximum. More specific information have been obtained from the maintenance and operational people during the time walk-through audit. It also included a walk-through of the facility to become familiar with the building's operation and a brief evaluation of facility utility bills (amount paid for electricity) and other operating data. During the audit the primary problem areas are discovered.

8.5. Macro Data collection and observation

Current level operation and practices within the campus are assessed and then the data regarding the number of electrical loads connected in each section are collected. The power ratings of each component and their respective hours of operation are also observed and documented for preparing the recommendations to the Organization.

8.6. Measurements in the Energy Audit process

An energy audit required measurements, such as the energy identification and quantification, and these quantities necessitate the instruments used in a consistent way. Some of the basic electrical parameters are monitored during the energy audit such as Voltage (V), Current (I), Power factor, active power (Kw), apparent power (demand in Kva), reactive power (Kvar), energy consumption (Kwh), frequency (Hz), harmonics, illumination level, etc. Temperature and heat flow, radiation, air and gas flow, liquid flow, speed, air velocity, noise and vibration, dust concentration, TDS, Ph, moisture content, relative humidity, flue gas analysis – CO_2, O_2, CO, SO_2, NO_2, combustion efficiency are the mechanical, thermal and other parameters that are analysed during the audit depending upon the requirements

9. About the Institution

9.1. St. Peter's Institute of Higher Education and Research

SPIHER is a Deemed to be University under section 3 of UGC Act, 1956 since 2008. The institution was previously known as St.Peter's Engineering College which was established in the year 1993. It is one of the India's leading Institute, with students from all over the country. The institution continuously strives to focus on imparting quality technical education and introducing innovative programmes leading to Research and Development for sustainable growth. The institution offers Engineering, Technology, Architecture, Management Studies, Science and Humanities programmes approved by UGC and AICTE.

9.2. About Nature Science Foundation (NSF)

NSF is ISO 9001:2015, 14001:2015, 45001:2018 & 50001:2018 certified and registered with Ministry of Micro, Small and Medium Enterprise (MSME), Government of India Organization functioning energetically towards the noble cause of nature conservation and environmental protection. NSF is managed by a board of trustees of NSF Public Charitable Trust under the TN Societies registration Act 1975 (TN Act 27 of 1975) on 29th November, 2017 at Peelamedu, Coimbatore- 641 004, Tamil Nadu, India with Certificate of Registration No. 114 / 2017. In addition, NSF has

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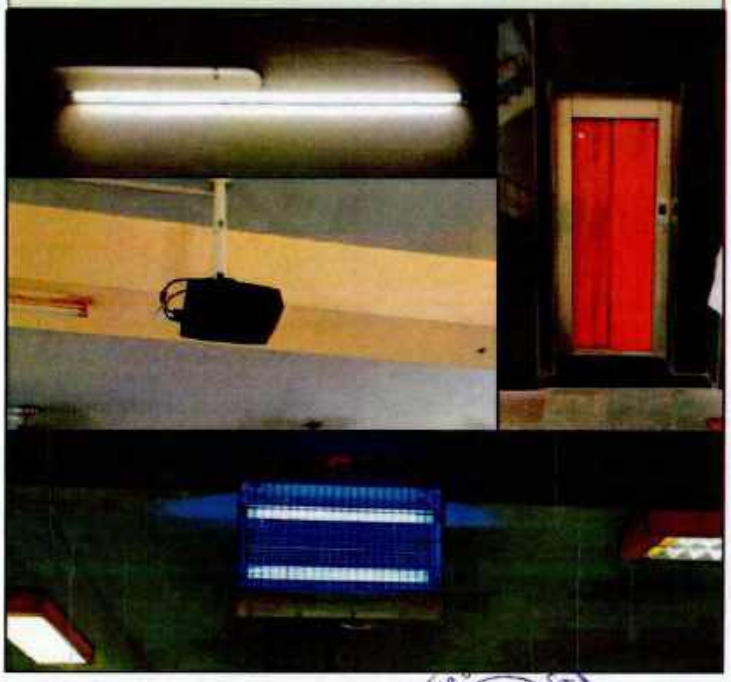
Energy Audit Process that shows SPIHER an Institution has plans to upgrade existing buildings to higher energy efficiency

Energy Management and Conservation Activities in
St. Peter's Institute of Higher Education and Research, Chennai, Tamil Nadu.

