

Greening the City: Advocating Natural Materials with Vo Trong Nghia Architects

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Images by Vo Trong Nghia Architects

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To many, Vietnam is an unexpected place to find modern, groundbreaking architecture.

After many tumultuous years of conflict and wars fought on its soil, the densely forested country has now remade itself—and is pegged to achieve one of the highest economic growth rates in the region. Within the current landscape, an unexpected architectural culture has grown out of the disunity of conflict, mixing the old with the new: traditional Vietnamese temples and colonial houses rub shoulders with gleaming, monolithic skyscrapers that are poised to take over the city. A loss of greenery is a certain by-product of rapid growth, so how will the city balance progress while still creating a livable, green city?

This is a question that Vo Trong Nghia Architects, a leading architectural practice in Vietnam, aims to answer through its projects. Founded in 2006 by architect Vo Trong Nghia, the 60-strong studio employs distinctively modern forms in its projects, while experimenting with natural elements like light, wind and water. It is in their methodology to incorporate natural and local materials into buildings, which the studio believes will form the foundation of green architecture in the 21st century.



Award-winning projects like the S House, which is a study of sustainable housing in the context of Vietnam’s rural countryside, serves to better meet the needs of its inhabitants in a green, sustainable manner. Other projects, like the nurturing Farming Kindergarten, emphasises the importance of environment education for future generations to come, while House for Trees brings trees back into the city, literally—the tops of buildings serving as sustainable “pots” in which to house greenery.

Recently, the studio has been recognised for its efforts in incorporating bamboo and other natural materials in today’s predominantly steel-and-concrete city landscape. The architectural studio hopes to uproot long-held misconceptions of bamboo and to re-establish its reliability and durability, as many of their projects can attest.

Last December at Design for Asia Awards 2016, Naman Resort by Vo Trong Nghia Architects was declared one of the prestigious Grand Award Winners. *CITYGREEN* speaks with Takashi Niwa, one of the partners of the studio, to gain a deeper understanding of Vo Trong Nghia Architects’ vision for the green city of tomorrow.

What is the main goal you seek to achieve with every project?

Vietnam has faced many wars in the past, which resulted in less emphasis on good architecture within the country. However, times have changed; it is much more peaceful now, so it is a great time to start our own story here. As a studio, we always try to create good architecture for the society of the future. Although the current economy is prospering in Vietnam, developers only care about the quantity of buildings, and not their quality or spatial features. Our firm's aim is to get society to pay more attention to natural materials, such as bamboo, soil and greenery to discover the beauty of the Vietnamese lifestyle. Hence, our aim is to plant a seed in order to develop better cities for the future.

The studio seems to embrace the ideology that bamboo is "the material of the 21st century". What influenced this thinking?

Timber is made out of trees and due to the current high demand, Vietnam is importing a high volume of timber. As a result, timber is available in limited quantities to be used for structural and design work. That is why we choose bamboo as our primary structural material. This because bamboo is a material that brings people closer to nature and is often used by the Vietnamese to produce food and other products. In addition, Vietnamese handicraft villages often possess a natural treatment technique that can improve the durability of the bamboo.

Bamboo also possesses amazing material features. It is bendable and flexible in its usage, and workable in both its raw and processed states. The material is also cheap, lightweight, possesses good acoustics, and is easy to work with. Unfortunately, most people do not consider bamboo a good structural material compared to the likes of steel and reinforced concrete, due to lack of treatment or incorrect usage of the bamboo. However, we have proven that bamboo is durable, beautiful, strong, stable, and is a lifelong material. We think that now is the best time to showcase the potential of bamboo in architecture.



Are there any new natural materials that your studio is experimenting with now?

We are currently working on projects that use natural materials such as soil, bricks and stones.

Your projects combine contemporary green technology and traditional Asian Architecture ideologies in a seamless manner. What spurred this approach?

Vietnam is a developing country. Some goods are still made by hand locally and there are good local materials available in abundance. On the other end of the spectrum, industrial building products are expensive and electricity shortages occur frequently in this country. Keeping in mind this situation, our design approach cannot rely on high-tech methodology. Instead, we think that the combination of greenery and traditional techniques is the better approach.



1. Members of Ho Chi Minh City Office.
2. Five volumes designed as pots of trees.
3. Seeing up the elevated trees.
4. Trees post shadow into the courtyard.

Seeing the variety of work you've undertaken as a partner of Vo Trong Nghia Architects, which project still stands out to you after all these years? Why?

