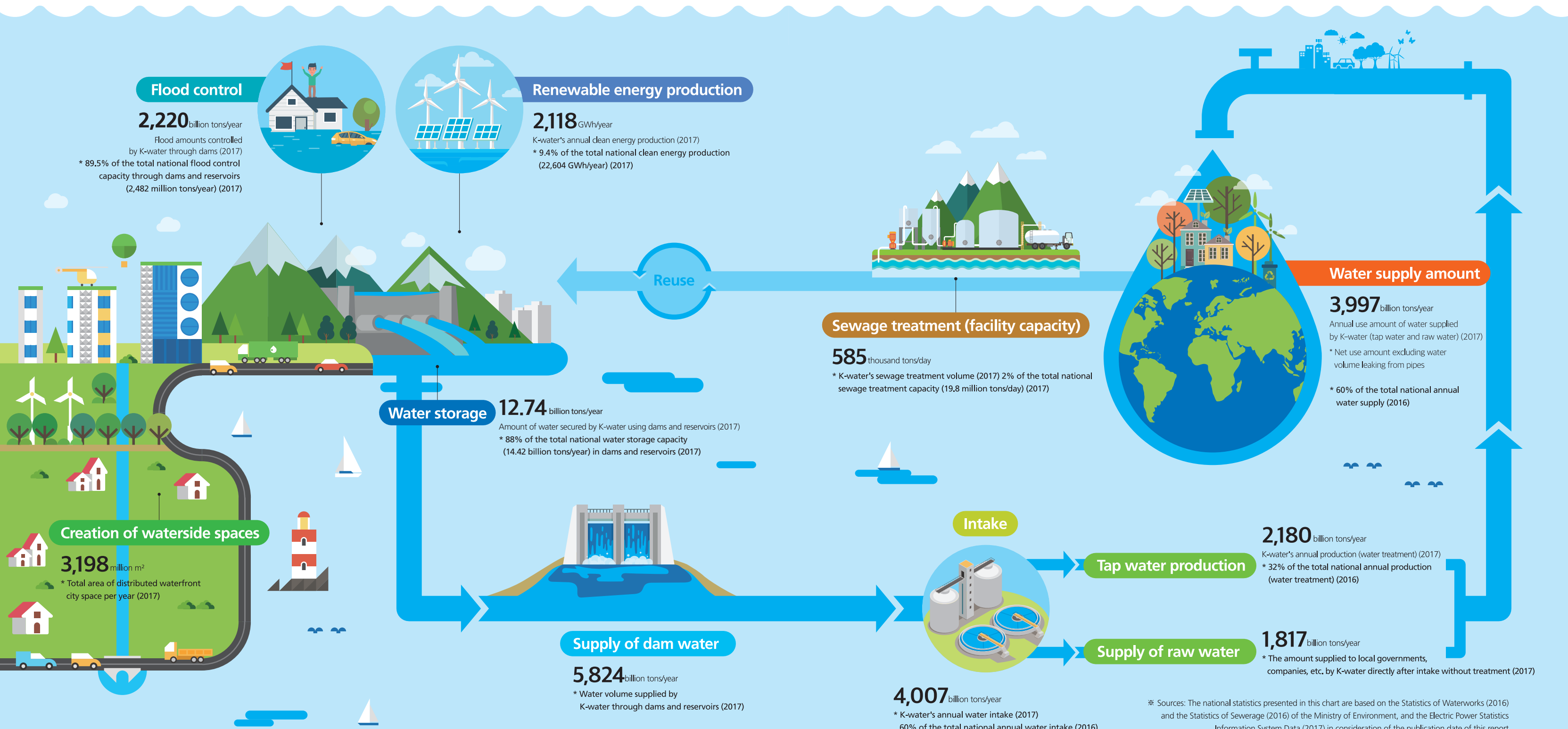


# Annual Green Bond Report 2018



# K-water, Today and Tomorrow

K-water continues its commitment and dedication to create sustainable value throughout the water circulation process from water source to faucet.



※ Sources: The national statistics presented in this chart are based on the Statistics of Waterworks (2016) and the Statistics of Sewerage (2016) of the Ministry of Environment, and the Electric Power Statistics Information System Data (2017) in consideration of the publication date of this report.



