



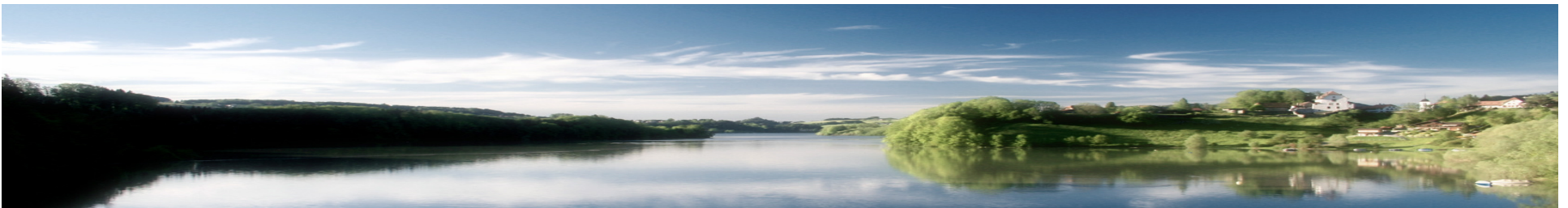
*The 8th Meeting of the GEOSS/AWCI International Coordination Group and
The 1st Climate Change Assessment and Adaptation Workshop*

Current Issues on Korean Water Management

2011. 10. 06

Prof. Deg-Hyo Bae

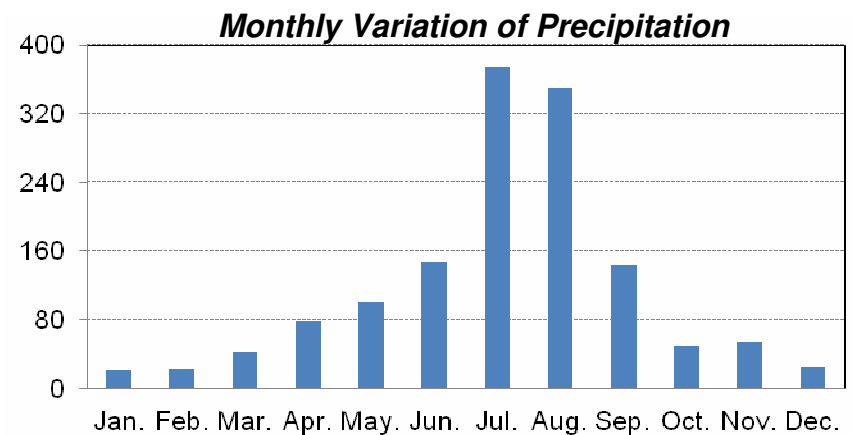
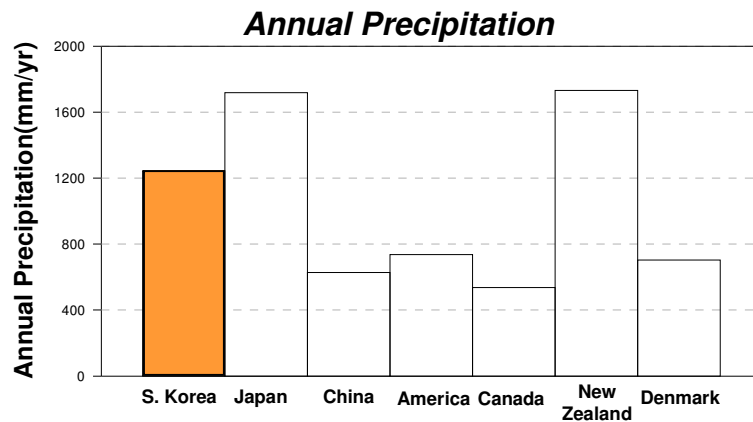
Department of Civil & Environmental Engineering, Sejong University, Seoul, Korea



