Providing a brighter, happier, and more prosperous future with water
About This Report

K-water has published its Sustainability Report annually since 2005, and this year, it presents its 14th Sustainability Report. The report introduces K-water’s sustainable management activities aimed at the fulfillment of its mission “Providing a brighter, happier, and more prosperous future with water” and the achievements of these activities, along with the company’s unceasing efforts to be a global leader in the water industry by providing safe and clear water for all. The contents of this 2018 report were curated with a focus on the three strategies and the social values that K-water has pursued.

Reporting Standards

This report has been drafted in line with the GRI (Global Reporting Initiative) Standards and ISO 26000, which are the international sustainability reporting guidelines and it complies with the core of the GRI Standards. This report features key issues derived from materiality tests and management approaches (MA) on key issues.

Reporting Period, Scope and Boundaries

The quantitative performances presented in this report are as of 2017. As for additional achievements, this report centers on the sustainable management activities of the K-water Headquarters (1 division, 5 head offices, 27 departments including departments, institutes, centers, and offices) and local business sites (3 divisions, 5 head offices (including institutes), 72 departments, 62 branches). As overseas businesses are carried out on a project basis, only their management performances have been included in this report. The achievements of subsidiaries and affiliates are not covered in this report as well as performances related to the company’s training and supporting systems, while those related to partner companies within the corporate supply chain are presented in this report. Financial performances have been filed based on consolidated data (K-IFRS) since 2011.

Report Assurance

For the enhancement of accuracy and reliability, the report has been verified by the Korea Management Registrar, an independent external agency. This third-party verification agency has certified that this report complies with the core of the GRI Standards.

Alterations

During the reporting period, the competent authority of K-water changed to the Ministry of Environment (June 8, 2018), which has brought no alterations related to the sizes, structure, basic year or ownership structure presented in this report. However, some of the data from the previous year’s report have been altered after re-calculation to reflect the changes in the calculation and application standards. K-water publicizes its Sustainability Management and Annual Report through the disclosure of its business management on its website. The Sustainability Report is issued both in Korean and English. It can be downloaded in PDF format via its website. For more information or inquiries, please find below our contact information.

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Appendix

Membership Activities and Awards
Sustainability Highlights
KMR Assurance
GRI STANDARDS Index ISO 26000
Code of Ethics, Quality and Environment Centered and Green Management Policy, Customer Charter Statement, Human Centered Oriented Management Statement
Statement of Support for the UN Global Compact’s 10 Principles
Questionnaire for Readers

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

2018 Sustainability Report

K-water

Corporate Overview
Vision and Strategy
K-water’s Sustainable Management
Governing Structure
K-water’s Communication with Stakeholders
Major Topics of K-water’s Sustainable Management
Water Safety Services
Healthy Water Circulation, Happy Korea
Protecting all People through the Prevention of Water Disasters
Sustainable Safety Environment
Risk Management
Water Sharing Services
High-Quality Tap Water Services
Innovation of Water Management, Smart Water Management
Rights for All, Water Rights
Water Convergence Services
K-water’s New Paradigm, Clean Energy
Environment-Friendly Waterfront Cities for the Happy Lives of Citizens
Leading the National Water Industry by Creating the Industry Platform
K-water’s Future Convergence Technology
K-water as a Global Water Company
Jobs for All, Jobs with Values
Mutual Growth with all People
K-water’s Environmental Management for a healthier nation
Management System to Create Social Values

Contents

CEO’s Message
K-water, Today and Tomorrow
K-water, Sustainability Highlights 2017
K-water, 100 Years as the Leading National Water Company
Corporate Overview
Vision and Strategy
K-water’s Sustainable Management
Governing Structure
K-water’s Communication with Stakeholders
Major Topics of K-water’s Sustainable Management
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K-water as a Global Water Company
Making a Happier Korea with Water
Jobs for All, Jobs with Values
Mutual Growth with all People
K-water’s Environmental Management for a healthier nation
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Questionnaire for Readers
Dear stakeholders who have always been interested in and supportive of K-water,

I am delighted to introduce our 14th Sustainability Report to you.

First, we will provide safe, clean and secure water services with river basin-based integrated water management. We will contribute to the successful establishment of river basin-based integrated water management systems by concentrating our capacity on the improvement of water environment, safeguarding citizens from water disasters such as floods, droughts and deteriorating water quality, and enhancing the water quality and water ecology health that have been relatively neglected so far.

Second, we will continue with our commitment to provide water sharing services to ensure the supply of clean and sufficient water. Instead of focusing on the construction of large dams, we will link existing dams and reservoirs and discover alternative water sources to secure the necessary amount of water, while preventing the waste of water through scientific demand management. In addition, we will narrow the gaps in water quantity, quality, and rates among different regions and strengthen the safety of drinking water so that people can drink tap water free from harmful chemicals without worries.

Third, we will create new values of water through the convergence of water, energy, and urban technologies. We will actively develop eco-friendly water energy sources such as floating photovoltaic energy and hydrothermal energy. In addition, we will take the initiative in innovative growth, by solving urban water problems through the enhancement of water ecology services including the restoration of streams and the successful completion of the national smart city test operation in Busan Eco-Delta City using the Fourth Industrial Revolution based smart technology. As well, we will increase the competitiveness of the domestic water industry and create more jobs by expanding our support for SMEs and venture businesses.

Finally, we will be reborn as a public company for all citizens through our innovations to provide greater publicness and make a happier Korea with water. We will continue to innovate our business practices and management process to provide services that people need by placing our top priority on public values. We will also do our best to become a public company trusted by citizens, providing water services that the public can sympathize with through communication with a wider range of people and stakeholders and sharing values with them.

Please continue to support K-water as we strive to fulfill the UN’s Sustainable Development Goals (SDGs) and practice sustainable management with the aim of “Providing a brighter, happier, and more prosperous future with water.”

Thank you.

Dear stakeholders who have always been interested in and supportive of K-water,

I am delighted to introduce our 14th Sustainability Report to you.

December, 2018

Lee Hak-soo
K-water, Today and Tomorrow

Flood control
- 2,220 billion tons/year
- Flood amounts controlled by K-water through dams (2017)
  * 88.5% of the total national flood control capacity through dams and reservoirs (2,482 million tons/year) (2017)

Renewable energy production
- 2,118 GWh/year
- K-water’s annual clean energy production (2017)
  * 9.4% of the total national clean energy production (22,604 GWh/year) (2017)

Creation of waterside spaces
- 3,198 million m²
- Total area of distributed waterfront city space per year (2017)

Water storage
- 12,741 billion tons/year
- Amount of water secured by K-water using dams and reservoirs (2017)
  * 79% of the total national water storage capacity (14.42 billion tons/year) in dams and reservoirs (2017)

Supply of dam water
- 5,824 billion tons/year
- Water volume supplied by K-water through dams and reservoirs (2017)

Supply of raw water
- 1,817 billion tons/year
- The amount supplied to local governments, companies, etc. by K-water directly after intake without treatment (2017)

Supply of treated water
- 2,186 billion tons/year
- K-water’s annual production (water treatment) (2017)
  * 32% of the total national annual production (water treatment) (2016)

Water intake
- 4,007 billion tons/year
- K-water’s annual water intake (2017)
  * 60% of the total national annual water intake (2016)

Sewage treatment (facility capacity)
- 585 thousand tons/day
- K-water’s sewage treatment volume (2017)
  * 2% of the total national sewage treatment capacity (19.9 million tons/day) (2017)

Water supply amount
- 3,997 billion tons/year
- Annual use amount of water supplied by K-water (tap water and raw water) (2017)
  * Net use amount excluding water volume leaking from pipes

Water supply amount
- 2,180 billion tons/year
- K-water’s annual production (water treatment) (2017)
  * 32% of the total national annual production (water treatment) (2016)

Water supply amount
- 1,817 billion tons/year
- The amount supplied to local governments, companies, etc. by K-water directly after intake without treatment (2017)

Water supply amount
- 3,198 million m²
- Total area of distributed waterfront city space per year (2017)

Water supply amount
- 12,741 billion tons/year
- Amount of water secured by K-water using dams and reservoirs (2017)
  * 79% of the total national water storage capacity (14.42 billion tons/year) in dams and reservoirs (2017)

Water supply amount
- 5,824 billion tons/year
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Water supply amount
- 2,220 billion tons/year
- Flood amounts controlled by K-water through dams (2017)
  * 88.5% of the total national flood control capacity through dams and reservoirs (2,482 million tons/year) (2017)

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- 2,118 GWh/year
- K-water’s annual clean energy production (2017)
  * 9.4% of the total national clean energy production (22,604 GWh/year) (2017)

Water supply amount
- 4,007 billion tons/year
- K-water’s annual water intake (2017)
  * 60% of the total national annual water intake (2016)
K-water, Sustainability Highlights 2017

Overcoming the national drought crisis through cooperation with other institutions
- The stable supply of 640 million m$^3$ of water through cooperation with water management related institutions
- The prevention of limited water supply to 1.39 million people in 16 cities and counties through emergency water supply

Establishing a country free from water disasters and safety accidents
- Won three awards in the field of integrated disaster management as part of the government’s disaster and safety contests

Protection of water rights for all to benefit from water supply services
- Universal water services by solving the problem of limited water supply in Tongyeong (which occurred over the past 50 years)
- Approx. 725,000 people benefiting from Smart Water Management (SWM) services

Creation of jobs for all, jobs with values
- A total of 6,552 private jobs (18% increase from the previous year) (991↑)
- Discovery of 5 venture companies and support for their advancement into overseas markets

Expansion of social support for the socially vulnerable and safeguard for equal opportunities
- Strengthening of social responsibility as a public enterprise by actively participating in the Public Workers Solidarity Foundation
- Awarded three prizes in personnel innovation including the Prime Minister’s Award at the Personnel Innovation Competition

Increase in the quality of jobs through improved quality of employment and work
- Early transition of irregular jobs to regular jobs following democratic procedures without conflicts between labor and management, and the creation of the largest number of youth jobs (34) since the company’s foundation

Fulfillment of mutual prosperity and cooperation with SMEs and the strengthening of a fair competition base
- Revitalization of the local and social economy through the return of profits, a 57% reduction in the amount of postponed payments to construction subcontractors (from KRW 5.5 billion to 2.35 billion)

Support for national water management innovation to restore healthy water circulation
- Agreement between the ruling and opposition parties on the amendments to the Government Organization Act including water management unification in the first half of 2018 (December)

Acceleration of internal innovation to expand people-centered services
- The first turn to profit since losses related to the four Major River Project (net losses ▲ KRW 117 billion → net profit KRW 184.9 billion)
- Ranked as one of the top 100 Best Korean Companies to Work For list for the 5th consecutive year (implies #1)

Strengthened a substantial and responsible management base through the stabilization of overseas businesses
- Annual income of KRW 20 billion for the next 30 years secured with the commencement of commercial power generation at the Patrind Hydropower Plant (Pakistan)
- The first achievement of net profit (KRW 700 million) and turn to profit since the commencement of the commercial power generation at Angat Dam and the Philippines

Innovation of waterfront value and the popularization of eco-friendly energy sources
- Leading the way in waterfront paradigm changes through national smart city test-bed projects
- Securing energy sources that can replace the capacity of a nuclear reactor (1GW) with the development of alternative water energy sources (5GW)
K-water, 100 Years as the Leading National Water Company

Corporate Overview  12
Vision and Strategy  15
K-water’s Sustainable Management  16
Governing Structure  19
K-water’s Communication with Stakeholders  21
Major Topics of K-water’s Sustainable Management  23
K-water, as Korea’s representative public company, will continue to strive for innovative water management in order to complete a sustainable water circulation system through balanced and integrated river basin-based water management. We will provide universal and equal high-quality water services to all citizens for the fulfillment of the national welfare and the aim of "Providing a brighter, happier, and more prosperous future with water."

### Appendix

#### K-water, 100 years as the leading national water company

K-water's efforts to enhance national welfare

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#### A global water company recognized at home and abroad

Growing into a water expert company

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#### Major businesses

Water safety services

- Water supply using dams: 13.3 billion m$^3$/year (94% of the total national water supply)
- Operation and management of 53 water facilities (dams, weirs, and the Gyeongin Ara Waterway)
- Flood control amount through multipurpose dams: 5.3 billion m$^3$
- Construction of 2 new dams and the implementation of projects to increase existing dam’s capacity and safety

Water sharing services

- Lifewater sales: KRW 1.3 trillion
- Operation and management of 48 large-scale and industrial waterworks, construction of 21 waterworks facilities in progress
- *Capacity: 7.6 million m$^3$/day (44% of the total national capacity)
- *Embued with flood control at 23 local waterworks and 14 reservoirs

Water convergence services

- Total area of distributed waterfront: 6.7 million m$^2$
- Renewable energy capacity: 1.356 MW
- 2,118 GWh/year from hydro, tidal, solar, and wind power generation, etc. (2017)
- 5 GW/year from the development of alternative water energy sources such as floating photovoltaic and thermal hydroelectric systems
- *Reduction of CO2 emissions through the introduction of hydropower systems such as the Tibet Yarko and the Soyanggang Free Hydropower Cluster

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#### Subsidiaries

- K-water (Philippines)
- JSC Nenskra Hydro (Georgia)
- KWPP Holdings Co. (Philippines)
- Star Hydro Power Ltd. (Pakistan)
- K-water Thailand Co. Ltd. (Thailand)
- LG Chem Water Development Co. Ltd. (Thailand)
- Kamico Hydro Co. Ltd. (Korea)
- P&K Development Corporation (K-water)
- Korea Overseas Infrastructure & Urban Development Corporation

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#### Organisation

- Capital authority changed to the Ministry of Environment due to the unification of water management in Korea

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#### Key planning dates

- 1967: Foundation of the Korea Water Resources Development Corporation
- 1974: Establishment of the foundation for national economic development
- 1988: Construction of large-scale industrial complexes in Gumi, Yeosu, Changwon, etc.
- 1994: Operation and management of 53 water facilities (dams, weirs, and the Gyeongin Ara Waterway)
- 2004: Creation of a livelihoods convergence system
- 2009: Improvement of national welfare and livelihoods
- 2016: Creation of a sustainable water circulation system
- 2018: A happier Korea made with water

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####机身 Overview

Fulfilling our role as a public water company, leading the national economic growth

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#### Mission of the times

- To contribute to the enhancement of citizens’ livelihoods and public welfare by ensuring the smooth supply of water and improving water quality through the comprehensive development and management of water resources.
- To promote water-related businesses and industries in line with national economic development.
- To contribute to national economic development by ensuring the smooth supply of water and improving water quality through the comprehensive development and management of water resources.
**Vision and Strategy**

**Mission and Vision**

K-water has been committed to the comprehensive development and management of Korea’s water resources for the past 50 years and has recently declared new mid- and long-term strategies to reflect the public’s opinions in order to be reborn as a water management institution for the people (November 2018).

K-water has established 29 strategic tasks and 102 detailed indicators under 14 strategic objectives to promote water disaster safety, water environment improvement, and water welfare enhancement through national and citizen-centered sustainable water management. With this, the company seeks to gain recognition as a global water expert by building the optimal water circulation system and strengthening its capacity to take the initiative in solving global water problems related to climate change and water shortages.

**2018 Sustainability Report**

**Appendix**

**Domestic integrated water management facilities**

**Overseas projects**

*Gyeong, Yeongsang River Regional Head Office*

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1. We prioritize the public’s interest and pursue efficiency improvement strategies.
2. We provide equitable water services that are accessible to all.
3. We guarantee security from water-related threats.
4. We will suspend unnecessary development and pursue environmental justice through sustainable integrated water management.
5. We create and share new values with people.

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**Mission and Vision**

**A Partner for providing healthy water circulation service for all**

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**Strategic goals (29)**

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**Strategic Business Units**

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**Shared values**

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**Core values**

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**Substantial Management Principles**

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**Vision**

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**Values**

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**Goals (102)**

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**Detailed goals**

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**Strategic directions**

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**Water·Energy·Cities**

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**Effectiveness**

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**Functional innovation**

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**Trust**

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**Core values**

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**Innovation**

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**pursuit, sharing, innovation, convergence services, water·energy·cities**

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**Safety and disaster basin management**

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**Water sharing services**

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**Water Energy·Cities convergence services**

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**Contribution to social values**

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**Customer satisfaction and evaluation system**

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**Achievement of ecosystem service value**

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**Accomplishment of the highest grade B in customer satisfaction and contribution to social value**

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**Lability value improved to 153.5%**

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**Strategic modes (29)**

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**Detailed goals**

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**Strategic goals (102)**

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**Strategic units (29)**

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**Strategic goals (102)**

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**Strategic business units**

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**Strategic directions**

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**Mission**

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

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**A Partner for providing healthy water circulation service for all**

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**2018 Sustainability Report**

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**Appendix**

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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 excellence, 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 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

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 return as “a partner for healthy water circulation that benefits all.”

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

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.

Strategic Direction 1

Human-centered Water Industry

People and nature

Water welfare and equity

'Healthy Water Circulation'

Service Partner

Innovative values

’Water quality and technology

National policy

Citizens’ needs

National values

Strategic Direction 2

Water sharing services

Expansion of services converging water, energy, and urban technologies

Supply of clean and sufficient water

Strategic Direction 3

Water safety services

Expansion of water safety services

Strategic Direction 4

Water innovation services

Functional innovation focusing on new technologies

K-water’s 100 years as the leading national water company

K-water’s efforts to enhance national welfare

K-water Korea made with water

Appendix

K-water, 100 years as the leading national water company

K-water’s efforts to enhance national welfare

K-water Korea made with water

Appendix
The Korea Water Resources Corporation Act stipulates that the capital of K-water shall be invested by the State, local governments, or the Korea Development Bank and at least 50% of it shall be invested by the State. As of December 31, 2017, the investment ratios of the State, the Korea Development Bank and local governments are 10.5%, 7.41%, and 0.1%, respectively. In addition, the K-water Board of Directors is composed of experts in each field and a sound governing structure with a fair decision-making system has been established.

The K-water Board of Directors is the supreme decision-making body that deliberates and resolves important management issues including management objectives, in consideration of public interests, economic efficiency and social and environmental impacts. The Board also performs the functions of supporting and keeping the management in check. The K-water Board of Directors consists of 15 members, 7 of which are standing directors and the other 8 are non-standing directors, and the role of chairman is served by a non-standing senior director. The Board contributes to the improvement of the governing structure of K-water as a public corporation and to the rational check on its management. In addition, in order to safeguard the independence and strengthen the role of checking of non-standing directors, more than half of the members of the Board of Directors, the Executive Recommendation Committee, and the Audit Committee are non-standing directors.

