VIEW FROM VILLAGE

UNDER ONE ROOF: A GATHERING SPACE FOR CONNECTIVITY AND SUSTAINABILITY

CONCEPT

The building is designed as a communal gathering space for the village, fostering community interaction and social events. It features a series of shaded areas created by angled roofs, all interconnected by pathways that encourage movement and accessibility.

The semi-outdoor spaces vary in size, providing versatile environments that can serve as a playground for children or transform into a market area for village activities on occasion.

The angled roofs are strategically designed to collect rainwater. During the rainy season, water is funneled into pipes located at the edges of the roofs.

In addition to rainwater harvesting, the angled roofs are also optimized for solar panel installation, ensuring that the building makes the most efficient use of renewable energy sources. This thoughtful design enhances both the functionality and sustainability of the space, making it a valuable asset for the community.

The primary material selected for the roof is wood, chosen for its aesthetic appeal, sustainability, and structural integrity. This material is designed to be modular, allowing for efficient prefabrication in a controlled environment. Each module can be crafted to precise specifications, ensuring consistency and quality.
Once manufactured, these wooden components can be easily transported to the construction site, streamlining the assembly process. The modular design not only facilitates quicker installation but also minimizes waste, contributing to an eco-friendly approach. This method allows for flexibility in design, enabling the roof to adapt to various architectural needs while maintaining a cohesive look throughout the building.

TECHNICAL

Solar panels have been strategically installed on the angled roofs of buildings, which are oriented to face North. This specific orientation is crucial, as it allows the panels to capture maximum sunlight throughout the day. The roofs are designed with a steep angle of 75 degrees, a measurement carefully calculated based on the solar angle specific to the site's geographical location. This angle optimizes the panels' exposure to the sun, enhancing their efficiency in energy production.

In total, the solar panels cover an impressive area of 3,695 square meters. This substantial surface area is expected to generate a significant amount of renewable energy, which will be harnessed to power the village.

The estimated capacity of solar panels is calculated below:
Determine Solar Panel Efficiency: Typical solar panels have efficiencies ranging from 15% to 22%. For this estimate, we'll use an average efficiency of 18%.
Calculate Capacity:
The total solar energy received by 1 square meter in Fiji is approximately 5 kWh/m^2/day, accounting for local solar conditions.
The formula for capacity in kilowatts (kW) is:
Capacity (kW)=Area (m^2)×Efficiency×Solar Energy (kWh/m^2/day)
With:
Area = 3695 m^2
Efficiency = 0.18
Solar Energy = 5 kWh/m^2/day

Calculation:
Capacity (kW)=3695 m^2×0.18×5 kWh/m^2/day=332.73 kW
So, the estimated capacity of the solar panels would be approximately 332.73 kW under optimal conditions

ENVIRONMENT IMPACT

The proposed design for the communal gathering space aims to serve as a multifunctional hub for the village, incorporating sustainable materials and practices. This Environmental Impact Assessment evaluates the potential environmental effects of the project and outlines strategies to mitigate any negative impacts.

1. Land Use and Site Planning
Impact: The construction may alter the existing land use patterns.
Mitigation: Conduct a thorough site analysis to minimize disruption to existing ecosystems. Ensure that pathways and structures follow the natural topography to preserve native vegetation.
2. Material Selection
Impact: The sourcing and use of materials (primarily wood) can affect local forests and biodiversity.
Mitigation: Utilize sustainably sourced wood, certified by recognized organizations. Implement a procurement strategy that prioritizes local materials to reduce transportation emissions.
3. Biodiversity
Impact: Construction activities could disturb local wildlife habitats.
Mitigation: Schedule construction during periods that avoid critical wildlife breeding seasons. Conduct a biodiversity assessment to identify and protect sensitive areas.
4. Water Management
Impact: Changes to the landscape may affect natural water drainage and local hydrology.
Mitigation: Implement a rainwater harvesting system designed to capture and utilize runoff, thereby reducing potential flooding and erosion. Maintain natural drainage patterns where possible.
5. Energy Consumption
Impact: The construction and operation of the facility may increase energy demand.
Mitigation: Incorporate solar panels into the roof design to offset energy consumption and promote renewable energy use. Ensure the building is designed for energy efficiency.
6. Waste Management
Impact: Construction activities can generate significant waste.
Mitigation: Develop a waste management plan that emphasizes recycling and composting of construction waste. Use prefabricated modules to minimize on-site waste generation.
7. Community Impact
Impact: The project may affect local social dynamics and community engagement.
Mitigation: Involve community members in the design and decision-making process to foster ownership and ensure the facility meets local needs. Provide ongoing opportunities for community feedback.
8. Noise and Air Quality
Impact: Construction activities may produce noise and dust, impacting air quality.
Mitigation: Implement noise control measures, such as scheduling construction during designated hours and using equipment that minimizes noise. Employ dust suppression techniques, such as watering the site during dry conditions.