



2023

Beijing Enterprises Water Group Limited

Sustainability Report

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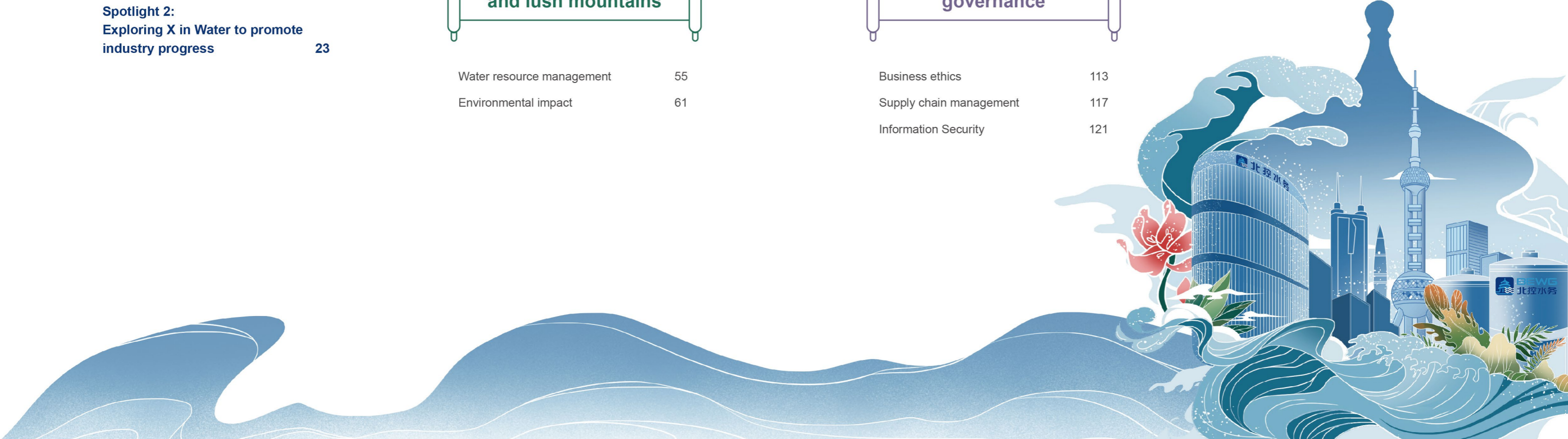
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About this report



As a non-financial report publicly disclosed by Beijing Enterprises Water Group Limited, this report aims at responding to the expectations of stakeholders and comprehensively demonstrating the Group's concepts, management, actions and achievements in environmental, social and governance ("ESG") and sustainable development. This report has been reviewed and approved by the Board of Directors. We ensure that there are no false records, misleading statements or material omissions in this report.

Reporting period

The reporting period is from 1 January, 2023 to 31 December, 2023. Information beyond this scope will be specified in related sections.

Reporting scope

All information and data disclosed are from Beijing Enterprises Water Group Limited and its subsidiaries. The data covers the Group's headquarters and its subsidiaries that hold operational control. Data from subsidiaries with common financial control but autonomous implementation of operational policies is not reported.

Reporting principles

Materiality: The Board of Directors and the Sustainability Committee have identified, evaluated and reviewed significant ESG matters. This report published ESG matters based on the materiality assessment results.

Quantitative: This report referred to applicable quantification standards and practices, adopted a quantitative approach to measuring and disclosing applicable key performance indicators. The measurement criteria, methods, assumptions and/or calculation tools used for the key performance indicators in this report, where applicable, are described accordingly.

Balance: This report provided the Group's 2023 Sustainability performance and outputs through fair presentation without any misstatement, inappropriate content and omissions.

Consistency: Due to the adjustment of the scope of this report, the statistical calibre of the quantitative data has changed compared to previous years, and the changes have been explained in the corresponding positions in this report. The statistical and calculation methods for quantitative data are consistent with previous years.

Reporting guidelines

This report is in accordance with the requirements of *Appendix C2 Environmental, Social and Governance Reporting Guide (ESG Reporting Guide) of the Rules Governing the Listing of Securities on the Stock Exchange of Hong Kong Limited (the "Listing Rules")*, with reference to the *GRI Sustainability Reporting Standards (GRI Standards)* issued by the Global Sustainability Standard Board (GSSB), and other standards.

Abbreviations

For the convenience of expression and reading, this report refers to Beijing Enterprises Water Group Limited as "the Company" and Beijing Enterprises Water Group Limited and its subsidiaries as "BEWG", "the Group" and "We".

Data explanation

All data disclosed in this report are from the Group's internal collection and statistics, and reports from its subsidiaries. The currency unit in this report is RMB unless specified otherwise.

Access to this report

This report is available in Chinese and English on the Company's website (<http://www.bewg.net>). In case of any conflict or inconsistency between the Chinese and English versions, the Chinese version shall prevail; in case of any conflict or inconsistency between this report and the annual report of the Group, the annual report shall prevail.

Confirmation and approval

After confirmation by management, this report was reviewed and approved by the Board of Directors of the Company on 26 March 2024.

Statement of the Board



BEWG fully integrates ESG concepts into its business development and daily operation, and has established an effective ESG governance system with a clear division of responsibilities and obligations. With the goal of "achieve sustainable development of the Company", we strive to continuously enhance corporate core competitiveness.

Supervision on ESG matters

As the highest decision-making body on ESG matters, the Board of Directors of BEWG participates in ESG governance throughout the process, and takes full responsibility for the ESG strategy and ESG disclosure of the Group. The Sustainability Committee under the Board of Directors is responsible for implementing the ESG decisions made by the Board of Directors, developing ESG management systems and strategies, reviewing ESG risks, and overseeing the implementation and promotion of specific ESG issues. The Board of Directors receives reports annually on the progress of ESG and sustainable development work of each functional department of the ESG Working Group and subordinate companies to ensure the smooth implementation of ESG work and an effectiveness of ESG risk prevention and control.

ESG management guidelines and strategies

BEWG has established effective sustainable development governance and management mechanisms. The Group constantly improves means of communication for stakeholder engagement, timely follows up on the ESG priorities of the capital markets and the industry, and regularly identifies and assesses material ESG issues. In 2023, the Board of Directors closely monitored the ESG materiality assessment, measured the importance of each ESG issue based on the analysis and understanding of the external macro-environment and the results of internal and external stakeholder communication results, and determined the ESG materiality matrix of the Group.

Review of ESG targets

In line with its business characteristics, BEWG has set a series of ESG management targets regarding water saving, energy saving, emission reduction, quality and safety, etc. The Board of Directors receives the work progress of ESG-related targets, oversees and evaluates their progress to ensure the facilitation of ESG governance across the Group.

The ESG progress and achievements of BEWG in 2023 have been fully and truly disclosed in this report, which was reviewed by the Sustainability Committee and approved by the Board of Directors on 26 March, 2024.



Message from the Chairman



Chairman of the Board
of BEWG

Mr. Xiong Bin



Message from the CEO



Chief Executive
Officer of BEWG

Mr. Zhou Min



Forging ahead with great resolve and striving towards our goals with earnest efforts along the arduous journey of long-term development. The year 2023 marks the beginning of fully implementing the spirit of the 20th National Congress of the Communist Party of China, a crucial year for carrying forward the previous achievements and laying a strong basis to implement the "14th Five-Year Plan", as well as a challenging year for the high-quality development of Beijing Enterprises Water Group. During this year, we conducted an in-depth analysis of both internal and external environments, charting new paths, exploring new initiatives, and experimenting with new approaches. Embracing the new development philosophy, we strive to foster new quality productive forces, develop green and environment-friendly growth engines, seize opportunities, and continue our efforts, advancing further on the path of sustainable development.

Fostering sound business ethics and solidifying the foundation of modernised governance. BEWG has deepened the spirit of reform of state-owned enterprises and continues to explore the operation models, management system, and business mechanisms of enterprise development. We earnestly advanced integrity building and the fight against corruption, promoted a fine style of integrity and rectitude, enhanced the modern governance framework, and continuously unleashed development vitality. Within the year, we established an Sustainability Committee, developed a comprehensive ESG governance system, and integrated ESG principles into the fabric of corporate development, exerting the distinctive guiding role of sustainable development, and pledging of development prioritisation. In 2023, BEWG's high-quality and sustainable development reached a new level, where we were selected for the first issue of the S&P Global Sustainable Development Yearbook (China Edition); our MSCI ESG rating was upgraded to A, making us the only Asian enterprise in the water industry to receive such a rating.

Building a green business model and developing high-quality development momentum. Faced by new waves of technological revolution and industrial change, and as a flagship enterprise focusing on water resources recycling and aquatic ecological environmental protection, BEWG firmly implements the "Two Mountains Theory,"

relying on scientific and technological and modal innovations to continuously forge core competitiveness in various aspects such as water, sludge, and ecology, and innovate its own process technology in order to tap the potential of new quality productivity. We insist on the thorough, precise, and comprehensive implementation of the new development philosophy, always grasping, measuring, and promoting development with the intrinsic unity of innovation, coordination, greenness, openness, and sharing. We are committed to providing customers with more high-quality, high-performance, highly reliable, safe, and environmentally friendly products and services, thereby supporting the national "Dual Carbon" strategy, promoting high-quality economic development and coordinated advancement of ecological environment protection, and adding green colours to the building of a beautiful China.

Deepening the concept of safety development and pursuing the path of steady development. BEWG adheres to the people-oriented development concept, attaches great importance to production safety, cares for the well-being of employees, and established a sound production safety responsibility system. We maintain the bottom-line thinking and a mindset of preparing for worst-case scenarios, ensuring the meticulous implementation of work. Regarding development and safety as the two wings and dual wheels of enterprise development, we enable safety to promote and ensure development, while emphasizing the equal importance of safety and development, striving to promote the Group's high-quality development in a steady and far-reaching manner.

Standing high again with our eyes open, and setting the sail to ride on the tide. The year 2024 is a crucial year for achieving the goals and tasks of the "14th Five-Year Plan". BEWG will continue to adhere to the development approach of seeking progress amid stability, promoting stability through progress, and establishing before breaking, to promote innovation-driven development. We will actively share our wisdom with colleagues from all walks of life, accelerating the pace of exploring green, low-carbon, and intelligent transition in the new wave of industry reforms, and promote the Group's development to achieve new results and reach new heights. At the same time, we will lay a solid foundation for building a beautiful China with ever-lasting lush mountains, lucid waters, and fresh air, as a tribute to the 75th anniversary of the founding of the People's Republic of China.

Looking back on 2023, global climate change intensified, extreme weather events occurred frequently, and a variety of uncertainties posed severe challenges to the sustainable development of mankind, driving ever-increasing global attention and importance on ESG. As the vanguard of China's environmental water services industry, BEWG remained firmly committed to and fully supported the United Nations' 17 Sustainable Development Goals and effectively integrated sustainability into our core values, guided by China's green development philosophy in the new era. Upholding the business philosophy of "customer orientation through innovation capability," we diligently promoted various sustainability practices and actions while deepening our main business. We made continuous efforts in low-carbon development, industry leadership, technological innovation, and corporate governance to create a green and beautiful living environment, joining hands with all stakeholders to build a beautiful China.

Staying true to our original aspiration as guardians of lucid waters and lush mountains, BEWG fully leverages its industrial advantages, innovates and develops low-carbon technologies, vigorously promotes the green transformation of the industry and itself, fostering harmonious co-existence of human beings and nature. During the year, we closely focused on the whole-process management of water resources, promoted the sustainable use of water resources and water ecological protection, and strived to provide society with safe and reliable water resources while achieving a year-on-year decrease in the auxiliary water ratio and leakage rates of the pipeline network. During the year, we focused on climate change responses, closely following the guidance of China's "Dual Carbon" strategy and seizing green development opportunities to empower the industry's low-carbon transition. By optimising the allocation of business resources and continuously increasing investment in low-carbon technology R&D and applications, a series of green and low-carbon technologies developed by the Group have been widely promoted and applied in numerous national projects, delivering remarkable carbon reduction benefits and contributing our solutions to building ecological civilisation.

Sharing the same situation in and as the facilitator of a harmonious society, BEWG values scientific and technological innovation, constantly explores new opportunities for the industry development while shouldering social responsibilities and striving to create a new and better life for the people. During the year, we innovatively

proposed the "X in Water" plan, anchored in the paradigm of upgrading scientific and technological innovation and chart new goals, explored new paths, and researched methods for the future development of the water industry. During the year, we focused on technological advancement, driving continuous innovation and upgrades through technology introduction and independent R&D, enabling BEWG to accelerate the product marketisation of technologies and products while iteratively enhancing our core competitiveness. During the year, we expedited digital development breakthroughs, upgraded intelligent operations systems, and refined regional intensive management. During the year, we cared for the employees' career development and mental well-being, deepening our talent development system to ensure an exceptional talent pool. We concentrated on popularization and education of environmental protection, supporting rural revitalisation through concrete actions that fulfilled our responsibilities as a state-owned enterprise.

Pursuing excellence as implementors of deepened scientific governance, BEWG strengthens corporate risk control and implements a modernised scientific governance system based on compliance and integrity in operation. During the year, we established a three-tier "Group-Region-Area" risk management system, and continued to optimise risk control measures to further solidify the cornerstone of BEWG's long-term, stable operations. During the year, we paid attention to the macroeconomic trends in major international capital markets, benchmarked excellent industry practices, conducted internal and external stakeholder interviews, and evaluated and updated our material ESG issues to better advance BEWG's future sustainability management endeavours.

