

PPP Framework for Sustainable Development & Investment in Wastewater Management

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KOLON WATER & ENERGY

T O T A L W A T E R S O L U T I O N P R O V I D E R



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A BOUT KOLON

- Established in 1954
- Over 14,000 Employees with 34 Subsidiaries
- 16 Branches, 25 Regional Offices worldwide
- Sales Revenue \$ 10 Billion USD (2011)



Core Business Domains

Growth Engines

Chemicals & Advanced Materials



43%

US\$4.3b

- Chemicals & Bio
- Electronics materials
- Automotive products

Construction & Services



40%

US\$4.0b

- Engineering
- Construction
- Leisure
- Water

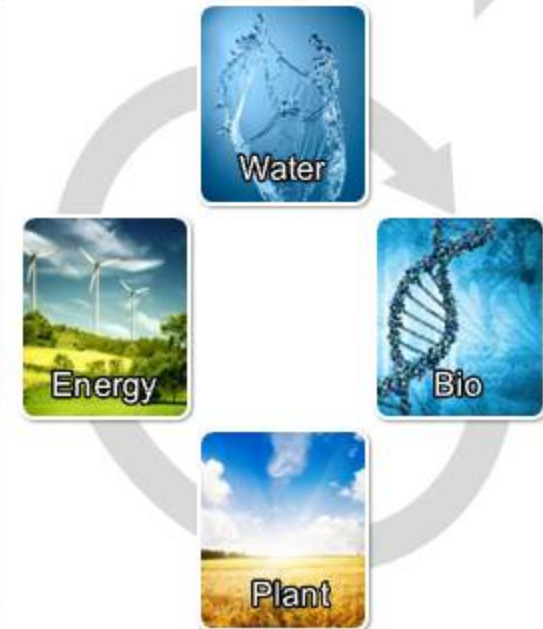
Fashion & Retails



17%

US\$1.7b

- Fashion
- Retail
- Premium goods



ABOUT KOLON WATER

KOLON Water Business

Using synergies among KOLON subsidiaries, KOLON completed water business value chain to provide total water solutions for customers

Construction Business

- KOLON Engineering & Construction

Operation Business

- KOLON Water & Energy

Materials & Equipments Business

- KOLON Watertech
- KOLON INDUSTRIES
- KOLON LIFE SCIENCE
- KOLON EN-Solution

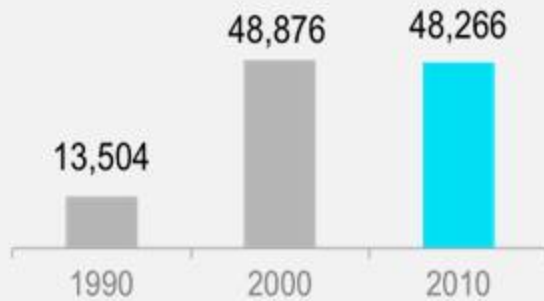
A graphic featuring a 3D rendering of a modern city skyline with several skyscrapers. The text "Total Water Solutions" is overlaid on the image in a blue, sans-serif font. The background of the slide includes a large, faint circular graphic with three oval insets showing industrial and urban scenes, and a vertical strip on the left showing water splashing.

IN-WIN PPP FRAMEWORK

Government 'for Sustainable Development'

Increased demand for wastewater treatment facilities due to rapid economic growth

① Number of Companies



② Wastewater Capacity (1,000m³/day)



Value-added Approach

Rapid economic growth



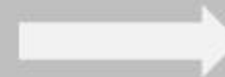
Established six government owned industrial complexes

Individual management for WWT facility



Demand for the integrated WWT facility

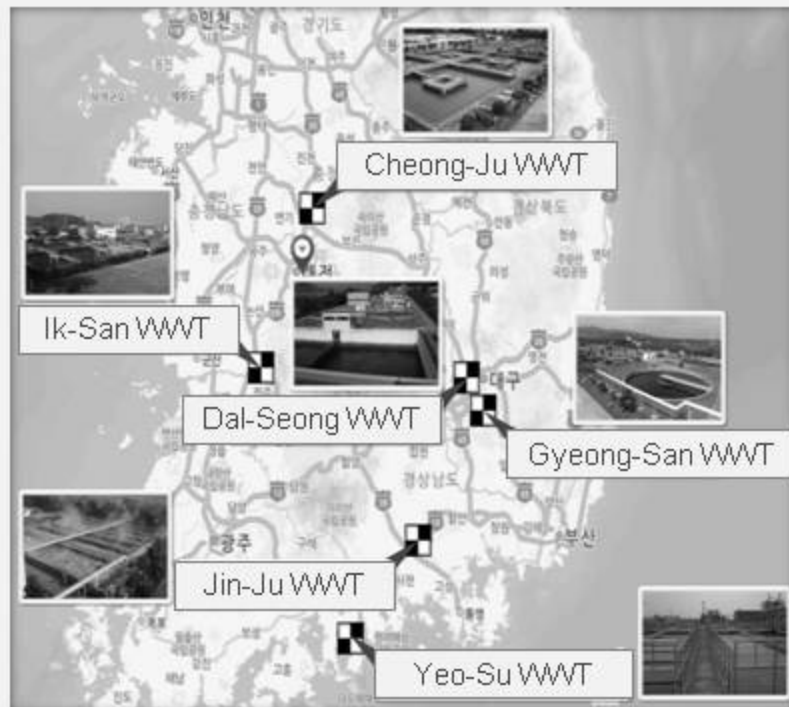
Establishment of the Environment Pollution Prevention Organization in 1987



