



Water networks management in Seoul

June 30th. 2021.

Contents



Introduction on Seoul Water

Background on Water Quality Management in Pipe Network

Policy on Water Quality Management in Pipe Network

Endeavor for Innovation

Future Directions



Introduction : SEOUL WATER(ARISU)



Population
served

- 9,911,088 people(2020.12.31)
- 4,417,954 households,
distribution rate 100%



Production
facilities

- Production capacity : 4,800,000 tons/day
(6 purification centers, 4 water intakes)
- Average production : 3,100,036 tons/day



Water
Source

- Surface water(Han River)



Water supply
facilities

- 2020 Total asset : 4.6415 billion \$
- 2021 Budget : 660.5 million \$

Length of water pipes

13,432km

Booster stations

217 places

Water reservoirs

102 locations
(2.45 million tons)

Hydrants

2,268,000 units



Why **not** drinking tap water?

Due to foreign substances and odour

17%

Possibility of not clean water source

21%

Possibility of a faulty in a water tank or an aged water pipe

51%

Why?

8%

Others

3%

Due to negative press release

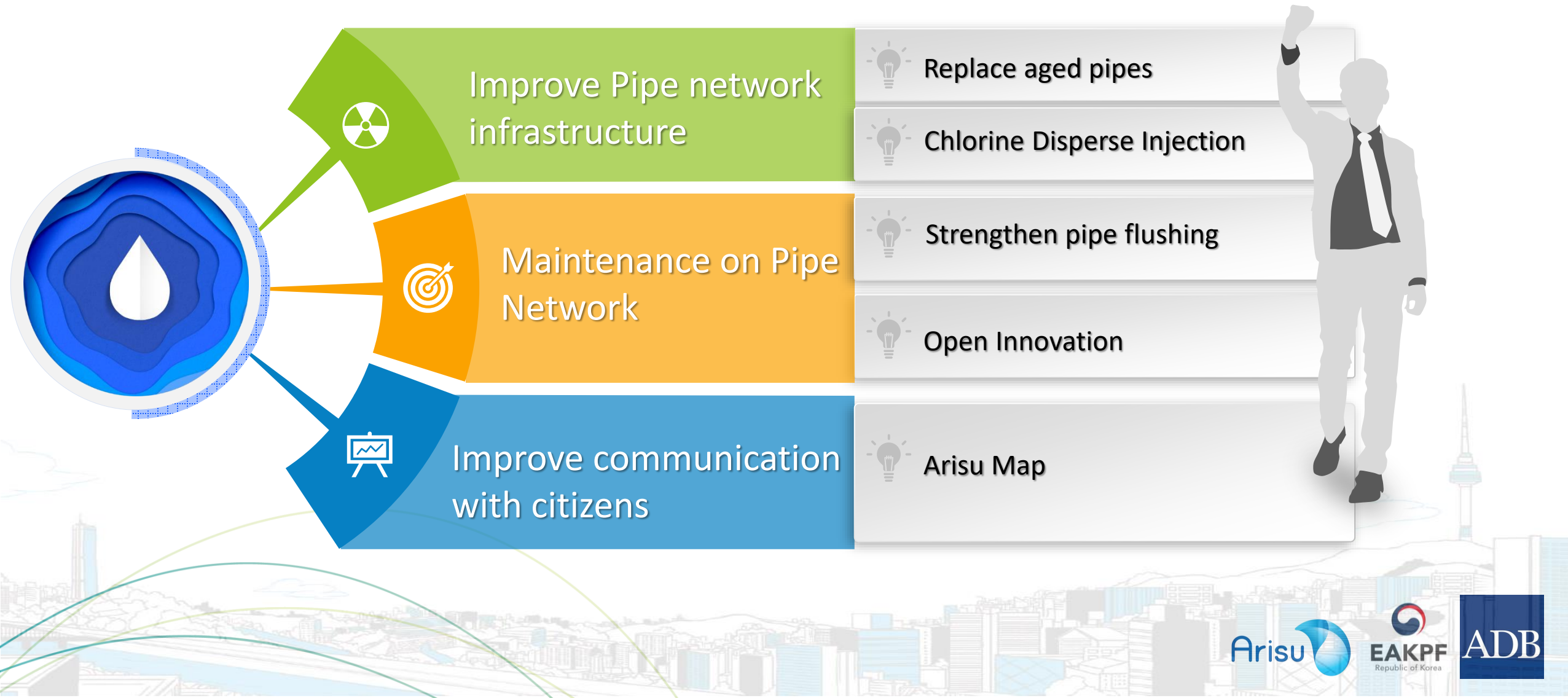


shower head filter

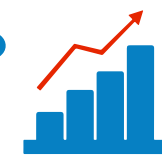
Survey results on potable water
conducted by Ministry of Environment



