

LAGI 2025 Fiji Narrative Template

1. Concept Narrative

The project is based on creating an energy landscape that can supply the energy needed by the local community, while also proposing a new space for identity and socialization.

Taking a basic solar grid as a starting point, the strategy aims to ensure that this infrastructure can coexist with other activities, such as agriculture and tourism. To this end, the grid is open to create a porous board. At the same time, the standard solar module is placed vertically as a 'solar tree', which liberates more space for the same amount of solar surface area. A 6x6 meter triangular grid is developed in the plot, allowing local activities to coexist in a new spatial pattern that can be applied to the site considering local crops like cassava or yam suitable to be installed with such a space.

Like a traditional Masi textile, the proposed pattern not only organizes the space, but also serves as a communication system thanks to its ability to enhance the ambience, both the open space and the built environment.

The selected implementation area follows certain criteria:

1. Occupy the lowest parts of the territory and the areas closest to the village in order to minimize the visual impact on the landscape and generate a comprehensible gradient between rural constructions and nature.
2. Avoid removing existing trees and maintain a certain distance around them and do not built in the dark areas behind vegetation.
3. Define organic limits and rounded associations of devices to apply a kind of natural approach to the implementation of the energy park.
4. Creating clearings in the grid for collecting rainwater and providing social spaces. These areas will work as a center in the regular network, working also as visual references in the isotropic space.
5. The energy network is complemented by a marine grid of floating platforms for storing energy according to the *Buoyant energy* system*. The spots will mark the entrance to the village in the sea and will act as a transport-exchanger.

* Buoyant energy is a system patented in the University of Innsbruck, Austria, for collecting energy using only potential energy. <http://www.buoyant-energy.com/english/home.html>

2. Technical Narrative

The prototypes fall into two main categories: 'Solar Trees' and 'Rainwater Islands'. The former are responsible for energy production, while the latter collect rainwater. Both are small, independent structures that are easy to replace and repair.

Both have a bamboo and wooden structure. Four 10 cm diameter bamboo tubes are the main structural elements. These tubes are fixed to each other using metal rings, which also hold the wooden boards that connect them around the bamboo tubes. In the case of the trees, the bamboo pillars end in four open legs that are fixed to the ground with a local sand and cement foundation. The legs' open design allows vegetation to continue growing around them, minimising their impact.

The solar prototype is triangular in shape, measuring 1 meter on each side, and incorporates transparent solar panels containing 50% conventional monocrystalline silicon PV cells over thin glass. The colour of the cells varies across a green gradient, transforming the standard appearance of a solar panel. The loss of efficiency resulting from the colour and the reduction of the energy density is balanced by increasing the quantity of panels and including other activities. The idea is to focus the project's objectives on a set of goals instead of prioritizing energy production. In any case, different types of solar modules could be integrated. Each "tree" is considered able to provide 4 m² of solar surface area, and it is estimated that 100 devices are needed to meet the required demand. The atomization of the low-density energy allows a new dispersed landscape to be created instead of hard infrastructure.

The 'rainwater' islands are based on the same proportions that the solar module but are circular with a diameter of 1 meter. A rain collector is placed on top and a 5,000-litre reservoir is partially buried in the ground. This reservoir acts as a foundation and allows a wooden platform to emerge as a social space for the local community. The verticality of the elements is offset by the modules being attached with wooden connections. Similarly, the wooden platform supports the entire group of elements and provides stability when the deposits are empty. The total capacity could reach 450,000 liters if all 90 deposits under the three islands in the proposed design were full.

3. Prototyping and Pilot Implementation Statement

The entire implementation process will be reviewed with the local community. Different workshops will be held to redefine the prototype, and to develop a comprehensive understanding of the key features of the existing landscapes and the parameters required to create the final grid. At the same time, new local craftsmanship techniques can be considered. Prototyping allows close monitoring

of the project's evolution and the opportunity to test and improve the devices. Testing it in different locations can encourage innovations that were not anticipated in relation to the response to the specific context. At the same time, as other activities surrounding the energy devices can be proposed the grid can be opened or stretched to be adjusted to the them.

4. Operations and Maintenance Statement

The project combines low-tech and high-tech elements. Using bamboo and local wood for the structure means that the local community can repair the main elements of the installation themselves according to the original designs. The systems also allow different sizes of elements to be experimented with, primarily in terms of height and the use of alternative panel types. The spatial system will work perfectly. Involving the local community in the design process will encourage them to take care of the proposed energy environment. Offering new social and economic activities can also encourage a sense of dependency that may lead to greater attention being given to maintaining the system.

5. Environmental Impact Assessment

The porous grid enables the continuity of ecosystems and existing water cycles. The same that the small built occupancy avoiding large foundations and structures. It is proposed an ephemeral occupancy derived from the multifunctionality as a way to intensify the use of the ground. On the contrary, of conventional energy infrastructures were monofunctionality is a standard and proposing, in this case, take advantage intensely of the existing spatial resources.

Aerial impact with birds can be tested and monitored in ordered to find an adequate height.

The solar cell lifecycle will be no longer than 25 years. After that time, the spatial pattern can be reconsidered to be more integrated to natural ecosystem, which gives flexibility to the system in comparison to other kind of technologies. In any case, the vertical structures and the social platforms can be maintained because they are a public facility working independently, whose success is related to the social dynamics. At the same time, the proposal mainly uses local materials, bamboo, wood and local cement, which minimises CO₂ emissions in terms of transport. Caring the origin of each element links the project to the territory and to the people who inhabits it. The low ground occupancy frees it of large foundations or anchorages and let