

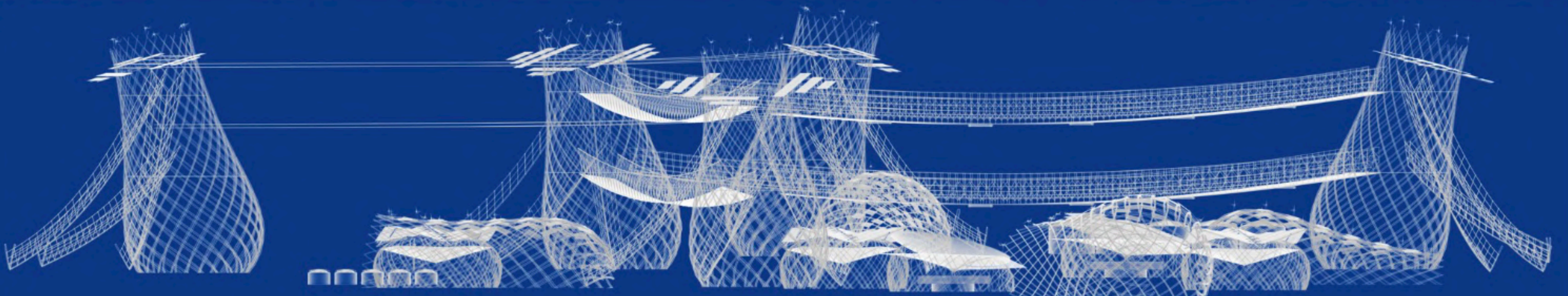


Eco - Woven

Marou Sanctuary

Naviti Island

LAGI 2025 FIJI





Eco woven sustainable bamboo structures
locally sourced and local construction.



Local materials - local skill sets - local
craft - local ownership - local future.







"Local Resource-Based Construction" or "Territorial Construction" refer to systems that use local materials and labour. These approaches highlight the importance of nearby resources and workforce, fostering sustainability and community engagement.

Visitor and Community Experience: Visitors to the Eco - Woven Marou Meeting Place Sanctuary will first glimpse it from the sea, where it merges harmoniously with the idyllic island. It mirrors not only the land's contours but also the soul of the cultural tapestry - blending memories, future dreams, and spiritual essence. The Sanctuary is crafted with materials and designs that resonate with the heartbeats of the Village of Marou, embracing their hopes for a steady tomorrow.

Both local and global travellers, along with inquisitive students, will find unique wisdom and treasures here, basking in regional culture and witnessing the villagers' tender stewardship of their land, sea, and daily life, all in the under the omnipotent watch of Vatu Rua.





Eco - Woven Marou Sanctuary

Collect - Harvest - Farm - Convert - Store - Use

Input:	sun (PV)	rainwater (roof)	wind (turbines)	air (WfA)	seawater (desal)	solar bio-wast	algae farming	solar thermal
Output:								
Electrical Energy (yearly)	89.9 MWh		179.4 MWh			R&D		R&D
Potable Water (yearly)		0.99 ML		0.91 ML <188.3 MWh>	R&D		R&D	R&D
Methane Gas						R&D		
Storage Water		0.5 ML (polytanks)		visitor use				
Storage Electricity	Lead/Acid Battery Banks		Lead/Acid Battery Banks					Molten Salt (R&D)
Estimated Total Energy Farmed Throughout the Marou Aqua Eco - Meeting Place Sanctuary				509.4 MWh (per Annum)				
Estimated Total Water Harvested Throughout the Marou Aqua Eco - Meeting Place Sanctuary				1.91 ML (per Annum)				

Energy farming calculations for both photovoltaic (PV) systems and wind turbines are estimates derived from our comprehensive understanding of the relevant parameters, including the equipment used and the environmental conditions specific to the location.

PV Solar Energy Farming Parameters	Quantity/Formula Utilised
Area of 1 x Standard Silicon Cell PV Panel	1.8m ²
Output 1 x Standard PV Panel	0.3 kWh
Peak Sun Hours	5.5hr/day
Performance Coefficient	0.8
Total Array Output Per Day	PV Area/1.8 x 0.4 x 5.5 = Per Day kWh
Total Array Output Per Annum	Per Day kWh x 0.8 x 365 = Per Annum kWh

PV Cost per Watt	Quantity/Formula Utilised
Cost per 0.3kW PV Panel (ex US factory, PC sum)	US\$125/panel
Cost per Watt (excluding logistics and installation)	US\$0.416/watt





Pilot Implementation: implementation Process:

Effective cost control is vital for the success of the Aqua Eco Gathering Place Pilot. One proven strategy is using local materials and labour, also known as Territorial Construction or Local Resource-Based Construction. This approach aims to minimise logistics costs. By applying ethno-design principles, we can simplify techniques, reduce imports, and allocate more funds towards purchase and Installation of the technical equipment and manufactured products.

Once cost control measures are in place, effective communication with the local construction team is key. We will use standard, basic tools such as drawings, 3D visualisations, and animations as our foundation. More pro-active tool might include:

Pre-start Workshops:

Ensure everyone fully understands the design and construction process.

Provide opportunities to modify designs if necessary.

Consider alternative materials that might be more suitable.

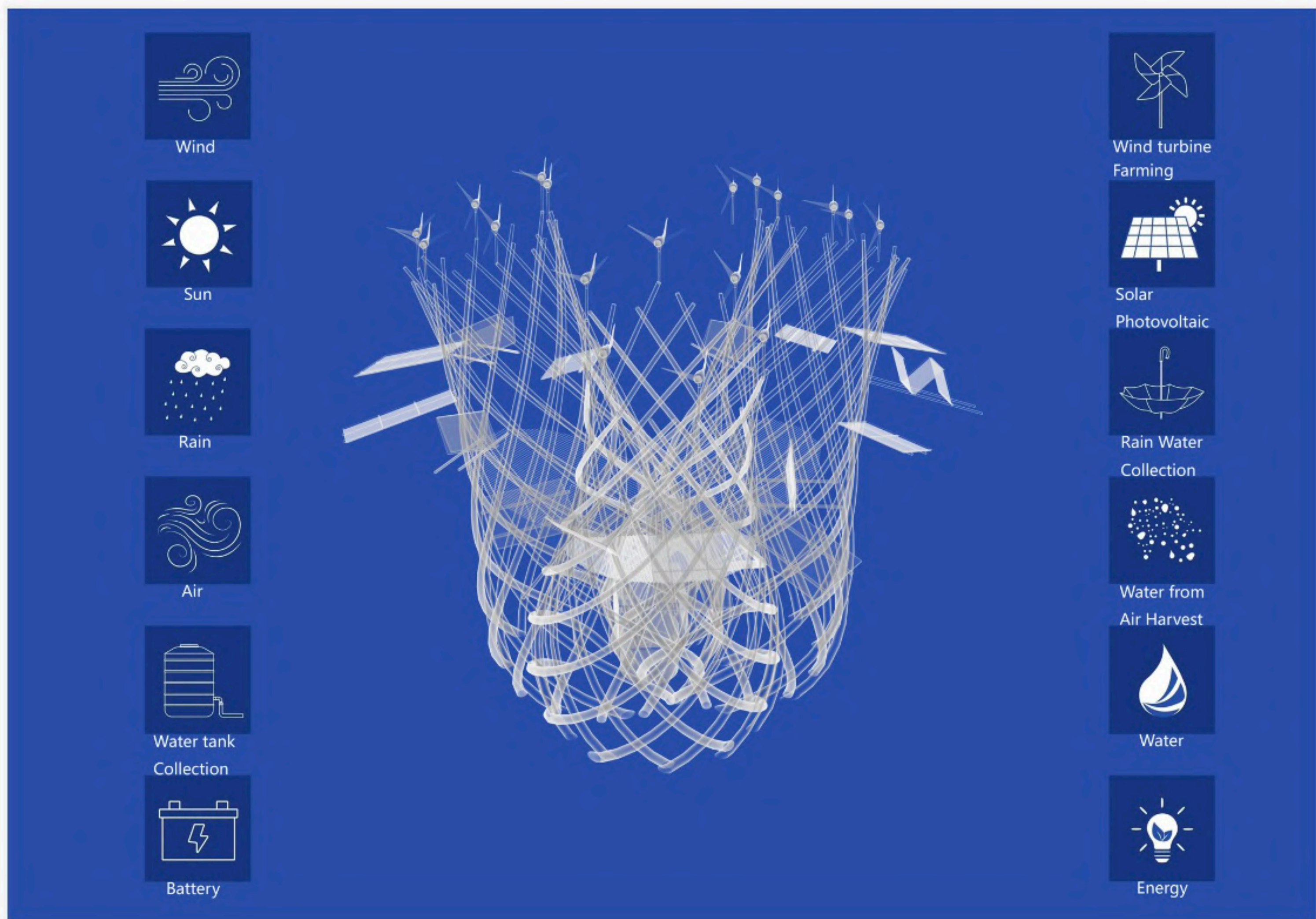
Simplify techniques to match local conditions and expertise.

Scaled Mock-up: Building scaled models as mock-ups will demonstrate the erection sequence, offering a hands-on approach that clarifies requirements at each phase. Workshopping this exercise with the Marou villagers will introduce the project and commence education on the design, construction and operation process.

collaboration: While traveling to the site for Pilot project implementation can be rewarding, it is not always sustainable. A more efficient approach involves collaborating with locals who possess leadership and construction skills. A local project manager acquainted with the design specifications and sequencing can manage labour, materials, resources, health and safety protocols effectively. A successful project manager will coordinate with local tradespeople, such as electricians and plumbers, ensures a streamlined workflow with minimal disruption and cost.

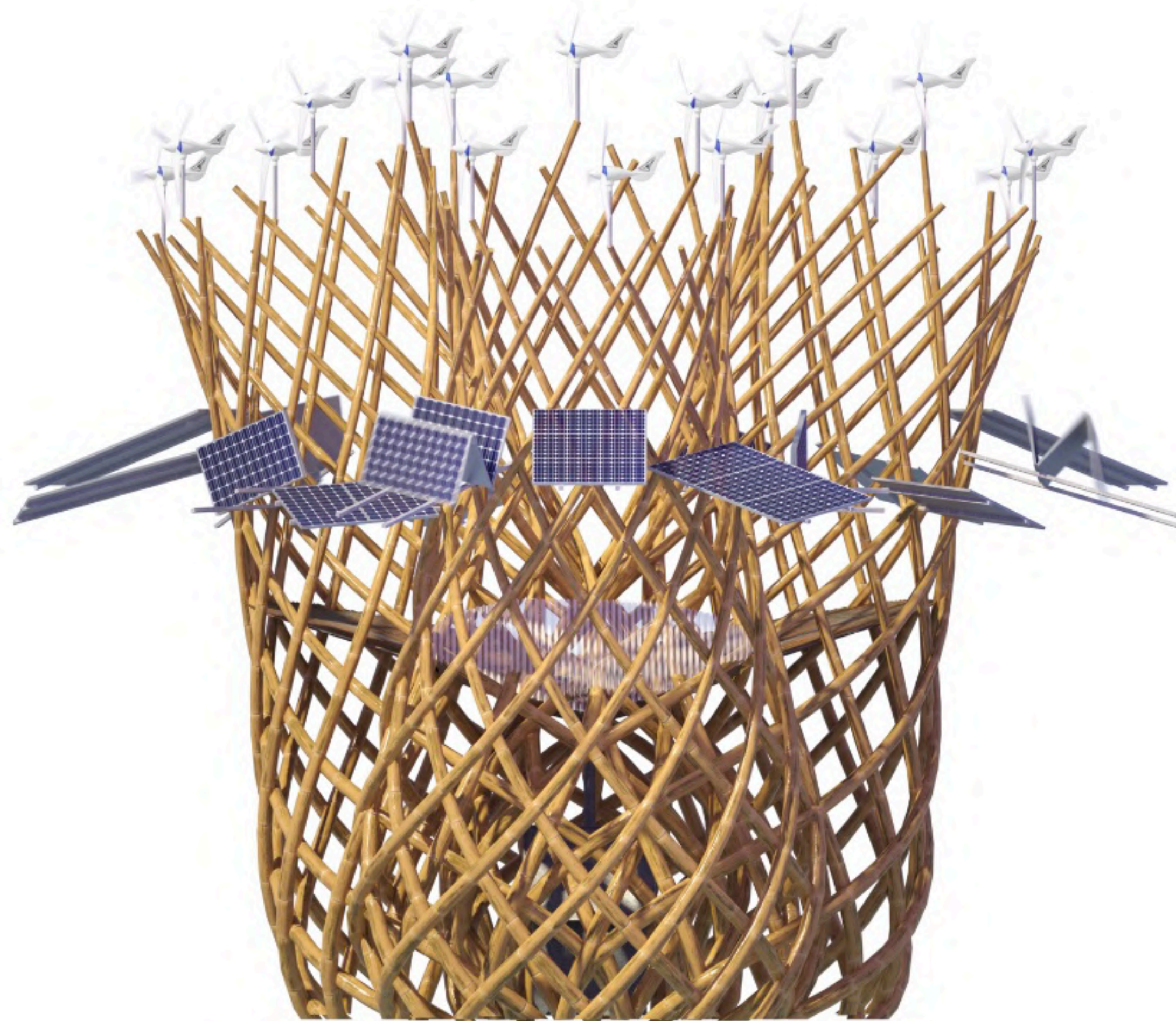
Sharing the Knowledge, Knowledge Transfer: The successful realisation of other Pilot installations in remote locations depends on sharing the knowledge and experience gained from the previous Pilot builds with the respective teams.



