

# Green Collectivism

**Location:** Hanoi, Vietnam

**Team members:** Tran Hoai Phuong, Bui Xuan Duong

## Overview

The name of Hanoi, the capital city of Vietnam, literally means “inside the river”. Located next to the mercurial Red River, Hanoi has been always in a close and complicated relation with water. On the one hand, Red River is life line to Hanoi as much as any other area in the Delta. On the other, flooding has always been such a great threat that the inhabitants started the millennium-long construction and reconstruction of the Dyke to keep the River at bay. This love-hate relationship expands into 21<sup>st</sup> century with renewed complications.

## Analysis

### City of lakes:

Hanoi’s landscape is a mosaic of high and low lands. Typical for a deltaic city, water bodies are integral parts of Hanoi’s urban tissues. Large number of lakes, ponds and productive water landscape allows the city to be resilient to flooding. However, the conventional mode of development is substantially reducing the permeable surface, putting increasing strain on the evacuation system.

### Dyke and port:

Highly dependent on the dyke, the city is cut off from river’s natural sedimentation, giving rise to the use of polluting fertilizers. The newly-proposed reinforcing dyke system will call for modifications of dyke and inevitably narrow the floodplain; in the long term, the heightened river bed due to accumulation of sedimentation will only vitiate the cycle of dyke heightening. The reckless and sprawling development in the unsafe area outside the dyke system is feared to be accelerated by the proposed extension of the port.

### Pollution:

With the Dyke recently heightened to protect the city’s centre, Hanoi now faces an unexpected source of flooding – the grey and black water from an exploding megapolis that exceeds the capacity of its outdated sewage and pumping system. The inadequate water treatment system is overloaded by increasing amount of waste water, which is afterwards pumped directly into the river.

As in so many Asian cities, both spatial structuring and water management of Hanoi is reaching the limits of its full capacity. Hard engineering approach of centralization (one water treatment station) and concentration on one element (dyke) will not hold out for very long. Hanoi is facing an urgent need to revolutionize its planning and building paradigm, which integrates soft-engineering and follows radical and systematic approach.

Once a stain in Vietnam’s history, Collectivism should be revisited for its potentials of resources concentrating and cohesive strategy. The high density enables the preservation of balance between built and permeable surfaces. Collective housing make access to infrastructure possible to more inhabitants with less resources while collective production means more effective water management.

## **Collectivism vision**

### **Accommodating:**

Despite being deemed as unsafe for development, the area outside of the dyke is expected to house an additional 2,000 inhabitants following the extension of the port and its service. Compact neighborhoods are well connected to city' traffic network and public transportation. Complexes of eco-friendly modular houses are mass-constructed to meet the demand of and affordable housing.

### **Deconcentrating**

Cut-and-fill method creates a network of high and lowland, water channel and embankment, each area is designated with specific urban or water management functions. The result is a balance system of water and land, where integral parts work closely together.

### **Decentralizing :**

Water are treated and stored by multi-scalar wetlands and reservoirs. This system is supposed to share the strain from the existing water treatment station. Water is collected and recycled for household and agricultural uses.

### **Investing**

Higher concentration of population and production enables focused investment in exploiting renewable energy and innovative research in agriculture.

## **Masterplan**

The project locates outside of the dyke, at the interface between water and land. This is a strategic space, whose functions should be safeguarded during the rapid development of Hanoi. The proposal creates new urban tissue in form of a more sophisticated dyke, operating as both infrastructural and landscape elements. It is the mediator between the river and the city, providing more space for water, occasionally floodable mass and concentrating the urban development to strategic location. Urban and landscape element work together, establishing a self-sufficient water management system.

**Space for water:** Flood can be treated as opportunity. Overflowed river water can act as a natural fertilizer, reducing the need of using chemicals. The area can be developed into exclusive bio-agriculture zone with higher economic values. Cut-and-fill method is used to construct a system of reinforced embankment, water channels, water reservoirs, wetland and aquaculture.

**Bio – agriculture:** Natural sedimentation and on-site water treatment enable the development of organic agricultural product. While lowland can cater for crops, new network of highland can be used to experiment and cultivate orchard, which brings more jobs and income.

**Wetland and floodable area:** Beside large wetland designated for city-scale water purification, a system of small wetlands is responsible for treating water in neighborhood scale. Together with floodable areas, they can be used as public or recreational spaces.

**Infrastructure:** Housing is concentrated in highland, at the strategic location with access to road network and potential to be connected to the proposed urban railway.

## **Hierarchical systems**

Besides maintaining the compactness of housing complex, agriculture gives initiatives to secure the permeable surface as it provide more job and income for the neighborhood. Multi- and cross-scale hierarchies of agriculture and water management are proposed in order to optimize the use of open space as an urban food source.

## **The Green Home**

Water management is closely integrated in the design of housing complex. Rain water is collected from roof garden, part of it is directly filtered by vertical garden to irrigate household scale garden. The excessive amount and the rest of grey water are recycled. Black water is also treated before brought to neighborhood's purifying wetlands.

## **The Modular Home**

In order to reduce the price for each house, the houses are mass-produced in form of modules. It allows flexibility in housing composition and caters to the specific needs of each household as more module can be added as the family grows. The construction of the house must maintain the ability of natural ventilation and lighting of every module and of the whole complex. The green envelop and roof garden improve the micro-climate, reducing the energy demand. The lower platforms are reserved for traffic connection, public and commercial activities. Housing complex is placed on pillars, with the ground left empty for agricultural or public appropriation. Therefore, in case of extreme flooding, inhabitants can stay connected to city infrastructure, maintain their commercial activities and protect the goods or harvested crop.

## **House as a part of ecological process**

A green home in the growing Hanoi, as we imagine, should go beyond the conventional idea of a mere dwelling. In this project, the house is an integral unit of an extensive program to construct a new model of more sophisticated dyke. The dyke is a composition of urban tissues and landscape elements working inseparably. It strives to incorporate hard and soft water engineering and to integrate infrastructure, landscape and water management.

It is an attempt to revitalize the principles of collectivism in order to focus resources and effectively steer the development. The house is the central piece, giving the initiative and energy to construct the site, and, with its own program, it orchestrates the operation of the landscape. Once a highly water-based city, Hanoi is losing its connection and appropriation with water in the way to become a metropolitan. The proposed house endeavors to reconcile this bond, a development model for the whole city in order to become resilient to flood and climate change.