Smart Water Approach from K-water as an SOE

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SMART K-water
START Together

미래 물관리 선도
Smart Water

국민 물복지 실현
Smart Welfare

고객 눈높이 경영
Smart Service

Contents

K water

I Water Supply in Korea

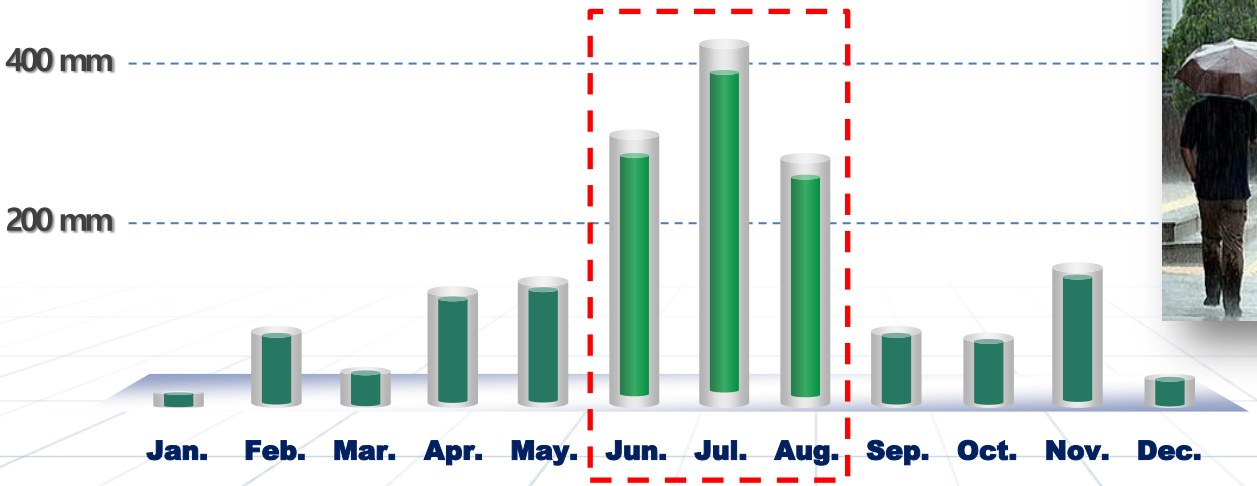
Water Environment in Korea

Water Stress

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

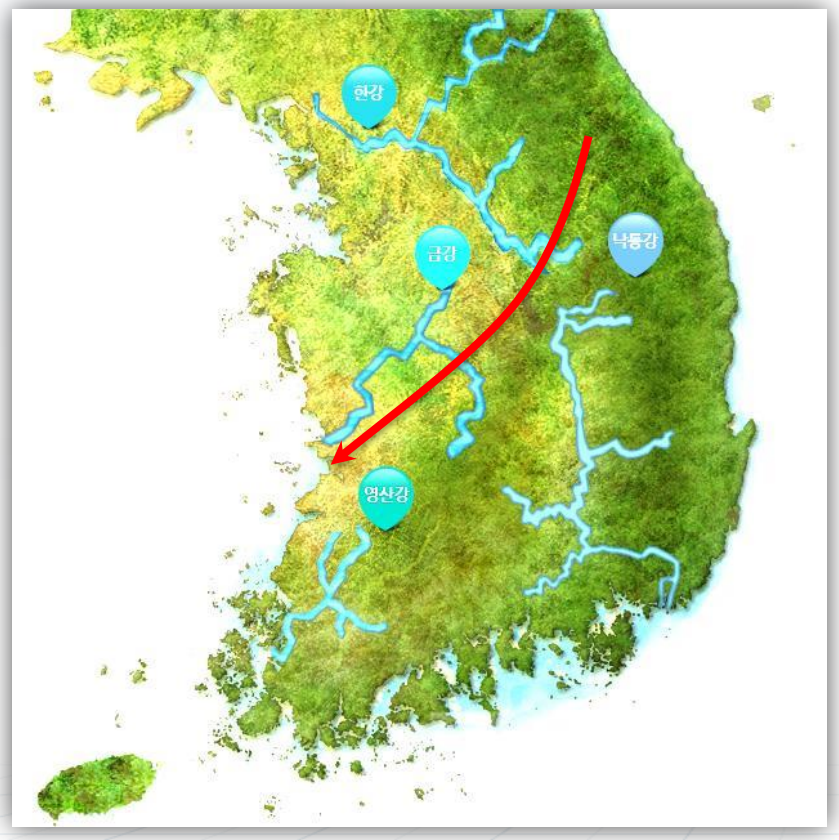
Monsoon Season

- 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

MOLIT
Ministry of Land, Infrastructure and Transport

MINISTRY OF ENVIRONMENT

MINISTRY OF SECURITY AND PUBLIC ADMINISTRATION

K water

Bulk water

Raw or treated water
(Approx. 50%)

