

Son Lap Commune, Bao Lac, Cao Bang Province has 257 households/ 1,700 inhabitants with 98% of the minority ethnic H'Mong and Dao. As an extremely poor area with more than 70% of the population living in poverty, people have to live a life without electricity, infrastructure, road, market, telecommunication network... Following the shifting cultivation of wandering hill tribes, they have destroyed forests and keep backward habits such as having many children in a family, of whom only few could go to school.

Son Lap School has a total of 485 students from kindergarten to secondary levels with more than 10 classes at the main school, 4 branch schools and some staff housings. None of them meets the minimum standards, specifically in terms of sanitary and washing facilities.

Thus, a space including toilet + washing area + vegetation is very urgent to the school here in particular and in Vietnam countryside in general. Being named Toigetation, the project has been designed based on three objectives: quick construction, low cost and widely-applied ability.

**Solution:**  
 Inspired by the iconic image of a large tree with wide canopy giving shade for the space below and within, Toigetation humbly blends into the slope at the foot of Phja Da mount. It includes a thick layer of vegetation (trees and herbs) on its four sides and the surrounding terraced garden. The vegetation layer helps regulating indoor climate, reinforcing the load bearing structure, supplying food and at the same time creating an implied boundary between inside and outside.

EXISTING AREA

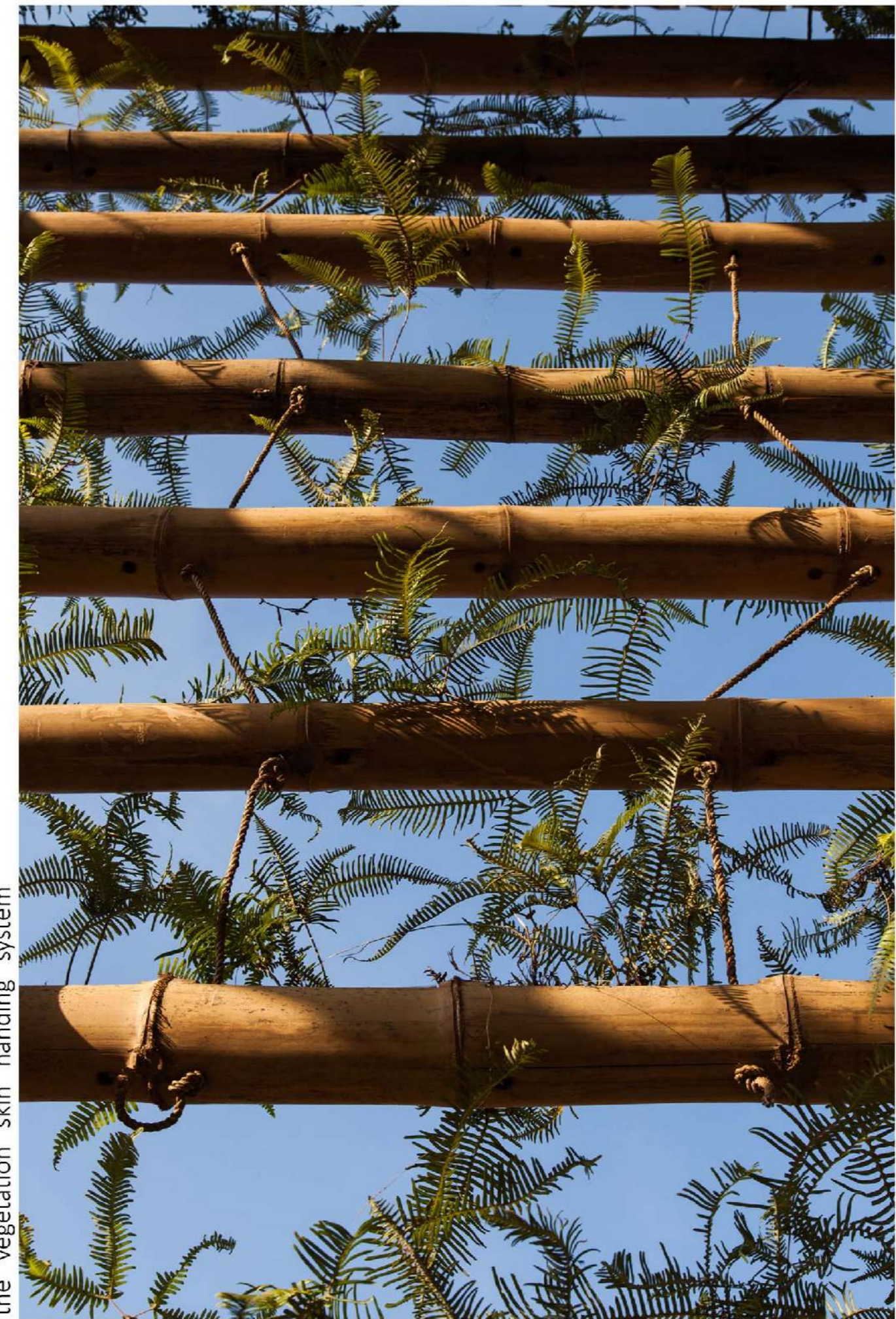


- 1 entrance
- 2. teacher & pupils accommodation
- 3. toilet place of pupils (outdoors)
- 4. primary classes
- 5. pupils washing at Son Lap people's committees

