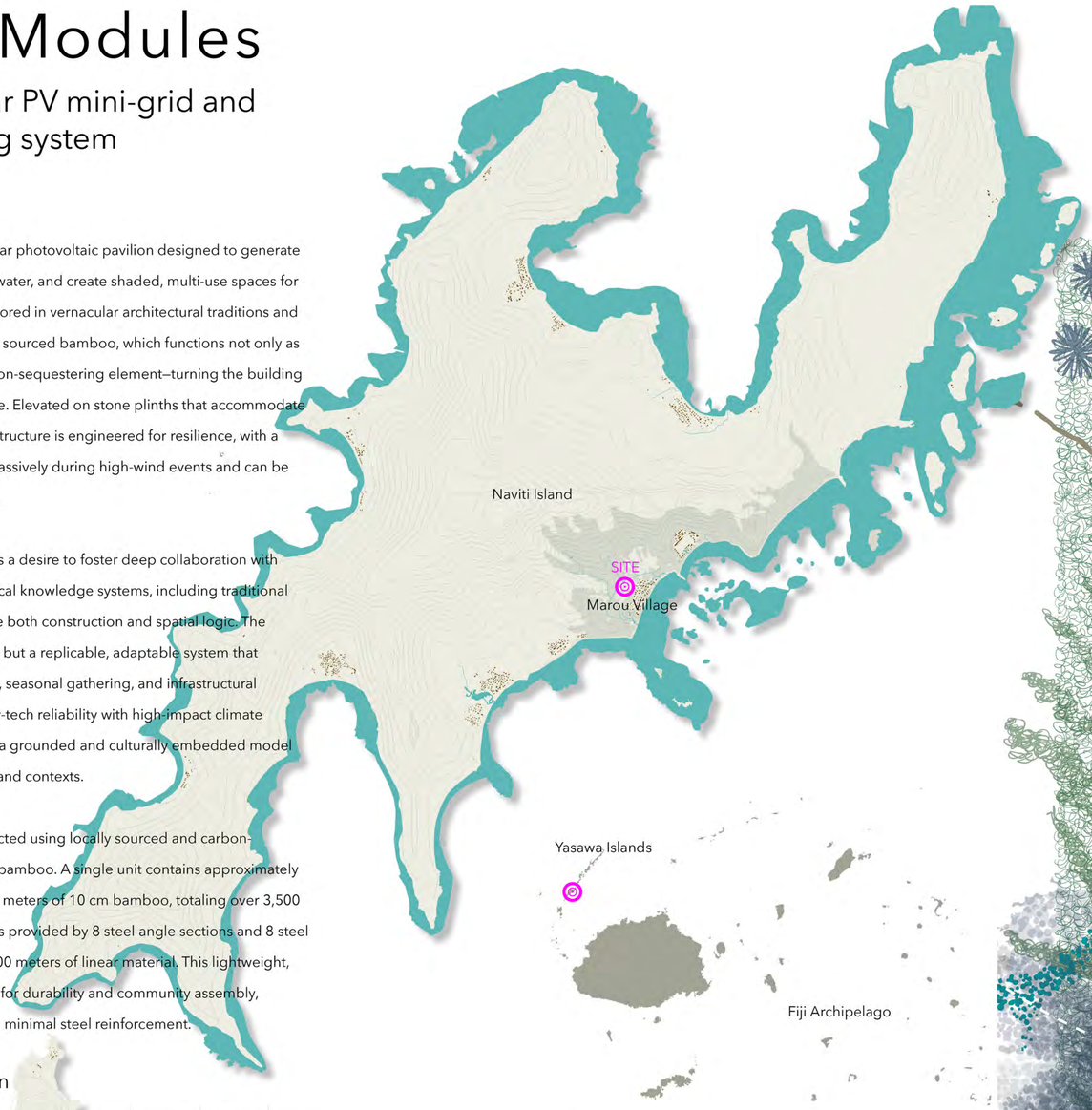
Marou Modules

A Light, Modular PV mini-grid and water harvesting system

This proposal introduces a modular photovoltaic pavilion designed to generate renewable energy, harvest clean water, and create shaded, multi-use spaces for Marou Village. The system is anchored in vernacular architectural traditions and constructed primarily from locally sourced bamboo, which functions not only as a structural material but as a carbon-sequestering element–turning the building itself into a living climate response. Elevated on stone plinths that accommodate water bladders and cisterns, the structure is engineered for resilience, with a foldable PV system that retracts passively during high-wind events and can be reset manually by the community.

