AIEES Asian Institute for Energy, Environment & Sustainability
The URBAN DESIGN CENTER for Public Benefits

UN Forum on Climate Change Mitigation, Fuel Efficiency and Sustainable Urban Transport

GREEN GROWTH for the CITY: CITY DESIGN INITIATIVES thru GREENWAYS

2010. 3. 17

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Seoul National University

Contents:

Part 1: Introduction

How to reduce CO_2 emission:

From "grassroots approach" in City Design

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INTRODUCTION :

"Although the city comprises only 2% of the total surface area of Earth, 80% of the world's greenhouse gases is emitted from urban regions."

Reference: http://www.c40seoulsummit.com/ 3/57

INTRODUCTION :

"Although the nation has been put to motion, the progress is painstakingly slow. This is why our own tasks are so significant. The outcome of the war on climate change is dependent upon the city."

Ken Livingston (Fmr. Mayor of London)

Reference: http://www.c40seoulsummit.com/ 4/57

INTRODUCTION : GHG EMISSION OF KOREA

▷ Rate of increase in GHG emission of Korea in 2000-2005: 4th among OECD countries (12.1%)

▷ Emission per capita : 13th among OECD countries

〈 Comparison with OECD Countries(2005) 〉

	Korea	Rank	Remarks
Emission	590 million CO_2eq ton	7th	1st: U.S. (7260), 2nd: Japan (1360)
Increase ('00~'05)	12.1%	4th	1st: Luxemburg (33.3), 2nd: Austria (15.0), 3rd: Spain (14.6)
Emission per GDP	0.62 CO_2eq ton/1000$	8th	1st: Australia (0.86), 4th: U.S. (0.66)
Emission per capita	12.24 CO_2eq ton per capita	13th	1st: Luxemburg (27.9)

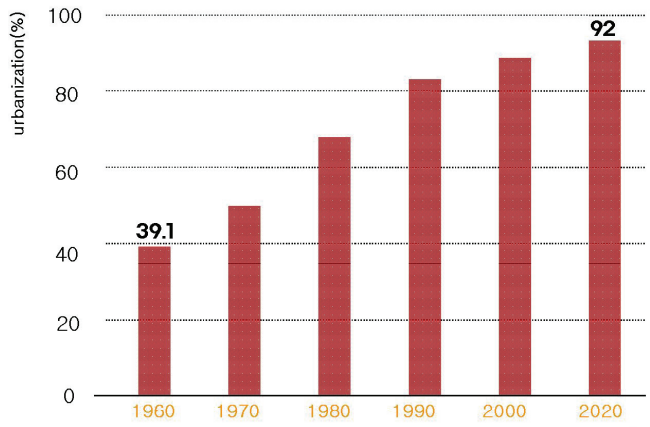
* International Energy Association (IEA) Standards: Korea's GHG Emission Ranks 16th out of 137 nations

Reference: Climate Change General Foundation Plan, Prime Minister's Office Climate Change Commission 5/57

INTRODUCTION : Level of urbanized rate in Korea

▷ The rapid urbanization has taken place in the last 40 years

▷ High level of urbanized rate is the challenge in reducing GHG emission in Korea



자료: 국토해양부, 국토연구원

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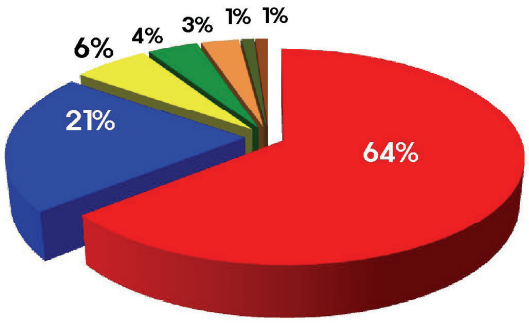
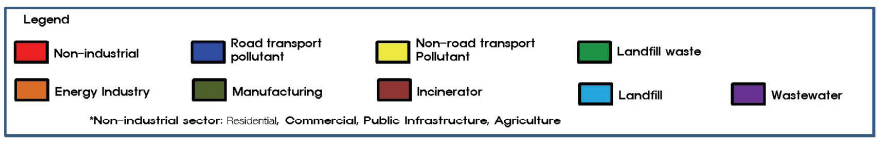
INTRODUCTION : Seoul City GHG Emission Percentage by Sector (2006)

▷ In the case of Seoul, 85% of GHG emissions are caused by residential, commercial, and transportational sectors



Non-Industrial + Road Transport = 85%



Reference: Seoul City GHG Reduction Foundation, Seoul Metropolitan Government (2008)

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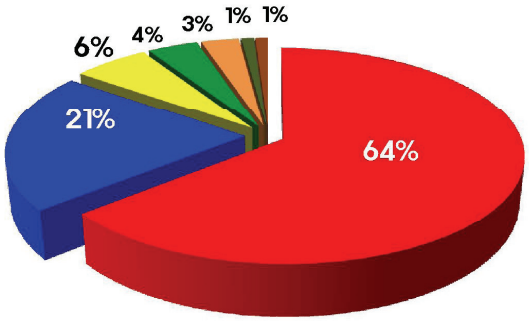
INTRODUCTION :

Seoul City GHG Emission Percentage by Sector (2006)

▷ Thus, the amount of GHG emission can be reduced through city-Redesign which influences the Life-style of people and modifies city infrastructure.