Policy on Pipe Network Management



Replace to non-corrosive pipes

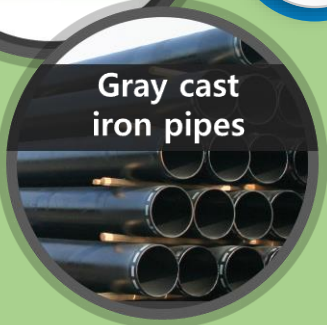


Repairing weak, old water pipes to create an environment to supply safe, clean tap water

Built before 1983
Rust often generates



Galvanized steel pipes



Gray cast iron pipes

1984

Replacement of corrosion resistance pipes

13,463km repaired
3,135 million \$

99.7%



Stainless steel pipes



Ductile cast iron pipes

- Remaining Section
 - Areas for redevelopment/reconstruction: 37km
 - Long-term management like traditional market, etc.:



Status of Waterworks Pipe Network

Total length 13,432 Km

7

Years

~20 years

5,343 Km

21~25 years

2,206 Km

26~30 years

2,956 Km

31~35 years

2,334 Km

36~40 years

367 Km

41years~

226 Km

Waterworks pipe used
for a long time, more

than **31 years**

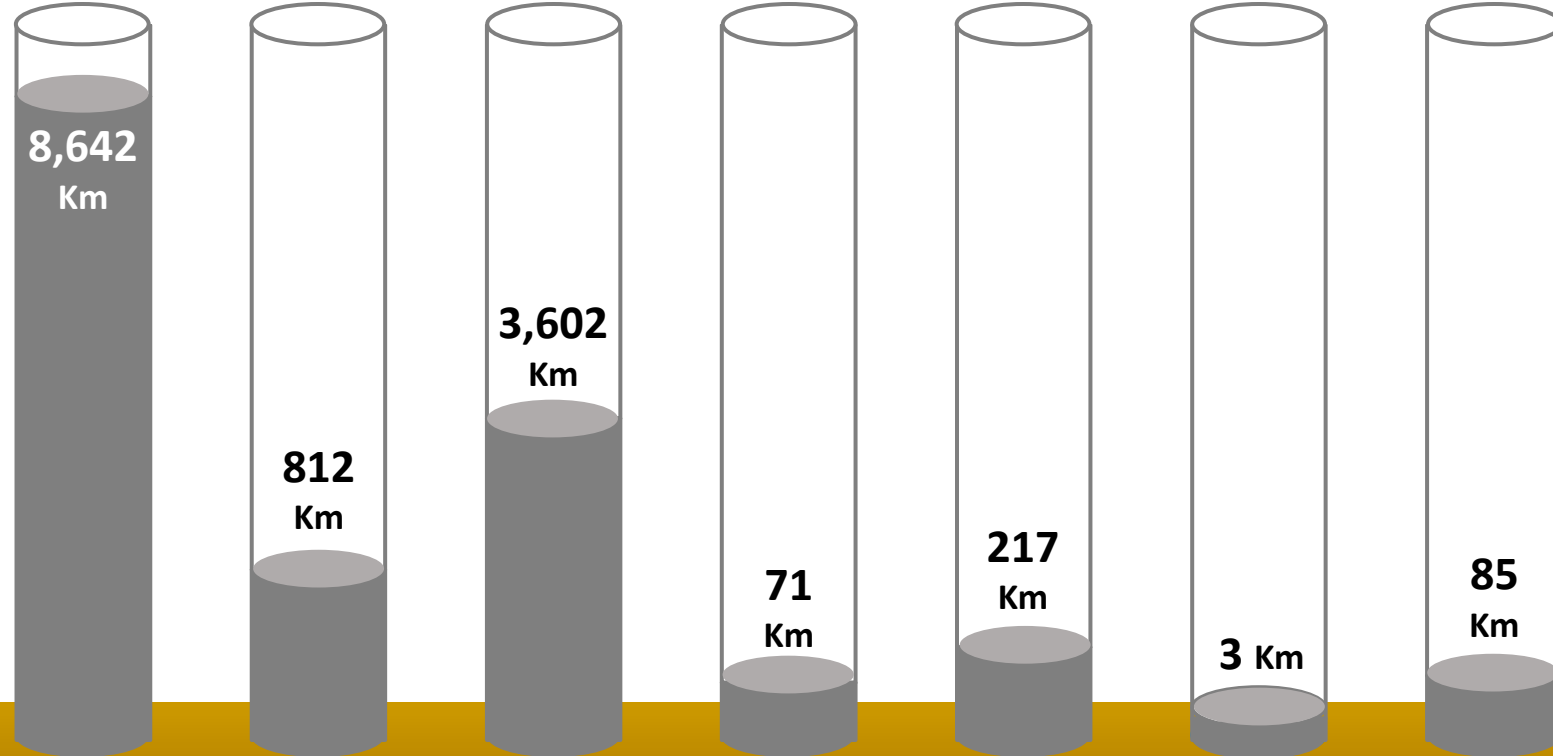
2,927 Km
(21.8%)

