

UAI, UCE, University of Forestry,  
VIAP, KU Leuven

# International Students Workshop on Water Urbanism in Hanoi

*“How Water is Treated in HAIDEP”*

*12 February 2009*

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ALMEC Corporation*

- Background
- **HAIDEP** (Hanoi Integrated Development and Environment Program) = *Beautiful Hanoi*
- Urban Master Plan Outline
- Approach to Water Environment

# Historical Development of Hanoi

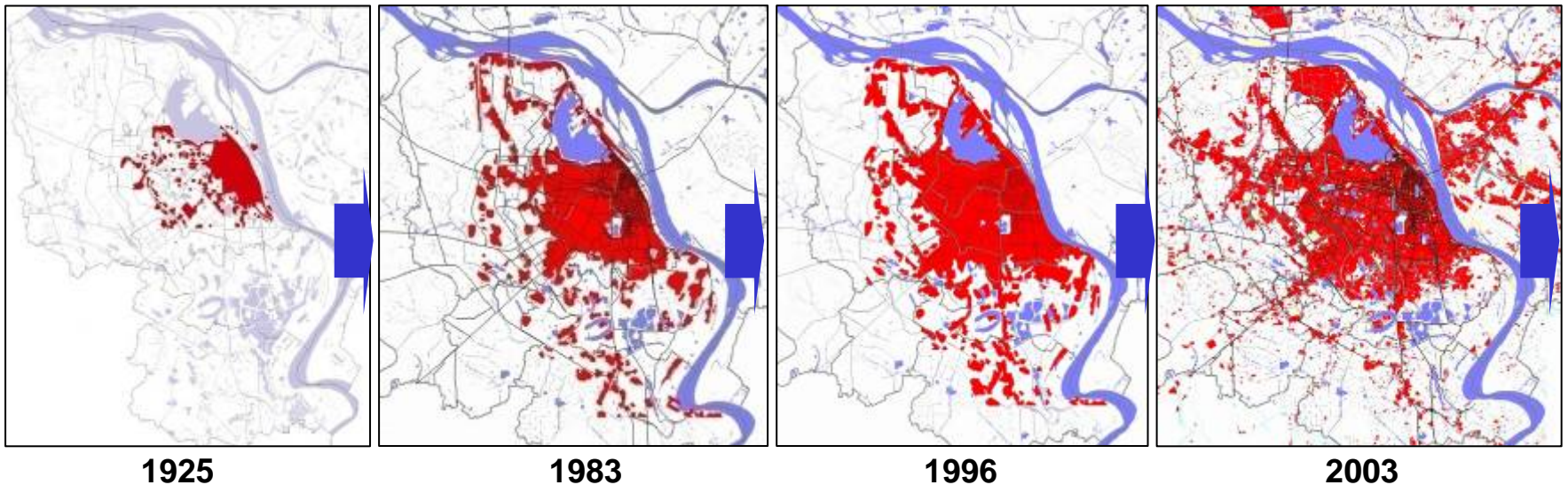
Hanoi's population and urban areas have increased rapidly due to in-migration from other provinces/cities and rural to urban transfer. Urban population increased at 5.2% between 1990 and 1998 and 4.6% between 1995 and 2005. Incomes have doubled and cars/motorcycle numbers have increased to roughly 10 times in the 1995-2005 period.

## Historical Changes in Hanoi's Socio-economic Profile

Indicator		1990	1995	2005
Population (000 (%))	Urban	990 (48)	1,275 (52)	2,000 (65)
	Rural	1,096 (52)	1,156 (48)	1,083 (35)
	Total	2,086 (100)	2,431 (100)	3,083 (100)
	Growth Rate/ year (%)			
	Urban	-	5.2	4.6
	Rural	-	1.1	-0.7
	Total	-	3.1	2.4
Per Capita GDP (million VND)		n.a.	5,150	10,700
No. of Vehicle (000)	Car	n.a.	97*	786
	Motorcycle	n.a.	164*	1,566

\* 2000 figures.

## Historical Development of Urban Areas of Hanoi



# Expected Problems if No Proper Measures are Implemented



*Traffic congestion will further worsen.*

*Traditional values will disappear.*



*Economic growth will slow down and inequalities will widen.*



*Risks from disasters will increase.*

*The natural environment will become even more degraded.*



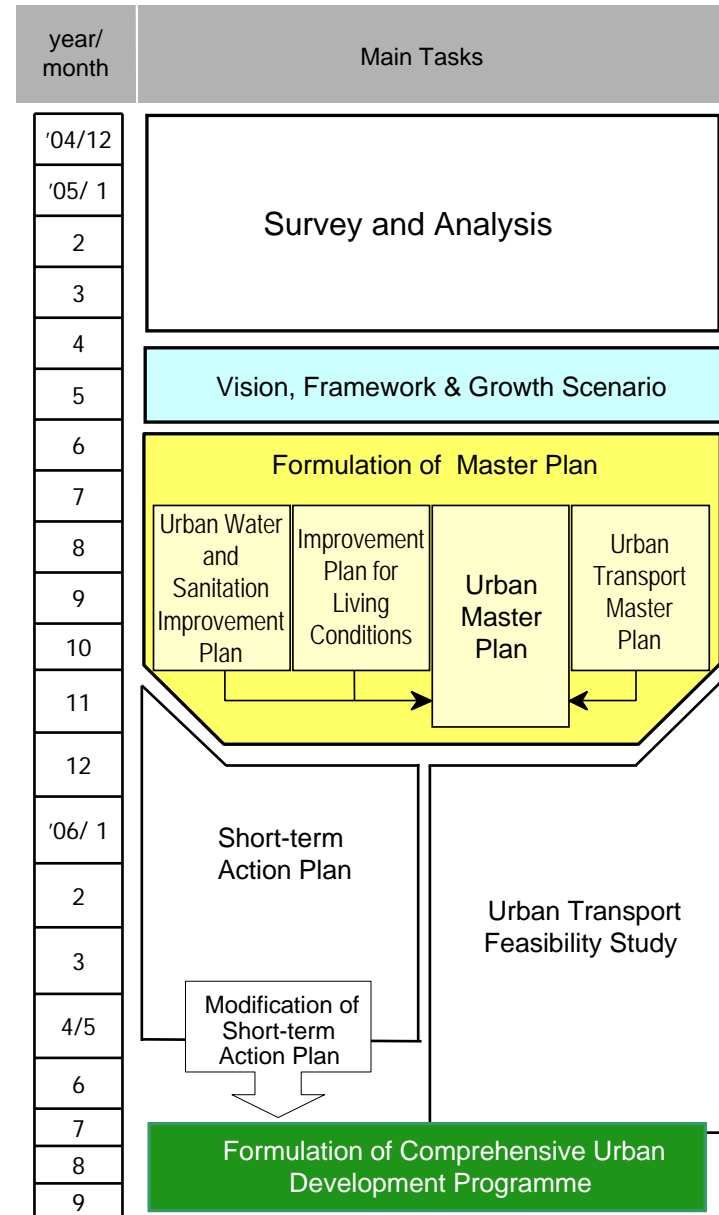
*Living conditions will further deteriorate.*