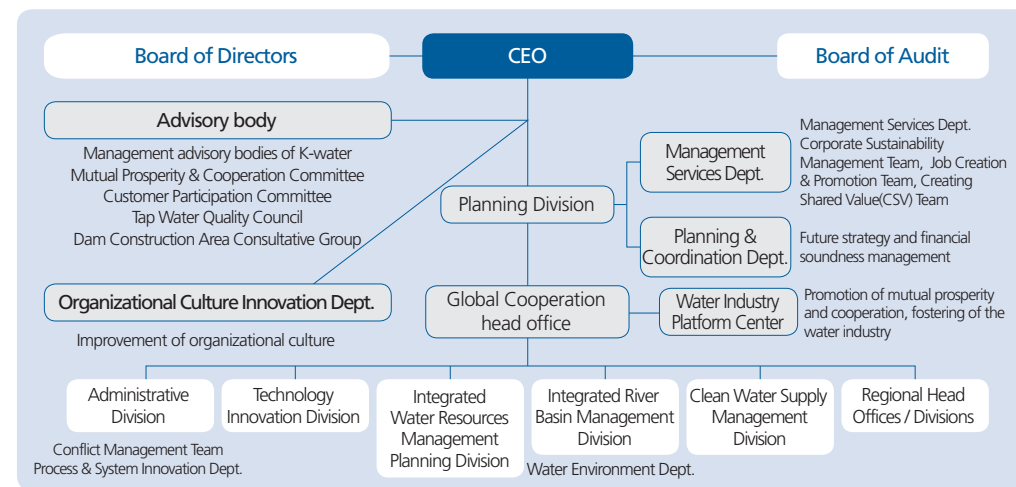
# K-water's Sustainable Management



## Sustainable management promotion system

K-water has set 29 core achievement indices for the systematic implementation of sustainable management and the UN's SDGs, and has evaluated its accomplishments using the indices. With these efforts, the sustainable management of K-water has gained recognition for its excellency, acquiring the highest grade in the KoBEX SM (Korea Business Index-Sustainability Management) survey conducted by the Korean government for the 6th consecutive year. K-water has also been included in the list of companies with superior UN SDGBI (Sustainable Development Goals Business Index) grade which was announced by the Korean Association for Supporting the UN's SDGs in November 2017. Sustainable management has been promoted as a corporate-wide mission. Led by the Business Management Department under the vice-president, each division of the headquarters and regional head offices have carried out their businesses in an economically, socially, and environmentally organic way.

