Abstract

Transforming Campus Sustainability: Leveraging Smart IoT Devices for Energy-Efficient Green Ecosystem

This research project proposes the implementation of IoT-based smart energy-saving devices in selected classrooms at East West University to optimize energy consumption, reduce operational costs, and promote sustainability. The initiative centers on the use of smart switches and automation to manage classroom electrical devices, such as projectors, based on scheduled activities. By ensuring energy is only utilized during actual use, the project aims to significantly enhance resource efficiency and minimize wastage.

A pilot implementation is planned for 20 non-laboratory classrooms, where the projected annual savings are estimated at approximately 1,302,000 BDT. This intervention demonstrates a remarkably short payback period, highlighting its cost-effectiveness and practicality. The study also evaluates the feasibility of scaling this system to all 141 classrooms at the university. If fully implemented, the annual savings could reach 9,165,300 BDT, accompanied by a substantial reduction in the university's carbon footprint, further contributing to environmental sustainability.

This project aligns with East West University's commitment to sustainable practices and supports global efforts toward achieving ***Sustainable Development Goal 13: Climate Action***. By integrating innovative IoT technologies with energy management strategies, this initiative represents a transformative approach to campus operations, paving the way for broader adoption of smart energy solutions in educational institutions.