### Composition of the Board of Directors

#### Standing directors

- **Lee Hak-soo**
  - CEO
  - Vice President, K-water
  - Head of Urban Environmental Business HQ, K-water
  - Head of Arad Business Dept., K-water

- **Park Jong-jeong**
  - General Manager of Business Management
  - Chairman of the Internal Audit Committee
  - Head of Gyeongin Ara Waterway Construction Office, K-water

- **Kim Byong-je**
  - Head of the Hapyeon Ara Waterway Construction Office, K-water

#### Non-standing directors

- **Choi Hong-jeong**
  - Senior non-standing director (Chairman)
  - Director of Environment & Energy Center, Seoul National University, Law Research Institute
  - Dean, Seoul National University, School of Law

- **Kim Jong-jeong**
  - Non-standing director
  - Director of the Hapyeon Ara Waterway Construction Office, K-water

- **Lee Hyun-myeong**
  - Non-standing director
  - President, Korea Dairy Association
  - Former Director of Gyeonggi City, Korea Land & Housing Corporation

- **Park Eun-young**
  - Non-standing director
  - President, Korea Clean Energy Association
  - Former Director of Gyeonggi City, Korea Land & Housing Corporation

- **Jeong Sang-ki**
  - Non-standing director
  - Director, Daegu YMCA

- **Hyeon-ji**
  - Non-standing director
  - Chief of Urban Development & Environment, Seoul National University, Law Research Institute
  - Dean, Seoul National University, School of Law

- **Yang Jeong-nam**
  - Non-standing director
  - Former Director of Environment Law Center

- **Lee Hyun-myeong**
  - Non-standing director
  - President, Cheongju University, Korea Land & Housing Corporation

- **Lee Suk-jung**
  - Non-standing director
  - President, Ansan Custom Association
  - Former Director of Gyeonggi City, Korea Land & Housing Corporation

- **Kim Seung-jae**
  - Non-standing director
  - President, Hapyeon Ara Waterway Construction Office, K-water

- **Park Hyeon-min**
  - Non-standing director
  - Former Director of Gyeonggi City, Korea Land & Housing Corporation

- **Park Hyeon-min**
  - Non-standing director
  - Former Director of Gyeonggi City, Korea Land & Housing Corporation

- **Lee Hyun-jae**
  - Non-standing director
  - President, Korea Clean Energy Association
  - Former Director of Gyeonggi City, Korea Land & Housing Corporation
In 2017, a total of 15 regular Board of Directors meetings were held, and the average attendance rate of the members was 90.2%. A total of 39 agenda items were reviewed and 74 management suggestions were made at the meetings. The suggestions presented to the Board were fully reflected in the management, contributing to the improvement of K-water’s management.

**BOD operation status**

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of agenda items</th>
<th>No. of the BOD meetings</th>
<th>Attendance rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>44</td>
<td>41</td>
<td>95.7</td>
</tr>
<tr>
<td>2016</td>
<td>39</td>
<td>18</td>
<td>93.9</td>
</tr>
<tr>
<td>2017</td>
<td>20</td>
<td>15</td>
<td>90.2</td>
</tr>
</tbody>
</table>

The Board of Directors has strengthened the management activities closely related to business sites, by making a total of seven site visits of non-standing directors to settle conflicts over local issues and to better understand and analyze management issues such as drought response and water management unification. Before each regular meeting, K-water provided the board members with clear explanation on the agenda items and carried out individual visits to business sites and offered consultations on a regular basis, to promote thorough deliberation on the agenda based on the expertise of the non-standing directors and responsible decision making. This greatly contributed to the strengthening of a responsible management system.

### Major Resolutions Made by the BOD

<table>
<thead>
<tr>
<th>Date</th>
<th>Agenda</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 27, 2017</td>
<td>Sponsorship of the 2018 PyeongChang Winter Olympic Games</td>
<td>Active support for the success of the 2018 PyeongChang Winter Olympic and Paralympic Games to fulfill its social responsibility as a public institution</td>
</tr>
<tr>
<td>September 26, 2017</td>
<td>Operation plan on an autonomous water saving demand adjustment system for large-area waterworks</td>
<td>Establishment of a preemergency drought response system by inducing autonomous water saving efforts from local governments to cope with constant and repeated droughts</td>
</tr>
<tr>
<td>November 13, 2017</td>
<td>Emergency water supply facility construction, for the Geumho River system’s large-area waterworks</td>
<td>Response to water outage due to flood damage in the Uman-Dan area and the worsening of national disaster situation through emergency water supply facility installation using the Geumho River as water source</td>
</tr>
</tbody>
</table>

### Committee in the BOD

<table>
<thead>
<tr>
<th>Name</th>
<th>Members</th>
<th>Authority and responsibility</th>
<th>No. of previous meetings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit Committee</td>
<td>1 standing committee member, 2 standing committee members</td>
<td>Auditing accounts and businesses of the corporation and reporting the results to the BOD; Requesting management activity reports, investigating the corporation’s businesses and asset status, etc.</td>
<td>54 (4)</td>
</tr>
</tbody>
</table>

### K-water’s Communication with Stakeholders

In order to effectively communicate with stakeholders, K-water has classified and analyzed stakeholders according to their roles such as value production and operated channels of communication suited to each stakeholder group by selecting issues of interest for them. The enabled K-water to establish a foundation for the implementation of water management unification through the participation of all employees in discussions on integrated water management and to prevent water outages that could have affected 1.39 million people through the communication and cooperation among local governments, related institutions and the residents. K-water has also solved local water problems by involving NGOs and other diverse stakeholders to participate in the decision-making process.

#### Composition of Stakeholders and Measures for Communication

**Strategic direction**

<table>
<thead>
<tr>
<th>Provided values</th>
<th>Strategic direction</th>
<th>Water sharing services</th>
<th>Water convergence services</th>
<th>Water innovation services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achieving integrated water management</td>
<td>• Ensuring water safety</td>
<td>• Pollution-free water environment</td>
<td>• Fostering the water industry and creating jobs</td>
<td></td>
</tr>
</tbody>
</table>

**Classification**

**Value evaluation**

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Value provided</th>
<th>Value sharing</th>
<th>Value creation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>• Sustainable development of the organization</td>
<td>• Improving welfare and working conditions</td>
<td>• Local water issues</td>
</tr>
<tr>
<td>Civic groups</td>
<td>• Matching with national policies</td>
<td>• Technology improvement and mutual growth</td>
<td>• Fostering of the water industry and creating jobs</td>
</tr>
<tr>
<td>Customers</td>
<td>• Water welfare, public management</td>
<td>• Local government and communities</td>
<td>• Environmental and ecological restoration</td>
</tr>
<tr>
<td>Partners</td>
<td>• Civic groups</td>
<td>• The press</td>
<td>• Social issues</td>
</tr>
</tbody>
</table>

#### Communication channels

- Internal: CEO messages, management meetings, labor-management council meetings, etc.
- External: Conferences, platform centers, etc.
- Others: Business meetings, MOUs, etc.

#### Expectations

- Sustainable development of the organization
- Improving welfare and working conditions
- Local water issues
- Civic groups
- The press

**Strategic direction**

- Leading the green transformation
- Matching with national policies
- Technology improvement and mutual growth
- Fostering of the water industry and creating jobs
- Environmental and ecological restoration
- Social issues

**Commitment to Social Responsibility**

- The Board of Directors has strengthened the management activities closely related to business sites, by making a total of seven site visits of non-standing directors to settle conflicts over local issues and to better understand and analyze management issues such as drought response and water management unification. Before each regular meeting, K-water provided the board members with clear explanation on the agenda items and carried out individual visits to business sites and offered consultations on a regular basis, to promote thorough deliberation on the agenda based on the expertise of the non-standing directors and responsible decision making. This greatly contributed to the strengthening of a responsible management system.

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<td>• Operation of public advocacy groups</td>
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**Creation of management performances through communication channels suited to each stakeholder group**

**Value creation** Establishing a foundation for the implementation of water management unification through the participation and discussion of all employees on implementation integrated water management.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Effect/communication</th>
<th>Efforts for cooperation</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Communication</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Diversification of communication and participation channels to enhance the understanding and consensus of all employees</td>
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<tr>
<td></td>
<td>- Promotion of integrated water management training for each level of positions (12 times)</td>
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<td></td>
<td>- Organizational innovation conference for the establishment of a region-based integrated water management system (4 times)</td>
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<td></td>
<td>- Application of the rights to water bodies for the household to the administrative/technical level to establish a responsible management system of water resources</td>
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<tr>
<td></td>
<td>- Contact to collect future project ideas that could lead to the development of new integrated water management implementation measures (284 applications)</td>
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<tr>
<td></td>
<td>- Receptive identification of tasks to implement water management unification through the Next-Generation Water Management TTF (February, 2017) and the CEO-led Water Management Innovation Committee (June, 2017)</td>
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</tbody>
</table>

**Value Cooperation and Sharing** Prevention of water outages affecting 1.39 million through cooperation and communication among local governments, related institutions and residents

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<tr>
<td></td>
<td>Limited water supply predicted in 16 cities and counties of Ulsan and Pyeongyu Dams due to prolonged and severe droughts over a period of four years</td>
<td></td>
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<tr>
<td></td>
<td>- Shering information with the public and communicating with local residents through joint cooperation and response with local governments and relevant institutions</td>
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<tr>
<td></td>
<td>- Establishment of a base for integrated water management and preemptive preparation for integrated water management unification</td>
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<tr>
<td></td>
<td>- Amun Dam Construction of an emergency water supply facility using the Geumgang River in cooperation with the cities of Daejeon and Gwangju (February, 2018)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>- Pyeongyu Dam Establishment of an alternative water supply pipeline connecting K-water’s Pyeongyu Dam and the Korea Rural Community Corporation’s Jeongnim Dam and the relevant agencies through a joint TTF</td>
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<tr>
<td></td>
<td>- Information sharing (launching of a drought information portal September 2017) to provide real-time drought information to the public</td>
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<tr>
<td></td>
<td>- Water saving campaign/Promotion of direct communication with local residents such as water saving campaigns</td>
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</tbody>
</table>

**Value evaluation** Resolving local water problems through the participation of various stakeholders and NGOs in the decision making process

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<td></td>
</tr>
<tr>
<td></td>
<td>Increase in dam discharge needed according to the growing demand for ecosystem restoration due to the drying of the Seomjingang River downstream</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- The Geumgang-gang Regional Mutual Property and Cooperation Committee, consisting of NGOs, academies, media, and K-water</td>
<td></td>
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<tr>
<td></td>
<td>- Consensus formed on the need to increase the volume of discharge from Seomjingang Dam</td>
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<tr>
<td></td>
<td>Participated in the Yeonggang River Water System Dam and Water Linkage Committee based on the consensus formed at the cooperation committee</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>- Induced the decision for additional discharge from Seomjingang Dam (260,000 m³/day)</td>
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</tbody>
</table>

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**Major Topics of K-water’s Sustainable Management**

K-water pursues sustainable development by effecting economic, social, and environmental issues in the entire operation process. K-water has selected major sustainable management topics based on the materiality assessment criteria recommended by the GRI Standards and ISO 26000 (Social Responsibility) in order to identify issues more important to K-water itself and its stakeholders, track and report the related businesses, and set up strategies for establishing its own sustainable management system.

**Materiality test process**
In order to define key sustainability management topics, K-water has conducted internal and external environmental analyses and materiality tests based on the sustainability context, principles for materiality and completeness, and stakeholder engagement criteria provided by the GRI Standards, which are international sustainability reporting guidelines.

**Step 1** Identification of sustainability management topics through internal and external environment analyses

K-water has selected 41 issues related to its sustainable management by analyzing mid- to long-term management strategies, business process improvement and competitiveness analyses report, press reports, and topics raised by leading domestic and global companies in the same industry.

- *External environment of sustainability management: The external economic, social, and environmental changes that affect K-water*
- *Impact of Sustainability Management: The economic, social, and environmental changes that K-water provides to the outside*

**Step 2** Relevance and significance tests through stakeholder surveys

Based on ISO26000, an international standard offering guidance on social responsibility, and the GRI standards, the international sustainable management reporting guidelines of GRI (Global Reporting Initiative), the 41 initially selected topics were tested for their relevance and materiality and prioritized. Through the relevance test, topics with low relevance were excluded, and based on the results of surveys for internal and external stakeholders on their social concerns and K-water’s performances, topics with wider gaps between the concern and performance levels were tested for materiality.

**Step 3** Selection of major topics

The present report has focused on 24 topics that showed wide gaps between the stakeholders’ concern levels and K-water’s performance levels, and thus were considered relatively more important by both the internal and external stakeholders.
K-water’s Efforts for Sustainable Management

This report contains important topics derived from the materiality tests and specific activities, results, and future plans related to these topics.

Interviews with stakeholders for K-water’s sustainable management

K-water actively cooperates with government organizations based on its excellent expertise and carries out various tasks with the Ministry of Environment. I hope that K-water will achieve organizational management and decision-making process transparency, the improvement of revenue management, and an innovative shift from development-oriented businesses such as dam construction to the maintenance and management of infrastructures. I also hope that it will actively promote various businesses that it performs for the people and establish itself as a public corporation that communicates well with the people.

K-water and its highly qualified staff are actively responding to recent water shortage crises through unified water management and technical cooperation with private companies. I hope that the compensation and incentive system related to the restriction of property rights of residents caused by the use of local water resources will be smoothly implemented in the future. I also hope that K-water will contribute to the practice of social values by creating quality jobs, taking into consideration the serious issue of youth unemployment, and coping with future water shortages by working with local residents based on its expertise in the field of water use.

Recently, we have discussed various issues such as the unification of water management and the re-orientation of existing businesses in accordance with the launching of a new labor union, and the shortening of working hours. I hope that in the process of determining business priorities, a transparent decision-making structure will be established and various working conditions within the vast organization will be taken into consideration to create a caring and understanding atmosphere. Korea has excellent water facilities nationwide, but the management of aging facilities has remained at an insufficient level. To solve the problem, keen interest from the people and cooperation with relevant institutions are needed. In addition, K-water should actively seek ways to support the improvement of inadequate water facilities in North Korea in preparation for future changes in inter-Korean relations in line with the recent peace efforts on the Korean peninsula.

K-water is a corporation that pursues the creation of social values with sincerity and authenticity. It has recently faced various issues such as water infrastructure development in North Korea due to the recent reconciliation efforts on the Korean Peninsula, reflecting social values in the organization, and the unification of water management for effective water management at the same time. I expect K-water to become an organization that internalizes social values through its Board of Directors which is composed of internal and external experts and enhances its resilience to climate change. Furthermore, I hope that K-water will continue its international social value creation activities by proactively implementing infrastructure projects that are urgently needed in developing countries through SDGs-based strategies.

K-water is an organization whose hands-on staff is committed to identifying the needs of partner companies and internally leading its organization to meet the needs of the Korean public. The corporation has gained a new growth engine with the stable establishment of an effective water management system through the unification of water management and increasing opportunities for technological innovations that this change has brought. I hope that K-water will contribute to overcoming water shortages by actively utilizing the corporate network and developing efficient water management technologies. In addition, I am keenly interested in K-water’s efforts for discovering and supporting startups that will lead to the activation of a virtuous cycle of social values where the technologies developed through the partnership of K-water and SMEs are utilized for infrastructure development in developing countries and exported to advanced countries.
### K-water’s Efforts to Enhance National Water Welfare

#### Water Safety Services
- Making a happier Korea with a healthier water circulation system: 29
- Protection of the People through the Prevention of Water Disasters: 31
- Sustainable Safety Environment: 35
- Risk Management: 37

#### Water Sharing Services
- High-Quality Tap Water Services: 41
- Innovation of Water Management, Smart Water Management: 42
- Rights for All, Water Rights: 46

#### Water Convergence Services
- K-water’s New Paradigm, Clean Energy: 48
- Happier lives for all citizens through the development of eco-friendly waterfront cities: 50
- Leading the National Water Industry by Creating the Industry Platform: 52
- K-water’s Future Convergence Technology: 55
- K-water as a Global Water Corporation: 56
Water Safety Services

Safe and Clean River Basin Management

K-water has contributed to enhancing Korea’s resiliency to disasters by strengthening its capacity to respond to water disasters and improving the stability of water facilities in response to climate change. In addition, it has tried to improve water management efficiency and its disaster response capacity by linking diversified functions related to water quantity, quality, and ecology and disaster responses in an organic and integrated way. K-water strives to achieve changes in the water environment that can directly benefit citizens through sustainable water management.

- Active implementation of water quantity and quality policies such as the opening of six weirs in the four major rivers at necessary times and the use of agro-induction facilities through the establishment of an organization dedicated to water environment advancement, advancement of water quality technology through scientific water quality forecasting.
- Advanced technologies are applied to the operation of the National Drought Information Center and the Integrated Water Management Center to build a disaster-resistant water management system.
- Active response to water disasters such as droughts and floods by linking dams (including hydropower dams), weirs and other water facilities.
- Develop systematic strategies to respond to climate change and drastically reduce national water disasters by strengthening support for drought and flood prevention, etc.
- Strengthen responsibilities and roles in the water environment sector, providing a model for upstream water quality improvement, investing in river basin pollution response projects, etc.
- Discontinuation of state-led dam development and focus investments on the enhancement of facility safety to respond to the deterioration of aging and existing dams, earthquakes, etc.
- Strengthen the role and participation in the sewage sector (water quality, urban floods, etc.) by linking rivers and sewage systems in terms of water circulation management.

K-water seeks to establish an optimal water circulation system for sustainable water use. It plans to achieve a shift from large-area to local centered water supply and sewage systems and to integrate diversified water management on the regional level. In this regard, K-water has selected major sustainable management topics in relation to water safety services, which is one of its main strategic tasks. By systematically managing the activities related to these topics, it has contributed to the fulfillment of the UN’s Sustainable Development Goals (SDGs).

Healthy Water Circulation, Happy Korea

Integrated water resources management refers to managing water quantity, quality, ecology, and environment, which were previously managed individually, in an integrated and intelligent way by taking into account of all the factors affecting water management in a region.

To create a healthy water environment and a cooperative water culture in Korea, K-water preemptively established a masterplan for integrated water resources management in 2014 and contributed to its inclusion in national policies. It also has been committed to the settlement and spread of integrated water resources management system through the formation of governance to eliminate conflicts over water issues between regions and river basin areas.

Integrated water resources management performance indices

Integrated water resources management system

K-water’s sustainable integrated water resources management (IWRM)

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Integrated water resources management performance indices

Integrated water resources management system

K-water’s sustainable integrated water resources management (IWRM)
Region-based integrated water resources management

What is region-based integrated water resources management?
Managing water quantity, quality, ecology, and environment, which were previously managed individually, in an integrated and intelligent way by taking into account all factors affecting water management in a region.

Based on its 50 years of water management experience, K-water has actively supported the water management unification policy, suggesting ways to achieve national water management innovation and leading the creation of a consensus among stakeholders, and has established a foundation for the implementation of the water management unification.

K-water has also created a foundation for integrated water management tailored to each river by taking into account the unique characteristics of water sources, such as sudden changes in water quality.

K-water has also created a foundation for the implementation of water management unification, including:  
- Establishment of the Integrated Water Environment Information System (Hangang River Water System)  
- Decision making on water quality prediction and dam discharge adjustment  
- Preemptive information sharing with local governments before using recycled water  
- Increased discharge in the water systems with a high water quality level (Namhangang River)  
- Primary improvement of the water quality in the Hangang River  
- Secondary improvement of the water quality during the time of heavy rainfall in the Han River

Water Management

Unification, a Massive Shift in Korean Water Management

Preemptive water management with a precipitation forecasting system
To more actively cope with abnormal weather conditions due to climate change and to reflect the weather characteristics of dam and weir areas with complex geographical features, K-water has built its own supercomputer-based precipitation forecasting system (PPM) and uses it to apply advanced water management.

K-water’s Precipitation Prediction Model (K-PPM) has been constructed as a 3-km high resolution grid system to take account of the detailed geographical characteristics of dams and weir areas. It is collected hourly over a period of 5 days and is uploaded to the IWRM system 4 times a day, which is used for K-water’s preemptive water management to prevent water disasters.

What is region-based integrated water resources management?

