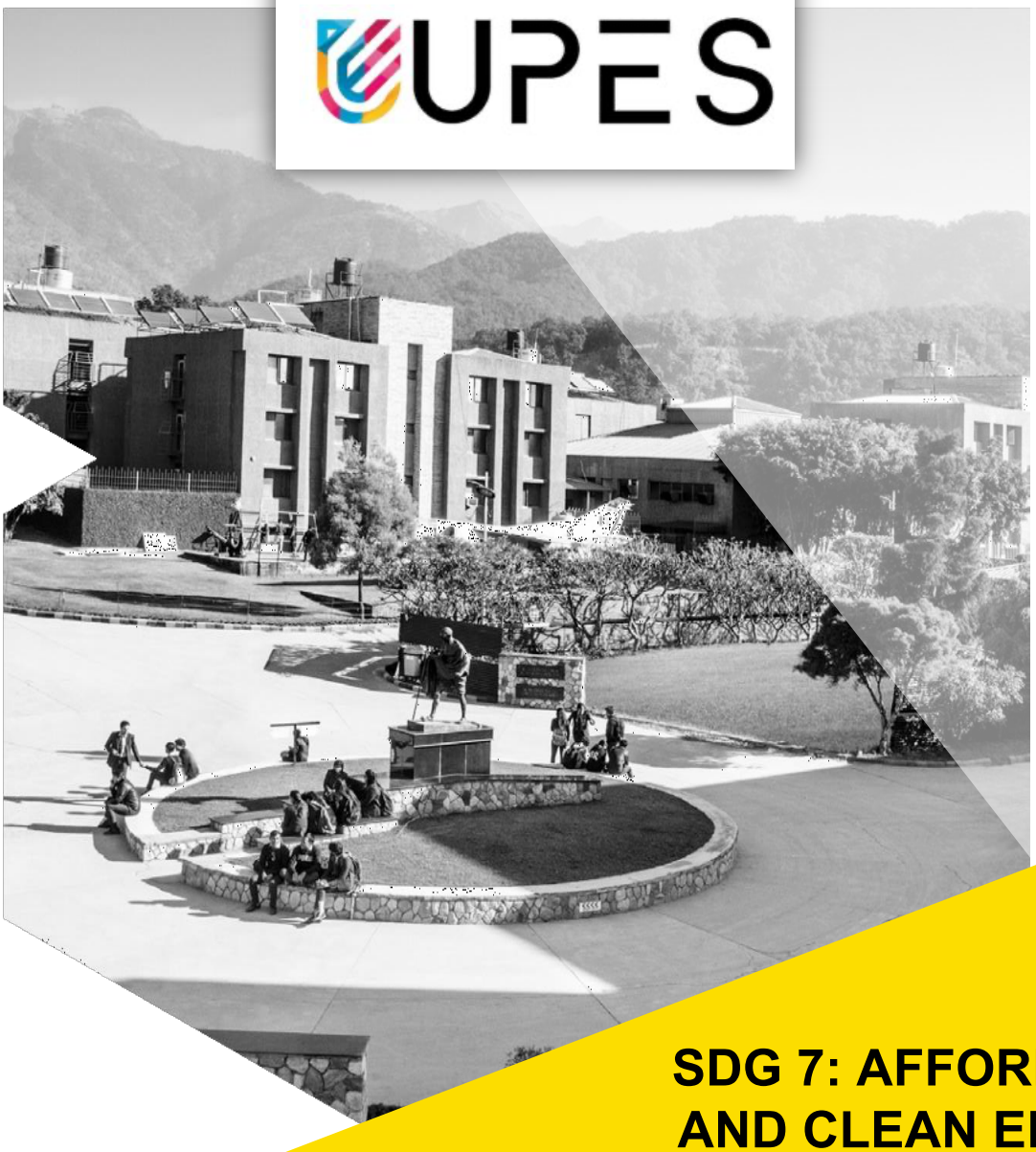
SUSTAINABLE DEVELOPMENT GOALS

UPES



SDG 7: AFFORDABLE AND CLEAN ENERGY

2025

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UPES has formally committed to sustainability and energy efficiency through recent institutional policies and plans. For example, the university's *Institutional Sustainability Policy* (aligned with India's National Education Policy 2020) sets out **"Green Campus Operations"** goals. A key objective is to reduce UPES's environmental footprint by implementing energy-efficient infrastructure and practices. Under the policy's *Infrastructure and Campus Planning* section, UPES mandates that **all new constructions and major renovations conform to green building standards and incorporate energy-efficient designs** upeswebsitecdn-prod-hphqfhc0b8h2ffhf.a02.azurefd.net. This means any building upgrades or expansions on campus must use sustainable materials, modern insulation, and design techniques that minimize energy consumption and emissions upeswebsitecdn-prod-hphqfhc0b8h2ffhf.a02.azurefd.net. These guidelines ensure that as the university grows or refurbishes facilities, energy efficiency is a top priority.

In addition, UPES's climate action strategies emphasize "green infrastructure" development. The university actively plans for **renewable energy installations, smart-building technologies, and other efficiency measures** as part of its contribution to combating climate change. This comprehensive approach – covering academics, operations, and infrastructure – provides a framework for upgrading campus buildings to higher energy efficiency over the past five years.

Retrofitting and Energy Efficiency Upgrades on Campus

In line with these sustainability plans, UPES has undertaken specific retrofitting projects and upgrades to improve the energy performance of existing campus buildings and facilities in 2020–2025. Key initiatives include:

- **LED Lighting Retrofits:**

The university has **made it official policy to retrofit all conventional lights on campus with energy-efficient lighting** upes.ac.in. Traditional bulbs and fixtures have been systematically replaced with LED and other low-energy lighting solutions. This campus-wide lighting upgrade reduces electricity consumption and maintenance costs while improving illumination. UPES reports that *"all the conventional lighting fixtures are being replaced to ensure energy savings"* upes.ac.in as part of its responsible consumption strategy. This retrofit covers classrooms, offices, hostels, streetlights and other facilities, significantly cutting lighting energy use.