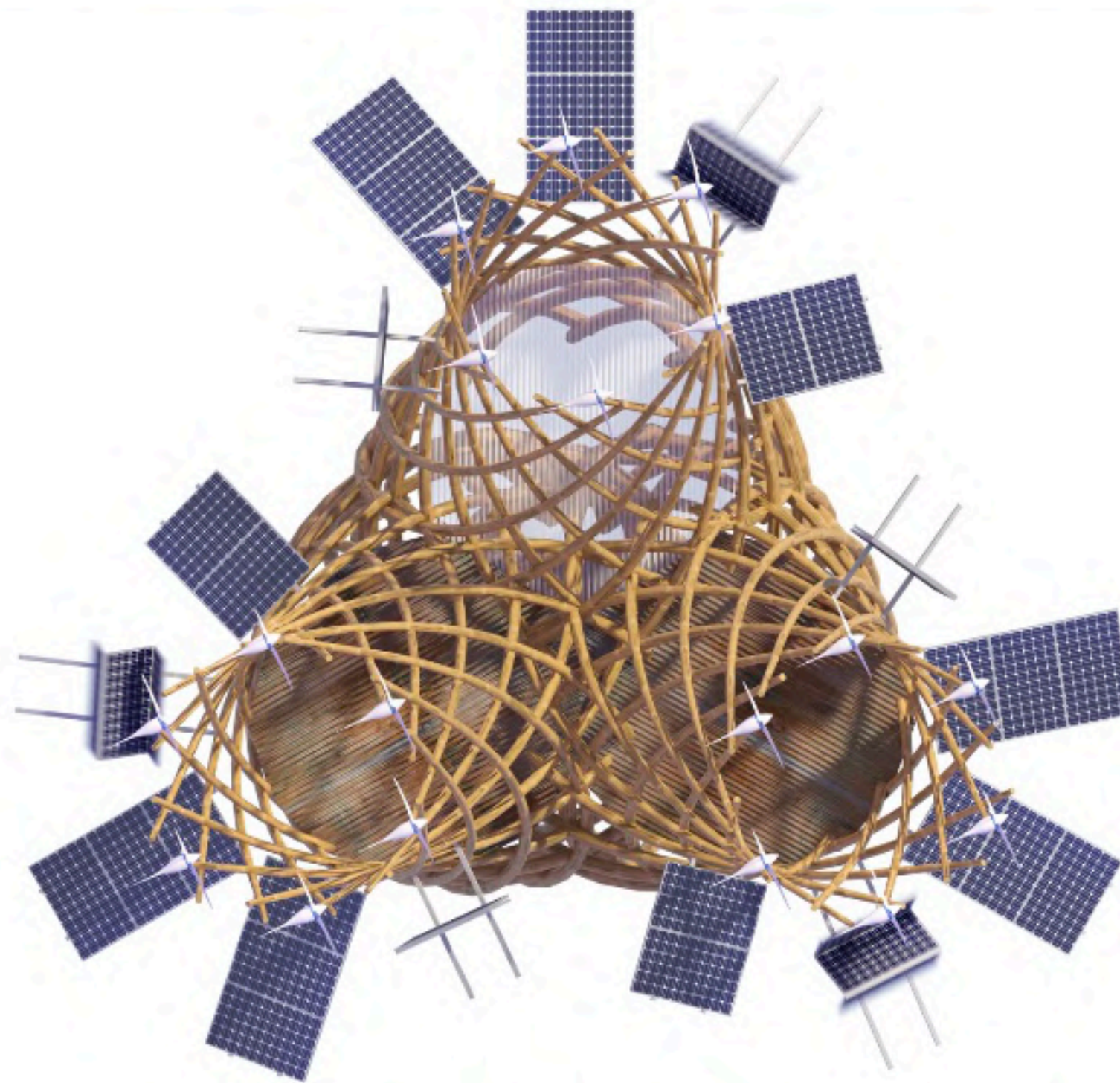


Eco - Woven Pilot / Prototype





Elevation



Plan

Eco - Woven Marou Pilot / Prototype



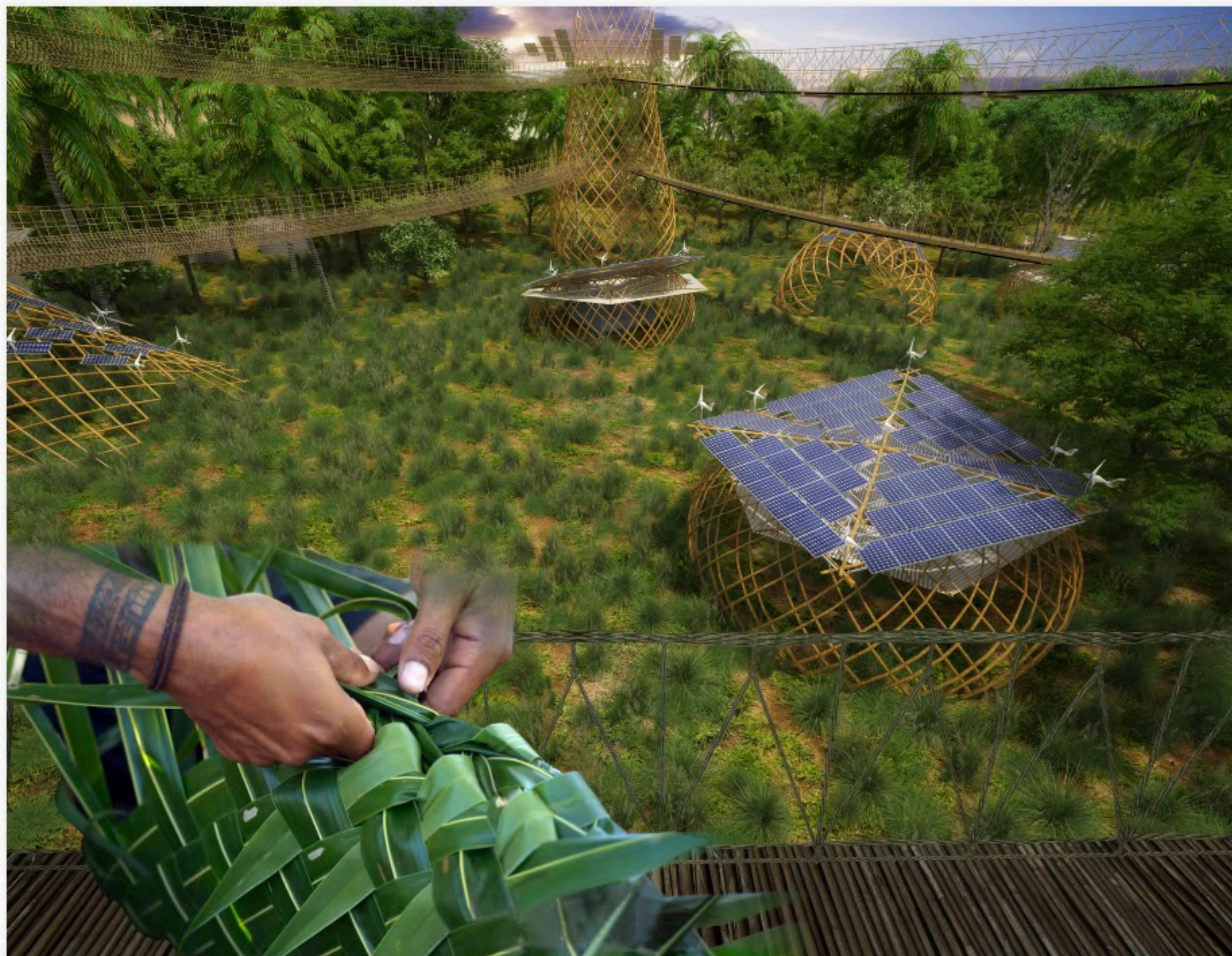


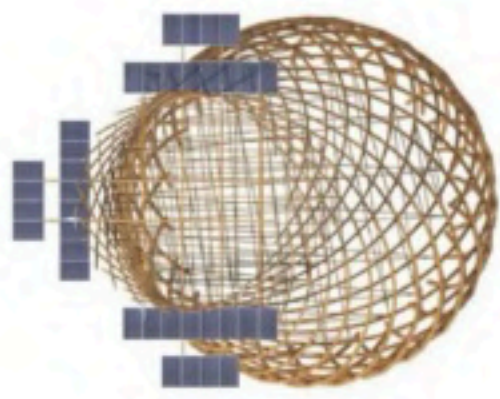
Operations and Maintenance Statement

Operations and Maintenance Philosophy:

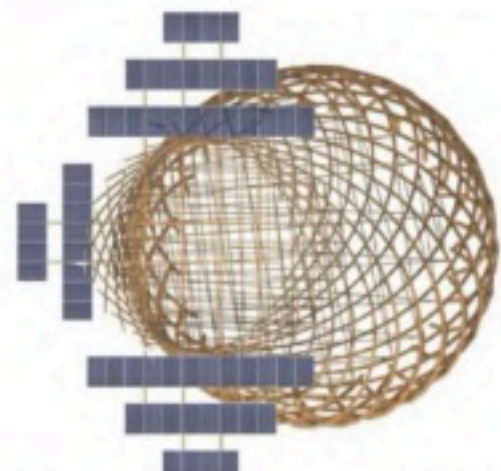
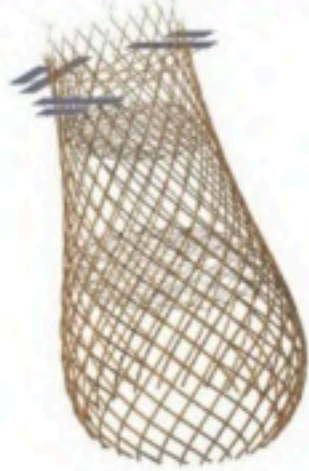
Local Resource-Based Principles: The Eco - Woven Marou Meeting Place Sanctuary aims to provide reliable energy and water while offering numerous benefits to the Village of Marou, Marou school, and nearby villages. Its innovative design is geared towards not only meeting present needs but also accommodating future advancements, ensuring that the community remains resilient and self-sufficient for generations to come. The sanctuary integrates cutting-edge technology with traditional practices, creating a harmonious balance that respects the environment and enhances the quality of life for its residents. Moreover, this project exemplifies the principles of ethno-architecture, which emphasises simplicity, sustainability, and cultural relevance. By drawing on the rich heritage and wisdom of local communities, the sanctuary evolves in response to changing social needs and technological progress. This dynamic approach fosters a sense of communal ownership and pride, inspiring hope and optimism for a brighter, more sustainable future.

Through collaboration and innovation, the Eco - Woven Marou Meeting Place Sanctuary stands as a beacon of possibility and progress. Eco - Woven Marou Meeting Place Sanctuary operates on Local Resource-Based principles, using local resources for daily operations and maintenance. The goal is to employ talent from the Village of Marou and nearby areas. Before opening, in-village education and training will ensure a competent workforce and smooth operations. Ongoing education and vocational training ensures long-term management of both operation and maintenance.

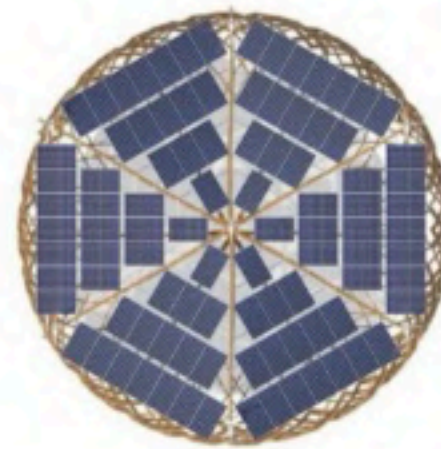
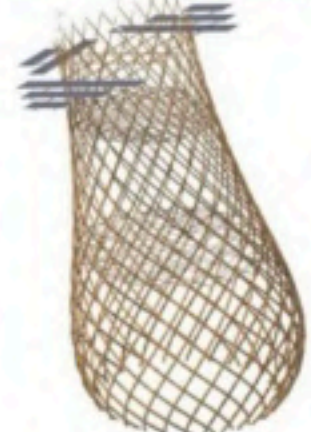




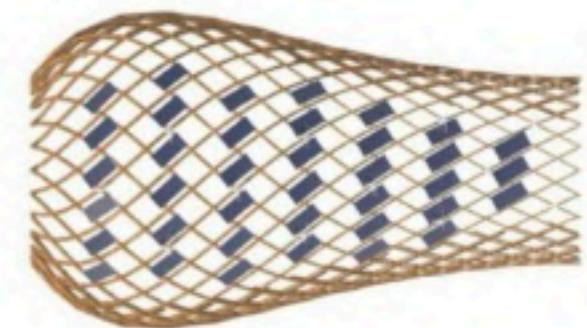
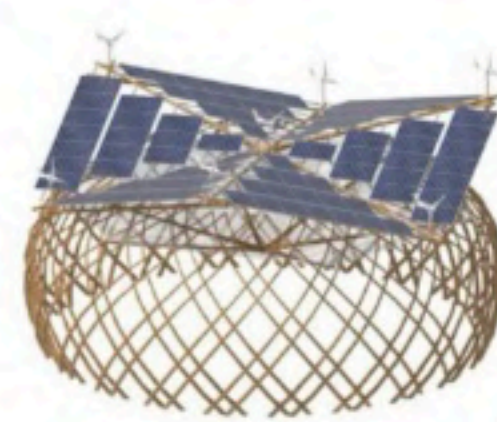
A1..North Fly Wire Obelisk
A2..South Fly Wire obelisk