Status of Waterworks Pipe Network

Total length 13,432 Km

8

By Pipe types



Ductile Cast
Iron Pipe

Steel
Pipe

Stainless
Steel Pipe

Cast Iron
Pipe

Copper
Pipe

Galvanized
Steel Pipe

Non-metal
elements

Repair pipes used for a long time

Prioritize pipe repair on 455 Km

9

Coated Steel Pipe in 1979



84 Km

Repair **Coated Steel Pipe**
aged more than **41 years**
built in Before 1979

Ductile Cast Iron Pipe in 1984



235 Km

Repair **Ductile Cast Iron Pipe** used for **35 years**
built in 1984~1985

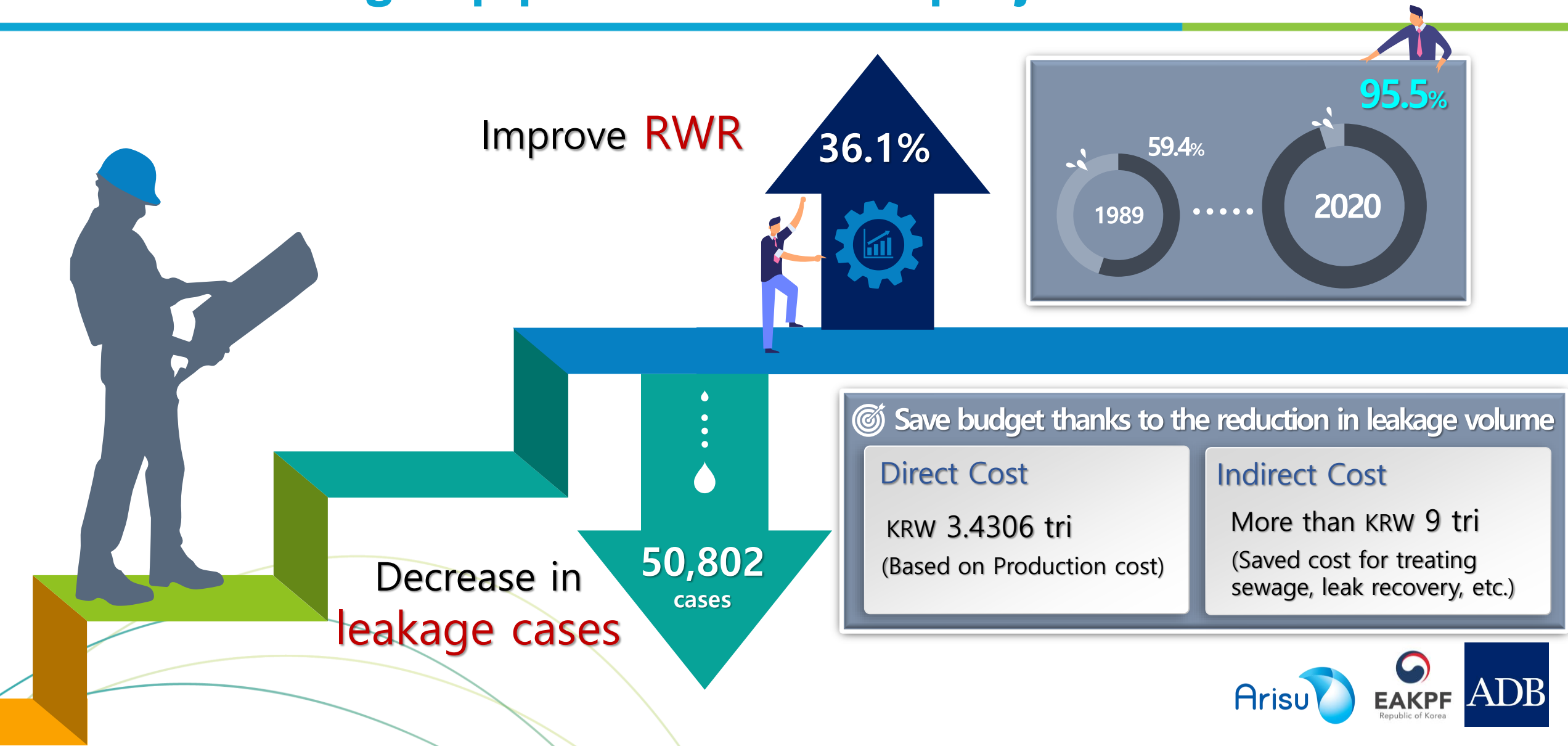
Epoxy coated Steel Pipe in 1999



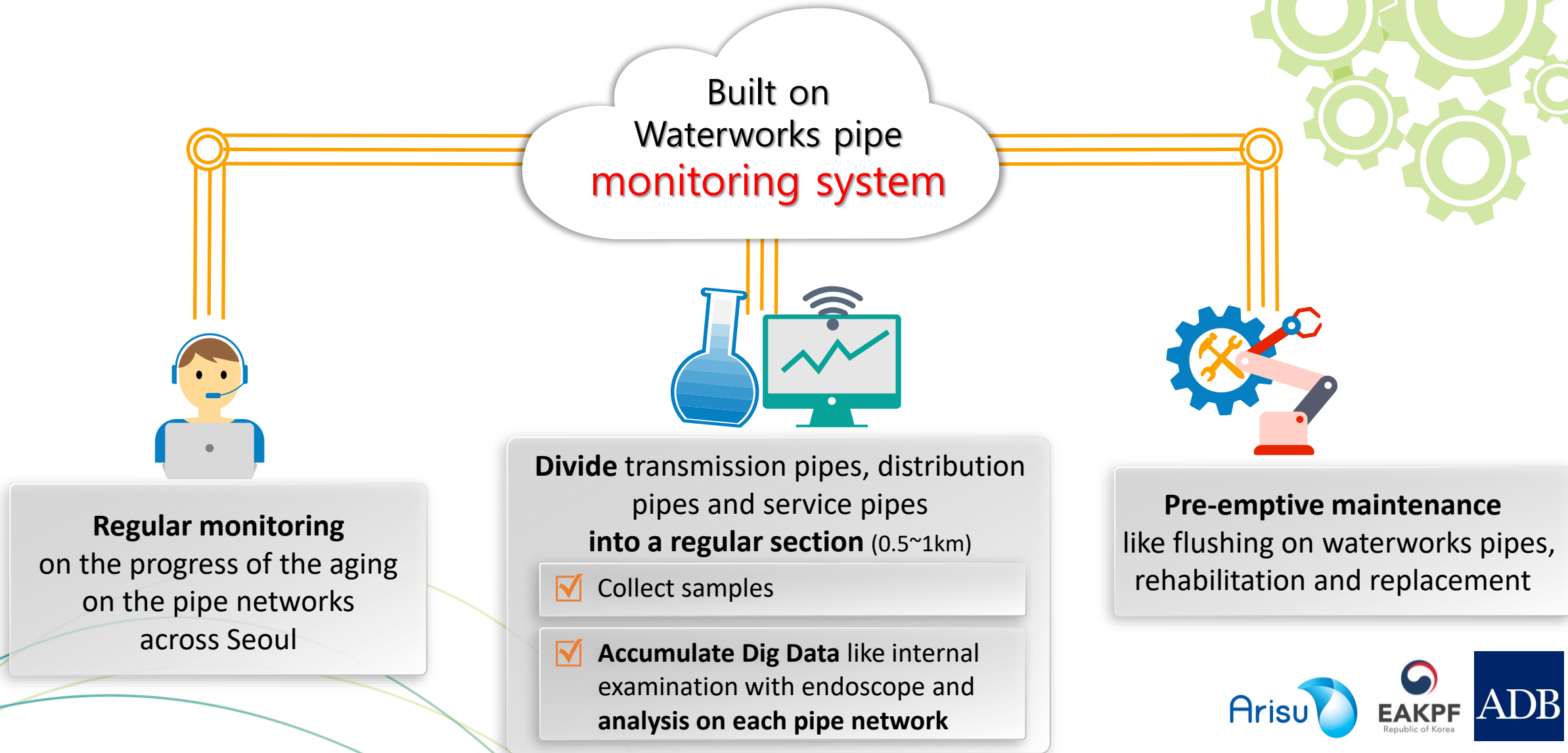
136 Km

Repair weak pipes with
ripped-off coating materials
due to rapid aging among
2nd generation pipes