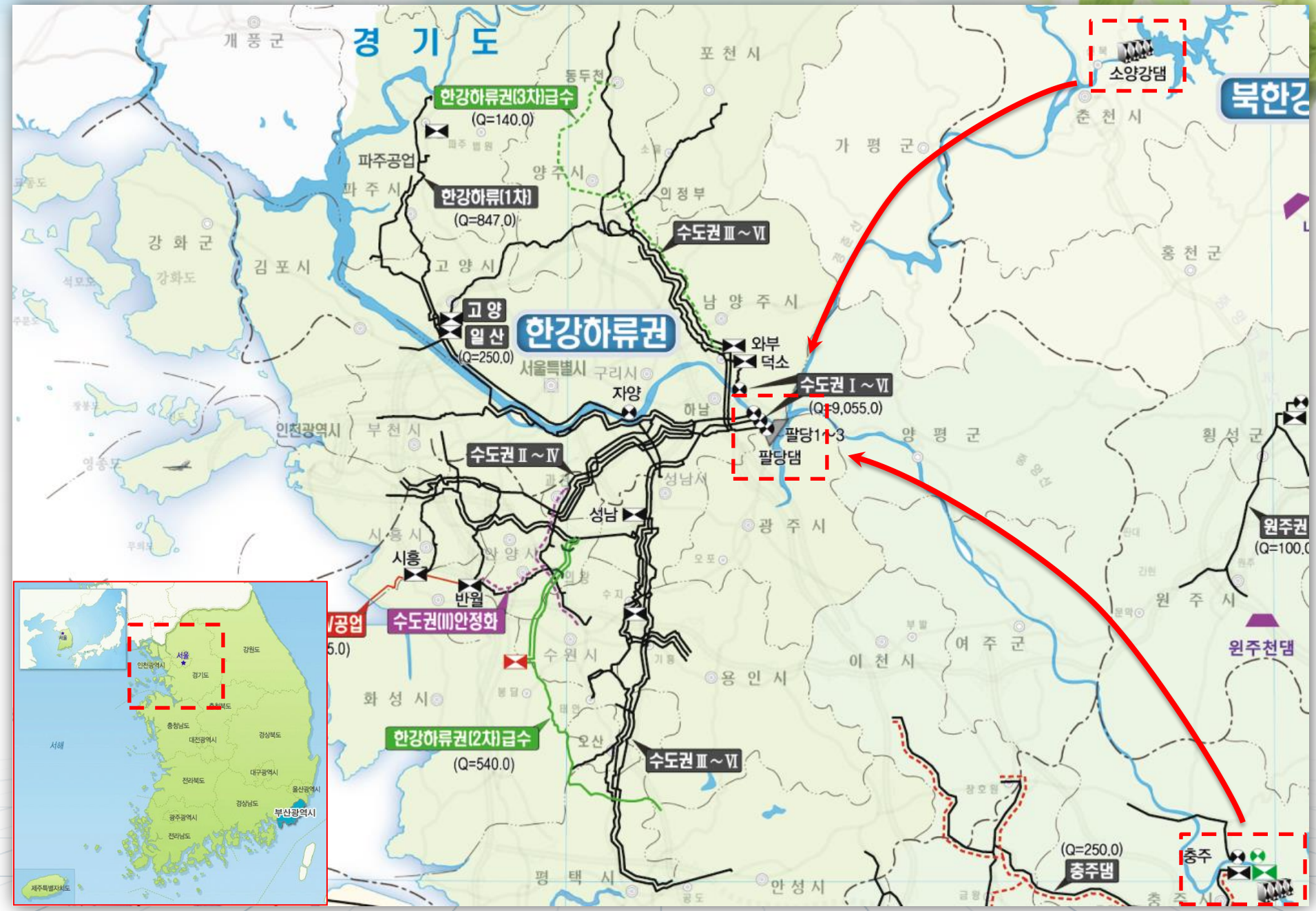
Local Government

End-users

Local intake

Raw water
(Approx. 50%)

Concession agreement


경 기 도
개 풍 군
포 천 시
동두천
소양강댐
북한강
춘 천 시
가 평 군
한강하류권(3차)급수
(Q=140.0)
파주공업
파 주 시
양 주 시
의 정부
한강하류(1차)
(Q=847.0)
수도권Ⅲ~Ⅵ
강 화 군
김 포 시
고 양 시
홍 천 군
남 양 주 시
고 양
일 산
(Q=250.0)
한강하류권
와부
덕소
서울특별시
구리시
자양
수도권Ⅰ~Ⅵ
(Q=9,055.0)
팔당1~3
팔당댐
인천광역시
부 천 시
하남
양 평 군
횡 성 군
수도권Ⅱ~Ⅳ
성남시
성남
광 주 시
원주권
(Q=100.0
시흥
반월
원 주 시
수도권(II)안정화
원주천댐
수 원 시
여 주 군
이 천 시
용 인 시
화 성 시
한강하류권(2차)급수
(Q=540.0)
오산
수도권Ⅲ~Ⅵ
(Q=250.0)
충주댐
충주
평 택 시
안 성 시
서울
인천광역시
경기도
강원도
충청북도
충청남도
대전광역시
경상북도
서해
대구광역시
전라북도
울산광역시
경상남도
광주광역시
부산광역시
전라남도
제주특별자치도

II K-water Introduction

Major Business

K water

Total Water Service Provider

- Water Resources
- Water Supply and sewerage
- Clean Energy
- River Restoration and Canals
- Providing Industrial Water and Seawater Desalination