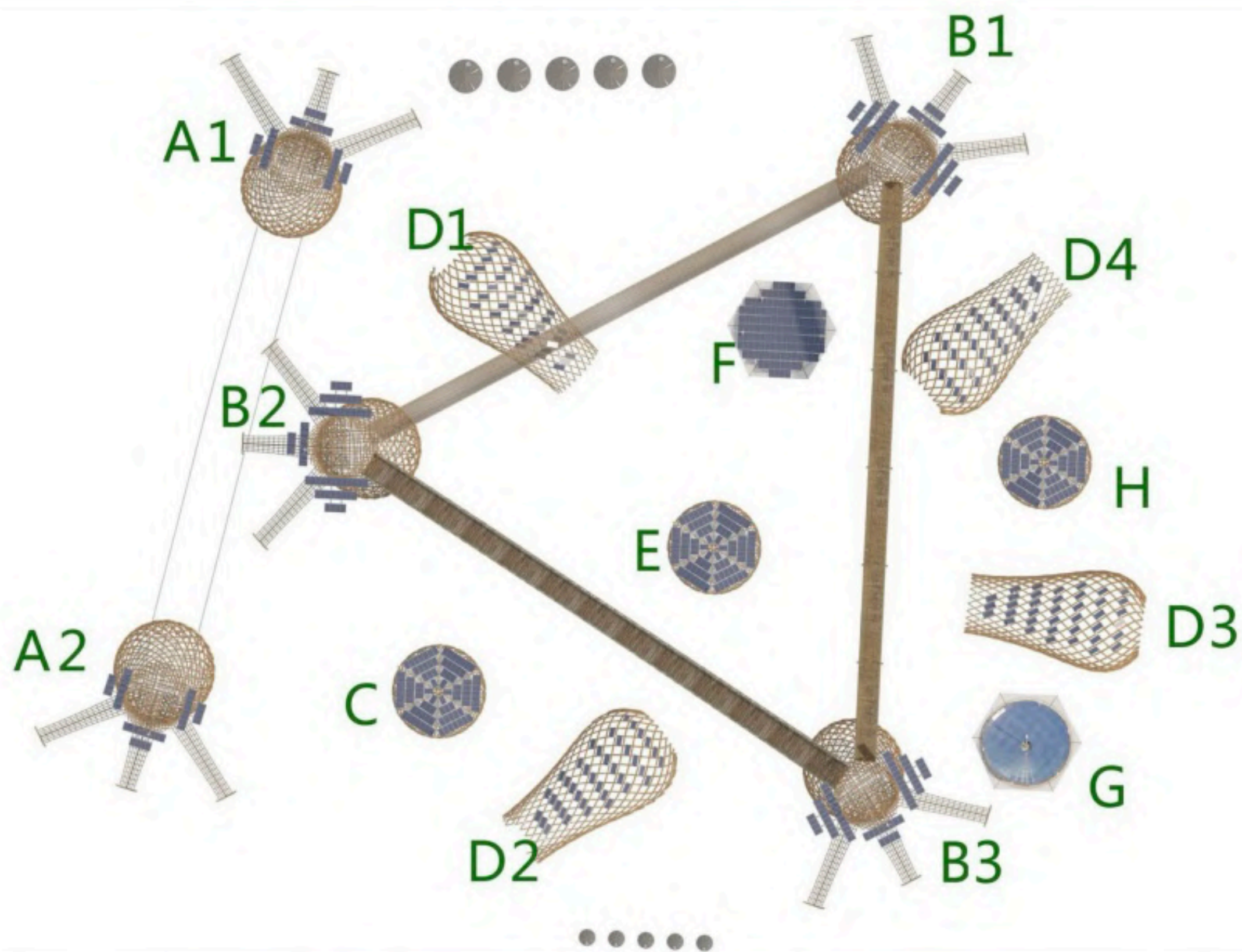
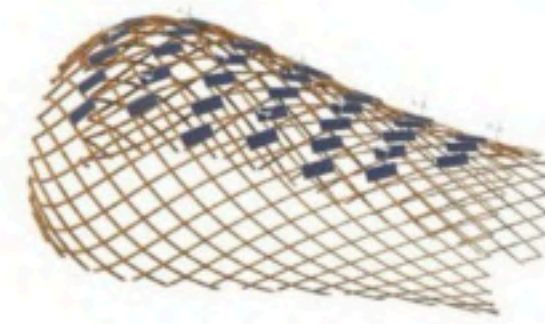
B1..Northern Skywalk / Sky Bridge
Soiar Avatar Palms Array
B2..Western Skywalk / Sky Bridge
B3..Southern Skywalk / Sky Bridge



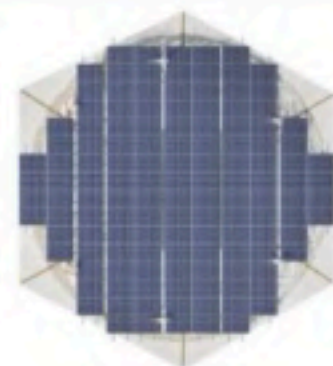
C..Bio - Waste Energy Pavillion Grove
Solar - Bio Energy Farming



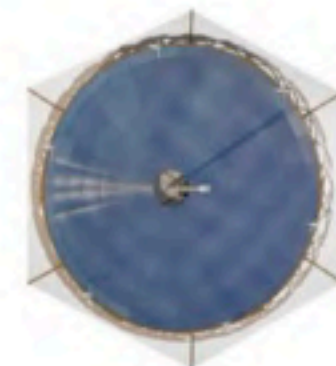
D..Solar Energy Fronds
Farming Solar Energy Harvesting



E..Green Algae - Diatom Phytoplankton
Energy Solar Pavillion Grove



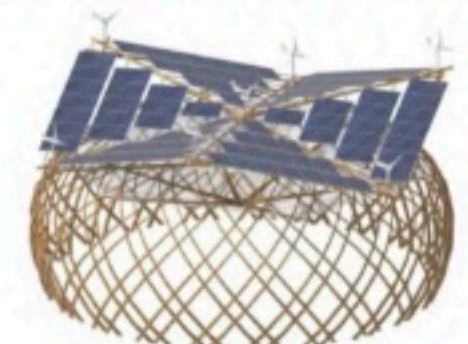
F..Solar Energy Pavillion Grove
Solar photovoltaics Farming / Harvesting

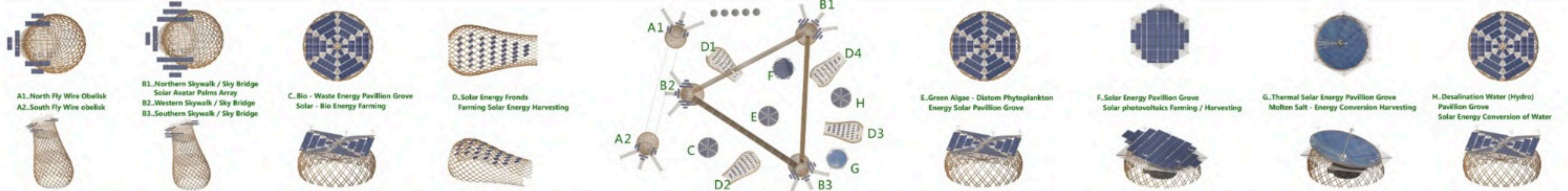
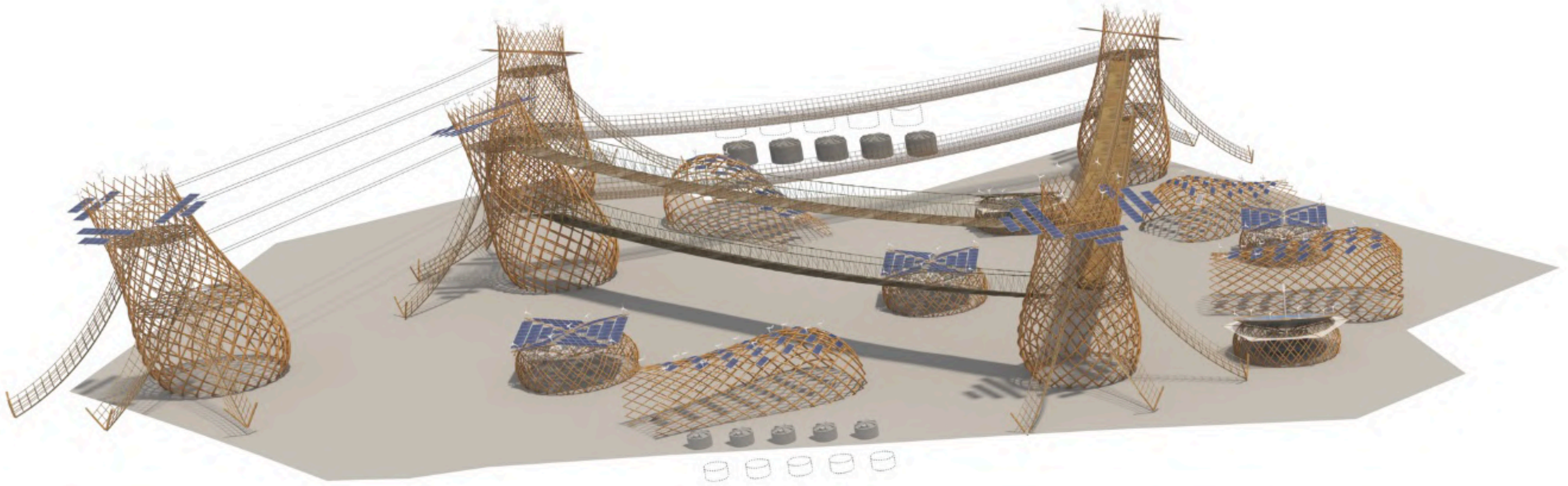


G..Thermal Solar Energy Pavillion Grove
Molten Salt - Energy Conversion Harvesting