# HAIDEP Study Process

- Commencement: December 2004
- First Draft M/P: July 2005
- Revised Draft M/P: Sep., Nov. 2005; March, June 2006
- Subsector Plans: Sept. 2006
- Draft Final Report: November 2006
  
- Technical Working Group Meetings
- Steering Committee Meetings
- Seminars, Workshops
- Exhibition (August 2006)

## Overall Study Framework



# Updated Subsector Plans

## ○ **Urban Planning & Development**

- ✓ Urban planning database
- ✓ Socio-economic framework
- ✓ Landuse plan
- ✓ Spatial structure plan
- ✓ Urban development projects/action areas
- ✓ Institutional improvement
- Coordination with HMA Plan of MOC

## ○ **Urban Water & Sanitation**

- ✓ Future demand
- ✓ Development orientations
- ✓ Projects/action and evaluation
- ✓ Institutional improvement
- Water supply
- Sanitation
- Drainage
- Lakes and ponds
- Sewerage
- Flood control

## ○ **Transportation**

- ✓ Transport planning database
- ✓ Future demand and modal policy
- ✓ Main transport network
- ✓ Traffic management
- ✓ Public transport planning
- ✓ Transport projects and prioritization
- Integration with regional transport strategy of MOC

## ○ **Living Conditions**

- ✓ Housing demand and orientation
- ✓ Parks and green space
- ✓ Urban landscape



*Documented in separate subsector reports*

# Public Information and Participation

- Extensive Questionnaire Surveys
- Stakeholder meetings
- Seminar/Workshops
- News Letters (No.1 ~ No.6)
- Exhibition



# Vision and Goals

## VISION

***“Hanoi must be built as a modern and thriving capital city, symbolizing the whole country, and functioning as a national and regional center for policy, culture, science, technology, education, economy, and international trade.” (Order No.1/ 2001/L-CTN)***

## OBJECTIVES

- To enhance the city’s identity and image, which must be shared by the public.
- To ensure socio-cultural and natural environment sustainability.
- To ensure that socio-economic activities can be conveniently carried out and good living conditions can be experienced by all.

## STRATEGIES

- ◆ To boost industrialization, modernization, and international as well as regional integration.
- ◆ To promote economic, social, and cultural development in a comprehensive and sustainable manner.
- ◆ To stabilize local security and political conditions.
- ◆ To accelerate infrastructure and superstructure development.
- ◆ To improve the people’s living conditions.





# Urban Water and Sanitation

- Necessity of the people and socio-economic activities
- Protection and preparedness against water borne disaster
- Important resource to enhance amenity and image of the city



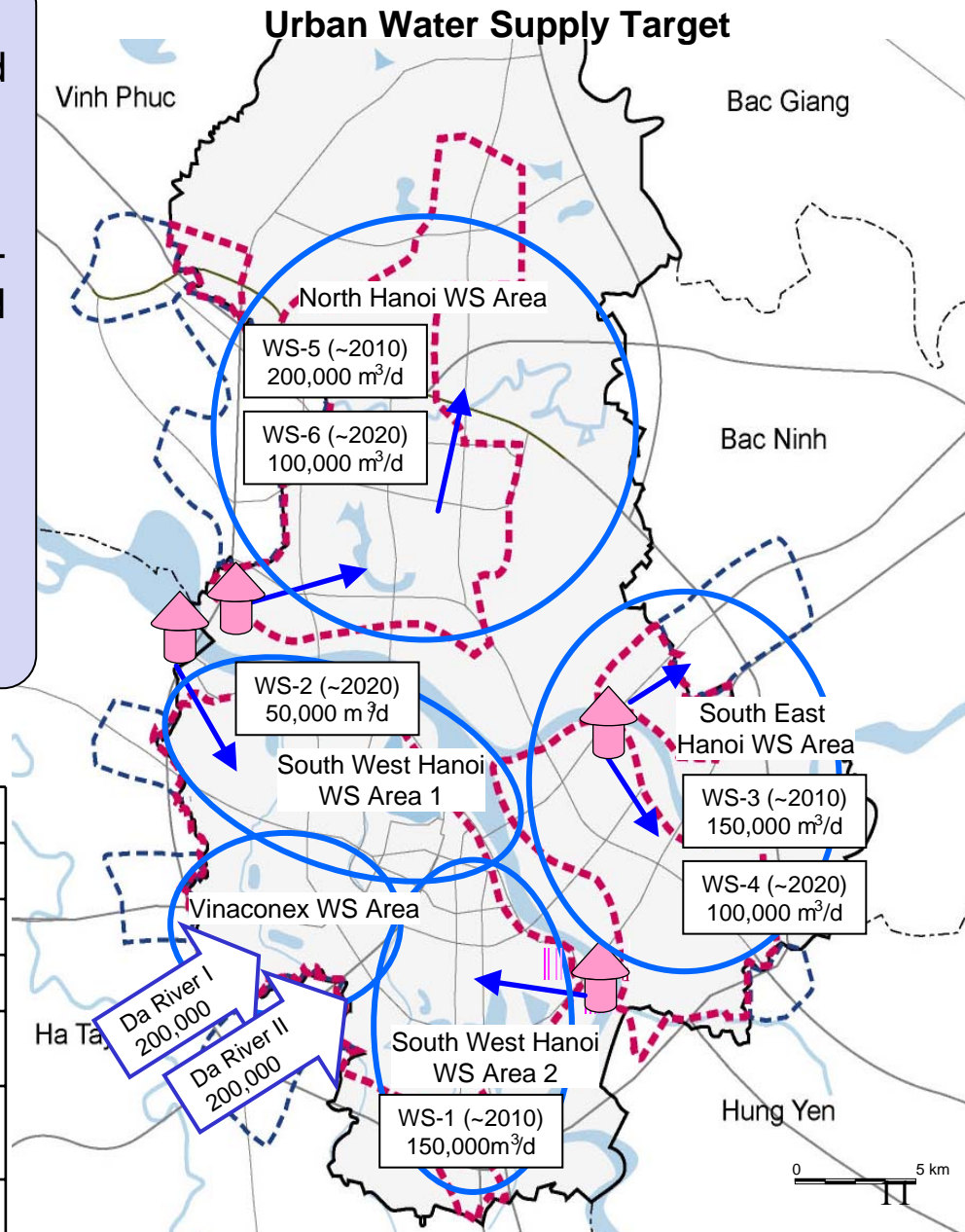
# Water Supply

- The entire city will be provided with clean piped water by 2020 together with increased water consumption per person per day.
- Future water demand is estimated to be 1.3 million m<sup>3</sup>/day in 2020. 3 plants (WS-1, WS-3, and WS-5) will be developed by 2010 and 3 more (WS-2, WS-4, and WS-6) by 2020
- Groundwater especially in the south of RR3 is not potable due to contamination. Future source will be surface water, particularly because land subsidence due to excessive extraction of ground water has occurred.