Individual Treatment

Integrated Solution

Government 'Suffering from Inefficiencies and Difficulties'
Six government owned industrial complexes' WWT facilities across Korea



- 1987: Installation of six WWT facilities
- 1998: Privatized facilities (acquired by current Kolon W&E)

What makes it difficult?

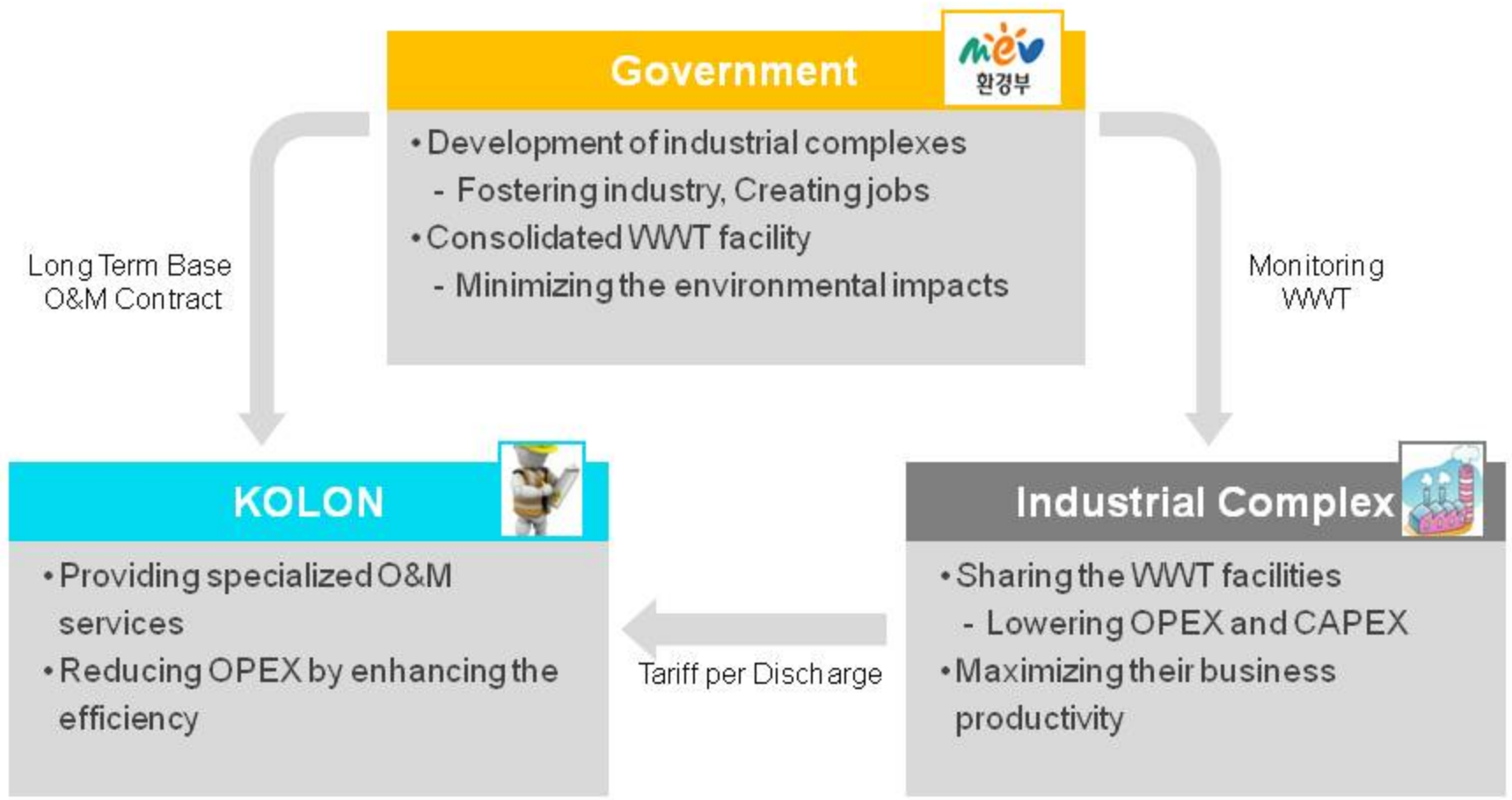
1. High variation in quality of water intake
 - Toxic, Heavy Metal such as mercury, cadmium, chromium, lead, and copper
 - Varied by time, season, and weather
2. Stricter government regulation than ever
 - Quality of water, TMS installation, Eco toxicity test
 - Strengthened monitoring of NGOs & Press
3. Limited management skill & know-how
 - Total capacity: 341,000 m³/day
 - Total number of the factory: 1,337