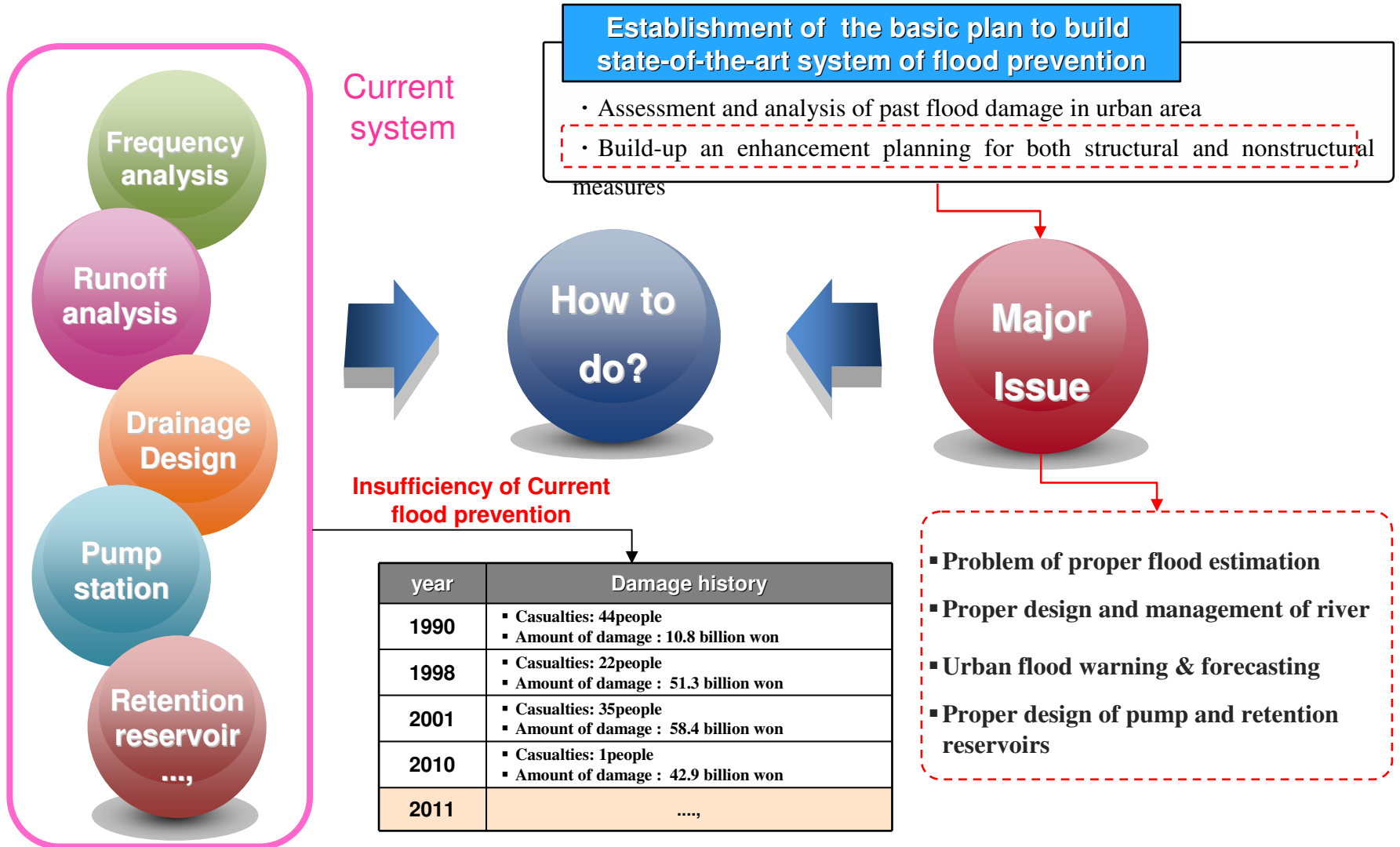
Water and Flood in Korea

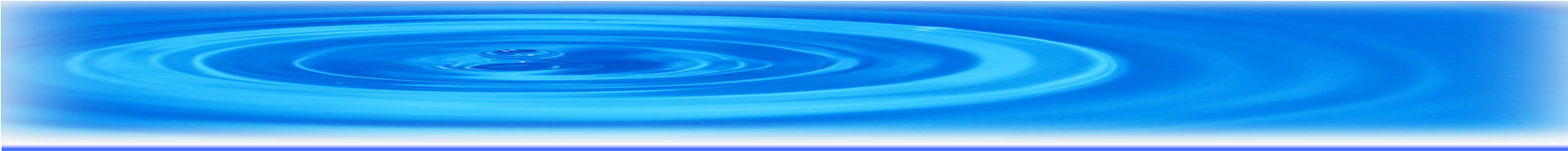
□ General Info. of Korean Water Resources

- Mean Annual Precipitation : 1,245mm (World average : 880 mm)
- River regime : 170-330 (Europe : 8-30)
- 26% of total water resources(33.1 billionm³ / year) are used
- Korea is classified as a water stress country
- Two-thirds of annual precipitation is concentrated on summer season.
 - Typhoon and sever rain storm are intensive in rainy season from June to September
 - Life and property damage caused by floods is occurred frequently