## Organizations promoting sustainable management



## Organizational innovation for sustainable management

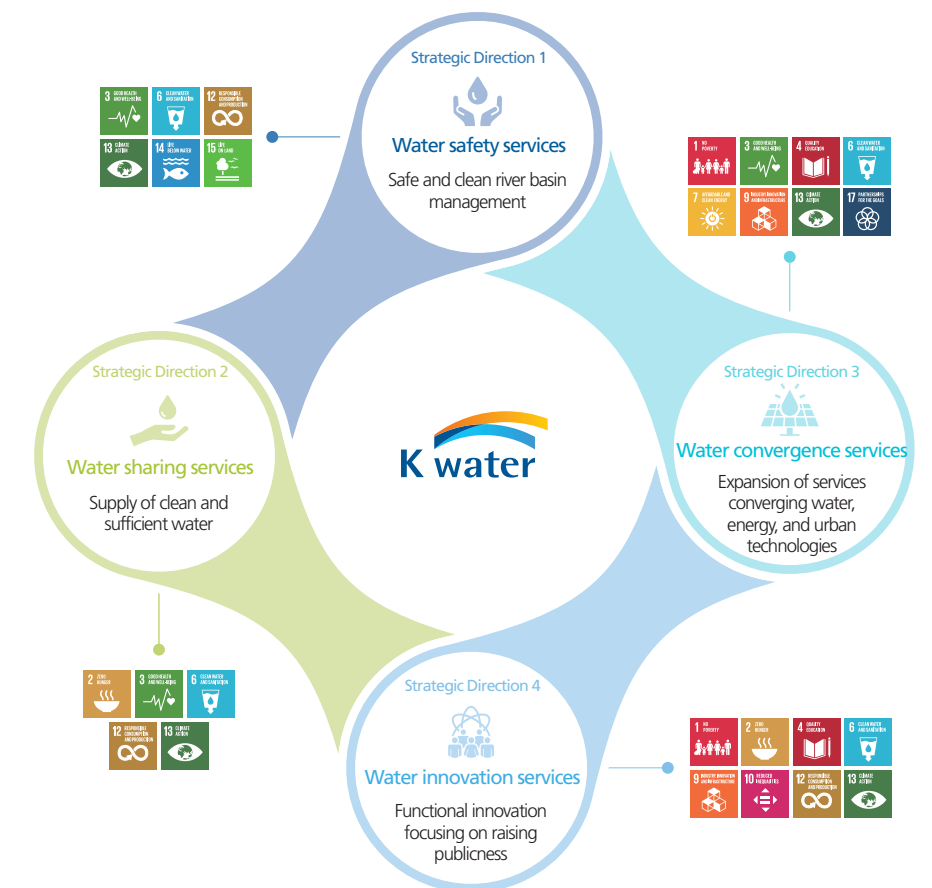
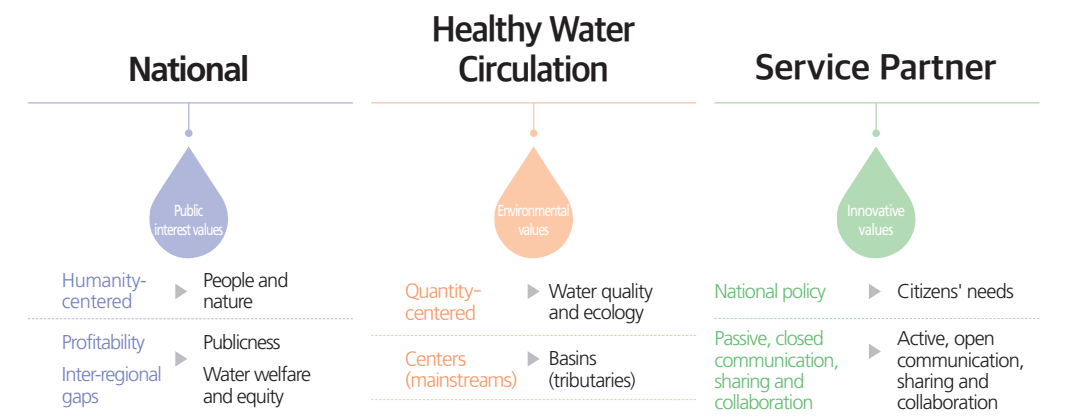
K-water has strengthened the main functions of the departments that promote sustainable management in light of changes in its management structure every year. In addition to working with these internal departments dedicated to sustainable management, it has listened to diverse opinions of stakeholders and operated advisory committees and councils to cooperate with them and pursue the accomplishment of sustainable management.

	2013	2014	2015	2016	2017	2018
<b>Necessity</b>	<ul style="list-style-type: none"> <li>Mutual growth with partnering companies</li> <li>Improvement of the company's financial structure</li> </ul>	<ul style="list-style-type: none"> <li>Strategies for sustainable growth including smart water management</li> <li>Strengthening of disaster safety management</li> </ul>	<ul style="list-style-type: none"> <li>Establishment of Center dedicated responding to climate abnormalities based on scientific data management</li> </ul>	<ul style="list-style-type: none"> <li>Innovation into a voluntary, positive, and developmental organizational culture</li> <li>Process innovation in consideration of the entire cycle of businesses</li> <li>Organization for performing integrated water management linking all businesses</li> </ul>	<ul style="list-style-type: none"> <li>Algae control</li> <li>Mutual growth by fostering the water industry</li> <li>Creating quality jobs and raising social values</li> </ul>	<ul style="list-style-type: none"> <li>Increase in environmental values</li> <li>Meeting the demands of the public by practicing social values</li> </ul>
<b>Organizational innovation</b>	<ul style="list-style-type: none"> <li>Mutual Growth Diagnosis Dept.</li> <li>Financial Structure Improvement Dept.</li> </ul>	<ul style="list-style-type: none"> <li>Future Strategy Dept.</li> <li>Disaster Safety Dept.</li> </ul>	<ul style="list-style-type: none"> <li>National Drought Information Analysis Center</li> </ul>	<ul style="list-style-type: none"> <li>Organizational Culture Innovation Dept.</li> <li>Reorganization of the entire corporation (Creation of regional head offices)</li> <li>ERP Promotion Office</li> </ul>	<ul style="list-style-type: none"> <li>Algae Technology Center</li> <li>Water Industry Platform Center</li> <li>Job Creation Bureau</li> </ul>	<ul style="list-style-type: none"> <li>Water Environment Dept.</li> <li>Social Value Creation Dept.</li> </ul>

