



ENERGY CONSERVATION DAY

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Keynote Speech

on

**Energy Conservation Practices in Higher Education Institutes:
An Accreditation-Oriented Perspective**

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Organized by

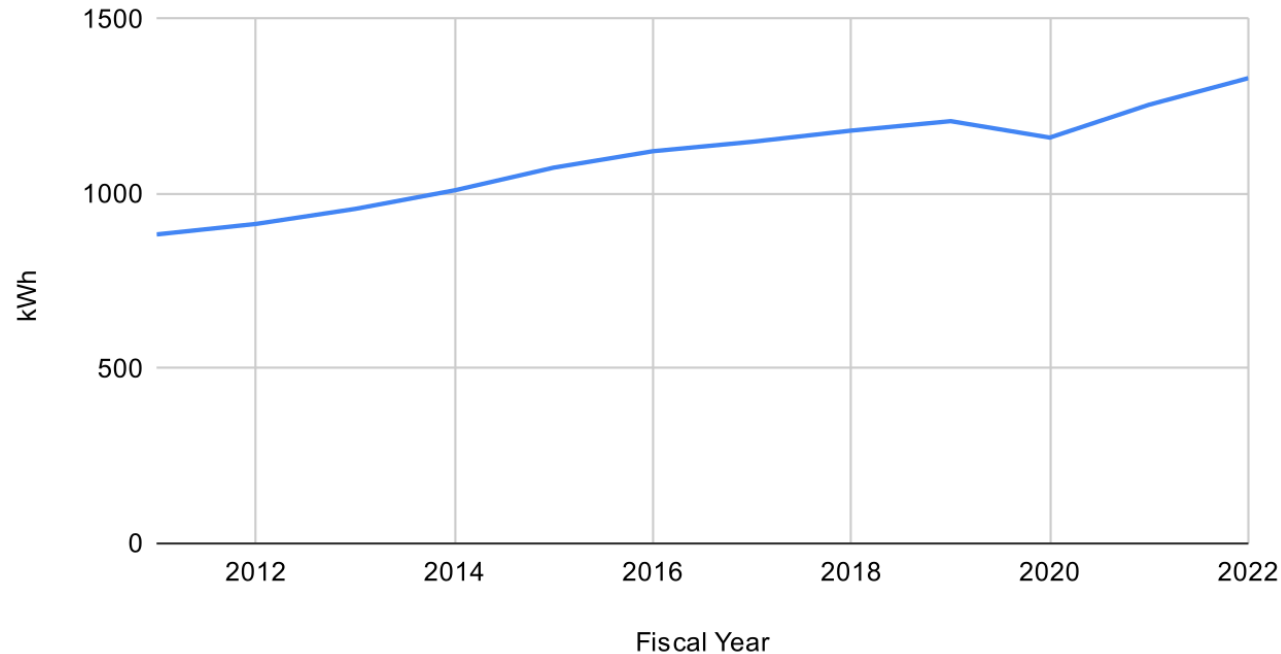
**The Institution of Engineers(India)
U. P. State Centre , Lucknow**

Need of Energy conservation

- ▶ In 2015, India committed itself to the UN 2030 Agenda for Sustainable Development.
- ▶ The primary goal of Indian universities is to align their operations and educational priorities around relevant Sustainable Development Goals (SDGs), such as good health and well-being (SDG 3), clean water and sanitation (SDG 6), affordable and clean energy (SDG 7), sustainable cities and communities (SDG 11), responsible consumption and production (SDG 12), climate action (SDG 13), life below water (SDG 14), and life on Earth (SDG 15)