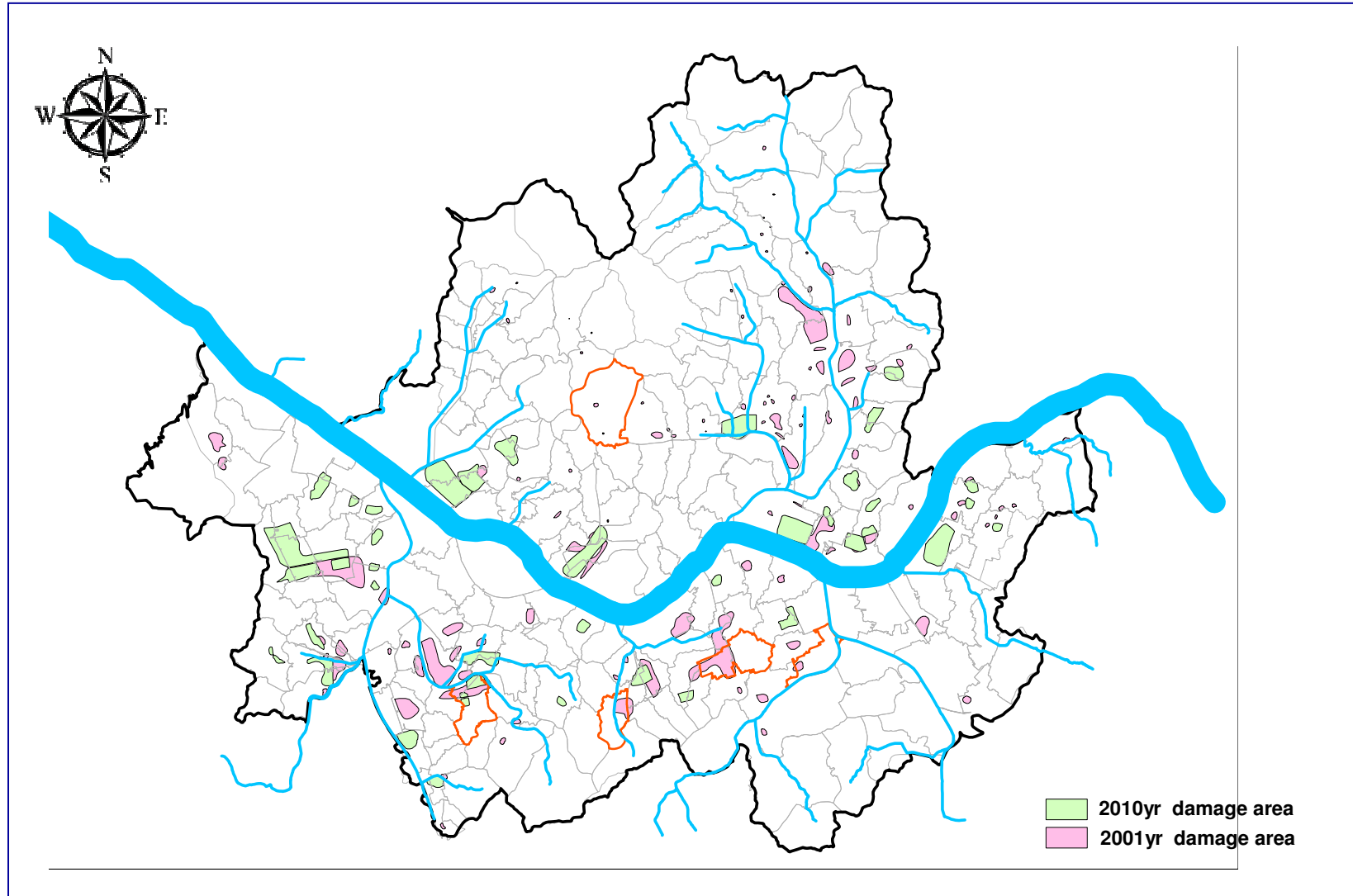


Flood control and management in urban area



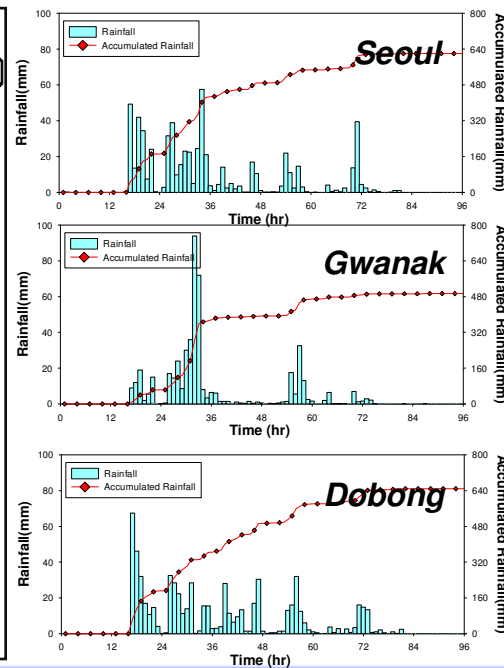
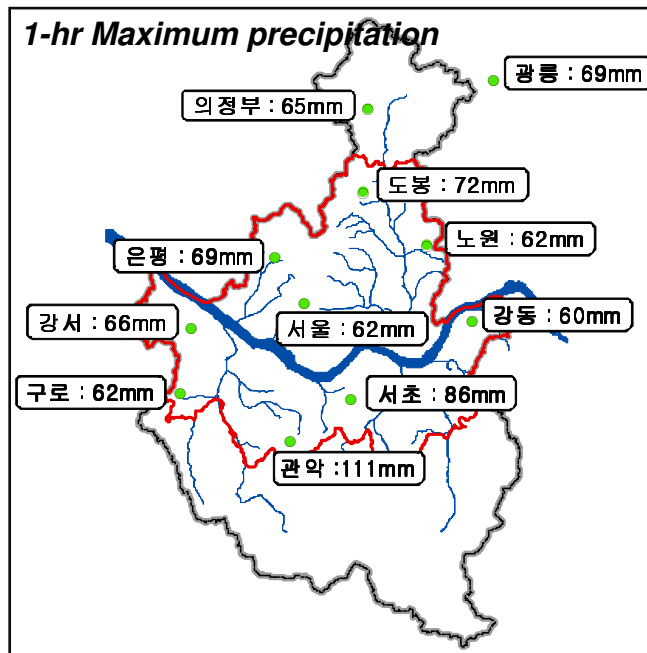
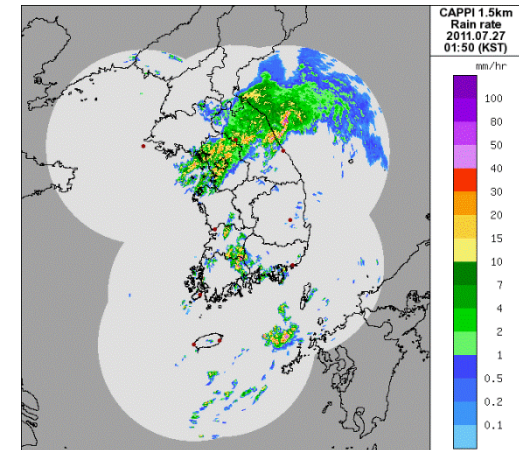