Step 1
Water quantity and quality management integration

- Establishment of the Integrated Water Environment Information System (Hanging River water system)
- Decision making on water quality prediction and dam discharge adjustment
- Preemptive information sharing with local governments before using recycled water
- Increased discharge in the water system with a high water quality level (Namhangang River)
- Primary improvement of the water quality in the Hangang River
- Secondary improvement of the water quality during the time of heavy rainfall in the Han River
- Supply of high-quality tap water through linkage (production decrease at water purification plants with low water pollution load and increase at those with low load)

Step 2
Water intake and purification plant linkage

- Increased discharge in the water system with a high water quality level (Namhangang River)
- Primary improvement of the water quality in the Hangang River
- Secondary improvement of the water quality during the time of heavy rainfall in the Han River
- Supply of high-quality tap water through linkage (production decrease at water purification plants with low water pollution load and increase at those with low load)

Step 3
Water facility linkage

- Increased discharge in the water system with a high water quality level (Namhangang River)
- Primary improvement of the water quality in the Hangang River
- Secondary improvement of the water quality during the time of heavy rainfall in the Han River
- Supply of high-quality tap water through linkage (production decrease at water purification plants with low water pollution load and increase at those with low load)

Water Management

IWRM (Integrated Water Resources Management)

K-water supercomputer + KMA supercomputer

Preemptive water management with a precipitation forecasting system

Data production and operation system of the K-PPM system for dam and weir areas

1. K-water Metorological Administration (KMA)
2. Korea Meteorological Administration (KMA)
3. National Oceanic and Atmospheric Administration (NOAA)

Integrated water quantity and quality management models

- Improved water environment information use
- Distribution forecast display
- 3-hour-interval rainfall probability display
- Analysis of weather information in dam and weir areas
- Quantitative estimation of precipitation in dam area

Weather information system

Preemptive water management with a precipitation forecasting system

Quantitative estimation of precipitation in dam area

Flood analysis model (KOPIC & KMA input)

3-hour-interval rainfall probability display

Risk analysis model (KOPIC & KMA input)

Real-time dam and weir area monitoring (Han River region)

Water disaster management using a real-time monitoring system

In order to preemptively respond to water disasters, K-water collects the water level data of multi-purpose dams, water supply dams, multi-function weirs and flood control reservoirs from all over the country as well as precipitation data from its monitoring stations in 5-minute intervals. To improve the reliability of the collected water level and precipitation data, K-water operates a real-time hydrological data quality management system. In particular, since 2017, it has performed water management optimization for each river basin using its newly constructed region-based water management system, monitoring water management in real-time at regional IWRM Centers, and carrying out integrated water quantity and quality information analysis.
Protection of People through the Prevention of Water Disasters

Flood response through optimal dam-weir linkage and system construction

K-water has made its best efforts to prevent flood damages through the scientific linkage of dams and weirs based on its water management technology accumulated for over 50 years. Despite the record heavy rainfall in the Seoul capital area in 2017, it successfully prevented flood damage in the downstream dam areas and the Han River terrace through the optimized dam and weir linkage system.

- Flooding occurred in the downstream of Goesan Dam (Korea Hydro & Nuclear Power) due to water discharge of 2,000 m³/s.
- Flooding occurred in the Han River basin due to torrential rain from July to August.
- Flooding expanded in the downstream of Chungju Dam (K-water) (EL.118.6 m).
- Flooding occurred in the upstream of the Han River due to torrential rain from July to August.
- Flooding occurred in the downstream of Goesan Dam (EL.7.9 m).
- Flooding occurred in the downstream of Chungju Dam (EL.6.5 m).
- Flooding occurred in the downstream of Hoengseong Dam (EL.137.3 m).

During the last decade, 89% of damages due to typhoons and torrential rain occurred in small and medium river basins, which means that those areas are vulnerable to floods. Therefore, since 2010, K-water has been working on strengthening the flood response capabilities of the areas by establishing an integrated flood management system in cooperation with relevant water management institutions and municipalities.

Damage minimized by preemptive disaster management despite a 4-year drought

In 2017, Korea was faced with a water shortage crisis due to a prolonged drought that lasted for four years. K-water, in close cooperation with related organizations such as the Korea Hydro & Nuclear Power Corporation, Korea Rural Community Corporation and municipalities, supplied about 640 million cubic meters of water, which is an amount that can be used by 10 million people for 237 days, by efficiently linking water facilities or replacing a water source with another. It also helped to prevent the limited water supply, which could have adversely affected about 1.3 million people, by rapidly installing emergency waterways in collaboration with the central and local governments and operating them on a timely basis. In addition, with 42 local governments, it reduced water use in drought affected areas by 3.2% through the provision of drought forecasts and alarms and relevant information to the residents. K-water also supplied large amounts of emergency water that can be used by 100,000 people for 155 days to 93 municipalities suffering water shortages free of charge.

- Illustration of the installation of emergency facilities (15,000 m³/day) along the Geumho River in cooperation with municipalities and government departments.
- Illustration of the installation of emergency facilities (127,000 m³/day) along the Geumho River in cooperation with the Ministry of Economy and Finance.
- Illustration of the installation of emergency facilities (115,000 m³/day) including Boryeong Dam in cooperation with the Korea Rural Community Corporation and Boryeong County.
- Illustration of the installation of emergency facilities (15,000 m³/day) including the Jangseong Dam in cooperation with the Korea Rural Community Corporation and Jangseong County.
K-water is committed to creating a clean water environment that everyone can enjoy through its preemptive and active green algae management.

Efforts to respond to Harmful Algal blooms (HAB)

K-water is leading the joint response of related agencies to forecast the occurrence of green algae blooms and to block the factors that can affect it. By using water quality forecasting systems (SURANI), it predicts the occurrence of HABs on weekly and monthly basis and provides information to related organizations and residents, while taking countermeasures such as the installation of barriers to prevent livestock manure from flowing into the rivers during precipitation events. In addition, for more accurate forecasts, K-water has promoted the linkage of water quality data among competent authorities including the Ministry of Environment and advanced the forecasting system. K-water has also continuously developed green algae monitoring and reduction technologies. It has promoted the practical application of related technologies so that it can monitor green algae levels in a wide range of areas at a glance by utilizing drones. Since 2014, K-water has opened the areas with HABS to use as test beds to support the on-site tests of companies owning green algae reduction technologies. Until 2017, a total of 70 technologies have been tested, of which 31 have been verified and 3 have been introduced to HAB sites to reduce green algae levels. K-water has carried out water discharge to respond to HABs through the linkage of dams and weirs as part of its water environment management that considers both water quantity and quality for integrated water resources management. It has also set up a pilot model for the improvement of upstream water environments by comprehensively taking account of water quantity, quality, and ecology and disaster safety.

Establishment of a safety management system led by the CEO and supported by expert agencies

Among the 37 dams and 57 water facilities managed by K-water, 54 (34 dams and 20 large-area water purification plants) have been designated and managed as national infrastructures1), taking up 19% of the total (273 national infrastructures). In addition, K-water plays a major role in the national economy, managing and supervising public construction projects worth about KRW 1 trillion every year; thus, its safety management capability is more important than ever.

To meet citizens’ growing interest in safety and their expectations of its role, K-water created an internal department dedicated to safety management in 2015 and has made effort to the settlement and advancement of the safety management system. Particularly, it has built a management foundation that puts top priority on safety, declaring that safety management is one of the core activities set by the CEO since the introduction of the Safety and Health Management System Certification standards in 2000. In addition, K-water has continuously enhanced its safety capacity by diagnosing the safety levels of the headquarters and the local business sites and strengthening its technological capabilities through joint inspections with safety expert agencies such as the Korea Occupational Safety and Health Agency and the Korea Industrial Safety Association.

Creation of safe workplaces through the elimination of safety blind spots

K-water has launched the SAFE K-water project to help workers work without worrying about safety. To ensure the safety of citizens who visit K-water facilities, it has checked the safety of all facilities that are frequently used by the public (e.g. elevators and safety rails) and intensively examined the safety blind spots of industrial sites with relatively high safety accident rates in cooperation with the employees under the wage peak system who have rich experiences and know-hows, as a part of its efforts to create workplaces where the people are safely protected.

In addition to public relations using easy-to-access media contents such as videos on safety, K-water has provided various types of education suited to different groups of people, operating safety experience centers and developing professional training programs for workers, builders, and clients, to spread the construction culture that places emphasis on safety to the entire organization.

1) National Infrastructure: All facilities related to energy, transportation, drinking water, etc. that need to be continuously managed for the protection of materials and human resources and functional systems as the collapses of these functions may have a significant impact on the lives and properties of the people, national economy, and the maintenance of the governmental functions.
K-water, led by the CEO, focused its efforts on safety prevention activities for its facilities and construction sites, which led to a significant decrease in accidents occurring at its business sites in 2017 compared to the previous year. At its construction sites, the death rate per 10,000 workers was reduced by about 70% compared to the national average rate announced by the Ministry of Employment and Labor, and the accident rate was reduced by 50% or more against the previous year at its industrial sites where the facilities are managed. Based on these achievements, in 2017, K-water won the Prime Minister Citations at the Safety Culture Awards and the National Disaster Response & Safety Drill; and the Runner-up Prize at the Best Safety and Public Safety Experience Awards.

Risk Management

As the complexity and size of disasters grow, greater emphasis has been placed on K-water’s role of continuously providing safe and healthy water. K-water has introduced and implemented a corporate-wide risk management system led by the Disaster Safety Department of which every department participated, to efficiently respond to risks, gain competitiveness in the international market through the strengthening of crisis response capabilities, and to successfully fulfill its own management goals along with the government’s disaster management policies.

Enhancement of K-water’s status as a safety management expert

K-water has established an emergency response system and risk management process that works immediately under any circumstances, in order to secure the business continuity management (BCM) system and to maintain the essential function of stable water supply in the event of a disaster. K-water has standardized manuals for each type of disasters and each department and established an emergency water supply support system among water service providers (K-water and 91 local governments).

Risk management system

Risk management process

Risk management (in the event of an accident)

Crisis sign (Determination of the KRM system)

Risk management (Response activities)

Enterprise risk management

Management department

Serious Alert

Alert

Critical Alert

Immediate organization of the Emergency Response Team and Emergency Response Center

Emergency Response Team control tower: Director of the regional head office

Immediate organization of the Emergency Response Center

Conorsal of the Risk Management Committee

Competent department level crisis response

K-water, 100 years as the leading national water company

K-water’s efforts to enhance national welfare

A leader for people’s lives and safety

Appendix
In order to strengthen the disaster and safety management system to support national water welfare, K-water has developed eight strategic tasks following the three strategic directions of the settlement of prevention-oriented risk management, the improvement of crisis response efficiency, and the enhancement of crisis management capacity based on feedback, in order to construct a corporate-wide risk management system.

### Enterprise risk management strategies

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Goal</th>
<th>Directions</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Vision</td>
<td>Safe K-water, Happy Nation</td>
<td>- Settlement of a safety management system focusing on disaster prevention - Enhancement of response capabilities through the advancement of the crisis response system</td>
</tr>
<tr>
<td>- Risk management</td>
<td>- Enhancing response capability - Strengthening preventive management</td>
<td></td>
</tr>
</tbody>
</table>

### Risk management performances

**Preemptive prevention and response system using advanced technologies**

K-water is building a disaster response system that utilizes advanced technologies such as drones and AI in preparation for mitigating the effects of massive disasters.

- **Drones**
  - Real-time monitoring and facility inspections using drones in the event of dam and wastewater accidents
  - Removal of concerns over national safety by sharing videos on disasters such as droughts, floods, and water pollution

- **IoT**
  - Introduction of IoT helmets at construction sites to eliminate safety blind spots that threaten workers
  - Establishment of an IoT-based safety management platform (fingerprint recognition, gas leak detectors, etc.) and entrusted research implementation

- **AI**
  - Establishment of AI development strategies for preemptive water disaster management and response

**Cyber security enhancement**

K-water has established the K-water Security Management system to implement a safe water management framework and has driven to achieve cyber safety and security innovation to protect citizens’ lives and property. To this end, it increased the number of the staff for its internal security team, expanding it from the Security Management Department to the Information and Security Center, which led to a dramatic increase in the number of threat detection cases by the Cyber Security Center of the Ministry of Land, Infrastructure, and Transport (27 in 2016 to 2 in 2017). K-water has achieved the “Outstanding” rating in the information system vulnerability assessment for the second consecutive year and continuously fulfilled the goal of “zero cyberinfrastructure accident” by strengthening its foundation by establishing a security threat response system for the Fourth Industrial Revolution era.

In collaboration with the National Security Research Institute on new security technologies, K-water has committed to creating a “zero-risk” environment for the infrastructures through the construction of packet monitoring system, a media conversion system, etc. As a result, in the 2017 National Intelligence Service’s information security risk management assessment, it gained 87.12 points, which greatly increased against the previous year. K-water was also awarded the citations of the Minister of Science and ICT and the Minister of Land, Infrastructure, and Transport in recognition of its contribution to national information security enhancement.

**Major risk management performances in 2017**

K-water has actively responded to 281 Key Risk Indicators (KRIs) and discovered 253 vulnerable facilities to prevent potential risks in advance. In addition, the K-water Risk Management (KRM) system was used in 2017 for response activities such as the rapid communication in the event of a total of 300 accidents mainly composed of disasters. The rate of appropriate reporting within an hour after the occurrence of an accident reached 95 points and the response completion rate is 95 points, proving the effectiveness of K-water’s crisis response system.

**Recognized as Korea’s representative disaster response expert**

K-water has promoted safety from disasters as one of the CEO’s core management activities and is practicing safety-oriented management. K-water was recognized for its effort and was a recipient of three national awards in safety management, safety training and safety activities.

### Current condition

- Increased dependence on IT in national infrastructures
- Need for customized security strategies to respond to cyber threats

### Major tasks

- **Administrative domain**
  - Advancement of the security organization system
- **Technical domain**
  - Development of next-generation security technology
Water Sharing Services

Supply of clean and sufficient water

K-water intends to promote the healthy water paradigm nationwide based on the achievements of smart water management in Paju and to enhance the equality of water supply by providing clean and safe water to the areas with limited access to water through a more efficient operation of large-area and local waterworks.

- Development of a Smart Water Management (SWM) model as a fundamental measure to eliminate distrust in the water transfer process and the achievement of tap water awareness improvement through the completion of the leading project in Paju
- Improvement of tap water quality by introducing a global-level Water Safety Plan (WSP), operating a world-class water quality inspection institute, and conducting an advanced water treatment process
- Expansion of welfare benefits for rural areas through large-area waterworks and the reduction of water leakage in local waterworks, to narrow gaps in water services between rural and urban areas
- Improving demand forecasting and management, securing water supply stability by linking existing facilities (lids, reservoirs, etc.) and developing alternative water resources
- Enhancing the safety and efficiency of water supply by constructing brain-based supply systems and integrating large-area and local waterworks (plans, facilities, organizations, etc.)
- Enhancing the safety and efficiency of water supply by constructing brain-based supply systems and integrating large-area and local waterworks (plans, facilities, organizations, etc.)
- Enhancing tap water safety services through advanced treatment to improve tap water quality, SWM introduction, and indoor pipe management

K-water plans to promote public trust by introducing smart water management by stages starting from municipalities that entrusted water management to K-water and enhancing tap water quality and values. Furthermore, it has made efforts to expand water welfare to rural areas and raise the efficiency of local waterworks operation. In this regard, it has selected materials sustainable management topics in relation to water sharing services, which is one of its main strategic tasks. By systematically managing the activities related to these topics, it has contributed to the fulfillment of the UN’s Sustainable Development Goals (SDGs).

High-quality tap water service performances

<table>
<thead>
<tr>
<th>Customer’s safety and health</th>
<th>Compliance with environmental laws and regulations</th>
<th>Water</th>
<th>Discharge of wastewater and wastes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased demand of the stability of products and services (water quality) increase in diverse and advanced customer demands</td>
<td>Strengthened environmental regulations Compliance with environmental laws and regulations</td>
<td>Climate change and environmental (bio, water, soil), pollution prevention</td>
<td></td>
</tr>
</tbody>
</table>

Comparison of major developed countries’ tap-water quality assessment items (As of 2015)

<table>
<thead>
<tr>
<th>Global water quality standard compliance rate (%): number of times of being fulfilled/number of evaluations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
</tr>
<tr>
<td>Water works flow rate (%)</td>
</tr>
<tr>
<td>Local wastewater flow rate (%)</td>
</tr>
<tr>
<td>Local wastewater customer satisfaction points</td>
</tr>
</tbody>
</table>

High-quality tap water production by introducing global water quality standards

K-water has implemented a global water quality standard system since 2012 to ensure the global competitiveness of tap water. The global water quality standards are K-water’s own standards based on the strictest drinking water quality standards of WHO and five representative OECD countries including Korea. Analysis of tap water produced in major water treatment plants abroad (US and UK) revealed that nine substances including aluminum exceeded K-water’s global water quality standards and the average compliance rate was 85%, which is lower than that of the tap water produced by K-water.

K-water is working to improve the standard compliance rate by evaluating the operation performances of the water treatment plants that is managing large-area, local and entrusted and receiving feedback from the assessment every year. Optimizing its water treatment process and improving poor water treatment facilities, K-water achieved a standard compliance rate of 99.99 % in 2017, which means it is producing the best quality water in the world.

Global water quality standard compliance rate

World’s top-level water quality testing system

To systematically verify the accomplishment of the global water quality standards, K-water has constructed the world’s top-level water quality testing system and added more items other than legally required ones, including those about various harmful substances, to thoroughly examine water safety. Every year, K-water performs tests using 300 items including drinking water quality standards on raw water of water sources and tap water, and it plans to establish a system for analyzing up to 500 candidate substances to be managed in consideration of recent water quality issue and risks through the implementation of the K-WISH 500 system by 2020. With these efforts, it will continue to strive to improve tap water safety.

Preemptive management of unexpected water quality risks

K-water strives to preemptively manage unexpected contamination in the process of tap water supply (e.g. the case of pesticide found in a water supply reservoir in 2012). Implementing a regular WSP (Water Safety Plan)*, it has performed risk tests using 160 items on tap water of all the 37 purification plants that it manages and implemented risk tests using 160 items on tap water of all the 37 purification plants that it manages and achieved improvements for 127 kinds of risks. In addition, in 2017, K-water constructed the CWISH** system that can monitor the inflow of contaminants in the case of drastic changes in water quality during the supply process and tested it in Goyang Purification Plant. As a result of these efforts, the Water Safety Index (WSI), which was independently developed by K-water, improved from 0.884 in 2016 to 0.901 in 2017.

Preemptive management of unexpected water quality risks

K-water’s efforts to enhance national welfare

K-water’s efforts to enhance national welfare

K-water, 100 years as the leading national water company

K-water’s efforts to enhance national welfare

K-water, national focus on water with sustainability

K-water, 100 years as the leading national water company

K-water’s efforts to enhance national welfare

K-water’s future plan for sustainable management

K-water’s key activities for sustainable management

K-water’s key activities for sustainable management

K-water’s material sustainable management topics and contribution to SDGs

Appendix

K-water’s efforts to enhance national welfare

K-water, national focus on water with sustainability

K-water, 100 years as the leading national water company

K-water’s future plan for sustainable management

K-water’s key activities for sustainable management

K-water’s material sustainable management topics and contribution to SDGs

Appendix

K-water's efforts to enhance national welfare

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K-water’s key activities for sustainable management

K-water’s material sustainable management topics and contribution to SDGs

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K-water’s material sustainable management topics and contribution to SDGs

Appendix
Innovation of Water Management, Smart Water Management

Overview and current status of the Smart Water City projects

SWC (Smart Water City) is a city where a healthy water supply system is implemented, with ICT technologies applied to the entire water supply process from water sources to faucets, the scientific management of the quantity and quality of water, and the provision of tap water information to citizens so that they can trust it and drink without worries. It utilizes excellent technologies for water safety services, such as residual chlorine quantification, automatic drainage, real-time water quality measurement and quality information provision, pipeline cleaning, advanced pipeline inspection requiring no water supply discontinuation, smart metering, and a remote water leak monitoring system.