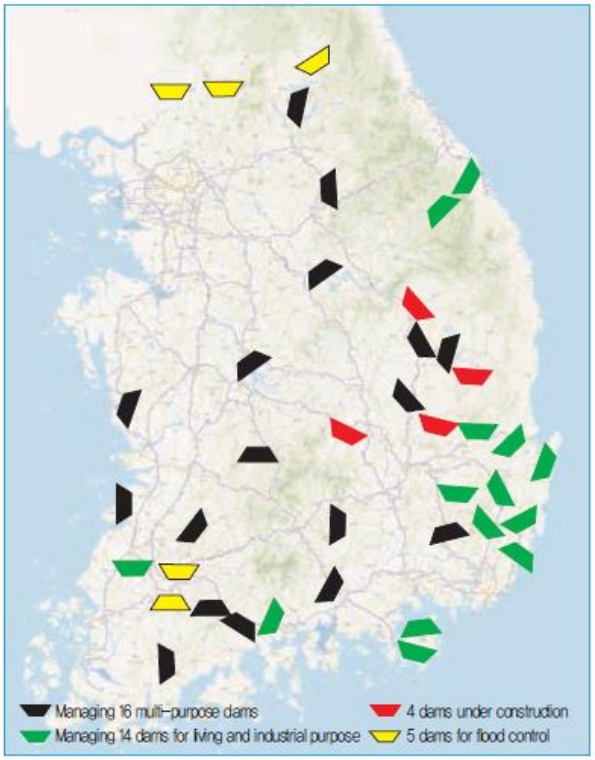
Water Resources Management

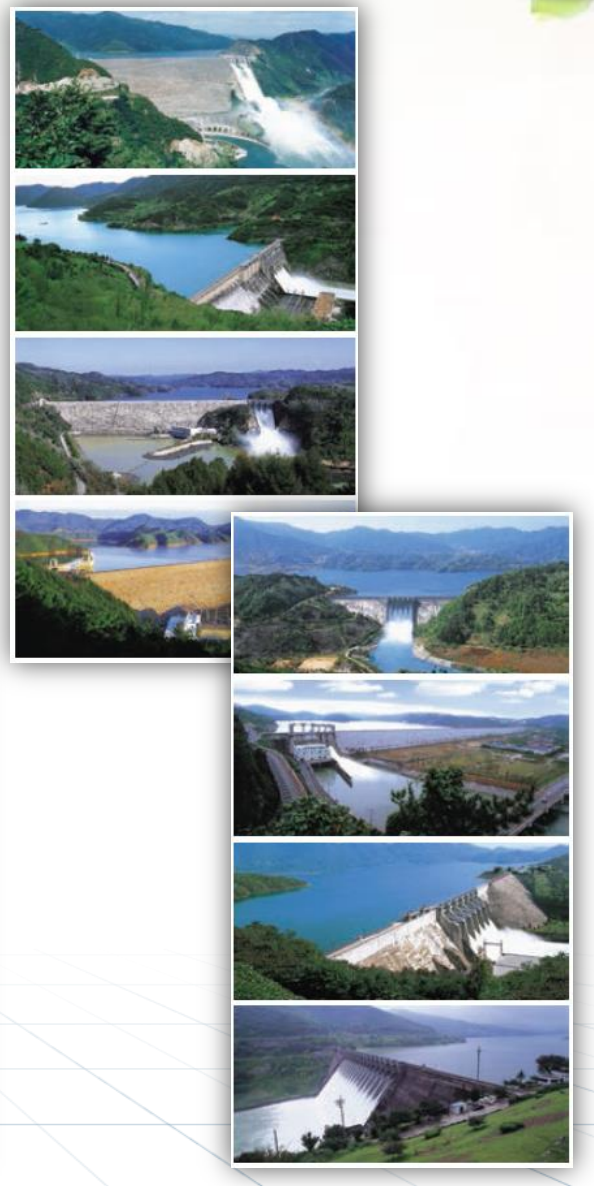
Managing Dams

Classification	Name	Total volume of reservoir capacity (million ㎥)	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	
	Dalbang	8	
	Wunmun	135	
	Yeongchun	96	
	Sayun	25	
	Daeam	9	
	Angye	18	
	Yuncho	5	
	Guchun	10	
	Soouh	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 ㎥)	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



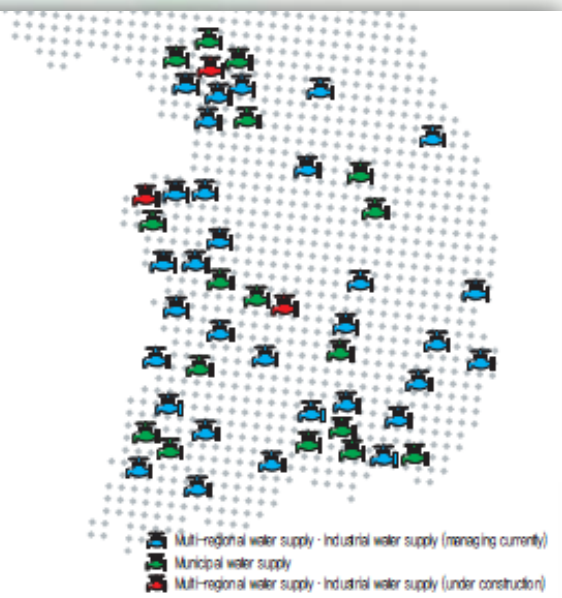


Water Resources Management

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.