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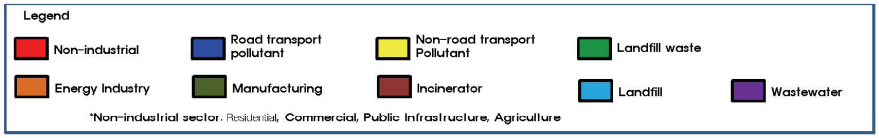

Reference: Seoul City GHG Reduction Foundation, Seoul Metropolitan Government (2008)

Possible solutions to reduce GHG emissions in cities

1. Substitute renewable energy for current energy resource of fossil fuel :

▷ National goals on renewable energy reliance:

2015 (4.33%), 2020 (6.1%), 2030 (11%) – currently (2.37%)

However, the impact of this solution may not be as substantial since the rate of reliance on renewable energy is relatively limited. In addition, measures to replace all present energy sources may not be realistic.

2. Reduction in energy use through Re-design of city:

▷ City Re-design can effectively influence the lifestyle of people who "lavishly" consume energy in everyday life.

Part 2 : Korean Cities

Where we are now

KOREAN CITIES : Where are we now?

▷ Excessive development: Redevelopment without corresponding improvement in urban infrastructure

▷ Lack of (ample) public open space, accessibility to Han river and obstruction of public view to the river and "wind flow"

An image of current redevelopment at Han River

Reference: October 05, 2007 Chosun Ilbo

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KOREAN CITIES :
A present image of development on Han River

Excessive development,

Lack of enough public open space,

Separation of the river from the general public

Jamsil *Si-Yong APT* Reconstruction Site (2007. 6. 13)

Present residential building prototype in Seoul :

Because of the closeness of the buildings, not enough daylight enters into dwelling units.
Therefore additional consumption of energy for lighting and heating became necessary.

Jamsil *Si-Yong APT*

사진출처: 중앙, 잠실 엘보 공인중개사무소

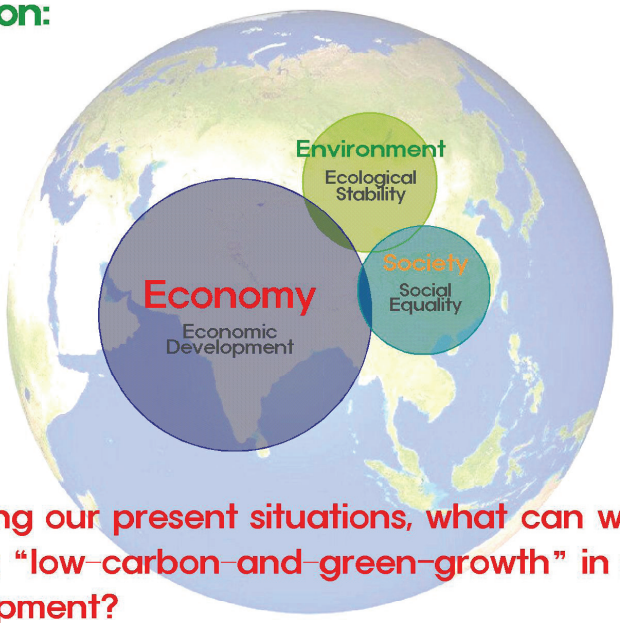
Question:

Is this a good model for

"low-carbon-and-green-growth"

in urban development?

The present picture of the sustainability of Korean cities can be drawn as follows based on previous observation:



Question:
Considering our present situations, what can we do to achieve a "low-carbon-and-green-growth" in urban (re)development?

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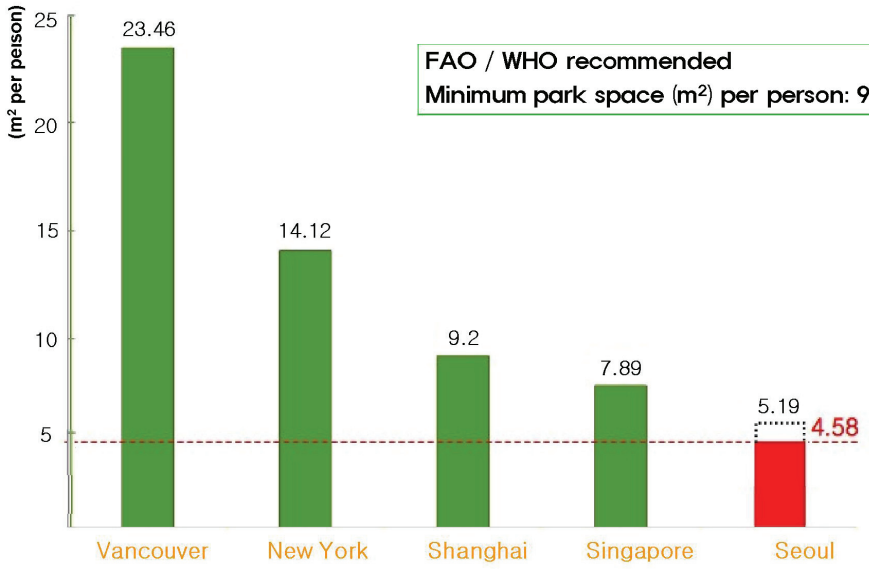
Comparison of park space between the cities :