## K-water's new management direction and fulfillment of the UN's SDGs

To celebrate its 51st anniversary, K-water has declared its new management vision to reflect the opinions of various stakeholders and citizens in order to become a public corporation that provides services for the people with top priorities placed on environmental, public interest, and innovative values. It has also established strategies to faithfully implement the UN's Sustainable Development Goals (SDGs), which are the promises shared by countries.

K-water will achieve water welfare that benefits both nature and humanity, both for the present and future generations, and for every citizen regardless of the regions where they live; build a water circulation system that encompasses water quantity, quality, and ecosystem; and create new water values with the people. Based on these efforts, K-water will achieve the UN's SDGs and be reborn as "a partner for healthy water circulation that benefits all."



## K-water Green Bond Framework

K-water Bonds will be used to finance and/or re-finance, in whole or in part, new or existing projects (“Eligible Project”) from any of the eligible project categories (“Eligible Project Categories”) listed below:

Eligible Green Categories	Use of Proceeds
Climate Change Adaptation	Flood protection / Protect and Manage Waterways
Sustainable Water Supply	Improve water supply infrastructure
Renewable Energy	Tidal power, Solar power and Small hydro power(25MW or less)
Water Management	Improve water management for local waterworks and sewage

### Process for Project Selection and Evaluation

#### Different teams involved

- The Investment Committee
- The Finance Department,
- The Corporate Sustainability Management (CSM) team
- The Investment and Funding Review Committee

#### Key steps include

- Approval by the Investment Committee followed by the Finance Department analysis of contemplated projects in line with the Framework
- CSM Team to confirm such compliance
- Final approval by the Investment and Funding Review Committee

### Management of Proceeds

- Water Bond to finance water-related assets and Green Bond to finance both water and other green assets as defined in the Use of Proceeds section
- K-Water’s treasury team to track internally the proceeds raised from the Green or Water Bonds to be allocated to Eligible Assets
- Two full years of look-back period
- Pending full allocation the balance of unallocated proceeds to be held in form of temporary sustainable cash or cash equivalent investment instruments within K-Water treasury management

### Reporting

#### Allocation reporting to include

- Allocation per Eligible Asset Categories
- Examples of projects financed by the proceeds
- Allocated amount vs. total amount (in %)
- Allocation per Eligible Asset Category

#### Impact reporting to include where feasible

- Climate Change Adaptation: flood control capacity in billion cubic meters
- Sustainable Water Management: number of people and cities served
- Renewable Energy: Annual GHG emissions avoided in tons of CO<sub>2</sub> equivalent
- Water Management: million of additional m<sup>3</sup>

### External Review

- Sustainalytics was appointed as an independent third party to provide assurance on K-water Green Bond Framework and its alignment with the Green Bond Principles 2017.
- The opinion from Sustainalytics (“Second-Party Opinion”) is available on K-water’s English website. <http://english.kwater.or.kr/eng/main.do>