**Urban Water Supply Target**

Item		2005	2010	2020
Coverage (%)	Urban Area	100	100	100
	Rural Area	80	87	100
Per Capita Consumption (liter/day)	Urban Area	160	170	190
	Rural Area	135	165	180
Physical Loss (%)	Physical Loss	16	15	15
UFW (%)	Admin. Loss	21	15	10

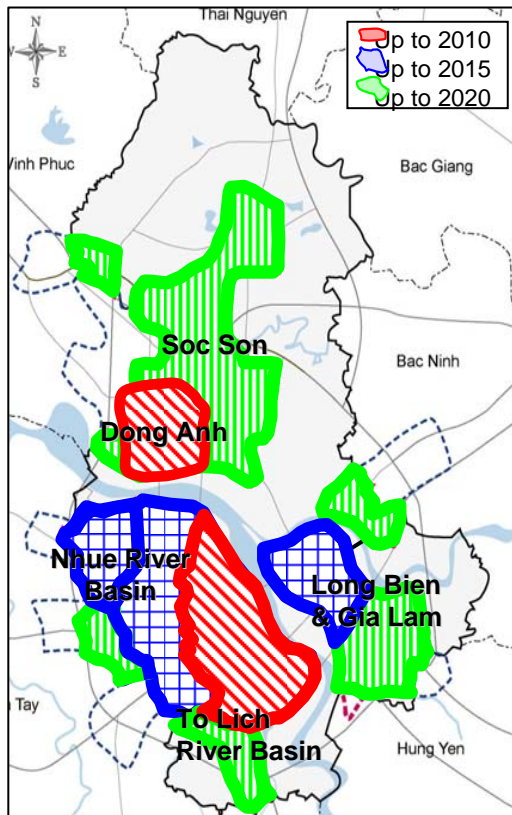
1) Unaccounted-for Water



# Drainage System

The drainage system will be developed to protect the entire urban area (432km<sup>2</sup>) from inundations of up to 310mm per 2 days of rainfall (equivalent to 10-year return period).