park space per person



Seoul is far behind in park space among major cities

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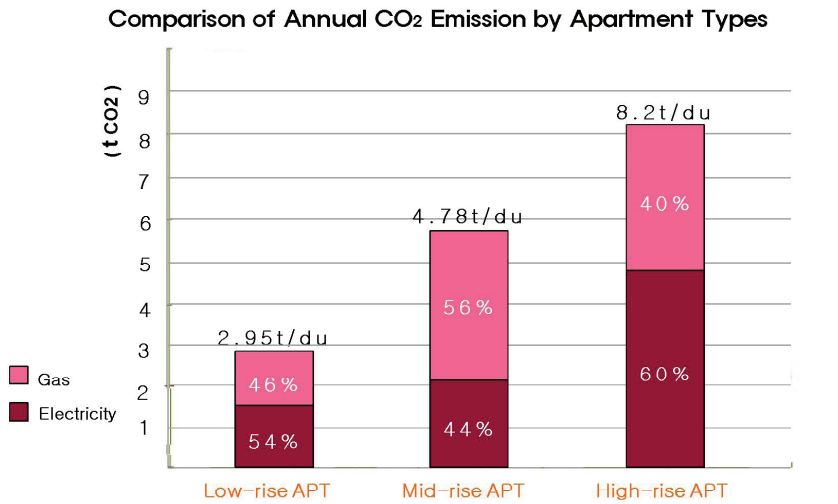
Comparison of energy consumption according to number of stories of residential building :



Reference: http://www.kfem.or.kr/ Korean Federation for Environmental Movement, Seoul Metropolitan Government (2008)

High-rise units produce more GHG emissions compared to low-rise units

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Part 3 : Best Cases Abroad

NEW YORK
SINGAPORE

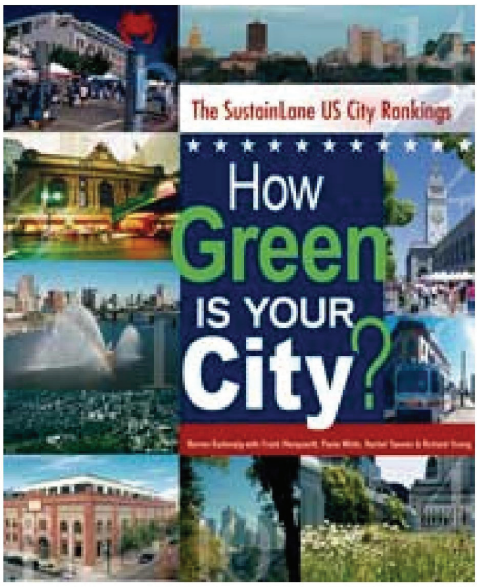
How has New York City become a sustainable city?

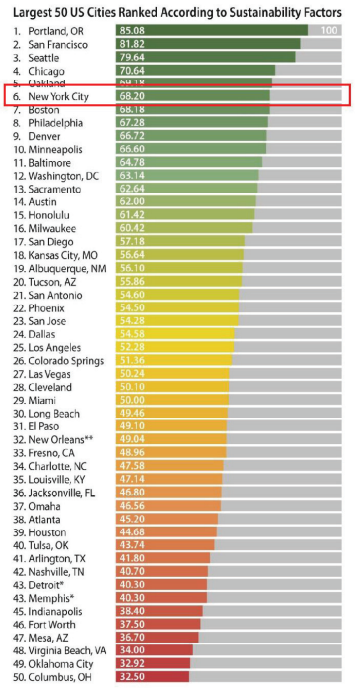
Why Singapore?

U.S. City Sustainability Rankings :

How Green is Your City?