## K-water Green Bond Summary

### Green(Water) Bonds Issued by K-water

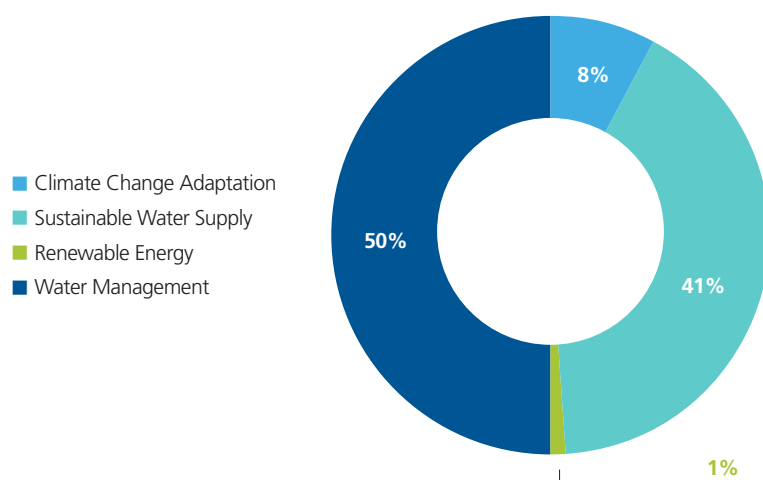
<b>Issuer</b>	Korea Water Resources Corporation ("K-water")
<b>Issuer Ratings</b>	Aa2 (Stable) by Moody's / AA (Stable) by S&P
<b>Format</b>	RegS
<b>Structure</b>	Fixed Rate, Senior Unsecured
<b>Tenor</b>	5 Years
<b>Issue Size</b>	USD 300 million
<b>Settlement Date</b>	15 May 2018
<b>Coupon</b>	3.875%
<b>Use of Proceeds</b>	Net proceeds will be allocated to new and existing projects from any of the eligible project categories in accordance with K-Water's Green Bond Framework.
<b>ISIN</b>	XS1798774656
<b>Terms</b>	SGX Listing, English Law

## K-water Green Bond Reporting

- As of 30 May 2019, a total of USD 300 million of proceeds were raised through the K-Water Green Bond, of which the full amount has been allocated to Eligible Projects.
- The details of allocation and impact reporting are as follows:

### Allocation of Proceeds

#### Breakdown by Eligible Asset Sub-category



- During the reporting period, K-Water allocated an amount totaling USD 387.2 million equivalent to four Eligible Project Categories: Sustainable Water Supply, Water Management, Climate Change Adaptation and Renewable Energy.
- All of the projects financed are located in South Korea.

Eligible Project Category	Sub-category	Amount allocated* (USD million)
<b>Sustainable Water Supply</b>	Improvement in water supply infrastructure in order to increase efficiency and accessibility of water delivery system	157.4
<b>Water Management</b>	Improvement in water management for local waterworks and sewage	192.7
<b>Climate Change Adaptation</b>	Amplification of dam capacity as a preliminary measure to extreme floods	31.2
<b>Renewable Energy</b>	Small hydro	2.3
	Floating photovoltaic	0.7
	Photovoltaic	1.1
	Tidal power	1.8
<b>Total</b>		<b>387.2</b>

\* KRWUSD FX rate used: 0.00084

# K-water Green Bond Reporting

## Impact Reporting

Eligible Project Category	Sub-category	Expected Environmental / Social Benefits per Green Bond allocation
<b>Sustainable Water Supply</b>		<ul style="list-style-type: none"> <li>• Increase in water supply: 37 million m<sup>3</sup> per annum</li> <li>• Adjustment in water system: 36 million m<sup>3</sup> per annum</li> <li>• Serving an estimated 689,519 people<sup>(1)</sup></li> </ul>
<b>Water Management</b>		<ul style="list-style-type: none"> <li>• Volume of sewage treated: 2.1 million m<sup>3</sup> per annum, serving 32,000 people</li> </ul>
<b>Climate Change Adaptation</b>		<ul style="list-style-type: none"> <li>• Increase in dams discharge capacity: 1,714m<sup>3</sup>/s</li> </ul>
<b>Renewable Energy</b>	Small hydro (<25MW)	<ul style="list-style-type: none"> <li>• Installation capacity: 0.65 MW</li> <li>• Annual power generation: 1,495.1 MWh</li> <li>• Reduction of greenhouse gas<sup>(2)</sup>: 697 tons/year</li> </ul>
	Floating photovoltaic	<ul style="list-style-type: none"> <li>• Installation capacity: 0.27 MW</li> <li>• Annual power generation: 362.8 MWh</li> <li>• Reduction of greenhouse gas: 169.1 tons/ year</li> </ul>
	Photovoltaic	<ul style="list-style-type: none"> <li>• Installation capacity: 0.9 MW</li> <li>• Annual power generation: 1290.7 MWh</li> <li>• Reduction of greenhouse gas: 601.8 tons/ year</li> </ul>

(1) Assumption: Water use per person per day = 289L. Source: statistic studies from the Ministry of Environment

(2) The methodology and baseline data for the greenhouse gas emissions reduction for renewable energy was based on the Guidelines on public sector's greenhouse / energy-target management issued by the Ministry of Environment of the Korea Government