## Implementation Plan on Drainage System Development

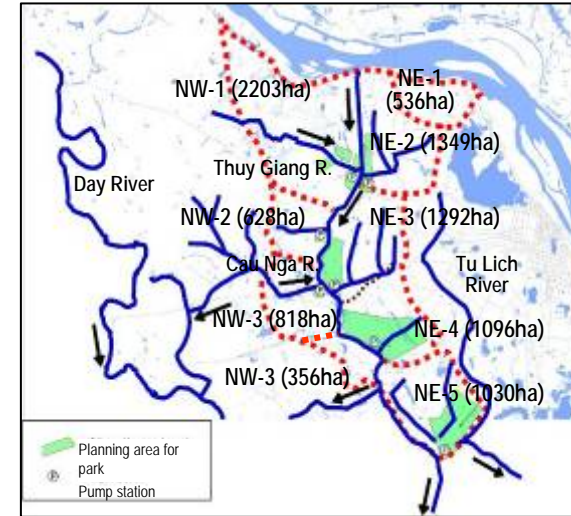


## Location of Water Supply Projects

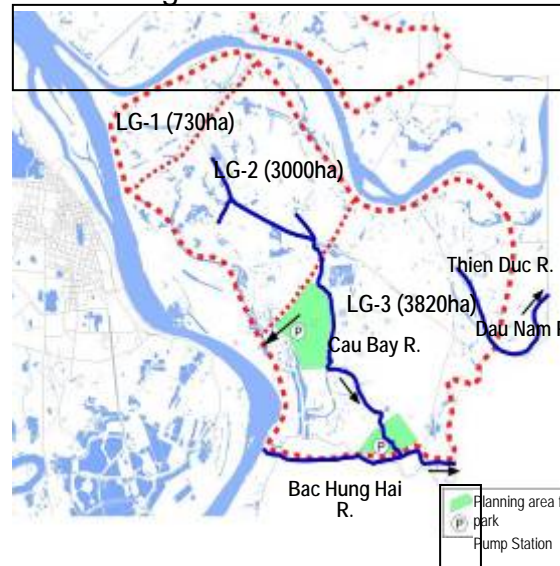
To Lich River Basin



Nhue River Basin



Long Bien and Gia Lam

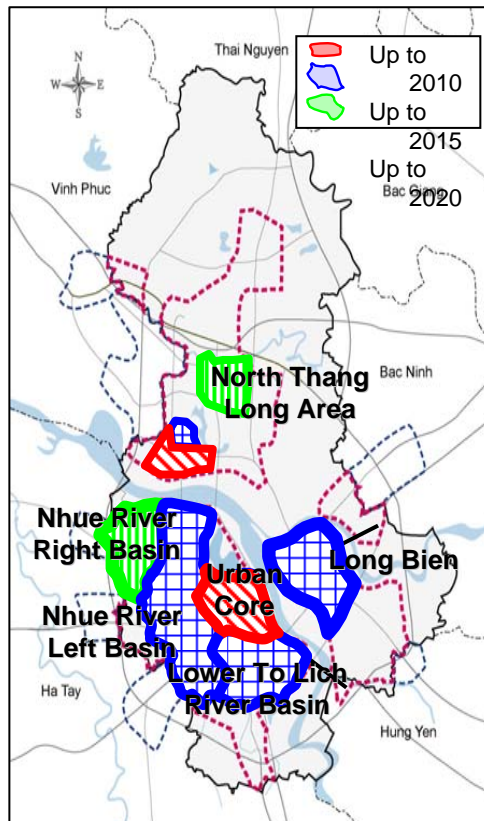
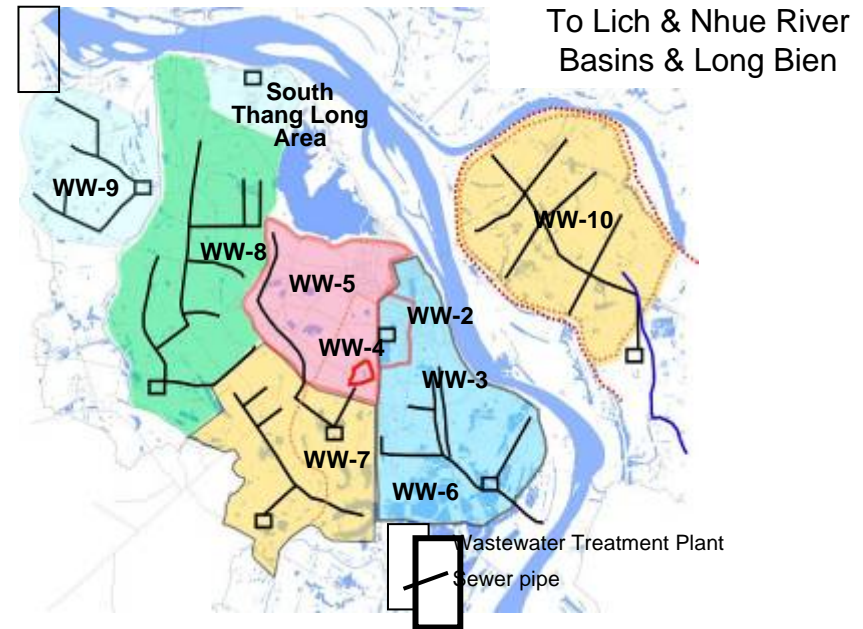


Dong Anh

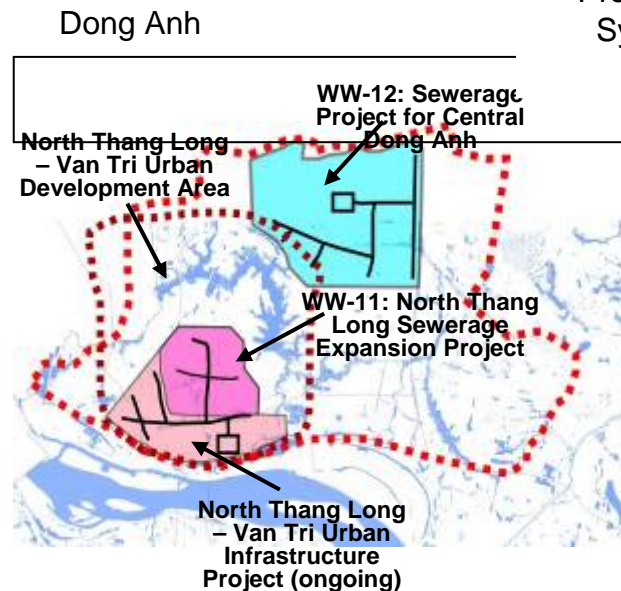


# Sewerage System

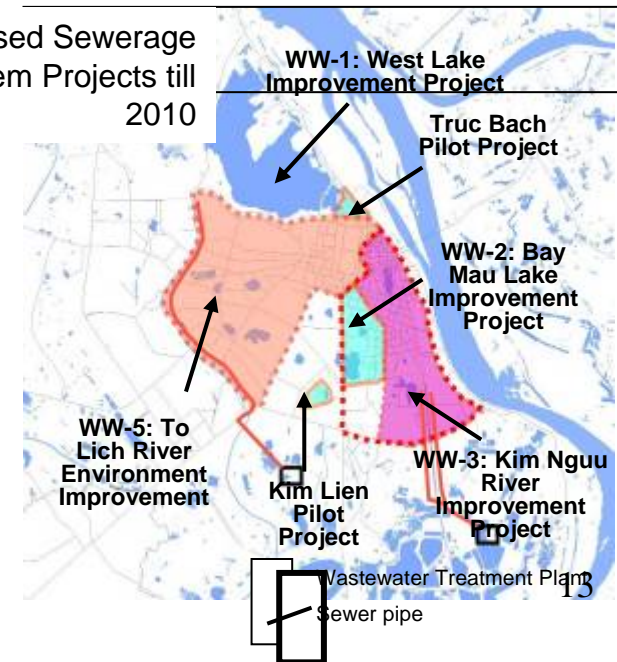
