



POLITECNICO  
DI TORINO

# Honors thesis

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## ARCHITECTURE FOR THE SUSTAINABILITY DESIGN

### *Abstract*

### **Experimentation of a fiber-reinforced cement block with bamboo for the Haitian construction market**

After countless dark periods, wars, riots, dictatorships, then finally independence, the Republic of Haiti is facing a moment of relative political and social stability, despite the ghosts of its own past still being present: an economy that is struggling to grow, makes Haiti one of the poorest countries in the world, certainly the poorest in the Americas; an earthquake that has yet to be disposed of, that has left too much despair, too many deaths, in a country where the mortality rate is among the highest (the fifth in the world); a lack of primary goods, safe access to water, food, electricity too limited; confusion and sense of disorientation can be perceived inside people's eyes and manifests itself as a lack of social and architectural identity.

Today Haitian architecture can be defined as a 'concrete jungle', using a term heard right here in Haiti, a building system based almost exclusively on concrete. Definitely the main material, the most present, the most used, but also the main cause of environmental transformation, on one side with the aim of modernizing the local building, on the other disfiguring its own land. The use and abuse of this material, probably due to the continuous comparison with the nearest wealthy countries (United States, South America, Dominican Republic), has made the Haitian architecture sterile, unable to get out of the common thought that, besides to concrete, there may be other construction materials that perform equally well. Especially if concrete in question is not made to perfection due to a lack of knowledge, inadequate materials and a misuse of these materials. Concrete exceeds in percentage the use of other building materials, not very present in the Island, sometimes too expensive and difficult to find. Haitians feel themselves without other alternatives, almost forced to use concrete for their houses, to stay safe from misfortunes,

to avoid what happened in that damn 2010. But the alternatives exist and not too far to find them.

Bamboo in Haiti is certainly not a widely used material, it is not belong to Haitian architecture canons and there are few examples of bamboo structures, in restricted areas, mainly in rural and mountain areas. However it is present and represents a great potential, having the island a tropical climate suitable for the growth and development of the plant. There is bamboo, why not use it? Why not support its use in architecture? Precisely that material defined as 'vegetable steel, due to its mechanical properties, is almost snubbed by inhabitants when it could instead be a lifeline. Thanks to its properties, its use as a reinforcement for concrete would guarantee the satisfaction of cultural needs, also contributing positively in economic and environmental terms, reducing the use of cement, sand and gravel.

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