

Smart Water Approach from K-water as an SOE

K-water (Korea Water Resources Corporation)
Yonghyo Park

SMART K-water
START Together

미래 물관리 선도
Smart Water

국민 물복지 실현

Smart Welfare

고객 눈높이 경영
Smart Service

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I Water Supply in Korea



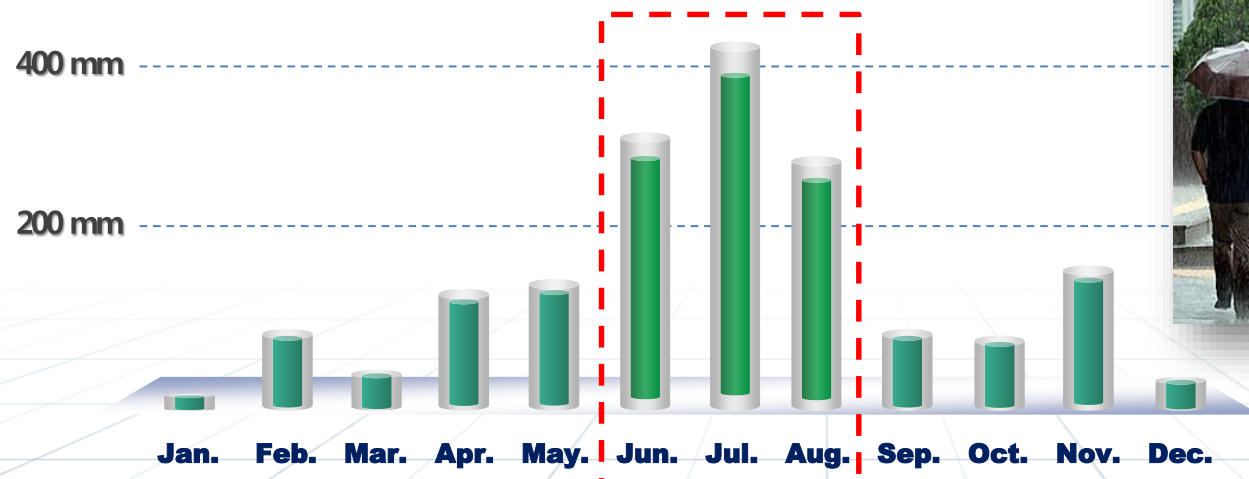
Water Environment in Korea

Water Stress

- Precipitation : 1,277mm (1.6 times of global average, 807mm)
- Water per capita : 2,629m³ (1/6 of global average, 16,427m³)