A time will come to ride the wind and cleave the winds, while setting our sail across the sea which raves. BEWG embraces sustainability as an innate driving force of enterprise development, actively responds to stakeholders' demands, develops asset-light business opportunities through the ESG thinking, and leads green development through product and service upgrading to realise both social and economic gains. In 2024, BEWG will closely keep up with the pace of development in the new era, align with national strategic plans, and unswervingly pursue high-quality and sustainable development. With ingenuity preserving our original aspiration and innovation shaping our future, we shall forge ahead, strive to become a world-class provider of water and environmental services that is trusted by the people and leads development!



Spotlight 1

Responding to climate change and taking low-carbon action

The challenges posed by climate change to mankind are severe and long-term, and the society has come to realise the severity and urgency of the climate crisis as well as the possible opportunities along the way. BEWG actively responds to global climate change and discloses information related to climate change in the TCFD¹ framework. BEWG has developed a sound risk management system, regularly identifying and evaluating risks and opportunities, comprehensively optimising resource allocation for business operations to minimise the negative impacts of climate-related risks on the Group, and seize new opportunities.

¹ TCFD refers to Task Force on Climate-related Financial Disclosures. In December 2023, the Financial Stability Board (FSB) has officially transferred TCFD's responsibilities around climate-related financial reporting to the International Sustainability Standards Board (ISSB). The TCFD organisation has been dissolved.



Climate governance

BEWG incorporates the management of climate change issues into the existing ESG governance framework. The Board is responsible for identifying and determining material ESG issues, including climate change issues, and advising on ESG objectives, policies and structures. The Sustainability Committee is established under the Board to manage and monitor the Group's climate change issues and reports to the Board regularly. Functional departments are responsible for managing and addressing climate change issues that affect their own operations, and subordinate units are responsible for performing data statistics and information collection related to climate change.



Climate strategy

BEWG regularly identifies the latest impacts of climate change on business operations and fully considers a response strategy that aligns with its development strategy.

Scenario setting

With the global transition to a low-carbon economy, BEWG conducted a special research programme on climate change based on different climate scenarios and policies of international organisations and national and local governments. Having selected RCP4.5², a representative concentration pathway developed by IPCC³, as the climate analysis scenario of the Group, and made full use of several international authoritative databases including Aqueduct⁴, with the recommendations and literature studies by our own experts and independent experts, we have identified several opportunities and physical climate risks that may have a financial impact on BEWG's business under this scenario.

Climate change risks and opportunities

BEWG actively identifies, assesses and manages the possible impacts (including material physical risks, transition risks and opportunities) of climate change on its global assets and business operations and takes a path of "proactive adaptation, flexible synergy" to adapt itself to and mitigate the impacts of climate change on business operations and sustainable development with effective measures. At the same time, BEWG attaches great importance to the impact of climate change on the development of the water industry and the community of human destiny. Therefore, in 2023, while focusing on the adjustment of enterprise management strategy, the Group set up a working group of "X in Water" to carry out research on cutting-edge topics in the future industry, hoping to help the industry progress based on the pioneering, subversive and applied topics that the Group carried out, and address the effects of climate change.

² The Intergovernmental Panel on Climate Change (IPCC) is an intergovernmental body established by the World Meteorological Organisation (WMO) and the United Nations Environment Programme (UNEP) in 1988.

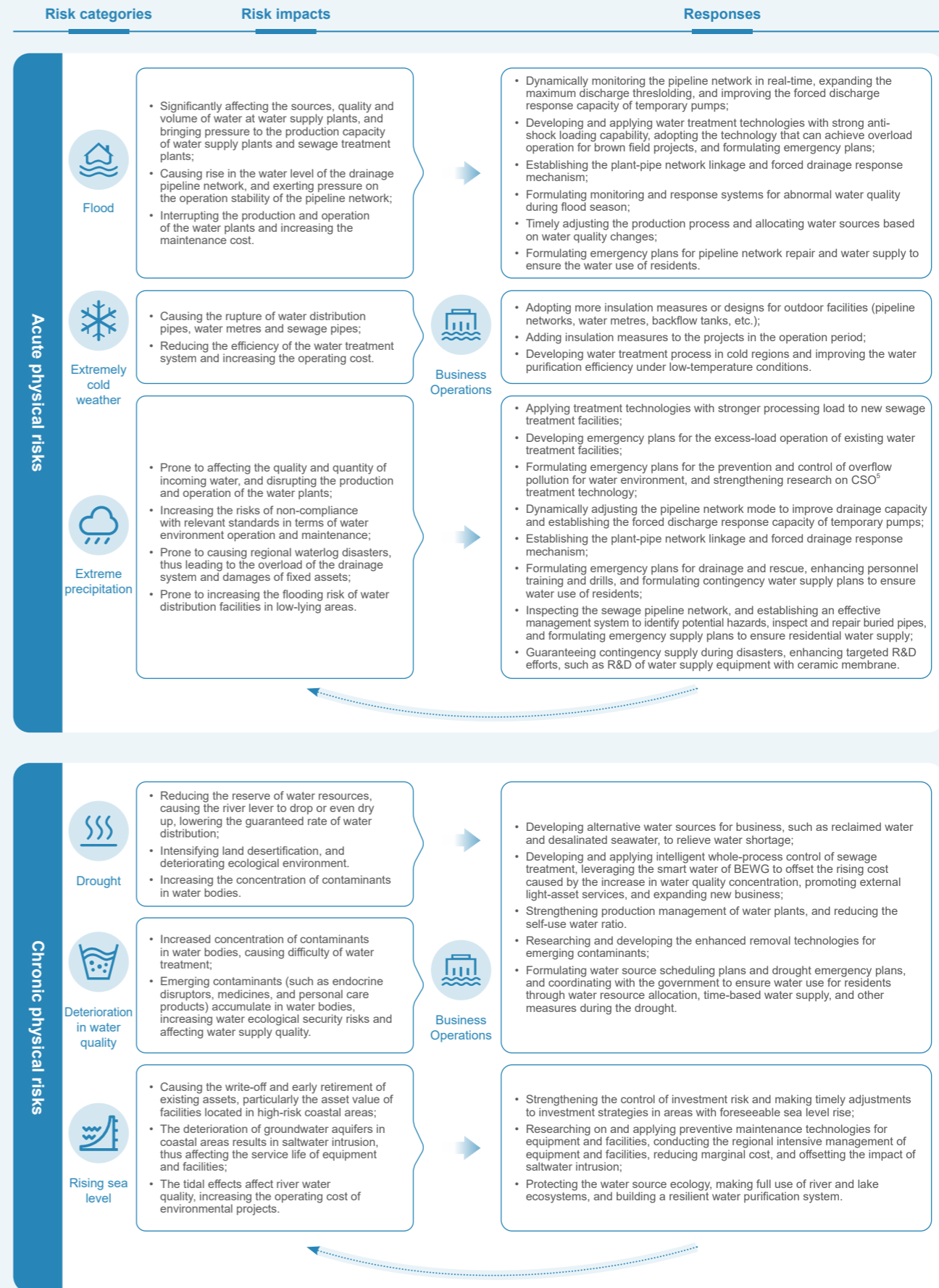
³ The Representative Concentration Pathways (RCPs) are scenario analysis models developed to analyse and evaluate climate change and forecast climate change trends.

⁴ Aqueduct is a tool launched by the World Resources Institute's Water Programme to identify and assess water risks around the world.

<https://www.wri.org/aqueduct>

⁵ CSO refers to combined sewer overflow.

Climate-related physical risks of BEWG



Climate strategy



Climate-related transition risks of BEWG

Transition risks	Risk categories	Risk impacts	Response measures
Policy and legal risks	Changes in energy policies	<ul style="list-style-type: none"> In response to the national policy of increasing the proportion of clean energy and non-fossil energy, BEWG needs to purchase and apply on-site, e.g., roof-top, solar photovoltaic (PV) power generation facilities in the plants, resulting in additional operation costs. 	<ul style="list-style-type: none"> Promoting technological innovation and improving solar PV utilisation efficiency; Making good use of favourable support from national clean energy policies.
	Tightening of carbon emission policies	<ul style="list-style-type: none"> The government is highly likely to impose carbon tax and expand the coverage of industries that adopt carbon emission quota, affecting the cost of BEWG; If the requirements of carbon trading and carbon tax become increasingly stricter, BEWG may face punishments for inadequate completion and cooperation, which may damage brand reputation. 	<ul style="list-style-type: none"> Strengthening clean and efficient utilisation of coal; Strictly managing the approval of new projects and energy consumption indicators.
Technical risks	Upgrade and maintenance of the pipeline network	<ul style="list-style-type: none"> Reducing the leak rate of the pipeline network is particularly important in areas lacking water resources. More technical manpower, material resources, and financial resources should be devoted to refined pipeline network management and smart pipeline network construction. 	<ul style="list-style-type: none"> Developing and applying technology for rapid pipeline network leak detection, rapid repair, and pipeline network leak control; Maintaining and upgrading the pipeline network, replacing the old pipeline network, and ensuring the quality of the newly reconstructed pipeline network; Strengthening pipeline network inspection and emergency repair and maintenance management.
	Greenhouse gas (GHG) capture, collection and monitoring technology	<ul style="list-style-type: none"> As the government and the water sector strengthen control over greenhouse gas management, BEWG will face stricter requirements for greenhouse gas capture, collection, and monitoring. 	<ul style="list-style-type: none"> Upgrading technology to reduce greenhouse gas emissions; Promoting research on the technology of recovering GHG from the water treatment process.
	Improved resilience of sewage treatment system	<ul style="list-style-type: none"> The noted variation of the coefficients regarding water quantity and quality between the rainy season and the dry season has a great impact on the existing sewage treatment system, which makes it necessary to develop a treatment system with high tolerance, flexibility, and controllability. 	<ul style="list-style-type: none"> Developing a treatment system with high tolerance, flexibility, and controllability; Monitoring the working conditions of the sewage treatment system in real time, and immediately responding and making an adjustment if being affected; Improving the impact resistance of the sewage system.
Market risks	Growing awareness of green consumption among users	<ul style="list-style-type: none"> With the increasing emphasis on green consumption across all sectors, water companies are facing more direct green transition and low-carbon demands from consumers. 	<ul style="list-style-type: none"> Accelerating green transition; Developing and promoting more environment-friendly green products and services.

Climate change brings both risks and opportunities to businesses. BEWG has not only identified and responded to the climate change risks mentioned above but also has paid close attention to climate change-related transition opportunities, and strived to integrate these opportunities into daily operations and strategies.

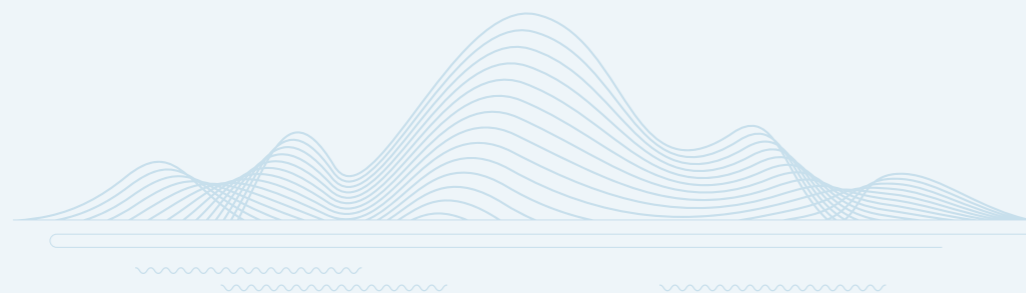
Climate opportunities of BEWG

Transition opportunities	Opportunity categories	Opportunity description
Policy and legal opportunities	Innovation of mainstream technologies	<ul style="list-style-type: none"> Increasing investment in the R&D of new low-carbon technologies in the fields of energy conservation and consumption reduction, energy self-sufficiency, and resource regeneration, as well as technological renovation in operational energy conservation, actively seeking and applying alternative technologies of clean energy, responding to energy policy requirements, and improving the competitiveness of BEWG.
	Development of rural water services	<ul style="list-style-type: none"> The Chinese government continuously promotes the improvement of rural sewage treatment standards, policies, and regulations, and emphasises the improvement of the rural living environment, including sewage treatment. BEWG leverages our leading water treatment technologies to build more high-standard rural water treatment facilities, which will help to increase the business revenue of the Group; Actively responding to national standards and policies, advancing technological innovation, and solving the difficulties of rural sewage treatment will help to enhance the reputation and image of the Group.
Technical opportunities	Improvement of operational efficiency through smart water	<ul style="list-style-type: none"> The smart urban water system represents the megatrend of the water industry. The Group should take advantage of the technologies and operating experience of smart water to improve water treatment efficiency and water resource utilisation rate, narrow the gap between production and sales of water supply, reduce operating costs, and improve revenue and industry competitiveness.
	Development and use of new energy (solar PV, sewage source heat pump, biogas power generation, and sludge recycling)	<ul style="list-style-type: none"> Implementing national policies, actively deploying the use of new energy, and reducing the cost of low-carbon transition; Making deployment in two directions of clean power (solar PV) and clean heating (sewage source heat pump) in advance, and actively conducting the innovation research on related technologies; Diversifying low-carbon business opportunities and business types, and boosting synergies among sectors such as energy, transportation, building, industry and agriculture. For example, water plants supply or recharge water resources after treatment for domestic, industrial, ecological and agricultural use, and can provide excess electricity or heat generated by clean energy to the surrounding domestic or industrial facilities.
	Resilient sewage treatment systems	<ul style="list-style-type: none"> Promoting the R&D and application of new technologies with a strong anti-impact load ability, reducing investment costs, and improving operational flexibility and reliability.
Market opportunities	Green financing	<ul style="list-style-type: none"> With the growing maturity of the green bond issuance market, the advantages of green financing are increasingly prominent. Through green financing, BEWG will effectively increase the amount of financing and alleviate financing difficulties.
	Growing awareness of green consumption among users	<ul style="list-style-type: none"> In the context of the "3060 Dual Carbon goals", the government has put forward stricter requirements for energy conservation and emission reduction in the water industry, and consumers show a growing preference for green and low-carbon products. By carrying out emission reduction throughout the life cycle and applying more eco-friendly technologies, BEWG meets the green transition and low carbon requirements of more consumers/customers.