New Society Publishers (2007), Warren Karlenzig





Sustainability of New York City : Why it is 6th among major U.S. Cities

✓ **Disadvantages:**

Metro Congestion,

Air Quality,

Housing Affordability,

Typical challenges of high-density cities

✓ **Advantages:**

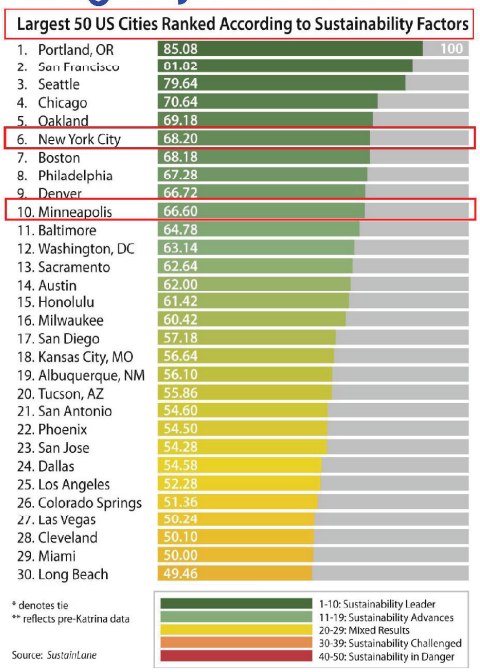
Creative Planning and Land Use Policy,

City Innovation,

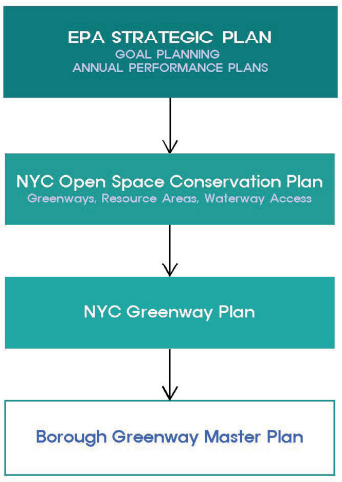
Metro Public Transit,

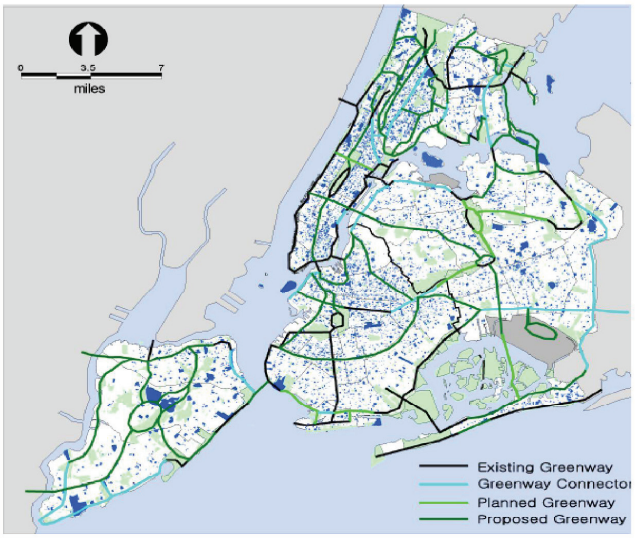
Energy and Climate Change Policy,

Numerous parks and green spaces



New York City : Greenway Plan





Reference : NYC DCP (2004), Greenway Plan

NYC has prepared a long-term master plan for the creation of Greenways

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New York City : Central Park and Greenways

CENTRAL PARK
(841 acres)

Along with the Central Park at the heart of Manhattan, NYC has been creating a network of Greenways along the Hudson river and the East river

Reference: www.nyc.gov

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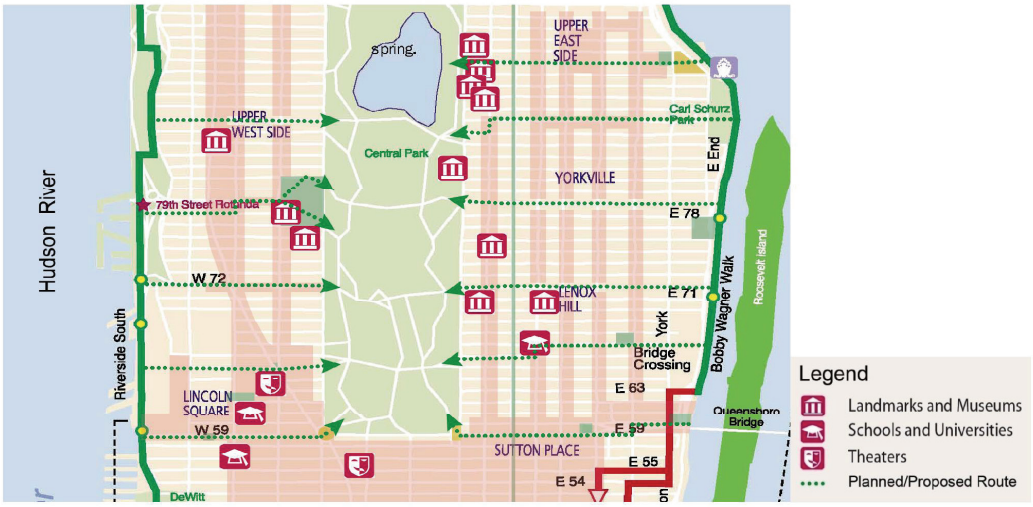
Before Central Park was built, there was a public debate on the creation of park :

"Without a park of this scale, New York in the next century will require the same scale of a psychiatric hospital."

– William Cullen Bryant, editor of The Evening Post , 1844. 7 –

Central Park and Greenways :

NYC' s efforts to get Central Park connected to Greenways have allowed people with better access to parks. NYC has thus become a good place where people can live, work, and play.



Reference : http://www.nyc.gov. Overlay of Manhattan Greenway Map and ZONING MAP

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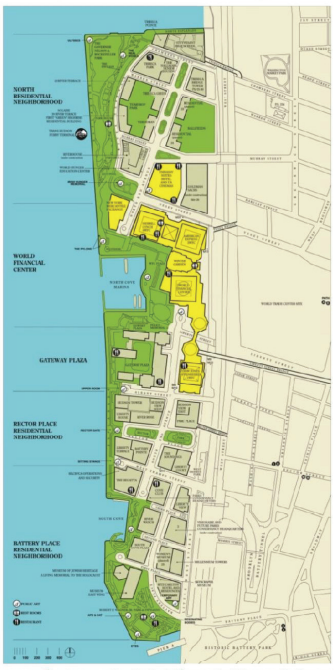
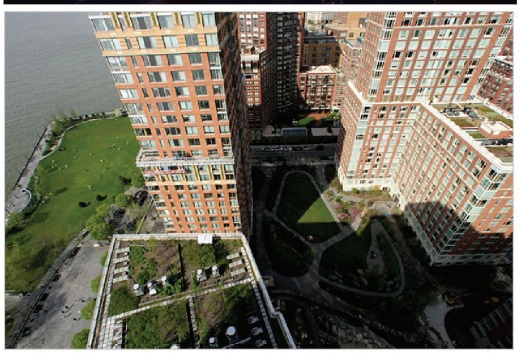
Battery Park City : A Case for Sustainable Development





28 acres (about 30%) of the 92-acre site have been provided for public open space


Manhattan Greenway at Battery Park City
Through urban development,
they have created ample open space
for recreational life of the general public
Battery Park City Esplanade


Manhattan Greenway at Battery Park City
This public open space provided through urban
development has given people peaceful past-time.