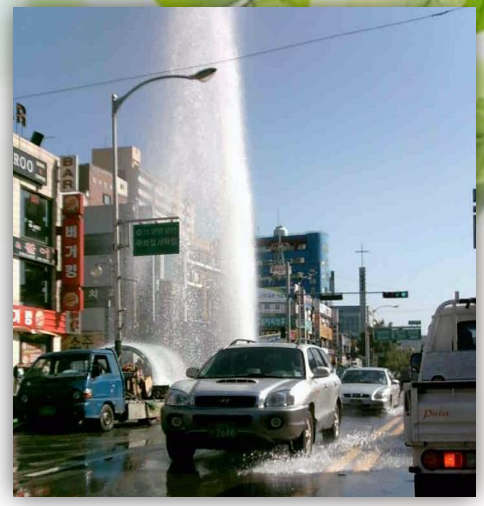
Multi-regional water supply current status

Regional	facility capacity (1000㎥/day)	Pipe length (km)	Serving population (1000)	Regional	facility capacity (1000㎥/day)	Pipe length (km)	Serving population (1000)
Metropolitan area	8,285	932	9,600	Central Yeongnam	44	77	147
Taebaek	110	70	366	Geumgang	170	155	557
Ilsan	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
Gegje	36	41	120	Buan	87	104	290
Miyang	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	–	Gunjang (Industrial)	–	30	–
Geumhogang	370	78	1,233	Central area of Chungnam	163	100	543
				Total	18,033	4,742	20,056

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"

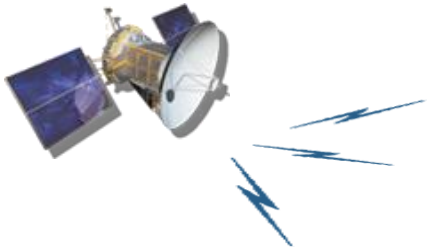
- Top priority is to decrease the NRW, expanded to cover water quality
- Accumulate water quality DB, monitor and control
- Share the water quality DB with end-users

Smart Bulk Water Supply

Seoul Metropolitan area

Established in 2007, world's largest smart water center (8 million m^3/day)

