**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):***

* **Concept Narrative**

The FOP is a fully ecologically add locally sourced and constructed design that uses no harmful or potentially dangerous materials and is weather and catastrophy proof. It is named flower of plenty as its design resembles the hibiscus flower, the flower that feeds and empowers the animals and humans on the Fiji islands. The FOP had a round outlook surrounded with rows of folding solar panels on rollout ropes, hanging above cascades of petal shaped tubs. The tubs can be filled with soil or water depending on needs, but a combination could make aquaculturing an easy reality. Depending on plant needs the solar panels are grouped in alternated groups to control shade time schedule of plants and or fish.

In the center of the flower structure the is a five sided tower which contains three containers inside. In the bottom, below ground, a big water storage tank that contains rain and sewage water that is not filtered yet. Using septic tank biocultures it will be degraded slowly. In the middle container, above ground level there is a thick walled sand container with a metal pipe heating construction to heat the the sand to high temperature around 600 Celsius. The solar panels provide it with power, and on the containers sides are 20x 4kw electro generators that run using the heat and provide 80kw max power.

The top container is a big drinking water tank that provides the village with pressurized drinking water.

The material used in the whole structure is ecologically sourced mix of concrete with locally sourced plant material to increase isolation efficiency. As part of the project a concrete 3d printer is transported to the site to in-situ print the walls and parts, it uses electricity provided by the solar panels.

As means of water capture the structure is complemented with two additional machines that convert the dirty water in the bottom tank to drinking water in the top tank. The first is a sludge decanting machine to filter the water from contaminations and solid residue, the second is a thermally powered desalination machine to remove any salt contamination. The desalination makes it possible to use seawater when water runs out, although it is not added to the sewage and rain water tank as the sludge would become salty.

The solid residue, or sludge, gets to be converted to biochar by using the heat from the sand battery. This can be used as fertilizer complement to aid in water storage improvement of the soil.

* **Technical Narrative**

The FOP is essentially a solar power-driven thermal power and water generator. It uses the power from the solar panels directly to power a long chain of diodes that very efficiently generate a huge amount of heat. This heat heats a big vessel of sand to a high temperature, around 600 Celsius. This is a so called sand battery, a heat storage battery that stores enormous amounts of energy by using the high heat capacity of sand, or silica.

The easy and almost loss-free step is heating the sand battery, which is realized with a diode string, which is cheap and very efficient. The conversion to electricity is more complicated and will require a special compressed gas-filled round device that rotates by heating on one side and cooling the other side; temperature differential.

The water from the bottom tank is decanted from solids using a vertical decanting machine. Then the water is treated with ionized gas bubbles in the plasma machine. The sludge is converted to biochar in the heating device.

* How much energy and water does your installation generate each year?

The folding solar panels used are placed in double rows, with 30 pieces on each single row, rolling out into a 15 meter lane each. There are 5 of those double rows of solar panels, and with the 60 per row, there are 300 panels in total. To give a total of ~80±5 kW max output we use 300W foldable panels.

* What are the system inputs? (for example, sunlight or rainwater)

 Sunlight and rainwater.

* What are the system outputs? (for example, electricity or clean drinking water)

 Eelctricity and clean drinking water.

* **Prototyping and Pilot Implementation Statement**

The prototype is built with ecological concrete blend that will be printed out on-site in parts that can be carried and installed part by part with manual means carried out by a small team of constructors. While. Printing walls and roof parts the stuff ground level will be dug out in 3 meter deep hole. Around the hole other holes for the fish ponds and farming lots still be dug out up to 1.5 meter depth.

* 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?

 By hiring local workers to help construct together with our 2

 employees.

* **Operations and Maintenance Statement**

 Spare parts will be supplied as well as support in manuals and help.

* **Environmental Impact Assessment**

The FOP has no negative impact on the environment and uses only environmentally friendly materials that can easily be sourced ecologically as its base. It uses thermal gradient, or temperature difference, between the super hot sand in the battery core and cooling water, from the top water container, to power it's utility tools. The cooling water flows down through 5 pipes on the tower sides, and is transformed into steam, the steam can be reprecipitated into the top container, but it is advised to use the fan blowers and blow the steam up into the sky. This way the local air is humidified and cooled, making it more comfortable and potentially temperating the local climate and lowering the chance of heat excesses.