We keep researching and updating approaches to addressing climate change and strive to reduce the impact of climate change on our business. In the future, BEWG will continue to improve the environmental management and supervision mechanisms, explore opportunities for business development, management improvement, and product innovation brought about by climate change, and further improve policies and measures to address climate change. For more details on our response measures and plans for climate change risks and opportunities, please refer to the sections "Climate targets and metrics", "Water resource management", "Environmental impact", and "Excellent quality" in this report.

Climate risk management

BEWG has integrated climate risk management responsibilities into the existing risk management framework, and clarified risk management procedures, including risk identification, risk assessment, and risk handling (please refer to the section "Risk management" for details). Based on the PDCA⁶ principles, we assess and manage climate change risks in an efficient, systematic, and standardised manner, forming a closed-loop management system covering climate change risk identification, assessment, response, inspection, and update. In the future, we plan to integrate climate risks to the Group's risk management system to better cope with climate risks, and continuously promote climate risk management.



Low-carbon development is a development path recognised by the global community and a common course of action for all stakeholders to address climate change. In the context of the "3060" dual carbon policy, BEWG adheres to the development philosophy of "prioritising environmental protection, reducing carbon emissions and improving efficiency" and actively leads the carbon emission reduction and low-carbon transformation of the water industry, thus contributing to achieving the "carbon peaking" and "carbon neutrality" goals. This year, based on our own practice, BEWG has prepared the *Company Action Plan for Carbon Peaking and Neutrality* to continuously tap into the potential of carbon emission reduction and improve the low-carbon ways of operation.

In 2023, BEWG continuously increased inputs into the in-depth practice and research on carbon emission reduction from the perspectives of low-carbon operation, low-carbon technologies, low-carbon construction, low-carbon offices and low-carbon collaboration to assist in achieving the energy conservation and emission reduction targets.

Energy consumption of BEWG in 2021-2023

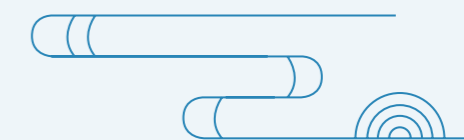
Indicator	Unit	2023	2022	2021
Water business in Chinese mainland				
Non-renewable energy substitution	kWh	1,900,571,731	1,763,557,170	1,542,694,570
Renewable energy substitution	kWh	31,350,264	28,900,222	23,698,836
Gasoline consumption	tonne	1,016	653	376
Diesel consumption	tonne	483	401	150
Natural gas consumption	m ³	237,505	164,348	361,111
Purchased steam for heating	GJ	203	482	7,565
LPG consumption	tonne	66	73	335

⁶ PDCA refers to Plan, Do, Check, Act, a four-step working procedure principle.

Indicator	Unit	2023	2022	2021
Overseas water business				
Non-renewable energy substitution	kWh	146,966,730	127,413,922	131,938,317
Renewable energy substitution	kWh	2,124,851	/	/
Gasoline consumption	tonne	15	14	/
Diesel consumption	tonne	640	601	365
LPG consumption	tonne	/	0.48	/
Solid waste business				
Non-renewable energy substitution	kWh	20,216,999	19,324,147	19,844,874
Renewable energy substitution	kWh	36,969,979	22,617,494	15,877,260
Gasoline consumption	tonne	10	10	12
Diesel consumption	tonne	510	620	266
Natural gas consumption	m ³	1,599,575	1,172,065	1,658,287
LPG consumption	tonne	1.48	0.88	0.91
Office building				
Non-renewable energy substitution	kWh	5,730,888	5,582,805	4,544,184
Gasoline consumption	tonne	218	260	193
Diesel consumption	tonne	25	16	1
Natural gas consumption	m ³	9,572	12,998	/
Purchased steam for heating	GJ	3,578	3,605	2,440
LPG consumption	tonne	5.51	4.95	3.64
Total				
Comprehensive energy consumption	tce	261,808	241,299	214,414
Comprehensive energy consumption density	tce/10,000 RMB	0.107	0.112	0.093

Notes:

- Comprehensive energy consumption is calculated according to the General Principles for Calculation of the Comprehensive Energy Consumption (GB/T 2589-2020) by covering the consumption of gasoline, diesel, natural gas, electricity and purchased heat.
- In 2023, the statistical scope of the data in the Report changed, we sort out the indicator scope, and some data of year 2022 is retroactively adjusted. Meanwhile, this report followed the presentation of currency changes in the Annual Report, changing the unit of the "Comprehensive energy consumption density" from "10,000 HKD" to "10,000 RMB".



Climate targets and metrics

GHG emissions of BEWG in 2021-2023

Indicator	Unit	2023	2022	2021
Water business in Chinese mainland				
GHG emissions - Scope 1	tCO ₂ e	5,317	3,821	3,386
GHG emissions - Scope 2	tCO ₂ e	1,083,918	1,005,809	942,030
Total GHG emissions	tCO ₂ e	1,089,235	1,009,630	945,416
Overseas water business				
GHG emissions - Scope 1	tCO ₂ e	2,056	1,936	1,148
GHG emissions - Scope 2	tCO ₂ e	88,199	82,445	83,354
Total GHG emissions	tCO ₂ e	90,255	84,381	84,502
Solid waste business				
GHG emissions - Scope 1	tCO ₂ e	5,098	4,517	4,461
GHG emissions - Scope 2	tCO ₂ e	11,530	11,021	12,107
Total GHG emissions	tCO ₂ e	16,627	15,538	16,569
Office building				
GHG emissions - Scope 1	tCO ₂ e	779	886	603
GHG emissions - Scope 2	tCO ₂ e	3,668	3,585	3,041
Total GHG emissions	tCO ₂ e	4,447	4,471	3,644
Total				
Total GHG emissions	tCO ₂ e	1,200,564	1,114,020	1,050,131
GHG emissions density	tCO ₂ e/10,000 RMB	0.49	0.52	0.45

Notes:

- GHG emissions – Scope 1 are generated from stationary sources (diesel and natural gas) and fuel consumption (gasoline and diesel) from transport vehicles. The emission factors of natural gas, diesel and gasoline, refer to the Guidelines for Accounting Methods and Reporting of Greenhouse Gas Emissions from Enterprises in Other Industrial Sectors issued by the National Development and Reform Commission, PRC on July 6, 2015.
- GHG emissions – Scope 2 are generated from purchased electricity and purchased heat consumption. The emission factors of purchased electricity, refer to the Notice on Doing a Good Job in 2023-2025 Reporting and Management of Greenhouse Gas Emissions of Power Generation Enterprises issued by the Ministry of Ecology and Environment, PRC on 7 February, 2023. The emission factors of purchased heat, refer to the Guidelines for Accounting Methods and Reporting of Greenhouse Gas Emissions from Enterprises in Other Industrial Sectors issued by the National Development and Reform Commission, PRC on 6 July, 2015.
- In 2023, the statistical scope of the data in the Report changed, we sort out the indicator scope, and some data of year 2022 is retroactively adjusted. Meanwhile, this report followed the presentation of currency changes in the Annual Report, changing the unit of the "GHG emissions density" from "10,000 HKD" to "10,000 RMB".

Low-carbon operation

Adhering to the green development pathway, BEWG has formulated internal management policies such as *Low-Carbon Operation Management Measures of BEWG* to carry out low-carbon operations from energy conservation during production, energy substitution and recycling, and has continued to increase inputs in upgrading operational energy-saving technologies to promote energy conservation and carbon emission reduction.

Production energy conservation

The Group actively promotes energy-saving production, improving the energy efficiency and reducing carbon emissions during production through lean management of energy efficiency, optimisation of intelligent operation mode, energy-saving equipment renovation, and other methods.

BEWG adopts a lean management model for energy efficiency in production, and has established a set of operational management standards to ensure safe, stable, and efficient operations. We set energy consumption control targets for the current year based on the actual energy consumption of the previous year, and conduct monthly tracking during operations. Expert meetings are held to analyse and rectify abnormal energy consumption data and to improve energy efficiency. In addition, BEWG has established a system and equipment evaluation model to optimise equipment operation methods and working hours. Energy-efficient equipment operation has been achieved through multiple paths, such as precise control, equipment selection, and frequency conversion control.

By fully integrating intelligent operation with green and low-carbon operation, we have developed online process control tools, transforming the most advanced process control methods into platform-based application tools to improve the stability and reliability of the system and promote energy conservation in production.

In 2023, BEWG continued optimising energy-saving technologies with a focus on energy-saving upgrading of energy-intensive equipment like submersible centrifugal pumps, submersible mixers, and aeration blowers. We evaluate equipment energy efficiency according to relevant standards, identify energy-inefficient equipment, and develop improvement plans accordingly. By the end of 2023, a total of RMB 16.75 million had been invested in technological renovation projects for energy conservation, with an annual electricity savings of RMB 9.2 million.

Energy substitution and recovery

BEWG constantly optimises the energy consumption structure and makes full use of the roofs of the water plants by installing distributed solar PV power generation devices to provide clean power for them as an alternative to fossil fuels. By the end of 2023, the Group had more than 50 water plants using solar PV power generation, with a total installed capacity of over 166 MW.



Case: Kai Fat Harbour Cleaning Services Limited solar-powered vessels

In 2023, Kai Fat Harbour Cleaning Services Limited in Hong Kong installed solar panel devices on all refuse removal and oil pollution cleanup vessels. After the retrofit, the vessels are powered by solar energy instead of diesel and will be officially put into service in 2024. It's expected to save about 15,000 litres of fuel oil per year.



By the end of 2023
a total of RMB

16.75 million

had been invested in
technological renovation
projects for energy
conservation

With an annual electricity
savings of RMB

9.2 million





Case: Overseas companies' application of solar PV power generation

BEWG (PT) S.A. in Portugal installed solar PV panels at its water plants. By the end of the reporting period, the estimated annual power generation is about 1,507 MWh, and the annual amount of reduced carbon emissions is about 716 tonnes.

BEWGI-H₂O Pte. Ltd. in Singapore installed solar PV panels at its water plants, and the solar power supply was officially put into service in March 2023. The estimated annual power generation is 2,208 MWh, and the amount of reduced carbon emissions is 1,049 tonnes.



PV project of the BEWG (PT) S.A. <Portugal>

In addition, we continue promoting energy recovery technologies such as sewage source heat pump and anaerobic digestion to further reduce fossil energy consumption. In sewage treatment projects, sewage source heat pump fully absorb the heat energy of reclaimed water generated after sewage treatment, providing cooling and heating for office buildings, production areas and residential areas in the plants, and reducing electric energy consumption. In sludge treatment projects, we use biogas generated during anaerobic digestion to provide energy for production, reducing the use of purchased energy. Moreover, we actively conduct research on topics such as PV full life cycle assessment and temperature changes along the sewage source heat pump to advance the application of technologies related to clean energy.

Low-carbon technologies

In active response to the national strategy, BEWG continuously explores low-carbon process technology and low-carbon control technology, and has developed a series of products with new low-carbon technologies.

Low-carbon process technology

We have developed a series of green and low-carbon sewage treatment technologies for our main business, including main process technologies - BEAOA and BESWIFT, and low-carbon unit process technologies - BE-Fenton and BECFBR to help modern water plants achieve low energy consumption and high standard treatment.

BEAOA

BEAOA is a treatment process based on sludge double recirculation—Anaerobic/Oxic/Anoxic (AOA) technology for efficient and deep nitrogen and phosphorus removal. With such advantages as efficient nitrogen removal, energy saving and consumption reduction, it can reduce excess activated sludge by over 30% during operation and reduce energy consumption of aeration units by over 20%. In 2023, BEAOA was applied to Shandong, Guangxi and Inner Mongolia projects and granted a total of 10 patents. In the future, it will be applied to more projects to support the sound development of eco-environmental industries.



Case: BEAOA technology certification by the Ministry of Ecology and Environment of the PRC

The BEAOA technology developed by BEWG has been certified by the Environmental Development Center of the Ministry of Ecology and Environment with a certificate of eco-environmental technology assessment. Such certification fully affirms the energy conservation and sludge reduction effects of BAEAOA in urban domestic sewage treatment, and accelerates the transformation and engineering application of BAEAOA technology.



Certificate of eco-environmental technology assessment

BESWIFT

As a new technology product independently developed based on aerobic granular sludge technology, BESWIFT can reduce energy consumption of aeration and other processes by over 20% throughout the year, and the consumption of nitrogen and phosphorus removal chemicals. As of the end of 2023, BESWIFT has obtained 5 authorized patents, and is continuously and widely applied in engineering, with expectable achievements made in multiple places:

- A 1,000-tonne-level prefabricated project has been in stable operation for three years in Jinan, Shandong;
- A 10,000-tonne-level renovation project has been in stable operation for more than one year in Foshan, Guangdong;
- A mobile device has been in stable operation for more than six months at the industrial parks in Chifeng, Inner Mongolia.
- New projects are carried out in a number of places, such as Qingdao, Shandong and Enping, Guangdong.

Striving to realise high-quality development while promoting the sustainable development of the environment industry, BESWIFT aims to create standardised products that can be applied on a large scale in different application scenes, and provide efficient and low-consumption new technologies for new construction or transformation and expansion projects.