The Smart Water City pilot project, which was first carried out in some areas of Paju in 2014, gradually expanded to the entire city in 2016 as it drew increasingly positive reactions from citizens. This project greatly improved the local tap water quality and the city’s direct tap water drinking rate also increased from 1% to 36.3%. The citizens’ satisfaction with tap water also increased from 80.7% to 93.8%. Overall, the project has been evaluated as successful and these achievements have laid the foundation for the expansion of the Smart Water City projects to the entire country.

Songsan Green City and Busan Eco-Delta City, which are currently under construction, were designed as Smart Water City projects. These cities were specifically chosen due to the nature of smart water management technologies, local governments’ approval are required for the introduction of smart water management systems.

Challenge

- Due to the nature of entrusted businesses, local governments are responsible for the introduction of smart water management systems.

Expansion strategies

-・Target local governments that have already achieved the aimed mission (mission) extra expenses due to the nature of entrusted businesses - no extra expenses

Achievement

-・Target local governments that have already achieved the aimed mission (mission) extra expenses due to the nature of entrusted businesses - no extra expenses

Expected effects

-・Supplying healthy water to 50 million people
-・Improved tap water drinking rate and confidence in it
-・Foundation of public health and safety

K-water’s efforts to enhance national welfare

K-water, 100 years as the leading national water company

About 31% (58,000 km) of water pipelines in Korea are more than 20 years old and this has led to annual water losses totalling 690 million m³, which is an amount equivalent to national water supply amount for 48 days, and results in an annual loss of KRW 605.9 billion. To prevent such losses and to utilize water resources more efficiently, K-water has established a pipeline management system by carrying out local waterworks operation entrusted by 23 municipalities since 2004. It has also focused on the improvement of aging facilities. This led to an increase in the scientific operation rating of the waterworks from 68.4 points before the entrustment to 93.0 points today. The flow rate was also enhanced by 23.7%, from 60.6% to 84.3%. As a result, the current population supplied with water came to 2.38 million, an increase of 1.64 million in comparison with before the entrustment. Customer satisfaction was also improved up to 81.71 points, increasing by 11.42 points.
Enhancement of customer satisfaction

K-water achieved the highest customer satisfaction by identifying and improving service dissatisfaction factors and provide services that can impress customers. In addition, it has reinforced the implementation of the Tap Water Safety Check System that inspects the quality of tap water of each household, provides analysis results, and solves problems immediately after detection. The system, combined with the household water supply cleaning services, has contributed to the improvement of the water quality for 311 households. This led to the increase in customers’ satisfaction with tap water quality from 83.2 points in 2016 to 85.2 points in 2017.

K-water has participated in the national local waterworks modernization project and successfully contributed to the successful implementation of the project by improving the efficiency of the operation of 23 local waterworks and reducing water leakage in the western part of Chungcheongnam-do Province. The local water service modernization project intends to provide national subsidies to local governments to repair aging water facilities including water pipelines and water purification plants and enhance the operation of local waterworks businesses for 12 years from 2017 following the policy of the Ministry of the Environment. K-water has participated in 18 out of 46 related projects (total project costs: KRW 478.1 billion) until 2018.

Since the launching of the national project, K-water has carried out 1077 cases of water leak detection and projects (total project costs: KRW 478.1 billion) until 2018. For 12 years from 2017 following the policy of the Ministry of Environment, K-water has participated in 18 out of 46 relevant projects (total project costs: KRW 478.1 billion) until 2018. Since the launching of the national project, K-water has carried out 1077 cases of water leak detection and restoration by offering a comprehensive service that combines designing, emergency management, and leak detection. As a result of these efforts, K-water increased the flow rate of local waterworks from 57.8% to 62.8% in the first year of the project and contributed to stabling water supply to drought-prone areas in Seo County.

With the creation of a national industrial complex (1996), K-water established the Shwea Sewage Treatment Plant (phase 1) in 1988 and operation commenced in 1996. Currently, K-water is operating facilities with a total daily treatment capacity of 1.25 million m³ for 10 local government bodies. Based on private-funded BT (build-transfer-operate) businesses, K-water is operating water recycling facilities in Pohang City (100,000 m³/day), Asan New Town (270,000 m³/day) and Chilgok County (10,000 m³/day). It is also actively managing a new large-scale water management policy through the revitalization of reclaimed water supply to areas in need of industrial water.

According to the Statistics of Sewerage (2016) of the Ministry of Environment, 62 million m³ of 112 million m³ of water recycled in the nationwide sewage treatment plants every year is supplied as industrial water. About 75% (47 million m³) of the reclaimed water used for industrial purposes is supplied by K-water. In 2016, releasing its Smart Water Industry Development Strategy, the government announced that it would increase the sewage reuse rate to 34% by 2030 and secure about 2.45 billion m³ of reclaimed water every year. Therefore, K-water plans to supply reclaimed water when the demand for industrial water increases due to the expansion of the existing industrial complexes including Yeosu Industrial Complex and the construction of new large-scale waterworks. In addition, K-water has been conducting a survey on the national demand for reclaimed water in connection with the Basic Waterworks Management Plan (2018-2021) from October 2018. It will publish with forward the shift towards reclaimed water supply through the existing industrial water supply facilities (stems and waterworks) through the consultation on the use of K-water’s water pipeline network for these facilities.

K-water, 100 years as the leading national water company

K-water efforts to enhance national welfare

K-water Achievements report

Local waterworks modernization projects

Local waterworks satisfaction index

<table>
<thead>
<tr>
<th>Classification</th>
<th>Facility name</th>
<th>No. of facilities</th>
<th>Capacity required (㎥/day)</th>
<th>Entrenchment period</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local waterworks satisfaction index</td>
<td>Chungcheongnam-do</td>
<td>18</td>
<td>11,123</td>
<td>2018 (Jan. 2018 to Dec. 2018)</td>
<td>100%</td>
</tr>
<tr>
<td>Local waterworks satisfaction index</td>
<td>Sejong</td>
<td>1</td>
<td>9,400</td>
<td>2014 (Apr. 2014 to Feb. 2014)</td>
<td>100%</td>
</tr>
<tr>
<td>Private sector waterworks projects</td>
<td>Asan</td>
<td>3</td>
<td>46,000</td>
<td>2018 (Aug. 2016 to Aug. 2016)</td>
<td>100%</td>
</tr>
<tr>
<td>Private sector waterworks projects</td>
<td>Chilgok</td>
<td>3</td>
<td>47,000</td>
<td>2020 (May 2020 to Apr. 2020)</td>
<td>100%</td>
</tr>
<tr>
<td>Private sector waterworks projects</td>
<td>Busan</td>
<td>1</td>
<td>135,000</td>
<td>2018 (Oct. 2017 to Sep. 2021)</td>
<td>100%</td>
</tr>
<tr>
<td>Adverse projects</td>
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<td>2020 (Jul 2014 to Jul 2034)</td>
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<tr>
<td>Huang</td>
<td>3</td>
<td>573,483</td>
<td>2017 (Apr. 2017 to Mar. 2022)</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

Asan New Town Water Environment Center operation process

> Asian New Town Water Environment Center operation process

> Asian New Town Water Environment Center operation process
Water Convergence Services

Expansion of service converging water, energy and urban technologies

K-water is committed to meeting the public's needs for ecological and cultural values and the wise use of water and maintaining healthy and sustainable waterfront values. As demand for renewable energy has increased, it has also taken part in the global efforts to reduce greenhouse gas emissions and mitigate climate change. In addition, K-water has striven to fulfill its social responsibilities as a public enterprise by boosting local economies and promoting balanced growth through the fostering small and medium enterprises (SME) in the water industry by establishing an integrated platform.

Addressing local water problems to resolve water supply limitations

K-water has reduced 85% of civil complaints regarding water supply deficiencies and secured additional supply capacity, thereby completely resolving the water supply limitation problems (4 years) in Tongyeong City that had lasted for 50 years.

Direct supply of large-area waterworks to water-scarce areas suffering from water pollution

Korea has a national water supply rate of 96.4%, but only 72.7% of farming and fishing villages are supplied with waterworks services, which means many rural villages do not receive the benefits from the water supply services. To address these areas which are not equipped with waterworks facilities or use their own water sources such as groundwater and salty water, which can only provide a limited amount of water. Thus, the residents have difficulties in reaching stable water supply due to the drying of these water sources during droughts or water pollution incidents caused by unprofessional management. Therefore, K-water is developing a government-municipality collaborative model, moving away from the existing dualized water supply system of large-area and local waterworks. Since 2014, it has promoted and implemented a project to directly supply water to the areas that have no waterworks facilities and are suited to direct water supply through large-area waterworks rather than through local waterworks. Up to date, K-water has concluded and implemented agreements on direct water supply with 16 municipalities. Under the agreements, it plans to supply clean and safe tap water to a population of 11,000 who have had no access to waterworks. It has already supplied water through large-area waterworks to the residents of Mugungsarho Apartment in Sejong City, which were using contaminated groundwater with an excessive amount of limestone.

Improved water rights for island residents through groundwater retention and seawater desalination

K-water has improved the water rights of island residents by creating groundwater reserves and providing subsidies for the construction of high-cost seawater desalination facilities on islands that suffer from water shortages. It has supplied 77,000 tons of water every day to 477 residents and 23,000 tourists in Daejeo and Ainnado Islands using these groundwater reservoires and entitled with the operation of 39 seawater desalination facilities by 8 municipalities, to reduce the average water rates by 77%, from KRW 23,000 to KRW 7,000.

K-water has provided emergency water support to areas severely hit by droughts during the farming season. Also, through the temporary opening of drainage pipelines of large-area waterworks near agricultural waterways, it has supplied 194,000 tons of agricultural water to 9 cities and counties including Gyeonggi. To the remote areas not suited for accessing K-water facilities, it has sent water trucks (85 vehicles to 12 municipalities) and bottled water (1.35 million bottles to 78 municipalities) free of charge.

Water convergence services

K-water’s material sustainable management topics and contributions to the SDGs

K-water’s key activities for sustainable management

- Promoting ecosystem health recovery by restoring river ecology and creating new waterfront values
- Promoting projects to create eco-friendly cities taking account of ecology and water circulation
- Fostering development of water energy, floating photovoltaics and hydrogen by strengthening eco-efficiencies and civic participation and reforming related systems
- Fostering water-related technologies and the water industry to secure the competitiveness of SMEs and create jobs
- Strengthening the stability of overseas businesses through thorough risk management

Customer's safety and health

<table>
<thead>
<tr>
<th>2015</th>
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<tr>
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■ Compliances with social sector laws (persons) - Jehovah’s Witnesses, fair trade, technology development, anti-competitive practices

■ Increased importance of mutual growth with partnering companies

K-water’s key plans for sustainable management

- K-water’s main goals for 2016 (social) year

- Playing the role of a national distributed energy hub as Korea’s top new and renewable energy company (solar and wind hydropower generation, the world’s largest tidal power plant at Sihwa, floating photovoltaic power generation, etc.)
- Constructing global-level cutting-edge waterfront cities such as MTV and Songadan Green City and promoting the creation of waterfront space to prevent improper development near the Shinhwa Lake Promotion of zona development
- Opening K-water’s technological assets (infrastructures, technologies, etc.) to the private sector and fostering small and medium enterprises (SME) in the water industry by establishing an integrated platform
- Achieving visible performances from overseas investment projects (commercial power generation in Patim in November 2017) and leading international cooperation on water issues through AWC and IWMI
- Promotion of ecosystem health recovery by restoring river ecology and creating new waterfront values
- Promoting projects to create eco-friendly cities taking account of ecology and water circulation
- Fostering development of water energy, floating photovoltaics and hydrogen by strengthening eco-efficiencies and civic participation and reforming related systems
- Fostering water-related technologies and the water industry to secure the competitiveness of SMEs and create jobs
- Strengthening the stability of overseas businesses through thorough risk management

K-water’s efforts to enhance national water welfare, strengthen SMEs and venture business support system and reinforce the global competitiveness of the Korean water industry. Moreover, by systematically managing the activities related to these topics, it has contributed to the fulfillment of the UN’s Sustainable Development Goals (SDGs).
K-water’s new paradigm, clean energy

Clean energy as a next-generation new growth engine

New clean energy business model for local communities

K-water is concentrating its efforts on sustainable clean energy by participating in local development projects led by public interests. The Hapcheon Dam Floating Photovoltaic Power Generation project is expected to serve as a major catalyst for the revitalization of the local economy by allowing the residents to join the SPC invested by K-water as debt investors and earn stable profits. Also, the Yongdam Dam Floating Photovoltaic Power Generation project is a development project customized to the local area where the residents share the revenues from power generation with K-water by jointly investing in the project through their cooperative association. In this way, K-water is enhancing the social values of public corporations with a new business model that seeks coexistence with local communities, expanding sustainable eco-friendly energy businesses.

Floating photovoltaic power generation led by K-water

K-water began testing the possibility of floating photovoltaic power generation development by installing a 2.4-kW pilot model in 2009 on the surface of Jumun Dam reservoir, following the installation of a 100-kW demonstration model in 2011. K-water constructed a 500-kW facility at the dam in 2012, which enabled the world's first commercial floating photovoltaic power generation using the surface of a dam reservoir. Since then, K-water has been laying the foundation for the widespread use of the power generating method by promoting it thoroughly through environmental verification and the reduction of equipment production costs. In 2016, K-water constructed a 2-MW power generation facility at Boryeong Dam in 2016, followed by a 3-MW facility at Chungju Dam in 2017, for commercial power generation. Especially, through environmental monitoring which has been carried out since the completion of the floating photovoltaic facility at the Hapcheon Dam in 2013, K-water has continuously tracked its impact on water quality and ecology. In addition, K-water has taken the lead in disseminating and expanding clean energy projects that are harmless to the natural environment by using eco-friendly equipment compliant with the Korean tap water hygiene and safety standard (EC).

Floating photovoltaic power generation project

A Briefing session on the Yongdam Dam Floating Photovoltaic Power Generation Project

Floating photovoltaic power generation project

A launching ceremony of the Consultative Group for the Hapcheon Dam Floating Photovoltaic Power Generation Project

Hydrothermal energy diffusion

K-water endeavors to create new industries that utilize the added value of water-leading a shift in thinking about energy. As a pilot project based on the properties of water (4°C), it has introduced a cooling and heating system that uses hydrothermal energy to the Lotte World 2, which led to the reduction of annual energy costs by 28% and 348 tons of carbon emissions. Furthermore, K-water is focused on the development and dissemination of a standard model for urban distributed hydrothermal energy projects and the improvement of relevant systems by promoting legislative work to include hydrothermal energy in new and renewable energy sources.

Efforts to expand projects

K-water: the world’s first development of a standard urban distributed hydrothermal project model using geothermal resources

- Joint development of hydrothermal energy using deep water from Gwangyang River * Passing of MOU with Gwangyang-do Province and Gwangyang City (July 2017)
- Introduction of hydrothermal energy to buildings in Seoul ( Relevant ordinance to be announced)

Hydrothermal energy diffusion

- Introduction of hydrothermal energy system to the Samsung-dong Complex Tower Center and the Samsung-dong Hyundai Motor Company building in Seoul
- Reduction of CO2 emissions (39,300 tons), mitigation of heat island phenomenon
- Development of hydrothermal cooling in Gwangyang-do Province
- Development of a new temperature control method that is the Lotus model base
- Designated as an energy subject to radiation use regulations adapted to newly built buildings

Achievements

- Creation of 1,751 private jobs in the hydrothermal energy sector (By 2022)
- Demonstration of urban hydrothermal energy supply standard models including Busan EDC (Exo Delta City)
- Laying the foundation for a down to up system and the enhancement of new project development competencies through the expansion of existing projects
Space for citizens to live to the fullest, eco-friendly waterfront cities

Creation of waterfront space to improve the national quality of life and public values

Recently, there has been a growing demand for the utilization of waterside space linked with the quality of life due to de-urbanization, the advancement of industrial structures, and the improvement of income levels. In addition, there is a growing need for sustainable city development projects as a means of enhancing urban vitality and identity. Therefore, K-water, moving away from complex development projects focusing on the supply of industrial and residential space, pursues the improvement of the national quality of life and public values using water, based on its experiences in all fields related to water circulation including future-oriented culture, amenity, safety from disasters, projects focusing on the supply of industrial and residential space, and low-impact development (LID) along with the application of Fourth Industrial Revolution technologies.

Creating global innovative growth cities where nature, people, and technology meet and accelerates the arrival of the future

Particularly, Busan Eco-Delta City (EDC) is being developed as a national pilot smart city differentiated by K-water's water management and innovative technology. K-water has selected 3 specialization strategies and 7 core contents aiming at making "global innovative growth cities where nature, people, and technology meet and the arrival of the future is accelerated," solving the existing problems of the city, and transforming it into a new futuristic city.
As a public water company, K-water has established an SME (small and medium enterprises) and venture company fostering system through its Water Industry Platform Center to create a virtuous cycle ecosystem in the domestic water industry and enhance its global competitiveness.

In particular, the Center is focusing the entire organization’s competencies on supporting the growth and development of water-related companies based on its accumulated experiences of fostering the water industry in line with the recent water management unification. The Center has strengthened the existing SME technology development support system and is providing support at each stage of the company growth process from founding to export. In addition, K-water has shared its knowledge, technologies, and infrastructures with its partner companies and compiled its own water industry upbringing program that reflects the needs of these companies.

Asmara, 100 years as the leading national water company

K-water’s efforts to enhance national welfare

Creating an ecosystem for innovative entrepreneurship

In January 2018, K-water Startup Hub, a startup support space, was opened in the K-water Convergence Institute located in Daedeok Innopolis in Daejeon to promote the active start-up and growth of new businesses in the water industry. Also, K-water has regularly held the Water Industry Startup Forum and provided a scale-up program under cooperative agreements with 40 companies. It has offered the companies with space for starting their businesses, mentoring from K-water engineers, and provided support for overseas expansion.

K-water’s 2018 Partner and Startups Challenge

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<th>Global Track</th>
</tr>
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<tbody>
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<td>40</td>
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K-water’s Support for Partner and Startups Challenge 2018

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<th>No. of Companies</th>
<th>Global Track</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

K-water’s efforts to enhance national welfare

Startups need to attract investment for growth. However, it is difficult for investors to understand water industry technologies and predict their growth potential, which is why private investment in the water industry has not been very active. To solve this problem, K-water plans to take the lead and invest in water industry startups by creating a venture business investment fund, laying the foundation for the innovation and growth of startups. Starting from 2018, it will discover and foster 100 promising startups by 2021 to create an ecosystem for the water industry and innovative entrepreneurship and contribute to the creation of high-tech jobs.

K-water’s in-house venture operation status

K-water launched the first phase of (group of) K-water venture teams to create a growth engine for the water industry and pursue an innovative culture. The first group of K-water venture teams includes Sejong Precipitation (mixed precipitation measurement system), Water Tech (water management using the sensor and IoT), Water-Friend (ultrasonic and plasma tumbler washer), Water-Eyes (water management using the sensor and IoT), and Surgetech (lightning protection system diagnostic equipment). Each team consists of two or three employees, and the technologies they have developed are based on the ideas they got while conducting water management tasks in K-water. These teams receive subsidies for starting up their businesses from K-water and the Ministry of SMEs and Startups and that total KRW 230 million (KRW 100 million from K-water and the Ministry of SMEs and Startups). They are also allowed to focus on preparation for the establishment of their businesses and are provided with a separate space.