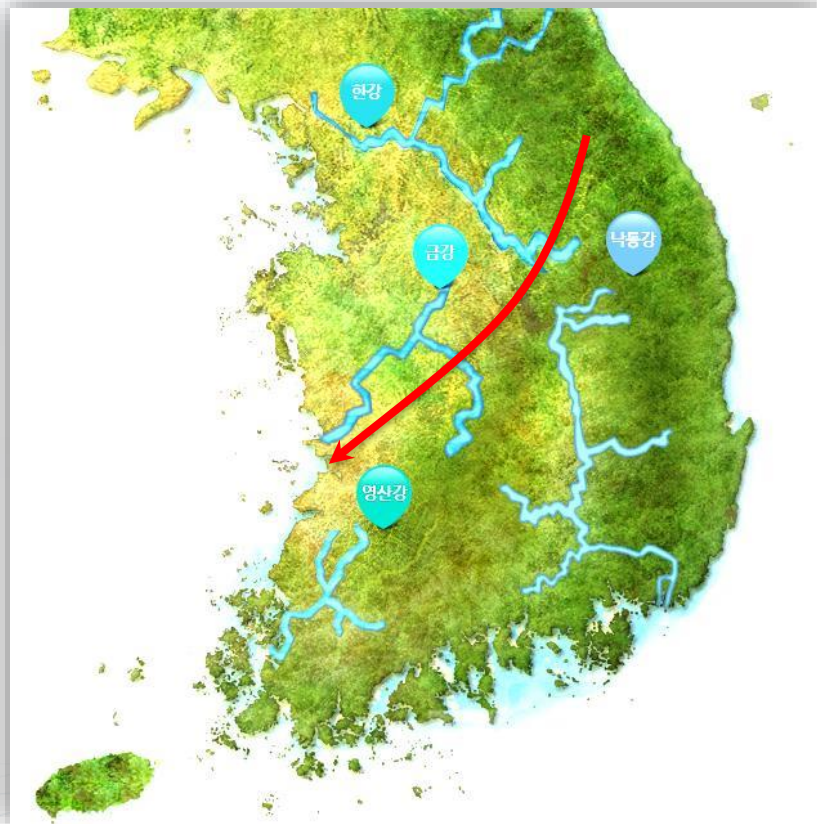
Monsoon Season

- Precipitation is concentrated during Monsoon Season (Jun. ~ Aug.)



