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Climate Mitigation, Adaptation & Green Finance

A Research-to-Regulation Approach to Introducing Bamboo Construction in Fiji

The Fiji bamboo case study demonstrates how evidence-led research, code reform, capacity building and institutional champions can mainstream low-carbon, climate-resilient construction. For CSCC, it exemplifies a replicable research-to-regulation model that links innovation, standards development, and finance mobilisation to accelerate affordable, sustainable housing across Commonwealth SIDS and LMICs.

Two-storey bamboo prototype. *Hilti Foundation and Base Bahay Foundation Inc.*

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1. Executive Summary

Fiji faces a growing housing crisis driven by rapid urbanisation, rising construction costs, climate change, and poverty. Over 140,000 people—more than 15% of the population—live in substandard housing, and an estimated 30,000 new homes are needed by 2030. Heavy reliance on imported, high-carbon materials has made conventional construction unaffordable and unsustainable, while natural disasters and sea-level rise worsen vulnerabilities.

The Fiji Bamboo for Adaptation and Mitigation Project addresses these challenges by promoting bamboo as a sustainable, climate-resilient construction material. It introduces Cement Bamboo Frame Technology (CBFT), combining bamboo and cement to deliver durable, cyclone-resilient, low-carbon housing suited to local conditions. Through research, policy development, and capacity building, the project strengthens the enabling environment and builds confidence in bamboo construction.

The intervention supports sustainable urbanisation by expanding affordable housing, reducing emissions, and stimulating local value chains and livelihoods. Promoting fast-growing, locally available bamboo benefits remote maritime communities by improving access to affordable materials. The project aligns with Fiji's National Housing Policy 2025–2030, National Development Plan, and climate priorities. Key lessons emphasise evidence-based policy, institutional support, and awareness raising to shift perceptions and mainstream bamboo housing solutions.

2. Context and Challenge

Fiji is undergoing rapid urbanisation, with 56% of its population now living in urban areas, up from 37% in the 1970s. This growth places significant pressure on land, infrastructure, and housing, especially in the Suva–Nausori and Lautoka–Nadi corridors. With over 90% of the population concentrated on the two main islands, demand for affordable urban housing continues to rise. At the same time, construction costs have escalated due to inflation and dependence on imported materials such as cement and steel, making conventional housing increasingly unaffordable. As a result, informal settlements have expanded, now housing roughly a quarter of the urban population, often in hazard-prone areas exposed to cyclones, flooding, and climate-related risks. Fiji faces a housing deficit of around 30,000 homes, underscoring the need for resilient, affordable, and scalable solutions.

This project responds to these challenges by supporting the adoption of Cement Bamboo Frame Technology[1] (CBFT) and strengthening policies that enable its integration into Fiji's housing sector. The approach aligns with national priorities outlined in the National Development Plan, National Housing Policy, and the Climate Change Act (2021).

Many Commonwealth Small Island Developing States, including Samoa, Vanuatu, Solomon Islands, Jamaica, and Mauritius, face similar pressures: limited land, vulnerability to disasters, and high construction costs. Fiji's experience demonstrates how innovative building technologies can be integrated at national level, and highlights key factors—such as policy readiness, skills development, and local market capacity—that other countries should consider when pursuing technology transfer to improve housing resilience and sustainability.

[1] Cement Bamboo Frame Technology: https://base-builds.com/?page_id=563

3. Approach or Experience

The project is supporting Fiji to integrate Cement Bamboo Frame Technology (CBFT) into its social and affordable housing sector through coordinated research, policy development, capacity building, and awareness. It applies a strong evidence-based approach grounded in technical, economic, and contextual analysis.

A core component generates technical and economic evidence, including laboratory testing of Fiji's most common bamboo species (Bambusa vulgaris) and comparison with Bambusa blumeana, used in CBFT housing in the Philippines. Led by Fiji National University with guidance from the Base Bahay Foundation, this has strengthened national testing capacity. Challenges arose due to limited local experience in bamboo treatment and drying, requiring several trial cycles to achieve acceptable moisture levels, but producing valuable institutional learning.

