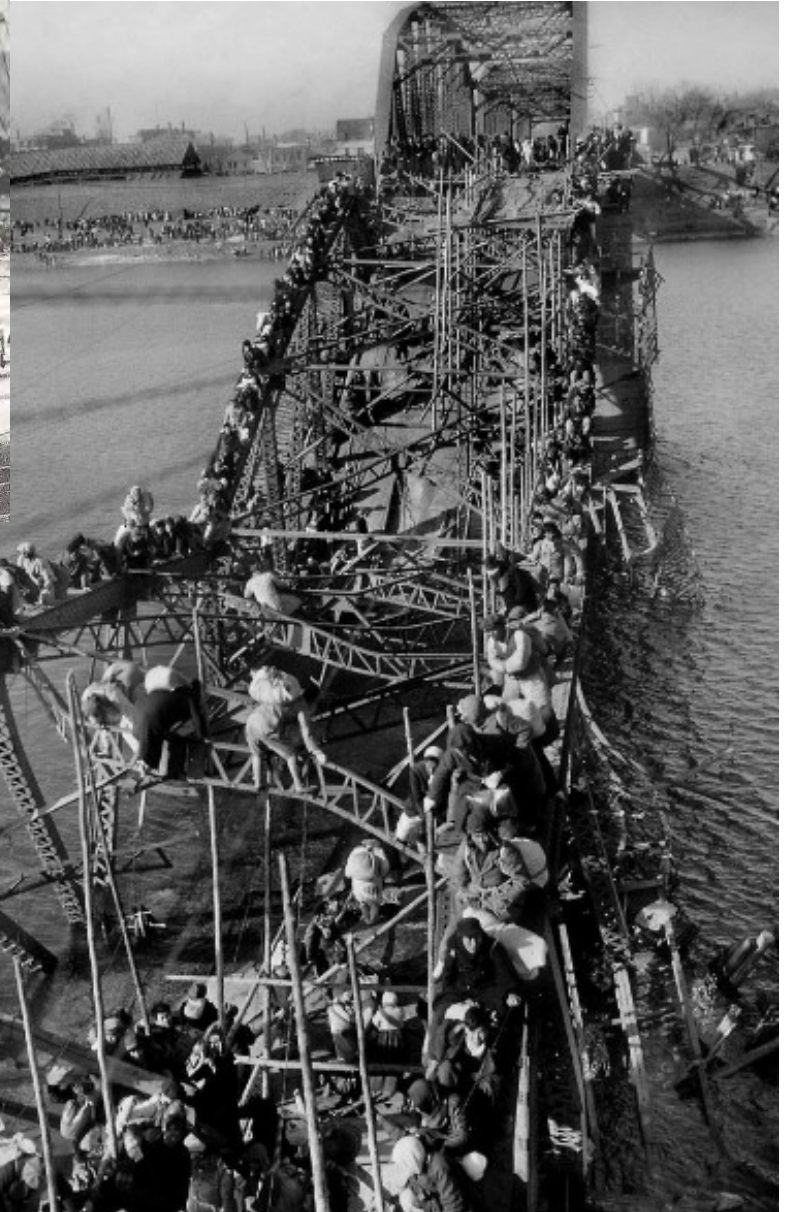


**Journey
from Double-Deck Motorway
to Eco-Oasis Waterfront:
Cheong-gye-river Restoration Project.
Seoul, Korea**

**(Michael) Gyeong Chul KIM Ph.D., P.E.,
Former President of Korea Transport Institute(KOTI)
gckim1004@gmail.com**

Korean War (1950-1953)



Shanty Towns

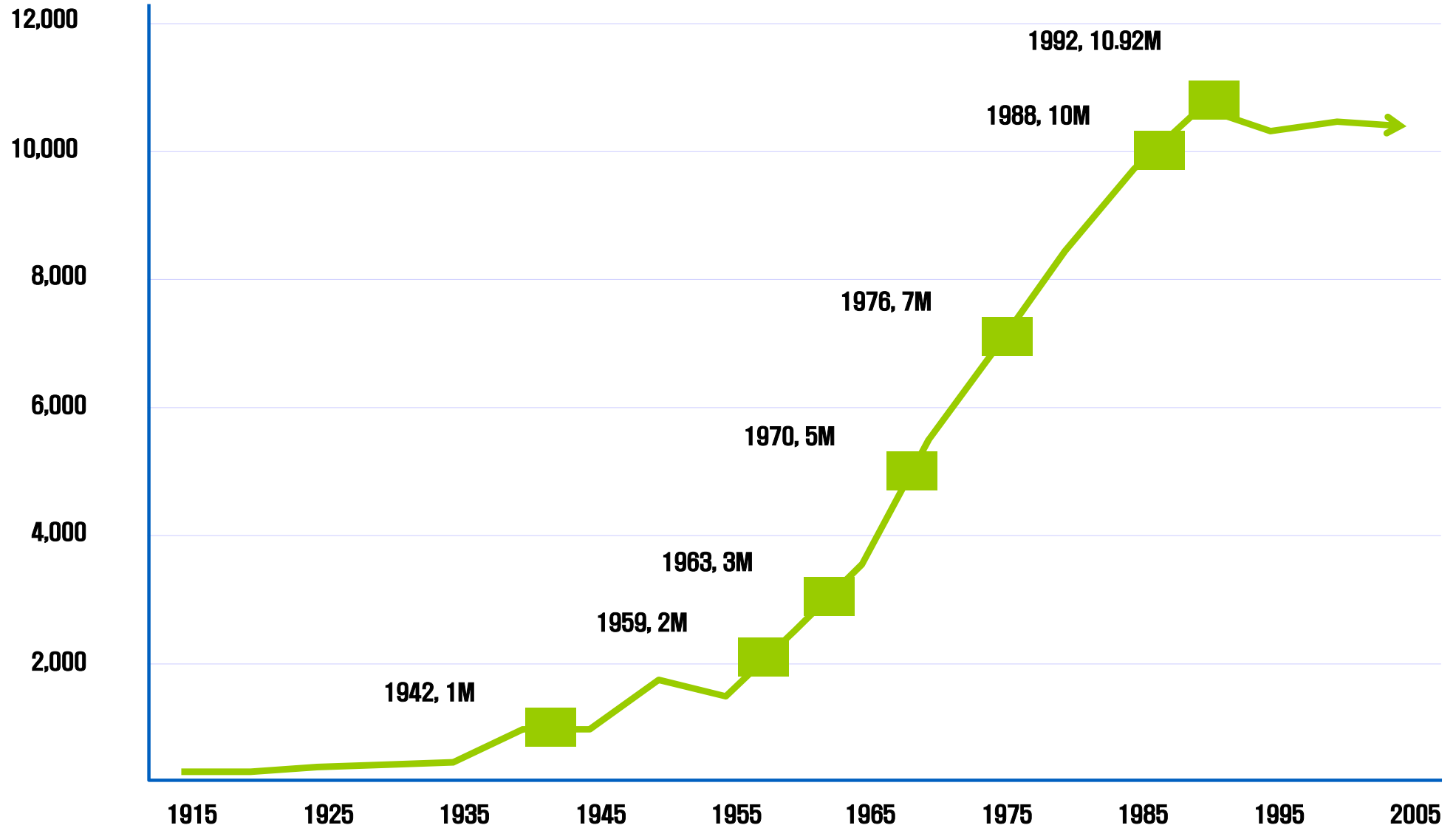
Rapid Urbanization



**After the Korean War
(1950-1960)**

Seoul Population Trend

(1,000 Persons)



Crowdedness (Seoul in 60s)



A crowd of people waiting to ride the streetcar due to the strike of bus drivers (1964)



A female conductor in local transit (1964)
They collected fares and assisted the drivers' stops and starts for safe operation.

Bus became the main mode of transport.

Overloaded Transport Infrastructure

Bus,

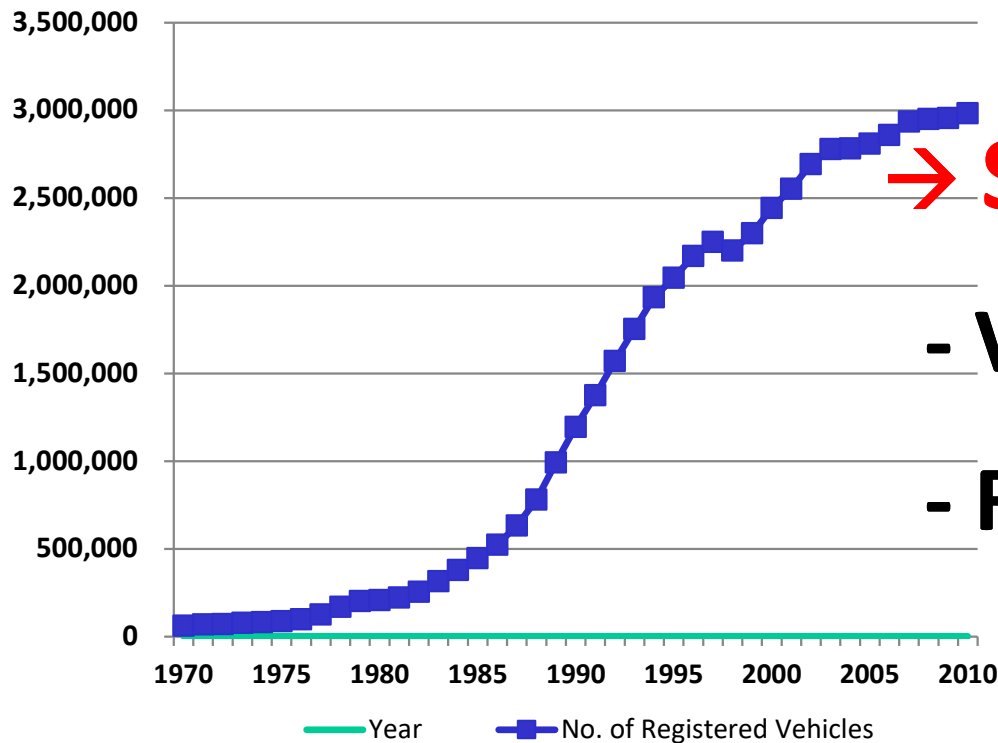
a primary transport mode
in 1960s-70s



CAR, CAR, CAR ?