SINGAPORE

" A GREAT CITY TO LIVE, WORK, PLAY IN "

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SINGAPORE : LONG-TERM MASTER PLAN for Greenways

Concept Plan, 2001

↓

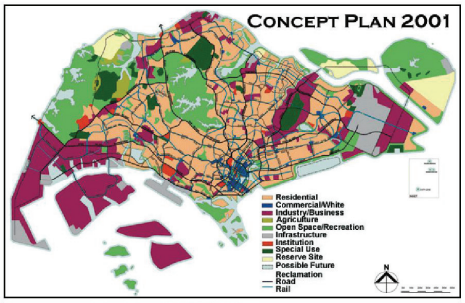
Parks and Waterbodies Plan
Identity PLAN

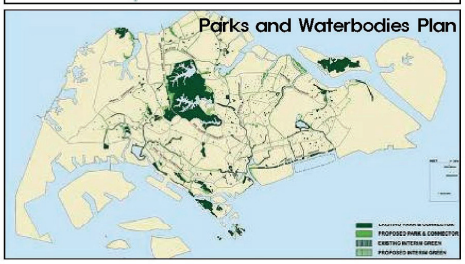
↓

Draft Master Plan
Development Guide Plans

↓

Master Plan 2003





Singapore has also prepared a long-term master plan for the creation of Greenways.

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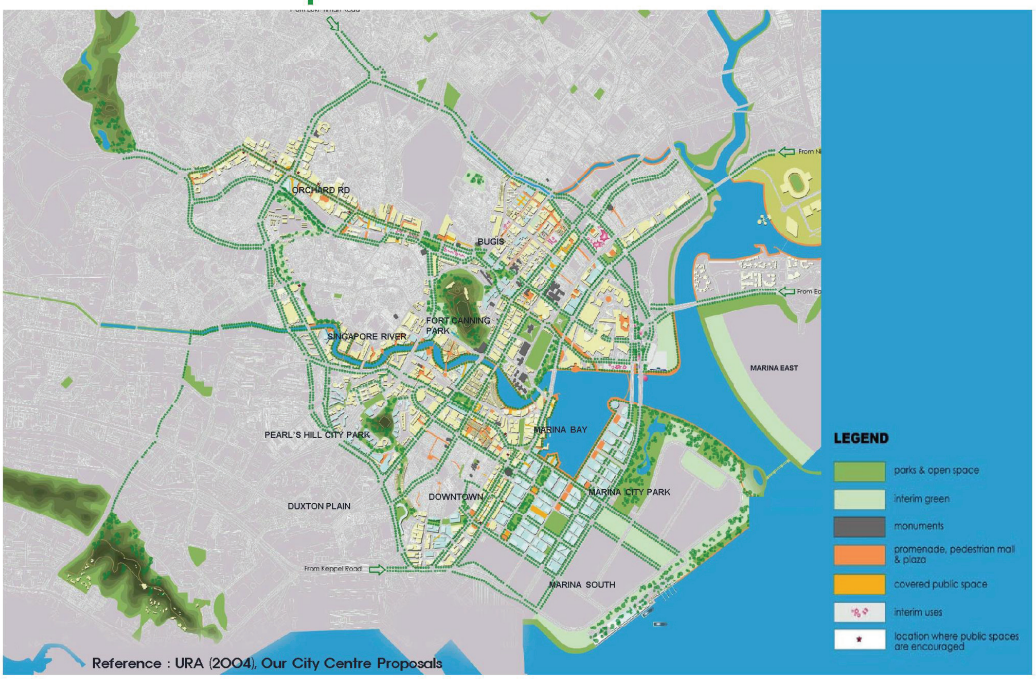
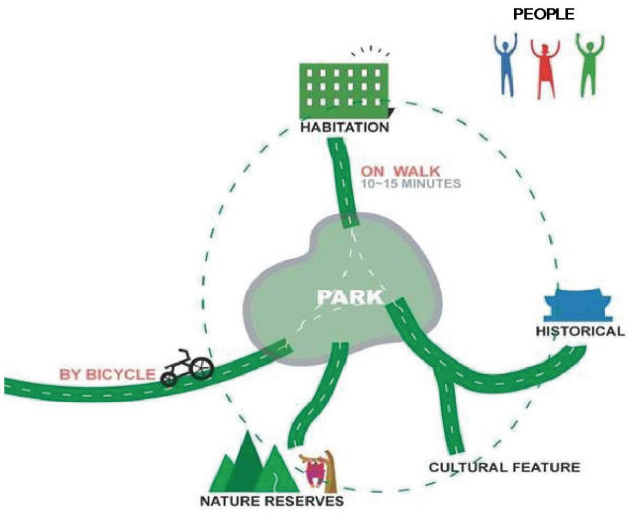
SINGAPORE : Long-term Master Plan for Public Space and Urban Waterfront



Singapore Greenway at Marina Bay Esplanade

WHAT IS A GREENWAY ?

GREENWAY is a Linear Open Space to connect separate open space elements such as greenway, park, historical and cultural sites.



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WHAT IS A GREENWAY for ?

✓ For THE ENVIRONMENT/ Climate Change

Improve air quality by absorbing / filtering pollutant emissions

✓ For TRANSPORTATION/ Energy Savings

Bike paths and pedestrian roads for commuting to work / school

✓ For SAFETY

Space for safe pedestrian environment

✓ For HEALTH

For leisure & recreation activities (strolls, jogging and bicycle)

✓ For FUN

As access to park and historical and cultural sites

Reference : New York Parks & Recreation Department 35/57

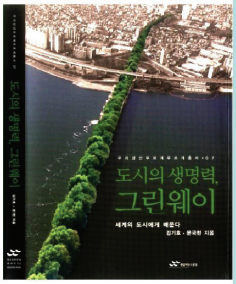
Part 4 : Pilot Projects

Demonstration of "climate-positive" urban design along the Han river in a central Seoul