Promotion of mutual growth with SMEs

K-water has expanded and strengthened its support program for mutual growth with SMEs in the water industry to meet their needs and has supported them in technology development and market expansion for their products, contributing to raising the national competitiveness. With various support systems including the conditional purchasing system (domestic customers, private and public joint investment) and performance sharing system, K-water will encourage SMEs to develop new advanced technologies. Also, it has implemented a technology prediction system to prevent the participating companies from experiencing trials and errors in the development process and help them complete their development goals in a short time. The SMEs that benefited from the systems achieved sales of KRW 58.6 billion in 2017, and the total sales since 2015 amount to KRW 148.1 billion.
A happier Korea made

K-water 2018 Sustainability Report

A total of 111 dams and water business sites operated and managed by K-water have been provided to Korean water companies as test-beds for the demonstration and verification of the technologies that they have developed to enhance their technological competitiveness and self-sufficiency in the global water market, which is expected to continue to grow. Since the launch of the first test-bed project contest in 2018, 49 tasks have been launched in all areas of the water industry, including water treatment, pipe networking, and energy as of November 2018. In addition, K-water has issued certificates for the technologies that had been utilized by K-water for a certain period of time (2 to 5 years) and have been proven to have excellent performance as a means of supporting SMEs in market pioneering.

Overseas market advancement with SMEs
K-water has participated in overseas water industry exhibitions together with its partner SMEs and venture companies under the theme of “smart water management technology” and supported the companies in opening up markets by arranging meetings with major local buyers. This led to the creation of 106 new jobs and export performances of KRW 10.5 billion by the partnering companies in 2018.

Furthermore, as part of its efforts to develop marketing strategies differentiated from those of other countries and businesses that can meet the needs of developing countries, K-water has made “Smart Water Management” a brand, connecting its experiences with the technology of SMEs. In addition, through the establishment of partnership relationships with the water agencies of various countries, it has promoted the localization test projects for the demonstration and verification of SME technologies in the countries, contributing to the increase in the sales of SMEs and venture companies and creation of jobs by laying the foundation for the expansion of the basis for the projects.

Achievement of sales of KRW 5.6 billion of SME technologies and products in 2017 (increased by KRW 7.2 billion from 2016)

Fostering of water industry technologies

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Strengthening of the foundation for substantial and responsible management through the stabilization of overseas businesses

K-water has completed 76 projects in 30 countries, starting with the Fen River basin survey in 1994 in China. It is currently conducting 11 projects in nine countries including Pakistan, the Philippines, and Georgia, including four in the water and waterworks sectors. To cope with rapidly changing environmental conditions, K-water has established the “Overas8 Business 2027 Practice Roadmap” and pursues businesses that harmonize substance and growth. In addition, it has strengthened responsible management changing the organizational structure into a large team system for the flexible operation of the organization and human resources and introduction of a project-level performance evaluation system.

- Strengthening substantiality (establishment of risk management guidelines for each business sector)
- Business diversification (Practice of responsible management)

New overseas business strategies (2018-2027)

- Enhancing operability by selectively pulling through new projects taking account of K-water’s financial conditions and competencies
- Complimenting diversified projects (China, Vietnam, etc.)
- Increasing dividends from the existing businesses in newly developed projects
- Complementing and strengthening of the key existing functional strategies
- Enhancing project previsions and overseas SPC cost management, setting work standards for each project, etc.
- Linking global network activities and overseas businesses

Overseas business performance

The Patndir Hydropower Plant (150MW) construction, operation, and management project is K-water’s first overseas investment. The hydropower plant commenced commercial power generation in November 2017 after six years of construction. Based on its technologies accumulated for over 50 years, K-water reduced the construction period by preventing a flood and inflow in an environment-friendly way with the use of a water blocking dam and providing technical support for the installation of power lines. With the project, K-water has secured revenues of KRW 600 billion for over 30 years and strengthened its ability to win orders from overseas countries as it has acquired experiences of the entire process of overseas hydroelectric power generation from project development to construction and operation (O&M).

In addition, K-water acquired overseas technical assistance in power generation for the hydropower generation project at the Angal Dam in the Philippines (since November 2014) through M & A, by overcoming low electricity prices and limitations on water usage. This led to the increase in the revenues from the project by 55% from KRW 48 billion in 2017 to KRW 71 billion in 2018. Furthermore, carrying out the Narikaki Hydropower Plant construction and operation project in Georgia, K-water has made efforts to efficiently respond to environmental and social issues as well as the concerns of local residents over the impact of the dam construction, the negative opinions of local NGOs, and the increasing expectations of the local development. As a result, it has acquired major shareholders’ approval of an investment of KRW 530 billion, which accounts for 70% of the total targeted loans, securing the sustainability of the project.

Fulfillment of its social responsibility by expanding overseas technical assistance

Pursuing technical innovation based on smart water management technology in cooperation with SMEs, K-water has expanded its overseas technical assistance (T/A) business by actively applying new technologies and diversifying its overseas technical assistance activities.

- Development of an IoT-based water pipeline management technology
- Application to the Champion Industrial Complex (Verified effectiveness in water outage prevention and operation cost reduction; KRW 200 million/year)
- Technology export to 6 South Asian countries (4 in 2018; 2 countries in 2016; $1.8 million ~ $1.5 million)
- Joint development of small-scale vertical/distributed type systems that can be used for local water sources such as groundwater with SMEs
- Signing of an agreement on the establishment of water purification plants in Cambodia and Indonesia with SMEs (August 2017)

K-water’s efforts to enhance national welfare

K-water, 100 years as the leading national water company

Appendix

K-water’s efforts to enhance national welfare

K-water’s 100 years as the leading national water company

Appendix

K-water

Appendix

K-water’s efforts to enhance national welfare

K-water, 100 years as the leading national water company

Appendix
Making a Happier Korea with Water

Jobs for All, Jobs with Values  60
Mutual Growth with the People  62
K-water’s Environmental Management for a Healthier Country  66
Management System to Create Social Values  69
The Korean government has spurred its efforts to create jobs as the most important national task, and K-water, the only public water management corporation in Korea, has concentrated the competencies of the entire organization on creating good jobs and putting social values into action in accordance with the government’s policies. Under the leadership of the CEO, K-water became the first among the 1st group public corporations to set up Good Job Creation Strategies and form the Job Creation TF (May 2017), which was later made permanent as the Job Creation Bureau (July 2017). It aims to create 62,000 public and private jobs over five years from 2018 to 2022 based on the Job Creation Roadmap (September 2017). In 2017, 6,886 jobs were created and in 2018, it is working on the creation of 9,091 jobs, which is increased by 32% from the previous year. K-water created the largest number of jobs for young people (384 people) by implementing a preliminary employee system and increasing nonscheduled recruitments to minimize the gap between the fixed and current numbers of employees (2.6 → 2.3%, the lowest among the public corporations), expanding the employment of the socially underprivileged such as women and local talents (249 → 277 people; 11%↑), and operating a job sharing system (time selective job system, etc.).

**Jobs for All, Jobs with Values**

*"Public corporations are required to fulfill greater responsibility and create higher values, and the biggest emphasis is on creating new jobs."

- CEO’s Message (May 2017) -

K-water is also striving to create jobs for socially vulnerable groups and small and medium-sized businesses, by increasing the number of jobs related to national tap water services (employment of 104 water coordinators, water doctors, etc.). After the release of the government’s guidelines on communication between labor and management (July, 2017), K-water took the initiative among 1st group public enterprises in changing non-regular jobs to regular ones without conflicts between the labor and management, by quickly establishing an organization to push forward the change of non-regular jobs to regular ones.

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**Modular type flexible working system**

K-water operates a modular type flexible working system that enables employees to autonomously design their working hours and days. Deviating from standardized 29 flexible working types, they are free to choose their working hours and days. Optimized for the individual needs and duties of each employee, this system is utilized by 42% of all the employees, which is the highest rate among group public corporations.
A happier Korea made with water

Appendix
K-water's efforts to enhance national welfare

Mutual Growth with the People

Supporting projects for dam area residents for 29 consecutive years
Since 1990, K-water has carried out support projects to raise the income of dam area residents and promote welfare in areas that have been geographically isolated due to dam construction. These projects are divided into local support projects, resident support projects, and others. Contributing to the increase in incomes from farming, forestry, fisheries and cattle farming, improvement of living conditions, education and local PR, K-water endeavors to enhance the quality of life of the residents.

Local communities Cooperation for mutual prosperity

Local support projects to raise residents’ income and enhance their self-reliance
Citizens residing in dam areas are exposed to poor economic conditions where it is hard for them to gain financial self-reliance (only 25% of the national average) and the local economy has remained stagnant for long periods of time. Thus, K-water has developed and promoted projects for entire local communities together with the local social economic organizations such as residents’ associations and village businesses. By supporting local small farmers to open new sales channels by holding farmers’ markets at dam spaces such as squares, K-water has helped them to generate more income.

Various projects for the local youth
K-water has systematically operated various educational programs such as English education with native English teachers as well as arts and physical education for the youth living in dam areas whom are provided less educational opportunities than those residing in urban areas. K-water has also made efforts to expand support for the children of multicultural families as well.

K-water is striving to make a happier society by creating social values based on its water management expertise and its Sharing Love with Neighbors program.

Efforts to create K-water’s own specialized activities to enhance social values
K-water is committed to enhancing social values and improving the quality of people’s lives through its own specialized social contribution activities to solve social issues linked to water.

Proving happiness through K-water’s Social Contributions

Various projects for the enhancement of local welfare
Taking into consideration the characteristics of dam areas where there is a relatively large elderly population, K-water has continued to carry out welfare projects for senior citizens, operating welfare centers for the elderly and assigning helpers through which K-water has promoted the positive awareness of dams among the locals.

K-water is striving to make a happier society by creating social values based on its water management expertise and its Sharing Love with Neighbors program.

Efforts to create K-water’s own specialized activities to enhance social values
K-water is committed to enhancing social values and improving the quality of people’s lives through its own specialized social contribution activities to solve social issues linked to water.
K-water, 100 years as the leading national water company

K-water’s efforts to enhance national welfare

A happier Korea made with water

Water for Happy Life Project

Han River Mulnareumi

K-water has conducted a variety of social contribution activities tailored to the conditions of its business areas. Led by the 120 volunteer clubs nationwide, various projects such as elderly welfare center operation, crisis monitoring services for senior citizens living alone, creation of eco-friendly agricultural complexes and market pioneering assistance to enhance local development, and water rate support for the vulnerable (water voucher system). K-water has also provided medical services and home nursing services to the areas with poor medical conditions in cooperation with professional medical institutions, operated child welfare centers, and contributed to the creation of sustainable income and jobs for local residents by constructing solar power plants.

K-water has supported various activities for the youth, who are the hope of the future, so that they can grow to be healthy and happy. K-water also helps the teens in vulnerable areas to design their future and fulfill their dreams through the Happy Water Hope Mentoring program with K-water employees and local college students. Also, through the Water Dream Camp, which is a science education program related to water, K-water employees have donated their talents to provide the local youth with creative and interesting educational experiences. Lastly, K-water has also supported various educational services by operating differentiated education programs for schools in dam areas to narrow the educational gap between rural and urban areas and offering educational equipment.

Support for the underprivileged

Various activities such as providing food to elderly people living alone, the disabled, child breadwinners, etc.

Contribution to the local community

Technical services in rural areas, drinking water quality inspection, support for residents’ events, etc.

Disaster relief activities

Support for damage restoration in domestic and overseas areas hit by disasters such as floods and droughts, provision of relief supplies, etc.

Environmental conservation

Environmental conservation activities including environmental campaigns and river and stream purification projects

Since 2013 K-water has carried out the “Water for Happy Life Project” to support the improvement of indoor aging water facilities and living spaces where water is used such as kitchens and bathrooms for the socially vulnerable people who lack access to clean water, which is essential for a healthy and happy life. K-water has also improved water supply facilities by installing membrane filtration facilities at elementary and middle schools in the areas that have no waterworks. In addition to this, it has carried out projects specialized in its business area, water management, such as providing emergency water in disaster affected areas. K-water’s social contributions have been made in overseas countries as well. It has supported the development of drinking water sources and the construction of public facilities in water shortage areas of developing countries. With these activities, K-water helps local communities achieve self-reliance and sustainable development.

K-water’s Water and Love Sharing Group was awarded a citation from the Minister of the Interior and Safety at the 2017 Korea Volunteer Work Awards in recognition of its contribution to the promotion of volunteer work in the local community. Over the years, they have constructed water points and provided clean water for children, conducted health care programs, and contributed to the education of the next generation. In cooperation with professional medical institutions, operated child welfare centers, and contributed to the creation of sustainable income and jobs for local residents by constructing solar power plants. K-water has supported various activities for the youth, who are the hope of the future, so that they can grow to be healthy and happy. K-water also helps the teens in vulnerable areas to design their future and fulfill their dreams through the Happy Water Hope Mentoring program with K-water employees and local college students. Also, through the Water Dream Camp, which is a science education program related to water, K-water employees have donated their talents to provide the local youth with creative and interesting educational experiences. Lastly, K-water has also supported various educational services by operating differentiated education programs for schools in dam areas to narrow the educational gap between rural and urban areas and offering educational equipment.
K-water's Environmental Management System for a Healthier Country

Environment-friendly management system

The effects of climate change, such as massive floods and droughts, are spreading throughout the world, and water management has become a key factor in the preparation for the future as it accounts for 90% of responses to climate change. K-water conducts its management activities in consideration of not only the environmental impacts caused by climate change but also the influences it has on the entire supply chain and the environment. As Korea’s sole public water management corporation, it has driven to implement environmental management throughout the entire business process. K-water is encouraging all employees to adopt an environmentally friendly lifestyle. It is also actively participating in the reduction of disposable products used in public organizations, promoting the use of multiple-use products and paperless conferences to create a workplace where a green lifestyle is put into action and a better environment will be handed down to generations to come.

Overview of K-water’s environmental management

Practice system

- Acquisition of international standardization certification (ISO) for Quality Environmental and Green Management
- Change to ISO9001/ISO14001 certification in July 2018 [ISO9001 (Quality Management)/ ISO14001 (Environmental Management)/K37001 (Green Management)]
- Every year, improvements are made in every department based on the assessment by internal and external experts on the performance in quality, environmental, and safety management (customer service quality, environmental and safety management, etc.)

Support base

- Training in ISO quality and environmental management certification auditing has been provided to selected internal employees since 2007.
- A total of 169 ISO quality and environmental management certification auditors have been provided to selected internal employees since 2007.

- Comprehensive and quantitative measurement of the performance in environmental management across all management sectors.
- The evaluation has been conducted since 2007 and K-water has constructed Korea’s first computerized environmental performance evaluation system and acquired a patent for the system.
- The Environmental Management System Evaluation (EPIS) for 2017 was 150 which indicates that the environmental performance has enhanced by 50% from the base year (2006).

- The internal experts have provided a practical understanding of quality and environmental management in accordance with international standards in every K-water business site.

Strategies for implementing environmental management

- Response to climate change
- Reducing greenhouse gas emissions through clean energy production
- Water Safety services

- Opening the Future and Providing Happiness by Sharing Water
- Strengthening environmental management at all stages of the enterprise supply chain
- Taking account of environmental impacts not only at the construction and production stages, but also at the stages of raw material supply as well as the use and disposal of products and services

- Local environment conservation and value creation
- Providing eco-cultural spaces to local residents through environment improvement in business areas and creation of new business demands
- Water Safety services

Business development and planning

- Environmentally friendly construction
- Construction waste reduction and recycling
- Environmental education for partnering companies
- Minimization of energy, resource, and labor input through facility and process improvements
- Minimization, recycling, and disposal of residual solidification (sludge) from water and sewage treatment
- Discharging water and wastewater after purification/wastage treatment in accordance with standards higher than legally required
- Healthy tap water for the human body
- Lightweight packaging materials
- Rate discount for consumers of reclaimed water to promote the use of water (see Graph 3)
- Collection and disposal of waste that flows into dams, reservoirs and rivers during precipitation events
- Reduction of daily waste by practicing an eco-friendly lifestyle

Disposal and reuse

- Expanded the use of tap water to prevent contamination of groundwater
- Reduced social costs for waste disposal
- Local environment conservation

Environmental performance

- Promoting resource recycling/product production (see Graph 1)
- Encouraging suppliers to practice environment-friendly management
- Improving the environment of water sources

- Reduced energy and resource costs (see Graph 2)
- Reduced greenhouse gas emissions (see Graph 3)
- Reduced sludge, construction waste, and other processing costs
- Prevention and improvement of the local environment including water discharge areas (see Graph 6)

- Green purchase performance in 2017
- Energy use and reduction in 2017
- Greenhouse gas emissions in 2017

- Water purification sludge, sewage sludge, and construction waste
- Total amounts and recycling rates of water purification sludge, sewage sludge, and construction waste
Response to climate change

K-water, designated as a business subject to the national greenhouse gas emissions trading system, has made efforts to reduce greenhouse gas emissions and complied with the government’s emission limitations. In 2017, K-water’s greenhouse gas emissions amounted to 720,687 tCO₂-eq, abiding by the Ministry of Environment’s greenhouse gas emission regulations for the sixth consecutive year. Most of the greenhouse gases were indirectly emitted, mainly caused by the use of electricity to supply tap water. In May 2005, K-water launched its Clean Development Mechanism (CDM) Projects, registering 12 projects to the United Nations Framework Convention on Climate Change (UNFCCC) and securing a total of 530,000 tons of potential greenhouse gas reduction per year.

Greenhouse gas emission amount (tCO₂-eq)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total emission amount (tCO₂-eq)</th>
<th>Direct emission amount</th>
<th>Indirect emission amount</th>
<th>Total emission amount (tCO₂-eq)</th>
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</thead>
<tbody>
<tr>
<td>2015</td>
<td>624,860</td>
<td>227,70</td>
<td>397,160</td>
<td>624,860</td>
</tr>
<tr>
<td>2016</td>
<td>647,652</td>
<td>227,70</td>
<td>419,952</td>
<td>647,652</td>
</tr>
<tr>
<td>2017</td>
<td>651,687</td>
<td>227,70</td>
<td>424,987</td>
<td>651,687</td>
</tr>
</tbody>
</table>

Current status of CDM Projects

<table>
<thead>
<tr>
<th>Classification</th>
<th>Target</th>
<th>UNFCCC registration date</th>
<th>Annual energy production (MWh/y)</th>
<th>Expected emission reduction (tCO₂-eq)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Plants 1</td>
<td>Buhang</td>
<td>Nov 2009</td>
<td>6,160</td>
<td>315,224</td>
</tr>
<tr>
<td>Power Plants 2</td>
<td>Buhang</td>
<td>Nov 2009</td>
<td>4,963</td>
<td>2,759</td>
</tr>
<tr>
<td>Power Plants 3</td>
<td>Buhang</td>
<td>Apr 2012</td>
<td>4,603</td>
<td>1,160</td>
</tr>
<tr>
<td>Power Plants 4</td>
<td>Buhang</td>
<td>Aug 2012</td>
<td>-</td>
<td>7,644</td>
</tr>
<tr>
<td>Power Plants 5</td>
<td>Buhang</td>
<td>Sep 2012</td>
<td>58,170</td>
<td>38,654</td>
</tr>
<tr>
<td>Power Plants 6</td>
<td>Buhang</td>
<td>Sep 2012</td>
<td>79,597</td>
<td>52,892</td>
</tr>
<tr>
<td>Power Plants 7</td>
<td>Buhang</td>
<td>Sep 2012</td>
<td>57,541</td>
<td>38,237</td>
</tr>
<tr>
<td>Power Plants 8</td>
<td>Buhang</td>
<td>Sep 2012</td>
<td>57,541</td>
<td>38,237</td>
</tr>
<tr>
<td>Power Plants 9</td>
<td>Buhang</td>
<td>Sep 2012</td>
<td>57,541</td>
<td>38,237</td>
</tr>
</tbody>
</table>

Management system to create social values

Strengthening of ethical management and transparency

In order to promote integrity and ethics in its organization, K-water has strengthened both internal and external frameworks, supplementing the internal promotion system and consolidating the inter-agency cooperation network. In particular, K-water has restructured the Integrity and Ethics Committee, which is the highest decision-making body on integrity and ethics issues, and by expanding the operation of the Citizen Integrity Auditor System in which citizens participate in audits, K-water has paid close attention to the public’s opinions to supplement its weaknesses. In addition, K-water has encouraged voluntary integrity promotion activities in each regional division by appointing integrity and ethics management personnel for each department and holding regional integrity fairs. Also, with the appointment of auditors who perform audits and consulting for each regional division, it has strengthened the internal checking system. Lastly, in order to actively respond to social issues that citizens take interest in and put social values into action by increasing the participation of the people, environmental experts have also been invited as citizen integrity auditors. With these changes, K-water has further enhanced the Citizen Integrity Auditor System, obliging to a one to one audit system, regulating system implementation council meetings, and holding joint meetings with partnering agencies.