- **Power System Optimization:**

UPES upgraded its electrical infrastructure to eliminate energy wastage. In particular, the campus maintains a **Unity Power Factor across its power distribution systems** upes.ac.in. Achieving unity power factor (i.e., minimizing reactive power) required adding capacitors and modern controllers to the campus grid. This ensures there is virtually zero energy loss in electrical transmission on site upes.ac.in, improving overall efficiency of power usage in all buildings. By optimizing load management and power factor, UPES reduces wasted electricity and improves the performance of HVAC and equipment.

- **Smart Energy Management:**

The university has also adopted **smart energy management systems** to monitor and control energy use in campus buildings upeswebsitecdn-prod-hphqfhc0b8h2ffhf.a02.azurefd.net. According to UPES, a range of **energy-saving measures – including LED lighting, energy-efficient buildings, and smart energy management systems – have been implemented on campus** upeswebsitecdn-prod-hphqfhc0b8h2ffhf.a02.azurefd.net. These may include sensors, automated controls (like motion sensors for lights or intelligent HVAC controls), and real-time energy monitoring software. Such systems help identify inefficiencies and adjust usage patterns (for example, turning off lighting and cooling in unoccupied areas), thereby reducing overall consumption.

- **Other Efficiency Improvements:**

In pursuit of higher efficiency, UPES has been upgrading building equipment and utilities where possible. For instance, large **solar water-heating systems** have been installed to serve campus buildings upes.ac.in. The university now has **solar water heaters with a total capacity of 61,500 liters**, supplying hot water for hostels and cafeterias using renewable heat upes.ac.in. This retrofit cuts down on electrical or fuel-based water heating needs. While specific HVAC upgrades (like new chillers or efficient boilers) were not explicitly highlighted in available sources, the emphasis on *"energy-efficient buildings"* upeswebsitecdn-prod-hphqfhc0b8h2ffhf.a02.azurefd.net suggests that any major renovations would include more efficient cooling, heating, and insulation to reduce energy demand. Additionally, routine steps like improving building insulation, using energy-efficient window glazing, and upgrading to Star-rated appliances are likely part of UPES's ongoing efforts, aligning with its green campus guidelines (though not detailed in the sources).

