**LAGI 2025 Fiji Narrative Template
*The use of this document is optional. It is intended to help you organize your written description that describes your proposal. You do not need to provide answers to each specific question. They are there to help guide you.***

***Do not include any information within the written description file that could identify you or your team members. Please organize your narrative document as per the five sections below. Limit each of the five sections to around 500 words (for a total of no more than 2,500 words in the entire document):***

1. **Concept Narrative**
* Discuss materials, design concept, visitor and community experience, co-benefits, shared land uses, and any other important aspects of your design.

The *Plug-in Solar Sheds* is a field of modular structures that harvest natural resources to produce clean, renewable energy for the local residents of Marou Village.

The design responses directly to the two pressing needs of Marou Village—access to fresh water and reliable electricity—by implementing a shared modular structural frame that houses two possible energy units—the solar unit and the water unit. Building upon local architectural and cultural heritage, the sheds are configured as distorted thatched roof, referencing the Fijian traditional “bure” or “vale” typology. This provides a sense of familiarity and meanwhile offers a playful form and space for something new as focal points of gathering, allowing the community to connect with nature while participating in the energy production and harvesting cycle.

Each singular module measures 4.5m x 4.5m x 4.5m. The solar unit provides shaded area for potential crop production—a mini version of agrivoltaics for local crop beds. The water unit shares the same geometric profile as the solar unit, and utilizes an array of soft sails for directing storm water into a bamboo basin below. The basin collects the drained water into portable filter tanks. Movable carts with filter tanks can be swapped once filled. The fresh water can be directly used for irrigation or other daily uses.

Larger sheds are designed by chaining singular shed modules in linear or parallel fashions. By connecting and mirroring singular units, larger covered zones are created for housing various community events, while nested uncovered courtyards emerge as part in forms of cross-pathways or visual axes. These plug-in sheds vary in size and configuration, ranging up to 20 meters long and 9 meters tall for multi-functioning structures.

1. **Technical Narrative**
* What technologies does your design incorporate? Why did you choose them?
* How much energy and water does your installation generate each year?
* What are the system inputs? (for example, sunlight or rainwater)
* What are the system outputs? (for example, electricity or clean drinking water)

This design incorporates typical monocrystalline silicon photovoltage panels, mounted on an adjustable tracking mechanism for optimizing their capacity during different time and seasons. This will allow the maximum flexibility for sourcing, transporting, and replacement needs of PV panels in the longer term. The storm water harvesting and filtration is done in three different ways in this proposal: (1) storm water harvesting edge—a retractable soft canopy assembled at the lower end of PV panels of each singular solar unit; (2) storm water harvesting module with portable filtering and irrigation tanks (the water unit described in the prior section), each holding 3 movable carts at the minimum, with 34,000 liters total capacity which will potentially increase with additional movable carts; and (3) storm water detention systems that are constructed as part of the foundation of the water units and the large aggregated solar structures, with potential to draw water from the channel through pumped underground paths, and 800,000 liters total capacity.

These plug-in sheds harvest sunlight and rainwater, and produces electricity and fresh water for drinking and for irrigation. Annually, the whole system would generate approximately 120 kW, and offers 850,000 – 1,000,000 litters capacity of water storage.

1. **Prototyping and Pilot Implementation Statement**
* How will your team approach the prototyping process and full-scale pilot implementation process and how will you collaborate with the local community in both of those efforts?

The design utilizes locally sourced materials (including bamboo and straw that are readily available throughout the island) and construction techniques, allowing for adaptable workflow and collaboration with local community. The design team will learn from local craftsman, and will specify material, schedule, and construction details, along with customized hardware and tectonics through detailed drawings and video demonstrations.

1. **Operations and Maintenance Statement**
* How will your design be operated and maintained during its life? How will the local community contribute to operations and maintenance?

The proposal learns from the findings of the VANUA project that a robust structural frame is the key for sustaining from natural catastrophe such as cyclones. However, instead of abandoning thatch material altogether for something more permanent, we embrace the environmental advantages of straw and thatch, and we envision alternative tying and paneling methods that allow additional bond and easy replacement. A thin layer of red bamboo at the backing of the solar and thatched panels introduces filtered sunlight while provides porosity for airflow, alleviating possible damages from strong wind. The panels can be easily remade with local techniques. With a 30-40 years lifespan overall, blocks of thatch could then be recycled afterwards for fertilizers.

1. **Environmental Impact Assessment**
* What effects might your installation have on natural ecosystems and what steps can be taken to mitigate any foreseeable issues?

The project intends to create no harm to the existing ecosystems. Proper installation and maintenance will assure its longevity and long-lasting positive impacts.