Effects of aged pipe maintenance project



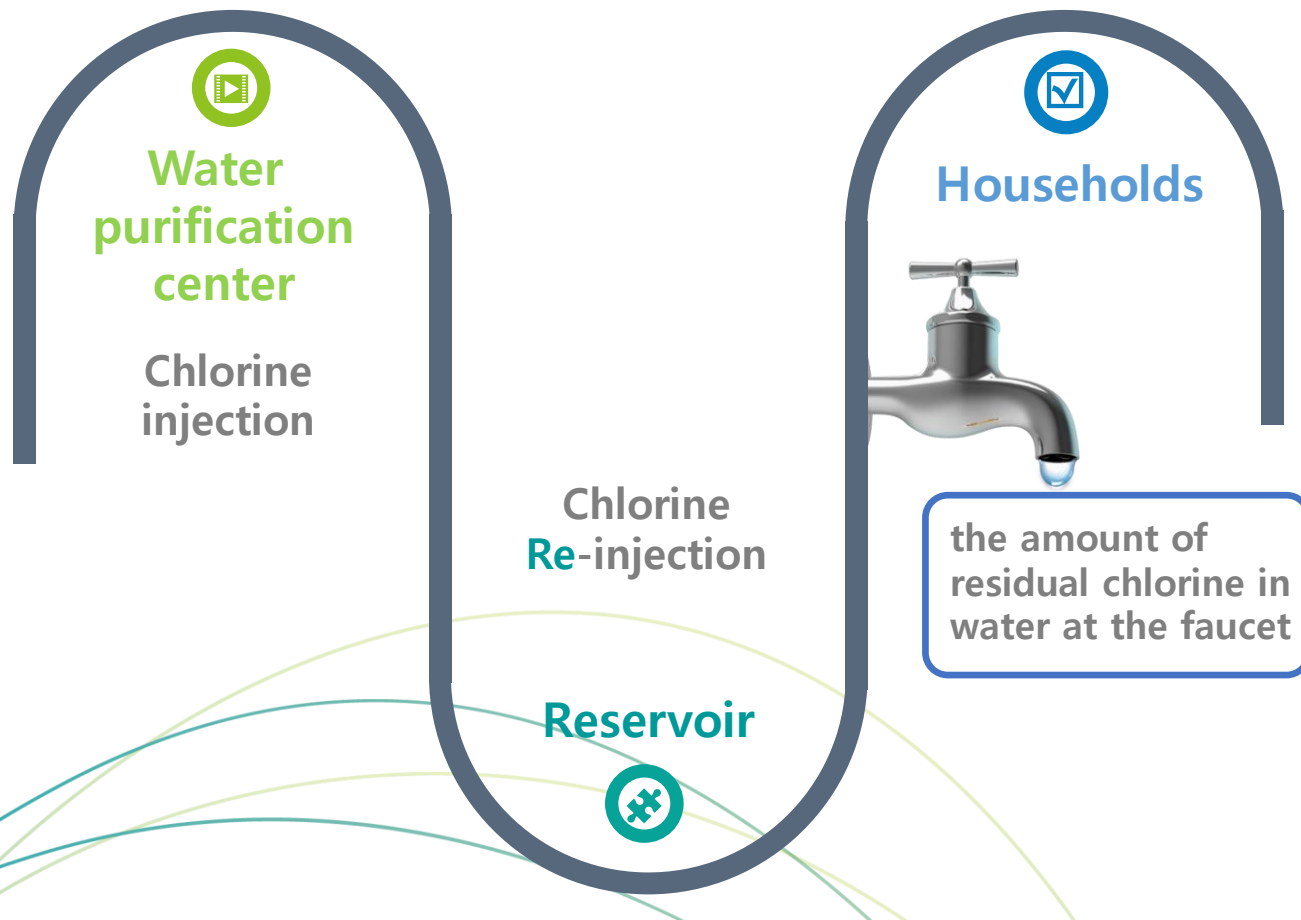
Challenge on doing maintenance for aged pipes



Chlorine Disperse Injection System

12

Residual chlorine equalization across the entire area



Past

Chlorine injection limited to **center**

- Local chlorine odor complaints
- Long-distance residual chlorine targets not met

Now

Decentralized injections in **water purification center and reservoir**

- Reduction of chlorine odor
- Supply of tasty water (0.1~0.3mg/l of chlorine)