K-water strives to spread the culture of integrity and ethics in the private sector in order to realize a transparent and clean society reminiscent of water.

Improvement of the integrity and ethics promotion system

In order to promote integrity and ethics in its organization, K-water has strengthened both internal and external frameworks, supplementing the internal promotion system and consolidating the inter-agency cooperation network. In particular, K-water has restructured the Integrity and Ethics Committee, which is the highest decision-making body on integrity and ethics issues, and by expanding the operation of the Citizen Integrity Auditor System in which citizens participate in audits, K-water has paid close attention to the public’s opinions to supplement its weaknesses. In addition, K-water has encouraged voluntary integrity promotion activities in each regional division by appointing integrity and ethics management personnel for each department and holding regional integrity fairs. Also, with the appointment of auditors who perform audits and consulting for each regional division, it has strengthened the internal checking system. Lastly, in order to actively respond to social issues that citizens take interest in and put social values into action by increasing the participation of the people, environmental experts have also been invited as citizen integrity auditors. With these changes, K-water has further enhanced the Citizen Integrity Auditor System, obliging to a one to one audit system, regulating system implementation council meetings, and holding joint meetings with partnering agencies.
Various efforts to spread the culture of integrity and ethics
K-water requires executives to take a pledge of integrity and conducts integrity assessments for employees in high-ranking positions (general manager or higher) to encourage them to take the initiative to practice integrity, while operating Clean Master communication training by touring each and every business site and inviting all employees to take the same pledge, all in the quest to create an organizational culture of integrity. Also, K-water provides outstanding employees with the opportunity to participate in International Anti-Corruption Academy (IACA) training, fostering global integrity experts. In this way, K-water has created a virtuous cycle for spreading the culture of integrity and ethics.

* Clean Master: K-water’s internal integrity and communication skills training specialists (8 people in 2017 → 24 in 2018)

Spreading the culture of integrity and ethics to the general public
K-water is willing to listen to the opinions of customers at all times, holding meetings with customers and operating an online communications channel. It is taking the lead in creating a society of integrity by requesting customers to take a pledge of integrity when signing a contract with them. In addition, K-water produces contents that can be easily accessed by customers, such as leaflets, slogans, and UCCs, to promote its whistleblowing and anti-corruption reporting system. K-water operates a variety of reporting channels both on-line and off-line to create a clean organization without corruption.

Clean Master communication training touring all business sites | Completion of International Anti-Corruption Academy (IACA) training

Integrity slogan | Integrity UCC

K-water whistleblowing system
K-water’s efforts to enhance national welfare
K-water has made its best efforts to establish a corporate culture based on respect for human rights, set up a roadmap for promoting human rights centered management to protect the human rights of internal and external stakeholders, and take the lead in implementing human rights centered management.

K-water’s roadmap for human rights centered management

Systematization of human rights centered management
K-water has constructed a system for the actualization of human rights centered management, establishing basic guidelines for human rights centered management and organizing a committee where outside experts participate to promote and protect the human rights of stakeholders including executives and employees. K-water has also sought to identify and analyze actual and potential risks to human rights centered management and reflected the results in its efforts for improvement, to achieve sustainable human rights centered management.

K-water human rights centered management implementation system

Internalization and spread of human rights centered management
K-water has declared its commitment to promoting human rights centered management by enacting its human rights centered management charter and requiring all employees to take a pledge to abide by it. It has also provided regular training to all employees on human rights and contributed to the internalization and spread of a human rights culture. K-water has also actively participated in the Human Rights Forum of the National Human Rights Commission, taking part in building an inter-agency collaborative network and benchmarking other organizations.

Pledge of integrity by all employees and the organization of a human rights centered management committee
K-water, where people work in harmony and are happy together

K-water recognizes that its members’ creativity, flexibility, and satisfaction with their organization, which are attained through the balance of work and life, are the driving forces behind its sustainable growth. Therefore, K-water has striven to achieve an effective work & life balance by introducing a system that constantly identifies ineffective business practices and improves them while ensuring the autonomy of employees through the implementation of a flexible work system. In addition, since 2016, K-water has created and promoted an organizational culture innovation model (5 Smart), carrying out its systematic innovation activities based on them.

In particular, in 2018, K-water made efforts to create a “K-water where people work together in harmony and are happy together” through effective task sharing and the flexible work system. K-water has been selected as one of the best Asian companies to work for the second consecutive year and has topped the list of the 100 best Korean companies to work for (as of November, 2018).

K-water’s sustainable management is about people. With this belief, K-water strives to secure, cultivate and maintain excellent human resources whom are the key to sustainable growth.
K-water has established and operated a fair and reasonable performance evaluation and reward system that takes into consideration the performance of the headquarters, each department and teams so that executives, employees and departments can continuously demonstrate their full potential.

Construction of fair and reasonable evaluation system
K-water has established an optimized evaluation system for all employees of its domestic and overseas business sites in accordance with the characteristics of each internal departments. Based on the principle of priority on performance, it has strengthened the discrimination of evaluation and introduced an organization-specific evaluation system for indiscriminative rewards based on performance. In addition, K-BEST, K-water’s own system, has been established to minimize the complexity and difficulty of evaluations so that general members can easily access evaluation systems and information. The system has been continuously improved to reflect the changes in the business environment.

Organizational development through the organic linkage of organizational and individual evaluations
Through evaluations, K-water clearly informs its members of the weaknesses to be supplemented in common competencies that departments and individuals should improve upon through joint efforts, so that employees’ long-term self-development and personal capacity enhancement can be linked to the performance enhancement of the organization. In particular, for the person in charge of each departments, his/her achievement and leadership have been included in the management contract with the CEO. These systems contribute to the creation of a sound and strong organization.

Linking performance evaluation results with rewards
Evaluation of the performance of regular employees are performed by using various indices including cooperation in their jobs but also in terms of integrity, organizational culture (nighttime work rate, vacation use rate), and human resource development efforts (participation in education). The results of the evaluation using these performance indicators serve as the basis for individualized rewards for each employee. K-water motivates its employees to work enthusiastically by offering individualized rewards, including bonuses and awards, to employees who have shown excellent performance based on the results of the evaluation for the year, allowing for no gap in salary between men and women. Consulting and refresher training are provided to employees who have shown relatively low-level performance. These systems enable the entire organization to continuously achieve good performance.

Efforts to enhance labor-management communication and advance labor-management culture
K-water has established legitimate labor-management relations and carried out various activities for advanced labor-management culture. K-water’s labor and management have successfully held various joint events, made joint efforts to fulfill national policies and improve the national quality of life and the productivity of the organization.

Joint efforts for communication and government policy enforcement for strengthening partnerships
Various partnership strengthening activities have been promoted in order to resolve accumulated labor conflicts in the process of boosting the morale of employees and implementing government policies. K-water’s labor and management have made a variety of joint efforts for mutual growth by performing activities in relation to the government’s “regulation of non-regular jobs” policy together.

Leading they way by resolving social problems through communication based on mutual trust
Conflicts of labor and management continued due to various accusations and lawsuits related to the introduction of the new performance-related annual pay system. The representatives of K-water labor and management released the “Joint Declaration of Cooperation for Achieving the Future Vision” (January 17, 2017) and reached an agreement on the return to the former pay system and the return of the paid bonuses during the early implementation of the new system. (June 28, 2017) This led to the withdrawal of related complaints and lawsuits (July 7, 2017), which ended labor-management conflicts including legal disputes. K-water labor and management discussed the period, procedures, and methods of the paid bonus return and decided to donate KRW 3.5 billion of bonuses to the “Public Mutual Solidarity Fund,” which was the largest of all donations made by any public corporation. The decisions made through the negotiations between K-water labor and management will play a leading role in actualizing public values such as the improvement of the treatment of temporary workers in the future.
K-water has established a personnel management process to strengthen the implementation of new management strategies. In addition, it has constructed a convergence education system to actively cope with future changes, and established a water specialist training program to create a training system for cultivating well-rounded talents. As the need for management and technical convergence experts to cope with technological innovation and unification of water management has increased, K-water has set up a Global Water Management Policy Course in collaboration with the Korea Development Institute (KDI). With these efforts, K-water is building a foundation for fostering convergence water experts, developing customized curricula in various fields such as integrated water resources management, and conducting convergence research.

**Establishment of medium- and long-term human resources development system for sustainable growth**

K-water has established personnel management policies for each field, such as expansion of the use of female talents and the promotion system without discrimination, in order to increase the ratio of female managers, which is currently 8.5% to 9.4%. In addition, with the adoption of the maternity leave system, K-water has expanded the implementation of the parental leave system and reduced maternity and childcare burdens by providing paid short-term leave. In addition, through the operation of the “Shelter,” an anonymous and confidential counseling channel, it has reduced sexual harassment in the workplace, to create a healthier workplace.

**Promoting the increase of female managers through personnel management tailored to K-water**

K-water has expanded the implementation of the parental leave system and reduced maternity and childcare burdens by providing paid short-term leave. In addition, through the operation of the “Shelter,” an anonymous and confidential counseling channel, it has reduced sexual harassment in the workplace, to create a healthier workplace.
Appendix

Membership Activities and Awards 80
Sustainability Highlights 82
KMR Assurance 96
GRI Standards/ISO 26000 98
Code of Ethics; Quality, Environmental and Green Management Policy; Customer Charter Statement; and Human Rights Centered Management Statement 100
Statement of Support for the UN Global Compact’s 10 Principles 102
Questionnaire for Readers 104
Membership Activities and Awards

Membership Activities

1971 Association of Great Dams
1974 Korean Society of Civil Engineers
1976 KFA Electric Association, International Contractors Association of Korea
1993 KWA Water Resource Association
1995 KWA Water Resource Association
1996 Korean Association of Academic Societies, Korean Institute of Landscape Architecture
1997 KWA Electric Engineer Association
1999 Korean Disaster Prevention Association
2001 Korea New & Renewable-Energy Association
2002 Korea Water and Wastewater Works Association
2003 Korea Society on Water Environment
2005 Korea Engineering & Consulting Association
2006 Ethical Management Forum, Rare Associates, Korea Society for Environmental Analysis
2007 Korea Society of Environmental Restoration Technology, American Water Works Association, International Water Association, UN Global Compact
2008 Korea Society of Environmental Engineers, Membrane Society of Korea, Korean Society of Environment and Ecology
2010 2010 Korean National Committee on Irrigation and Drainage, Korean Society for Fluid Machinery
2011 Society of Air-conditioning Refrigerating Engineers of Korea
2012 Korea Environmental Policy and Administration Association
2013 Architectural Institute of Korea
2015 Korean Society of Ecology and Infrastructure, Korea Society of Hazard Mitigation
2017 Society of Korea Industrial and Systems Engineering, Korean Society of Public Enterprise

Awards

Apr. 2008 KWA Management Innovation Grand Prize (Awarded by Ministry of Knowledge Economy and Mail Business Newspaper)
Oct. 2008 KWA Social Contribution Grand Award (Korea Journalist Forum); Sustainable Management Top Award (Ministry of Knowledge Economy and Korea Chamber of Commerce and Industry)
Jan. 2009 Continuity & Creation Management Award in Environmental Management (Korean Ministry of Knowledge Economy and UN Global Compact)
Oct. 2009 Low Carbon Green Growth Commendation (Green Growth Award and Korean Ministry of Environment); New Regeneration Energy Awards Prime Minister Commendation (Ministry of Knowledge Economy), Asian Most Admired Knowledge Enterprise (UK Telecos)
Dec. 2010 National Green Technology Grand Award (Korean Ministry of Knowledge Economy and Korean Ministry of Education)
June 2011 KWA Green Management Award (Ministry of Knowledge Economy and Korean Ministry of Environment); Eco-Star Eco Technology Award in Water Pipeline (Korean Ministry of Environment)
June 2012 First Korean public company to win the Excellent Smart Work Agency Award (Ministry of Public Administration and Security)
Feb. 2013 Most Admired Company in Korea (KMAC)
June 2012 Environmental Impact Management Grand Prize (Korean Ministry of Environment, Excellent Global Social Contribution Agency Commendation (Ministry of Health and Welfare), Selected as an excellent company with outstanding performance in Labor and Management Relations (Korean Ministry of Employment and Labor)
July 2012 KWA Digital Innovation Award Grand Prize in the Public Sector (Ministry of Knowledge Economy)
Sep. 2012 Presidential citation for outstanding performance in purchasing goods from SMEs (Small and Medium Business Administration of Korea)
Oct. 2012 Family-friendly Enterprise (Korean Ministry of Gender Equality and Family), Selected as one of the 100 Best Companies to Work For (SIFW Korea), Asian Most Admired Knowledge Enterprise (UK Telecos)
Nov. 2012 Sustainability Grand Awards Innovation Management Award (Ministry of Knowledge Economy)
Dec. 2012 Public Company Management Award Grand Prize (SISA Journal)
July 2013 Korean Digital Green Management Award (Ministry of Science, ICT and Future Planning)
Oct. 2013 Korean Green Architecture Competition Award of Excellence (Presidential Committee on Architecture Policy), Recognition in recognition of contribution to renewable energy utilization system (Korea Ministry of Trade, Industry and Energy)
Nov. 2013 National Environmental Grand Award (Korean Ministry of Environment), Asian Most Admired Knowledge Enterprise (UK Telecos)
Dec. 2013 Global Most Admired Knowledge Enterprise (UK Telecos)
Feb. 2014 Most Admired Company in Korea (KMAC)
June 2014 Top 5 Korean Water Business Assessment (Ministry of Environment)
Sep. 2014 International Water Association Global Project Innovation Award
Oct. 2014 Asian Most Admired Knowledge Enterprise (UK Telecos)
Nov. 2014 Ranked as one of the top 100 Best Korean Companies to Work For (KWA); Outstanding Award in Anti-Disaster Engineering Assessment (National Emergency Management Agency), Korea Quality Management Enterprise President (Ministry of Trade, Industry and Energy), Advanced Public Enterprise in Shared Growth Prime Minister Award (Ministry of Public Administration and Security)
Dec. 2014 Sustainable Social Grand Award in Environment (Sustainable Korea), Korean Voluntary Work Grand Prize (Ministry of Public Administration and Security, Global Most Admired Knowledge Enterprise (UK Telecos)
June 2015 National Sustainability Management Award in Social Contribution (Ministry of Health and Welfare)
Nov. 2015 Most Admired Company in Korea (Ministry of Trade, Industry and Energy)
Dec. 2015 Minister's Award in recognition of support for youth outside the school system (Ministry of Gender Equality and Family), Educational Donation Grand Prize for Public Enterprises (Ministry of Education), Asian Most Admired Knowledge Enterprise (UK Telecos)
May 2016 Minister's Commendation in the Selection of Excellent Institutions at the Unification Expo (Ministry of Unification)
Sep. 2016 Minister's Commendation at the 2016 National Sharing Awards (Ministry of Health and Welfare)
Oct. 2016 Minister's Commendation in recognition of contribution to the development of innovation and measurement (Ministry of Trade, Industry & Energy), Advanced Public Enterprise in Shared Growth Prime Minister Award (Ministry of Public Administration and Security)
Nov. 2016 Double awards in the 2016 Asia-Pacific Stevie Awards Korea (Ministry of Science, ICT and Future Planning)
Dec. 2016 Asia Pacific Stevie Award in Social Media (Ministry of Public Administration and Security)
Dec. 2016 Asian Most Admired Knowledge Enterprise (UK Telecos)
June 2017 Korea Social Contribution Grand Award in CSR, 2016 Asia-Pacific Public Enterprise Innovation Example Contest Grand Award (Ministry of Economy and Finance), 2017 Public Agency Innovation Example Contest Grand Award (Ministry of Economy and Finance, Leading the World Trophy (Global Water Summit 2017)
June 2017 Asia-Pacific Stevie Award Silver Prize in Corporate Communication
July 2017 2017 Safety and Health Activity Case Presentation Contest Excellence Prize in Service Sector (Ministry of Employment and Labor)
Sep. 2017 Korea Employment Friendly Management Grand Award
Oct. 2017 The TIV Applied Eco Technology Contest Excellence Prize for the 5th consecutive year (Korea Society of Eco Technology and Environmental Engineering), Asian NAWIE Award and Global NAWIE Award for the 10th consecutive year (Hall of Fame, UK Telecos)
Jan. 2018 Selected as an Excellent Ordering Agency in SW Business and Minister's Award (Ministry of Science and ICT), Prime Minister's Citation at the 2017 Safety Culture Awards (Ministry of Science and ICT), Korea Social Media Grand Award in the Public Sector Award of the Minister of Science and ICT; Korea Data Quality Awards Excellence Prize (Ministry of Science and ICT)
July 2018 Listed as one of the top 100 Best Korean Companies to Work for for the 9th consecutive year
Dec. 2017 Minister’s Citation at the 2017 Korea Volunteer Work Awards (Ministry of Interior and Safety), Korea Social Contribution Grand Award in Overseas Volunteer Work, Educational Donation Grand Prize for Public Enterprises (Ministry of Education), Prime Minister’s Award for Outstanding Personal Innovation Performance (Office of the Prime Minister), Prime Minister’s Citation at the 2017 Safety Culture Awards (Ministry of the Interior and Safety)

Appendix

Appendix
Sustainability Highlights

Economic I Financial Performance

Condensed all-inclusive income statement (Unit: KRW in millions)