Design Principles and Criteria for building a climate-positive city

– Criteria for building urban infrastructure and facilities in major projects

10 TIPS



01. At city-wide scale: Park area per person 10m²~17m²
02. At project scale: 30~50% of the total site for Public Open Space
03. Each residential unit within 250m from Greenway
04. Design Green Space first and build other elements around it
05. Mixed use: Residential, Commercial and Retail, Educational, and Public Open Space, take place within proximity
06. Create public open space on private assets through redevelopment process
07. Create a long-term master plan with its short-term applications
08. Employ an integrative approach between Multi-Sectors as well as Multi-Departments
09. Create a new governance: engage independent, Private Not-for-Profit Corporations
10. Citizen participation: advocates for public cause

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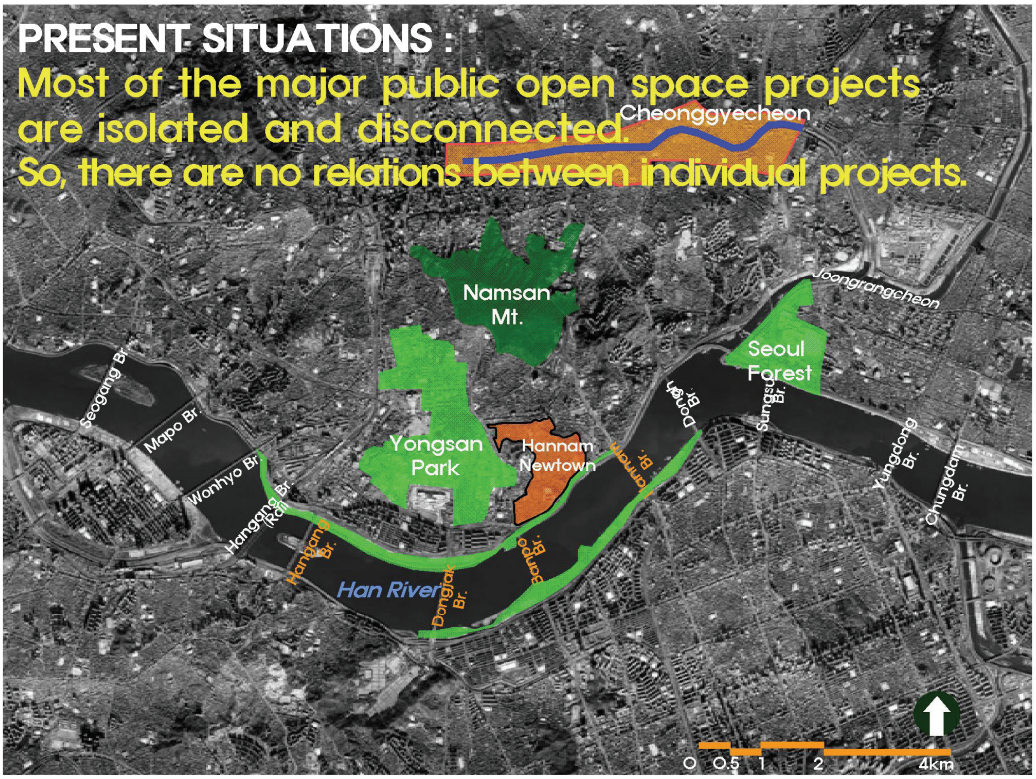
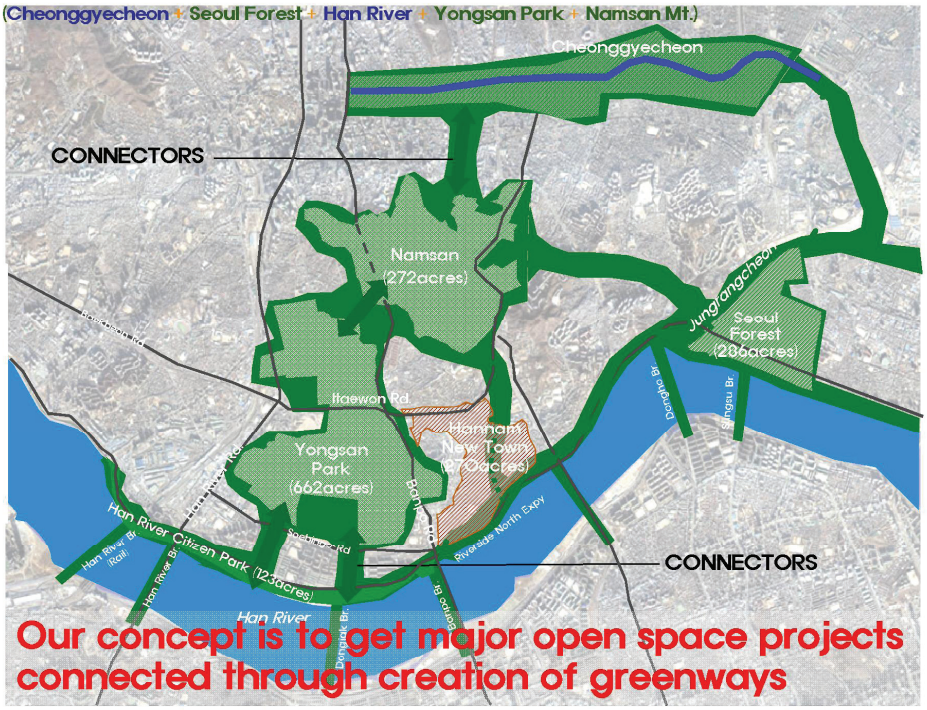