Main Rivers and Topography

4 Main water resources

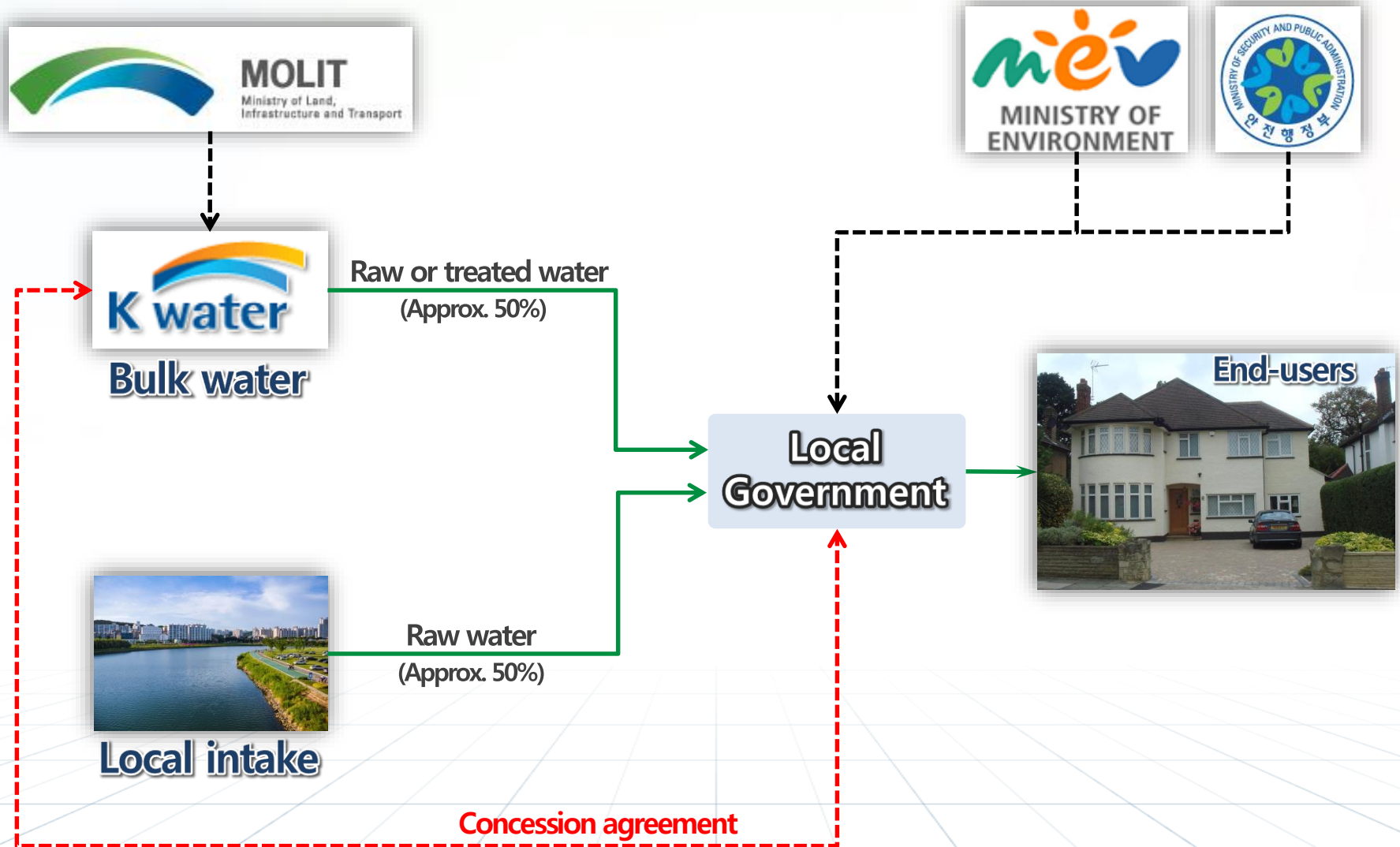


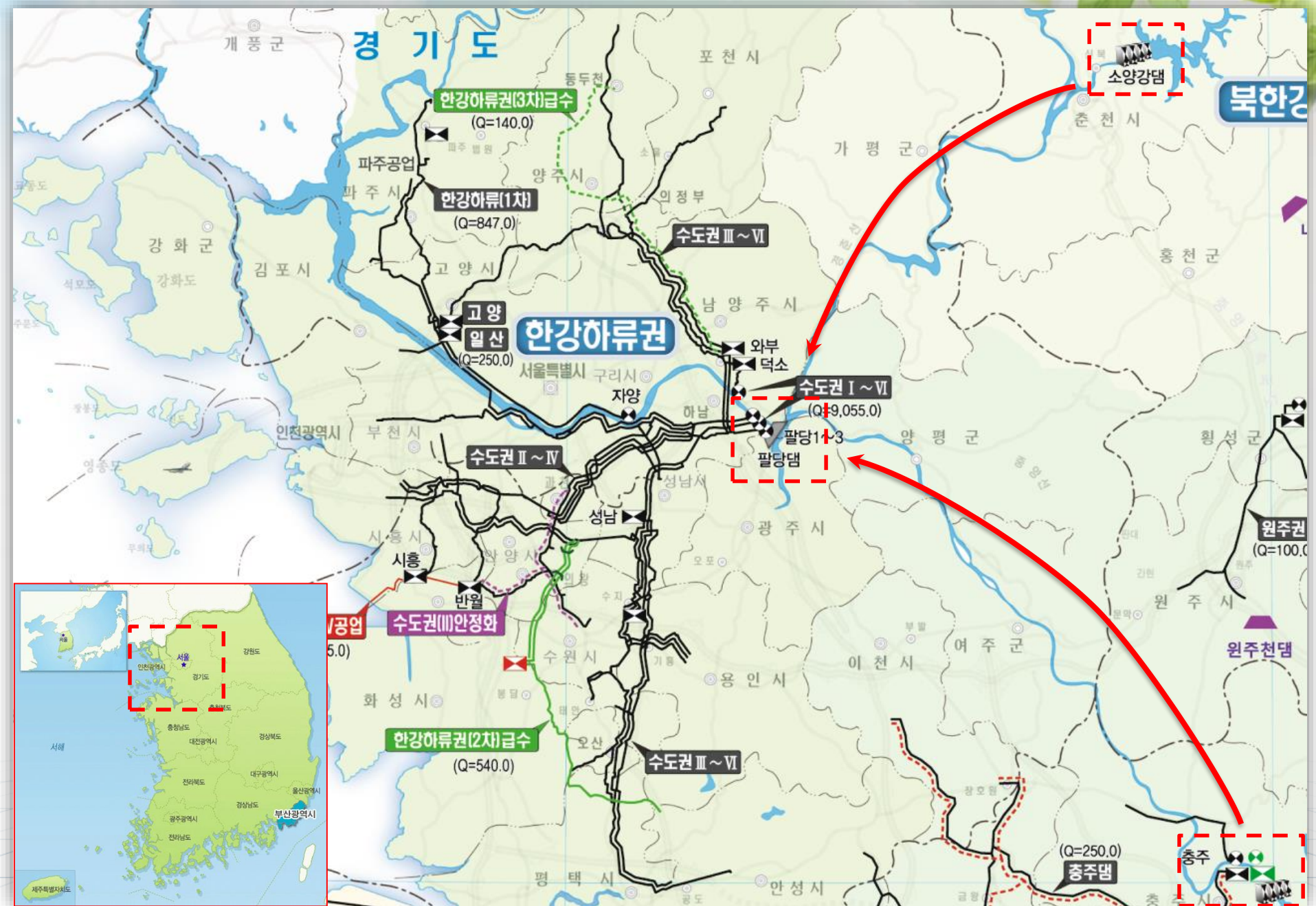
Water reservoirs (large dams)