## Project

# Sustainable Water Supply

Given that an increase in demand for drinking/industrial water in accordance to recent development plans in the some area, K-water aims to prepare for water shortages in the future and secure stable water supply



## Daecheong III Large-Area Waterworks business

(2011~2019)

- Pipeline 131.7km(D2,400~450mm)
- Water intake station, 2 Water Purifying Stations
- 3 Booster Stations (1 Newly established, 1 Expanded, 1 Reformer)
- 7 Cities: Sejong-si, Cheongju-si, Cheonan-si, Asan-si, Dangjin-si, Yesan-si, Seosan-si
- 2,387,543 People

Executed Amount in 2018

**142,640**m krw (119.8m USD equ.)

Total Business Cost

**687,465**m krw

Increase in the water supply (1,796k/day → 2,239k m<sup>3</sup>/day) (new development of 443km<sup>3</sup>/day)  
Adjustments\* in water system (247km<sup>3</sup>/day)



\* Adjustment in water system is similar to a new construction of water system, but is different in a way that surplus water supplies from other regions are used in the water system. It refers to the utilization of existing supplies without construction on new dams



## Project

# Sustainable Water Supply

### Establishment of Water Supply Ecosystem at Hangang River Downstream Areas III

(2014~2019)

- Purifying facilities: Conversion of existing water-purifying facilities into industrial purposes (107km<sup>3</sup>/day)
- Industrial water: Water pipe of 32.7km(D1,100~600mm), 3 new booster stations
- Residential water: opening up new water pipe between Pocheon ~ Dongducheon 4.9km(D900mm)
- 4 Cities: Hwaseong-si, Osan-si, Anseong-si, Pyeongtaek-si
- 370,240 People

Executed Amount in 2018

**39,776m krw** (33.4m USD equ.)

Total Business Cost

**92,055m krw**

Adjustments in water system (107km<sup>3</sup>/day)

### Yeongnam Inland II Large-area Waterworks

(2016~2019)

- Expansion of Goryeong water-intake station (26.6km<sup>2</sup>/day), Expansion of Goryeong water-purifying station (22.0km<sup>2</sup>/day),
- 1 Booster station (14.5km<sup>2</sup>/day), Water pipe 2.0km(D700mm)
- 4 Cities/Provinces : Daegu Dalseong-gun, Goryeong-gun, Seongju-gun, Changnyeong-gun
- 76,124 People

Executed Amount in 2018

**4,974m krw** (4.2m USD equ.)

Total Business Cost

**12,986m krw**

Increase in the water supply (44km<sup>3</sup>/day → 66km<sup>3</sup>/day) (new development of 22km<sup>3</sup>/day)

## Project

# Renewable Energy

### Floating Photovoltaic System at Chungju Dam

(2016~2019)

- Floating Photovoltaic generation facility 3MW
- Annual Generation: 4,031MWh
- Profits from Generation: KRW8.5 bn/year
- Reduction of greenhouse gas: 1,879 ton/year

Executed Amount in 2018

**794m krw** (0.7m USD equ.)

Total Business Cost

**9,000m krw**



### Development of Overland Photovoltaic System

(2017~2019)

- 28 Photovoltaic Generating facility 8.9MW
- Annual Generation: 12,907MWh
- Profits from Generation: KRW3.2bn/year
- Reduction of greenhouse gas: 6,018 ton/year

Executed Amount in 2018

**1,316m krw** (1.1m USD equ.)

Total Business Cost

**12,857m krw**



[Baseline data of greenhouse gas reduction calculation were taken reference from the "Guidelines on Public Sector's greenhouse / Energy-target Management" published by the Ministry of Environment.]

## Project

# Renewable Energy

### Construction of Small Hydro Power Plants at Chungju Saddle Dam

(2013~2020)

- Hydro Power generation facility 5MW
- Annual Generation: 11,501MWh
- Reduction of greenhouse gas: 5,362ton/year