Recent Major Flooding Area in Seoul



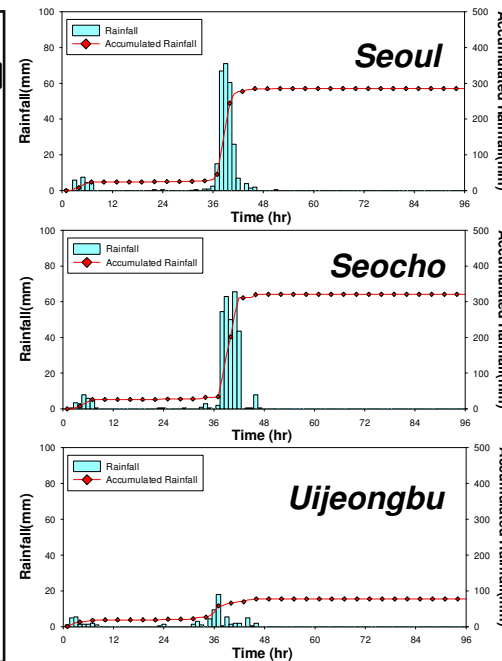
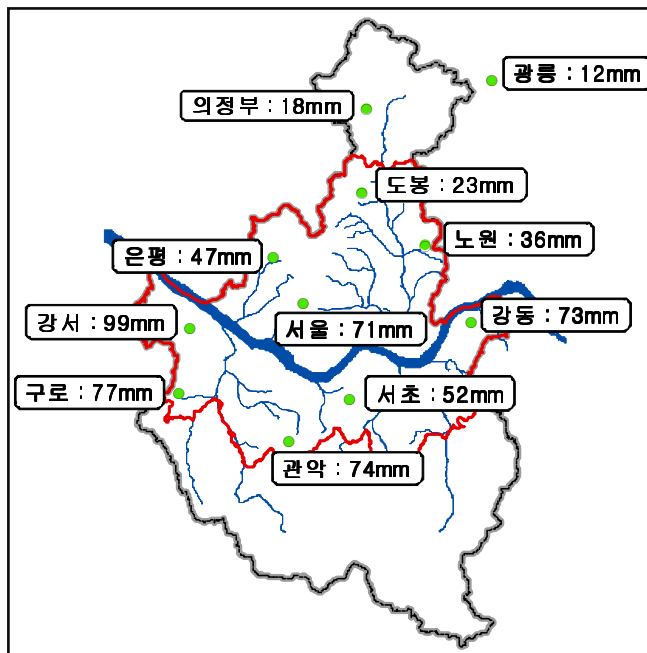
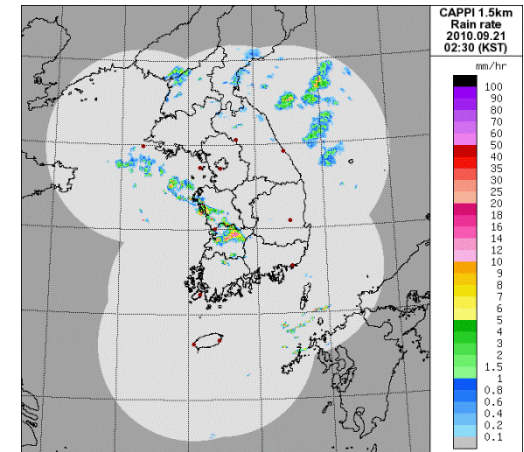
➤ July 27, 2011

- Strong precipitation recorded more than 50mm per hour
- Spatial variation of precipitation is high
- Maximum rainfall value of the meteorological history is 111 mm/hr which was measured at Gwanak-Gu.
- Since the Seoul gauge station started to measure rainfall, the total rainfall for three days is over 40% of the annual average rainfall