- Registered vehicles: **49 times**

1970 : 60 thousands → 2010 : 2.98 millions
[Registered Vehicles in Seoul]



→ **Seoul's challenges?**

- **Vehicles : Up by times 49**

- **Road : 4 %/y only**

Gridlock in Seoul in 90's

Traffic Congestion
From 7am to 23:00
Entire area of Seoul



CBD of Seoul



Mountain city → bowl, weak for **Air Pollution
→ needs different policy (**Death** → **GREEN**)**

Gridlock in Seoul in 90's



**Air Pollution and Cancer
Occurrence**

Energy Consumption Increase

Traffic Accidents

Discomfort

Government bus subsidy increase



Decision by Election Manifesto



July 2002

**Restructuring of
Urban Policy**
from CAR to People, Nature

“Urban Space Reform” :
“Cheon-Gye-Restoration”
“Pedestrianization”

“Transport Reform”

Passenger-car Reduction Policy

□ Reform of Seoul Plaza

□ 2004. 5. 1 Open → Restrain Traffic Flow → Ped. Square



Before



After(May 2004)

Passenger-Car Reduction Policy

- **Restoration of Cheong-gye-river**
 - Decrease of car-traffic volume: 125,000 veh/day



Before



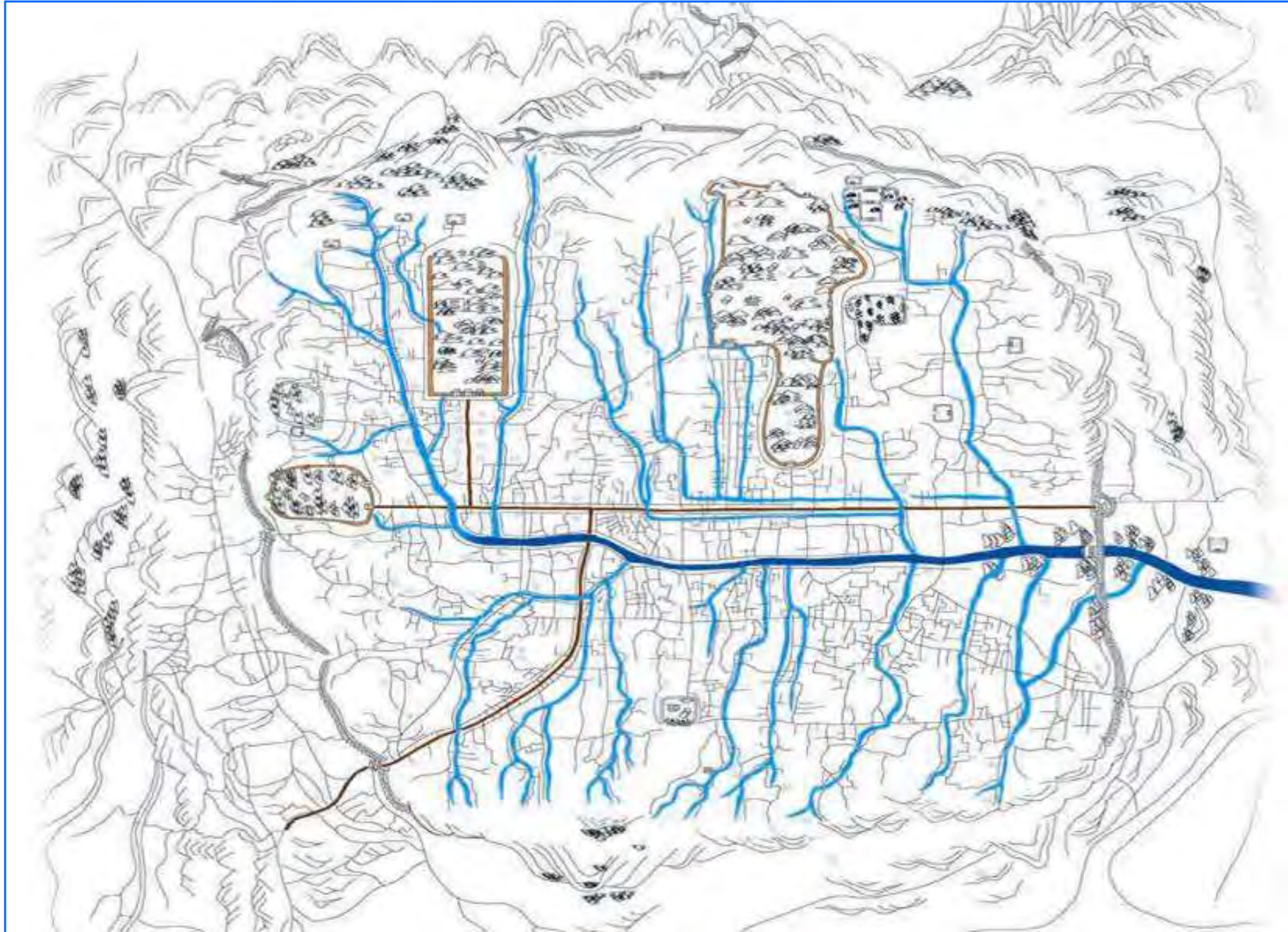
After (Sep. 2005)