⇒ More Specialized O&M Expertise Required

W

IN-WIN PPP FRAMEWORK

Win-win PPP Framework of Wastewater Management in Korea
Government, individual companies, and KOLON, all have to be satisfied





UR SERVICES & SOLUTIONS

Our Services 'Optimization'

KOLON provides multidisciplinary services approach

COST OPTIMIZATION

- 40% reduction of cost per tonnage
- Man-hour: 290 → 187
- Cost: 449 Kwon/T vs. 270 Kwon/T

OPERATION OPTIMIZATION

- Integrated monitoring system
- 5C, TBM, OJT Training
- Risk management manual and on-site training

GREEN OPTIMIZATION

- Sludge reuse
- Wastewater reuse
- Energy self-supply

SERVICE OPTIMIZATION

- Technical consulting for factories
- Discharge stabilization
- WW source risk management



OUR SERVICES & SOLUTIONS

Our Solutions 'Out-think'

KOLON promotes sustainable investment business model by fully capturing sludge & wastewater reuse and energy generation opportunities

Sludge Reuse

Consolidated sludge recycle facility(under construction)

- Preventing overlapping investment through total sludge treatment solution



Water Reuse

WW reuse with advanced treatment

- Providing competitive cost to industrial complex
- Maximizing the usage of limited resources



Energy Self-Supply

Initiating energy self-supply business

- Solar & Hydraulic power generation
- Heat recovery system
- High efficiency of digester chamber

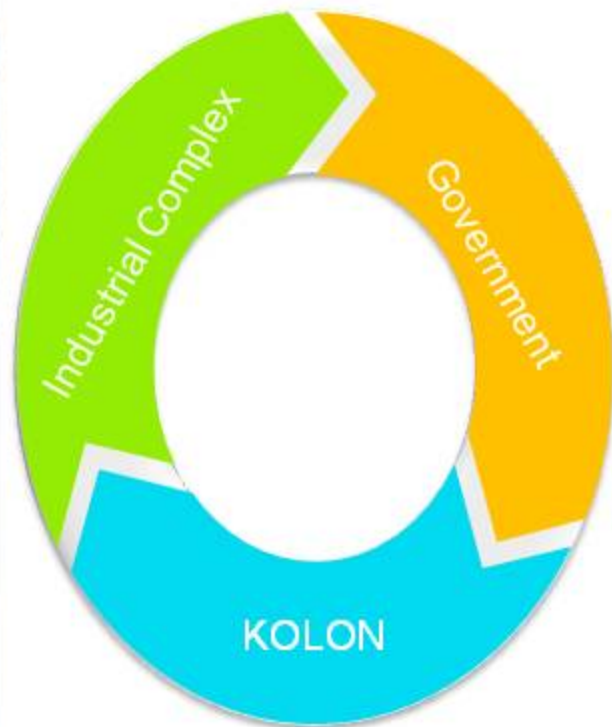


REDUCING COST → MAKING PROFIT

Achievements

40% Cost Reduction & Stabilized Water Quality

Government & individual companies have accelerated the sustainable development while KOLON has expanded its business through the sustainable investment



Industrial Complex

- Reducing WWT costs
- Focusing on productivity

Government

- Minimizing investment through integrated treatment facility
- Stabilizing water quality

Result of outflow COD (Nakdong River)



KOLON

- Operating and managing about 804 treatment facilities('12)
- Contributing the reduction of treatment cost

KWON per Tonnage(Kwon)



R

ECOMMENDATIONS

How to Motivate Private Sector For large scale projects, we shall plan & invest together and assign construction & operation to private sectors

| | Sustainable Development | Sustainable Investment |
|----------------|--|--|
| Public Sector | <ul style="list-style-type: none"> • Strengthening policy for its environment • Consulting with private sector | <ul style="list-style-type: none"> • Implementing business friendly policy • Developing sizable projects which private sector can maximize the effects of innovation • Sharing credits for private sector to do project financing |
| Private Sector | <ul style="list-style-type: none"> • Stabilizing water quality • Providing not only technologies but also state-of-art solutions | <ul style="list-style-type: none"> • Innovating cost-efficient technologies • Developing sustainable PPP framework |

Thank you!

