**LAGI 2025 Fiji Narrative Template**

 ***KAVA***

1. **Concept Narrative**

**KAVA** is an autonomous community module conceived as a response to the environmental and social challenges faced by the Marou community on the island of Naviti (Fiji). Its design aims to create a resilient, sustainable, and culturally significant space that complements the existing infrastructure.

The concept is based on creating a multifunctional model that promotes ecological sustainability, climate protection, food sovereignty, and social cohesion. The module is united by a central core made with blocks containing an aggregate of crushed coconut husk, to which four elements are attached, with the slope of the roof converging towards the center. These elements are elevated off the ground by a wooden structure on stilts.

KAVA exclusively uses local and renewable materials in its construction: in addition to the aforementioned masonry blocks, bamboo is used for the flooring structure, and wood from *Intsia bijuga* is used for columns and beams due to its durability and resistance to extreme conditions. The roof of the module allows the collection of 4,000 liters of rainwater during the wet season and supports a JA Solar 600W monocrystalline solar panel system with an estimated efficiency of 2.4 to 3.6 kWh/day. In total, the six modules will produce between 129.6 kWh and 194.4 kWh per day.

The module, in addition to being functional, also serves as a gathering point for community activities such as drinking kava, environmental education, tool storage, planting, potable water and energy distribution, as well as a platform for the exhibition of local knowledge and culture. Its strategic location and participatory design promote community ownership, the strengthening of cultural identity, and climate resilience.

An additional component of the system is the so-called **palm module**, mostly located along pathways and in the middle of homes, but it will also be placed at the top of **Vatu Rua** mountain. This module will provide water and energy, acting as a complementary element to the diesel generator, which powers the telecommunications tower that provides connectivity to the entire island of Naviti and nearby islands. This decentralized energy infrastructure ensures critical backup during emergencies.

In the low tide zone, bamboo floating platforms are located, which serve as spaces for community expression through the display of local sculptures that greet visitors arriving by boat. These platforms can also function as observation points for marine ecosystems or even as mobile bridges that connect and navigate over shallow water levels, eliminating the need to carry heavy items on one’s shoulders.

These structures are resistant, dynamic, and adapted to the variable behavior of sea levels through cables anchored to the seabed.

The sloped terrain surrounding the designated site features a sustainable cultivation system with **vetiver** (*Chrysopogon zizanioides*). This plant, with its deep and resistant roots, acts as a natural barrier against erosion, reducing runoff during heavy rains and promoting soil infiltration, thus retaining moisture for longer and improving soil fertility.

**Natural Coastal Protection**

The coast of Marou is affected by erosion, which threatens both the stability of homes and the resting places of deceased family members. Due to the scarcity of resources to address this issue, a gradual solution is proposed based on the implementation of a natural barrier. As it grows, this barrier will help compact the soil, retain sediments, and restore areas of land displaced by water.

The intervention includes, after the coconut trees, the planting of species such as *vetiver*, *Terminalia catappa*, and, finally, *Hibiscus tiliaceus*. Additionally, to strengthen the estuaries and enhance protection, mangroves will be planted in suitable areas, greatly expanding the barrier.

1. **Technical Narrative**

Incorporated Technologies:

* Rainwater collection: Sloped and channeled roof with a storage capacity of 4,000 liters for consumption.
* Photovoltaic solar energy: JA Solar 600W monocrystalline panels, with an estimated production of 2.4 to 3.6 kWh/day, guaranteed for 25 years.
* Floating bamboo infrastructure: Mobile modules for connection between areas affected by low tide, reusable and sustainable. They facilitate transportation, preventing people from having to carry sacks and other items from distant areas to the beach.
* Biotechnological protection with vetiver: For soil stabilization, crop protection, and runoff control.
* Agricultural mounds inspired by the Zenú indigenous people: Safe elevation against floods, agricultural use, and protection of the KAVA module.

System Inputs:

* Solar light for the production of electricity.
* Rainwater for storage and use.
* Local agricultural waste (coconut shells) as raw material for construction blocks.

System Outputs:

* Electricity for lighting, community device charging, and basic module functions.
* Potable water for consumption.
* Food from crops on the steep slopes of the mountain and elevated mounds.
* Shared knowledge through workshops, gatherings, and community events.

Estimated Annual Production:

* Electricity: Between 876 and 1,314 kWh/year.
* Rainwater collected: Up to 46,000 liters per rainy season.
1. **Prototyping and Pilot Implementation Statement**

The prototyping and initial execution process will be carried out in phases, in line with the logistical constraints of the location and the community’s capabilities. It will begin with a single pilot module, constructed with logistical support from Lautoka or Nadi, transporting only the elements that cannot be locally manufactured (cement, solar panels, hardware, tanks).

Community participation will be crucial from day one. Through workshops, collective construction days, and knowledge transfer activities, the goal is to empower the residents so they can continue replicating and adapting the modules autonomously.

During the prototyping phase, community workshops will be held, focusing on:

* Training in construction with natural materials.
* Training in solar system maintenance and rainwater collection.
* Participatory design and prototyping of the new cultivation system.

This pilot phase will have an estimated duration of 4 to 6 months, during which each step of the process will be carefully documented through illustrated manuals, material sheets, audiovisual records, and community work notebooks. Once the pilot is validated, a potential scalability of the model to other communities in the archipelago is projected.