Passenger-car Reduction Policy on CBD

□ Passenger Car-traffic (2002) : 200,000 veh/day



Old map of Seoul



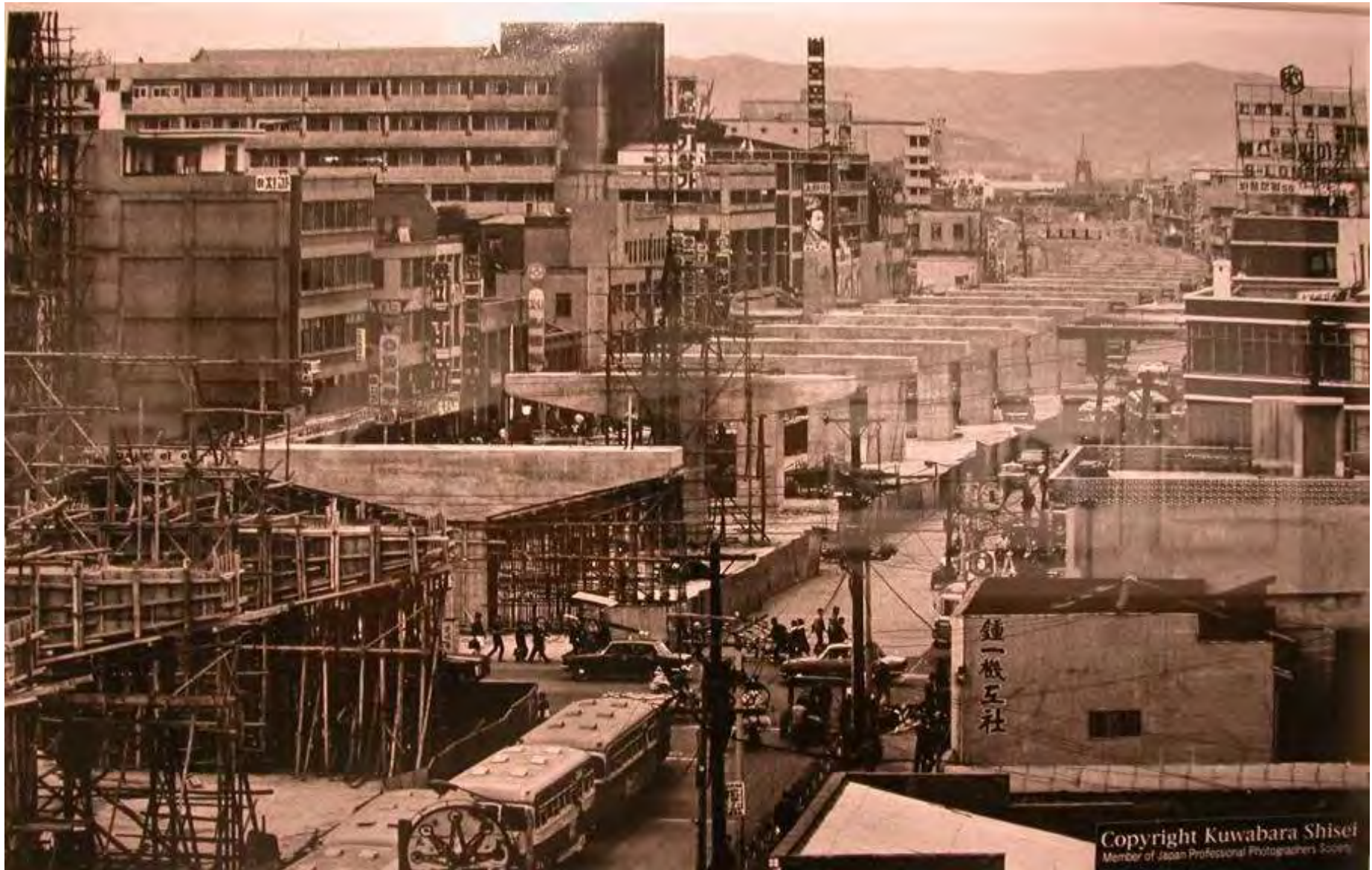
Cheong gye-cheon Restoration



Covering Cheong-gye-cheon in 1960s

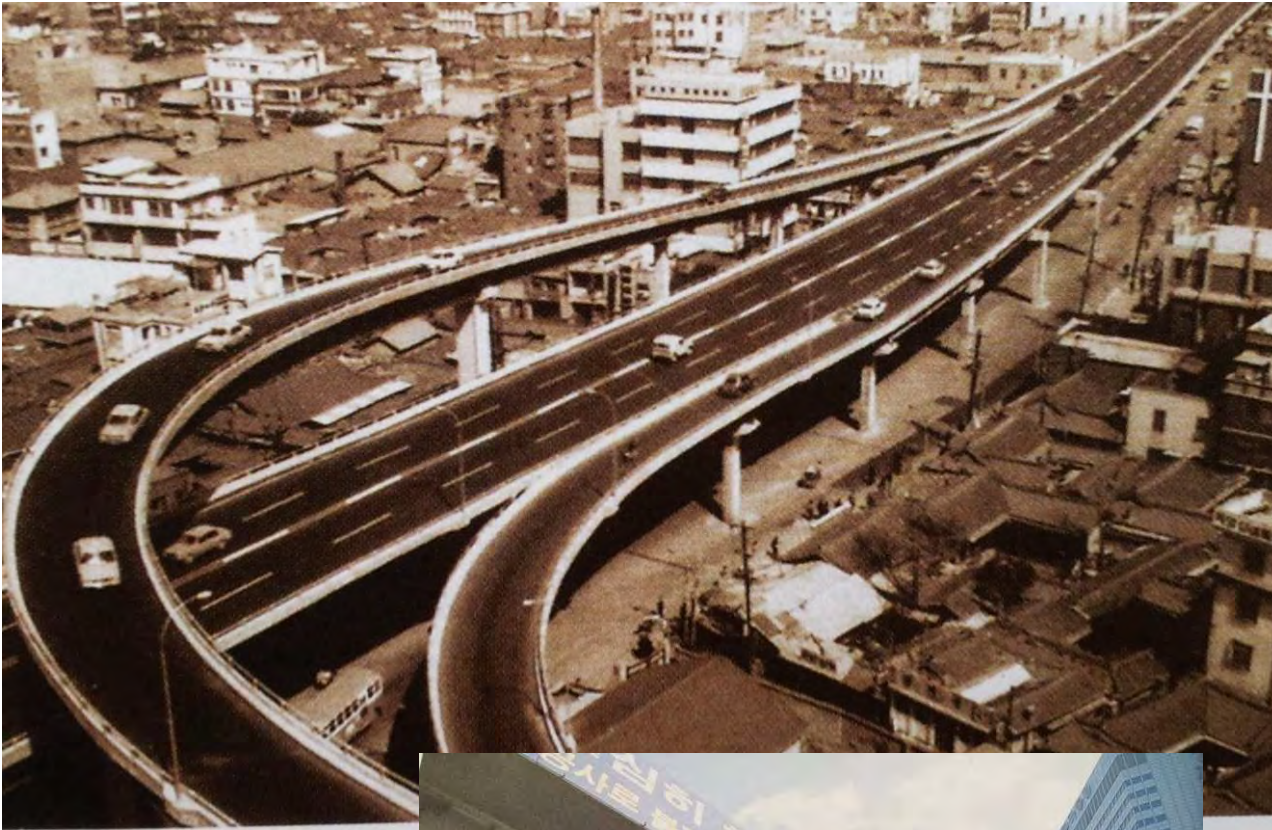


Covering Cheong-gye-cheon in 1960s

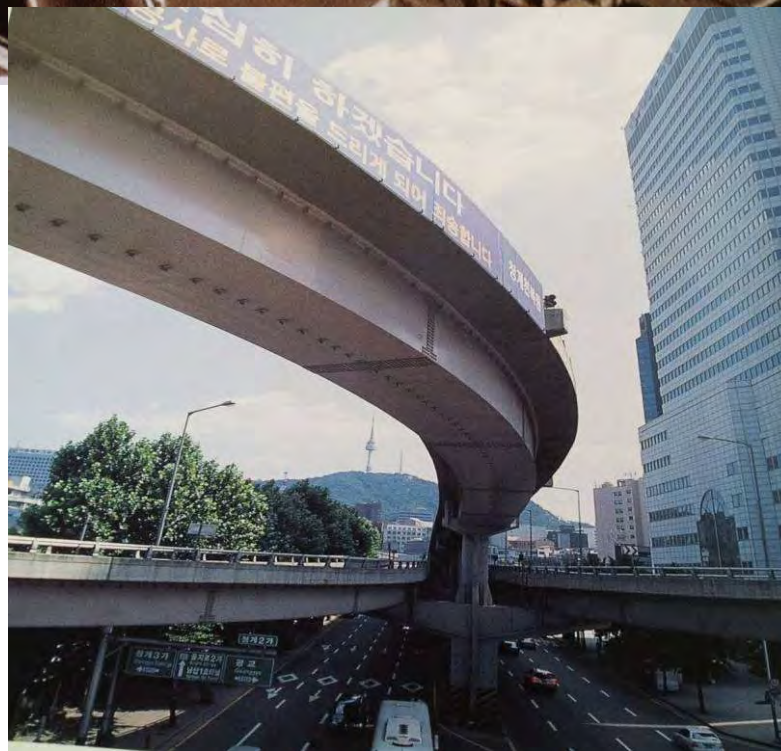


Cheonggye & Samil **Elevated Highway**





Icon of
Mobility
and
Prosperity



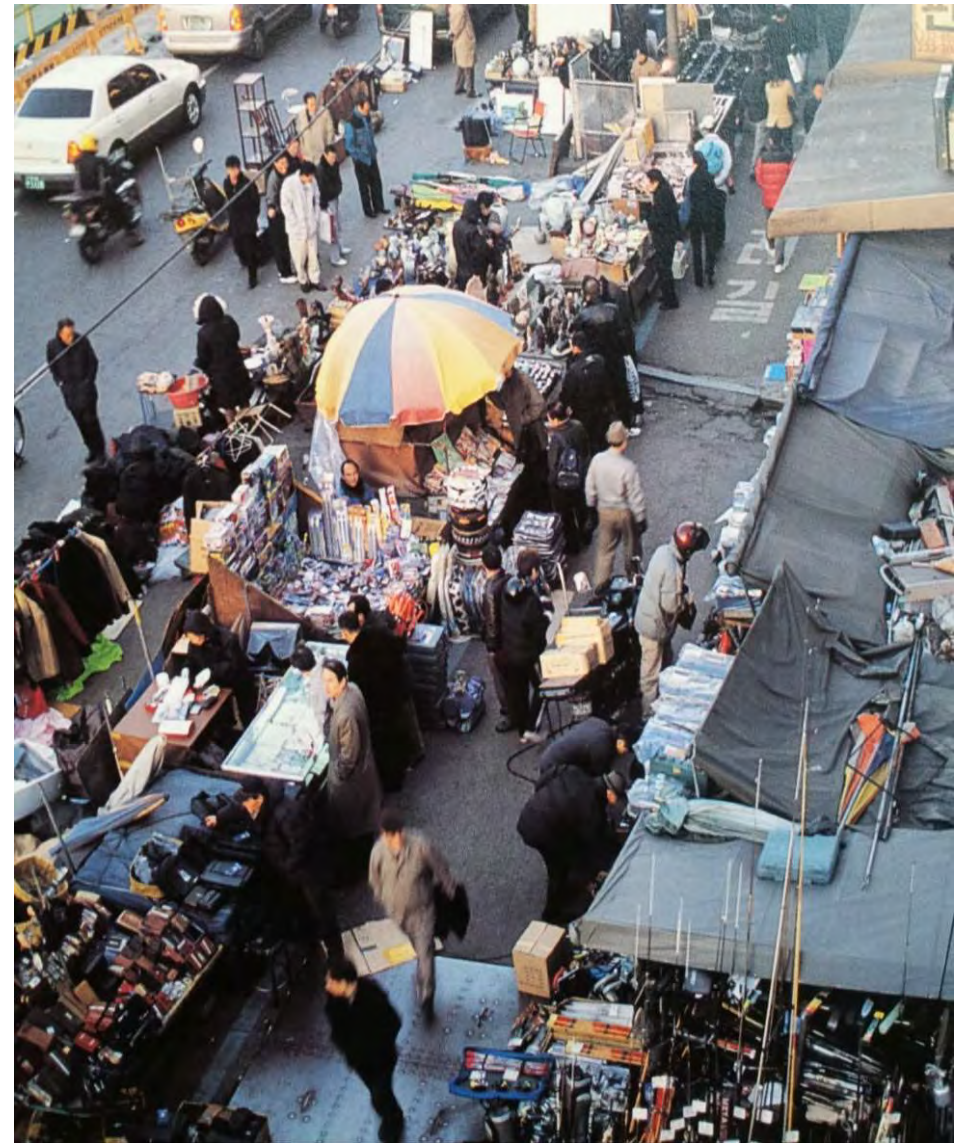
Cheonggye
Elevated Highway

Maintenance Costs → Increase



Only Midnight Repair

Air Pollution and Slum living



Need to transform

Car Inducement and Air Pollution



**Traffic
Chaos**



Subway lines already there..