8 spots


to adjust residual chlorine supplied from **water purification centers**


11 spots

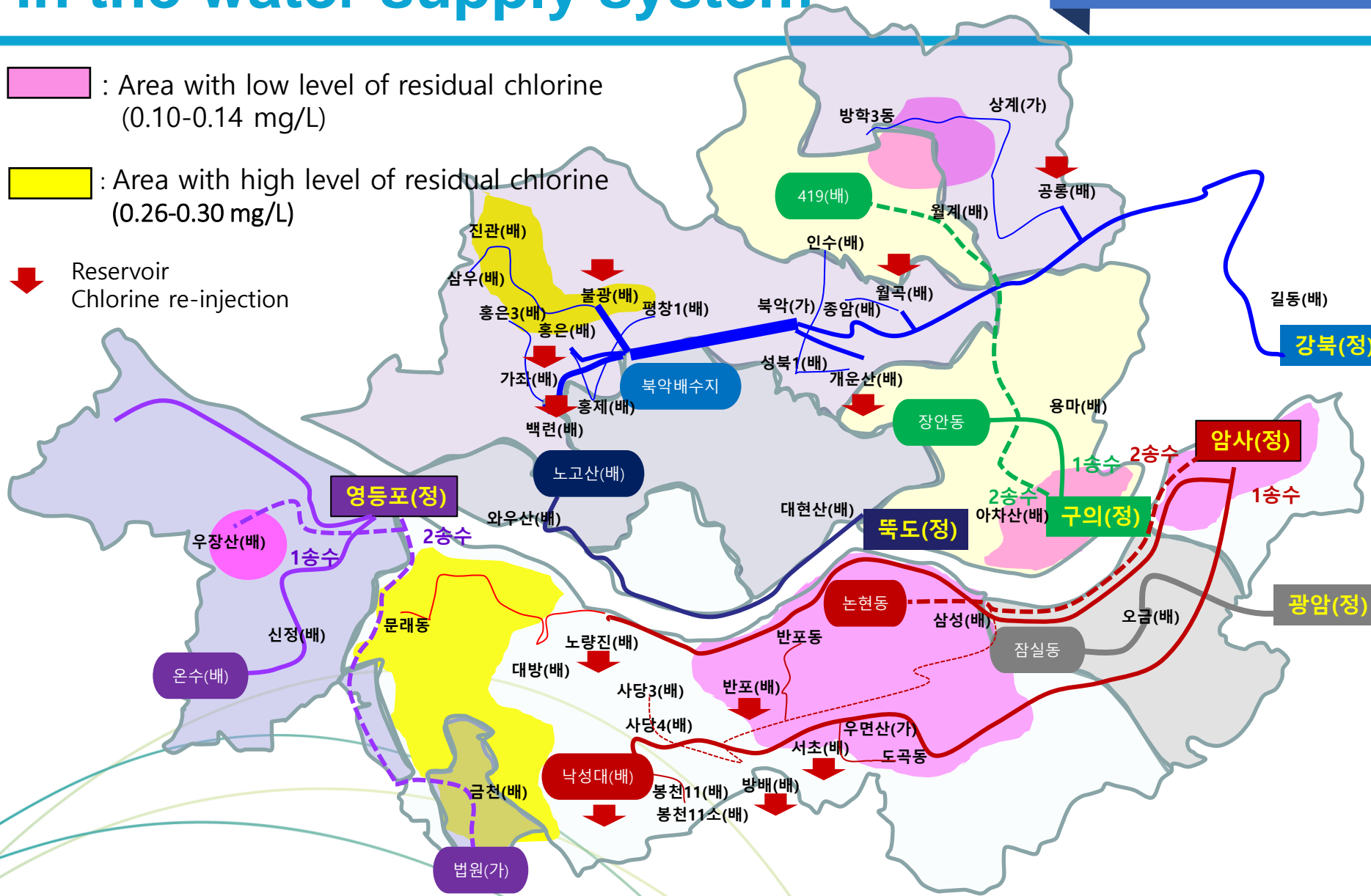
to adjust residual chlorine at the **reservoir** (Rechlorination)

Residual chlorine equalization in the water supply system

 : Area with low level of residual chlorine (0.10-0.14 mg/L)

 : Area with high level of residual chlorine (0.26-0.30 mg/L)

 Reservoir Chlorine re-injection



Additionally install facilities to re-inject chlorine at the **middle branch reservoir**

Amsa

6

facilities

Gangbuk

4

facilities

Strengthen water quality management on the pipe network

Extend the flushing target of the pipe network

: flushing the whole area of the small blocks (Since 2020)