Climate targets and metrics



BE-Fenton

With its advantages such as stable operation, precise control, low costs, low carbon and energy conservation, BE-Fenton enables fully automatic operation when it is used together with our self-developed precise dosing control system. By 2023, this technology had been applied in 6 projects with a designed processing capacity of 145,500 cubic metres/day, reducing refractory COD by approximately 2,610 tonnes per year. Two authorised patents have been obtained for this technology.

Case: No.2 Sewage Treatment Plant project in Xuecheng District, Zaozhuang City

The No.2 Sewage Treatment Plant project in Xuecheng District of Zaozhuang City in Shandong Province is featured by inflow containing refractory industrial wastewater, as well as the high water quality concentration in inflow, complex water quality components, and difficult water treatment. The construction for the project was completed and put into production in 2023. The BE-Fenton process was applied in the advanced treatment phase, achieving a COD removal rate at 40% - 60% and saving operation costs by 30% - 50% compared to regular technology.



No.2 Sewage Treatment Plant project in Xuecheng District, Zaozhuang City

Low-carbon control technologies

BE-EMR⁷

BE-EMR is BEWG's Engineering Management Robot (EMR), a biochemical treatment intelligent control solution exclusively designed for sewage plants. In 2023, we optimised and upgraded BE-EMR, achieving better energy conservation and consumption reduction effects. By 2023, we have applied and promoted BE-EMR technology to 50 projects.

Case: Application of the BE-EMR system to No.1 Reclaimed Water Plant project in Yinchuan, Ningxia

The BE-EMR system was applied to the Yinchuan No.1 Reclaimed Water Plant project (300,000 tonnes/day) in 2023. The application of BE-EMR technology construction for the project managed to reduce the power consumption per tonne of water by 15% and the consumption of dephosphorisation agents by 88%, and add zero carbon source, thus achieve the goal of stabilizing water quality, saving energy, and reducing consumption.



Aerial view of Yinchuan No.1 Reclaimed Water Plant project

BELEBC

As a biochemical system automation solution developed based on operational thinking, BEWG's low-carbon and efficient biochemical control system (BELEBC) can ensure stable and reliable effluent of the water plant and, at the same time, reduce energy consumption by 10% and carbon source chemical agent consumption by 20%, thus contributing to the innovation of low-carbon and automatic operation at the water plant. This technology has been promoted and applied in four projects, located in Shandong and Sichuan.

⁷ BE-EMR (Engineering Management Robot, EMR), i.e., BEWG's Engineering Management Robot

Low-carbon construction

BEWG values low-carbon construction and makes continuous efforts in R&D to improve construction technology and project application, so as to reduce carbon emissions during construction. We have defined requirements on project energy consumption and material consumption during the construction phase in the *Interim Administrative Measures for Engineering Products Appraisal of BEWG*, guiding the optimisation of process design and equipment selection during the construction phase with low-carbon operation standards during the operation period.

Case: Application of the "Kuo Neng" product to sewage treatment project

"Kuo Neng" refers to a comprehensive solution to enhance the sewage treatment capacity by improving sewage treatment efficiency. The product can enhance the sewage treatment capacity by 30% - 50% while reducing the energy consumption and drug consumption by 10% - 20%. By using the "Kuo Neng" product, Jiangsu Kunshan Sewage Treatment Plant solved its operation overload problem at the plant and built a new benchmark model for its capacity expansion and transformation.



Application of the "Kuo Neng" product to Jiangsu Kunshan Sewage Treatment Plant

In addition, we attach great importance to the eco-friendly gains that "prefabricated buildings" can make in terms of energy saving and consumption reduction, and promote the research, development and application of prefabricated wastewater treatment plant.

Case: Topic of "prefabricated wastewater treatment plant" approved in technological achievement evaluation

In 2023, BEWG carried out strategic cooperation with PCTEAM Co., Ltd. to promote technical research and project implementation for prefabricated wastewater treatment plant. The topic of "research and application of key technologies to prefabricated wastewater treatment plant (buildings and structures)" was approved in the technological achievement evaluation. The expert committee agreed that, it has reached the international advanced level due to its outstanding advantages in terms of shortening the construction period, improving quality and reducing carbon emissions. This cooperation opens up new prospects for the application of prefabrication technology in the field of environmental protection.



Technological achievement evaluation certificate for "research and application of key technologies to prefabricated wastewater treatment plant (buildings and structures)"

Case: Application of "prefabricated water plant" technology to water plants

In 2023, the "prefabricated water plant" technology was applied to the upgrading and renovation project of the No.3 Sewage Treatment Plant in Puyang City, Henan Province, as well as to the sewage treatment plant in Guan County (expansion project) and the ancillary pipeline network project. According to the inspection, the carbon emissions from on-site construction were reduced by 16.58% year on year, and the construction cycle was shortened by more than 30%.

It is the first time in China that such type of structural technology has been applied to water industry. This technology has not only mitigated the quality control risk, but also shortened the construction period. This innovative application in production has outstanding advantages in terms of labour savings and quality improvement, and provides a feasible example for in-situ technological upgrading in the water industry.



Low-carbon office

In 2023, BEWG continued to explore low-carbon office practices, further reducing the consumption of various resources.

Energy conservation in the office

- **Energy-saving lighting replacement:** Lighting fixtures in the passenger elevator halls of the office buildings have been upgraded by replacing the traditional lighting fixtures with LED ones. The renovation is expected to reduce power consumption by approximately 12,600 kWh, electricity bill by approximately RMB 5,100 and carbon emissions by approximately 9.08 tonnes every year.
- **Upgrading the control of air conditioning units:** The power control of certain air conditioners in the office building has been upgraded so that they are set to run for 12 hours per working day during the cooling season, 24 hours during the heating season, and shut down during the transition season, with an estimated electricity consumption reduction of 2,296 kWh per year;
- **Formulation of environmental protection guidelines:** Environmental protection guidelines require staff to minimise energy consumption in their daily activities, including using energy-efficient lighting systems, equipment and instruments and switching them off in time, as well as designating staff to regularly inspect equipment usage.

Water saving in the office

- Use water saving appliances and faucets;
- Use reclaimed water;
- Post signs on saving water in offices;
- No bottled water for internal meetings.

Material saving in the office

- **Promoting paperless office:** We vigorously promote the use of intelligent office software, require work communication and meeting notification to be carried out through online office software, and advocate online meetings, in order to effectively reduced the use of office paper resources and mobile storage media;
- **Paperless human resource process:** Through the paperless contracts and the digital contracting of human resources, we have effectively saved paper resources and reduced carbon emissions by approximately 1.5 tonnes;
- **Simplifying off-line meetings:** We recycle table cards and print less.

Low-carbon collaboration

Responding to climate change to achieve the “dual carbon” goals has become the core strategy for the development of the water industry. As the water industry is responsible for the allocation, purification and recycling of water resources, its responsibilities for the “dual carbon” strategy will increasingly grow in the future. As a leading enterprise focusing on water-related environmental protection and water recycling, BEWG will take on its responsibilities and seize the opportunities to fulfill its commission of leading and promoting the high-quality development of the water industry in China, and actively serve the “carbon peaking” and “carbon neutrality” strategies.

We take part in the establishment of the “X in Water” Expert Group, and work together with Beijing University of Civil Engineering and Architecture to prepare the *Industry Report for Carbon Peaking and Neutrality* and the *Enterprise Action Plan for Achieving Dual Carbon Goals*, taking the study on the dual-carbon technology pathway of BEWG as an important research direction.



Case: “X in Water” focusing on carbon emission reduction of the water industry

On 25 November, 2023, the third meeting of the X in Water Expert Group in 2023 was held in Hangzhou. Focusing on the “dual carbon” strategy, it carried out a systematic study on the carbon emissions from urban water services in the meeting. During the meeting, the working group introduced the opportunities and challenges facing the water industry under the “dual carbon” strategy. The new water service innovation manager of BEWG presented the “The Technology Pathway of BEWG for Carbon Peaking and Neutrality Report”, taking BEWG as the research object to provide advice on accounting methods and implementation pathways in detail for large water enterprises to achieve the “carbon peaking” and “carbon neutrality” goals within a multifaceted policy framework.



“Dual carbon” meeting of the X in Water Expert Group

Adhering to the concept of diversification and mutual understanding, the Group actively participates in industry exchange activities and low-carbon theme forums to share experience in energy-saving and carbon reduction technologies and discuss the cutting-edge development trends of the industry. Besides, the Group takes part in the development of industry low-carbon standards to improve low-carbon technologies and guide the industry to realise low-carbon transition in a standardised manner.

- BEWG has released a corporate standard named the *Passive Design Guidelines for Buildings of Urban Sewage Treatment Plants (Lighting and Ventilation)* to promote energy-free lighting and ventilation for buildings in water plants.
- BEWG has participated in the preparation of the *Evaluation Standards of Carbon Emission Reduction for Urban Sewage Treatment Plants*, which provides specific reference for the construction and reconstruction of sewage treatment plants, and the optimisation of process design and equipment selection.
- BEWG has participated in the preparation of the *National Development Roadmap of Methane Control Technology* to summarise the technical options, development paths and policy recommendations for methane monitoring and emission reduction, aiming to promote research on methane control technology development.
- BEWG has participated in the preparation of the *Carbon Emission Calculation Standard for Municipal Engineering Construction*, which analyses the carbon emission calculation methods used in the construction, reconstruction and expansion of municipal engineering projects in light of their characteristics and aims to promote the quantification of low-carbon construction.



Case: BEWG in the carbon monitoring and assessment pilot list

In September 2023, the Ministry of Ecology and Environment officially issued the *Plan for Deepening Carbon Monitoring and Assessment Pilot Work*, and BEWG, after successfully completing the first batch of national pilot work, was put on the second batch of national pilot list as one of the representative enterprises of the waste industry. In the future, the Group will better play its demonstration role, and support the state not only in monitoring carbon and pollution reduction and international compliance, but also in establishing a sound technical and methodological system for carbon monitoring and assessment.



Case: BEWG participated in China International Fair for Trade in Services to share intelligent low-carbon experience

In September 2023, the Digital Low-carbon Sub-Forum of China International Fair for Trade in Services was held in Beijing. At the forum, Beijing Green Industry Development Promotion Association issued the *Summary of Green Technologies and Successful Cases in Beijing*, and five of BEWG’s proprietary technologies, including BEAOA, BELEBC, BECFBR and BESWIFT were selected and displayed in the document. As the only representative of water enterprises at the forum, BEWG shared experience and thoughts on “intelligent low-carbon” practices in recent years, providing new ideas for green and intelligent transformation of technologies and products in the industry.



BEWG at the Digital Low-carbon Sub-Forum

Spotlight 2

Exploring X in Water to promote industry progress

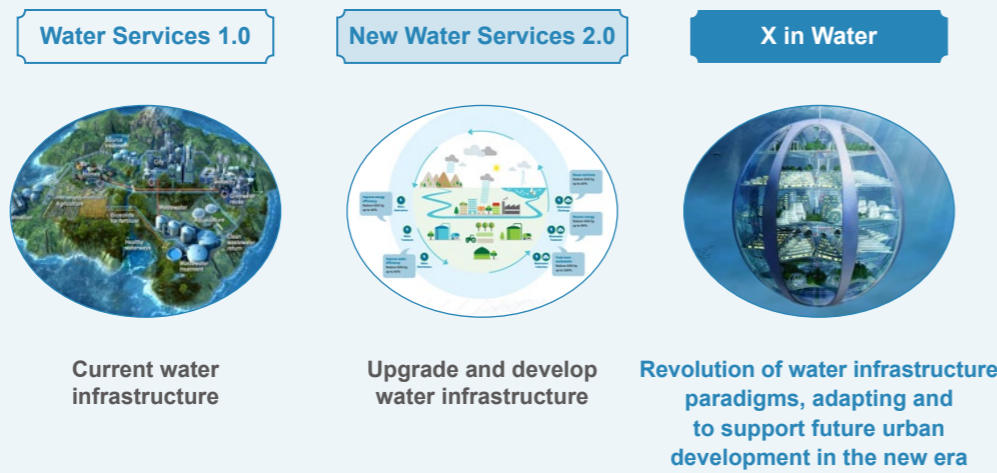
As the world today is undergoing major changes unseen in a century, and green and low-carbon development is being promoted worldwide, the development concept of the utility sector is changing, and modes such as unmanned vehicle and dark factory have begun to take shape. In 2023, BEWG proposed the X in Water development plan for the first time, aiming to upgrade the paradigm for technological innovation in the water industry and contribute to the progress of the industry, as well as guide the direction for BEWG's future development.



Determination of paradigm upgrading

The X in Water development plan is determined based on the three development phases of the water industry in China: Phase I, the "water services" phase, namely the phase for the construction and improvement of water infrastructure; Phase II, the "new water services" phase, which responds to the national requirements for water infrastructure system in a high-quality development phase and transforms the traditional urban water services into "Urban Water Services 2.0" through upgrading in integration and specialization; Phase III, the "X in Water" phase, where new paradigms and scenarios for water infrastructure emerge to adapt and to support future urban development in the new era.

Three phases of water service development



Our "X in Water" looks to the future and starts today. We have identified 2025 and 2030 as two critical years and determined three major development directions. We invite experts from government, industry, universities and institutions to combine environmental science, engineering and management based on the resources and power of the industry, which starts a new era for the industry to explore the development direction and journey for X in Water.