Leadership – *Paradigm shift*



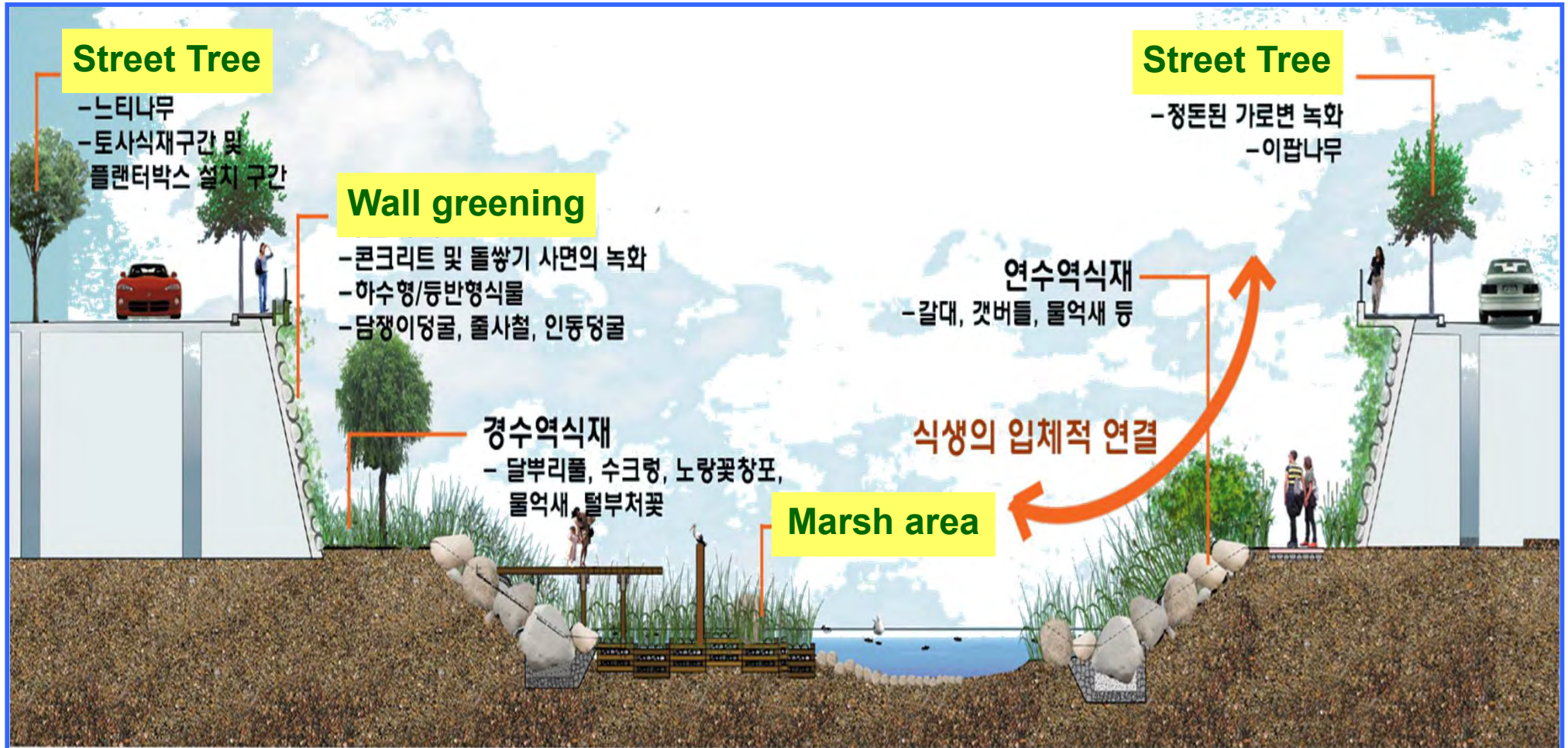
Now it's time
to take away
the **gray concrete** and
make the new Seoul
into a Eco friendly
delightful place.

Leadership- *Paradigm shift*



I hope to see the
stream flow into the
downtown instead of
the traffic.

Plan: Typical planting cross section

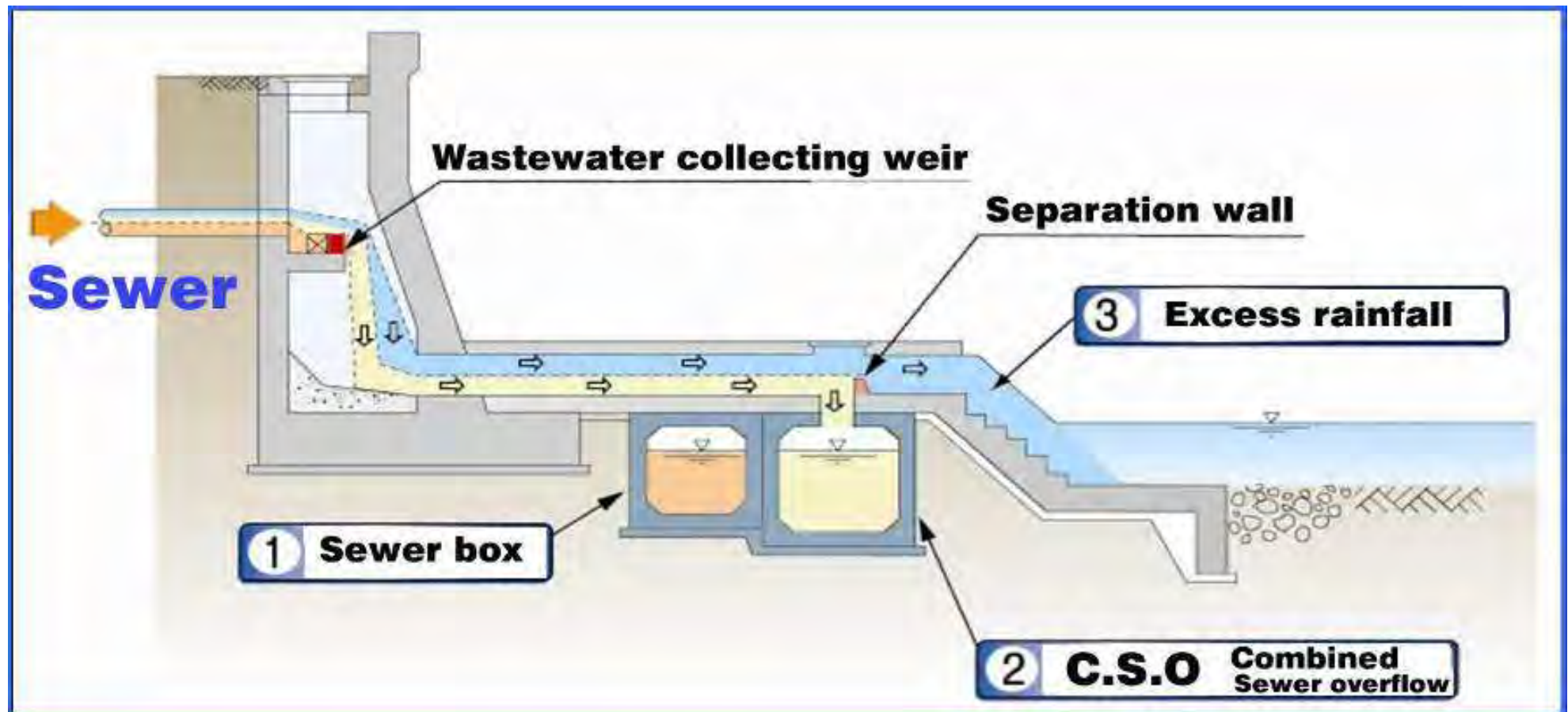


Sewer system section

□ Design Criteria

- Combined sewer system for rainfall and wastewater
- Capacity : 3 times of estimated wastewater

□ Combined Sewer System



Demolition

- Covered structure and highway: 5.4 km
 - Waste (concrete+asphalt): 872,400ton (96% recycled)

■ Step 1 ■ ■ ■ ■ Step 2 ■ ■ ■ ■ Step 3 ■ ■ ■ ■ ■



Demolition progress

Stage 1: Scaffolding (July 2003)



Demolition progress

Stage 2: Highway demolition (Aug 2003)



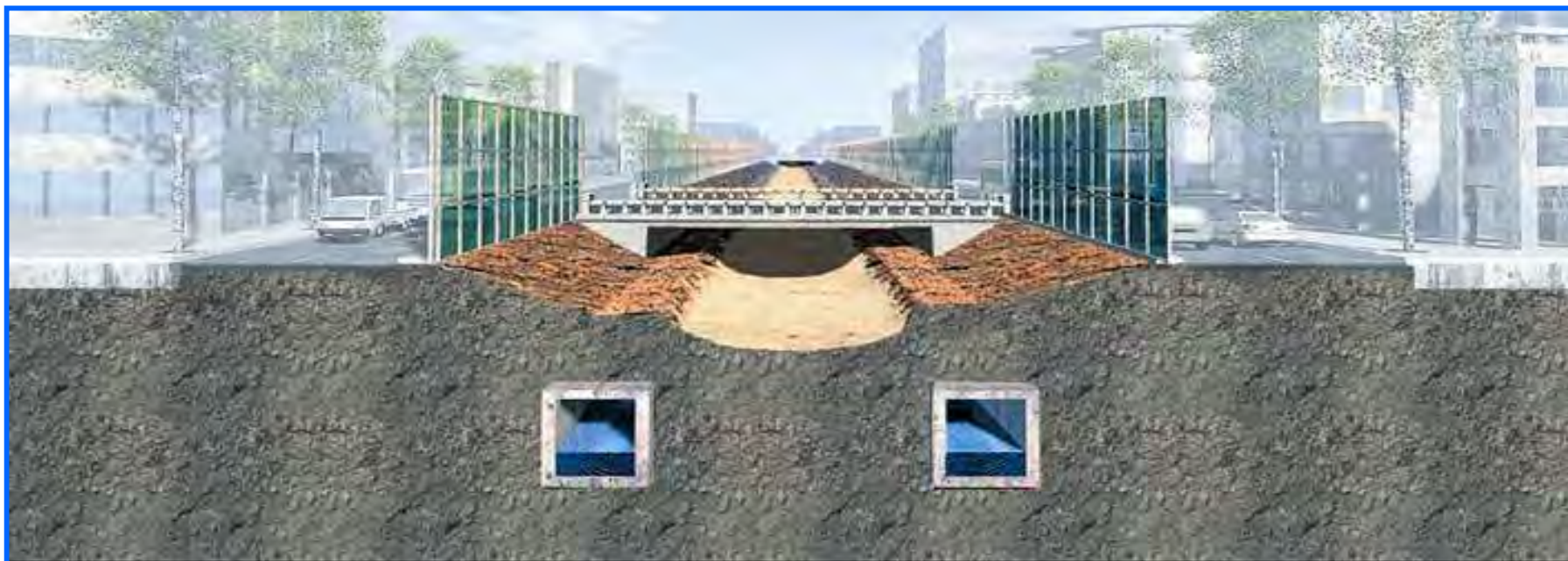
Demolition progress

Stage 3: Covered road demolition (Jan 2004)



