**A PLACE BECOMING**

**1. Concept Narrative**

A Place Becoming is a modular, multifunctional structure designed to serve Marou Village in Fiji as both a resilient infrastructure and a community anchor. Inspired by the principles of metabolism—a design philosophy emphasizing organic growth and adaptability—the project is envisioned as a living system, expanding and transforming to meet the evolving needs of the village. The structure blends architecture, energy generation, water harvesting, and social programming within a cohesive, phased framework.

The first phase centers around a solar-canopied pavilion, acting as a shaded public gathering space that functions both practically and symbolically as the village’s heart. Designed to withstand tropical storms and cyclones, the canopy provides protection from the elements while facilitating airflow and visibility. The open-air design makes it ideal for hosting traditional ceremonies such as Kava meetings, communal meals, market exchanges, and educational gatherings, reinforcing the structure’s role as a vital community nucleus.

Materials are carefully selected for durability and local relevance. Galvanized steel provides a strong, low-maintenance structural frame, while sustainably sourced timber from local suppliers adds warmth and tactile familiarity. A defining feature of the project is its use of flexible Copper Indium Gallium Selenide (CIGS) solar membranes. These are applied to curved translucent glass panels that form canopy, enabling both energy generation and soft natural lighting. The solar glass not only enhances visual quality but allows the roof to bend and follows the organic wave-like form that defines the structure.

Beyond aesthetics and engineering, A Place Becoming is about cultural integration and environmental stewardship. The wave form encircles different programmatic zones, gently defining educational areas, water collection spaces, and utility modules. This flowing geometry symbolizes continuity, growth, and connection—values intrinsic to both Fijian culture and the project's ethos. At the same time, the modular design enables functional expansion over time, aligning with the community’s changing needs and available resources.

Subsequent phases include an education space connected to Yasawa School, rainwater harvesting tanks to supplement freshwater availability during dry periods, and agricultural modules such as insulated farming pods and food storage areas. These components are designed to plug into the core structure, enhancing utility without disrupting the integrity of the original design. Each expansion responds to specific community feedback and is built through participatory design processes, ensuring local ownership and relevance.

Co-benefits of the project are numerous. Besides providing clean energy and water, the structure promotes climate resilience, reduces reliance on imported goods, and strengthens social infrastructure. By embedding utility within a social and cultural context, A Place Becoming encourages stewardship, knowledge exchange, and long-term sustainability. The presence of the structure also opens new opportunities for education around renewable technologies and sustainable practices, potentially inspiring similar projects in neighboring communities.

In every aspect—from form to function, materials to methods—A Place Becoming reflects a commitment to regenerative design. It is not a static object, but a process of becoming, a structure that learns and grows alongside the community it serves. It is a place shaped by people, culture, and environment, continually adapting to the rhythms of island life.

**2. Technical Narrative**

A Place Becoming integrates simple, yet effective renewable and sustainable technologies tailored to the tropical climate and infrastructure needs of Marou Village. The design prioritizes clean energy generation, water collection, food production, and flexibility while using materials and systems that are durable, low-maintenance, and suited for off-grid operation.

The core technology featured in the project is a flexible photovoltaic canopy using CIGS (Copper Indium Gallium Selenide) solar membranes. These membranes are embedded into semi-transparent glass panels that serve as the roof of the structure. CIGS was chosen for its high energy yield in diffuse light, flexibility for installation over curved surfaces, and minimal material thickness. This solution makes it ideal for the wavy, modular form of the project, seamlessly integrating aesthetics and function.

The initial phase of the structure generates approximately 75 kW of solar energy annually sufficient to meet lighting, fan, water pump, and small appliance needs for community gatherings and school activities. As additional modules are added, such as educational spaces and farming pods, the solar canopy can be extended to scale with increased demand. Energy is stored using lithium battery banks located in protected enclosures for nighttime or emergency use.

Rainwater harvesting is integrated through a passive collection system. The curving roof channels rainwater into gutters and then into sealed storage tanks. The system is designed to collect up to 200,000 liters annually, depending on rainfall. Water is filtered and used for handwashing stations, irrigation of crops, and emergency drinking supplies during droughts.