Water resources management for rapid water run-off and concentrated rainfall

Water Supply in Korea





II K-water Introduction



Major Business



Total Water Service Provider



Water
Resources



Water Supply
and sewerage



Clean Energy



River Restoration
and Canals



Providing
Industrial Water
and Seawater
Desalination

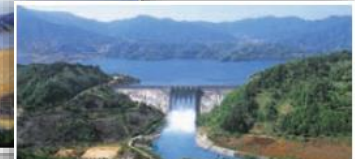
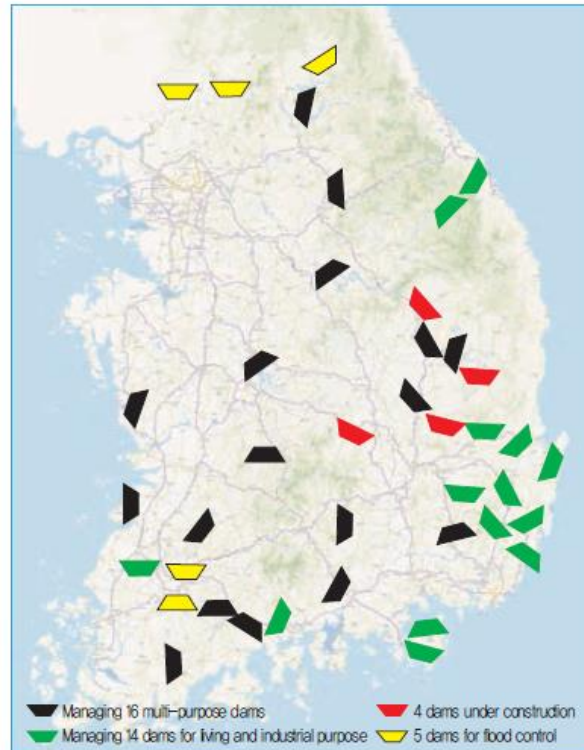
Water Resources Management

Managing Dams

Classification	Name	Total volume of reservoir capacity (million m ³)	Generation capacity (1000 kw)
Multi-purpose	Soyanggang	2,900	200
	Chungju	2,750	412
	Hwengseong	86.9	1.4
	Andong	1,248	90
	Imha	595	50
	Hapchun	790	101.2
	Namgang	309	14
	Milyang	73.6	1.3
	Daechung	1,490	90
	Yongdam	815	24.4
	Seomjingang	466	34.8
	Juam	707	22.5
	Buan	41.5	0.2
	Boryeong	116.9	0
	Jangheung	191	0.8
	Gunwi	49	3.0
Estuary Weir	Nakdong River	0	—
For living and industrial purpose	Kwangdong	11	—
	Dalbong	8	—
	Wunmun	135	—
	Yeongchun	96	—
	Sayun	25	—
	Daeam	9	—
	Angye	18	—
	Yuncho	5	—
	Guchun	10	—
	Soooh	28	—
	Sunam	2	—
	Daegok	28.5	—
	Gampo	2.4	—
	Pyeongrim	8.5	—
For flood control	Peace Dam	2,630	—
Total		15,469	1,047

Dams under construction

Classification	Name	Total water reservoir capacity (million m ³)	Generation capacity (1000 kw)
Multi-purpose	Yeongju	181.1	5
	Bohyeonsan	22.1	0.17
	Seongduk	27.9	0.2
	Buhang	54.3	0.5
For Flood Control	Gunnam Flood Control Reservoir	71.6	—
Total		285.4	5.9