Development direction



Toward 2025, we will promote the combination of major topics covering the entire industry chain and the Product 2.0 development plan to achieve the strategic goal of leading the water industry in terms of comprehensive technological indicators. Furthermore, we will turn our technologies into products, standardise our products and develop equipment for construction to create the technological influence and build technology and product brands for the Group. On this basis, we will continue to seek key breakthroughs in disruptive technologies and models, and create new business growth through technology and model innovation.

By 2030, we will achieve major breakthroughs in disruptive technologies and modes, build up the development pattern of X in Water, and realise transformation and upgrading of the Group. Finally, we will build up a new scenario for the X in Water and upgrade the development paradigm of the water industry.

This is a development path from technology-driven to product-driven to scenario-driven.

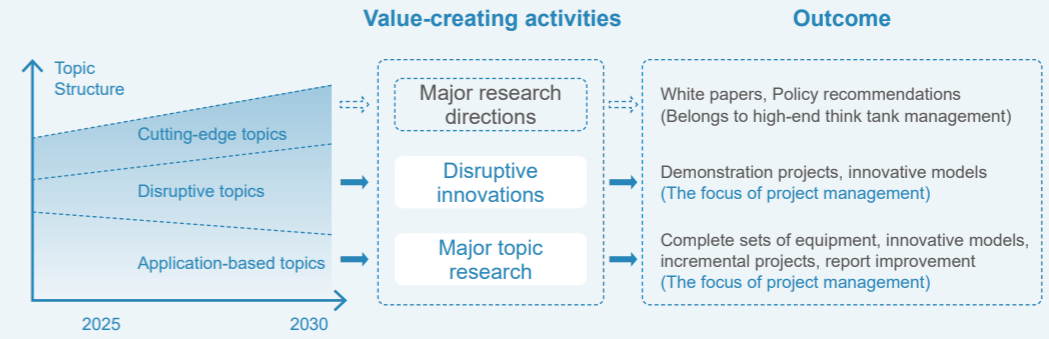
Case: Taking the lead to explore a path for the development of X in Water

On 3 March, 2023, BEWG invited and gathered 20 experts, including academicians, industry leaders, national think-tank experts, survey and design experts and famous industry experts, to discuss with the peers on the topics of the future development direction of water industry, technological innovation of water industry and development strategy of industry-leading enterprise (BEWG).

This marked the official start of BEWG's X in Water plan. In the future, BEWG will make continuous efforts in technological innovation and model innovation, explore the development path for X in Water, so as to lead the healthy development of the industry, and help China achieve the "carbon peak" and "carbon neutrality" goals.



Diagram of topics in research for the "X in Water"



Top-level Design & Current Research

- Research on dual-carbon technology approach of urban sewage: major research direction
- Cloud chain end system construction and operation mode research: disruptive technology
- Efficient underground sewage treatment plant based on BESWIFT technology: major topic
- Research on wastewater resource utilisation and regional reclaimed water recycling

First batch

Second batch

- Research on national new desalination strategy: major research direction
- MPC short-process zero-energy resource recovery: disruptive technology
- Reinvestment and re-operation of existing sewage plants: major topic
- Research on sludge reduction technology for sewage treatment plants: major topic
- Research on top-level design and implementation approach of X in Water development plan

Under the guidance of the study on the top-level design and implementation approach of the X in Water development plan, the "1+4+4" research topics were set up in two batches, including:

- The major topics of "Research on dual-carbon technology approach of urban sewage", "Research on wastewater resource utilization and regional recycling of reclaimed water", "MPC short-process zero-energy resource recovery", "Reinvestment and re-operation of existing sewage plants" actively respond to the national dual-carbon strategy and the synergistic efficiency and resource utilisation of pollution reduction and carbon reduction;
- The topic of "Cloud chain end system construction and operation mode research" will promote the deep integration of digital economy and real economy;
- The topic of "National study on new seawater desalination" positively cracks water crisis under climate change;
- The topics of "Efficient underground sewage treatment plant based on BESWIFT technology" and "Research on sludge reduction technology for sewage treatment plants" practice the green development concept of energy conservation and emission reduction.

After a year of exploration and trial, the working group has gradually explored a set of collaborative innovation model of "leading enterprises + expert network", as well as the working method of integration between high-end think tanks and industry frontiers, and has made fruitful progress in industry development leadership, cutting-edge strategic research, and leading technology development.

BEWG works together with the Jingjinji National Center of Technology Innovation to establish the X in Water Research Center, which will serve as an innovation platform to undertake think tank research and resource integration for X in Water. The research center aims to explore the paradigm of innovation in the water industry in terms of model, technology and management through building an ecosystem of innovation and entrepreneurship and carrying out a series of interdisciplinary, cross-industry and cross-field research. The center will set up expert groups gradually as a think tank and collaborative innovation partner. In 2023, the first 11 experts were recruited, and they are leaders in the fields of sewage, reclaimed water, dual-carbon, pipeline network, ecology and intelligence. The expert group is responsible for proposing development directions, clarifying implementation paths and promoting industry progress.

Case: The First Working Meeting of the X in Water Expert Group and the Press Conference of the X in Water Development Plan

北控水务发布“未来新水务”开发计划 推动水务行业高质量发展

4月21日-22日,在第54个世界地球日来临之际,北控水务集团“未来新水务”专家工作组第一次工作会议暨“未来新水务”开发计划发布会在北京冬奥村举办。发布会正式组建京津冀国家技术创新中心未来新水务研究中心,未来新水务专家工作组暨专家委员会,并发布《未来新水务开发计划》和《未来新水务》期刊号。

未来新水务研究中心由北控水务集团和京津冀国家技术创新中心共同发起成立,中心将作为未来新水务事业开展研究,资源融合的创新平台,构建创新生态体系,开展多学科、跨行业、跨领域的系列研究,探索水务行业在模式、技术和管理等方面的创新形式。

北京水务集团行业影响力领先,未来新水务研究中心链接行业顶尖智慧,秉承创新开发原则,期待与众多专家共筑共识,让未来新水务走向水更清、岸更绿、生态更美的未来。

发布会上,未来新水务专家工作组负责人、中国人民大学教授王洪臣宣读了《未来新水务开发计划》。

王洪臣表示,“中国式现代化是人与自然和谐共生的现代化”,这为中国水务行业实现绿色发展,跨越“碳”足迹,为我国未来新水务充分拓展想象和发展空间,是“未来新水务”追求。正如《未来新水务开发计划》中所说:“我们将通过技术创新,以水务的绿色发展,支撑经济社会‘健康’和‘繁荣’,环境优雅、生态宜居。”

会议期间召开未来新水务专家工作组第一次全体会议,首批研究课题完成开题工作并进入研究实施环节,并为未来新水务专家工作组首批专家聘任仪式。

京津冀国家技术创新中心副主任程鹏,环境科学与工程学院教授,清华大学环境学院教授曹燕,北京水务集团执行总裁李力,副总总裁陈洪,暨建华、未来新水务专家工作组全体专家成员参加加议。

未来新水务专家工作组 (首批)

Looking to the future and benchmarking at the forefront, we take topic research as an important way to drive the X in Water. We categorise the topics into cutting-edge topics, disruptive hard topics, and application-based hard topics, corresponding to major research directions, disruptive innovations, and major topic research, respectively. The major research directions involve value-creating activities of high-end think tank management, and the disruptive innovations and major topic research involve value-creating activities of major project management.



Building a high-end think tank

Innovation topic research

Major topic: Research on wastewater resource utilisation and regional recycling of reclaimed water

In 2023, to actively respond to China's efforts to promote the utilisation of wastewater as a resource and launch pilot projects on the utilisation of reclaimed water, the expert group carried out topic research on wastewater resources and recycling of regional reclaimed water to innovate the technology, mode and management.

The second plenary meeting of the X in Water Expert Group was held from 22 July to 23 July in Taiyuan, Shanxi Province, focusing on "Development Strategy for Reclaimed Water Utilisation". The Expert Group had a thorough discussion on the "Development Strategy for Utilisation of Reclaimed Water" and launched the second batch of research topics.

Meanwhile, the Seventh Session of the Shanxi Construction Lecture hosted by the Department of Housing and Urban-Rural Development of Shanxi Province with the joint efforts by BEWG was held in Taiyuan. The lecture focused on the industrialization of reclaimed water in Shanxi Province and attracted more than 100 attendees, including the leaders from five provincial units (i.e., the Department of Housing and Urban-Rural Development of Shanxi Province, the Department of Finance of Shanxi Province, the Department of Ecology and Environment of Shanxi Province), as well as the leaders and representatives from 11 cities such as Taiyuan. The lecture was broadcast live online to more than 21,000 viewers.



The second meeting of the X in Water Service Expert Group



The lecture

Innovation topic research

Cutting-edge topic: Research on national study on new seawater desalination

The *National study on new seawater desalination* takes a strategic view of water scarcity and assesses the role of water resources in supporting social development. The research includes basic information and international practices on desalination, outlook on the scenario of combining desalination with new energy sources, and analysis of institutional and industrial barriers.

It aims to address China's water scarcity challenges and promote the development of the water economy.






New desalination symposium



01

Overview of sustainable development



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ESG

BEWG Overview

BEWG is a leading professional water and environmental service provider, adhering to the business philosophy of “customer orientation through innovation capability”. BEWG integrates industry investment, design, construction, operation, technical services and capital operation, and relies on technology and innovative models for new business growth to realise corporate sustainability. Focusing on recycling of water resources and the protection of aquatic ecological environments, the Group has built a “1+4+4” business portfolio. Meanwhile, we actively developed our presence in the upstream and downstream of the industrial value chain, and our scale of water treatment has steadily ranked first in the domestic water industry. Consolidating strategy, capital and innovation, the Group has set up headquarters in Beijing, Hong Kong and Hangzhou. The water services are provided in 7 countries (including China). Our water plants covers 20 provinces, 5 autonomous regions and 4 municipalities directly under the central government in Chinese Mainland.



The water services are provided in **7** countries (including China)

Our water plants covers **20** provinces

5 autonomous regions

4 municipalities directly under the central government in Chinese Mainland



Honours of BEWG in 2023

- Ranked first in the Top 10 Influential Enterprises in China's Water Industry by E20 Environment Platform for 13 consecutive years
- Selected as "Top 50 Environmental Enterprises in China" for 6 consecutive years
- Honoured the first prize of the Beijing Science and Technology Award
- Honoured the first prize of the China Environmental Protection Science and Technology Award in 2023
- Selected the "Top 500 Chinese Brands" by TopBrand Union for 2 consecutive years
- Selected in the first issue of S&P Global Sustainability Yearbook (China Edition), becoming the only company selected in the utility industry of China, and honoured as the "Best Progressing Company in the Industry"
- MSCI ESG rating was upgraded to A, making us the only Asian company in the water industry to receive this rating

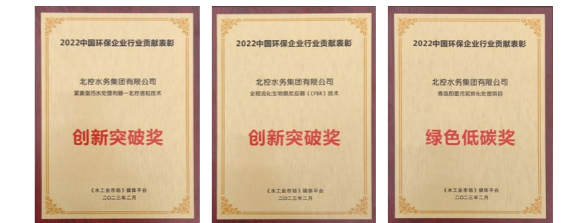


Honoured 2022 China Environmental Protection Enterprise Industry Contribution Awards - "Innovation Breakthrough Award" and "Green and Low-carbon Award"

China Talent Management Excellence Model Award

Selected as one of the second batch of National Enterprise Practice Base for Vocational Education Teachers

"6th Digital Transformation and Innovation Awards 2023" - "Model Case of Digitalization in State-owned Enterprises"



BESWIFT and CFBR won the Interaction Breakthrough Award, Ink sludge carbonization project won the Green and Low-carbon Award

Performance highlights of BEWG in 2023



Total revenue (in 100M RMB)

245



Total design capacity (tonnes/day)

43,963,124



Total design capacity of new projects (tonnes/day)

1,548,909



Number of sewage treatment plants and village/town sewage treatment facilities (unit)

1,215



Number of water distribution plants (unit)

170



Number of reclaimed water treatment plants (unit)

69

Industry contribution

BEWG serves the national strategy, deeply participates in industry associations and industry research and analysis, and drives win-win industrial cooperation based on our own innovation and development. In 2023, the Group participated in a total of 125 industry associations to strengthen the industry integration and cooperation of the headquarters and local companies, with an annual expenditure up to RMB 1.256 million. The Group actively participates in and promotes the preparation and revision of national, industry and group standards and promotes the progress of the industry. In 2023, the Group edited or co-edited 31 national and group standards.