Flushing distribution pipes



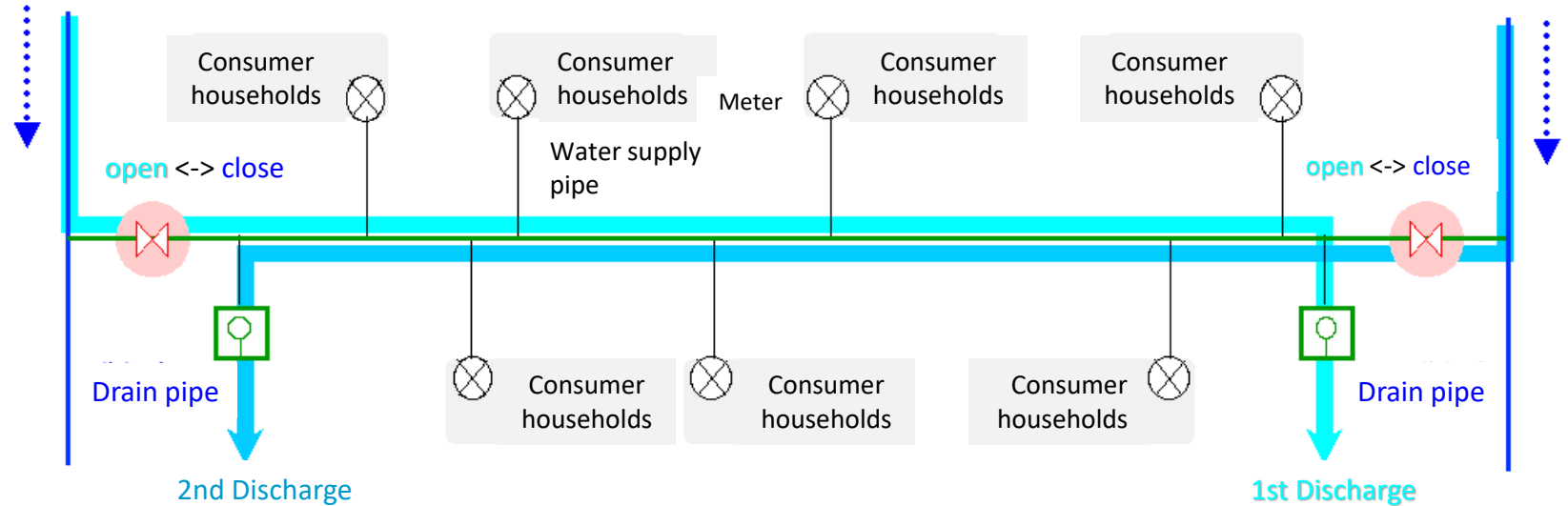
Flushing by block units



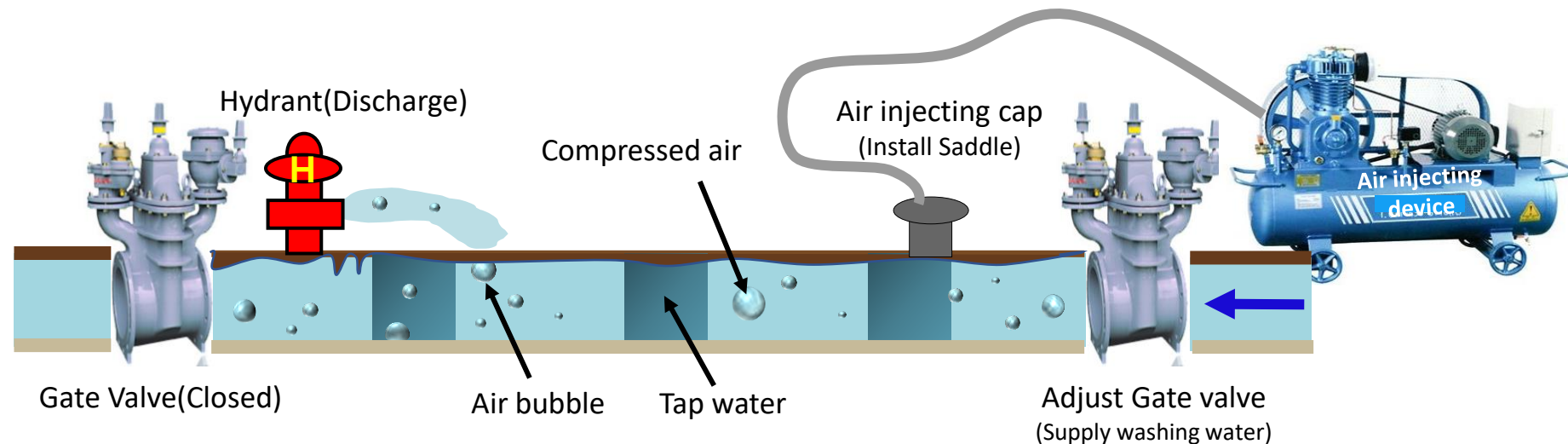
Strengthen water quality management on the pipe network



Pipe flushing
with speedy flux($2\sim3\text{m/s}$)
faster than usual flux
($0.3\sim0.7\text{m/s}$)