Walk through audit at SPIHER college



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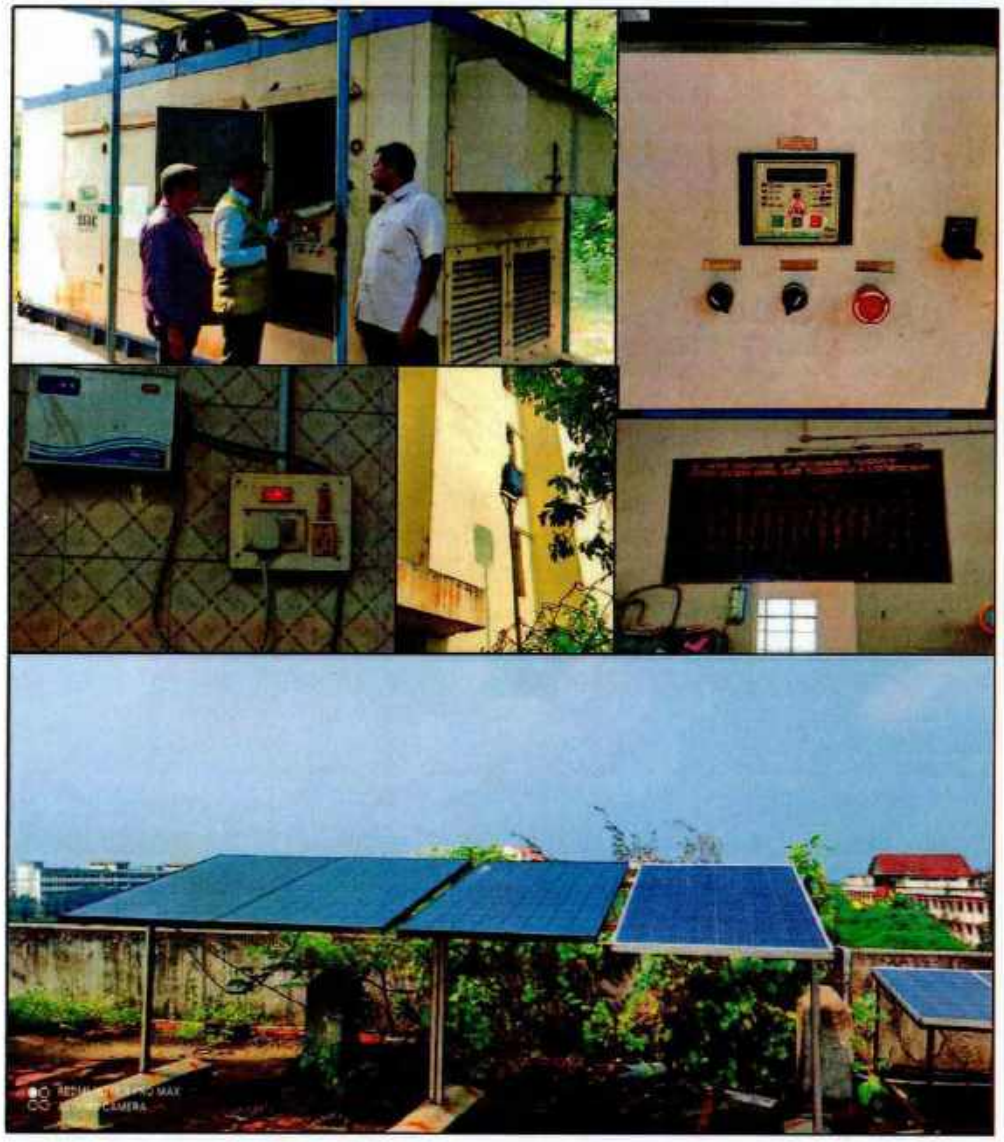

Best Practices followed by
St. Peter's Institute of Higher Education and Research,
Chennai, Tamil Nadu.

12. Best Practices followed in the Organization

- Transformer, Generators and UPS are protected properly with fencing and kept awareness boards on 'Dangers' and 'Warnings'.
- Most of places, sign board of 'Switch ON' and 'Switch OFF' are kept towards saving energy measures to the stakeholders.
- Electrical wires, switch boxes and stabilizers are properly covered without any damage which will cause any problems to the staff and student members.

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Sensor-Based Energy Conservation

Sensor based Energy Conservation is implemented by utilizing sensor based motion-sensor activated LED bulbs and tube lights in the campus

Sensor-based automation plays a critical role in modern energy conservation strategies, and SPIHER has proactively adopted this technology across its campus infrastructure. The University has significantly invested in **motion-sensor-activated LED bulbs and tube lights**, with over **100 units installed** in key areas including floor corridors, seminar halls, conference rooms, hostels, and restrooms. These smart fixtures automatically deactivate when no movement is detected, eliminating unnecessary electricity consumption. In addition, **sensor-operated hand-wash units** have been introduced to support water-efficiency objectives and minimize wastage. Through these automated systems, SPIHER demonstrates its commitment to adopting intelligent technology that enhances operational sustainability while fostering a culture of conscious resource utilization.

LED-Based Power-Efficient Lighting :

LED lighting represents one of the most effective energy-saving solutions in contemporary facilities management. With rapid advancements in LED performance, increased product availability, and reduced cost due to improved manufacturing efficiencies, LEDs now provide high-quality illumination while consuming a fraction of the power required by conventional 100-watt incandescent bulbs. SPIHER has implemented

extensive **LED-based lighting across the campus** as part of its long-term energy-efficiency drive. By replacing traditional lighting systems with LED alternatives, the Institute significantly reduces electrical load, lowers carbon impact, and aligns its operations with globally recognized clean-energy practices.