Through these retrofitting efforts, UPES is **modernizing its existing infrastructure to consume less energy**. Replacing outdated fixtures and optimizing systems have yielded tangible energy savings (e.g. reduced electricity bills and carbon footprint), though the university has not published exact percentage savings per project. Collectively, these upgrades demonstrate UPES's commitment in the last five years to make campus operations more energy-efficient.

Renewable Energy Integration and Efficient Systems

A cornerstone of UPES University's strategy to improve building energy efficiency has been the integration of on-site renewable energy generation and other clean energy systems. By producing sustainable energy on campus and using it to power facilities, UPES both lowers its reliance on conventional grid power and upgrades the energy profile of its buildings. Notable examples from 2020–2025 include:

- **On-Campus Solar Power Plant:**

UPES has installed a **100 kW solar photovoltaic (PV) power plant** on its campus rooftops upes.ac.in. This solar installation, spread across multiple building rooftops, directly supplies clean electricity to the university's buildings. Over the last five years, the PV system has generated enough energy to meet about **8% of the university's total power demand** upes.ac.in. In other words, a significant share of campus electricity is now sourced from solar panels, reducing the draw from the grid and cutting carbon emissions. The solar plant also doubles as a hands-on educational resource – it is *"utilised for training and project purposes for the students"* upes.ac.in in energy programs. By offsetting a portion of campus consumption, this renewable energy project effectively improves the net energy efficiency of all buildings (especially during sunny hours when solar power directly feeds labs, classrooms, and offices).

- **Solar Thermal Water Heating:**

As mentioned above, UPES deployed **solar water-heating systems with 61,500 liters capacity** to provide hot water on campus upes.ac.in. These are likely rooftop solar thermal collectors installed on dormitories or cafeteria buildings. By using solar energy to heat water (a process demand that otherwise would use electricity or diesel-fired boilers), the university significantly reduces conventional energy use. This upgrade not only improves energy efficiency of those facilities but also aligns with clean energy goals. Such a large solar-heating capacity indicates that a substantial portion of hot water needs (for student hostels, kitchens, etc.) is met through renewable means, cutting down on power consumption and costs.

- **Transition from Diesel Generators:**

While not explicitly detailed in official press releases, the introduction of solar power on campus has helped UPES cut back on fossil fuel use. Historically, institutions often rely on diesel generator sets for backup power. UPES's 100 kW solar-battery setup (partly funded by India's MNRE in earlier years) was intended to replace or reduce diesel generator usage ppsenviro.com ppsenviro.com. By having solar energy with battery storage to provide backup and daytime power, the university avoids burning diesel for electricity, which is both costlier and less efficient. This shift contributes to cleaner, more efficient energy management for campus buildings, especially during power outages or peak load times.

- **Renewable Energy Research & Innovation:**

In addition to infrastructure, UPES involves its academic community in advancing campus sustainability. The campus has seen prototype projects like a **"solar tree"** (a pole-mounted solar panel structure with LED lights and charging outlets) and solar-powered bicycles developed by students upes.ac.in upes.ac.in. While experimental, these initiatives foster a culture of energy innovation. They complement practical steps by demonstrating new ways to incorporate renewables into campus life (e.g., outdoor lighting from a solar tree). This culture ensures that improving energy efficiency remains an ongoing pursuit, backed by technical expertise from the university's own faculty and students.

Overall, by investing in on-site renewable energy systems, UPES has effectively **upgraded its energy infrastructure**. Campus buildings are now partially powered by clean energy (solar PV), and key services like water heating run on solar technology. These measures in the past

five years have both lowered the net energy consumption of the university and served as flagship examples of sustainable campus operations.