BEWG's editing and co-editing of industry standards in 2023

Co-editing of 10 national standards

- *Technical Specification for Evaluating the Aquatic Ecological Security* (published)
- *Technical Guidelines for Evaluation of the Aquatic Ecological Health* (published)
- *Technical Requirements of Operation Performance Assessment for Domestic Sewage Treatment Facilities* (in preparation)
- *Technical Specification for treatment of Industrial Concentrated Brine* (in preparation)
- *Technical requirements of high-efficiency water pollution control equipment for assessment — Submersible Mixer* (in preparation)
- *Technical requirements of operation performance assessment for sludge pyrolysis resource utilisation equipment* (in preparation)
- *Water Reuse Guidelines—Benefits Evaluation of Reclaimed Water Use* (in preparation)
- *Water Reuse Guidelines: Guidelines for Evaluation of the Benefits of Reclaimed Water Utilisation* (in preparation)
- *Technical Guidelines and Control Requirements for the Ecological Use of Reclaimed Water* (in preparation)
- *Guidelines for Evaluation of Water-saving Industrial Parks* (in preparation)

Editing (co-editing) of 21 group standards

Editing of 9 group standards

- *Technical Specification for In-situ Kuo Neng and Upgrading of Membrane Bioreactor Process for Municipal Wastewater Treatment* (published)
- *Classification and Compilation Standards for Cost Indicators of Municipal Sewage Treatment Plant Projects* (published)
- *Technical Standards for Online Collection of Urban Water Information* (submitted for approval)
- *Technical Specification for Anammox Treatment of High Ammonia Wastewater* (in preparation)
- *Technical Specification for Greenhouse Gas Monitoring at Sewage Treatment Plants* (in preparation)
- *Technical Guideline for Ecological Restoration of Seagoing Rivers* (in preparation)
- *Technical Guidelines for Environmental Management and Rehabilitation of Urban and Rural Rivers and Lakes* (in preparation)
- *Terminology of Urban Smart water* (in preparation)
- *Technical Specification for Structures of Assembled Monolithic Stacked Reinforced Concrete Structures for Water Supply and Drainage Works* (in preparation)

Editing (co-editing) of 21 group standards

Co-editing of 12 group standards

- *Procedures for Evaluation of System Reliability of Water Supply to Customers* (published)
- *Technical Specification for Hydrolysis Acidification Wastewater Treatment* (to be published)
- *Technical Specification for Treatment of Urban Wastewater by Moving Bed Biofilm Reactor* (to be published)
- *Technical Specification for Urban Wastewater Resources and Energy Recycling* (to be published)
- *Carbon Emission Accounting Methods and Assessment Standards for Urban Sewage Treatment Plants* (in preparation)
- *Engineering Design Standards for Treatment and Recycling of Domestic Sewage in Towns (Townships) and Villages* (in preparation)
- *Technical Specification for Ecological Flow Allocation and Guarantee in High Stress Rivers* (in preparation)
- *Technical Regulation for Survey and Transformation of Integrated Rain and Sewage Pipelines in Drainage Pipeline Network of Communities and Municipal Roads* (in preparation)
- *Quality Requirements for Sludge Treatment at Urban Sewage Treatment Plants and Collaborative Incineration at Thermal Power Plants* (in preparation)
- *Technical Guidelines for Pathogen Exposure Risk Prevention in Urban Drainage and Sewage Treatment Systems* (in preparation)
- *Construction Standards for Geographic Information System of Urban Water Supply Pipeline Network* (in preparation)
- *Carbon Emission Calculation Standards for Municipal Engineering Construction* (in preparation)

Ecological cooperation

Under the guidance of the ecological strategy, BEWG actively mobilises industry resources, carries out product and technical cooperation with different parties, and builds sustainable industry ecology to achieve mutual benefit and win-win results. The Group also plays a leading role by giving play to the advantages of universities and research institutes in scientific and technological cooperation channels, talent and platforms to promote the deep integration of industry, academia and research.

Highlights of ecological cooperation of BEWG in 2023

- Co-hosted the "2023 Summit Forum on Sludge Treatment and Disposal Technology and Application" with the State Environmental Protection Engineering Center for Technology Management and Evaluation and the State Environmental Protection Engineering Center for Sludge Disposal and Resource
- Entered into a strategic cooperation agreement with the Yunnan Anning Municipality Government, focusing on industrial and urban sewage treatment plants

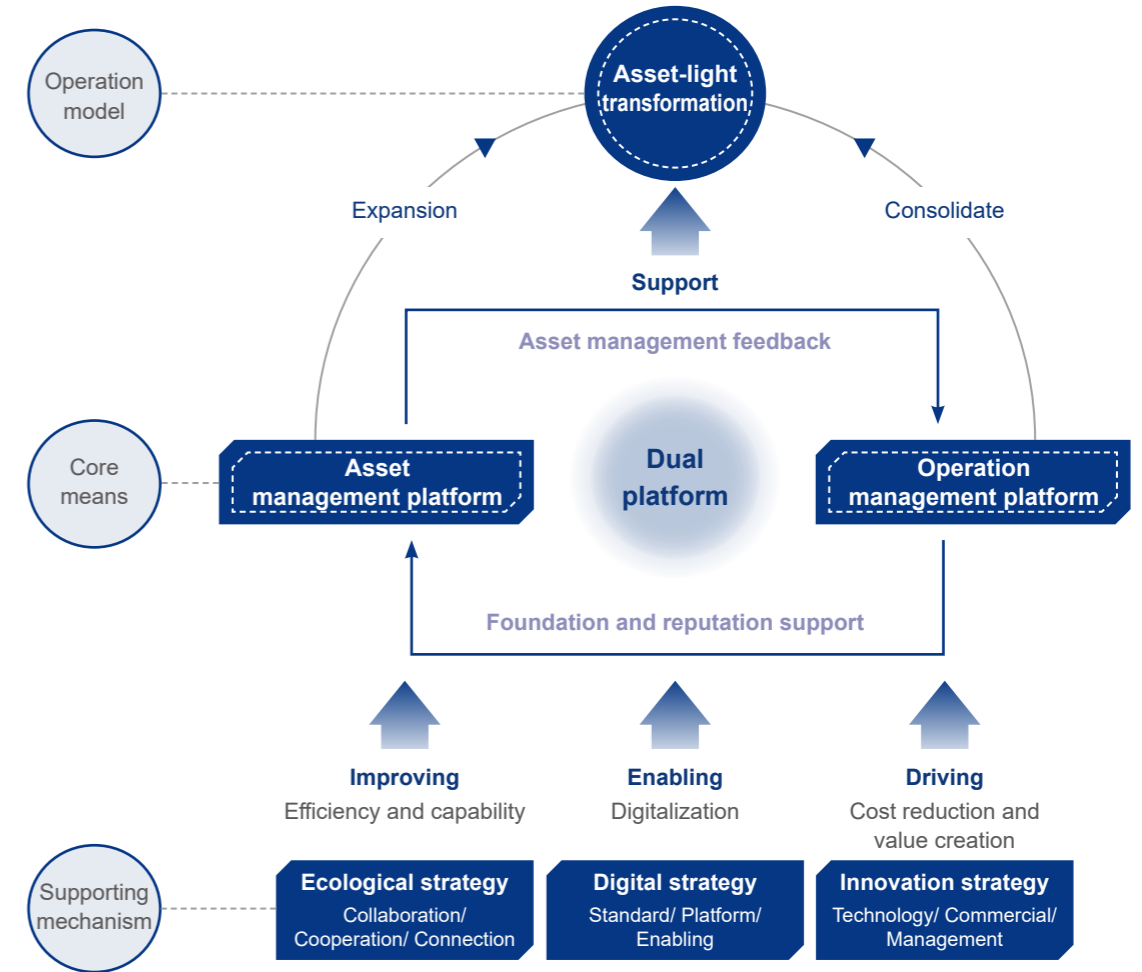
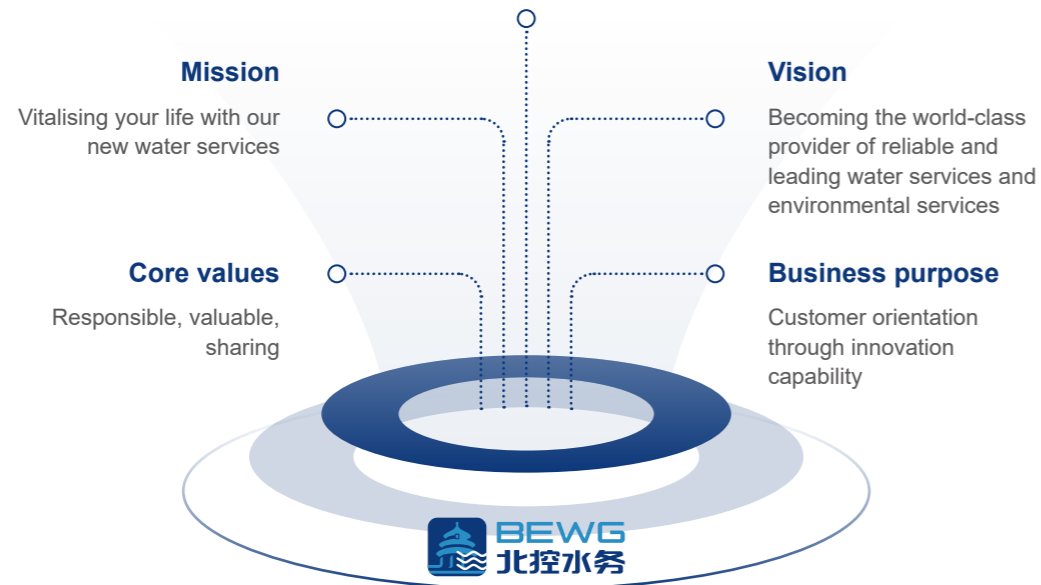


Group strategy and business deployment

The year of 2023 is a crucial year for the national “14th Five-Year Plan”. Actively serving national strategies, BEWG dives into environmental protection, refines water treatment, and achieves whole-process low-carbon management from construction to production. By continuously driving the sustainable development of the Group and the industry, BEWG contributes to the construction of a beautiful China.

Medium and long-term strategic objectives

Consistently acquire and manage assets in large amounts, apply technology and innovative models to new business growth, boost operational efficiency and realise Group's sustainability



Adhering to the business philosophy of “customer orientation through innovation capability”, and the principle of meeting customer needs, BEWG makes every effort from the perspective of customers, in order to build a new market development system. BEWG focuses on scientific R&D, constantly upgrades product quality, constructs smart water comprehensively and constantly upgrades the excellent operation system. At the same time, as a leading professional comprehensive service provider of water environment in the industry, BEWG has always been committed to the vision of “Becoming the world-class provider of reliable and leading water services and environmental services”. Supported by the mechanism of ecological strategy, digital strategy and innovation strategy, driven by the concept of sustainable development, we continuously deepen the “dual-platform” strategic model to firmly promote the transformation of asset operation mode and strive to build a pan-centralized community of shared future with super vitality. In alignment with our medium to long-term strategic objectives, the Group has defined the business portfolio of “1+4+4” to form a new pattern of benign interaction and coordinated development, thus propelling the organisation towards high-quality development.

Performance highlights in sustainable development

Environment

Percentage of star-level water plants (3-star or higher)

38%

Self-use water ratio

1.4%

Reduction in COD

1,054,379 tonnes

Reduction in total phosphorus

18,120 tonnes

Reduction in suspended solids

791,954 tonnes

Society

Number of employees participating in safety training

181,645 persons

Patents granted in the year

280 patents

Customer Satisfaction

94.2%

Governance

Major corruption complaints

0 cases

Major corruption lawsuits

0 cases

Percentage of ISO 45001 certified suppliers in the direct procurement inventory

98%



ESG governance

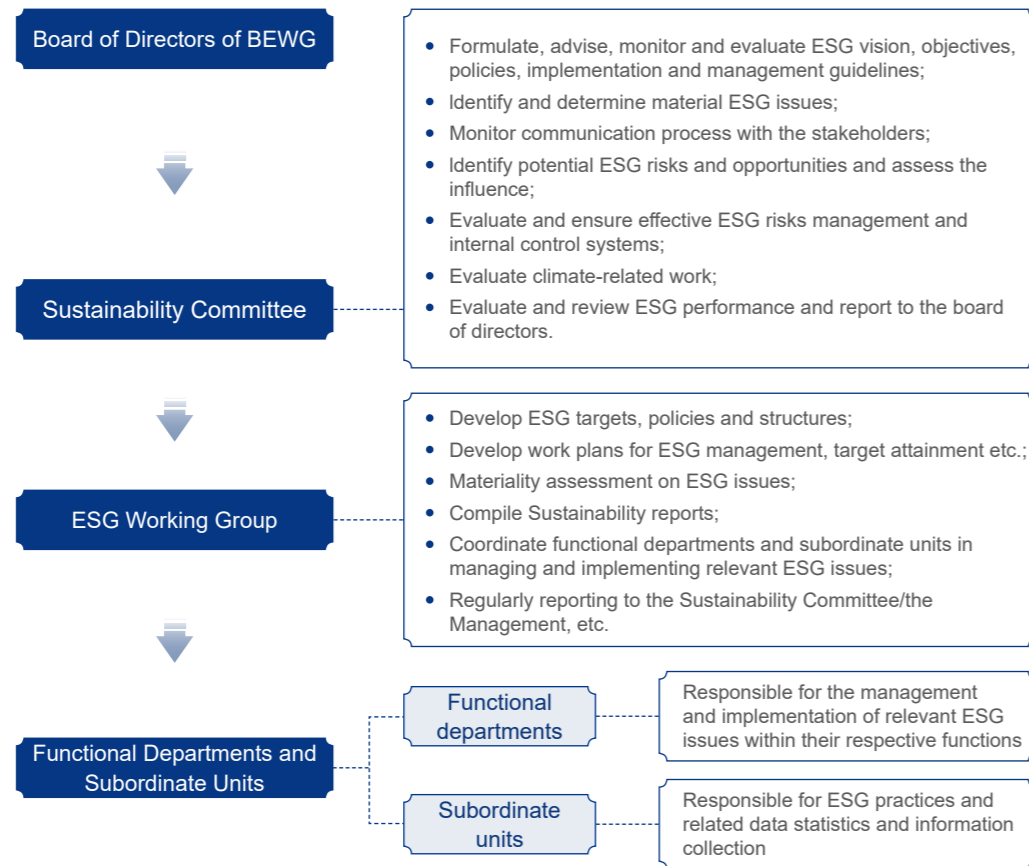
BEWG attaches great importance to corporate ESG governance and has always complied with *the Corporate Governance Code set on Appendix C1 of the Listing Rules of The Stock Exchange of Hong Kong Limited* and the relevant domestic and overseas regulatory requirements in the places of operation. The Group continuously improves ESG governance to safeguard shareholders' rights and better serve the interests of stakeholders.