Executed Amount in 2018

**2,768m** krw (2.3m USD equ.)

Total Business Cost

**21,843m** krw



### Repairment / Replacmenet of Siwha Tidal Power Plants

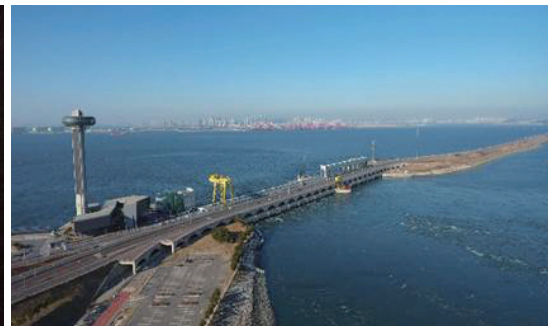
(ANNUAL)

Maintenance and repairment of major facilities, such as water gates and water turbing generators

- Siwha Tidal Power
  - Installation capacity of 254MW
  - Generation volume of 552.7GWh

Executed Amount in 2018

**2,108m** krw (1.8m USD equ.)



[Baseline data of greenhouse gas reduction calculation were taken reference from the "Guidelines on Public Sector's greenhouse / Energy-target Management" published by the Ministry of Environment.]



## Project

# Water Management

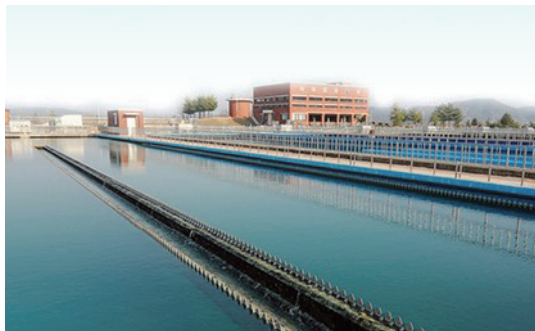
### Repairment/ Replacement of Waterworks

(ANNUAL)

- Managing total 48 water supply facilities
- Facility capacity: 17,559km<sup>3</sup>/day, 42 purifying station, 24 water-instate stations, 89 booster stations and water pipe 5,265km

Executed Amount in 2018

**215,620**m krw (181.1m USD equ.)



### Construction of Public Sewage Facility

(2013~2020)

- Construction of 7 Sewage treatment plants and Sewage pipeline 40.1km
- Treat sewage 145km<sup>3</sup> /day serving 0.8 million People

Executed Amount in 2018

**13,865**m krw (11.6m USD equ.)

Total Business Cost

**369,759**m krw





## Project

# Climate Change Adaptation

Amplification of dam capacity as a preliminary measure to extreme floods that have recently occurred more currently due to changing climates. Procurement of safety and protection of lives/assets as the result of capacity amplification

### Chungju Dam

(2013~2020)

- Probable Maximum Flood (PMF) 26,680m<sup>3</sup>/s → 33,700m<sup>3</sup>/s
- Built new discharge facilities to prevent flood
- Installation of auxiliary spillway(tunnel) D16.3m \* L1,541m \* 3 ways Water gate B10.0m \* H19.8m \* 6 doors
- Strengthening discharge capacity for the dam 17,500m<sup>3</sup>/s → 28,500m<sup>3</sup>/s

Executed Amount in 2018

**23,628m krw** (19.8m USD equ.)

Total Business Cost

**239,770m krw**

### Pyeonghwa Dam

(2012~2018)

- Probable Maximum Flood (PMF) 20,503m<sup>3</sup>/s → 24,075m<sup>3</sup>/s
- Reinforcement of downstream sides and top parts of the dam, as a preliminary prevention against dam overflows (T=1.5m)
- Overflow prevention wall for shatter-resistance (H=5~26m) and installment of breaking structure (L=23m)
- Strengthening discharge capacity for the dam 11,664m<sup>3</sup>/s → 18,402m<sup>3</sup>/s

Executed Amount in 2018

**13,148m krw** (11.0m USD equ.)

Total Business Cost

**138,478m krw**

### Namgang Dam

(2018~2025)

- Probable Maximum Flood (PMF) 15,800m<sup>3</sup>/s → 20,771m<sup>3</sup>/s
- Built new discharge facilities to prevent flood
- Construction of 4 regulating water gates, installment of supplementary spillways D12m \* L300m \* 1 way, Water-intake pipes B80m \* L500m
- Strengthening discharge capacity for the dam 7,000m<sup>3</sup>/s → 14,106m<sup>3</sup>/s

Executed Amount in 2018

**371m krw** (0.3m USD equ.)

Total Business Cost

**380,588m krw**

Providing a brighter, happier,  
and more prosperous  
future with water