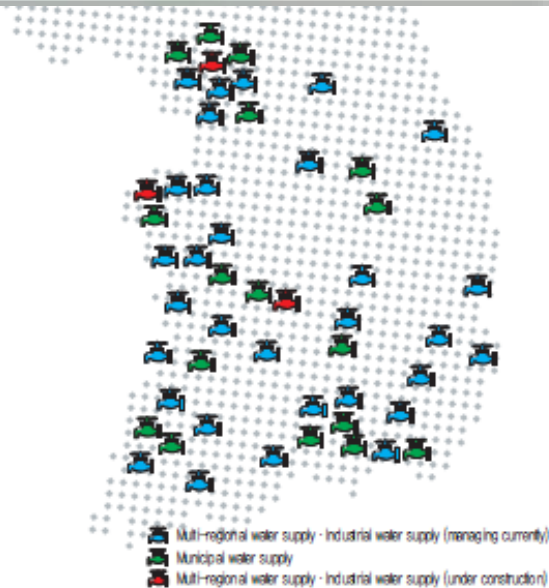
Water Resources Management



Bulk Water Supply

Multi-Regional Water supply construction · management

K-water is managing 18 million tons per day through its water supply plants (50% of Korea's facility capacity) and supplying living water and industrial water to major cities and industrial complexes.



Multi-regional water supply current status

Regional	facility capacity (1000m ³ /day)	Pipe length (km)	Serving population (1000)	Regional	facility capacity (1000m ³ /day)	Pipe length (km)	Serving population (1000)
Metropolitan area	8,285	932	9,600	Central Yeongnam	44	77	147
Taebaek	110	70	366	Gyeongang	170	155	557
Ilisan	250	61	833	Daecheong	1,010	239	3,367
Chungju	250	202	833	Yucheon	1,080	254	1,600
Wonju	100	70	333	Seomjingang	90	129	30
Ulsan (Multi-regional)	220	4	733	Juam	596	138	987
Ulsan (Industrial)	1,325	206	—	Daebul (Industrial)	58	23	—
Changwon	285	147	950	Gunsan (Industrial)	130	30	—
Namgang	261	332	870	Jeonju	700	170	233
Gedje	36	41	120	Buan	87	104	290
Miryang	150	90	500	Boryeong	285	182	950
Pohang (Multi-regional)	161	43	536	Asan	421	181	1,403
Gampo	5	0	17	Donghwa	52	155	173
Pohang (Industrial)	295	56	—	Southern area of Jeonnam	200	312	667
Gumi (Multi-regional)	400	93	1,333	Western area of Jeonnam	30	79	100
Gumi (Industrial)	64	19	—	Gwangju (Industrial)	—	30	—
Geumhohang	370	78	1,233	Central area of Chungnam	163	100	543
Total				Total	18,033	4,742	20,056



2008 Excellence in Water Treatment 5-Star Award



K-water Cheongju Water Treatment Plant

In recognition of a commitment to superior water quality



John P. Boyle
 ASCE Fellow (2001)
 ASCE Region Manager



Bulk Water Supply





Case Studies

(Bulk & Full Concession)



Why Smart Water?



Stable water supply – “Risk Management”

- Alarm systems to take actions immediately
- Accumulate DB and analyze/simulate to predict/prevent accidents

Safe/healthy water supply – “Customer Satisfaction”

- Top priority is to decrease the NRW, expanded to cover water quality
- Accumulate water quality DB, monitor and control
- Share the water quality DB with end-users



Smart Bulk Water Supply

Seoul Metropolitan area

Established in 2007, world's largest smart water center (8 million m³/day)

- Treatment control, water quality/quantity monitoring, and network operation for the metropolitan area