Green Building Standards and Certifications

UPES's commitment to energy-efficient buildings is further evidenced by its alignment with recognized green building standards and certifications. The university not only sets internal guidelines for sustainable construction but also has earned external validation for its campus infrastructure:

- **Policy-Driven Green Design:**

As noted, UPES requires that new buildings and major retrofits meet established green building benchmarks upeswebsitecdn-prod-hphqfhc0b8h2ffhf.a02.azurefd.net. This likely involves adhering to rating systems such as *GRIHA* or *LEED* for design and performance. By ensuring designs incorporate features like natural lighting, ventilation, high-efficiency HVAC systems, and proper insulation, these standards help minimize a building's energy needs. The policy of using *"sustainable materials and cutting-edge construction techniques to minimize energy consumption and GHG emissions"* upeswebsitecdn-prod-hphqfhc0b8h2ffhf.a02.azurefd.net means any upgraded facility is significantly more efficient than older baseline buildings.

- **GRIHA 4-Star Certified Campus Building:**

UPES has achieved recognition under India's Green Rating for Integrated Habitat Assessment (GRIHA) framework. Notably, one of the university's academic blocks at the Bidholi campus received a **GRIHA 4-Star** rating (final certification) grihaindia.org. *(GRIHA is a national green building certification system in India, akin to LEED, with 5-star being highest.)* This 4-star rating indicates that the building meets stringent criteria for energy efficiency, occupant comfort, and environmental responsibility. Earning a **"GRIHA Final Rating: 4 Stars"** confirms the campus infrastructure was designed or retrofitted to significantly exceed conventional energy performance standards grihaindia.org. Features likely included efficient lighting and AC, solar power integration, rainwater harvesting, and waste reduction, though specifics aren't listed. Importantly, this accomplishment shows UPES's upgrades are on par with national best practices for green buildings.

- **International Sustainability Recognition:**

UPES's green campus efforts have not gone unnoticed. The university has been climbing in sustainability rankings and forums. For example, UPES was highlighted in the QS Sustainability Rankings 2025–26 for its strong commitment to clean energy and resource conservation initiatives【0†L32-L36** (Instagram post)**】. While not a building certification per se, such recognition implies that the campus's energy efficiency measures (solar installations, efficient operations, etc.) meet global standards and contribute to the university's reputation as an environmentally conscious institution.

Through these measures, UPES ensures its building upgrade plans align with both **national and international sustainability benchmarks**. Every new project or retrofit is an opportunity to incorporate green building principles. This not only yields immediate energy savings but also future-proofs the campus by lowering operating costs and contributing to climate goals.

The period 2020–2025 has thus seen UPES solidify a path where campus growth and modernization are tightly coupled with energy efficiency and sustainability objectives.

Conclusion

In the last five years, UPES University has actively pursued the upgrade of its existing campus buildings and infrastructure to achieve higher energy efficiency. This multi-faceted approach – from **retrofitting old systems (LED lighting, power optimization)** to **integrating renewables (solar power generation and heating)** and **adhering to green building standards** – demonstrates UPES's commitment to sustainable development. Official university sources highlight concrete steps like replacing all conventional lights with LEDs, installing a 100 kW solar plant that supplies 8% of campus electricity, utilizing solar hot water systems, and designing new projects to green certification standards upes.ac.inupes.ac.inupeswebsitecdn-prod-hphqfhc0b8h2ffhf.a02.azurefd.netgrihaindia.org.
These initiatives have improved energy performance across the university's two campuses in Dehradun, contributing to lower carbon emissions and operational savings. They also align with broader national goals on energy efficiency and international best practices. Moving forward, UPES's continued focus on energy-efficient infrastructure – supported by policies, student projects, and technology upgrades – positions it as a leading example of a university campus embracing sustainability in its built environment.