Personally, I think that Farming Kindergarten demonstrates how our green approach is possible even in large-scale buildings, as our projects prior to this were only residential or small-scale buildings. The design proposes a sustainable education for children of low-income factory workers. The kindergarten provides natural activities, a massive playground area, as well as green education spaces like the vegetable gardens on the roof. This green building approach will benefit not only a child's education, but also the society at large for future generations to come.



- 5. Three courtyard for children's activity.
- 6. A roof continuously draw a stroke into ground.
- 7. Courtyard is surrounded by the classroom.

Farming Kindergarten

Located in Dong Nai, in the outskirts of Ho Chi Minh City, the Farming Kindergarten was designed as an educational space for children whose parents work in a nearby shoe factory. As rapid urbanisation is swiftly depriving Vietnamese children of green spaces, the Farming Kindergarten aims to buck the trend by pioneering a sustainable school design.

Rising gently from the ground, a knot-shaped roof—serving both as a rooftop vegetable garden and insulation—encircles three courtyard playgrounds, offering plenty of green spaces for children to explore and rediscover nature. The two-storey school is built using economical materials like concrete, bricks and tiles that are readily available, while an airy configuration provides natural lighting and cross ventilation—cutting down on electricity costs amidst a harsh tropical climate. Additional green measures like harnessing solar power to heat water, and the recycling of waste water from the neighbouring shoe factory to water plants and flush toilets makes the Farming Kindergarten a green building inside and out.

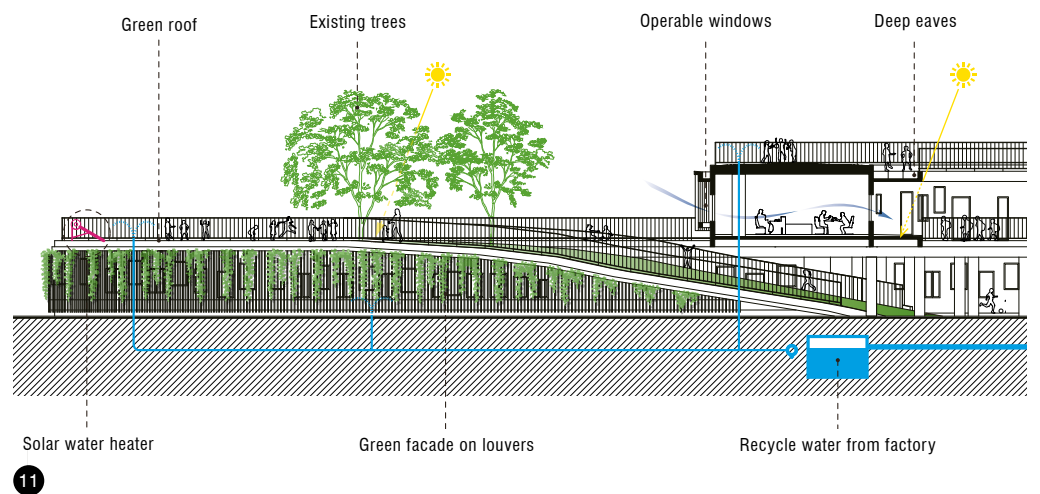


8. Safe courtyard for children's activity.

9. 1000m² of roof is vegetated for children's experimental learning.

10. Green roof for children's activity and learning.

11. Diagram for utilization of sustainable ideas.



On the S House: how did the idea for this project come about? What have you achieved, or hoped to achieve with this project?

People living in the countryside often dwell in homes that are in poor conditions due to inadequate building techniques and the lack of accessibility. In order to support our society, we aim to create basic yet comfortable space for living through the various studies of the S House. We have also spoken to our corporate partners to mass-produce S House for those who need it.

With the S House now in its third iteration, what was the design journey like? What were some takeaways you've gained from the process of creating the S House?

We are currently working on the fourth iteration of the S House, and in this process we've realised that the house can be used as a space for classrooms and schools as well. Throughout the entire S House series, we have studied the use of precast concrete and steel. For the latest S House, we decide to use a steel structure that can be assembled by the clients themselves, even in locations that can only be accessed by boats.



What are some less-known considerations you've discovered when building low-cost housing?

Nowadays, industrial products often contain too much chemical products and the quality and lifespan of these products can often be dubious. We wish to use durable and long-lasting materials to design high-quality low-cost housing, even when they are mass-produced. In the long run, we plan for S House to be a design made of basic and simple materials that will result in a lifelong and durable structure.