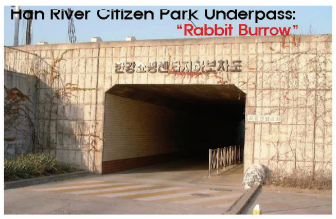
Our common FUTURE VISION :

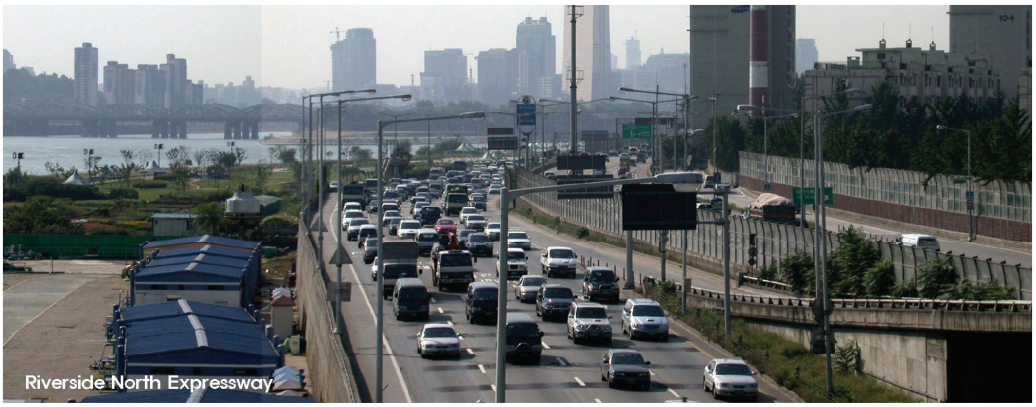


CONCEPT DESIGN 1 : Present site situations

DESIGN ISSUE 1 :
Automobile-oriented Transportation System

How to overcome Riverside North Expressway, Seobingo-ro, Yongsan Line (aboveground rail)?





Depress a section of "the Riverside North Expressway" and create a mound on it

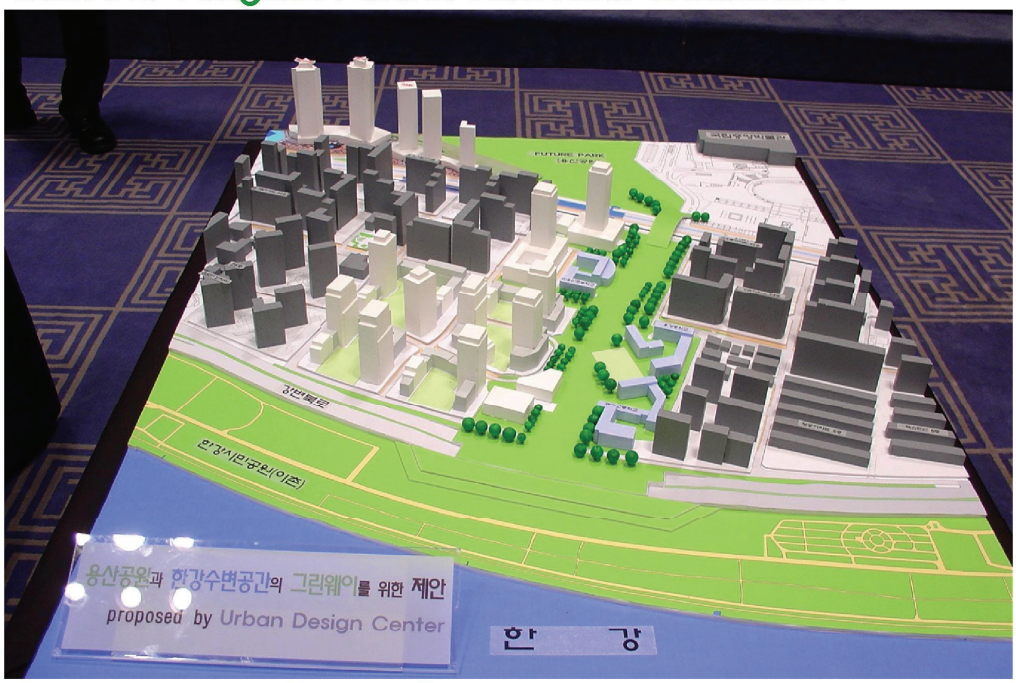
NYC Case Study: RIVERSIDE SOUTH PROJECT's Miller highway relocation planning

CONCEPT DESIGN : FRAMEWORK ALTERNATIVE 1

For creation of PUBLIC OPEN SPACE

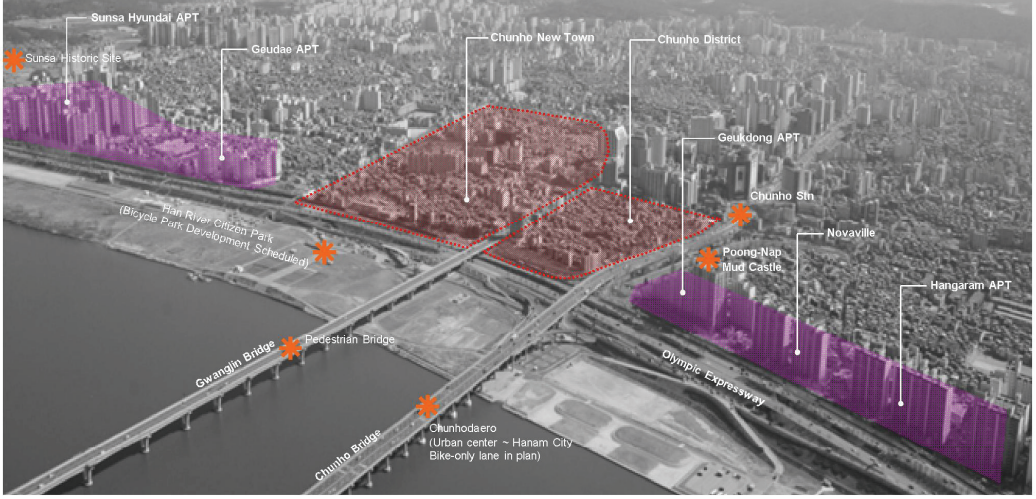
CONCEPT DESIGN for New URBAN INFRA

A design proposal for redevelopment along the Greenway from the Yongsan Park to Han River Waterfront :