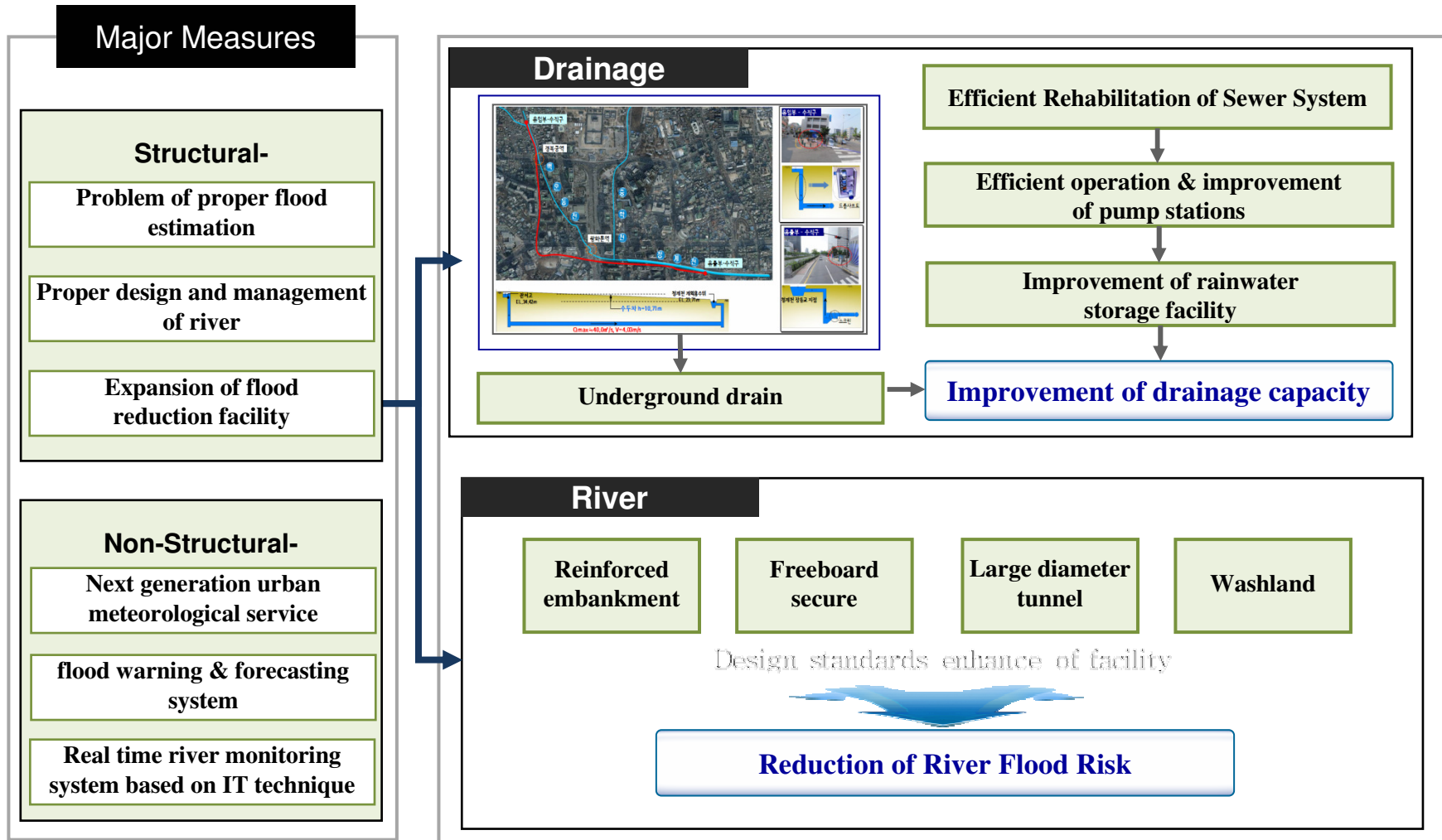


➤ September 27, 2010

- Spatial variation of precipitation is high in North and South-west of Seoul area
- 1-hr maximum precipitation 99mm/hr (Seocho stn.) is the highest in Seoul area
- Maximum hourly rainfall of Seoul station greatly exceeded in capacity of 10 year frequency which is design standard of sewer system.
- The total rainfall for 14hr of Seoul, Seocho and Gangseo-gu is over 19% of the average annual rainfall