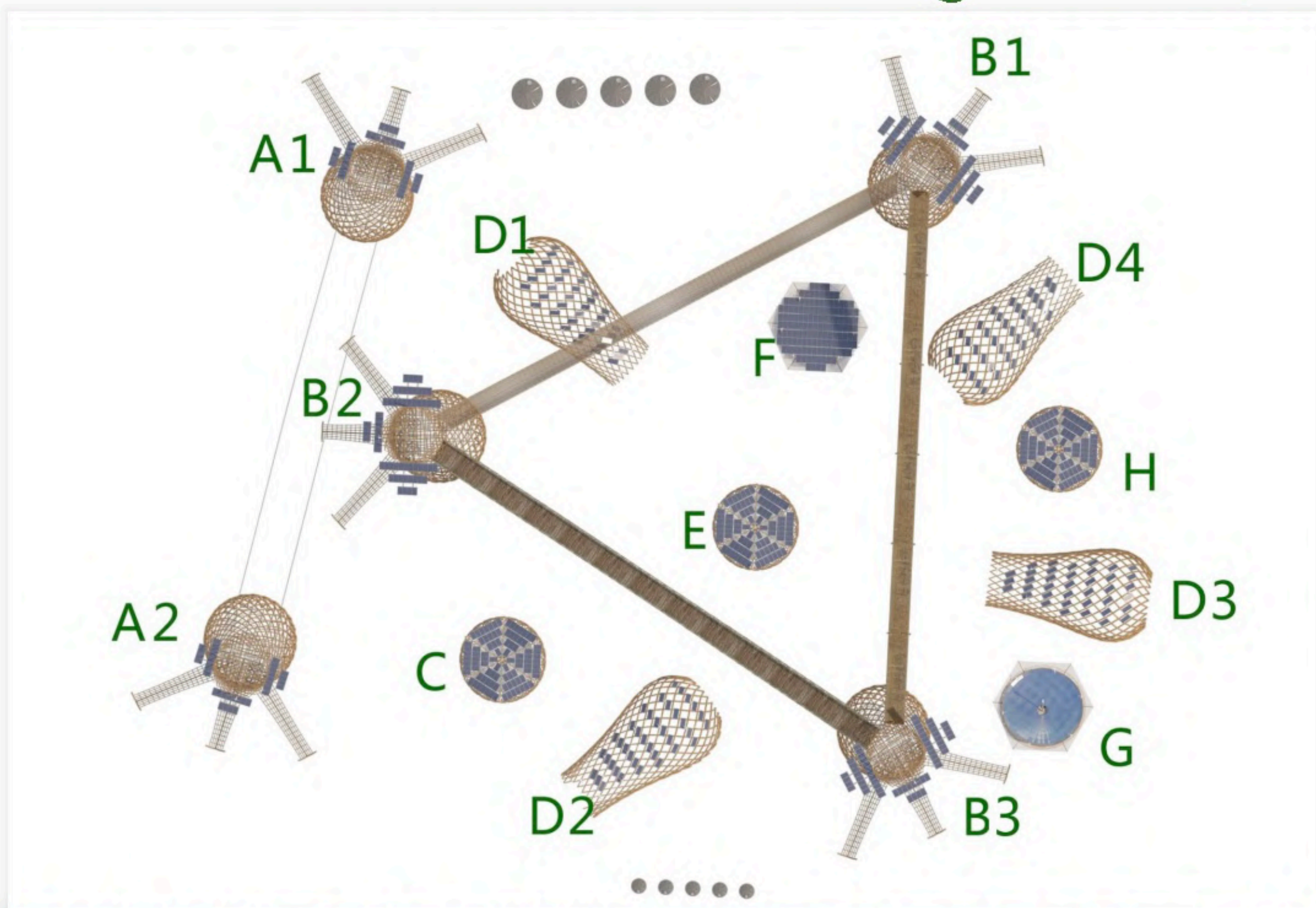


H..Desalination Water (Hydro)
Pavillion Grove
Solar Energy Conversion of Water



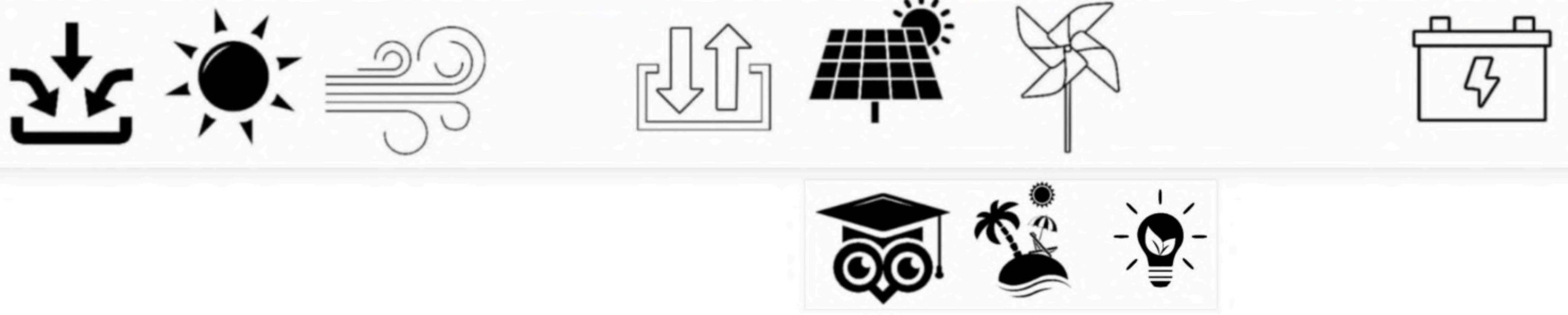
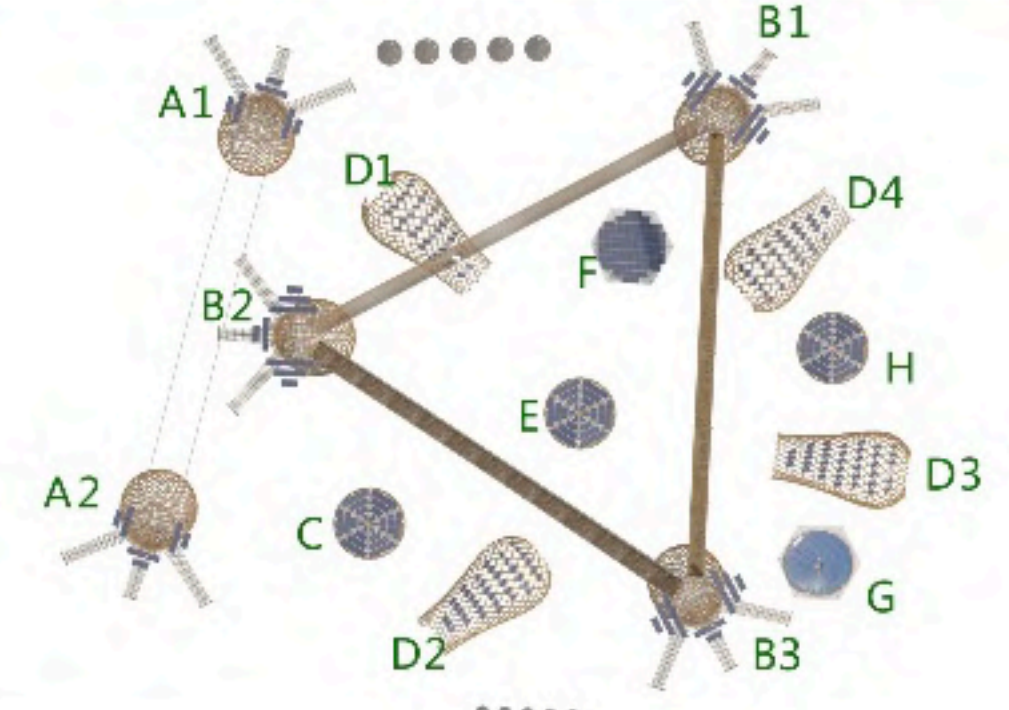
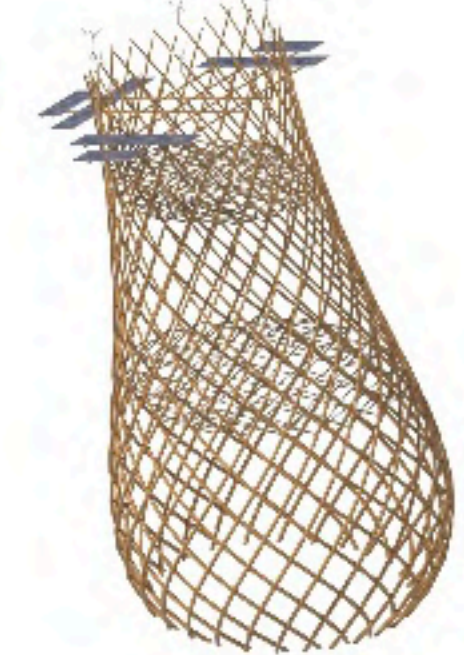
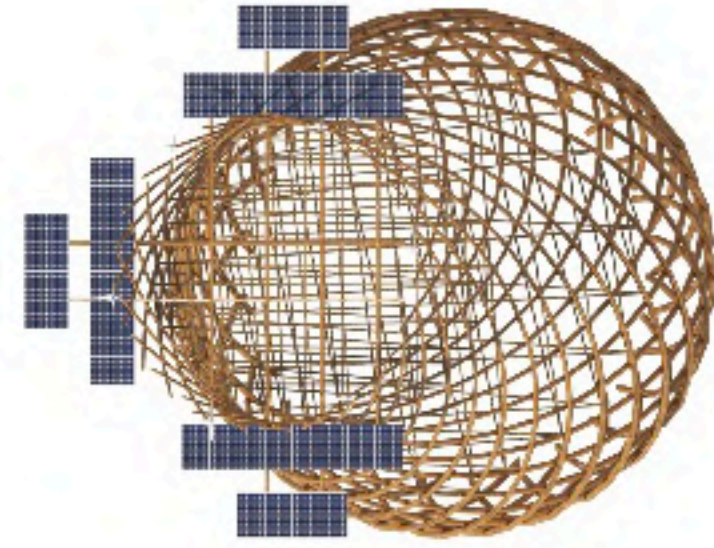


Eco - Woven Marou Sanctuary Masterplan





A Fly Wire Obelisk

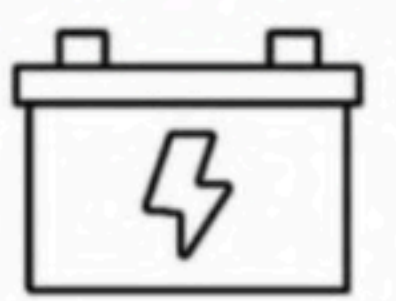
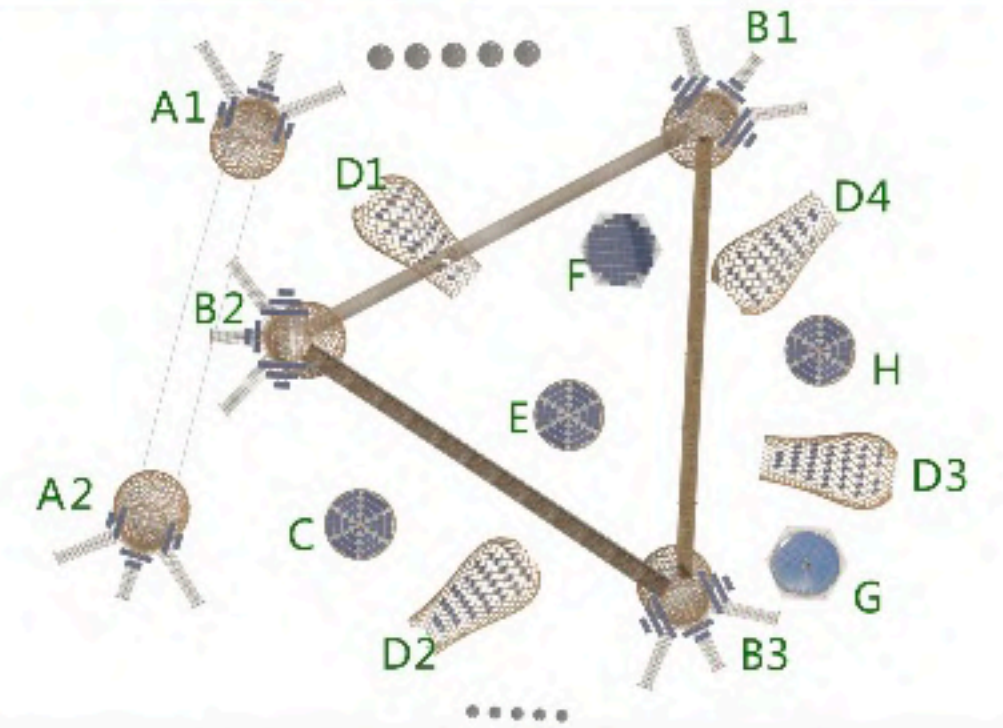
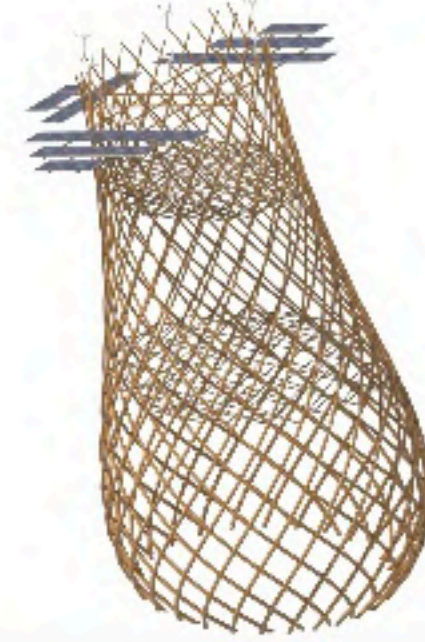
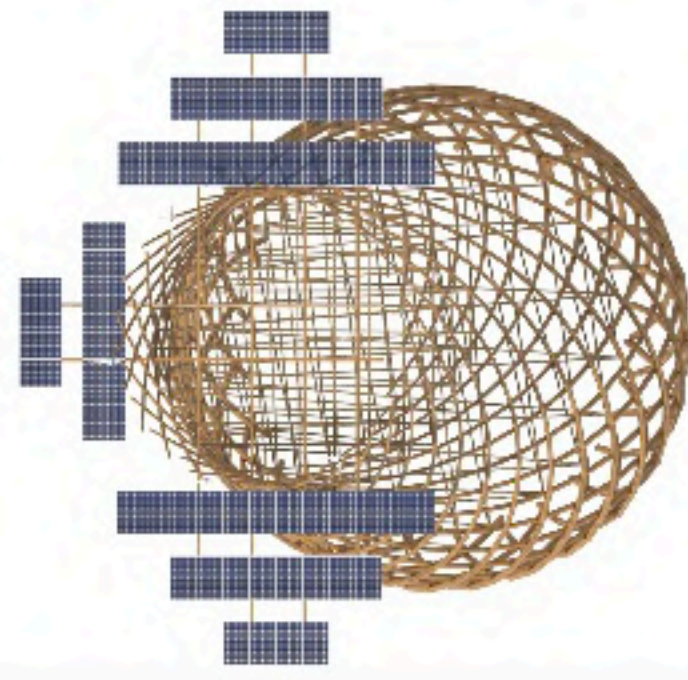


Category	Type	Details	Output Total PA
Energy	Farming	Wind - 6 x 1.5 kWh wind turbines	27,318 kWh
Energy	Harvest	PV - 65 sq metres = 36 x 0.3 kWh panels	17,345 kWh
Storage		Batteries – lead/acid	
Co-benefit	Tourism, Education	Skywalk rope bridge	revenue





B
Skywalk / Sky Bridge
Solar Avatar
Palms Array

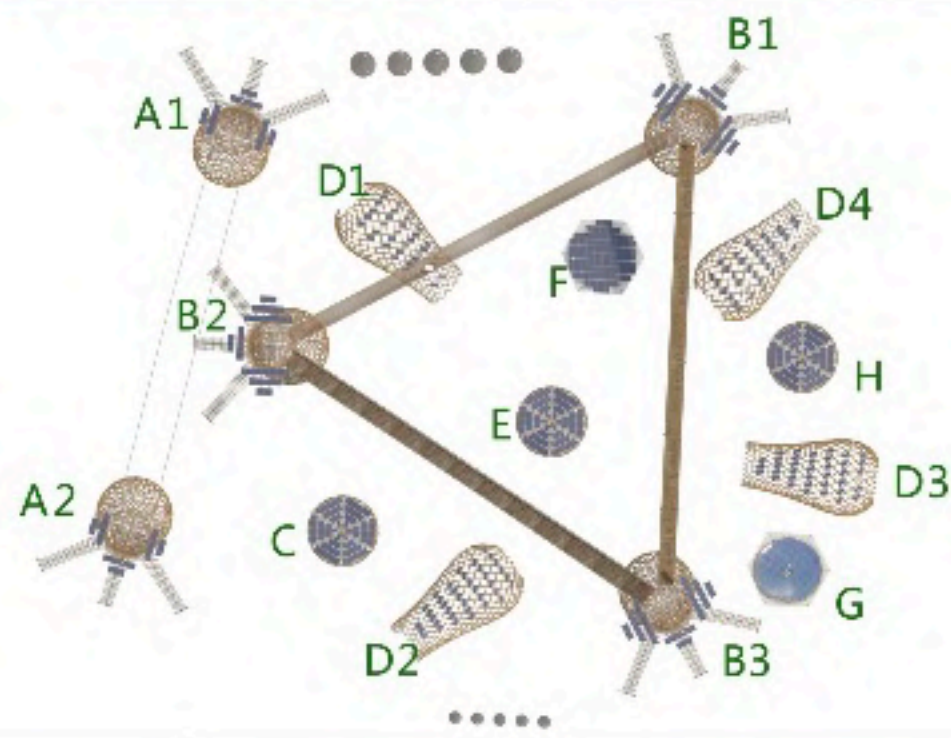
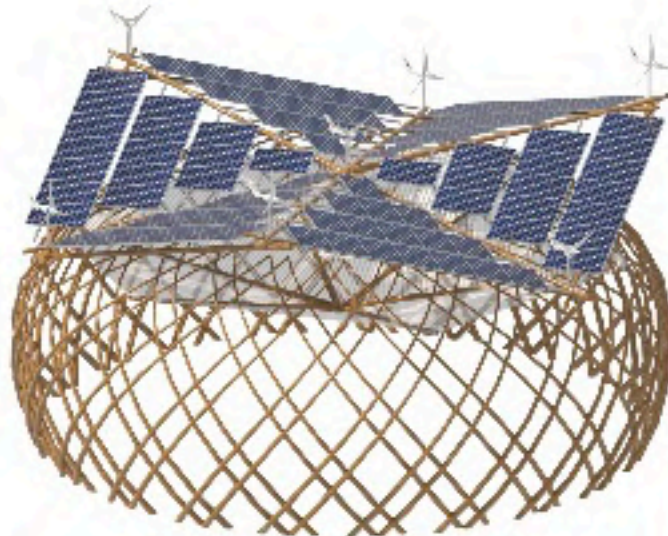
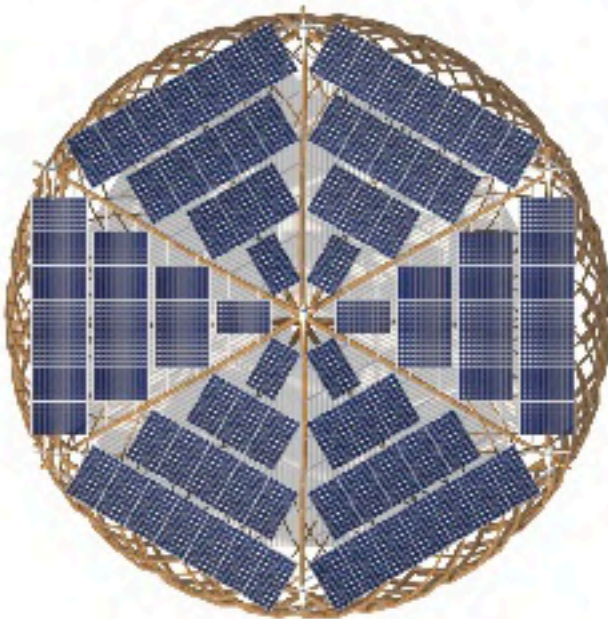


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Storage		Batteries – lead/acid	
Co-benefit	Tourism, Education	Skywalk rope bridge	revenue