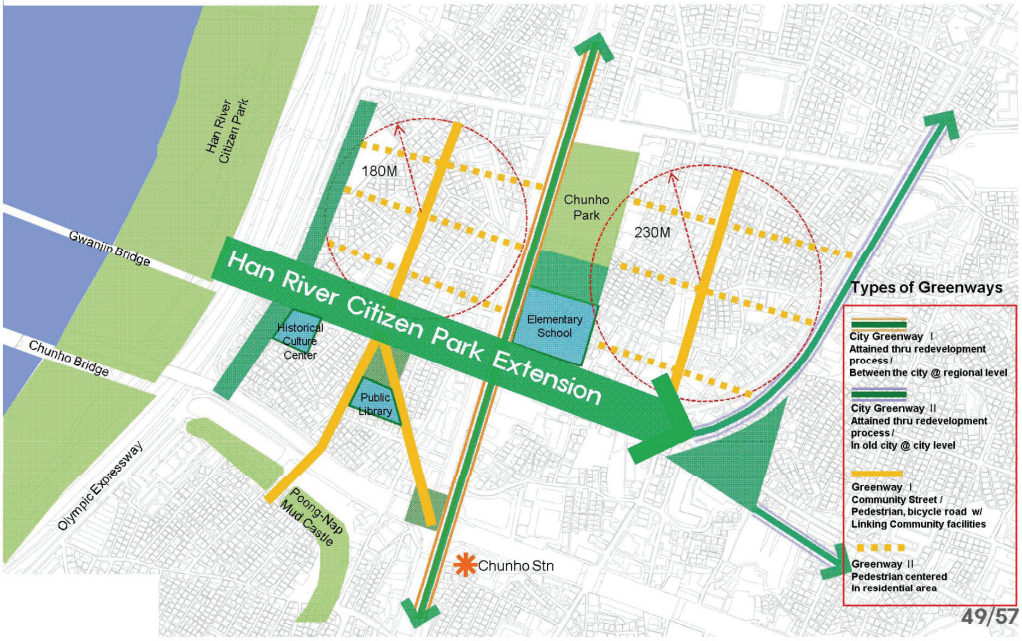
The Central Area of Kangdong-gu :

Kangdong-gu is located at the East end of Seoul, south of the Han river. It is expected that about 30,000 housing units (over 50% of the total housing stock) will be replaced in the next 10 years.



CONCEPT DESIGN :

Create first a new Green Fabric and Infrastructure for the demonstration site



A view of the city core through Greenway above the expressway from the river :

A view of Han river through Greenway from community focal point:

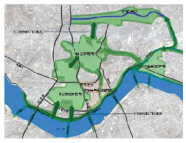
VISION: Networking through GREENWAYS

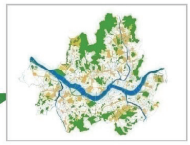
PRESENT SITUATIONS: Park area per capita 4.58 ㎡

FUTURE VISON Stage 1: Han River Namsan Yongsan Park 6.5㎡

FUTURE VISON Stage 2: Han River Waterfront Master Plan 9㎡

FUTURE VISON Stage 3: Seoul City Green Way Master Plan 14㎡





Isolated and Disconnected

A Plan for Vision for Green City in the Seoul Metropolitan area : By Stages

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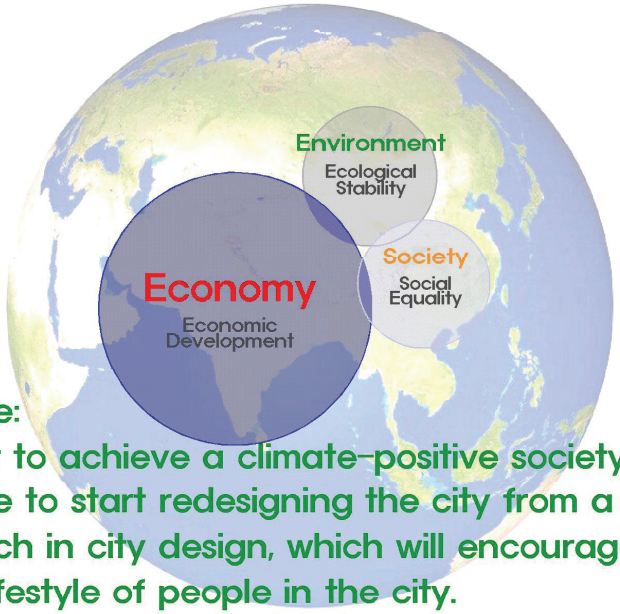
The present picture of the sustainability of Korean cities:



Epilogue:
In order to achieve a climate-positive society on Earth, we have to start redesigning the city from a grassroots approach in city design, which will encourage change in the lifestyle of people in the city.

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