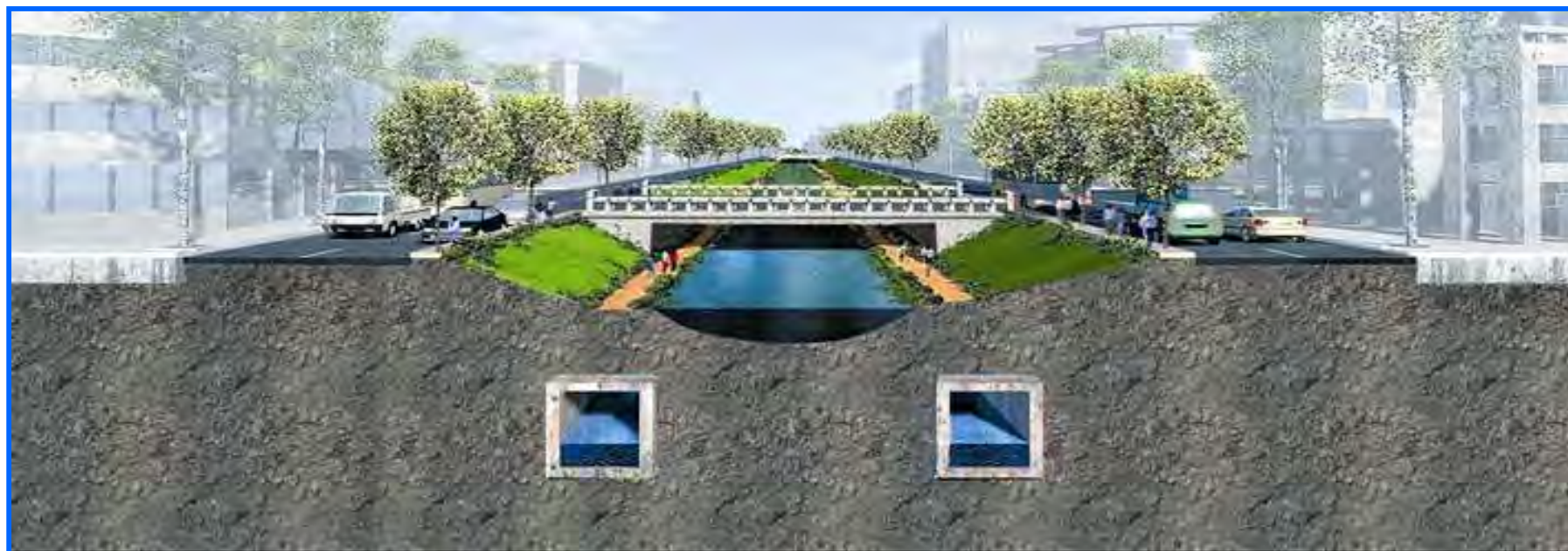
Demolition progress

Stage 4: Sewer, road & bridge construction (Sep 2004)



Demolition progress

Stage 5: Landscaping for the recovered area (May 2005)



It was **NOT EASY**

Nov. 30, 2003



**Neighboring merchants : Worried business decline
Access difficulty due to traffic congestion
Worse environment: noise & dust during construction**

Demonstration

Nov. 30, 2003



Making Consensus..



Conflict Resolution :
Next generation
“ What’s your dream?”



Making Consensus..



(Meetings **4,200** times)



Conflict Resolution : Public Hearing

Demolition – First ?