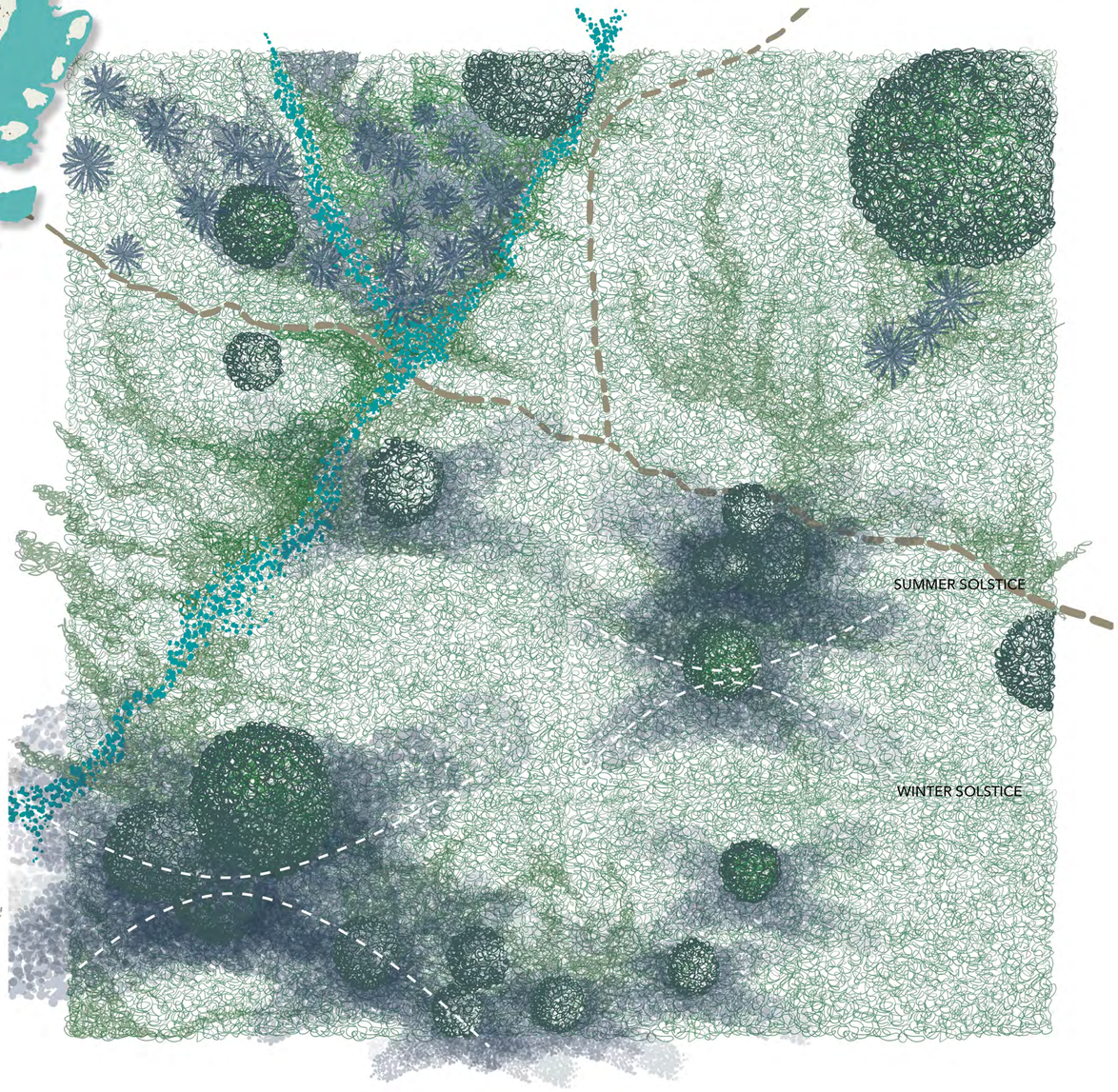
Every aspect of the design reflects a desire to foster deep collaboration with Marou Village and builds upon local knowledge systems, including traditional weaving techniques that influence both construction and spatial logic. The pavilion is not a singular structure but a replicable, adaptable system that supports daily agricultural activity, seasonal gathering, and infrastructural independence. By combining low-tech reliability with high-impact climate adaptation, the project proposes a grounded and culturally embedded model for energy transition in remote island contexts.

Each structural module is constructed using locally sourced and carbon-sequestering materials, primarily bamboo. A single unit contains approximately 55 meters of 6 cm bamboo and 3 meters of 10 cm bamboo, totaling over 3,500 meters. Structural reinforcement is provided by 8 steel angle sections and 8 steel rods, each contributing around 500 meters of linear material. This lightweight, low-carbon system is engineered for durability and community assembly, combining traditional joinery with minimal steel reinforcement.

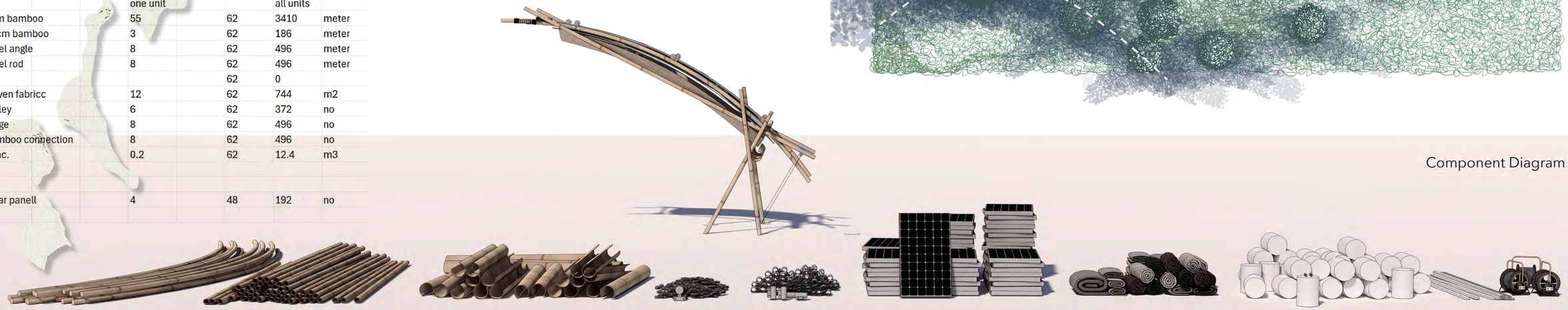


Site Shade Study

Shadows of trees Inform Site Strategy



Component Calculation

	one unit		all units	
6cm bamboo	55	62	3410	meter
10cm bamboo	3	62	186	meter
steel angle	8	62	496	meter
steel rod	8	62	496	meter
		62	0	
woven fabricc	12	62	744	m2
pulley	6	62	372	no
hinge	8	62	496	no
bamboo connection	8	62	496	no
conc.	0.2	62	12.4	m3
solar panell	4	48	192	no

Component Diagram