Energy consumption in India

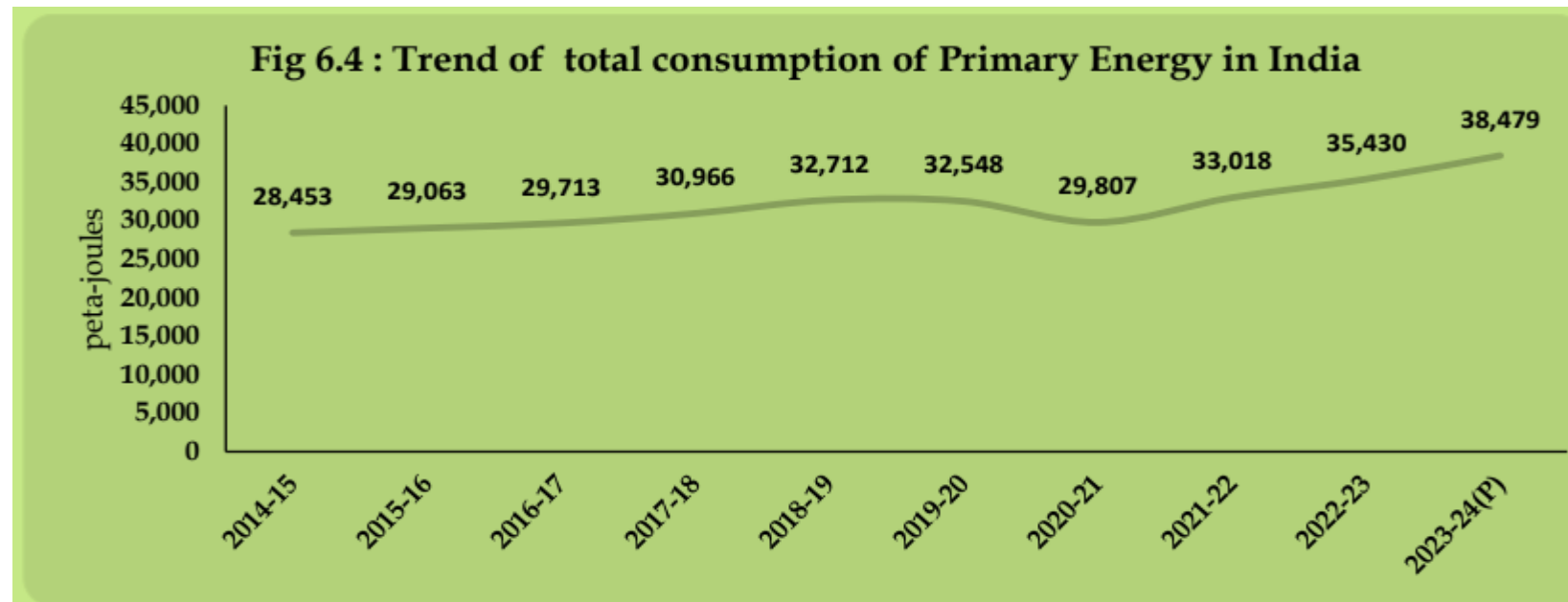
India - Per capita electricity consumption



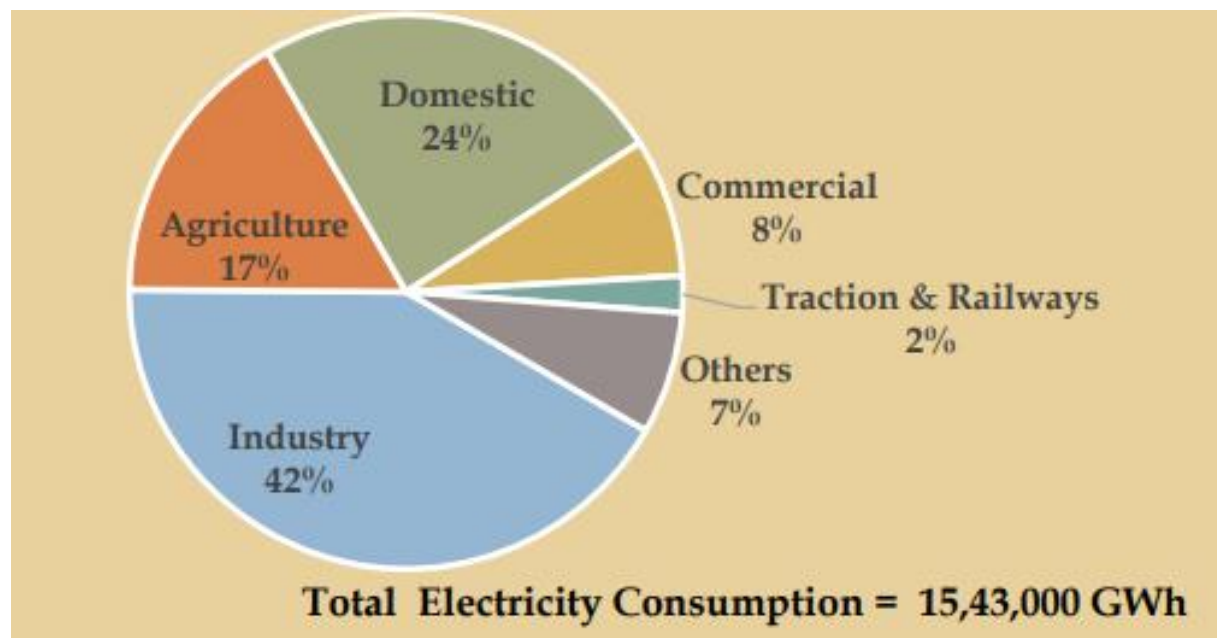
India consumed a total electrical energy of 1622 TWh in FY 2023-24, with an estimated figure of 1694 TWh for FY 2024-25.