C
 Bio - Waste Energy
 Pavillion Ton Grove
 Solar - Bio Energy
 Farming

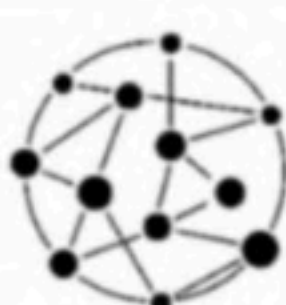
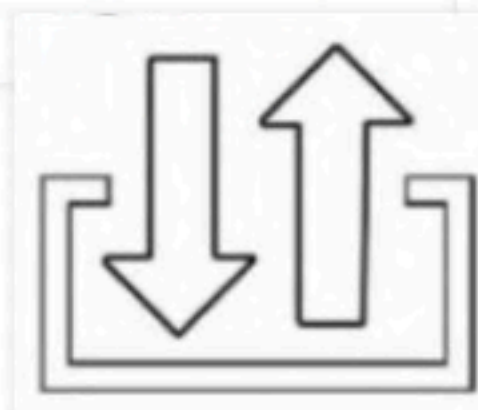
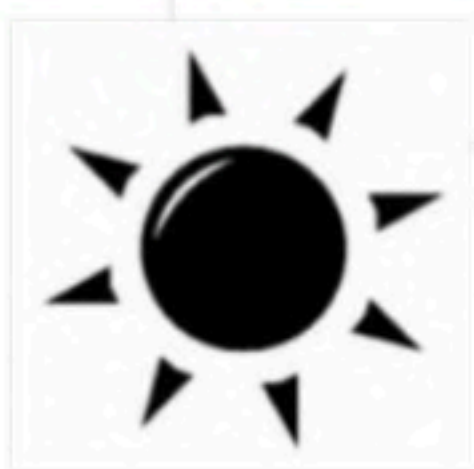
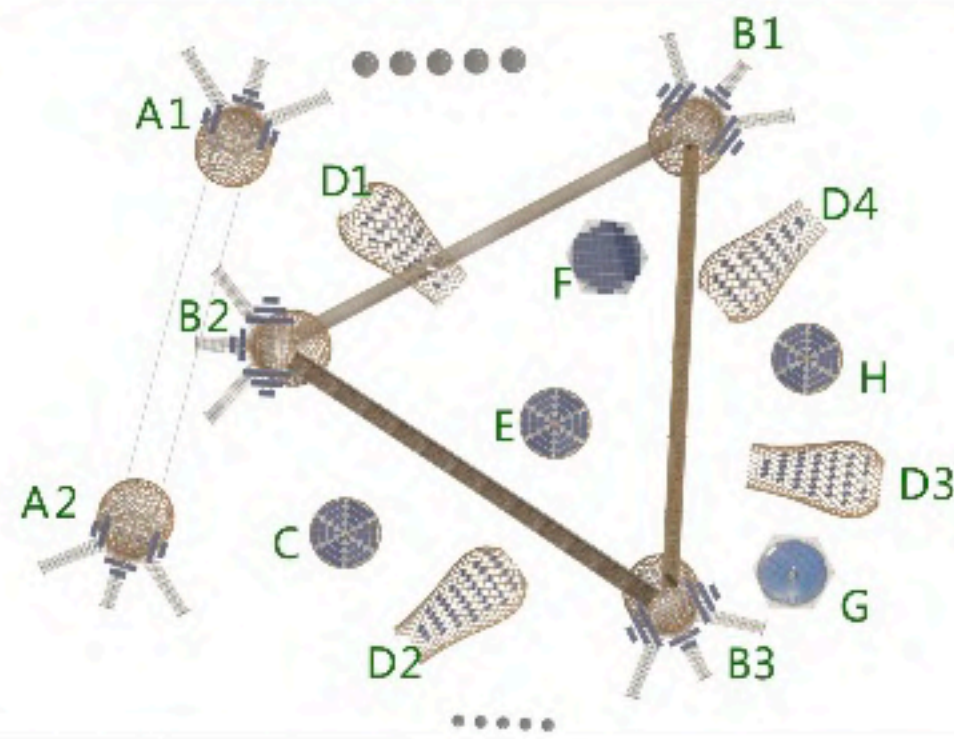
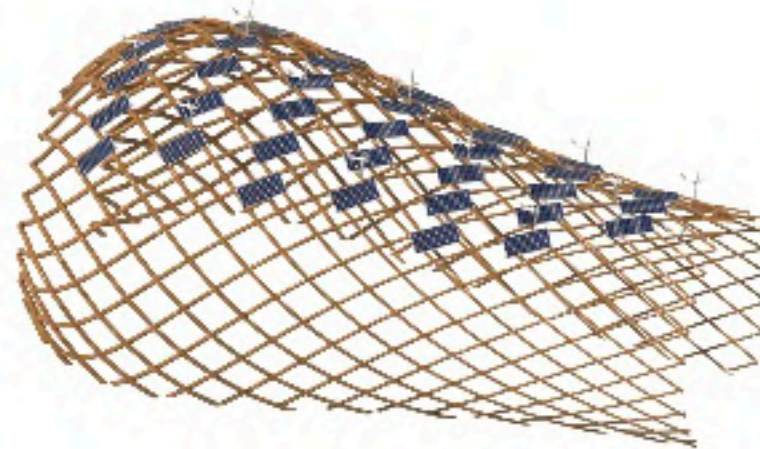
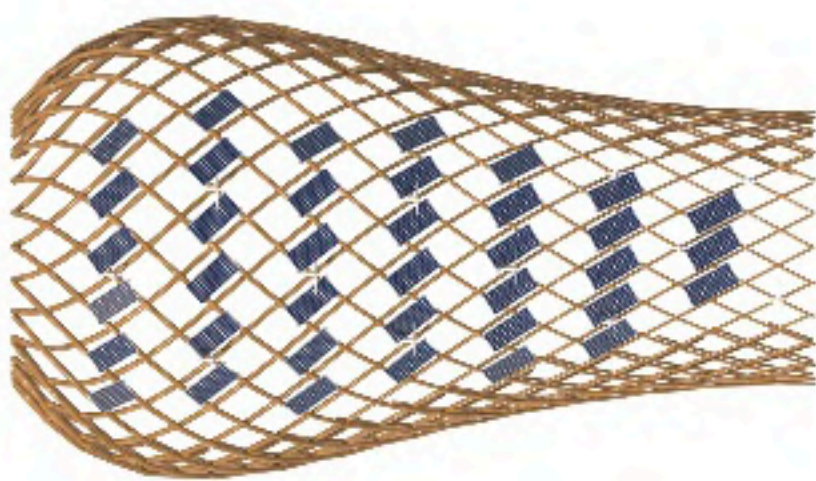


Categor	Type	Details	Output Total
Energy	Farming	Wind - 6 x 1.5 kWh wind turbines	27,594 kWh
Energy	Harvesting	PV - 120m ² , 66 x 0.3 kWh panels	31,799 kWh
Energy	Bio-waste	methane production - gas thermal/steam turbine	R&D
Energy	Storage	Batteries – lead/acid	
Water	Harvest	120m ² roof catchment	199,800 litres
Water	Storage	1 x 5000 litre polytank	
Water	Harvest	WfA 500 lt/day	182,500 litres
Water	Operation	<103.2 kW/day >	< 37,668 kWh>
Co-benefit	Learning	Bio-waste energy R&D	revenue
Co-benefit	Technology	thermal/steam turbine R&D	revenue
Co-benefit	Education	methane R&D	revenue
Co-benefit	Futures		revenue





D
Solar Energy
Fronds
Farming Solar
Energy Harvesting

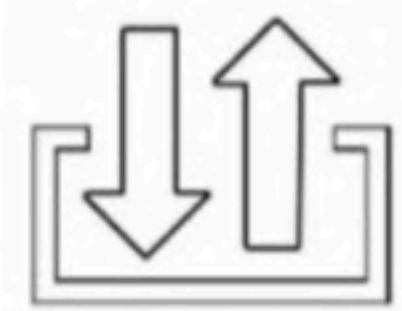
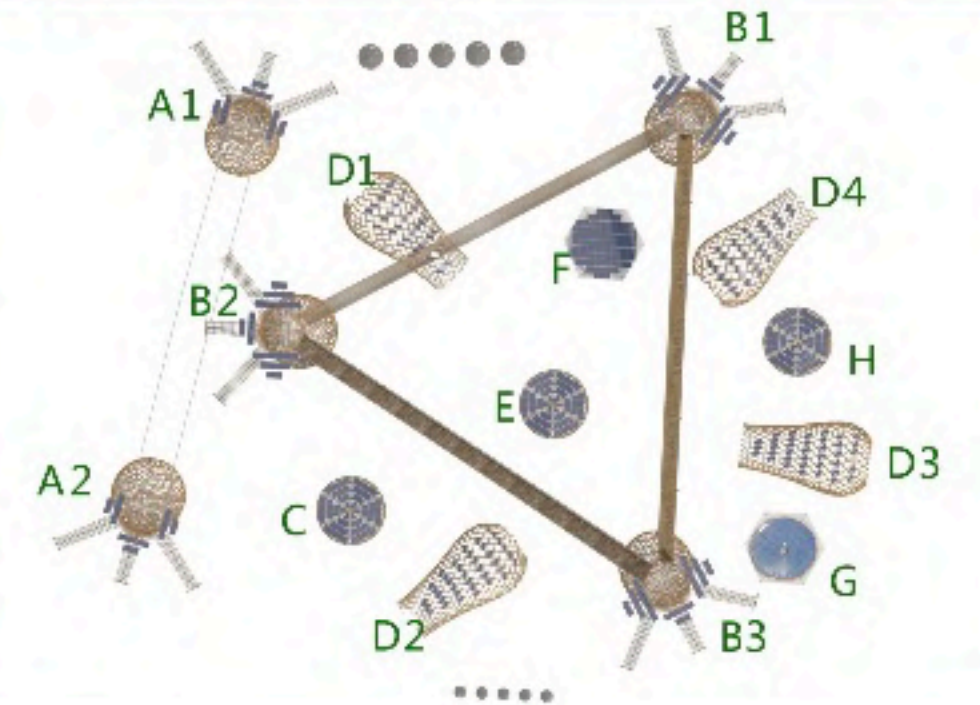
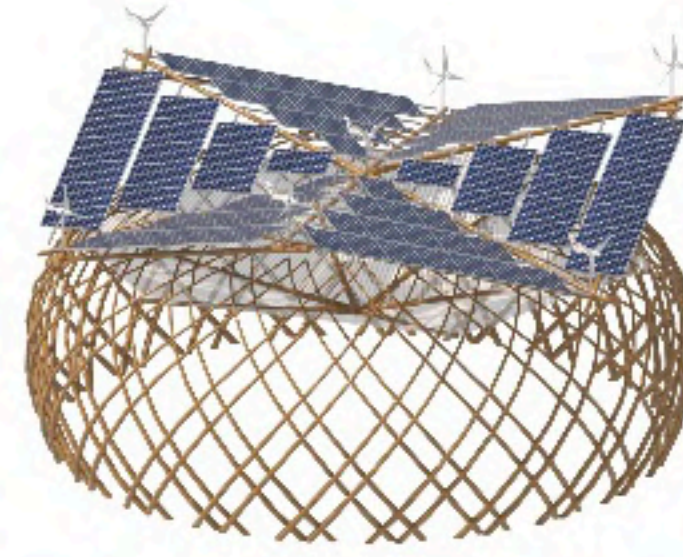
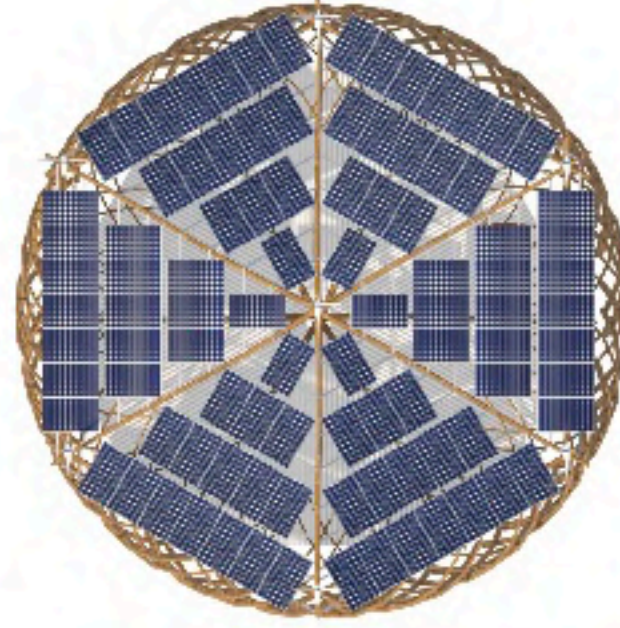


Category	Type	Details	Output Total PA
Energy	Farming	Wind - 12 x 1.5 kWh wind turbines	55,051 kWh
Energy	Harvest	PV - 69 sq metres = 38 x 0.3 kWh panels	18,309 kWh
Storage		Batteries – lead/acid	
Co-benefit	Tourism, Education	Skywalk rope bridge	revenue