Pipe flushing
by injecting air
in the pipe
to utilize hydraulic shock



Technological revolution: Open Innovation



16



Pipe Network Flushing Technology Contest

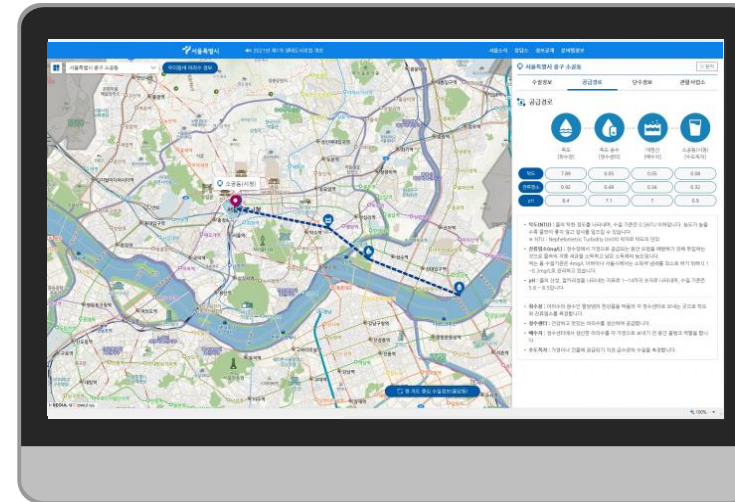
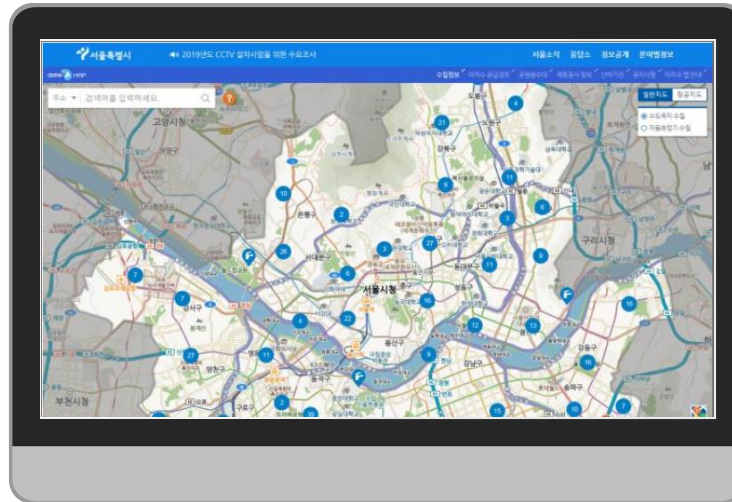
(For more than DCIP 400mm)

Acquire excellent technologies from the private

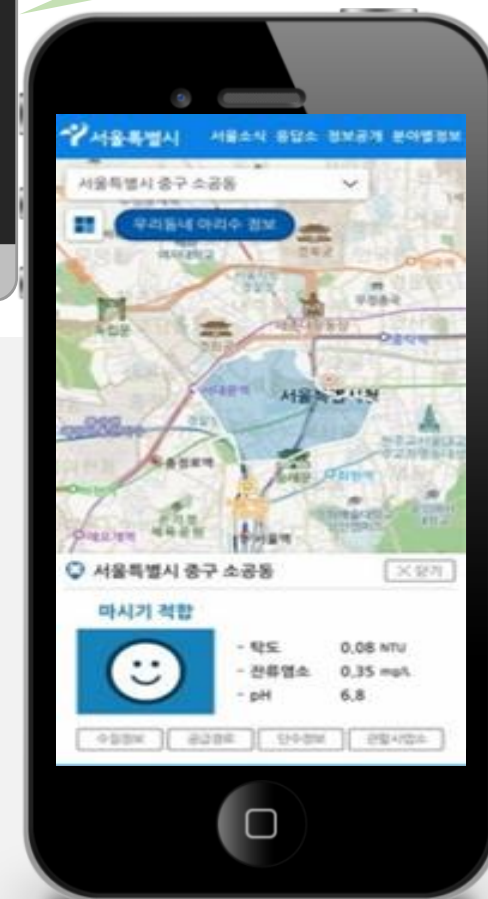


Citizen Services

17



Provide information by branches
(Turbidity, pH, Residual Chlorine,
Supply route)



Any Seoul
Citizen could
check the status
of water quality
in real time



Provide real time
information on
water quality
424 branches



18

A black silhouette of a person in mid-air, jumping over a hurdle. The person's arms are outstretched forward and slightly upward, and their legs are bent at the knees. The hurdle is a simple rectangular shape. The background is a light blue gradient with a faint, stylized pattern of dots and lines.



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[illegible]

Thank you for your attention

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Seoul Metropolitan Government

SEOUL WATER

SINCE 1908