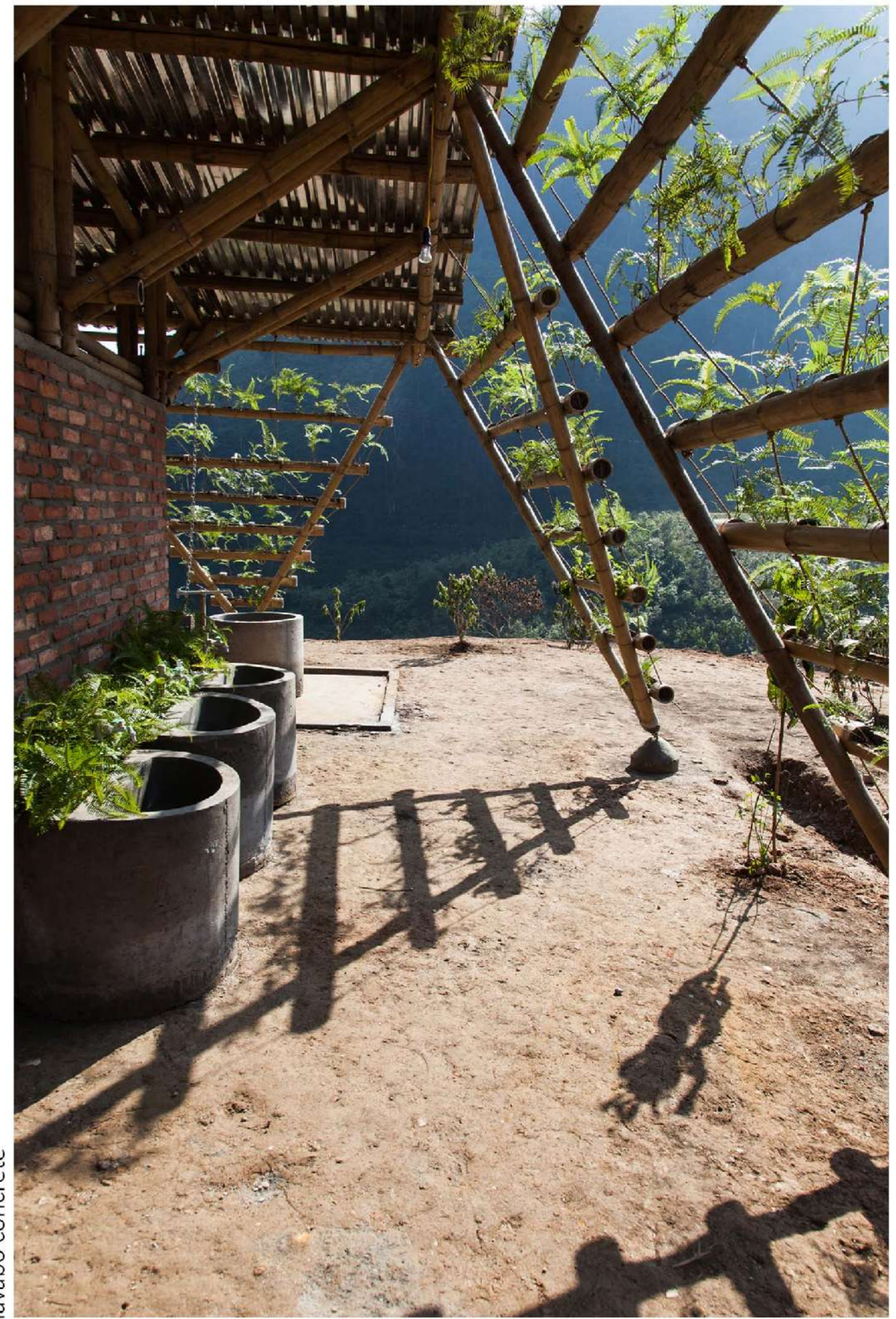




washing area



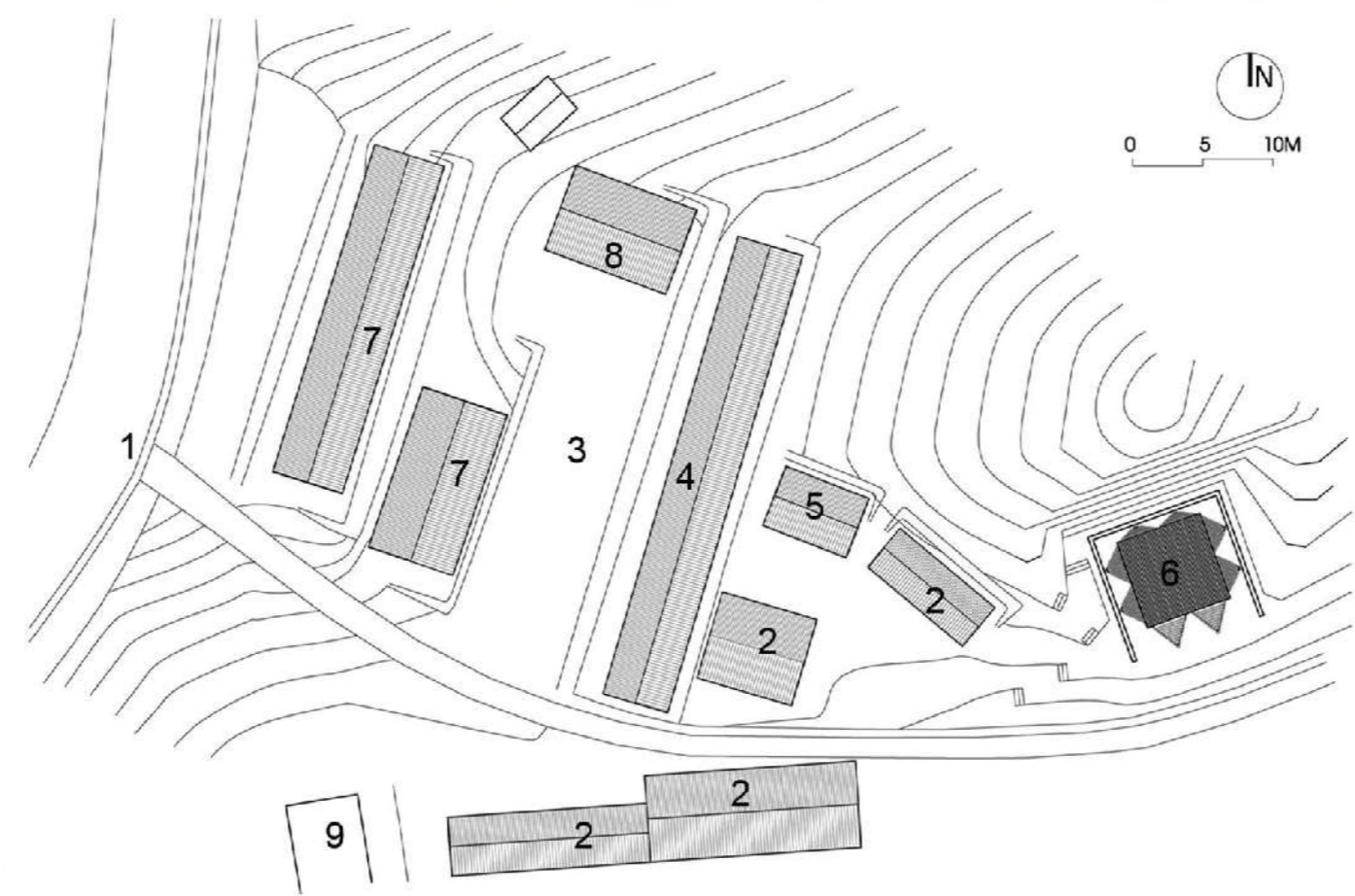
the vegetation skin handing system



lavabo concrete



the toilet block brightly illuminated at night



Containing a toilet and washing area, the building was developed for a school in the Son Lap Commune of the northern Cao Bang Province, where the majority of inhabitants live in poverty and standards of sanitation are very low. The architects aimed to create a low-cost sanitation solution that can be constructed quickly using locally available materials, so it can be easily rolled out throughout the country. The project was given the name Toigetation as the toilet facility is combined with a branching bamboo structure covered in vegetation, helping it to merge with its forested surroundings.

Brick walls enclose two toilets and two showers. They also support the bamboo framework, which is sheltered beneath a galvanised metal roof. Sloping bamboo poles connect the extremities of the roof structure with submerged concrete piles. Horizontal poles are filled with soil that adds ballast to reinforce the frame and is planted with vegetation, including herbs. The plants help to increase privacy and shade around the building's periphery, while reducing its visual impact. They could also provide a source of food.