E
Green Algae - Diatom
Phytoplankton
Energy Solar Pavillion
Grove

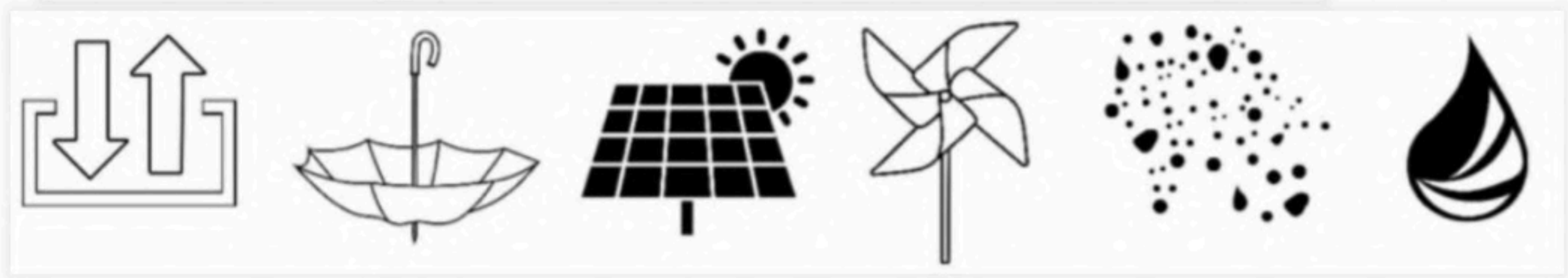
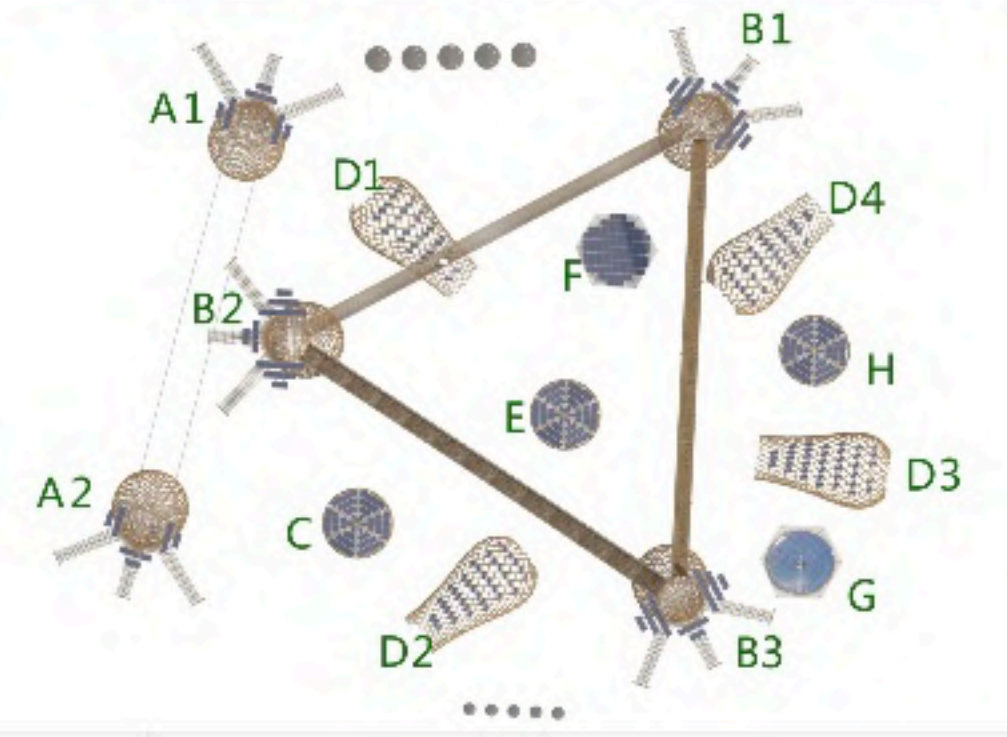
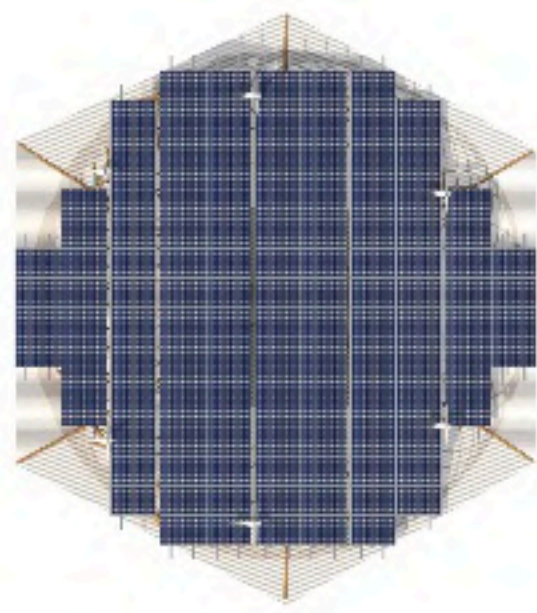


Category	Type	Details	Output Total
Energy	Farming	Wind - 6 x 1.5 kWh wind turbines	27,594 kWh
Energy	Farming	PV - 120m ² = 66 x 0.3 kWh panels	31,799 kWh
Energy	Farming	Green Algae Farming	R&D
Energy	Storage	Batteries – lead/acid	
Water	Harvest	120m ² roof catchment	199,800 litres
Water	Storage	1 x 5000 litre polytank	
Water	Harvest	WfA 500 lt/day	182,500 litres
Water	Operation	<103.2kW/day>	<37,668 kWh>
Co-benefit	Learning	Green Algae energy R&D	revenue
Co-benefit	Technology	Bio-fuel R&D	revenue
Co-benefit	Education		revenue
Co-benefit	Futures		revenue





F
 Solar Energy Pavillion
 Grove
 Solar photovoltaics
 Farming / Harvesting

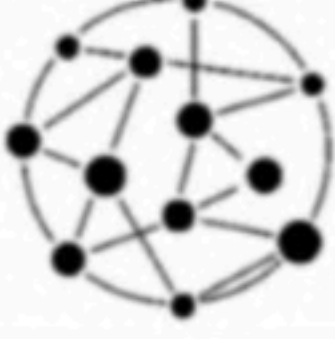
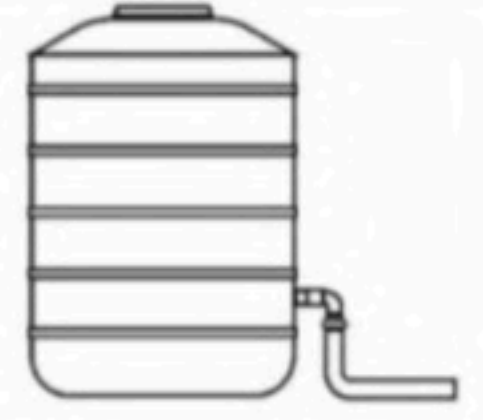
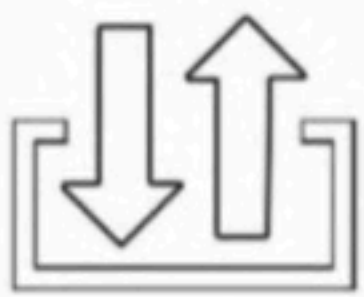
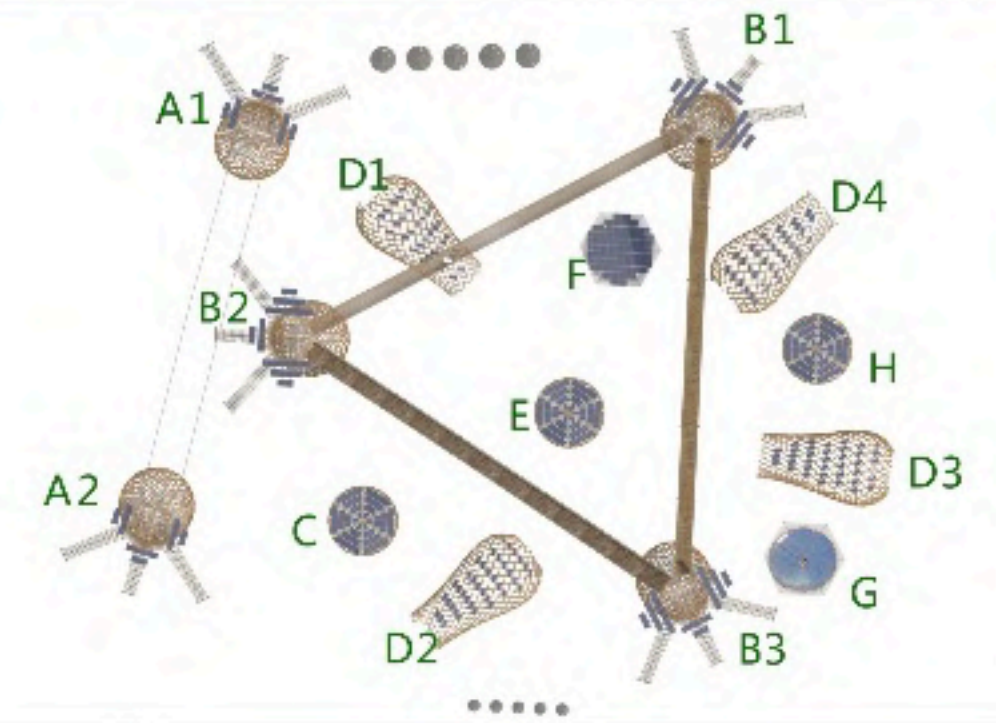
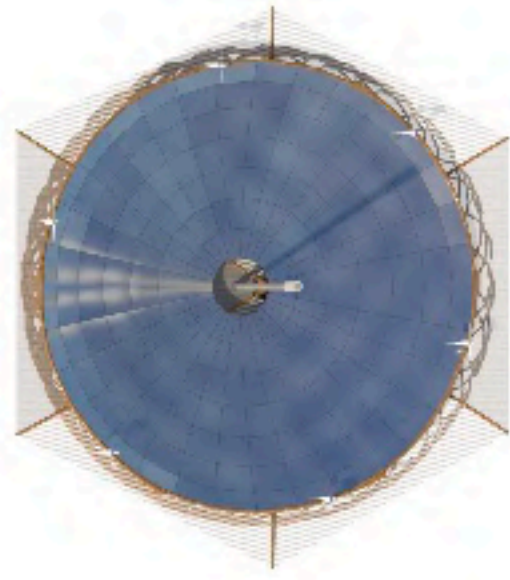


Category	Type	Details	Output Total
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Energy	Storage	Batteries – lead/acid	
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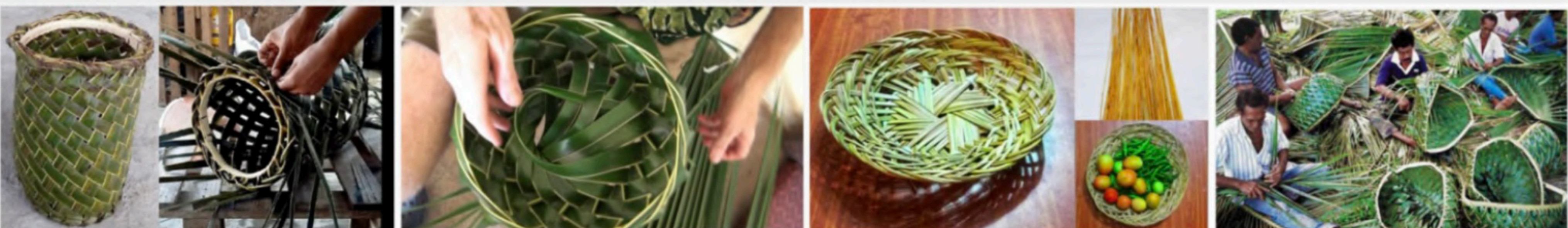




