NET.

**1. Concept Narrative**

This proposal envisions a solar park that integrates Building-Integrated Photovoltaic (BIPV) technology into a landscape-responsive and culturally rooted design. Inspired by the traditional Fijian fishing net—a symbol of ecological harmony, community, and adaptability—the structure becomes more than just infrastructure. It is a space of exchange, resilience, and renewal.

The project’s design language evokes the lightness and flexibility of fishing nets, creating a non-invasive intervention that coexists with the environment. It merges renewable energy generation with public space utility, producing a living canopy that provides power, shade, water filtration, and a gathering framework for communal activities. The net-like layout adapts to varied terrain and promotes minimal site disturbance. The modular design, based on a 5m × 5m grid, enables flexible site placement, scalability, and phased implementation across different contexts.

Two key modules form the building blocks: one for solar energy and one for water management. The solar module features lightweight, semi-transparent Sphelar BIPV panels that provide dappled shading. The water module funnels rainwater into biofiltration cells that support planted areas and recharge local hydrology. These modules serve not only technical functions but also elevate the visitor experience by embedding ecological cycles into daily life.

Shading is layered. While the BIPV panels block around 20% of solar radiation, secondary woven canvas panels provide greater thermal comfort in spaces for markets, gatherings, and workshops. In this way, the park becomes a social platform, nurturing cultural exchange and daily use while supporting broader climate adaptation goals.

Bamboo columns, mounted on ground screws, anchor the system. Bamboo is lightweight, locally available, rapidly renewable, and culturally familiar. This use of vernacular materials reinforces the project’s connection to regional identity and traditions. The installation is designed for reversibility and minimal ecological impact, allowing for easy disassembly or relocation if needed.

Overall, the park becomes a model of adaptive, low-impact design rooted in place and shaped by both environmental cycles and community needs. Its poetic gestures and technical integrations work together to offer a multifunctional public space that is simultaneously infrastructural and symbolic.

**2. Technical Narrative**

The installation’s core technologies are centered around two interconnected systems: solar energy generation using Sphelar BIPV panels and decentralized water management via passive biofiltration cells.

The solar module utilizes Sphelar technology, which employs spherical photovoltaic cells embedded in transparent sheets. Unlike traditional flat panels, these cells collect light from multiple angles, making them effective under Fiji’s diffuse and often low-angle tropical light. The system generates approximately 154 kW of electricity per year, sufficient to support lighting, device charging, and other localized energy needs. This reduces dependence on centralized energy infrastructure and increases resilience.

Each solar panel module is mounted on a modular bamboo structure using ground screws, eliminating the need for deep foundations. These structural nodes are designed for ease of assembly and reversibility. Materials used—bamboo and canvas—are locally available, sustainable, and easily replaceable.

The water module captures rainfall via small collection funnels integrated into the grid cells. Water is directed through biological filtration media into planted cells that serve both irrigation and groundwater recharge functions. This decentralized approach supports low-tech, community-managed water practices while improving local ecology.

System inputs include solar radiation and rainfall. Outputs are electrical energy, clean filtered water for plants, and shaded public space. Secondary benefits include thermal regulation, biodiversity support, and increased community resilience. The flexible framework is designed to be site-sensitive, scalable, and contextually adaptable.

**3. Prototyping and Pilot Implementation Statement**

The prototyping process will begin with small-scale structural and functional modules. These prototypes will test key elements such as the structural bamboo grid, mounting of BIPV panels, water filtration efficiency, and overall assembly logistics. Early testing phases will take place in controlled environments, with progressive deployment in target outdoor locations to evaluate weather performance, user interaction, and maintenance needs.

The pilot implementation will be driven by collaboration with local craftspeople, environmental experts, and community members. The bamboo construction methods will draw upon regional vernacular knowledge, fostering mutual learning and shared ownership. Community engagement workshops will shape site selection, module customization, and training in maintenance practices.

Pilot deployment will focus on a medium-scale installation on accessible land identified in partnership with local leaders. The modular nature of the system allows for incremental expansion based on community feedback, resource availability, and observed use patterns.

Incorporating local labor and knowledge ensures long-term buy-in and capacity-building. As part of the pilot, training materials will be developed to support community-led replication, maintenance, and adaptation. The goal is to enable local stakeholders to not only benefit from the installation but also to lead future phases of its development and evolution.

**4. Operations and Maintenance Statement**

The solar-net structure is designed for low-maintenance, community-led operation. Its modular format and lightweight, accessible materials simplify both routine care and occasional replacement. Bamboo posts can be swapped with locally sourced replacements, and Sphelar panels, though robust, can be unplugged and repositioned without specialized tools.

A core principle is resilience through reversibility: the entire system can be dismantled, transported, or adjusted without heavy equipment or skilled labor. This ensures operational continuity even in the face of climate events like cyclones. In anticipation of such events, the structure can be lowered or partially disassembled for protection.

Local stewards—trained during the pilot phase—will be responsible for routine inspections, minor repairs, and seasonal adjustments. Maintenance manuals will be visual, low-literacy-friendly, and available in local languages. Community members will be encouraged to contribute through scheduled maintenance days, reinforcing collective ownership.

The rainwater modules use passive filtration, reducing the need for active cleaning. However, biofiltration cells will be monitored for plant health and sediment buildup. Guidelines will support simple practices such as composting or replanting.

Because the project integrates multiple functions—shade, water, energy, gathering—it is expected to remain in frequent use, creating natural accountability for upkeep. In this way, the solar-net structure supports a culture of care, rooted in both necessity and pride of place.

**5. Environmental Impact Assessment**

The installation’s minimal footprint, reversibility, and reliance on natural, renewable materials position it as a low-impact ecological intervention. Bamboo construction, ground screws in place of concrete footings, and decentralized energy and water systems all reduce environmental disturbance.

Habitat disruption is limited by avoiding large-scale grading or permanent foundations. The shading created by the solar panels is partial and dappled, allowing light-sensitive vegetation to persist beneath. Rainwater harvesting and infiltration promote localized groundwater recharge and reduce erosion risks.

However, some potential ecological impacts remain. The introduction of new materials—Sphelar panels and synthetic canvas—requires responsible sourcing and end-of-life management. The pilot phase will assess panel recyclability and seek alternatives for non-biodegradable components. Shade patterns may alter local plant species composition, though these effects are likely to be minimal due to the light permeability of the system.

To further minimize impacts, ecological monitoring will accompany the pilot deployment. This will include assessments of soil health, plant vitality, and potential disturbances to local wildlife. Community members will be trained to observe and report on these indicators.

Ultimately, the installation offers multiple ecological co-benefits: carbon-free energy, improved hydrology, soil stabilization, and new habitat for native plant species. These benefits are achieved without permanent transformation of the site, aligning with the project’s guiding ethic of cohabitation with nature.