

## Bike Station Bamboo Parking

[Project title]

## AW20-HMHLU

[Project ID]

### LafargeHolcim Awards (Main Category)

#### General Project Data

<b>Project Group 2</b>	Landscape, urban design, transportation infrastructure and public utilities
<b>Competition region</b>	Latin America
<b>City</b>	Junin
<b>Country</b>	Peru
<b>Client</b>	Local Government
<b>Intervention</b>	New construction
<b>Status of planning</b>	Final design stage
<b>Status of permission</b>	--Other--
<b>Planned start</b>	Jan-Jun 2021
<b>Project background</b>	Public commission
<b>Latitude</b>	11
<b>Longitude</b>	75
<b>Elevation</b>	450
<b>Other competition</b>	no

#### Project Contact

##### Ms TANIA CERRON

Architect · 1974 · female · CERRON ARQUITECTOS · DANIEL CARRION 570 -33, MAGDALENA · 17 · LIMA · Peru · Tel 947170652 · cerron.arquitectos@gmail.com

#### Main Author(s)

##### 1. Ms TANIA CERRON

Architect · 1974 · female · CERRON ARQUITECTOS · DANIEL CARRION 570 -33, MAGDALENA · 17 · LIMA · Peru · Tel 947170652 · cerron.arquitectos@gmail.com



Ms. Arq. Tania Miluska Cerrón Oyague

#### Project Summary

The Bike Station Bamboo Parking proposes a sustainable design with bamboo for urban and rural areas of the Amazon, considering the physical conditions of the place, the enhancement of renewable and local natural resources with great potential such as bamboo, which helps to activate its productive chain, also linked to promoting sustainable transport. It is based on four pillars: ecology, society, economy and technology.

A design is proposed that can be replicated in other geographical spaces with similar climatic characteristics and where there is the bamboo resource. As well as the possibility of self-construction by local people linked to community and inclusive work.

The station, linearly, consists of three modules, one (center) office and two (side) parking for 20 bicycle units.

# Bike Station Bamboo Parking

[Project title]

## Project Details

<b>Construction costs</b>	19,000 USD
<b>Site area</b>	65 sq m
<b>Footprint area</b>	sq m
<b>Floor area ratio</b>	
<b>Site occupancy ratio</b>	70%

## Further relevant key figures

21.44m x 3.00m

## Materials

Structure: bamboo, Guadua or Bambusa, Ø 6cm - 75%  
 Connections: metals - 5%  
 Bases: stone, local cement - 10%  
 Roof: crushed bamboo, local wood slats and organic tiles or palm leaves - 10%

## CO<sub>2</sub> Lifecycle Assessment

For the evaluation of the construction life cycle, the stages established by Standard UNE-EN 15978 are considered:

Production stage

Raw Material. 350 bamboos from local plantations - Use 75%,  
 Manufacturing: selection and harvest (manual saw tool),  
 removing branches (manual palin tool), preservation  
 (concrete pools and borax salt preservatives), drying (air free )  
 and Transportation: Local

Construction Stage. Construction process: excavation (peak),  
 formwork (reused wood), foundation and bases (manual  
 mixer, water), bamboo structure and roof (electric circular saw  
 and electric drill).

Final Stage. Bamboo waste can be reused to generate  
 charcoal or energy

Since the plantation becomes a CO<sub>2</sub> sink, as a permanent  
 product the CO<sub>2</sub> remains trapped, the waste can be burned  
 for energy production.

## Statements on Sustainability

### Innovation and transferability - Progress

The project responds to the revaluation of renewable, natural and local materials, with contemporary technologies proposing an integral bamboo structure. Only 10% of cement is used in the bases, and 5% used in metals in the connections.

The project proposes an alternative for urban equipment that protects the Amazon, helps minimize the impact on the environment, improves the urban landscape and encourages the use of sustainable transport. As part of the transfer of knowledge, it is proposed to train the villagers in construction with bamboo, so that the model can be replicated in their localities.

If they build several bamboo parking lots, the retention of CO<sub>2</sub> in urban facilities and the activation of the productive chain of the resource could be measured in the long term.

### Resources and environmental performance - Planet

With the construction of several Bamboo Parking Bike, it will help to minimize the ecological footprint in urban facilities and maximize the positive impact on the environment.

If the greater use of bamboo is encouraged, consequently its cultivation and management of plantations and natural forests are promoted, in this way the environmental impact of bamboo parking bike constructions would be positive in its different phases. From the forest and / or plantation it becomes a CO<sub>2</sub> sink, as a permanent built product the CO<sub>2</sub> remains trapped and if there is an end of the product's useful life, the waste can be burned for energy production.

The structure employs 350 bamboo culms of 5.5ml and 6cm in diameter, which contributes to fix 0.6 TN of carbon.

### Economic viability and compatibility - Prosperity

The construction of the Bamboo Parking Bike adheres to the logic of the circular economy, bamboo as a material activates the economy in its different stages, and not only for one product but also for several products. From the harvest, a section of the culm will uses as construction material, another section for furniture, crafts, beverage sheets, as a plantation for CO<sub>2</sub> capture, waste to generate bamboo charcoal and / or electricity. In this way it contributes to activate and generate several productive chains, promoting the local economy.

## Bike Station Bamboo Parking

[Project title]

### Project Visualization



The Bike Station Bamboo Parking proposes a sustainable design with bamboo that can be replicated in other geographical spaces with similar climatic characteristics and where the bamboo resource exists. As well as the possibility of self-construction by the local population linked to community and inclusive work.



The station, linearly, consists of three modules, one (center) office and two (side) parking for 10 bicycle units, with a total capacity of 20 bicycles.





The use of bamboo in its straight and curved round shape for trusses and beams.



The structure of each parking module is composed of three bamboo structural reinforcements.



The Bike Station Bamboo Parking as a scale model



The three structural reinforcement by elements: curved beams that form the roof.