- A sewerage system will be developed for urban areas with expected population densities of more than 100 persons per hectare in 2020.
- As sewerage systems require large investments, priority is given based on population density, water supply amount, affordability of user charges, environmental standards, and ground water use.



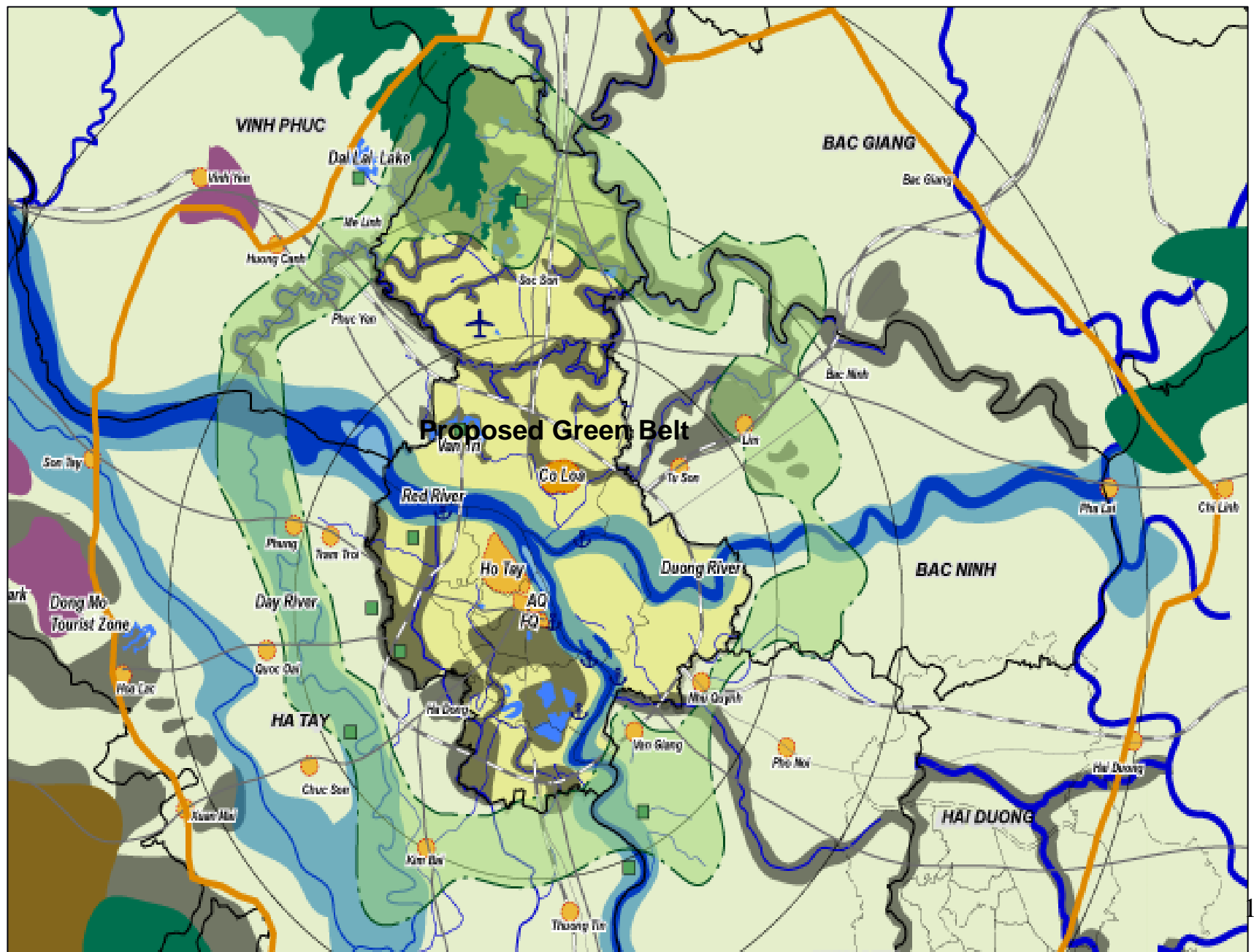
## Implementation Plan on Sewerage System Development