Various Measures for Flood Prevention



The 4 Major Rivers Restoration Project

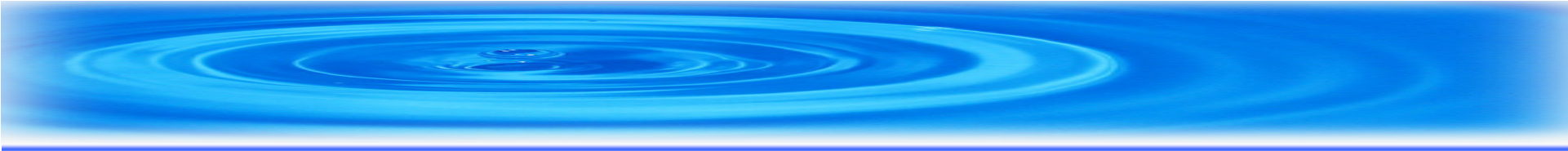
Original Project

➤ Kyung-bu Canal System Connecting the Han River and the Nakdong River



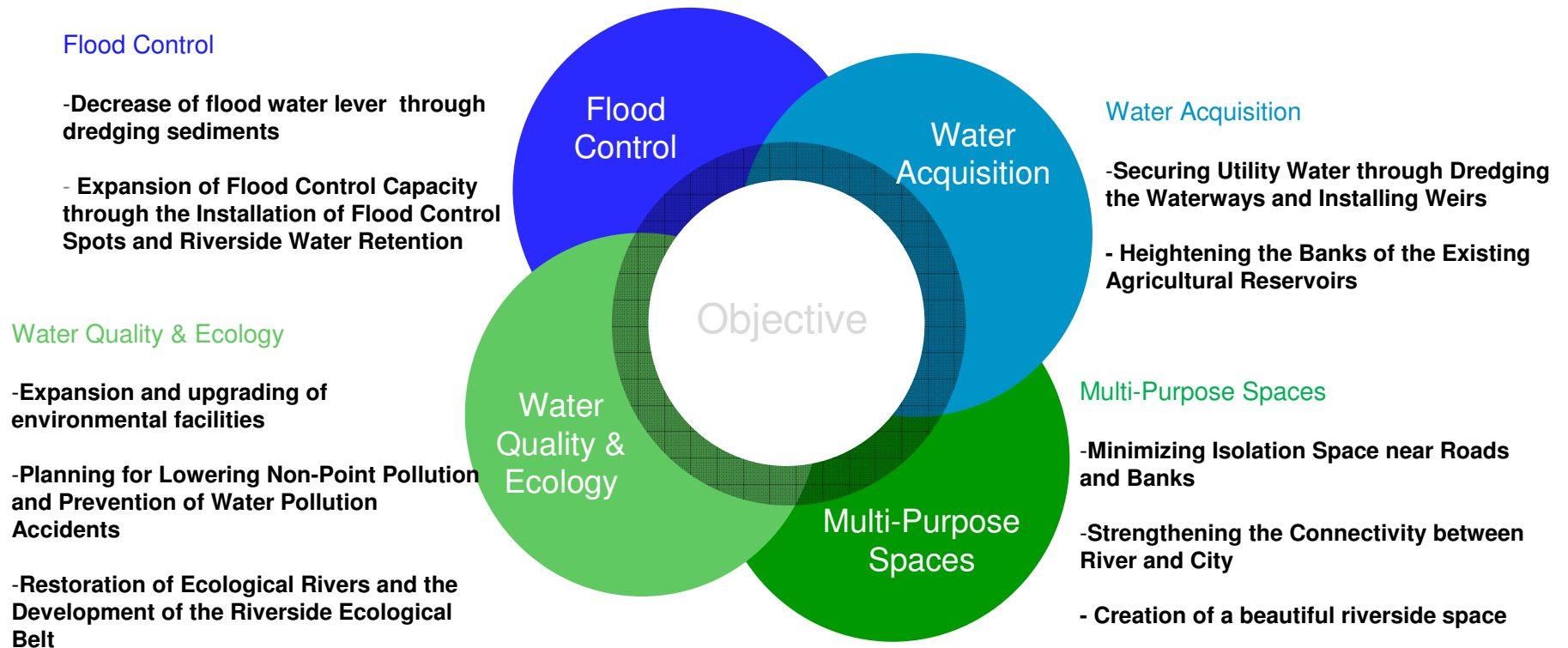
Main Facilities

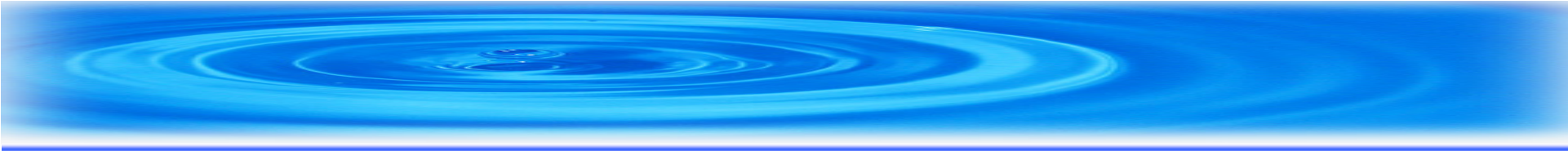
- Waterway Length : 540km
 - Natural River : 500km
 - Manmade River : 40km (26km tunnel included)
- Canal Dam : 16
 - New : 12
 - Existing : 4
- Lock Gate : 19
- Water supply facility for navigation
 - Tunnel : 10km
 - Dam : 2
- Facilities Replacement
 - Bridge Rebuilding : 14 (total : 115)
 - Drop Structure : 146
 - Eco-friendly River Creation
 - Intake Facility Improvement
 - Road Movement
- Cargo Terminal : 12



The objective of 4 Major Rivers Restoration Project

- **Fundamental measures against frequent flooding and drought disasters incurred as a result of climate change**