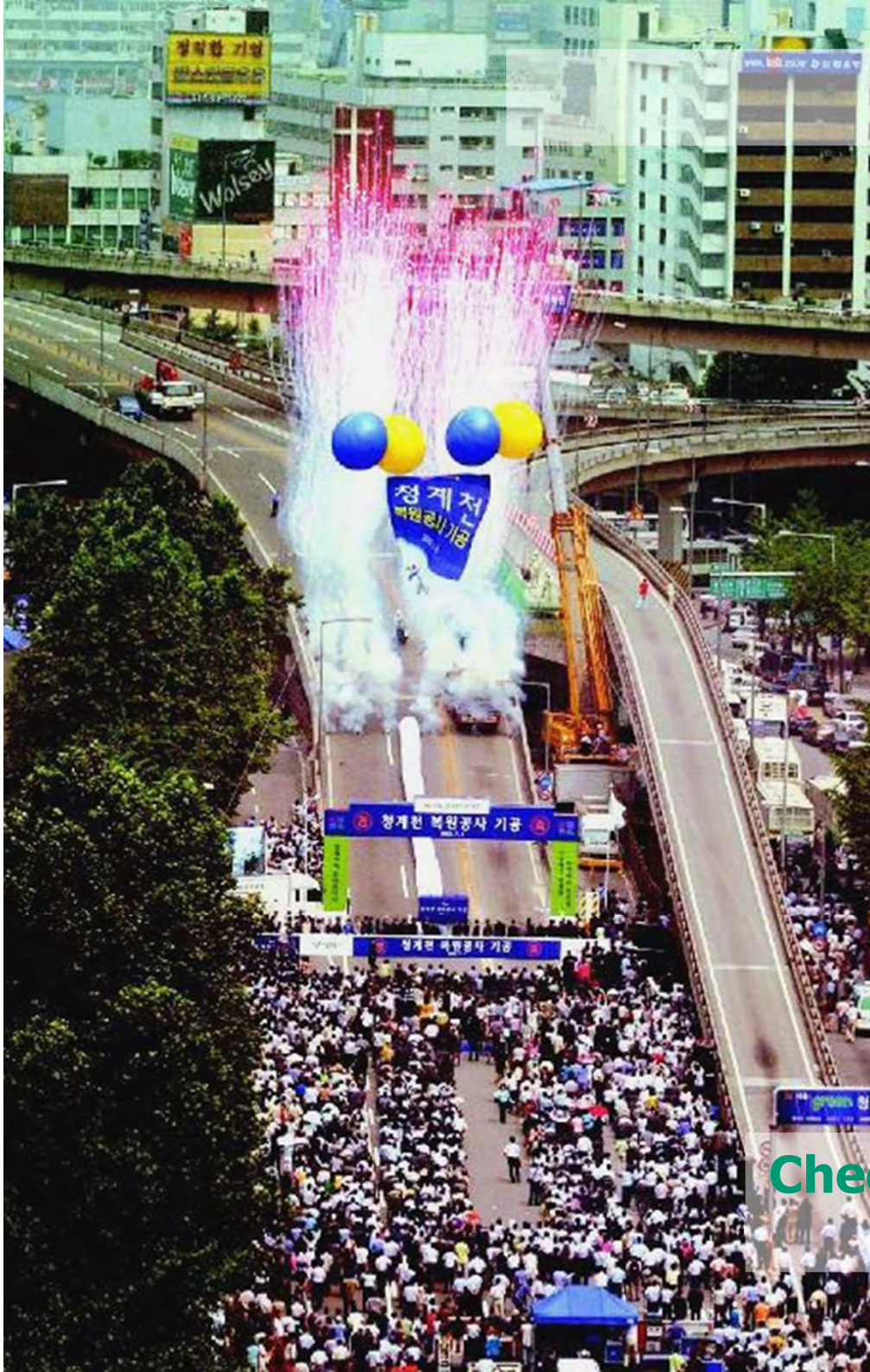


Car Free Experience



Starting the Work

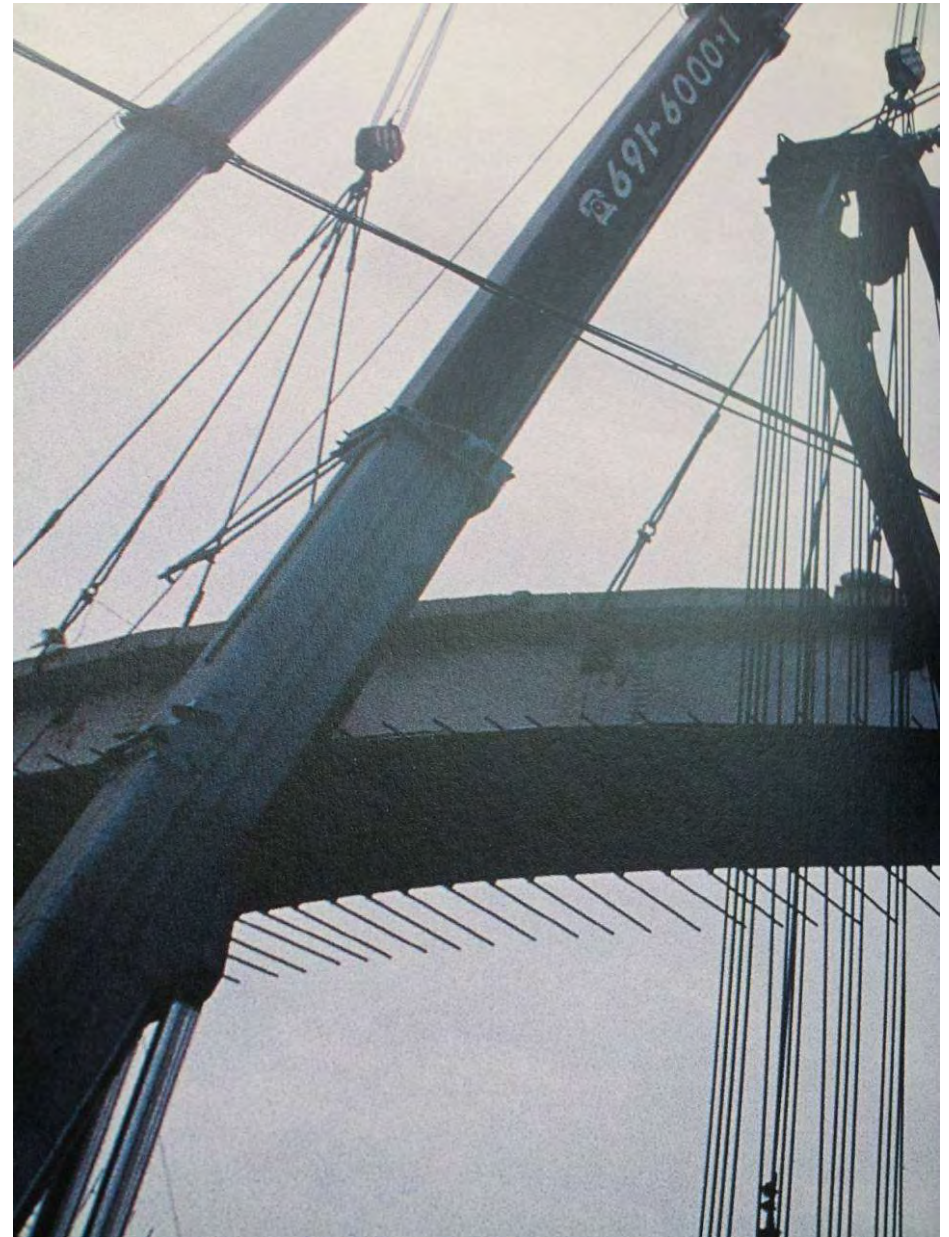
July.1, 2003



Cheonggye and Samil Elevated Highway
in History

Starting the BIG-WORKS

Nobody believed,
it was
deconstruction



First water supply

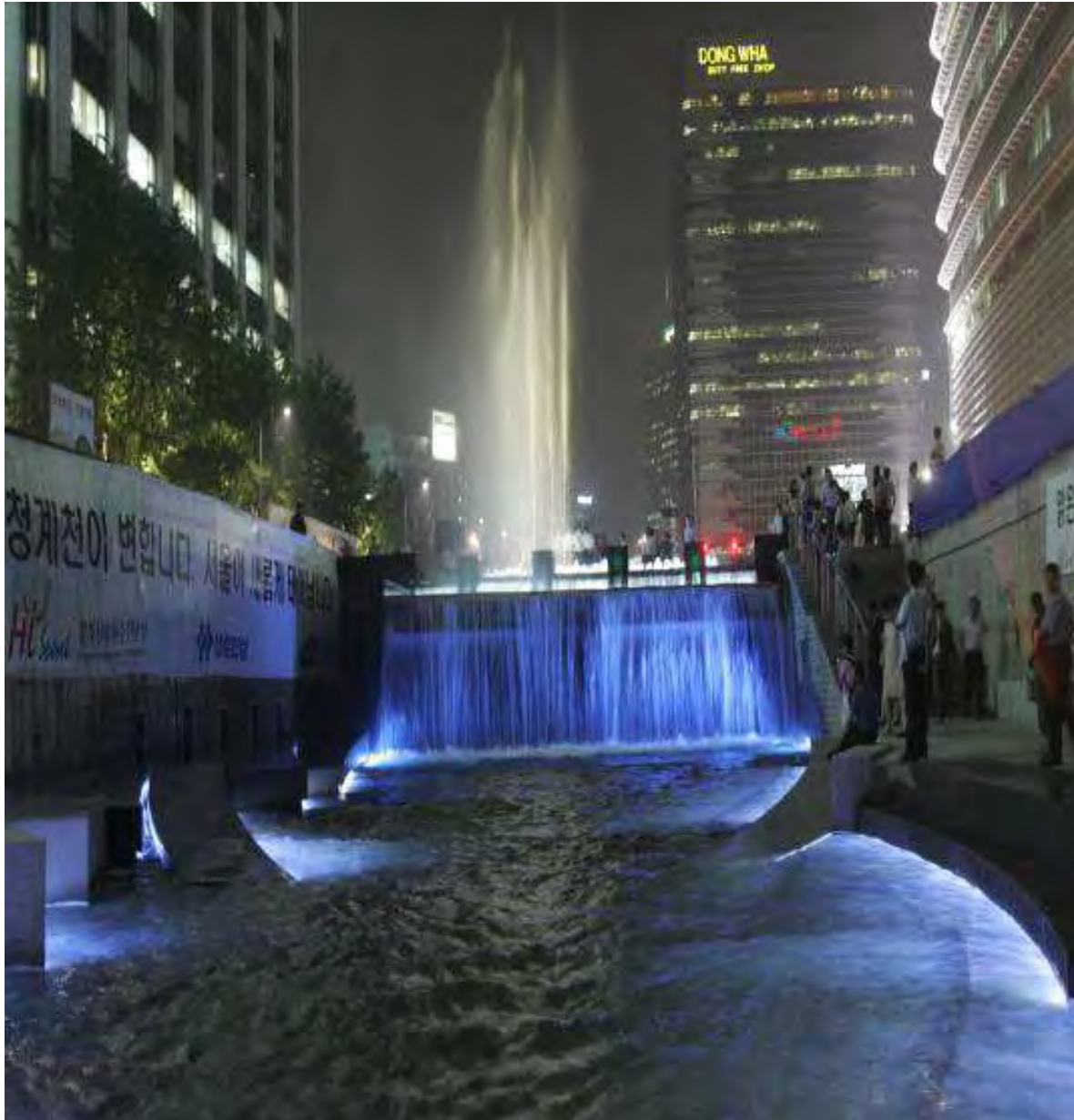
1 June 2005



Starting Point CGC DEC 2, 2006

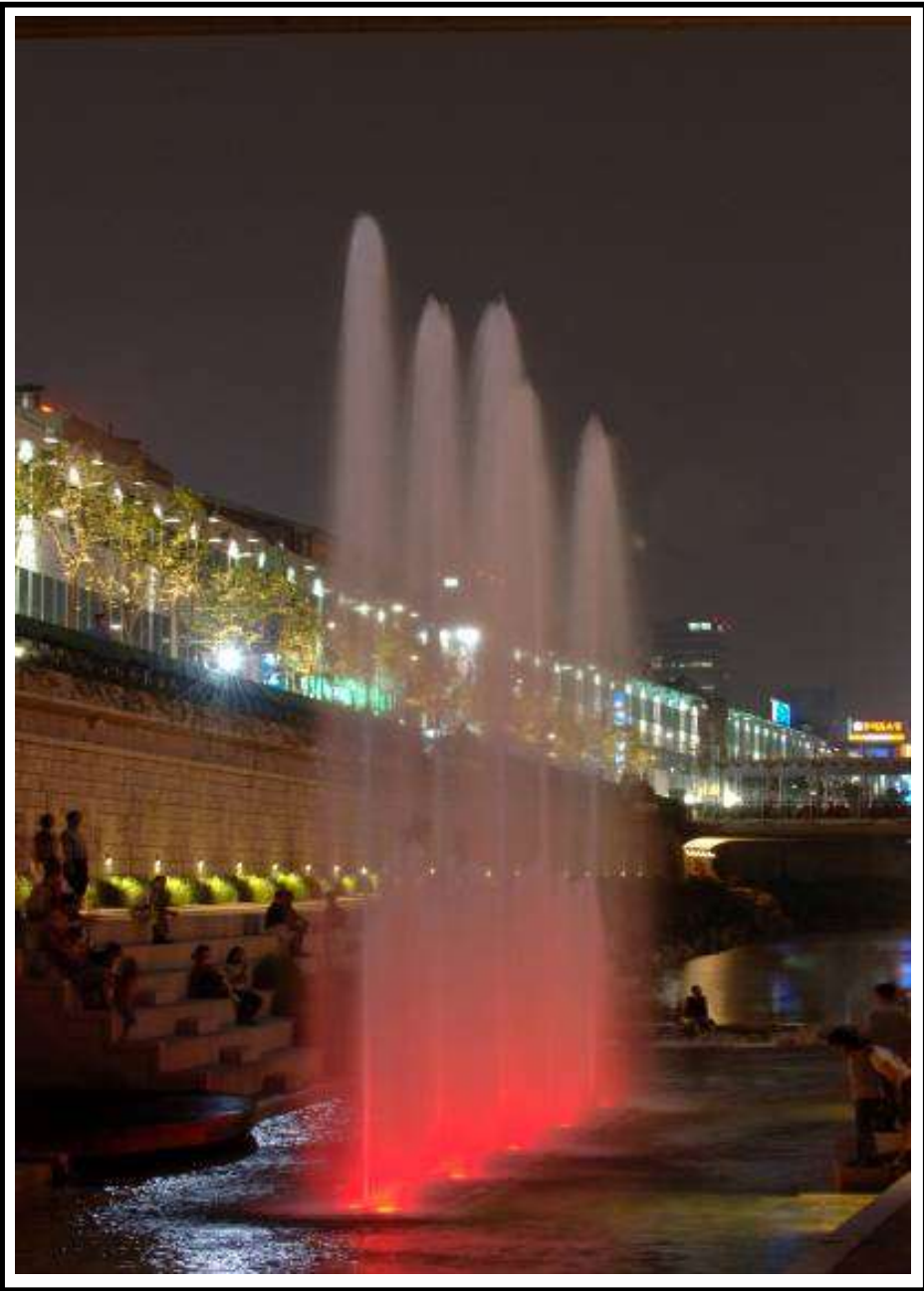


Starting point



