▎Introduction

The project for the canopies, inspired by the natural forms of shells and flowers, is designed to serve a tourist function and promote sustainable development in the village of Maru in Fiji. These canopies integrate solar panels for electricity generation and rainwater collection and filtration systems, contributing to the improvement of the local residents' quality of life.

▎Materials and Concept

For the construction of the canopies, we have chosen eco-friendly materials such as aluminum and recycled plastic. These materials not only minimize the carbon footprint but also blend harmoniously with the natural landscape. The shell concept symbolizes protection and coziness, while the flower is associated with life energy and the beauty of nature. These shapes provide optimal shade and protection from rain, creating comfortable conditions for relaxation.

▎Technologies

Our design includes:

1. Solar Panels: They provide electricity for the canopies and nearby homes. The installation is expected to generate about 50 MWh of electricity per year.

2. Rainwater Collection Systems: These systems can collect up to 10,000 liters of rainwater annually, significantly improving access to fresh water for local residents.

3. Water Filtration: Built-in filters ensure the cleanliness of the collected water.

▎System Inputs and Outputs

The inputs of the system are solar radiation and rainwater. The outputs include:

• A 30% increase in available electricity for local residents.

• Improved drinking water quality, contributing to a reduction in water-related diseases.

▎Prototyping Process and Pilot Implementation

Our team will use an iterative prototyping method, starting with small-scale models that will be tested for functionality and sustainability. The pilot implementation will be carried out in collaboration with the local community, involving them in the design process and feedback, ensuring alignment with local needs and traditions.

▎Operation and Maintenance

The canopies will operate with minimal costs due to the use of sustainable materials. The local community will be trained in system maintenance, creating jobs and enhancing the quality of life. Regular training sessions will provide skills for maintaining solar panels and filtration systems.

▎Impact on Ecosystems

The installation of canopies can have a positive impact on the ecosystem by reducing the strain on natural resources. However, it is essential to consider potential negative consequences, such as changes to the landscape. To mitigate these issues, we will conduct ecosystem monitoring and maintain a balance between development and nature conservation.

▎Conclusion

The Shell and Flower canopy project represents an innovative solution for sustainable development in the village of Maru in Fiji. It combines modern technology with respect for local traditions and ecology, creating mutual benefits for the community and nature.