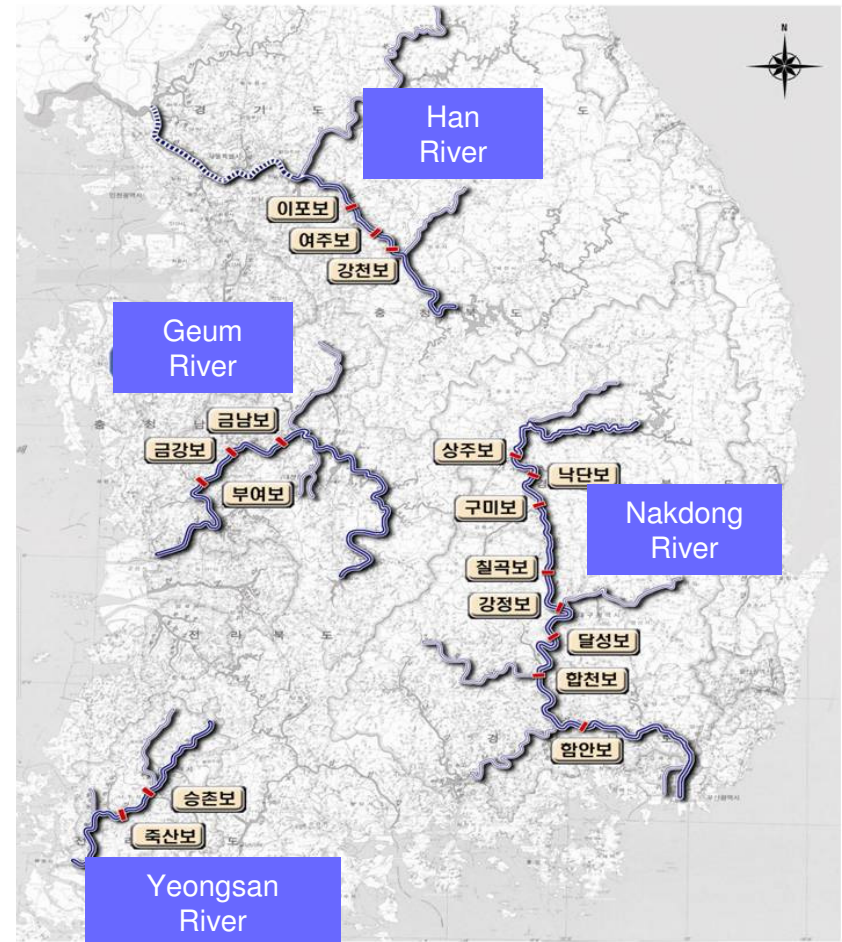
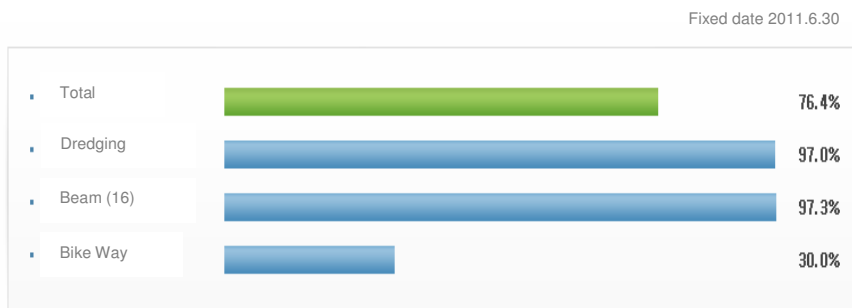




Main Activities

Activities	Total	Han river	Nakdong river	Geum river	Yeongsanri ver
Dredging	5.7 billionm ³	0.5	4.4	0.5	0.3
Beam	16	3	8	3	2
Bank revetment	377km	75	214	71	17
Dam, Reservoir	5	-	3	-	2

Current States



Expectations

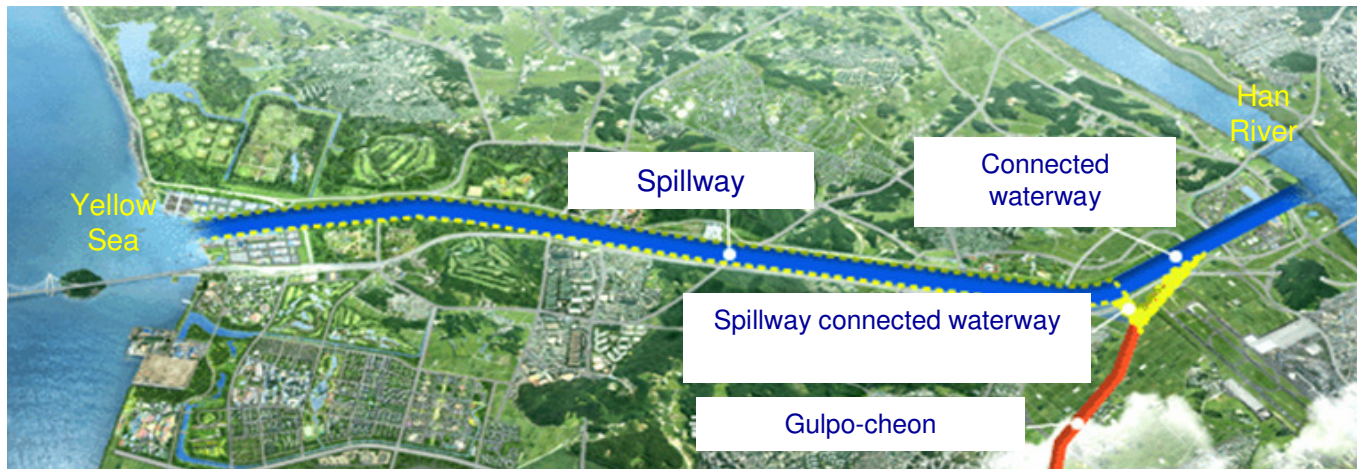
- **Resolving water shortage and flood issues fundamentally**
- **Developing a healthy water eco-system through water quality improvement and river restoration project**
- **Enhancing the standards of community leisure and quality life**
- **Boosting local economics through the green new deal project**



