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Sustainable Architecture Implementation of Mosque in Indonesia (Case Study: Mosque Istiqlal, Jakarta)

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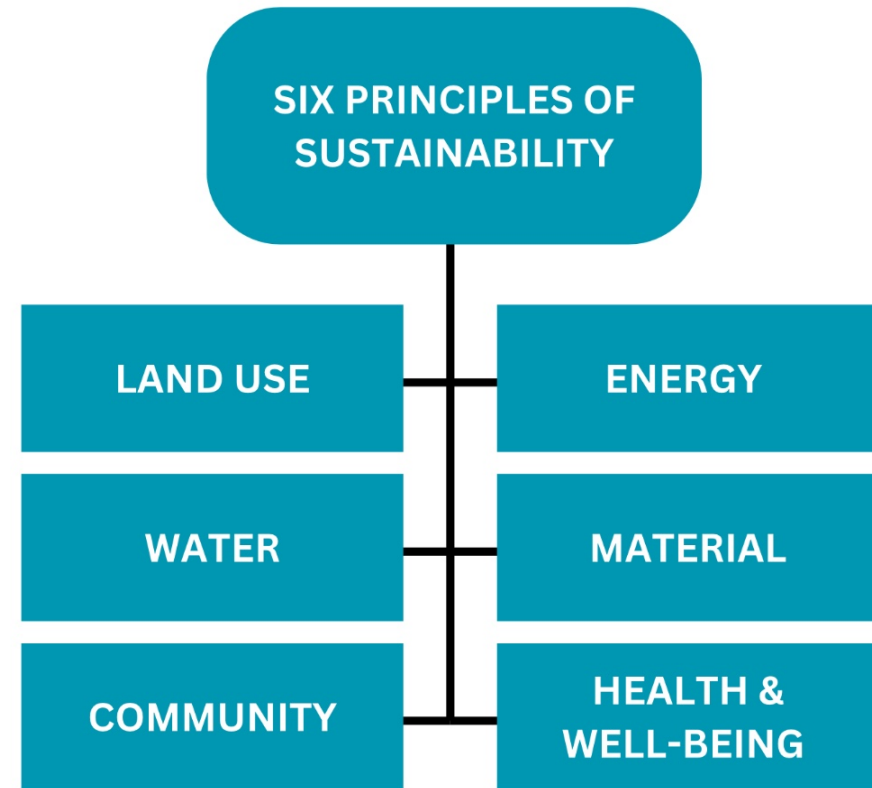
Introduction

- Introduce sustainable architecture as a practical implementation of the Sustainable Development concept.
- Discuss the theoretical and practical benefits of research on sustainable architecture.
- Highlight the significance of applying sustainable principles in various types of buildings, such as mosque.



Method

By using theory from :
Paola Sassi principal of Sustainability.



Result and Discussion



- The land use around Mosque Istiqlal has been designed to support accessibility and greenery. The area surrounding the mosque is designed with spacious sidewalks to facilitate pedestrian access, as well as ample parking areas. Additionally, there are beautiful gardens around the mosque, providing a touch of greenery and fresh air for visitors. These greening efforts are also part of the environmentally friendly concept applied around Masjid Istiqlal, creating a comfortable and cool environment for worshippers and visitors.

- As a sustainable architecture, it has implemented several energy-efficient features to reduce its energy consumption. Mosque Istiqlal has made several efforts to improve energy efficiency. One example is by making the mosque an environmentally friendly building. After undergoing major renovations, Mosque Istiqlal is classified as a green building. Its electricity and water consumption are more efficient. Additionally, Masjid Istiqlal has also obtained the final certificate of the Excellence in Design for Greater Efficiencies (EDGE) system from the International Finance Corporation (IFC) for achieving energy, water, and material efficiency.



Result and Discussion



- Mosque Istiqlal, as a sustainable architecture, incorporates principles of efficient water management. While specific details on water management at Mosque Istiqlal are not readily available in the provided sources, sustainable mosques often implement water-saving features such as rainwater harvesting, water-efficient fixtures, and systems for water reuse in ablution facilities. These measures contribute to the conservation of water resources and align with the principles of sustainable architecture.

- The mosque has implemented green building principles, including embodied energy efficiency, which involves the use of existing materials to reduce waste and energy consumption during construction. Mosque Istiqlal has received recognition for its application of these principles, making it a model for green building practices. The mosque's role as a center for energy conservation and clean energy literacy has also been recognized, highlighting its strategic importance in promoting sustainable practices for the future.

Result and Discussion



- The sustainable architecture principles applied in Mosque Istiqlal include energy-efficient features such as central and split air conditioning, as well as a focus on energy conservation and clean energy. The mosque has been recognized for its energy efficiency, water efficiency, and embodied energy efficiency, making it a model for green building practices. The application of these principles has led to significant energy savings and cost reductions.

- In terms of thermal comfort, a study shows that the thermal quality inside the mosque still falls within the slightly warm comfort zone during prayer times. Additionally, the analysis of sound quality and lighting is also a concern, where the lighting in the main prayer hall still does not meet comfort standards. However, from the perspective of cleanliness and the comfort of facility use, Masjid Istiqlal is considered highly adequate, with well-maintained cleanliness and facilities comfortable for use by worshippers and tourists.



Conclusion

- Sustainable Architecture principles are an effective solution for mitigating the negative impacts of unsustainable development practices, particularly in office buildings.
- Mosque Istiqlal in Jakarta exemplifies successful implementation of sustainable architecture principles, including green building practices and sustainable waste management.
- The mosque's integration of energy efficiency, water conservation, and waste management measures serves as a model for promoting environmental sustainability in construction projects.
- By adopting sustainable architecture principles, Mosque Istiqlal has not only achieved significant energy savings and cost reductions but also plays a pivotal role in advocating for clean energy and resource conservation practices.



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