Smart Bulk Water Supply

Integrated Operation Center

Intake
Facilities

Water
Treatment Plants

Pumping Stations



Real-time Monitoring



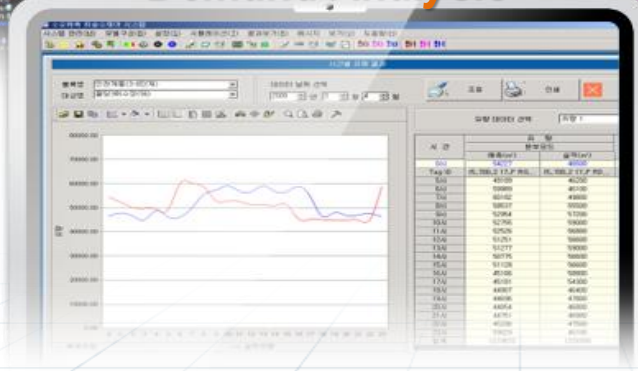
Alarm System



Demand Analysis



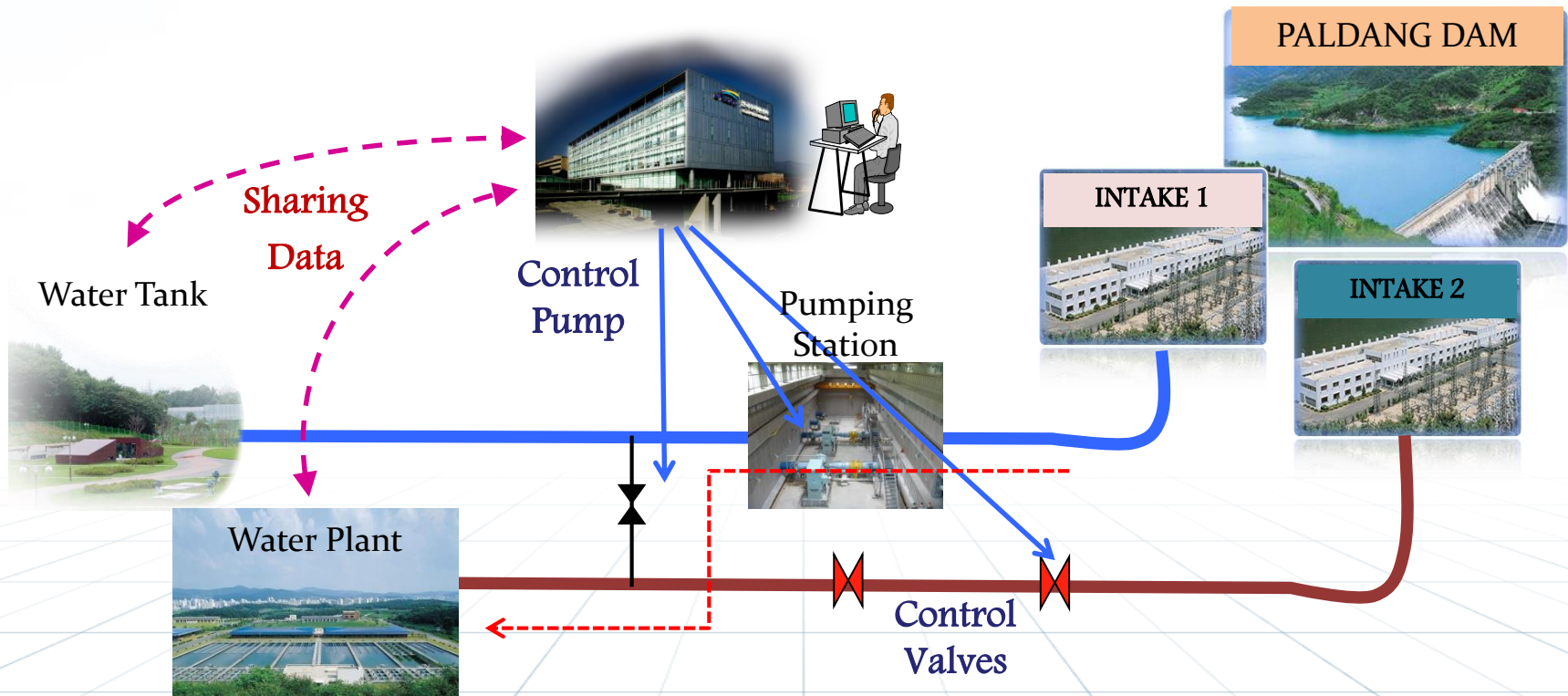
GIS-based Facility Management



Smart Bulk Water Supply

Optimizing Energy Efficiency

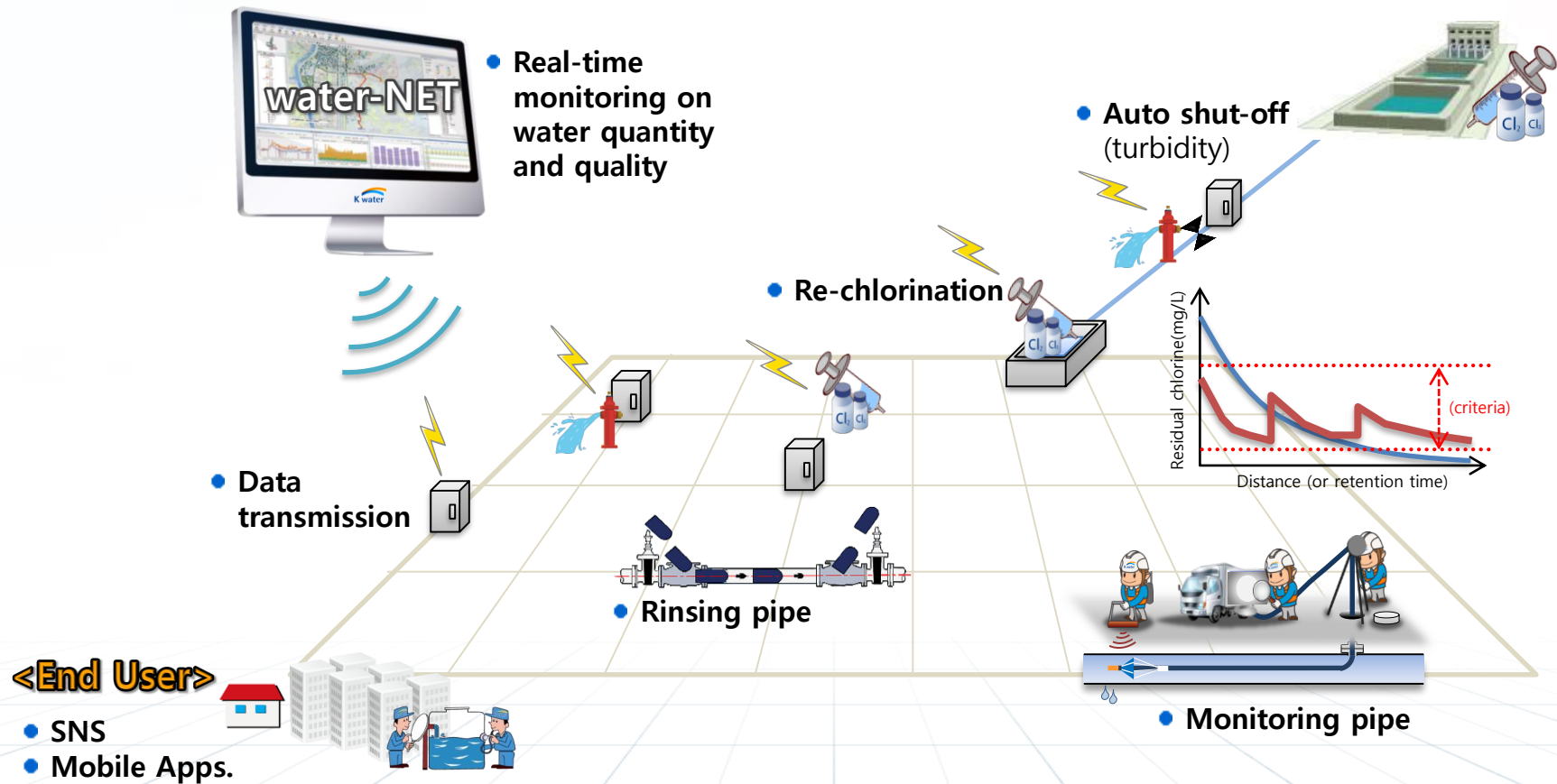
- Acquisition and analysis of operational information
- Sharing the data (pressure, Flow, water level) with local government (client)
- Control pumps and valves on the pipeline
- Low cost, high-efficiency water supply



Smart Local Water Supply

Distribution pipelines

Top priority is to decrease the NRW, however....



Smart Local Water Supply

Distribution pipelines

Data open to the public





Future Plan

Smart Water Grid



감사합니다

Thank you very much!!



Korea Water Resources Corporation K-water