As the highest decision-making body of BEWG, the Board identifies and determines material ESG issues, and advises on the Company's ESG targets, policies and structure. The Board is also responsible for steering the overall strategy and oversees the Management work.

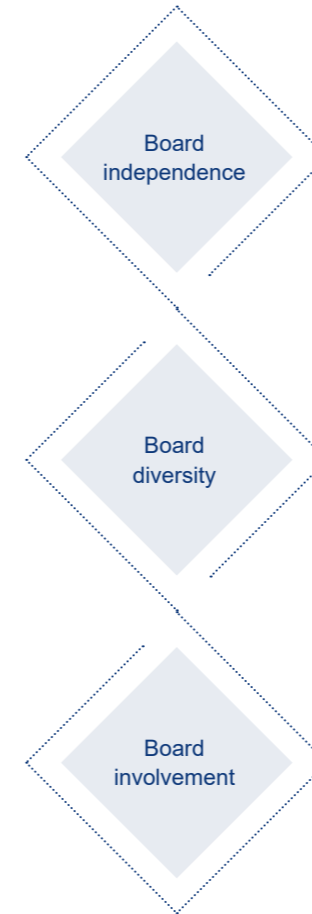
In 2023, the Board of Directors of BEWG decided to establish a Sustainability Committee⁸, which is responsible for monitoring and reporting to the Board on the implementation and effectiveness of ESG management. It also takes the responsibility for identifying material ESG issues, assessing risks and opportunities arising from climate change, reviewing and overseeing the achievement of environmental objectives, and evaluating the impact of the Company's ESG performance on stakeholders. The establishment and effective operation of the Sustainability Committee is an effective governance approach to fulfill the ESG management responsibilities of the Board, to improve the operational efficiency and ESG control quality of the Board. It also promotes the creation and enhancement of the Group's social value and long-term value, thereby promoting the high-quality and sustainable development of the Group.

To ensure the implementation of ESG management, we have established the ESG Working Group, comprising of business units and functional departments, that report regularly to the Sustainability Committee on the ESG work progress.

BEWG ESG governance framework



⁸ The detailed responsibilities of the Sustainability Committee can be found at: <https://www.bewg.net/uploadfile/2023/0331/20230331080801430.pdf>



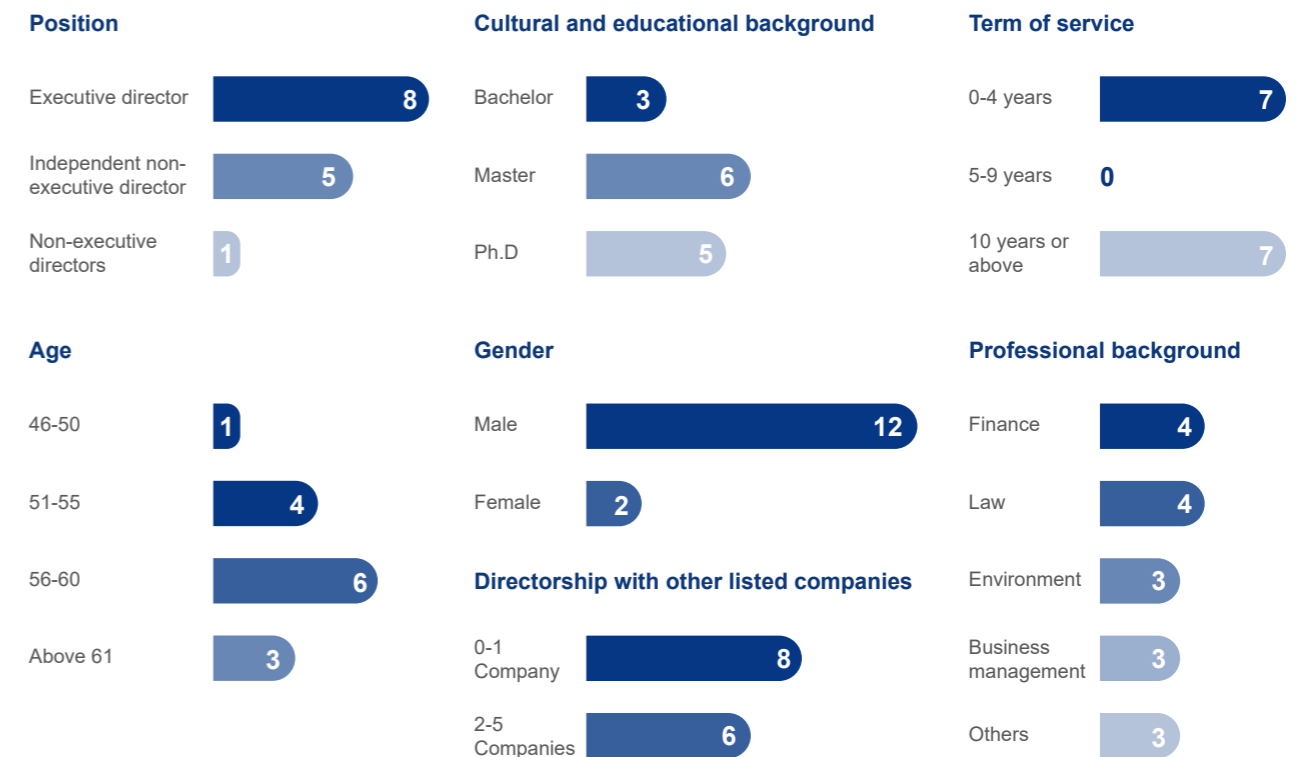
Effectiveness of the Board of Directors of BEWG

- The Board of Directors consists of five independent non-executive directors.
- The positions of Chairman and Chief Executive Officer (CEO) of BEWG are held by different individuals. The Chairman takes the lead and ensures the operation of the Board, while the CEO is responsible for business, operation and daily management.
- The Company confirms that each independent non-executive director complies with the independence guidelines under Rule 3.13 of the *Listing Rules*.

- The *Board Diversity Policy* has been developed.
- The Board members are appointed based on merit to ensure they provide balanced skills, experience and diverse perspectives required by the Group.
- When nominating candidates, the Nomination Committee considers multiple factors, including but not limited to gender, age, cultural and educational background, professional experience, skills, expertise and length of service.
- The Nomination Committee conducts regular reviews on the implementation of board diversity.

- A total of four Board meetings were held in 2023.

Diversity of Board of directors of BEWG

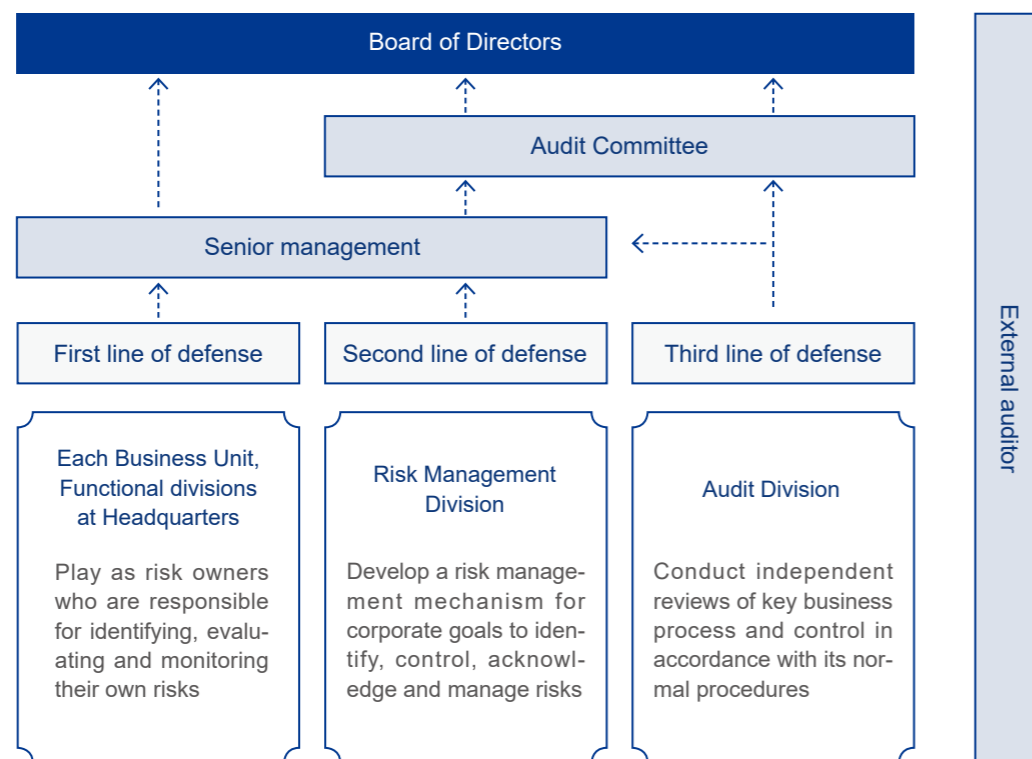


Risk management

A robust and effective risk prevention and control system is fundamental to the stable business operation in the long run. At BEWG, the Board of Directors takes full charge of assessing and determining the nature and extent of potential risks and ensures the soundness and effectiveness of the Group's risk management and internal control systems. The Board of Directors authorises the Audit Committee to oversee the design, implementation, and supervision of risk management and internal control systems by the management. Following the comprehensive framework for enterprise risk management set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), BEWG has established a "Three-tier" risk management architecture of "Three lines of defense", clearly defining risk identification, risk assessment, and standardised risk management control procedures.



BEWG risk management framework



During the year, we formulated two policies: *General Principles of Risk Management of Beijing Enterprises Water Group Limited* and *Detailed Rules for Risk Communication Management of Beijing Enterprises Water Group Limited*. Additionally, we revised the *BEWG Overall Risk Management System*, establishing a three-tier risk management system at the "Group, Regional, and Area" levels respectively. This framework outlines the principles, objectives, responsibilities, and authorities of risk management, which serves as an effective guidance.

The Group continuously refines risk management measures, enhancing communication of risk information to improve the efficiency and accuracy of risk identification. During the year, we further refined the risk repository and clarified the right way to hold people accountable, that is, making it the responsibility of each business segment to manage and control risks. We also established a risk information communication mechanism, tightly integrating risk management with business operations through this communication framework. During the risk assessment process, we take the risk appetite of different organisations into considerations and adopt risk questionnaires, risk lists, and risk heat maps to efficiently and accurately identify relevant risks based on risk coordinate graphs and practical work requirements.

BEWG attaches great importance to environmental and social risks. To better identify and mitigate these risks, we have established a sustainable development risk assessment system. Under this system, the Sustainability Committee takes the lead in identifying and dynamically tracking emerging risks related to environmental and social factors in products, services, as well as the construction and operation of water plants. The aim is to ensure effective risk control. Before initiating project investments, BEWG proactively identifies local environmental, social, and governance risks. We identify potential risks faced by the Group based on relevant ESG policies and regulations, implementing targeted contingency plans to mitigate risks. Looking ahead, we plan to review and incorporate specific climate-related risks during risk repository updates, fostering collaboration with ESG-related functional departments and subsidiaries in risk identification, assessment, and training.

In 2023, to solidify risk management awareness, BEWG conducted training for direct leaders of various functional centres, regional headquarters, and regional companies. The training focused on disseminating risk management theory, explaining the three-tier system, and interpreting risk cases. This initiative aimed to enhance employees' awareness of risk management and cultivate a risk management culture within the Group. Throughout the year, specialized compliance training was provided for key personnel and critical positions in the audited entities, totaling 5,231 hours with 10,462 person-times.