Night View

Oct. 2005



Bridges



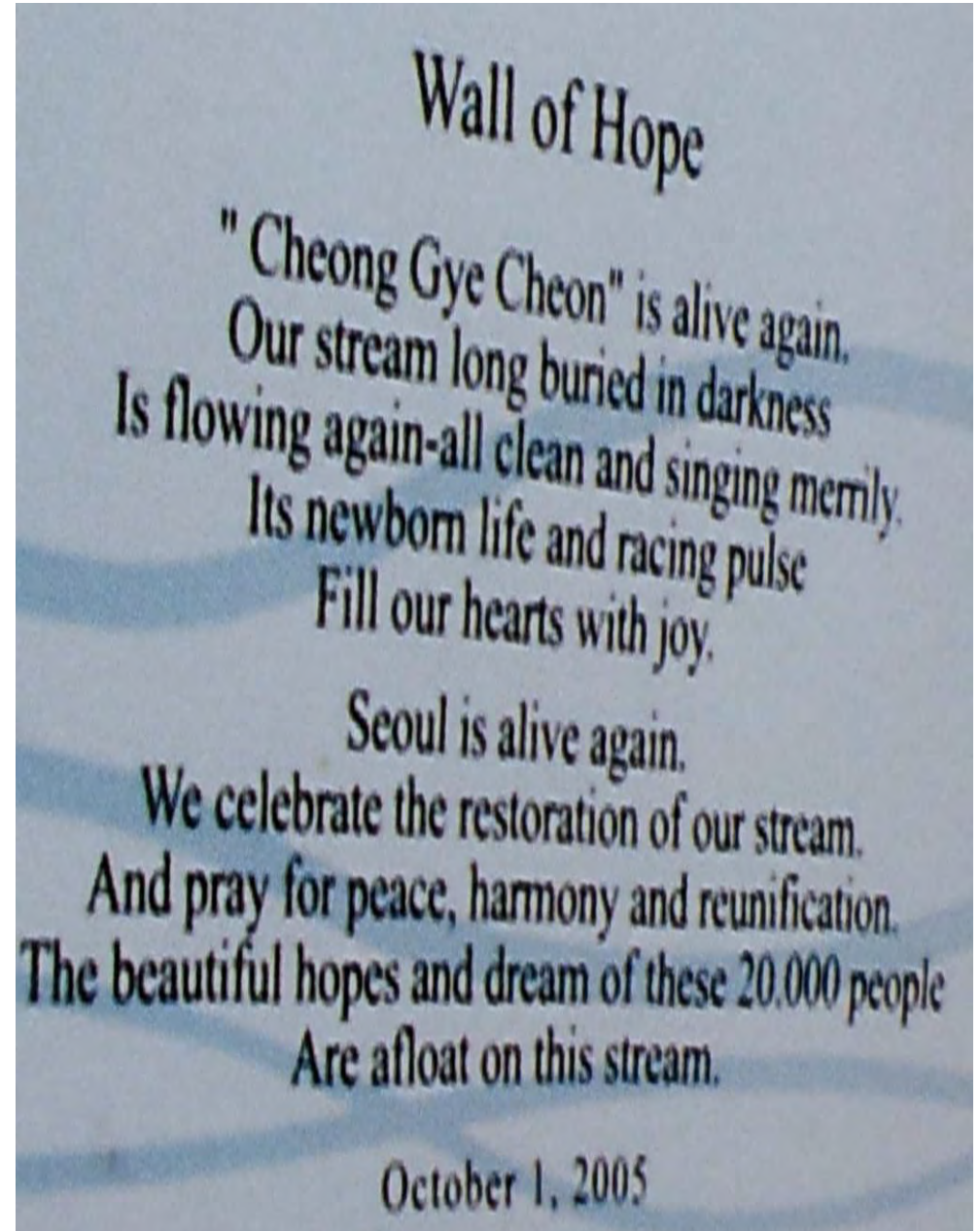
Having Fun in CBD



Having Fun in CBD



Hope Wall in CBD

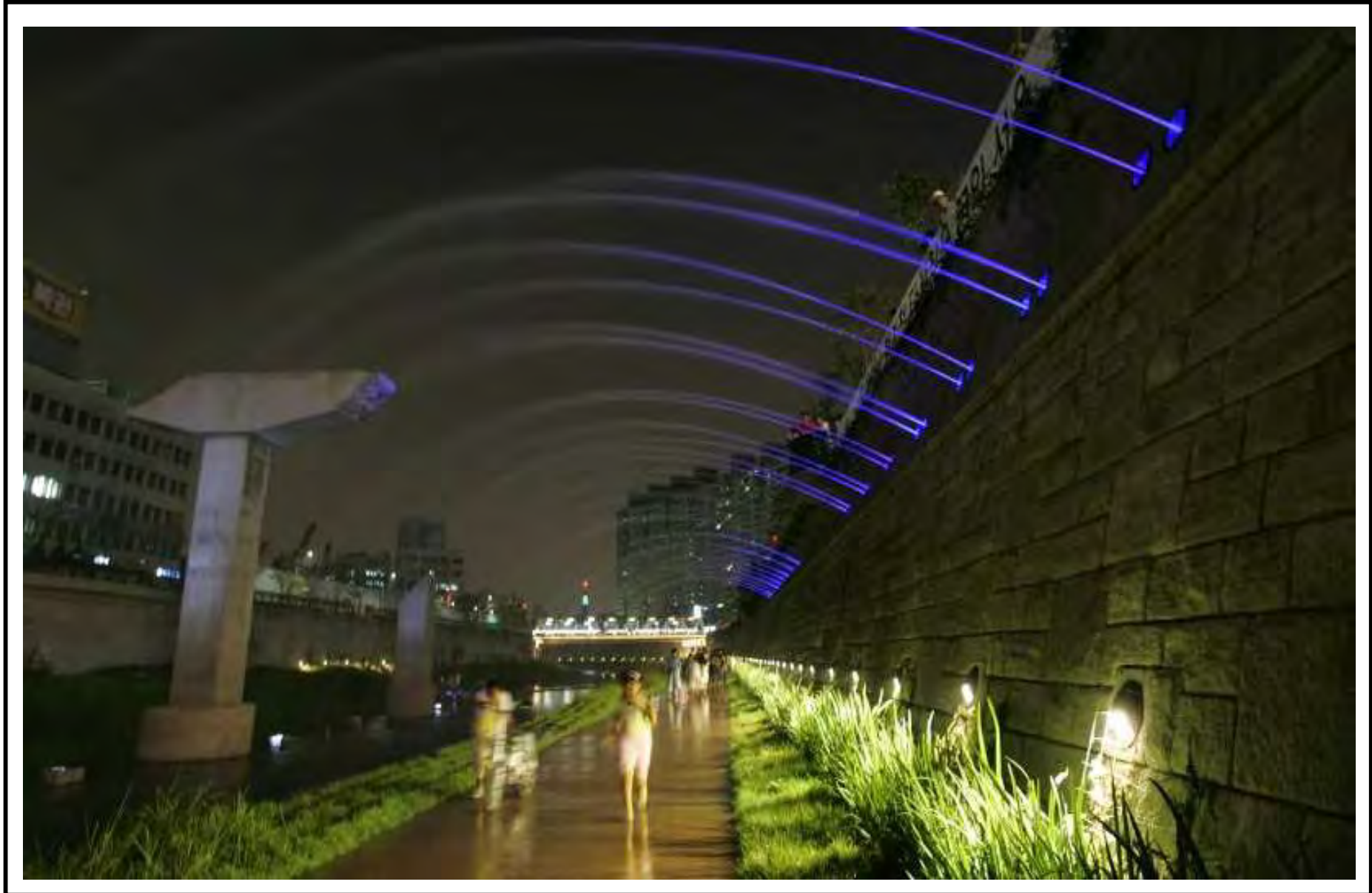


The Longest Mural Painting of 186m



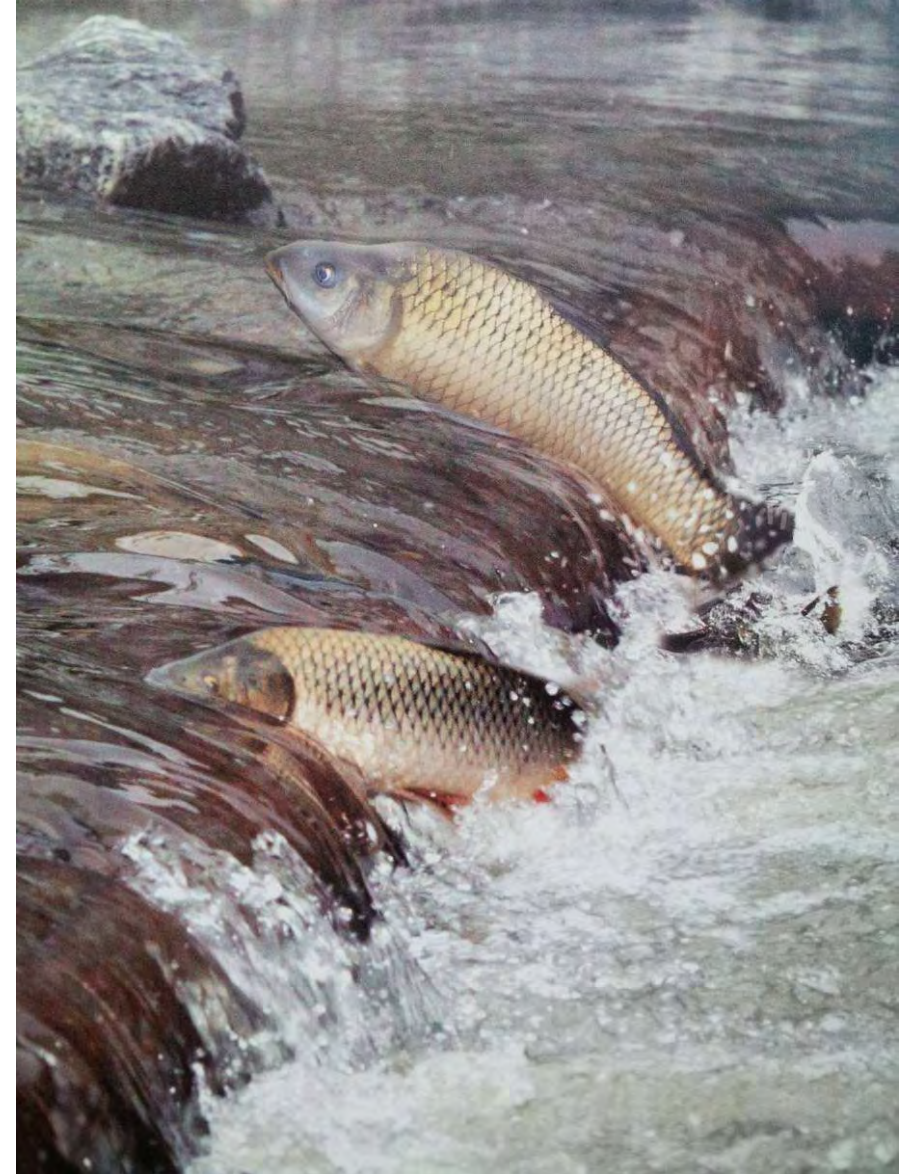
Mayor Lee and citizens are proud of a mural painting made from 5,120 tiles, stretching 186 meters, depicting the royal march accompanying King Jeongjo from Seoul to Suwon.