Total consumption of Primary Energy in India

- Total energy consumption of Primary energy Resources (Coal, Lignite, Crude Oil, Natural gas and Electricity) increased from 28,453 Petajoules (1 PJ= 278 gigawatt hours) in 2014-15 to 38,479 Petajoules (PJ) in 2023-24 (P), reflecting a notable rise. Specifically, from 35,430 PJ in 2022-23, the consumption surged by 8.60% in FY 2023-24 (P). Among the various energy resources, Coal and Lignite accounted for the highest growth, with a combined increase of approximately 11.87% during FY 2023-24 (P) compared to the previous year.



Consumption of Electricity by Sectors in India during 2023-24(P)



Source: <https://www.mospi.gov.in>

Energy Consumption in Higher Education Institutes

- ▶ Educational institutions (schools, colleges, universities) are a significant part of the **commercial/public sector for energy consumption**, often having high energy use due to large buildings, labs, and infrastructure, and are seen as key areas for implementing energy efficiency and renewable energy strategies, similar to other large building types.
- ▶ While sometimes grouped with general commercial buildings, they are also studied as a distinct, large-scale energy consumer within the public domain.
- ▶ Educational institutions should prioritize retrofitting existing facilities with technologies like ground source heat pumps and solar panels to achieve net-zero targets, improve indoor air quality, and create comfortable learning environments.

Benchmarks and Assessment criteria

- ▶ Establishing clear benchmarks and assessment criteria will enable institutions to measure their progress toward sustainability objectives and identify areas for improvement.
- ▶ To provide an evidence-based guidelines for policymakers, educators, and facility managers to inform strategic decisions, enhance energy efficiency, reduce costs, and align educational infrastructures with broader national sustainability goals.

Conceptual framework was developed to promote the implementation of smart technologies in the higher education sector

- ▶ It was found that the current energy-saving methodologies in educational buildings are diverse and have shown considerable effectiveness. Technological upgrades, renewable energy integration, and behavioral changes play crucial roles.
- ▶ However, challenges such as high initial costs and the need for ongoing maintenance and education must be addressed to maximize energy efficiency. Continued support through policies, funding, and education is essential for the long-term sustainability of energy-saving practices in educational institutions.

University Grants Commission of India (UGC)

- ▶ The University Grants Commission of India (UGC) has worked to incorporate sustainability principles into campus operations, developments, and programme curricula to promote sustainability.
- ▶ UGC has proposed a generic sustainable campus framework that lays out the principles of achieving a good and sustainable campus environment.

UGC QUALITY MANDATE

Quality mandates were adopted by UGC on the behest of Ministry of Human Resources and Development in the year 2018. It was mandated to fulfil the five objectives and ten initiatives for the improvement in the quality of education and education system.

- ▶ Out of Five objectives of the Quality mandates, one mandate focus on Creating a uniformity in the universities through the NAAC (National Assessment and Accreditation Council), and it is mandatory for every HEI to score 2.5 by NAAC.
- ▶ Out of ten initiatives for the improvement in quality of education and education system is creating awareness about the accreditation process, so that every institute gets accreditation in the short course of time.

FRAMEWORK

- ▶ The University Grants Commission released its document, 'SATAT-A Framework for Eco-Friendly and Sustainable Campus Development, in November 2019 to guide Higher Education institutions (HEIs) in incorporating sustainability into day-to-day campus management.
- ▶ SATAT also aimed to stimulate HEIs to create and disseminate knowledge to achieve India's Sustainable Development Goals.

SATAT : Framework for Eco-friendly and sustainable Campus development

- ▶ In higher educational institutions that encourages universities to adopt reflective policies and practices. It aims to enhance the environmental quality of the campus by **adopting green and sustainable methods**.
- ▶ UGC has established a Nodal Centre for SATAT at the Institute of Environment and Sustainable Development, Banaras Hindu University (an Institute of Eminence) for coordinating the implantation of SATAT by HEIs.

Key Aspects of the SATAT Framework

- **Eco-Friendly Practices:** Encourages universities to adopt sustainable methods like solar energy, rainwater harvesting, and proper waste management.
- **Campus Management:** Focuses on incorporating sustainability into daily campus operations and planning.
- **Knowledge Creation:** Promotes sharing knowledge to achieve national sustainability goals.
- **Green Buildings:** Recommends retrofitting existing buildings with green systems and evaluating new constructions for environmental impact.
- **Energy Efficiency:** Sets goals for reducing energy use and transitioning to renewable energy sources.
- **Holistic Approach:** Aims to enhance the environmental quality of the campus through a culture of sustainability.

SATAT serves as a blueprint for making Indian campuses environmentally conscious and self-sufficient, aligning with broader national sustainability objectives.

1.Policy & Practice: Universities develop and implement policies for sustainable campus development.

2.Implementation: Focuses on concrete actions like energy conservation, waste reduction, and promoting green spaces.

