Smart Solar Rooftop System with Heat & Carbon Reduction

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Summary

Smart Solar Rooftop System with Heat & Carbon Reduction

The University of Lahore installed a 406 kW solar power system in 2017, marking a significant step toward renewable energy adoption and reducing electricity costs. While this initiative is environmentally beneficial, it has created some secondary issues. During peak sunlight, the solar panels emit heat, making rooftop areas uncomfortable for students and staff. Additionally, minor inefficiencies in energy conversion can lead to negligible carbon emissions over time.

To address these challenges, we propose implementing a Smart Solar Rooftop System that enhances energy efficiency while reducing heat and environmental impact. The system incorporates green roof technology, placing plants strategically around and beneath the solar panels. These plants absorb excess heat, lower rooftop temperatures by an estimated 5°C, and capture carbon dioxide, improving overall air quality on campus.

Further improvements include shading structures, natural ventilation channels, and reflective rooftop coatings to minimize heat absorption. High-efficiency or bidirectional solar panels maximize electricity output while reducing heat emission. This integrated approach ensures rooftops remain both energy-efficient and comfortable for student use.

Expected benefits:

Reduced Rooftop Temperature: Cooler spaces suitable for study and recreation.

Carbon Absorption: Plants capture CO_2, enhancing campus air quality.

Sustainability Awareness: Encourages students and staff to adopt eco-friendly habits.

Improved Usability: Rooftops become functional, comfortable areas without sacrificing energy generation.

Although initial installation requires investment in plants, shading, and ventilation systems, the long-term environmental and social advantages significantly outweigh the costs. This Smart Solar Rooftop System preserves the benefits of solar energy while enhancing campus comfort and sustainability. We strongly recommend university approval and funding for this project.

Email Requesting Approval for Smart Solar Rooftop System

Subject: Proposal for Smart Solar Rooftop System with Heat & Carbon Reduction

Dear Sir,

Our university, **The University of Lahore**, installed a **406 kW solar power system in 2017** to promote renewable energy and reduce electricity costs. While this initiative has successfully supported sustainability, it has introduced some secondary challenges. During peak sunlight, solar panels emit heat, making rooftop areas less comfortable for students and staff. Additionally, minor inefficiencies in energy conversion may result in small carbon emissions over time.

To address these issues, we propose implementing a **Smart Solar Rooftop System**. This system includes **green roof technology**, shading structures, reflective rooftop coatings, and high-efficiency solar panels. Plants placed strategically under and around the panels absorb excess heat and capture carbon dioxide, while shading and natural ventilation further reduce rooftop temperature. **Bifacial solar panels** ensure maximum energy production with minimal heat emission.

Key benefits of this system include:

- Rooftops become cooler and comfortable for study or recreation.
- Carbon dioxide absorption by plants improves air quality.
- Encourages students and staff to adopt eco-friendly habits.
- Enhances overall energy efficiency and sustainability.

We understand that installation requires investment; however, the long-term environmental and social advantages significantly outweigh the initial cost. Implementing this Smart Solar Rooftop

System will improve campus comfort, reinforce the university's commitment to sustainability, and serve as an innovative model for other institutions.

We respectfully request your approval and funding for this project.

Sincerely,

Aliza Hamza & Ehtisham Hassan

SMART SOLAR ROOFTOP SYSTEM

COOL ROOFTOPS, CLEAN AIR, SMART ENERGY!