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



Smart Bulk Water Supply

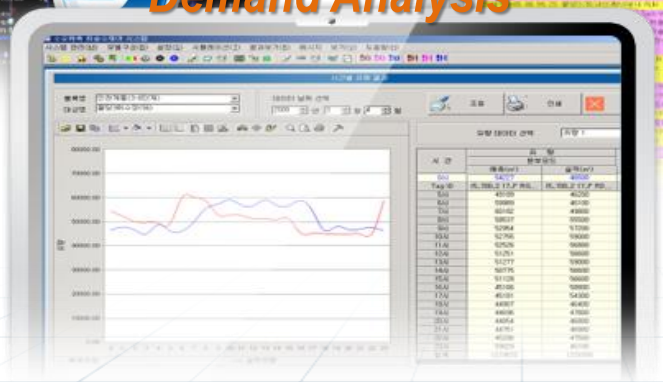
Integrated Operation Center

- Intake Facilities
- Water Treatment Plants
- Pumping Stations

Real-time Monitoring

Alarm System

Demand Analysis

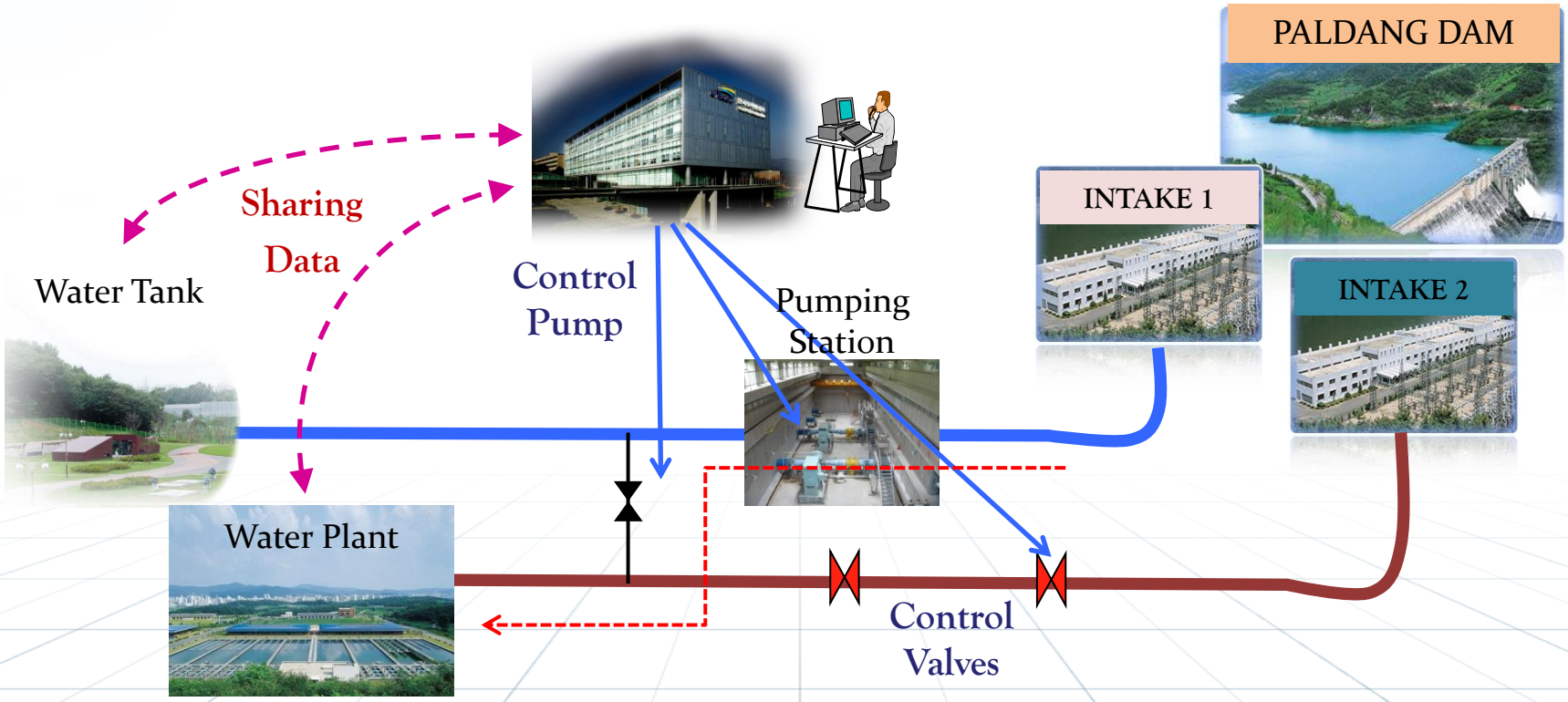


GIS-based Facility Management

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



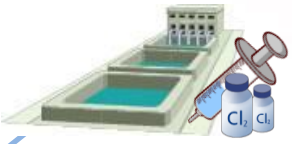
Smart Local Water Supply

Distribution pipelines

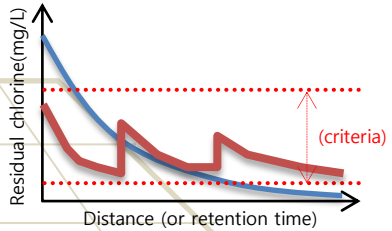
Top priority is to decrease the NRW, however….

- Real-time monitoring on water quantity and quality

- Auto shut-off (turbidity)



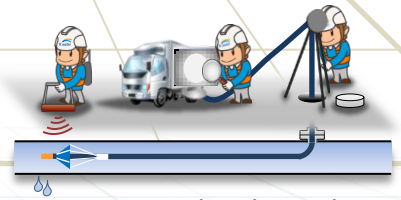
- Re-chlorination



- Data transmission

- Rinsing pipe

- Monitoring pipe



<End User>

- SNS
- Mobile Apps.

Smart Local Water Supply

Distribution pipelines

Data open to the public

Future Plan

Smart Water Grid

Source : KAIA

감사합니다

Thank you very much!!

K water

Korea Water Resources Corporation K-water