3.Learning & Responsibility: Infuses a sense of environmental responsibility and ethics among students and faculty.

Paramarsh- It is a scheme to mentor National Accreditation and Assessment Council (NAAC) accreditation aspirant institutions for promoting quality assurance in higher education.

Accreditation Framework: Supports accreditation agencies like NAAC (National Assessment and Accreditation Council)

Seven Criteria:

1. Curricular Aspects
2. Teaching, Learning, and Evaluation
3. Research, Consultancy, and Extension
4. Infrastructure and Learning Resources
5. Student Support and Progression:
6. Governance, Leadership, and Management
7. Innovations and Best Practices

Accreditation Framework: Supports accreditation agencies like NAAC (National Assessment and Accreditation Council)

Criterion VII - Institutional Values and Best Practices

► Environmental Consciousness and Sustainability

7.1.2 The Institution has facilities for alternate sources of energy and energy Q conservation measures

1. Solar energy
2. Biogas plant
3. Wheeling to the Grid
4. Sensor-based energy conservation
5. Use of LED bulbs/ power efficient equipment

Criterion VII - Institutional Values and Best Practices: Environmental Consciousness and Sustainability

- ▶ 7.1.3 Describe the facilities in the Institution for the management of the following types of degradable and non-degradable waste.

1. Solid waste management
2. Liquid waste management
3. Biomedical waste management
4. E-waste management
5. Waste recycling system
6. Hazardous chemicals and radioactive waste management

Criterion VII - Institutional Values and Best Practices

Environmental Consciousness and Sustainability

7.1.4 Water conservation facilities available in the Institution:

- ▶ Rain -water harvesting
- ▶ Borewell /Open well recharge
- ▶ Construction of tanks and bunds
- ▶ Waste water recycling
- ▶ Maintenance of water bodies and distribution system in the campus

Criterion VII - Institutional Values and Best Practices

Environmental Consciousness and Sustainability

7.1.5 Green campus initiatives include the institutional initiatives for greening the campus are as follows:

- ▶ Restricted entry of automobiles
- ▶ Use of Bicycles/ Battery powered vehicles
- ▶ Pedestrian Friendly pathways
- ▶ Ban on use of Plastic
- ▶ landscaping with trees and plants

Recommended implementation approaches by UGC

- ▶ Prepare Sustainable Campus Policy.
- ▶ Comply with all relevant legal requirements on environment protection and good practices recommended by Government
- ▶ Initiate education, training, and awareness program and create a network of communication by using social media, short films, outdoor activities, etc.
- ▶ Motivate schools/departments to integrate sustainability concepts in the existing curricula where possible.
- ▶ Establish a Campus Sustainability Office(CSO) to facilitate the task of creating and establishing comprehensive campus-wide policies, objectives, and targets.
- ▶ The CSO manages the campus and committee having a coordinator/director/chairperson not below the rank of Professor and representatives of all stakeholders of the institution including students, faculty members, administrations, support staff, and representatives of the state forest department, the pollution control board and the neighboring society.

Need of sustainability and eco friendly campuses

- ▶ Youth play a vital role in energy conservation as **innovators, advocates, educators, and agents of change**, driving the shift to a green economy through new tech, awareness campaigns, sustainable lifestyle choices.
- ▶ leveraging digital skills to foster a sustainable future by bringing fresh ideas, long-term vision, and passionate action to energy efficiency and renewable energy adoption.
- ▶ Create student sustainability forums/clubs/discussion groups on the thematic areas such as energy. Biodiversity, water waste disposal, integrates sustainability, etc.

Key Roles & Contributions

- ▶ **Innovation & Entrepreneurship:** Developing clean tech, designing efficient solutions (smart grids, storage), starting green businesses, and creating new energy models.
- ▶ **Advocacy & Policy:** Lobbying for stronger climate policies, holding governments accountable, influencing political agendas, and bringing future-focused perspectives to decision-making.
- ▶ **Awareness & Education:** Running campaigns, using digital tools to spread knowledge, and educating communities about energy waste and conservation.
- ▶ **Behavioral Change:** Adopting energy-saving habits at home, influencing family members (like parents) to conserve energy, and promoting sustainable consumption.
- ▶ **Workforce Development:** Pursuing green careers in renewable energy, equipping themselves with skills for the green economy, and driving industry transformation.
- ▶ **Community Action:** Engaging grassroots efforts, monitoring local ecosystems, and fostering a collective sense of responsibility for conservation.

Conclusion

- ▶ Engaging youth in decision-making processes and fostering partnerships between governments, businesses, academia, and civil society are essential for harnessing the potential of young people as catalysts for transformative change in the energy sector. The active participation of youth is critical for accelerating the transition to a more sustainable and resilient energy future

THANK YOU