LED Bulbs in Conference Hall

LED Bulbs Facilities in Seminar Hall

REPORT ON KNOWLEDGE TRANSFER SESSION ON "NATURAL DISASTERS REBUILDING & RECOVERY"

Date: 02nd September 2024 Venue: Mechanical Block, Seminar Hall

Time: 10.00 am onwards

Event: Knowledge Transfer Session on "Natural Disasters - Rebuilding & Recovery"

Program aligns with two Sustainable Development Goals: Quality Education (Goal 4) and Industry, Innovation and Infrastructure (Goal 9).

Organizers:

- Department of Chemistry - St. Peter's Institute of Higher Education & Research
- Department of Civil Engineering - St. Peter's Institute of Higher Education & Research
- IQAC - St. Peter's Institute of Higher Education & Research

Invited Speakers:

1. Mr. C. Sakthivel, Assistant Professor, Department of Chemistry Topic: Types of disasters
2. Mr. R. Rajeshwaran, Assistant Professor, Department of Civil Engineering Topic: Seismic Design of building

Advisors:

- Maj. Dr. M. Venkatramanan (Dean - FASCMH, SPIHER)
- Dr. S. Selvan (Advisor - Dean (Engg), SPIHER)

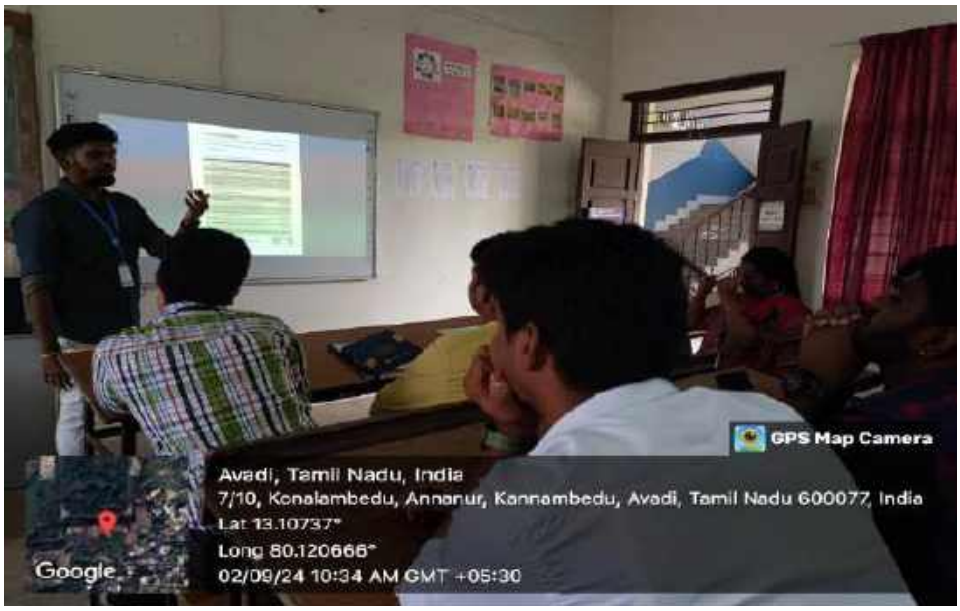
Conveners:

- Dr. Sayeeda Sultana (Professor & Head, Department of Chemistry, SPIHER)
- Dr. B. Hemalatha (Professor, Department of Civil Engineering, SPIHER)

The event aims to provide knowledge on natural disasters, focusing on rebuilding and recovery efforts. The invited speakers' explained about natural disasters such as earthquakes, hurricanes, floods, and wildfires cause significant damage to infrastructure, homes, and communities, requiring coordinated rebuilding and recovery efforts. Post-disaster recovery involves immediate relief such as providing shelter, food, and medical care, followed by long-term rebuilding, which includes restoring infrastructure, homes, and local economies. Successful recovery strategies emphasize community involvement, government support, and resilience-building to mitigate future risks. Sustainable building practices, such as using disaster-resistant materials and designs, are also critical to ensure that rebuilt structures can withstand future events, helping communities recover faster and stronger.

Event organized on 2/9/2024 for ensuring all renovations / new builds are following energy efficiency standards

Rebuilding lives after natural disasters begins with shared knowledge and collective resilience. This knowledge transfer session on "Natural Disasters – Rebuilding & Recovery" empowers communities with practical strategies for safer, stronger futures. This event fits into the context of ensuring all renovations / new builds are following energy efficiency standards.



Rebuilding after disaster is not just about structures, but about hope and dignity. This session on "Natural Disasters – Rebuilding & Recovery" lights the path from shock to sustainable renewal ensuring all renovations / new builds are following energy efficiency standards. This event fits into the context of ensuring all renovations / new builds are following energy efficiency standards.

From ruins to resilience: every community can rise stronger after a natural disaster. This session on "Natural Disasters – Rebuilding & Recovery" imparted knowledge on how to plan, rebuild and thrive. This event fits into the context of ensuring all renovations / new builds are following energy efficiency standards.