<table>
<thead>
<tr>
<th>Category</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>5,785,518</td>
<td>5,631,464</td>
<td>6,006,540</td>
<td>6,422,010</td>
<td>7,041,806</td>
</tr>
<tr>
<td>Non-current assets</td>
<td>19,818,389</td>
<td>19,807,635</td>
<td>19,554,099</td>
<td>13,877,420</td>
<td>13,825,489</td>
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<tr>
<td>Total</td>
<td>25,603,907</td>
<td>25,439,099</td>
<td>26,010,639</td>
<td>20,299,565</td>
<td>20,867,295</td>
</tr>
<tr>
<td>Current liabilities</td>
<td>3,158,540</td>
<td>2,161,443</td>
<td>2,759,626</td>
<td>3,056,079</td>
<td>3,056,079</td>
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<tr>
<td>Non-current liabilities</td>
<td>10,639,904</td>
<td>11,299,992</td>
<td>10,477,544</td>
<td>10,484,290</td>
<td>10,577,196</td>
</tr>
<tr>
<td>Total</td>
<td>13,998,452</td>
<td>13,461,435</td>
<td>13,273,170</td>
<td>13,638,555</td>
<td>13,633,291</td>
</tr>
<tr>
<td>Other expenses</td>
<td>4,697,176</td>
<td>5,055,535</td>
<td>6,507,005</td>
<td>6,625,393</td>
<td>7,004,323</td>
</tr>
<tr>
<td>Equity attributable to owners of the parent company</td>
<td>11,595,907</td>
<td>11,962,187</td>
<td>6,254,102</td>
<td>6,628,025</td>
<td>7,200,055</td>
</tr>
<tr>
<td>Non-controlling interest</td>
<td>9,046</td>
<td>10,477</td>
<td>12,387</td>
<td>13,897</td>
<td>15,397</td>
</tr>
<tr>
<td>Total</td>
<td>11,605,455</td>
<td>11,977,664</td>
<td>6,277,469</td>
<td>6,660,575</td>
<td>7,234,004</td>
</tr>
</tbody>
</table>

*Consolidation criteria applied in accordance with the Korean International Financial Reporting Standards (K-IFRS) since 2011

Condensed all-inclusive income statement (Unit: KRW in millions; Refer to the information disclosed in the ARI system on K-water’s website)

<table>
<thead>
<tr>
<th>Category</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue (turnover)</td>
<td>3,645,387</td>
<td>3,698,372</td>
<td>3,777,345</td>
<td>3,618,084</td>
<td>3,375,560</td>
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<tr>
<td>Cost of sales</td>
<td>2,989,350</td>
<td>3,178,494</td>
<td>3,288,664</td>
<td>3,105,646</td>
<td>2,793,724</td>
</tr>
<tr>
<td>Selling and maintenance expenses</td>
<td>123,920</td>
<td>129,419</td>
<td>139,064</td>
<td>148,369</td>
<td>154,120</td>
</tr>
<tr>
<td>Operating profit</td>
<td>532,117</td>
<td>390,459</td>
<td>349,617</td>
<td>364,099</td>
<td>427,716</td>
</tr>
<tr>
<td>Other income</td>
<td>315,516</td>
<td>323,280</td>
<td>349,076</td>
<td>20,053</td>
<td>68,450</td>
</tr>
<tr>
<td>Other expenses</td>
<td>43,087</td>
<td>6,826</td>
<td>7,437</td>
<td>120,128</td>
<td>42,887</td>
</tr>
<tr>
<td>Other gains</td>
<td>2,078</td>
<td>-13,221</td>
<td>-6,295,565</td>
<td>-143,011</td>
<td>-1,889</td>
</tr>
<tr>
<td>Financial income</td>
<td>97,870</td>
<td>91,264</td>
<td>85,503</td>
<td>46,182</td>
<td>125,341</td>
</tr>
<tr>
<td>Financial costs</td>
<td>449,185</td>
<td>400,656</td>
<td>370,962</td>
<td>329,105</td>
<td>383,290</td>
</tr>
<tr>
<td>Profit from investments in associates subject to equity method</td>
<td>1,585</td>
<td>33,248</td>
<td>-8,058</td>
<td>-3,309</td>
<td>-1,145</td>
</tr>
<tr>
<td>Net profit before corporate tax deduction</td>
<td>456,871</td>
<td>417,546</td>
<td>-2,487,565</td>
<td>-185,219</td>
<td>152,296</td>
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<tr>
<td>Corporate tax expenses</td>
<td>318,756</td>
<td>318,756</td>
<td>-102,188</td>
<td>-48,254</td>
<td>7,362</td>
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<tr>
<td>Net profit during the term</td>
<td>345,115</td>
<td>407,530</td>
<td>-3,575,498</td>
<td>-167,228</td>
<td>149,024</td>
</tr>
<tr>
<td>Other comprehensive income</td>
<td>-9,901</td>
<td>18,974</td>
<td>-8,023</td>
<td>2,844</td>
<td>-27,521</td>
</tr>
<tr>
<td>Total comprehensive income</td>
<td>335,214</td>
<td>426,506</td>
<td>-3,575,394</td>
<td>-164,384</td>
<td>121,497</td>
</tr>
<tr>
<td>Net profit during the term attributable to owners of the parent company</td>
<td>346,443</td>
<td>298,554</td>
<td>-5,799,067</td>
<td>-120,913</td>
<td>179,248</td>
</tr>
<tr>
<td>Net profit attributable to non-controlling interest</td>
<td>1,675</td>
<td>772</td>
<td>3,429</td>
<td>3,048</td>
<td>5,686</td>
</tr>
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</table>

*Consolidation criteria applied in accordance with the Korean International Financial Reporting Standards (K-IFRS) since 2011

Sustainable growth through innovation

IWRM (Integrated Water Resources Management)

<table>
<thead>
<tr>
<th>Relevant businesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterfront business</td>
</tr>
<tr>
<td>Healthy water supply business</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>907,729</td>
<td>891,207</td>
<td>714,844</td>
<td>687,037</td>
<td>551,821</td>
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<tr>
<td>2014</td>
<td>1,071,770</td>
<td>1,122,100</td>
<td>1,175,910</td>
<td>1,222,861</td>
<td>1,300,958</td>
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<tr>
<td>2015</td>
<td>543,591</td>
<td>544,912</td>
<td>229,469</td>
<td>7,284</td>
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</tr>
<tr>
<td>2016</td>
<td>2013</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>2014</td>
<td></td>
<td></td>
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</table>

Patents and research performances

<table>
<thead>
<tr>
<th>Years</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>685,741</td>
<td>5,483</td>
<td>224,469</td>
<td>7,284</td>
<td>2014</td>
</tr>
<tr>
<td>2015</td>
<td>218,000</td>
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<td></td>
<td></td>
<td>2016</td>
</tr>
<tr>
<td>2016</td>
<td>3,820</td>
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<td></td>
<td></td>
<td>2017</td>
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<tr>
<td>2017</td>
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<td></td>
<td></td>
<td></td>
<td>2018</td>
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</table>

<table>
<thead>
<tr>
<th>Years</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>98</td>
<td>74</td>
<td>144</td>
<td>131</td>
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<tr>
<td>2014</td>
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<td>2015</td>
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<tr>
<td>2016</td>
<td>48</td>
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<td>2017</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A happier Korea made with water

Appendix

K-water, 100 years as the leading national water company

K-water's efforts to enhance national welfare

Social performances

Customer satisfaction

Customer satisfaction (points)

Customer satisfaction

with local waterworks (points)

Communication with customers

Written civil complaints (items)

Electronic civil complaints (items)

Written civil complaints (items)

Electronic civil complaints (items)

Education for executives and employees

Number of educated personnel (people)

Educational investment per person (KRW in thousands)

Education time per person/hour

Gender

Employment type

Securement of R&D professionals (%)
Appendix
K-water, 100 years as the leading national water company
K-water's efforts to enhance national welfare

I Horizontal partnership and vertical growth

SME product purchase performance

<table>
<thead>
<tr>
<th>Year</th>
<th>Total purchase amount (KRW in millions)</th>
<th>SME product purchase amount (KRW in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1,398,700</td>
<td>53,22</td>
</tr>
<tr>
<td>2014</td>
<td>744,325</td>
<td>53,47</td>
</tr>
<tr>
<td>2015</td>
<td>1,177,081</td>
<td>55,22</td>
</tr>
<tr>
<td>2016</td>
<td>1,393,210</td>
<td>56,50</td>
</tr>
<tr>
<td>2017</td>
<td>828,633</td>
<td>58,53</td>
</tr>
</tbody>
</table>

Women's company product purchase performance

<table>
<thead>
<tr>
<th>Year</th>
<th>Total purchase amount (KRW in millions)</th>
<th>Women's company product purchase amount (KRW in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1,398,700</td>
<td>5,23</td>
</tr>
<tr>
<td>2014</td>
<td>73,166</td>
<td>6,40</td>
</tr>
<tr>
<td>2015</td>
<td>1,117,081</td>
<td>3,76</td>
</tr>
<tr>
<td>2016</td>
<td>1,393,210</td>
<td>3,33</td>
</tr>
<tr>
<td>2017</td>
<td>40,632</td>
<td>4,15</td>
</tr>
</tbody>
</table>

Social enterprise product purchase performance

<table>
<thead>
<tr>
<th>Year</th>
<th>Total purchase amount (KRW in millions)</th>
<th>Social enterprise product purchase amount (KRW in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1,398,700</td>
<td>0.29</td>
</tr>
<tr>
<td>2014</td>
<td>4,039</td>
<td>0.37</td>
</tr>
<tr>
<td>2015</td>
<td>1,117,081</td>
<td>0.4</td>
</tr>
<tr>
<td>2016</td>
<td>1,393,210</td>
<td>0.93</td>
</tr>
<tr>
<td>2017</td>
<td>7,004</td>
<td>0.71</td>
</tr>
</tbody>
</table>

I Together with local communities

Performance in the purchase of products for the severely disabled

<table>
<thead>
<tr>
<th>Year</th>
<th>Total purchase amount (KRW in millions)</th>
<th>Purchase amount of products for the severely disabled (KRW in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1,398,700</td>
<td>1,398,700</td>
</tr>
<tr>
<td>2014</td>
<td>4,539</td>
<td>4,537</td>
</tr>
<tr>
<td>2015</td>
<td>5,570</td>
<td>5,530</td>
</tr>
<tr>
<td>2016</td>
<td>5,168</td>
<td>5,160</td>
</tr>
<tr>
<td>2017</td>
<td>7,021</td>
<td>7,021</td>
</tr>
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</table>

Operational performance of the socially vulnerable group protection and preferential system

<table>
<thead>
<tr>
<th>Year</th>
<th>Total contracts (items)</th>
<th>Total screenings (items)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>3,664</td>
<td>3,281</td>
</tr>
<tr>
<td>2014</td>
<td>2,710</td>
<td>2,280</td>
</tr>
<tr>
<td>2015</td>
<td>1,654</td>
<td>2,124</td>
</tr>
<tr>
<td>2016</td>
<td>2,591</td>
<td>7,021</td>
</tr>
<tr>
<td>2017</td>
<td>1,713</td>
<td>5,771</td>
</tr>
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</table>

Social contribution engagement levels

<table>
<thead>
<tr>
<th>Year</th>
<th>Engagement (point)</th>
<th>Engagement level (points)</th>
<th>Number of engaged employees (people)</th>
<th>Ratio compared to the current total number of employees (%)</th>
<th>Time of engagement per person (hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>3,821</td>
<td>92.6</td>
<td>3,821</td>
<td>92.6</td>
<td>12.0</td>
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<td>2,736</td>
<td>93.4</td>
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<td>5,570</td>
<td>92.7</td>
<td>5,570</td>
<td>92.7</td>
<td>14.6</td>
</tr>
<tr>
<td>2016</td>
<td>8,204</td>
<td>97.7</td>
<td>8,204</td>
<td>97.7</td>
<td>14.8</td>
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<td>2017</td>
<td>9,876</td>
<td>90.7</td>
<td>9,876</td>
<td>90.7</td>
<td>14.6</td>
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</table>

Social contribution investment amount

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount (KRW 100 million)</th>
<th>Ratio vis-a-vis turnover (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>678.6</td>
<td>744.6</td>
</tr>
<tr>
<td>2014</td>
<td>764.8</td>
<td>764.8</td>
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<td>2015</td>
<td>889.6</td>
<td>889.6</td>
</tr>
<tr>
<td>2016</td>
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<td>879.8</td>
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<tr>
<td>2017</td>
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<td>1,902.1</td>
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</table>
### Workplace assured of fairness and diversity

#### Prescribed number of employees (Personnel: people)

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,272</td>
<td>4,489</td>
<td>4,615</td>
<td>4,635</td>
<td>4,667</td>
<td>5,091</td>
</tr>
</tbody>
</table>

#### Composition of employees (unit: people)

<table>
<thead>
<tr>
<th>Age</th>
<th>20s and under</th>
<th>30s to 40s</th>
<th>50s and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>2013</td>
<td>41.7</td>
<td>58.3</td>
<td>58.7</td>
</tr>
<tr>
<td>2014</td>
<td>41.7</td>
<td>58.3</td>
<td>58.7</td>
</tr>
<tr>
<td>2015</td>
<td>41.7</td>
<td>58.3</td>
<td>58.7</td>
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<tr>
<td>2016</td>
<td>41.7</td>
<td>58.3</td>
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</tr>
<tr>
<td>2017</td>
<td>41.7</td>
<td>58.3</td>
<td>58.7</td>
</tr>
</tbody>
</table>

### Employment of minority workforce

#### Composition of employees by employment type

<table>
<thead>
<tr>
<th>Category</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No. of employees</td>
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<td>3,824</td>
<td>3,922</td>
<td>4,020</td>
<td>4,118</td>
</tr>
<tr>
<td>Executives</td>
<td>137</td>
<td>142</td>
<td>149</td>
<td>156</td>
<td>163</td>
</tr>
<tr>
<td>Age</td>
<td>20s and under</td>
<td>30s to 40s</td>
<td>50s and over</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>2013</td>
<td>41.7</td>
<td>58.3</td>
<td>58.7</td>
<td>41.3</td>
<td>41.7</td>
</tr>
<tr>
<td>2014</td>
<td>41.7</td>
<td>58.3</td>
<td>58.7</td>
<td>41.3</td>
<td>41.7</td>
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<td>2015</td>
<td>41.7</td>
<td>58.3</td>
<td>58.7</td>
<td>41.3</td>
<td>41.7</td>
</tr>
<tr>
<td>2016</td>
<td>41.7</td>
<td>58.3</td>
<td>58.7</td>
<td>41.3</td>
<td>41.7</td>
</tr>
<tr>
<td>2017</td>
<td>41.7</td>
<td>58.3</td>
<td>58.7</td>
<td>41.3</td>
<td>41.7</td>
</tr>
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#### Employment of minority workforce

<table>
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<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No. of new recruits</td>
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<td>261</td>
<td>234</td>
<td>309</td>
<td>327</td>
</tr>
<tr>
<td>Executives</td>
<td>137</td>
<td>142</td>
<td>149</td>
<td>156</td>
<td>163</td>
</tr>
<tr>
<td>Age</td>
<td>20s and under</td>
<td>30s to 40s</td>
<td>50s and over</td>
<td></td>
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</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>2013</td>
<td>41.7</td>
<td>58.3</td>
<td>58.7</td>
<td>41.3</td>
<td>41.7</td>
</tr>
<tr>
<td>2014</td>
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<td>2015</td>
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<tr>
<td>2016</td>
<td>41.7</td>
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<td>58.7</td>
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<td>41.7</td>
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<td>2017</td>
<td>41.7</td>
<td>58.3</td>
<td>58.7</td>
<td>41.3</td>
<td>41.7</td>
</tr>
</tbody>
</table>

*Note: Ratio (%) ratio unless total number of new recruits

### Additional Information

- **Current number of employees**: total current number of regular employees, including employees for entrusted projects, on parental leave and in military service who are excluded from the data disclosed in the ALIO system.
- **Prescribed number of employees**: ratio (%) on the prescribed number of employees.
- **Number of new recruits**: total number of new recruits, including those for entrusted projects, on parental leave and in military service.

---

**K-water, 100 years as the leading national water company**

K-water's efforts to enhance national welfare

A happier Korea made with water

Appendix
### Non-regular employment

<table>
<thead>
<tr>
<th>Category</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Personnel (people)</td>
<td>Ratio (%)</td>
<td>Personnel (people)</td>
<td>Ratio (%)</td>
<td>Personnel (people)</td>
</tr>
<tr>
<td>Total</td>
<td>414</td>
<td>8.5</td>
<td>403</td>
<td>8.1</td>
<td>359</td>
</tr>
<tr>
<td>Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-term employees</td>
<td>340</td>
<td>7.0</td>
<td>322</td>
<td>6.5</td>
<td>320</td>
</tr>
<tr>
<td>Part-time employees</td>
<td>74</td>
<td>1.5</td>
<td>66</td>
<td>1.3</td>
<td>21</td>
</tr>
<tr>
<td>Other temporary employees</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

*Ratio (%) = temporary employees / (temporary employees + non-fixed term contract employees + regular employees)

### Turnover status (Unit: %, people)

<table>
<thead>
<tr>
<th>Year</th>
<th>Male employees</th>
<th>Female employees</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1.81</td>
<td>0.29</td>
<td>2.10</td>
</tr>
<tr>
<td>2014</td>
<td>4.2</td>
<td>1.54</td>
<td>5.74</td>
</tr>
<tr>
<td>2015</td>
<td>2.7</td>
<td>0.2</td>
<td>2.92</td>
</tr>
<tr>
<td>2016</td>
<td>1.3</td>
<td>0.1</td>
<td>1.41</td>
</tr>
<tr>
<td>2017</td>
<td>2.4</td>
<td>0.3</td>
<td>2.72</td>
</tr>
</tbody>
</table>

*No turnover among executives in 2017

### Creation of a corporate culture for balance of work and family life

- **Expanding flexible work**
  - Operating various types of part-time and flexible work systems
  - Implementing "Family Day" (every Wednesday)
  - Enhancing work efficiency through improvement of working processes
  - Operating various types of part-time and flexible work systems

- **Improving working practices**
  - Increasing Smart Work Centers and at-home work on alternating weekdays and days off
  - Operating maternity leave and parental leave pre-notification system
  - Enhancing working conditions with the maximum accepted number of children by converting idle facilities to childcare facilities

- **Supporting the balance of work and life**
  - Providing family-engaging education such as couple coaching, family-oriented training programs, etc.
  - Continuously adding recreational facilities, expanding support for employee recreational clubs, cultural performances, etc.