A rapid bamboo inventory in Naitasiri Province, conducted with the Ministry of Forestry, included field manual development, staff training, and navigation of rugged terrain and limited baseline data. The successful pilot has encouraged plans for national scaling. Complementary research on sustainable cultivation, harvesting, treatment, and inclusive value-chain development, integrating traditional knowledge, is underway, alongside studies assessing CBFT structural feasibility and cost–benefit performance. The Cost Benefit Analysis will demonstrate potential savings compared to conventional housing. In the Philippines, CBFT homes cost about USD 250 per m²—20–30% less than conventional structures—while in Fiji the Housing Authority spends around USD 700 per m² on conventional housing. Costing in Fiji is in progress and remains complex due to the absence of an established bamboo industry. Beyond construction savings, CBFT offers major social benefits, especially in rural and maritime areas, by reducing freight and material transport costs, enabling faster post-disaster rebuilding, lowering household vulnerability, and improving long-term affordability.

The project also supports development of a Fiji Bamboo Building Code, led by the Base Bahay Foundation and the Ministry of Public Works, Transport and Meteorological Services, to formally recognise bamboo as a compliant material. Expected by August 2026, the Code will create regulatory pathways for bamboo housing. Awareness activities, study tours, and industry engagement have helped shift perceptions of bamboo, strengthening confidence among engineers, architects, and policymakers.

The project is implemented by the Global Green Growth Institute (GGGI) in partnership with the Government of Fiji, particularly the Ministries of Forestry and Public Works, and funded by New Zealand's Ministry of Foreign Affairs and Trade and Ireland's Department of Foreign Affairs and Trade under the Low Emissions and Climate Resilient Development Programme. Key partners include the Base Bahay Foundation, Fiji National University, the Construction Industry Council, Engineers Fiji, architects, and private sector actors, advancing affordable, climate-resilient bamboo housing in Fiji.

4. Insights and Lessons

A key success factor was the early identification and engagement of committed “bamboo champions” across government, academia, professional bodies, and civil society. Their leadership, technical credibility, and ability to navigate institutional processes helped build momentum, secure government buy-in, and fast-track approvals despite bureaucratic constraints.

However, challenges included limited local experience in bamboo research, lengthy drying and treatment processes for testing, logistical difficulties in field inventories, and initial industry scepticism. These required adaptive planning and scaling activities to available resources while maintaining strategic focus. Key lessons highlight the importance of institutional champions, building trust through evidence and exposure, flexibility in project design, and active private sector engagement to strengthen sustainability. Together, these approaches enabled progress despite technical and operational constraints.

Coordination is ongoing with sustainable housing agencies to develop fundable proposals for CBFT prototypes in urban and rural areas. These prototypes are essential to build technical confidence and local capacity and, alongside the developed codes, will support government and partner-led scale-up of CBFT social housing.

5. Key Takeaways

- Insular island nations, particularly SIDS like Fiji, require innovative green housing solutions using locally available, low-cost materials.
- Strong government leadership and multi-stakeholder partnerships (construction councils, engineers, academia) are essential for timely delivery and sustainable progress.
- Evidence-based approaches—testing, inventories, and research—build technical confidence and sector trust. Assessing bamboo availability, strength, value chains, costs, and capacity is critical before adopting CBFT.
- Bamboo has strong structural potential in tropical developing contexts. Research supports decisions on mechanical properties, resource inventory, sustainable cultivation and treatment, inclusive value chains, and CBFT feasibility and cost–benefit performance.
- The project supports development of the Fiji Bamboo Building Code and Fiji Bamboo Harvesting Code, alongside essential research.
- It strengthens Fiji’s green construction capacity, enabling CBFT housing at scale for social housing, disaster response, and climate-related relocation.

This Case Study was prepared by Mr Shavneet Mani, Project Officer from GGGI[2], by way of contribution to the work of the CSCC Housing Action Group, March 2026.

[2] Global Green Growth Institute: https://gggi.org/

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