4
 Thermal Solar Energy
 Pavillion Grove
 Molten Salt - Energy
 Conversion Harvesting

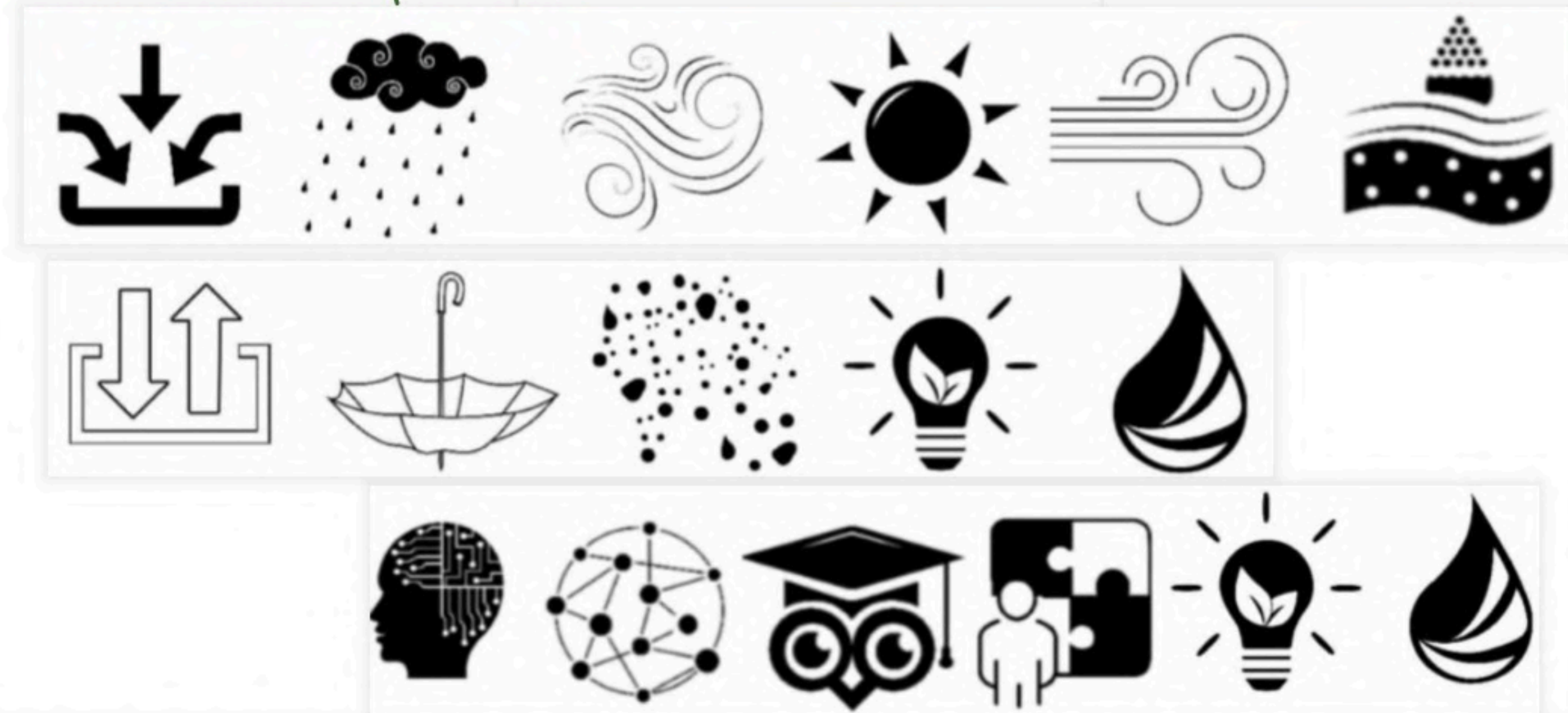
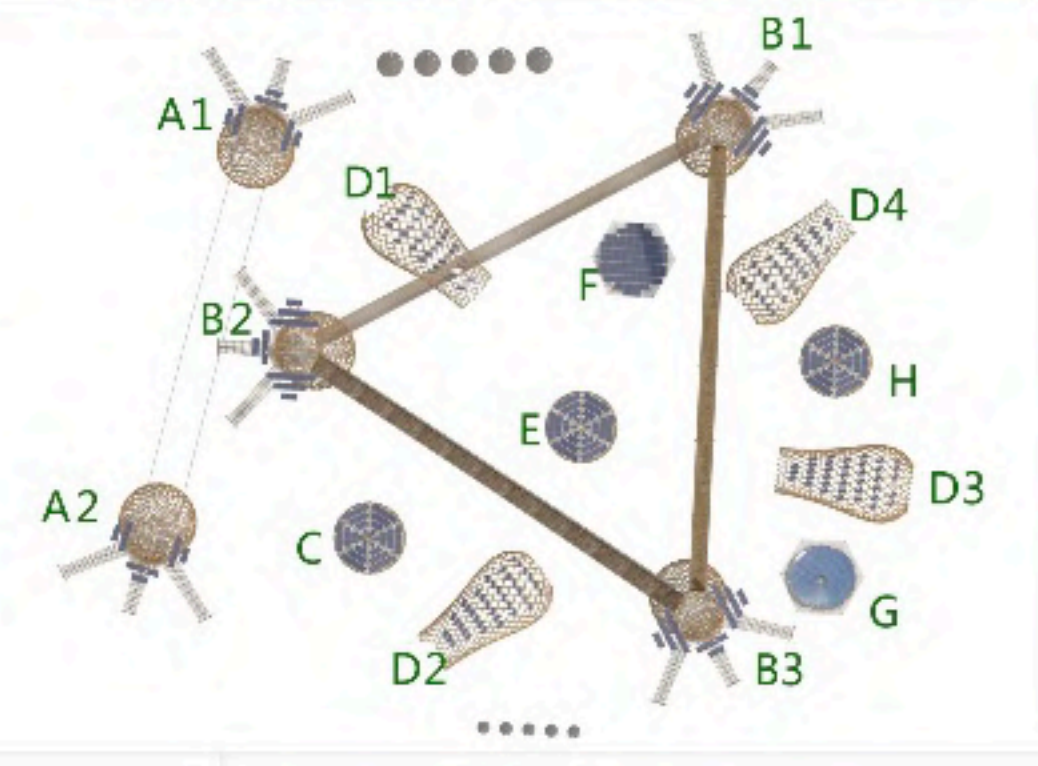
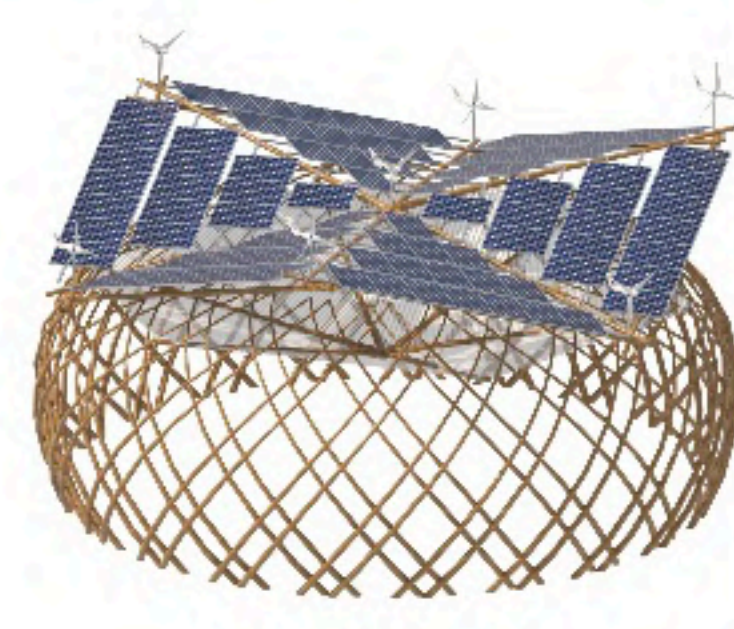
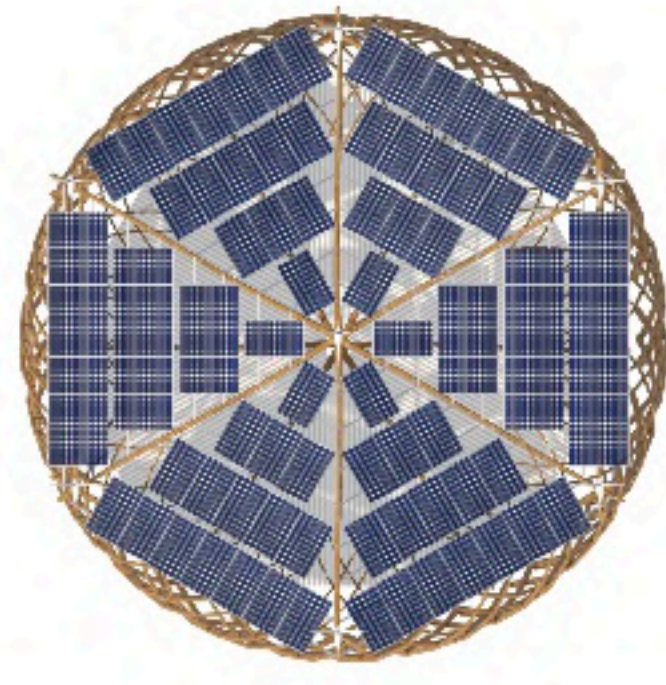


Category	Type	Details	Output Total PA
Energy	Farming	Wind - 6 x 1.5 kWh wind turbines	27,594 kWh
Energy	Farming	Mirrored Reflectors - 150m ²	R&D
Energy	Farming	Solar thermal/steam turbine	R&D
Energy	Storage	Molten salt power storage	R&D
Water	Harvest	120m ² roof catchment	199,800 litres
Water	Storage	1 x 5000 litre polytank	
Water	Harvest	WfA 500 lt/day	182,500 litres
Water	Harvest	Operation - <103.2kW/day>	<37,668 kWh>
Co-benefit	Learning	Mirrored Collection Systems R&D	Revenue
Co-benefit	Technology	Solar/Thermal R&D	Revenue
Co-benefit	Education	Molten salt power storage R&D	Revenue
Co-benefit	Futures		Revenue





H
Desalination
Water (Hydro)
Pavillion Grove
Solar Energy
Conversion of Water



Category	Type	Details	Output Total PA
Energy	Farming	Wind - 6 x 1.5 kWh wind turbines	27,594 kWh
Energy	Farming	PV - 120m ² = 66 x 0.3 kWh panels	31,799 kWh
Energy	Storage	Batteries – lead/acid	
Water	Harvest	120m ² roof catchment	199,800 litres
Water	Storage	1 x 5000 litre polytank	
Water	Harvest	De-salination	R&D
Water	Harvest	WfA 500 lt/day	182,500 litres
Water	Operation	<103.2kW/day>	<37,668 kWh>
Co-benefit	Learning	Desalination R&D	revenue
Co-benefit	Technology		revenue
Co-benefit	Education		revenue
Co-benefit	Futures		revenue





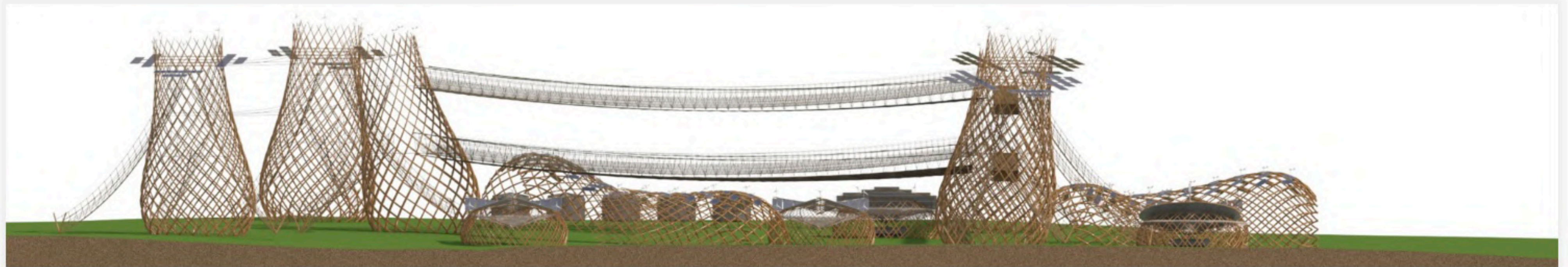
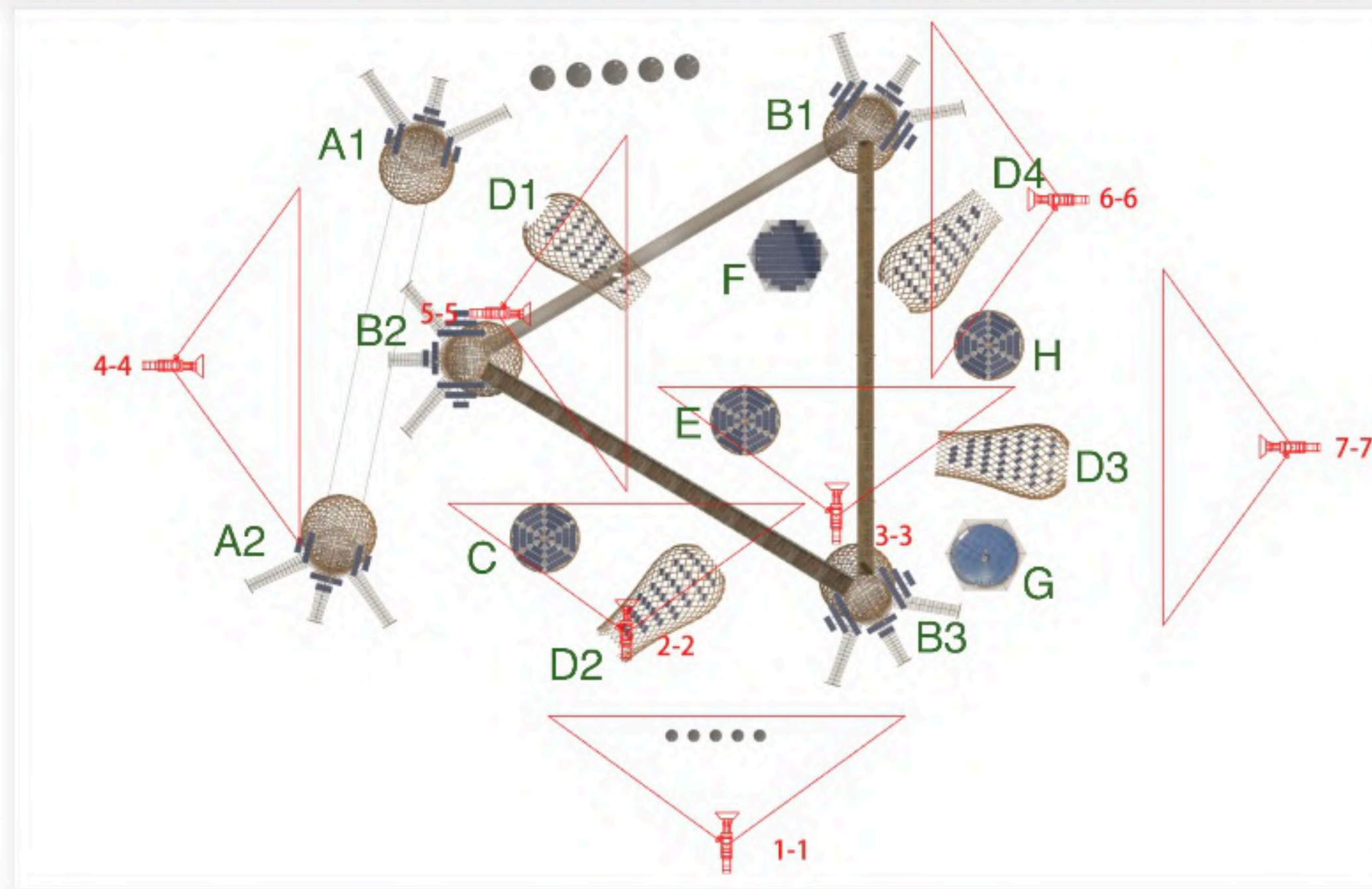
Longterm Strategy:

community Vocational Training: As we move forward, vocational training programs will be implemented in partnership with the local school. This approach helps us achieve Local Resource-Based Employment by equipping local folk with the skills they need to take on various roles within the sanctuary. Vocational training and sharing with neighbouring Villages creates future opportunity for Locals in education and tourism to share

For technical maintenance tasks such as electrical and plumbing work, local trade labour will coordinate with the installation trades. This period will serve as a crucial training phase, enabling local trade workers to undertake ongoing maintenance and upgrading responsibilities. Overall, our strategy aims to foster community involvement and create employment opportunities locally, which we believe will lead to sustainable and long-term success for Eco - Woven Marou Meeting Place Sanctuary.

The Eco - Woven Marou Meeting Place Sanctuary is designed to ensure local energy and water security while sparking a broad array of interests. This sanctuary promises to be an educational and tourist hub, attracting visitors not just locally but from across the nation and internationally as well. The community is set to see significant benefits once the sanctuary is up and running. It will create employment opportunities in various sectors such as transportation, accommodation, food services, cultural crafts, and entertainment. Additionally, there will be roles focused on the operation and maintenance of the sanctuary itself. By fostering a collaborative environment, the sanctuary aims to blend environmental sustainability with economic growth, ensuring a brighter future for everyone involved.