### Workplace safety

<table>
<thead>
<tr>
<th>Category</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Personnel (people)</td>
<td>Ratio (%)</td>
<td>Personnel (people)</td>
<td>Ratio (%)</td>
<td>Personnel (people)</td>
</tr>
<tr>
<td>Injuries</td>
<td>10</td>
<td>0.22</td>
<td>7</td>
<td>0.16</td>
<td>13</td>
</tr>
<tr>
<td>Occupational disease</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
</tr>
<tr>
<td>Industrial accident rate</td>
<td>0.06</td>
<td>0.06</td>
<td>0.25</td>
<td>0.25</td>
<td>0.23</td>
</tr>
<tr>
<td>Disease prevalence</td>
<td>7.0</td>
<td>6.7</td>
<td>8.7</td>
<td>457</td>
<td>8.8</td>
</tr>
</tbody>
</table>

*Ratio (%) = ratio of personnel compared with the current number of employees
Environmental performances | Expanding environmental considerations for the entire corporate supply chain

Purchase of green products

<table>
<thead>
<tr>
<th>Water</th>
<th>Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase</td>
<td>Used (discharged) amount (thousand m^3)</td>
</tr>
<tr>
<td>46,399</td>
<td>48,038</td>
</tr>
<tr>
<td>50,158</td>
<td>51,372</td>
</tr>
<tr>
<td>50,615</td>
<td>50,972</td>
</tr>
<tr>
<td>3,062</td>
<td>3,062</td>
</tr>
<tr>
<td>4,588</td>
<td>4,588</td>
</tr>
<tr>
<td>1,942</td>
<td>1,942</td>
</tr>
</tbody>
</table>

Output (Unit: KRW in millions)

<table>
<thead>
<tr>
<th>Category</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand</td>
<td>15,545</td>
<td>15,945</td>
<td>16,216</td>
<td>15,733</td>
<td>14,783</td>
</tr>
<tr>
<td>Energy</td>
<td>10,892</td>
<td>11,066</td>
<td>11,180</td>
<td>11,180</td>
<td>10,892</td>
</tr>
<tr>
<td>Water</td>
<td>13,292</td>
<td>13,230</td>
<td>13,252</td>
<td>13,252</td>
<td>14,783</td>
</tr>
</tbody>
</table>

Labor-management relations

<table>
<thead>
<tr>
<th>Category</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of labor disputes (item)</td>
<td>83</td>
<td>83</td>
<td>84</td>
<td>84</td>
<td>85</td>
</tr>
<tr>
<td>Rate of labor union membership (%)</td>
<td>56.5</td>
<td>56.5</td>
<td>56.5</td>
<td>56.5</td>
<td>56.5</td>
</tr>
</tbody>
</table>

Record of grievance settlements

<table>
<thead>
<tr>
<th>Category</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of grievances that have been received previously, but was settled in the following year or later on (items)</td>
<td>84</td>
<td>50.9</td>
<td>56.5</td>
<td>56.5</td>
<td>56.5</td>
</tr>
<tr>
<td>Total number of grievances (items)</td>
<td>89.3</td>
<td>55</td>
<td>28</td>
<td>29</td>
<td>33</td>
</tr>
<tr>
<td>Settlement ratio (%)</td>
<td>47.2</td>
<td>55</td>
<td>78.8</td>
<td>89.3</td>
<td>94.3</td>
</tr>
</tbody>
</table>

Status of flexible work

<table>
<thead>
<tr>
<th>Category</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part-time</td>
<td>New recruits</td>
<td>0</td>
<td>12</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Conversion</td>
<td>2</td>
<td>28</td>
<td>31</td>
<td>29</td>
</tr>
<tr>
<td>Flexible work</td>
<td>Staggered office hours</td>
<td>662</td>
<td>858</td>
<td>979</td>
<td>1628</td>
</tr>
<tr>
<td></td>
<td>Flexible working hours</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Intensive work</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Discretionary overwork schedule</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Flexible work</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Smart work</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Ratio (%) calculated based on the current number of employees including those not qualified for membership such as those at grade 2 or in higher positions.
### Table: Post-environmental impact investigation of construction sites (2017)

#### Category

<table>
<thead>
<tr>
<th>Category</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste treatment plants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generated amount (tons)</td>
<td>110,027</td>
<td>110,997</td>
<td>107,988</td>
<td>119,896</td>
<td>121,581</td>
</tr>
<tr>
<td>Generated amount compared to the quantity of supplied water (g/m3)</td>
<td>54.2</td>
<td>55.3</td>
<td>52.9</td>
<td>56.4</td>
<td>59.9</td>
</tr>
<tr>
<td>Recycling rate (%)</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Raw material of cement</td>
<td>83.8</td>
<td>46</td>
<td>46</td>
<td>69</td>
<td>97</td>
</tr>
<tr>
<td>Soil covering material, fill material</td>
<td>12.4</td>
<td>57</td>
<td>50</td>
<td>39</td>
<td>63</td>
</tr>
<tr>
<td>Green soil, pebbles, etc.</td>
<td>3.8</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Construction sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generated amount (tons)</td>
<td>39,565</td>
<td>42,083</td>
<td>37,894</td>
<td>37,896</td>
<td>60,586</td>
</tr>
<tr>
<td>Recycling rate (%)</td>
<td>49</td>
<td>59</td>
<td>65</td>
<td>89</td>
<td>46.7</td>
</tr>
<tr>
<td>Water quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOD (mg/L)</td>
<td>4.6</td>
<td>1.6</td>
<td>1.8</td>
<td>1.1</td>
<td>2.2</td>
</tr>
<tr>
<td>COD (mg/L)</td>
<td>3.0</td>
<td>3.0</td>
<td>3.1</td>
<td>3.2</td>
<td>4.7</td>
</tr>
<tr>
<td>NO2 (ppb)</td>
<td>46.5</td>
<td>39.9</td>
<td>46.5</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>PM-10 (㎍/㎥)</td>
<td>14.0</td>
<td>6.9</td>
<td>11.0</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Noise (dB(A))</td>
<td>44.5</td>
<td>44.6</td>
<td>44.6</td>
<td>44.6</td>
<td>44.6</td>
</tr>
<tr>
<td>Vibration (dB(A))</td>
<td>66.7</td>
<td>66.7</td>
<td>66.7</td>
<td>66.7</td>
<td>66.7</td>
</tr>
</tbody>
</table>

### Post-environmental impact investigation of construction sites (2017)

*In the case of the Han River Dam and Seongdeok Dam, post-environmental impact investigations have been conducted while the dams were in operation after the completion of the construction. Environmental quality and noise and vibration levels have not yet been measured.*

#### Table: Creation of local eco-cultural spaces

#### Efforts to preserve and improve the local environment

Promotion of reclaimed water use through rate discounts for consumers of water

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reclaimed water supplied at discounted rates (1,000 m3)</td>
<td>115,751</td>
<td>115,751</td>
<td>115,751</td>
<td>115,751</td>
<td>115,751</td>
</tr>
</tbody>
</table>

Disposal of waste that flowed into dams, reservoirs and rivers (t)

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dams and reservoirs</td>
<td>95,000</td>
<td>100,000</td>
<td>105,000</td>
<td>110,000</td>
<td>115,000</td>
</tr>
<tr>
<td>Rivers and wetlands</td>
<td>69,500</td>
<td>72,500</td>
<td>75,500</td>
<td>78,500</td>
<td>81,500</td>
</tr>
<tr>
<td>Total</td>
<td>164,500</td>
<td>172,500</td>
<td>175,500</td>
<td>183,500</td>
<td>196,500</td>
</tr>
</tbody>
</table>

### Appendix

2016 Sustainability Report

- **K-water’s efforts to enhance national water quality**
- **A happier Korea made with water**
- **A total of 100 years as the leading national water company**
- **Table of contents**
- **Letter\’s efforts to enhance national water quality**
- **A total of 100 years as the leading national water company**
- **Table of contents**

Hantan Dam: wildcat  Gimcheon Buhang Dam: Eurasian Hobby, Grey Frog Hawk, kestrel, mandarin duck  Yeongju Dam: whooper swan, mandarin duck  Seongdeok Dam: otter and long-billed ringed plover  Bohyeonsan Dam: whooper swan, mandarin duck, kestrel, scops owl, collared scops owl, eagle-owl, Korean buzzard, goshawk, and sparrow hawk
Third Party’s Assurance Statement

To the Readers

K-water, 100 years as the leading national water company
K-water’s efforts to enhance national welfare
K-water’s efforts to enhance national welfare
A happier Korea made with water

Appendix

Our conclusion

Based on the results we have obtained from material reviews and interviews, we had several discussions with K-water on the revision of the Report. We reviewed the Report's final version in order to confirm that our recommendations for improvement and our revisions have been reflected. When reviewing the results of the assurance, the assurance team could not find any inappropriate contents in the Report to the compliance with the principles stipulated below.

1. Inclusivity
Inclusivity is the participation of stakeholders in developing and achieving an accountable and strategic response to sustainability.
K-water is developing and maintaining stakeholder communication channels in various forms and levels in order to make a commitment to be responsible for the stakeholders. The assurance team could not find any critical stakeholder K-water left out during this procedure.

2. Materiality
Materiality is determining the relevance and significance of an issue to an organization and its stakeholders. A material issue is an issue that will influence the decisions, actions, and performance of an organization or its stakeholders.
K-water is determining the materiality of issues found out through stakeholder communication channels through its own materiality evaluation process, and the assurance team could not find any critical issues left out in this process.

3. Responsiveness
Responsiveness is an organization’s response to stakeholder issues that affect its sustainability performance and is realized through decisions, actions, and performance, as well as communication with stakeholders.
- The assurance team could not find any evidence that K-water’s counter measures to critical stakeholder issues were inappropriately recorded in the Report.
- We could not find any evidence the Report was not prepared in accordance with the ‘Core Option’ of GRI Standards.

Recommendation for improvement

We hope the Report is actively used as a communication tool for stakeholders and we recommend the following for improvements.

1. Establishment of sustainable management system: K-Water has made impressive effort to determine and prevent different organizational risks in advance in the context of social responsibility. To pursue sustainability in a more systematic way, the organization is advised to develop both short-term and long-term quantitative objectives for the implementation of sustainable strategies and set up a dedicated team to report the process.
2. Strengthening stakeholder inclusiveness: K-Water is advised to segment stakeholders, identify their individual expectations, report the organization’s responses and results, and disclose the possible impact on each stakeholder of key issues identified by materiality assessment as well as performance.

Our independence

- With the exception of providing third party assurance services, KMR is not involved in any other K-water’s business operations that are aimed at making profit in order to avoid any conflicts of interest and to maintain independence.

K-water 2018 Sustainability Report

Appendix

November, 13th, 2018

CEO

E. J. Hong
GRI Standards/ ISO26000

<table>
<thead>
<tr>
<th>Material topics</th>
<th>Topic</th>
<th>Disclosure</th>
<th>Verification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GHG emissions</td>
<td>5, 6, 7, 8, 9</td>
<td>29-30</td>
</tr>
<tr>
<td></td>
<td>Energy indirect (Scope 2)</td>
<td>5, 6, 7, 8, 9</td>
<td>29-30</td>
</tr>
<tr>
<td></td>
<td>Waste</td>
<td>5, 6, 7, 8, 9</td>
<td>29-30</td>
</tr>
<tr>
<td></td>
<td>Biodiversity</td>
<td>5, 6, 7, 8, 9</td>
<td>29-30</td>
</tr>
</tbody>
</table>

Material topics in the report include material topics, organizations, profile, strategy, ethics and integrity, governance, stakeholder engagement, reporting principles, anti-corruption, anti-competitive behavior, human rights, environment, biodiversity, water, and climate change. The report covers a wide range of topics such as environmental, social, and governance (ESG) issues, including water management, biodiversity, and climate change.

For example, the report discusses the management of GHG emissions, energy indirect emissions, waste, and biodiversity. It also highlights the importance of stakeholder engagement and the implementation of anti-corruption and anti-competitive behavior policies. The report provides detailed information on the activities and impacts of the organization's operations, products, and services, as well as its supply chain.

The report's assurance is provided by an external assurance provider, and the management approach is described in detail. The report also includes information on the organization's financial statements and key performance indicators, as well as the organization's strategy and governance structure.

The report aims to provide a comprehensive and transparent overview of the organization's material topics, ensuring that stakeholders have access to the necessary information to make informed decisions.
K-water” Code of Ethics; Quality, Environmental and Green Management Policy, Customer Charter Statement; and Human Rights Centered Management Statement

K-water is a business of the people that contributes to the quality of life of all citizens and the development of the country by developing, managing, and preserving Korea’s water resources to be sustainable in environmental, economic, and social aspects and by providing the best products and services. Based on our experience, know-how, and advanced technology, we promise the following to become a global professional water business.

We develop partnerships with labor and management based on mutual trust and harmony, promoting our mutual prosperity.

We respect the unique personalities of all people without discrimination, and respect personalities and creativity.

We comply with ethical/legal values, respect market order of free competition, and seek realization of fair competition.

We recognize that the Earth is a precious heritage for our offspring and is a healthy and clean shelter, and as such, we are obligated to practice eco-friendly management.

We provide the best products and services to customers and actualize a customer-oriented policy through customer satisfaction and management of new value creation.

As a part of the local community, we respect the traditions and cultures of the community and enrich the lives of local residents by contributing to the development of the local community.

We accomplish our missions through creative thinking and challenges and make efforts to actualize transparent management by processing tasks with an honest and fair attitude.

We guarantee workers' safety and health rights by providing a safe and hygienic working environment.

We do not use any form of forced labor in employment and do not allow child labor.

We fully understand that it is high time to make all-out efforts for the promotion of sustainable development harmonized with the environment to create and maintain a pleasant and livable environment for all. Therefore, in order to enhance the public values of K-water so that all citizens will lead a happy life, we, the executives and employees of K-water, will take responsibility for the water welfare of the people through by pursuing mutual prosperity and do our utmost to achieve sustainable growth.

We faithfully fulfill our obligations required to the practice of quality, environmental and green management and achieve continuous improvements by enhancing our performance.

For establishing and implementing plans related to quality, environmental and green management, we enhance the reliability of the executives and employees to put it into action.

We take the initiative in preserving clean water and air, and a livable natural environment.

In order to fulfill our goal of “Opening the Future and Providing Happiness by Sharing Water,” we will actively practice human rights centered management emphasizing and protecting human dignity and values in all our business activities and pursue the actualization of social values and the achievement of sustainable development. For this, we support and resolve to practice human rights centered management in accordance with the following criteria for our actions and value judgment which all the executives and employees should abide by.

We will provide water and waterfront spaces of the highest quality so as to ensure customer trust.

We will provide information and services for the safety and ownership protection of customers even before customers request them.

We will provide information and services for the safety and ownership protection of customers even before customers request them.

We will give the best products and services to customers and actualize a consumer-oriented policy through customer satisfaction and management of value creation.

We accomplish our missions through creative thinking and challenges and make efforts to actualize transparent management by processing tasks with an honest and fair attitude.

We fully understand that it is high time to make all-out efforts for the promotion of sustainable development harmonized with the environment to create and maintain a pleasant and livable environment for all. Therefore, in order to enhance the public values of K-water so that all citizens will lead a happy life, we, the executives and employees of K-water, will take responsibility for the water welfare of the people through by pursuing mutual prosperity and do our utmost to achieve sustainable growth.

Implementing this policy, we, all the executives and employees of K-water, will take responsibility for the water welfare of the people through by pursuing mutual prosperity and do our utmost to achieve sustainable growth.
Support for the UN Global Compact’s 10 Principles

The UN Global Compact’s Ten Principles are derived from the following international agreements.

- The Universal Declaration of Human Rights
- The International Labor Organization’s Declaration on Fundamental Principles and Rights at Work
- The Rio Declaration on Environment and Development
- The United Nations Convention Against Corruption

The UN Global Compact asks companies to embrace, support and enact, within their sphere of influence, a set of core values in the areas of human rights, labor, the environment and anti-corruption.

Human Rights
Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and Principle 2: make sure that they are not complicit in human rights abuses.

Labour
Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining; Principle 4: the elimination of all forms of forced and compulsory labour; Principle 5: the effective abolition of child labour; and Principle 6: the elimination of discrimination in respect of employment and occupation.

Environment
Principle 7: Businesses should support a precautionary approach to environmental challenges; Principle 8: undertake initiatives to promote greater environmental responsibility; and Principle 9: encourage the development and diffusion of environmentally friendly technologies.

Anti-Corruption
Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

K-water practices and complies with the ten principles of UN Global Compact.

CEO Statement of Support for the Sustainable Development Goals

K-water, as the only public enterprise for water services in Korea, has contributed to the economic development and water welfare of Korea by providing clean and healthy water stably using scientific water management technologies and experience accumulated over 50 years in water infrastructure and management.

Especially, K-water has made diverse efforts to achieve the water-related SDGs established by the UN. To bridge the gap of water supply among regions, K-water is implementing improvements and expanding existing facilities. Furthermore, K-water is doing its best to secure stable water resources and manage water quality to achieve water sustainability. In addition, K-water is actively involved in new & renewable energy businesses relevant to water including floating photovoltaic systems and hydrothermal energy as an effort to respond to climate change.

K-water strengthened its water management and disaster response capabilities by establishing Integrated Water Resources Management (IWRM) and by introducing Smart Water Management (SWM) based on 4th industrial revolution technologies. Moreover, K-water is making efforts to apply Low Impact Development (LID) technology aimed at reinforcing the water circulation system for waterfront areas currently under development.

Also, with a keen interest to solve global water problems, K-water has proceeded with cooperative projects with global water-related associations and international organizations such as WWC, World Bank, ADB, and UNESCO. K-water has also been very active in establishing relevant governance and took the initiative to help establish Asia Water Council (AWC). As the chair nation of AWC, K-water is hoping to solve water problems in Asia by drawing active participation and support from Asian nations.

K-water is committed to achieving the United Nation’s SDGs and gives its wholehearted support. K-water will endeavor to find various ways to improve the value and accessibility of water for all humanity.

[SDG 6, 7, 9, 11, 13, 17]

11 September 2017

Haik-Soo LEE
K-water CEO & President of Asia Water Council
Questionnaire
for Readers

We welcome your valuable opinions. With a view to publishing a better sustainability report in the future, K-water wants to hear the opinions of various stakeholders including our readers about the 2018 sustainability report. Please complete the following and send it to the address listed at the bottom of this questionnaire by mail or fax.

1. Which of the following groups do you belong to?
   - [ ] Customer  [ ] Employee  [ ] Government  [ ] Local resident  [ ] Partner  [ ] NGO and Civic Group  [ ] Specialized organization  [ ] Others

2. How did you find this sustainability report?
   - [ ] K-water’s home page  [ ] Media such as newspaper  [ ] Web surfing  [ ] K-water’s employee  [ ] Seminar/lecture  [ ] Others

3. For what purpose do you use this report? (Multiple responses are allowed)
   - [ ] To get information about K-water
   - [ ] To compare and analyze the characteristics of the industry to which K-water belongs
   - [ ] To understand K-water’s sustainability management activities
   - [ ] For research and education
   - [ ] Others

4. Which section was most interesting to you in this report? (Multiple answers are allowed)
   - [ ] K-water’s 100 Years as the Leading National Water Company
   - [ ] K-water’s Water Sharing Services
   - [ ] K-water’s Making a Happier Korea with Water
   - [ ] K-water’s Water Safety Services
   - [ ] K-water’s Water Convergence Services
   - [ ] Appendix

5. Which section requires more supplementing information? (Multiple answers are allowed)
   - [ ] K-water’s 100 Years as the Leading National Water Company
   - [ ] K-water’s Water Sharing Services
   - [ ] K-water’s Making a Happier Korea with Water
   - [ ] K-water’s Water Safety Services
   - [ ] K-water’s Water Convergence Services
   - [ ] Appendix

6. Was this report helpful for you to have a better picture of K-water’s sustainable management activities?
   - [ ] Very helpful
   - [ ] Helpful
   - [ ] Moderately helpful
   - [ ] Slightly helpful
   - [ ] Not at all helpful

7. How satisfied are you with this report?
   - [ ] Understanding of information  [ ] Very Satisfied  [ ] Satisfied  [ ] Neither Satisfied Nor Unsatisfied  [ ] Unsatisfied  [ ] Very Unsatisfied
   - [ ] Accuracy of information  [ ] Very Satisfied  [ ] Satisfied  [ ] Neither Satisfied Nor Unsatisfied  [ ] Unsatisfied  [ ] Very Unsatisfied
   - [ ] Quantity of information  [ ] Very Satisfied  [ ] Satisfied  [ ] Neither Satisfied Nor Unsatisfied  [ ] Unsatisfied  [ ] Very Unsatisfied
   - [ ] Design  [ ] Very Satisfied  [ ] Satisfied  [ ] Neither Satisfied Nor Unsatisfied  [ ] Unsatisfied  [ ] Very Unsatisfied

8. Feel free to write your opinions about the overall configuration and contents of the report.
Providing a brighter, happier, and more prosperous future with water
K-water will be the source of flowing that embraces both humanity and nature