Later phases introduce specialized modules: a cold storage unit powered by solar for fish and food preservation, hydroponic pods with insulated walls for year-round vegetable growth, and educational kiosks equipped with screens and charging stations. Each module plugs into the centralized energy and water spine. Because they are modular, these systems can be expanded or relocated as the community needs change.

The project minimizes external input and prioritizes circular systems. System inputs include sunlight, rainwater, and basic maintenance labor. Outputs include clean electricity, potable or non-potable water, educational and community space, and agricultural yield. Minimal waste is produced, and all materials are recyclable or locally repairable.

Finally, the system includes passive cooling and natural ventilation, essential in the hot, humid climate of Fiji. Elevated floors reduce heat gain, and roof overhangs minimize solar radiation. Open-air walls allow wind to flow through the spaces, reducing the need for mechanical cooling.

This adaptable technical framework ensures that A Place Becoming not only meets today’s needs but can flexibly grow to serve future generations. The technology is approachable, modular, and designed for community ownership.

**3. Prototyping and Pilot Implementation**

The development of A Place Becoming is rooted in community participation and practical, scalable prototyping. Our team will approach the implementation in two distinct but connected phases: prototype testing and full-scale pilot deployment in Marou Village.

The prototyping phase will begin with a small-scale mockup of a central canopy segment, including integrated CIGS solar membrane panels and structural framing. This test structure will be fabricated using the same materials intended for final deployment and will undergo environmental exposure testing, structural loading analysis, and community review. A key aim is to assess how the structure performs under real-world conditions—sun exposure, wind load, rainfall, and salt air corrosion—before full implementation.

Local builders and craftspeople will be actively involved from the start. Through workshops and skill-sharing sessions, we will train them on modular construction techniques, solar panel integration, and maintenance of water collection systems. This transfer of knowledge ensures that the village retains control and capacity over the infrastructure, reducing long-term dependence on outside help.

Once tested and refined, pilot implementation will be carried out in phases. Phase 1 will involve installing the central pavilion with solar power and water collection capabilities. Phase 2 will introduce an education module adjacent to Yasawa School. Phase 3 adds rainwater storage tanks and community-use water stations. Phase 4 includes expansion into farming pods and cold storage modules.

Throughout the process, local voices will shape priorities. We will hold participatory design workshops where villagers, students, and elders contribute ideas and review plans. A local advisory group will guide decisions on materials, aesthetics, and usage patterns. Feedback loops will be embedded at every stage, allowing the project to evolve in response to real needs, not just assumptions.

We will also create a construction and assembly manual in English and Fijian to guide replication or repair, empowering other communities to adapt the system. During the pilot, students from Yasawa School will be invited to participate in hands-on learning experiences around solar power, farming, and architecture. The goal is not just to build for the community but to build with them, fostering deep engagement and shared ownership.

Documentation of the pilot process—through video, photography, and reporting—will be shared with stakeholders and regional governments as a replicable model for other islands facing climate resilience challenges. Our vision is to create a living, open-source project that doesn’t end with a single installation but sparks a regional conversation on adaptive, regenerative infrastructure.

**4. Operations and Maintenance**

The long-term success of A Place Becoming relies not just on the elegance of its design or the robustness of its technology, but on how it is cared for, used, and nurtured by the local community. From the earliest design stages, the project has prioritized ease of maintenance, local ownership, and community-led operations.

The structural system is modular and low-maintenance, using lightweight galvanized steel and weather-resistant coatings that require minimal upkeep. The CIGS solar membranes integrated into the glass roof are designed for high durability and self-cleaning in the tropical rain, with performance warranties extending over two decades. Their flexible, non-fragile composition also makes them easier to handle and replace compared to conventional solar panels.

To ensure smooth operations, we propose forming a community-based maintenance cooperative, comprised of volunteers and part-time staff trained during the pilot implementation. These individuals would oversee basic upkeep of the structure, including cleaning solar glass, checking battery banks, clearing gutters, and monitoring water storage levels. Training will be reinforced with a bilingual (English/Fijian) operations manual and visual maintenance checklist posted at the hub.