## Proposed Sewerage System Projects till 2010



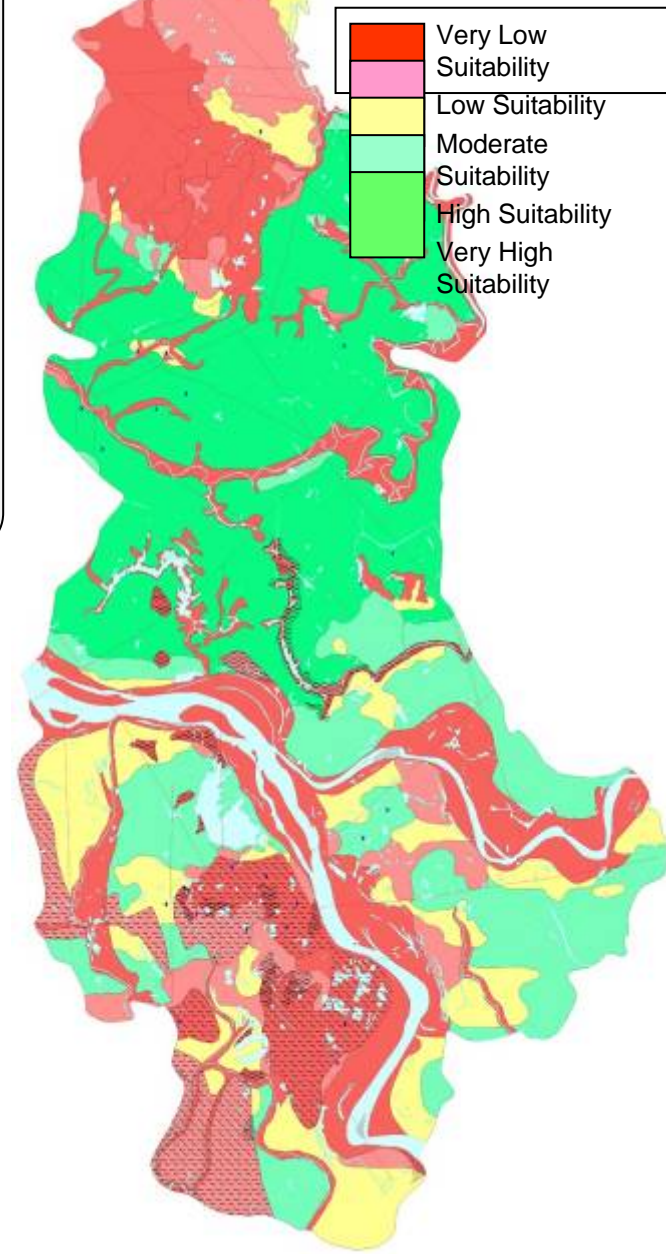
# Environment



# Environmental Consideration

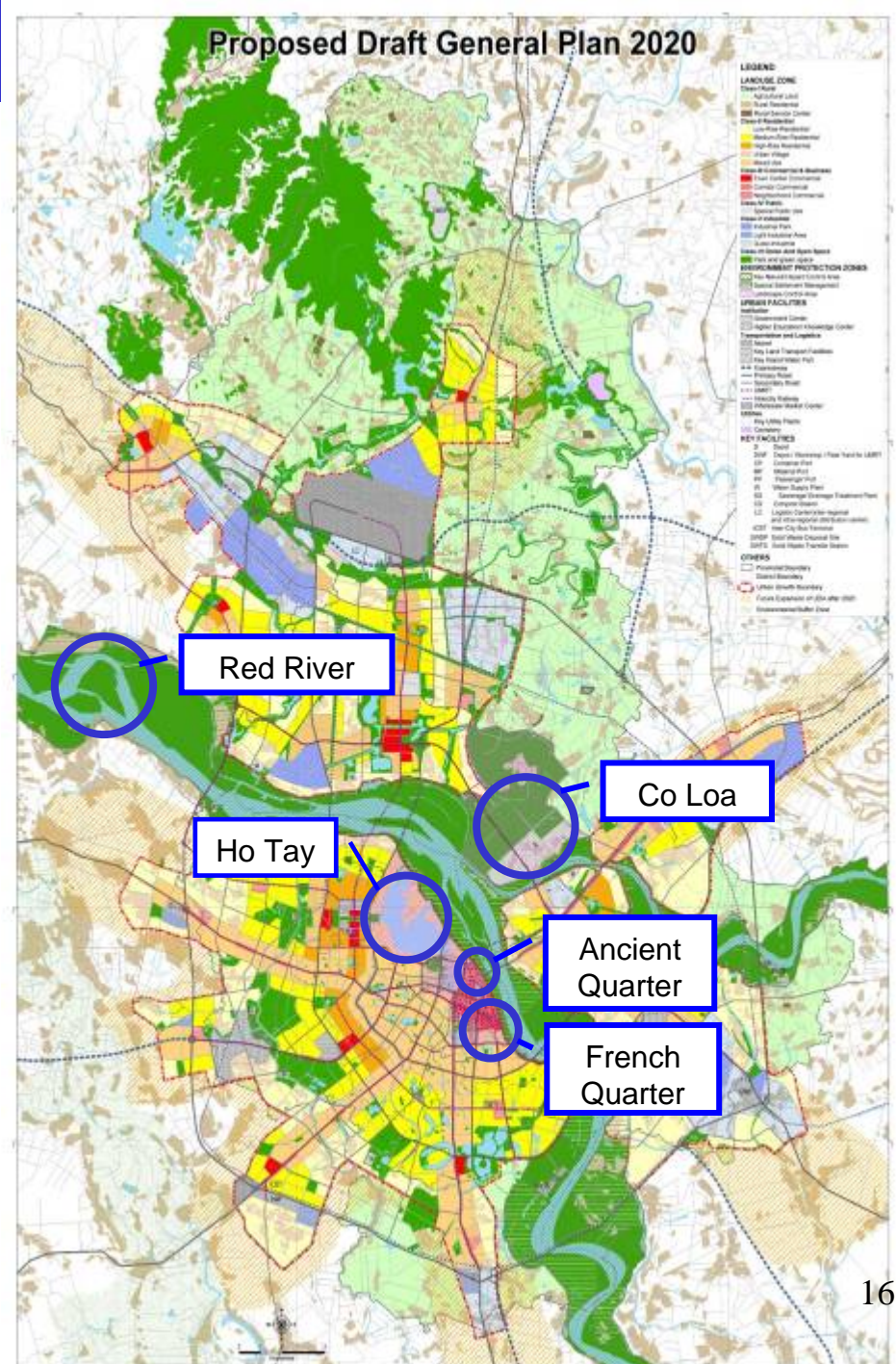
- Environment must form the foundation for the future development of Hanoi both at the regional and city levels. Because Hanoi is not situated on stable ground with favorable natural conditions, the suitability of lands for development must be considered. At the same time, Hanoi has diverse natural resources, comprising water bodies and greeneries, and a rich cultural heritage which must be preserved.
- In developing a regional green belt based on existing rivers, forests, and prime agricultural lands, flood-prone areas need to be considered.

Suitability of Land for Development



# Special Areas

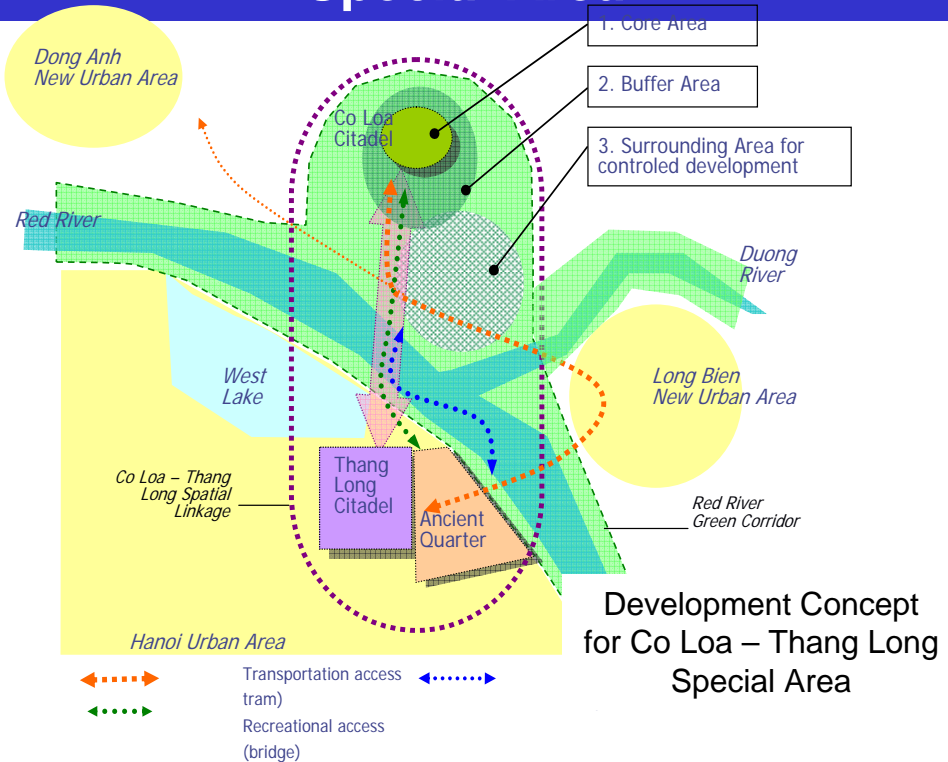
Hanoi shall conserve, develop, or redevelop key areas, such as the Ancient Quarter, French Quarter, Red River, Co Loa - Thang Long, and Tam Dao, to further enhance the city's image and contribute to its socio-economic growth.





Red River and the Thang Long – Co Loa area will form the physical and cultural backbone of the city symbolizing the concept of “water,” “green,” and “culture”.

# Red River + Thang Long – Co Loa Special Area



## Red River and Areas Outside the Dyke

This aerial map shows the Red River and surrounding urban areas. A yellow line marks the 'Red River Waterfront Development Area'. A legend identifies bridge types: solid black for existing, dashed black for under construction, and dotted black for planned. A blue line indicates the 'Dyke road'. Numbered callouts (1-8) point to specific locations. Inset images provide details: 'Co Loa Citadel', 'Sunset at Red River', 'Open space around the dyke', 'Thang Long Citadel', 'Ancient Quarter', 'Densely constructed housing outside dyke', and 'Bat Trang Pottery Village'. Other labels include 'Ho Tay', 'Hanoi Port', and 'FQ' (Foreign Quarter).

Development Concept for Co Loa – Thang Long Special Area

Image of Proposed Cultural Core in Thang Long – Co Loa Special Area



# Ho Tay (West Lake)

- Ho Tay (West Lake) is expected to form one of the most important cultural and environment backbones of the city which is envisioned “water”, “greeneries” and “culture” for the city. In the past, there were 16 ancient villages around the lake, but now, they are in fact almost disappear, and this area lost its charm and character.
- Ho Tay area in future should strengthen the access to water and green for citizens, and revitalize traditional villages as well as strengthen commercial values in some development areas connected to public transportation.