Gyeong-In ARA Waterway

Project Overview

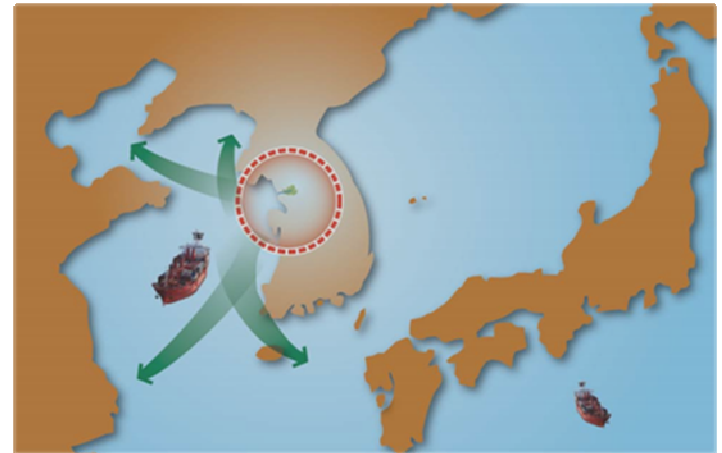
- The Gulpocheon basin has sustained huge flood damage because 40% of its area is low-lying.
- Serving as both an ordinary waterway and as a spillway during flooding.
- The Gyeong-In ARA Waterway, spanning 18km, being South Korea's first eco-friendly inland waterway connecting the Han river with the Yellow sea.



Completed Date. 2011.10

□ Expectations

- Preventing flood damage
- Ensuring eco-friendly, innovative logistics
- Creation of water-friendly cultural spaces
- Vitalization of the regional economics



Cheong-Gye Cheon Restoration Project

Backgrounds

- The Cheong-gye cheon used to be a naturally formed stream.
- In 1968, the stream was covered with concrete with highway to solve urban traffic problems.
- There were hundreds of thousands of vehicles passing through the covered stream and the elevated highway.
- The area eventually became the busiest and noisiest sector in Seoul.
- In the 1990s, it came to be regarded as a source of intense traffic, health and environmental issues



Objectives

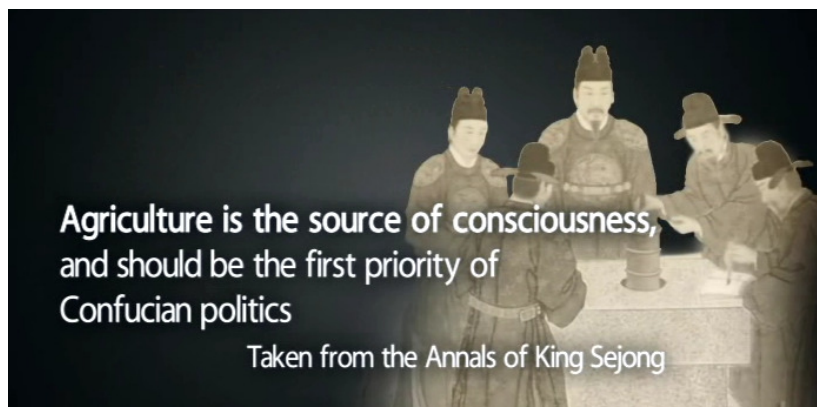
- Restoration of a natural environment and enhancement of the quality of life
- Restoration of history and culture
- Creation of future-oriented urban environment

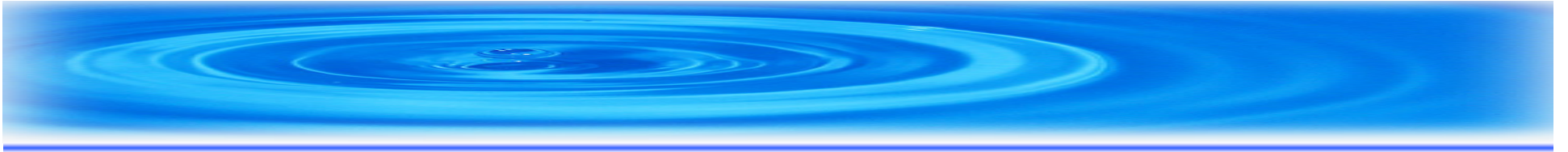
Expectation

- Significance of restoring an urban environment centered on a stream
- Balanced and sustainable development of areas both in south and north of the Han river
- Urban traffic focusing on pedestrians and public transportation means



➤ **Korea has long history of precipitation and water level measurements**





Thank you