- 12. First S House's mock up to study an affordable house.
- 13. Interior of S House 1.
- 14. The mockup was used for site office of Farming Kindergarten.
- 15. The bamboo wall and roof made a loose skin for ventilation.



16. Second S House made by prefabricated concrete structure.

17. Third S House made by Steel structure.

18. Structure of S House 2.

19. Wall panels are made by leaves.

20. Interior of S House 3.

S House

The S House project began as a study of low-cost housing for Vietnam's poor, especially those residing in the Mekong Delta area. The endeavour, which initially began as voluntary work, was spurred by a need for stable but lightweight, permanent and yet affordable homes for Vietnam's low-income communities, who currently live in temporary structures. Easily built in a day, the first iteration of S House features a lightweight steel frame with walls of corrugated polycarbonate and bamboo—eschewing common materials like concrete and bricks due to the soft soil.

Now, three versions of the S House have been created: the second version of the S House—a pre-cast concrete frame bolted together with steel, and walls of bamboo and palm leaves—costs just US\$4,000 to build, while the third-generation S House requires just three hours to assemble.

The fourth generation of the S House now in the works, with Vo Trong Nghia Architects exploring how the structure can be used for classrooms or meeting points within communities, and working towards tying up with corporate partners to mass produce the S house for those in need.

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The main principle of our design is to bring happiness to each user while balancing the budget and functions with our design. ... We try to minimise the use of industrial equipment to maximise local resources.

Having designed architecture for renowned universities, luxury hotels, and all the way to affordable housing for low-income people, do you find that the range of projects each have a different definition of sustainability?

The main principle of our design is to bring happiness to each user. Of course, we have to balance the budget and functions with our design, but we still try to achieve a comfortable space for the people who will inhabit the space. Luckily, some of the natural materials in Vietnam are still cheap and the greenery grows very fast. We try to minimise the use of industrial equipment to maximise local resources.

In your opinion, what defines an ideal city?

Vietnamese cities have strong sense of community despite their high density. Due to economic development, developers only focus on making skyscrapers, a move that can segregate local communities. Our aim is to use greenery to develop and rehabilitate the local society. The addition of greenery in cities can provide more green “skins” for buildings and produce fresh air for cities. Also, we think that greenery can improve communication between people and their neighbours, and within society. Therefore, a city that spreads the message of the benefits of greenery for a better society is the ideal city.



21. Roof landscape of thatched roof.

22. Sky view of the landscape.

In your projects, have you ever encountered the dilemma of balancing sustainability concerns with the expectation of making an architectural statement?

We enjoy creating spaces for people to experience and communicate with nature. In our work, greenery is considered a building element or a material because it grows fast, especially in Vietnam's tropical climate. That is why we place our focus on creating low-energy buildings with a good environment for the people, so that they can engage with the space and its natural surroundings. Therefore, we are happy to design good buildings with a good environment, without achieving any green certifications.

Besides choosing to use environmentally sustainable materials and introducing plants to buildings, what are some other ways to bring nature back to the city?

Natural wind is very important in bringing nature back to the city. Traditional houses in Vietnam used to be well-connected with nature. However, with the increasing number of air-conditioning units, population growth and climate change, natural wind is now even more important as it has the ability to reduce heat and energy usage.

Some people have the impression that architecture is simply a building or a structure; do you think it is possible to do well and alleviate poverty with architecture alone?

People tend to underestimate an architect's ability and not have a full understanding of how building design works; but things have changed recently in Vietnam as more and more people have experienced or encountered a well-designed space. This helps them to understand the potential of architectural design. So the real question is: how can we build good architecture that will help educate and inform society?



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Having pioneered a series of green-focused projects in Vietnam since the studio's founding in 2006, are Vietnamese people now more aware of the importance of green spaces in their city?

We are trying our best to promote our green approach to society and have suggested to the government to introduce more greenery to the cities. Fortunately, the Vietnamese government have started planting more greenery in Ho Chi Minh and Hanoi recently. In addition, more and more young architects are integrating greenery into their building designs. Buildings with plants are no longer an uncommon sight. On the other hand, ongoing industrial development is causing more “greenless” skyscrapers to be built. Now is the right time to transform underdeveloped cities and improve their living conditions. 

23. Bamboo structure.

24. Bamboo elements are assembled into bottom of columns.

25. A top light illuminate interior of the space.