## Conceptual Zoning Plan of Ho Tay area

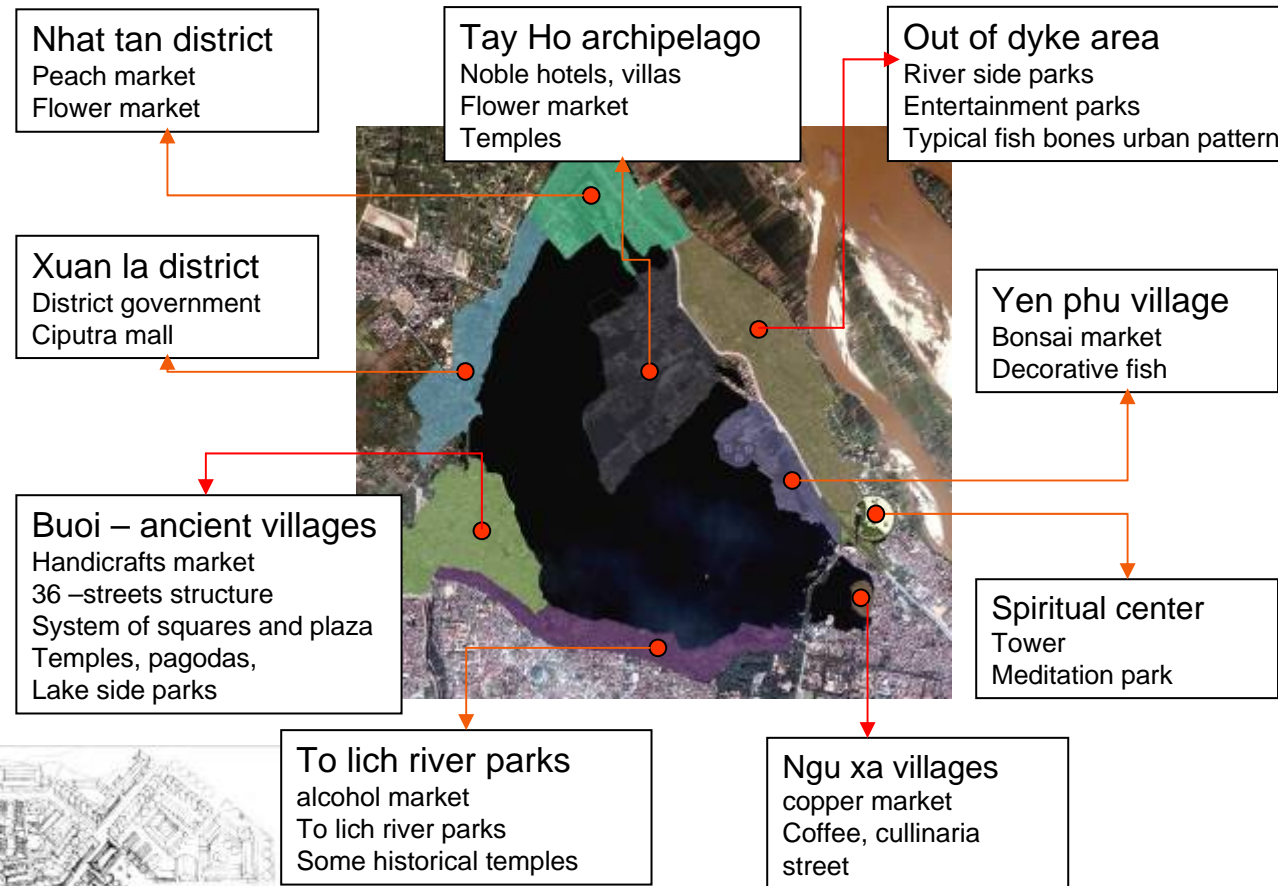
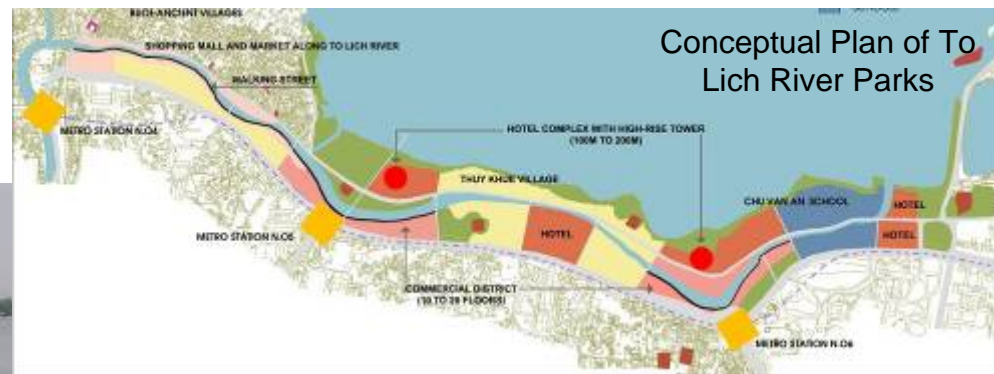