The design’s adaptability allows it to be replicated in similar contexts, adjusting details according to geographical, climatic, or cultural conditions.

The prototype will also serve as a connection point with other existing initiatives and networks, integrating appropriate technologies with traditional knowledge and fostering a focus on cultural appropriation and localized resilience.

1. **Operations and Maintenance Statement**

The operation and maintenance strategy of KAVA is designed to be horizontal, self-sustainable, and educational. From the beginning, a group of community guardians will be formed, who will receive continuous training in technical, agricultural, and social management aspects of the space. This network of guardians will rotate periodically to ensure equity and diverse participation, integrating women, youth, and older people from the community.

It is designed to integrate naturally into the daily life of Marou. The technologies used require low maintenance, and their components (wood, coconut blocks, simple connection systems) can be easily intervened with local tools.

The community will be responsible for tasks such as cleaning water filters, checking solar connections, repairing minor structures, and managing the use of the space. A rotating committee system will promote collective responsibility and appropriation of the space. Additionally, the installation will function as an educational space to share technical knowledge with the new generations.

The operational functions include monitoring the solar systems —based on JA Solar 600W Monocrystalline panels, with an estimated efficiency of between 2.4 and 3.6 kWh/day, and a 25-year warranty— and controlling the quality of the water collected on the module’s roof, which has a storage capacity of up to 24,000 liters during the rainy season.

The growth of vetiver and coastal protection planting against erosion, flooding, and cyclones should be monitored, ensuring that the planting follows the established design and does not move out of areas that could cause disturbances.

With this approach, we aim to create a social fabric and a sense of collective responsibility, transforming each inhabitant into a key actor in the operation and sustainability of the module. KAVA will become a dynamic community platform that adapts, transforms, and, most importantly, is collectively cared for.

1. **Environmental Impact Assessment**

KAVA represents a sensitive architectural intervention that prioritizes restoration and balance with coastal ecosystems. From its initial conceptual sketches, the project was conceived not as an infrastructure imposed on the environment, but as a strategy for ecological coexistence that supports, regenerates, and protects the natural systems of Marou.

One of the most urgent environmental threats in the region is coastal erosion, which endangers both housing and the symbolic and emotional value of spaces dedicated to the rest of ancestors. In the absence of resources for expensive infrastructure defense, a progressive solution based on living natural infrastructure is proposed. A system of plant barriers is planned, composed of species strategically selected for their ecological and symbiotic properties: vetiver as the first line of defense and soil anchor, Terminalia catappa to mitigate southeast winds and provide shade, Hibiscus tiliaceus as intermediate stabilizing vegetation, and finally, the restoration of mangroves to reinforce estuaries and areas most vulnerable to wave action. This multi-species sequence not only stops erosion but also creates habitats for birds, pollinating insects, crabs, and other local species.

Regarding water impact, KAVA not only avoids placing pressure on existing water sources but also proposes an autonomous and resilient alternative. The rainwater collection system, based on the sloping roofs directed toward a central point, collects 4,000 liters during the rainy season, stored in four 1,000-liter tanks. This system is designed to cover human consumption during dry periods, both for drinking and basic hygiene. Additionally, it is complemented by a functional and poetic element: the "palm" module, a vertical structure shaped like a leaf that channels rainwater from its "branches" into a collection container with a capacity of 1,000 liters per rain event. This device not only increases the availability of collected water but also functions as a night lantern, illuminating community pathways and promoting safety and well-being.

In terms of biodiversity impact, care has been taken to ensure that the construction of the modules does not involve deforestation or alteration of natural habitats. The raised platforms on pilings avoid compacting the soil or interrupting surface water flows. In construction, the use of recycled materials (such as coconut shells) and renewable resources (such as bamboo and wood from sustainable plantations) is prioritized, minimizing the project’s carbon footprint. The species used are sourced from certified suppliers or can be locally grown through a reforestation and community forestry program.

An additional feature that strengthens the sustainability of the project is the bamboo floating platform located in the low tide zone. This structure will not only have an aesthetic and cultural function but also serve several important functional roles. The floating platform will provide space to exhibit sculptures created by the inhabitants of Marou, integrating local art into the landscape and fostering community identity. Additionally, it can be connected with other platforms to form a floating bridge, facilitating the transportation of materials and people, especially in hard-to-access areas. This system of floating platforms, supported by cables anchored to the seabed, provides an innovative and flexible solution for transportation in Marou.

Minor potential impacts associated with the transportation phase (use of boats from Viti Levu) and the introduction of new technologies (such as solar panels and batteries) have been identified. To mitigate these impacts, the number of external elements has been limited to those strictly necessary, prioritizing resource efficiency and maximizing the use of local or low-impact materials.

Finally, the best mitigation strategy is the community's appropriation of the project. KAVA is not perceived as an alien or imposed object, but as a tool that evolves and is an expression of those who inhabit it. Through environmental education programs, technical training, and participatory monitoring, the community will be able to oversee the impact of the project and adapt it over time, promoting a replicable model of ecological and participatory architecture that transcends its material scale to become a catalyst for ecosocial regeneration.