MASTER PLAN

- 1. Entrance
- 2. Teacher & pupils accommodation
- 3. Schoolyard
- 4. Primary classes
- 5. Kindergarten class
- 6. Building area
- 7. Junior Secondary classes
- 8. Administration room
- 9. Son Lap people's committees





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Toigetation  
H&P Architects

A trough urinal is attached to one wall of the brick structure, while other sides are lined with concrete washbasins made from reused sewer pipes. Rainwater runoff is collected and filtered before being fed into a water tank in the roof space, for use in the toilets and washing facilities. Dirty water that gathers in the septic tank passes through a clarifying tank before being used to water plants in the terraced vegetation garden on the adjacent hillside. Solar panels on the roof help to generate electricity required to power lighting at night. The project was completed using local materials and labour with simple construction methods that could be easily replicated elsewhere in Vietnam. Toigetation requires just three weeks and \$3,000 (£2,000) to build.

- 1 view from west
- 2 trough urinal
- 3 bamboo roof detail
- 4 view over east- south
- 5 view from lavaboo concrete to washing area





CONSTRUCTION WITH VOLUNTEERS (PUPILS, TEACHERS,..)



Toigetation is created by local human resources (teachers, students, people) & local materials (bamboo, brick, reused sewers) with simple construction method (dig/fill proportion of 1/1; handcraft methods: pin, tie, hang) which makes the structure anchored, tied to resist natural disasters. The project has fully natural ventilation and lighting. In addition, we also use solar panels for producing energy and reuse waste water and running water.

Users can learn and be educated from the dialogue between the project, nature and local community. The construction methods would be useful teaching materials such as Geology and Hydrology (water), Physics (light diffusion), Aerodynamics (ventilation), Biology (photosynthesis, vegetable planting), Agriculture... All of these will affect the future actions of the people, contributing to the development of the local ecological balance and stable economy.

With the ability of wide application, people from across the country can quickly build a Toigetation by themselves within 3 weeks with 3000 USD cost. We hope the Toigetation could considerably improve human rights in Vietnam.