Image of Buoi village



Landscape Image of Ho Tay



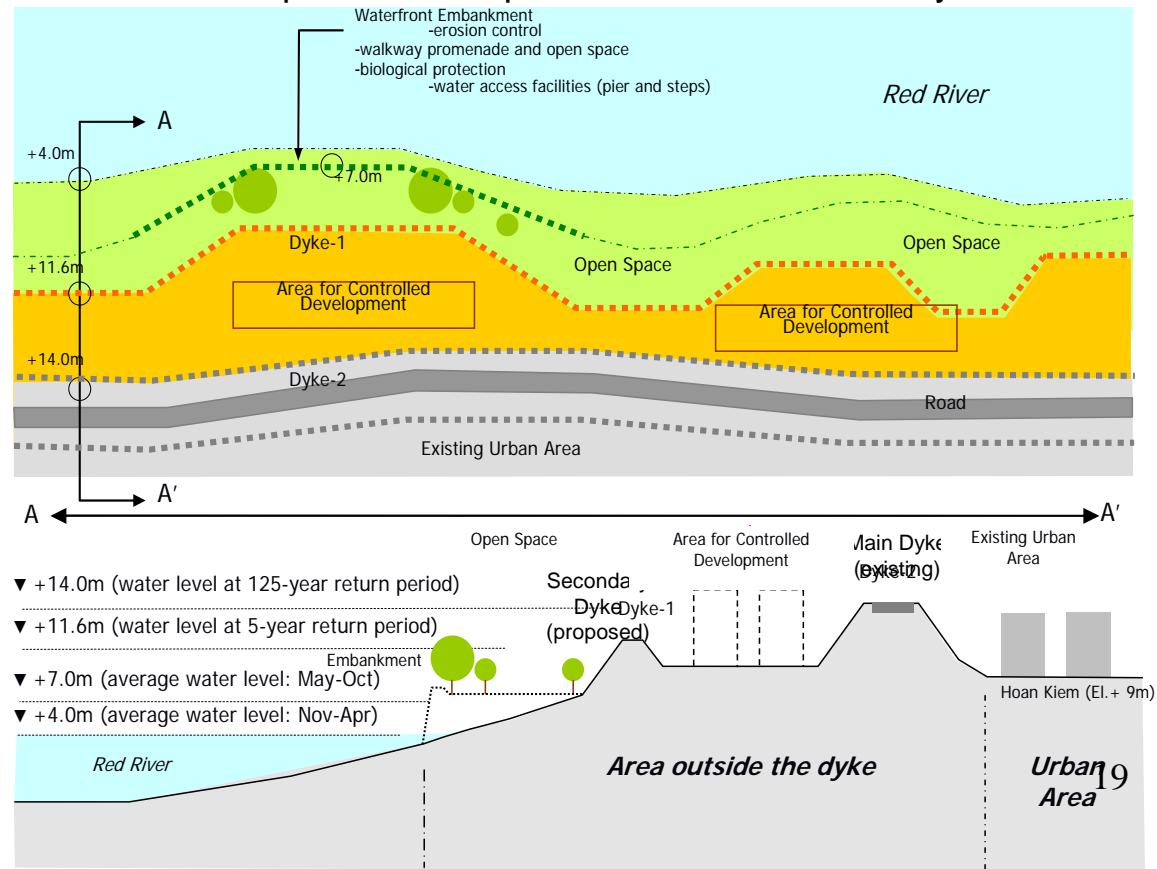
# Development Concept for Areas Outside the Dyke

- The area outside the Red River dyke is a precious asset for the city because of its historical value, landscape, disaster prevention and urban development.
- A clear policy must be formulated with due consideration of the following:
  1. Areas lower than the water level of a 5-year return period must be free from any kind of development, except temporary public facilities.
  2. Construction of a secondary dyke along the water level line of a 5-year return period to protect the area between the existing dyke where non-residential developments, such as markets, parking, recreation facilities, commerce/ business, etc., can be located.
  3. Residential areas must be protected by expanding the main dyke.

## Areas Outside the Dyke

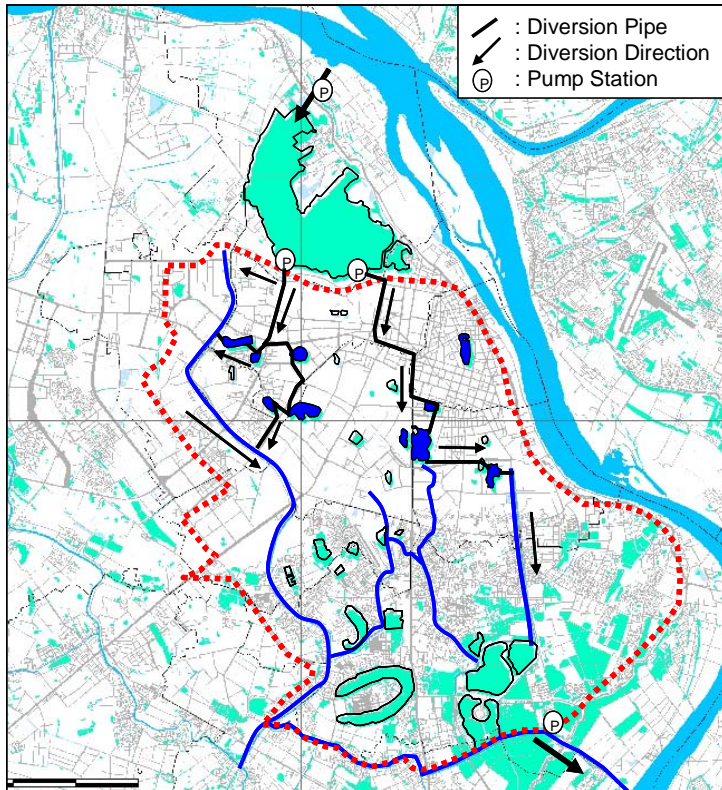


## Development Concept for Areas Outside the Dyke

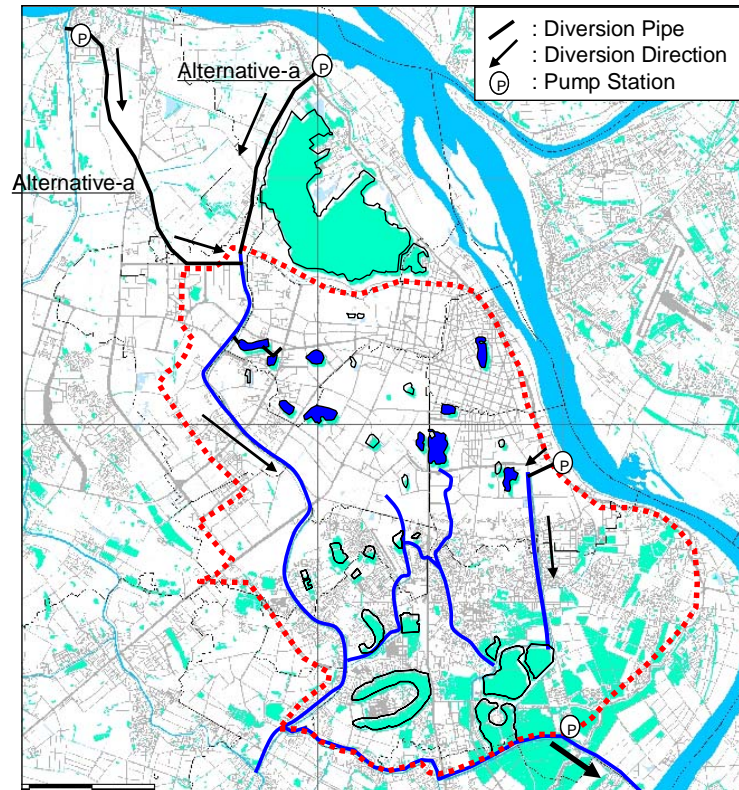


# Lake Improvement

- Protect lakes from illegal construction, encroachments, solid waste dumping, etc.
- Develop lakefronts with promenades/walkways, green spaces, and other amenities around the lakes.
- Increase storm water retention capacities of the lakes by increasing their effective depths.
- Improve water quality of the lakes



Plan 1: Environmental Water for  
Lakes/Rivers



Plan 2: Environmental Water for  
Rivers