01- 01. Elevation Section

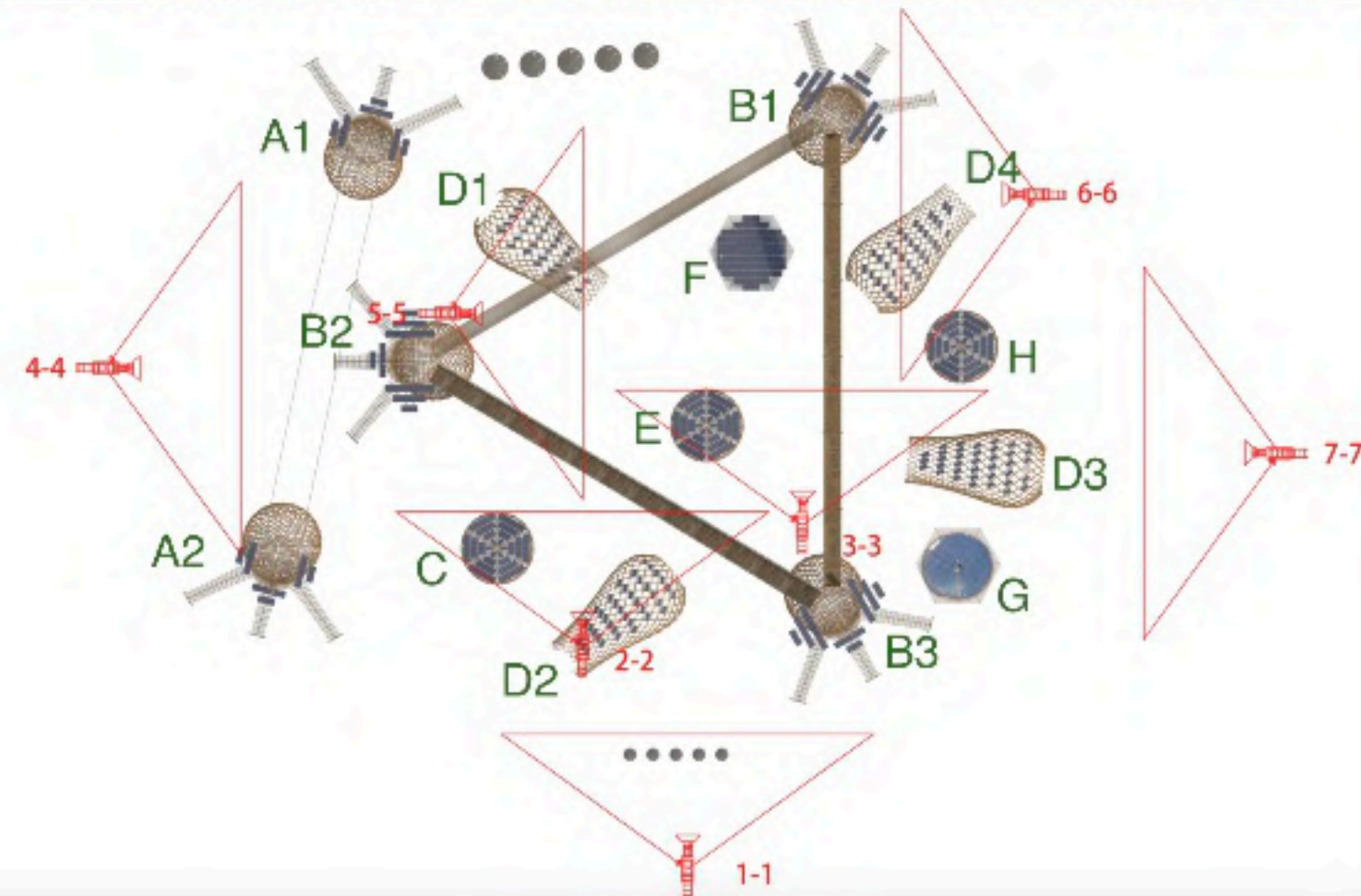


02 - 02 Elevation Section

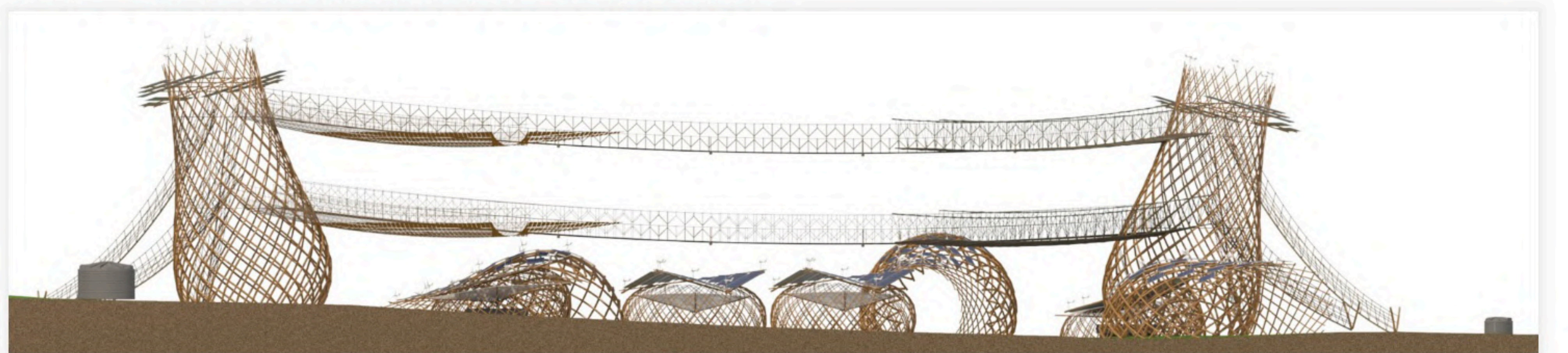


03 - 03. Elevation Section

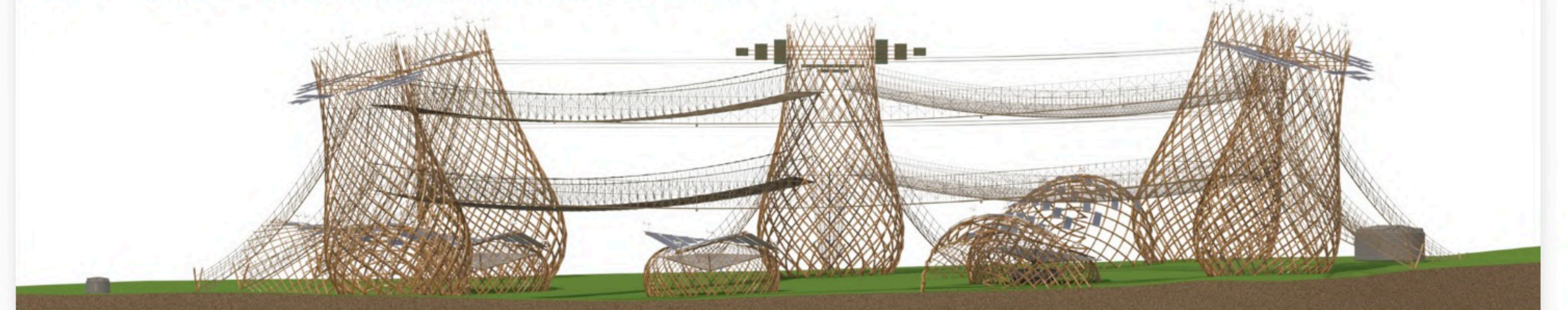




04 - 04. Elevation Section



05 - 05. Elevation Section



06 - 06. Elevation Section





Environment Impact Assessment

Impact on the Natural and Social Environment Philosophy:

The principles of etho-architecture, echo-design, ethno-building, local resource-based construction, and territorial construction aim to implement local actions with global considerations. These practices focus on reducing the carbon footprint in the Marou environment by sourcing labour and materials locally. By recycling, reusing, and repurposing materials whenever possible, these efforts support the Eco _ Woven Marou Meeting Place Sanctuary and its neighbouring villages. The design incorporates these approaches to protect and sustain the shared environment. Taking care of our planet starts at home, and that's exactly what the Marou community will be doing with their beautiful blend of traditional practices and modern sustainability. By using local materials and labour, the Marou villagers will be reducing their own carbon footprint but also giving back to their own community.

Reusing and recycling are at the heart of their efforts, ensuring that nothing goes to waste. This heartfelt commitment supports the green community activity and helps neighbouring villages thrive. Together, they're creating a harmonious and sustainable environment for everyone.

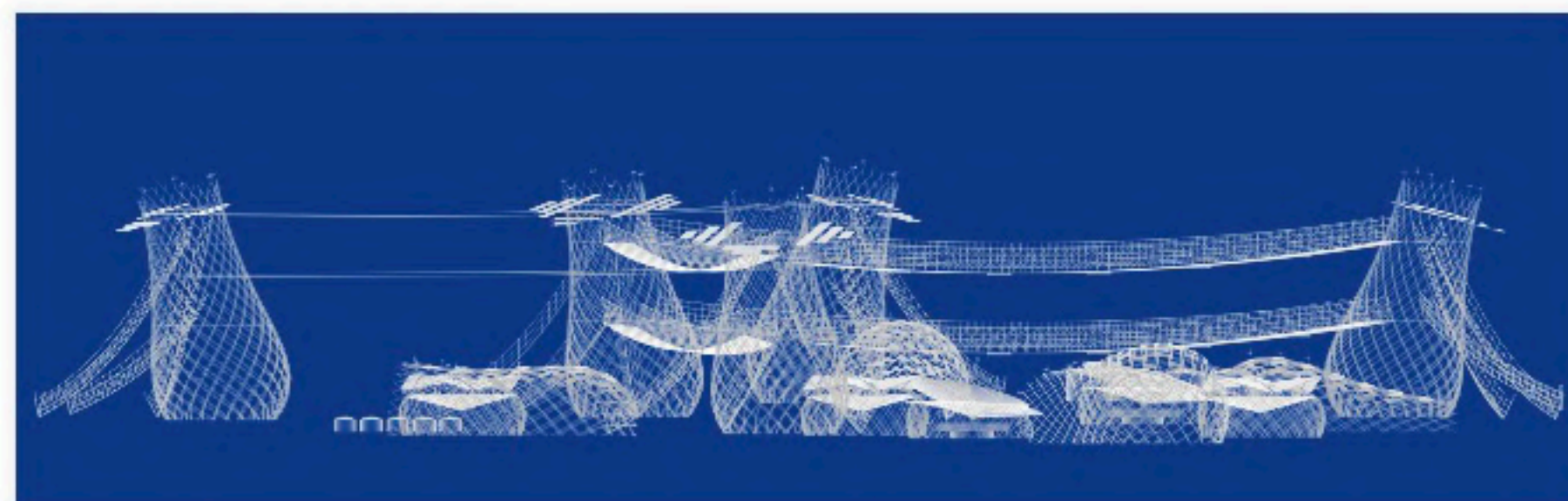
Natural Environmental Impact Considerations:

Design The initial design phase emphasised reducing the environmental footprint on the immediate site. By incorporating simple point contact methods, we suggested the utilisation of minimal screw-pile footings to limit disturbances. The design's set out tolerance permits adjustments to the footings to accommodate natural site variations without the need for advanced survey equipment. This flexibility ensures that the site does not need to be perfectly flat or even; any terrain irregularities are anticipated in the design's functionality.

use of Local Materials

A critical aspect of the design is the reliance on locally available, abundant materials. The primary structural elements consist of locally harvested naturally island growing bamboo, which requires little preparation prior to use. In addition, beach sand and gravel serve as concrete aggregate.

Perimeter screening and lashing materials are sourced from collected beach driftwood, jungle vines, cane, and grasses. Only a few imported components are needed, including proprietary fixings such as screw piles, bolts, screws, nails, capping sheets, and cement. Roofing is constructed using salvaged corrugated sheets, capping, and downpipes.





Practical Benefits - Immediate & Longterm:



Community Business: A wellspring of long-term income flowing through the veins of the community.



Island Employment: An endless horizon of opportunities for individuals in maintenance, daily chores, administration, culinary arts, and the creation of village crafts.



Wider Community Futures: A beacon shining as a living example for neighbouring islands and mainland communities to follow.

Co-Benefits: Cradled in the embrace of Naviti Island's majestic mountains, at the heart of Marou Village, lies the Marou Aqua Eco Meeting Place Sanctuary. A pioneering project unlike any other in Fiji and its neighbouring lands. This initiative weaves advanced technologies and engineering practices into the fabric of the community, merging first-world expertise with timeless tradition. The Marou Aqua Eco Meeting Place Sanctuary stands as a bridge between worlds, poised to offer transformative solutions and boundless potential.

*Educate – Inspire - Imbue Confidence - Encourage Attempt
Celebrate Accomplishment*





Co-Beneficial Areas Include:



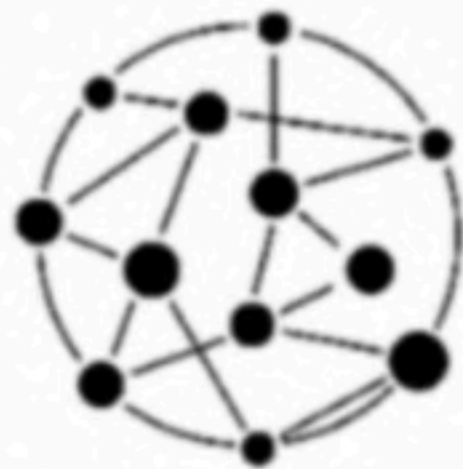
Education: From the early footsteps of primary school to the heights of tertiary education and the dreams of international study.



Tourism: Enchanting day trips, warm home-stays, and eco-adventures in nature's embrace.



Sports: The laughter and cheers echoing across fields and courts within and around the Array's expanse.



Technology: A haven for R&D opportunities that foster green systems and innovation.



Futures: The local villagers will weave their destinies in various roles within the Sanctuary's enterprise.

The village of Marou, under the ever watchful gaze of Vatu Rua, will bask in the glow of reliable electricity and water. Nearby villages and farmland will thrive with heightened awareness, education, and stewardship, enhancing sustainability, reliability, and bountiful production.





Social Environmental Impact Considerations:

Construction Methodology

The construction methodology is streamlined to ensure it can be executed using local labour. The modular structure design permits most assembly at ground level, facilitating manual elevation if necessary. If an excavator is available, it can be utilised for the installation of screw piles and lifting modules into position. This approach simplifies the construction process while leveraging available resources and labour, however it was important to allow for construction could without the intervention of mechanical heavy equipment.

Maintenance and Operation For ongoing maintenance and operation, staff will be recruited from Marou and adjacent villages. This strategy minimises travel distances for staff, thereby promoting local employment and involvement in the upkeep and management of the Eco - Woven Marou Meeting Place Sanctuary.

Engaging local communities ensures sustainable management practices and fosters a sense of ownership and responsibility among the residents.

Eco - Woven Marou Sanctuary strives to promote equity for Indigenous peoples and foster meaningful connections between individuals and their surroundings, as well as with one another. Its mission is to empower the Pacific region and advocate for a world where the voices of those impacted by climate change are acknowledged and sustainable solutions are prioritised. Eco - Woven Marou Sanctuary aims to raise awareness about the urgent need for climate justice and inspire positive global change.





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