The solar system is modular and includes a charge controller and battery storage system with plug-and-play interfaces, allowing for straightforward diagnostics and part replacement. Local technicians will be trained to handle basic electrical checks, while more technical issues can be remotely assessed via an open-source monitoring system with SMS-based alerts.

Water collection tanks are gravity-fed and include simple first-flush systems and leaf screens, minimizing clogging and contamination. Scheduled tank cleaning every six months will be coordinated by the maintenance group. Any farming modules introduced in later phases will include modular irrigation systems and insulated walls to reduce water evaporation and pest intrusion, requiring routine but low-skill care.

Community engagement is baked into the usage cycle. Students at Yasawa School can be involved in weekly checkups as part of environmental science curricula. Elders may oversee ceremonial use of the pavilion, ensuring its cultural integration remains strong. Seasonal community clean-up days will also offer opportunities to reinforce collective stewardship.

An important aspect of operations is flexibility. As the village grows or changes, so can the structure. New modules can be added with minimal disruption, and old ones can be relocated, reused, or repurposed. This inherent adaptability reduces obsolescence and allows the village to grow its infrastructure as resources become available.

To ensure sustainability over the long term, we recommend that the village set aside a small portion of revenue generated from tourism, events, or government grants into a maintenance fund. This fund would support replacement parts, training, and ongoing repairs, keeping the infrastructure functioning well into the future.

By combining low-tech accessibility with smart, locally rooted operations, A Place Becoming is designed to live and thrive through community care. It is not just a structure, but a framework for resilience—one that can weather storms, shift with needs, and remain in harmony with the village that gives it life.

**5. Environmental Assessment**

A Place Becoming is designed as a low-impact, high-benefit intervention that harmonizes with the natural environment of Marou Village rather than imposing upon it. From the beginning, our approach has been to embed sustainability and ecological stewardship into the physical form, materials, and function of the project.

The location of the installation has been carefully selected to avoid disrupting sensitive coastal or forest ecosystems. It is sited on already disturbed or semi-developed land near existing community spaces, reducing the need for vegetation clearing or earthworks. The modular system requires minimal foundation work, using elevated and lightweight footings to avoid soil compaction and preserve stormwater flow patterns.

The structure’s use of CIGS solar membranes significantly reduces the embodied energy compared to traditional rigid silicon panels. These membranes are cadmium-free and mounted on glass rather than plastic, enhancing both recyclability and environmental safety. Unlike diesel generators often used in remote villages, this clean energy source eliminates harmful emissions and noise pollution while reducing dependency on imported fuels.

Rainwater collection directly reduces pressure on local freshwater aquifers and minimizes runoff, which can carry sediment into coral reefs. First-flush diverters and filters help ensure that only clean water is stored and used. As part of the education programming in Phase 2, community members and students will be trained in water conservation practices and safe rainwater usage.

Each farming module, when implemented, will use organic growing methods with composting, avoiding synthetic fertilizers and pesticides that could leach into the ecosystem. The modular insulated pods reduce the need for extensive irrigation, and runoff can be redirected into bioswales or small gardens. If outdoor farmland is developed in Phase 4, it will follow agroecological principles such as crop rotation, native planting, and integrated pest management.

Construction materials have been selected for low environmental impact. Steel is recyclable and long-lasting. Wood used for benches or garden planters will be locally sourced and treated with natural oils rather than harsh chemicals. All packaging and construction waste will be recycled or repurposed where possible.

Potential negative environmental effects—such as temporary noise during construction or local wildlife disturbance—will be mitigated through careful scheduling, community engagement, and low-impact construction methods. For instance, noisy work will be limited to daytime hours and planned outside sensitive seasons for bird nesting or community events.

Long-term, the project contributes positively to the ecological footprint of Marou Village. By promoting localized food production, reducing reliance on plastic water bottles, and offering solar-power lighting and cooling, it addresses core sustainability challenges with gentle, regenerative solutions.

Ultimately, A Place Becoming models a future in which development and nature do not stand in opposition but evolve together. It is a place where architecture supports ecosystems, infrastructure invites stewardship, and resilience grows not from extraction, but from harmony. This philosophy—of growth through relationships is at the heart of the environmental vision of the project.