For future generations: One Pillar with water-spraying still there



Ecology: Fish

□ 3 ⇒ 15 species



Ecology: **Insects**

□ **15** ⇒ **84 species**



Ecology: **Birds**



□ **34 species**



Traffic

- **CBD Car in/out flow**

1.56M \Rightarrow 1.27M (-18.6%)

- **Public transport rider-ship**

- **Bus: + 6~10 %**

- **Subway: + 6~9 %**

Environment

Air

- No_2 : 69.7 \Rightarrow 46.0 ppb (-34%)
- PM10: 74.0 \Rightarrow 60.0 $\mu\text{g}/\text{m}^3$ (-19%)

Water quality

- BOD: 100~250 \Rightarrow 1~2 ppm

Noise level reduced

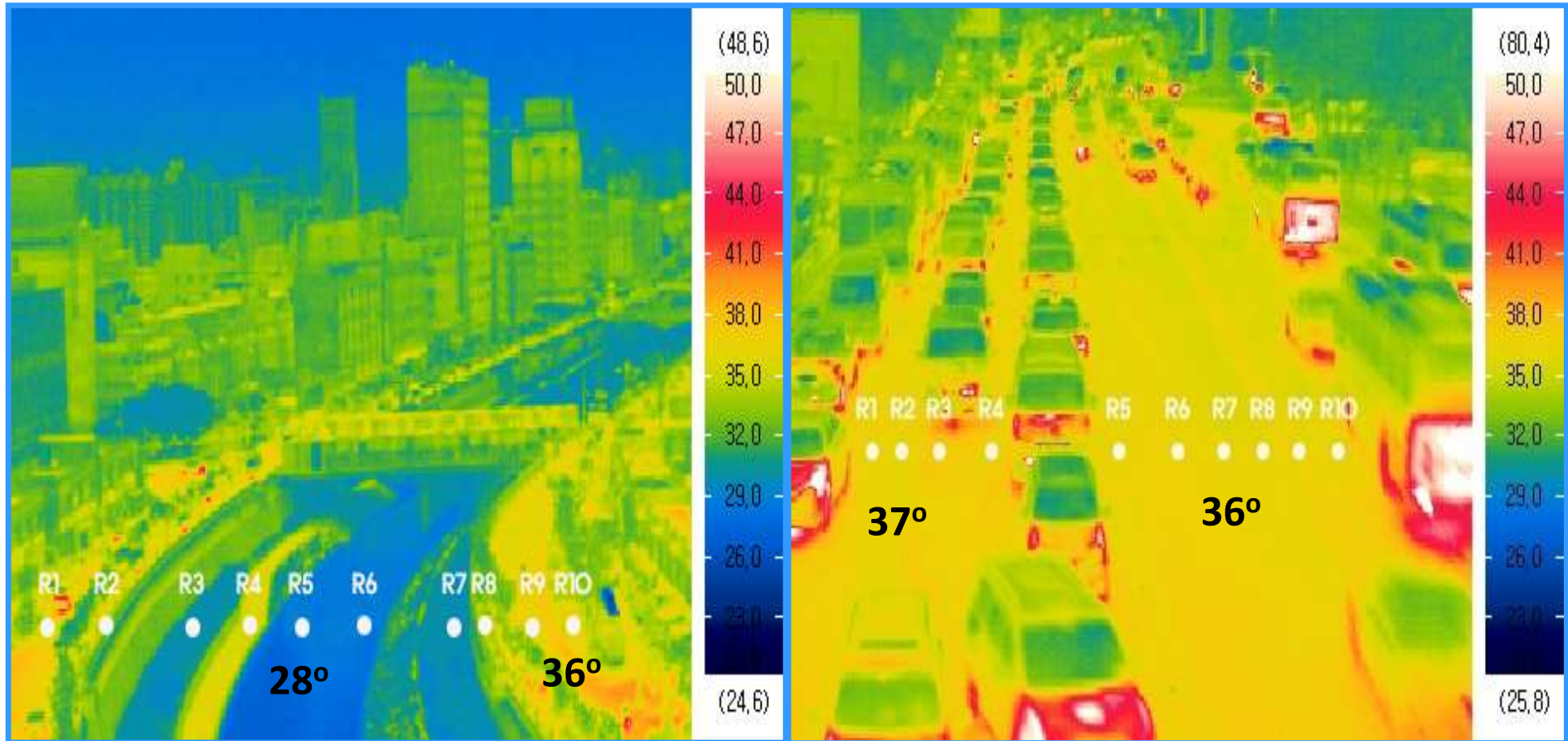
Heat island effect relieved

Wind corridor created

Cooling effect

Thermal image

27 July 2005



Average 32.7°C

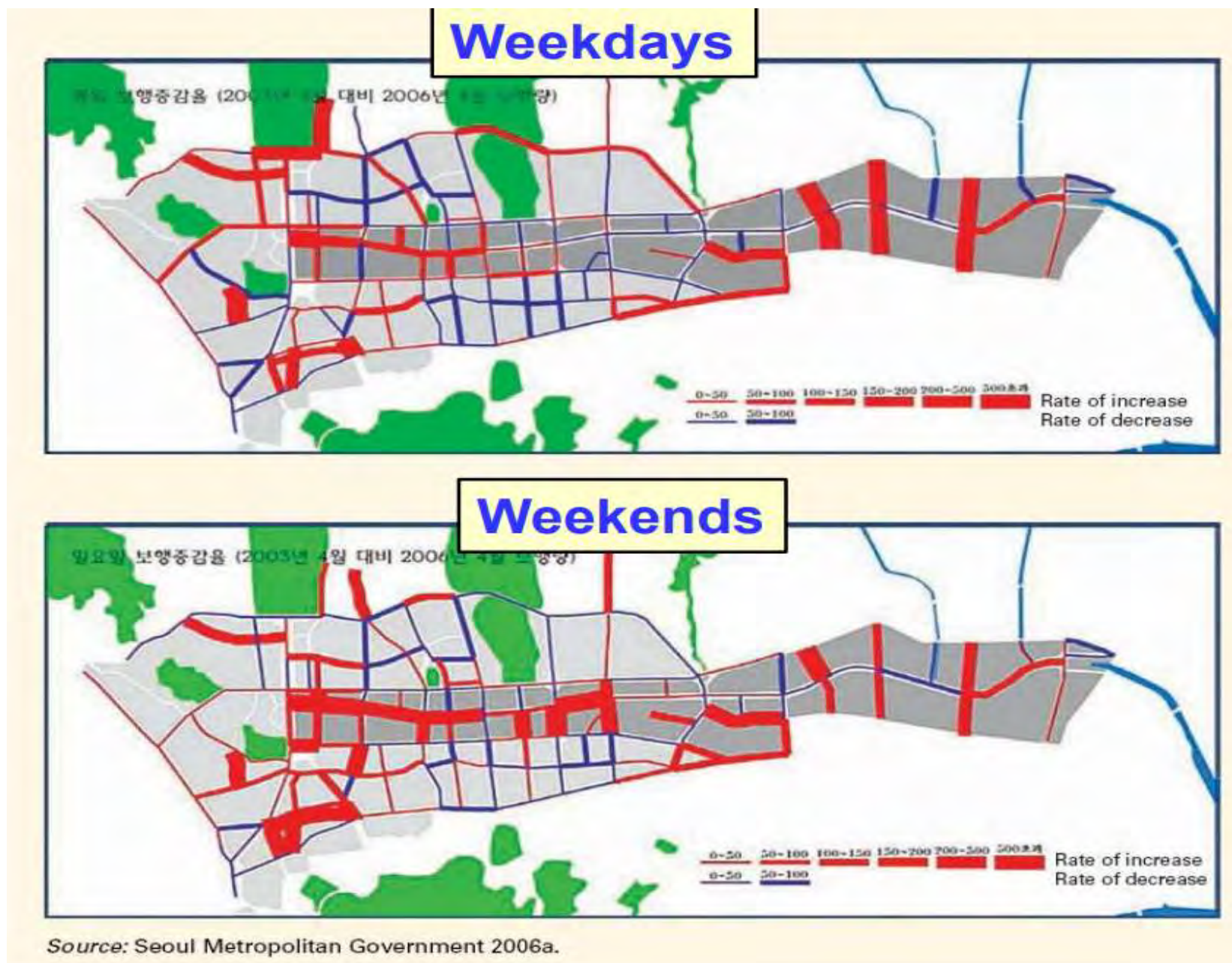
-3.6°C

Average 36.3°C

Cheong Gye Cheon

Nearby street

CBD Business: Changes in pedestrian volume near the restored river, from April 2003 to April 2006



CBD Business: Real Estate Usage

Price up :
3-4 times

■ Before

- Manufacturing
- Tool shops
- Second-hand bookshops

■ After

- Cafe
- Restaurant
- Modern retail shops

Tool shops



Café



Dream comes true



Dream comes true



Further information
<http://english.seoul.go.kr/cheonggye>