In 2023
the Group organised

234

participants of
specialized risk training

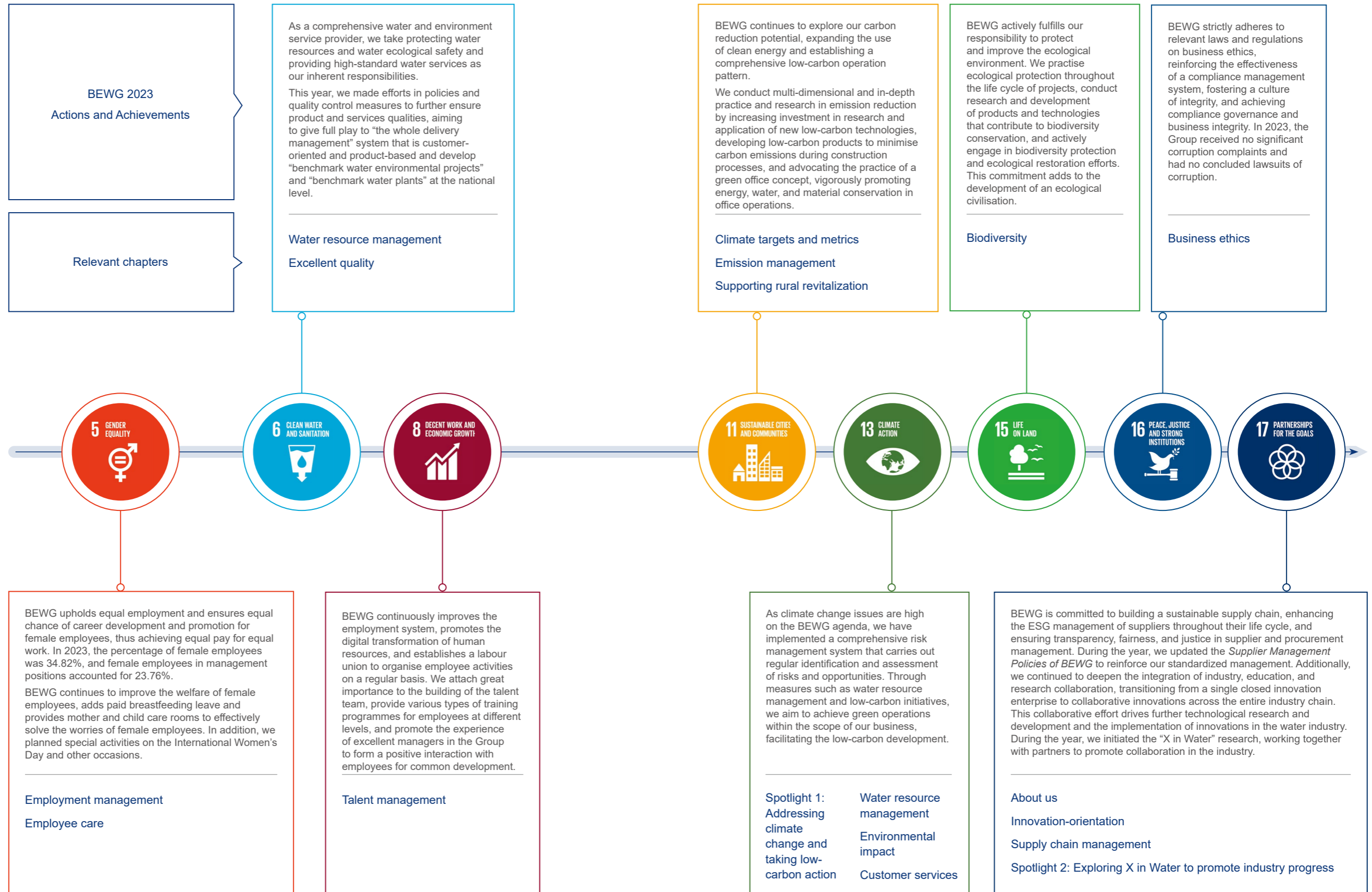


Accumulating a
training duration of

234 hours

Sustainable development management

Commitment to sustainable development



Communication with stakeholders

BEWG highly values the expectations and demands of stakeholders, and listens to the opinions and suggestions of stakeholders such as the government, shareholders, customers, communities and employees through different channels to improve the ESG performance of the group in a targeted manner.

Details on stakeholder communication

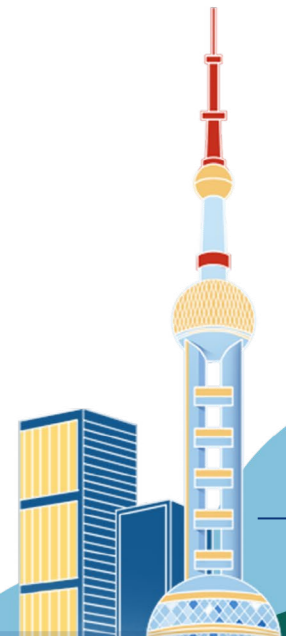
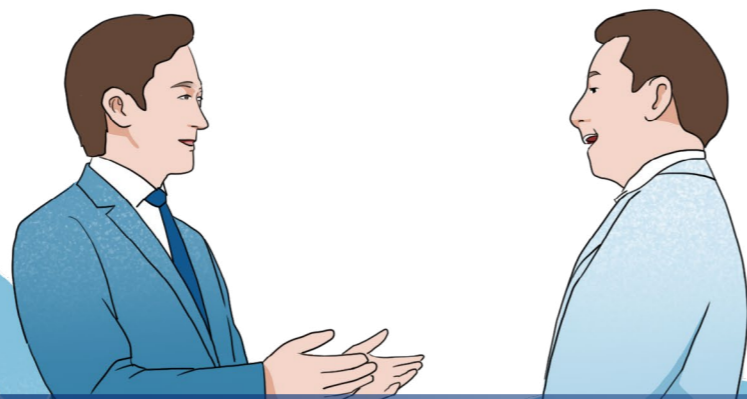
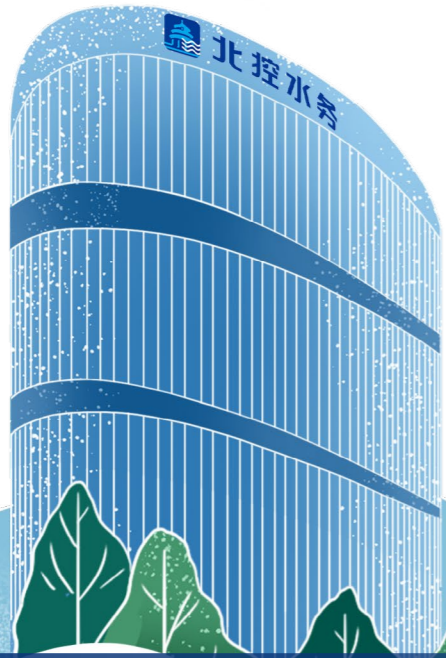
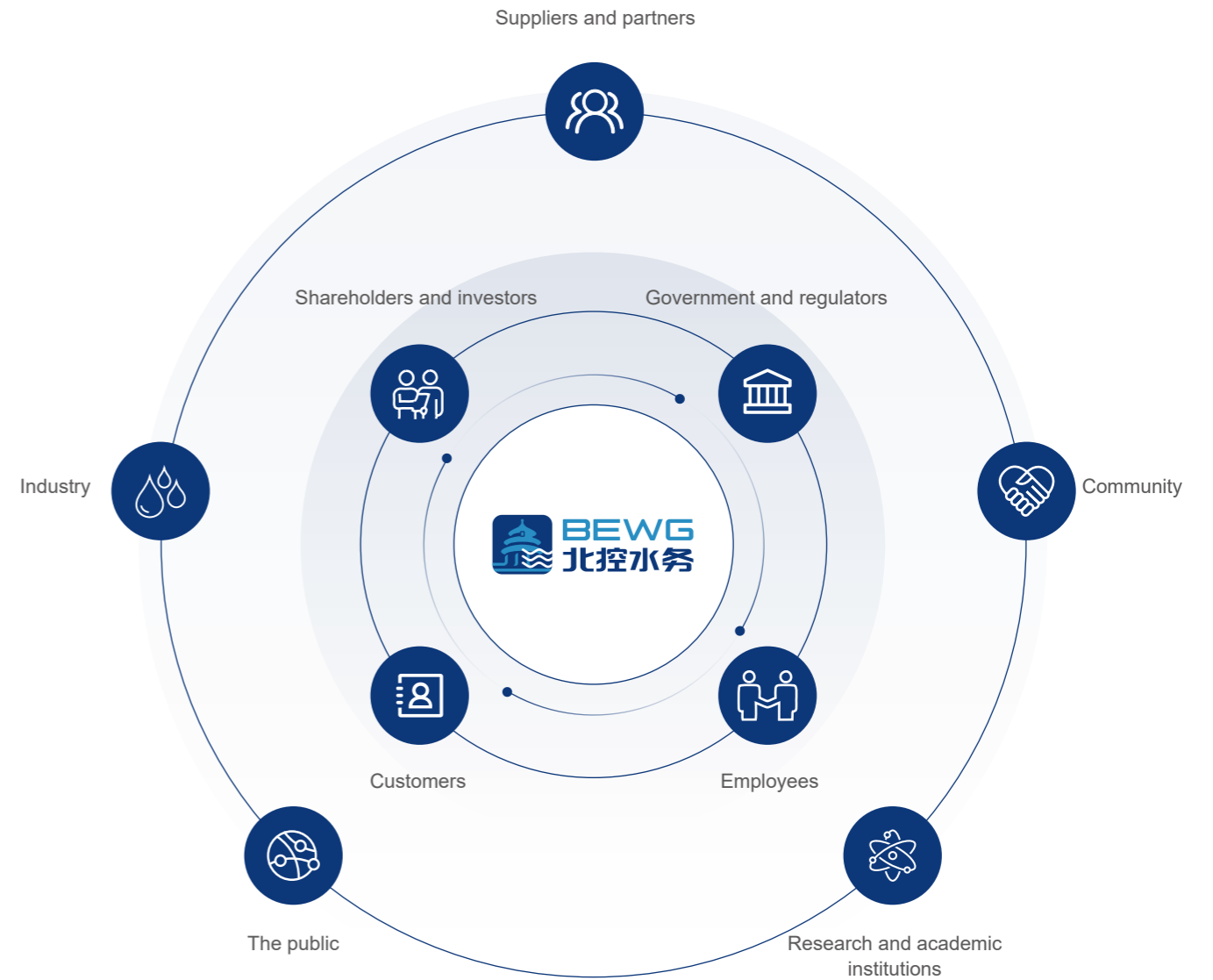
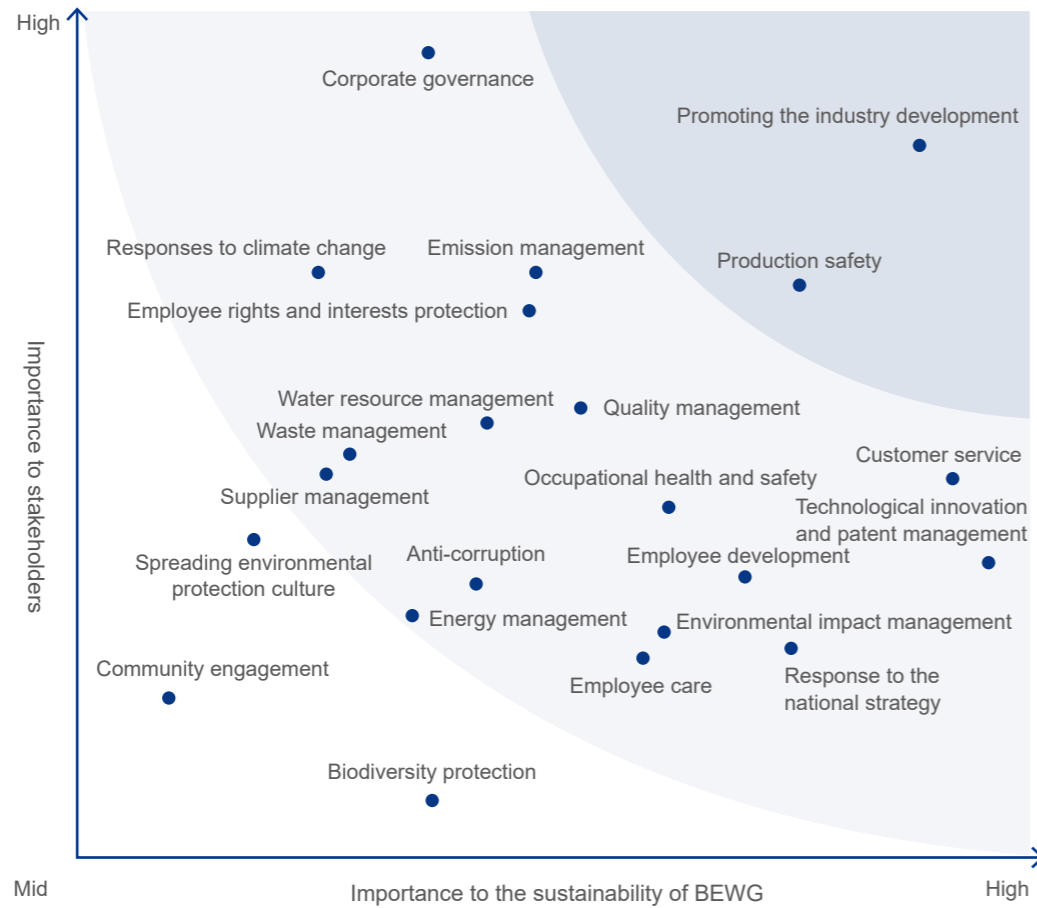
	Shareholders and investors	Government and regulators	Customers	Employees	Suppliers and partners	Industry	Community	The public	Research and academic institutions
Communication channels	<ul style="list-style-type: none"> General meeting of shareholders Periodic reporting and announcements Investor communication meeting 	<ul style="list-style-type: none"> Disclosure of information Daily communication and reports On-site investigation Supervision and inspection Visit and reception 	<ul style="list-style-type: none"> Customer satisfaction survey Visits and communication Customer activities 	<ul style="list-style-type: none"> Labour contracts Opinion feedback Communication channels for career development Employee care activities Tailor-made training Anonymous communication channel 	<ul style="list-style-type: none"> Public bidding Contracts and agreements Suppliers' meeting Suppliers' training 	<ul style="list-style-type: none"> Launch and participate in industrial activities Sharing research results Constructing communication platforms Industry cooperation Technical exchanges 	<ul style="list-style-type: none"> In-person visits Charity activities Charitable donations Volunteer activities Open day event 	<ul style="list-style-type: none"> Open day event Charity activities 	<ul style="list-style-type: none"> Industry-university-research integration Talent cultivation
Expectations and demands	<ul style="list-style-type: none"> Compliant operations Continuous and stable investment return Enhance product and service quality Risk management Addressing climate change Corporate governance 	<ul style="list-style-type: none"> Compliant operations Job creation Response to national strategy Enhance product and service quality Production safety and operation compliance Scientific and technological innovation Energy conservation and emission reduction 	<ul style="list-style-type: none"> Enhance product and service quality Disclosure of information Win-win cooperation 	<ul style="list-style-type: none"> Employee rights and interests protection Occupational health and safety Professional training and development Employee care Employee communication 	<ul style="list-style-type: none"> Contract compliance Mutual benefits and win-win results Supply chain management Ecological cooperation 	<ul style="list-style-type: none"> Leading industry development Scientific and technological innovation Enhance product and service quality 	<ul style="list-style-type: none"> Community communication Community services Community investment Publicity of environmental protection ideas Compliant operation 	<ul style="list-style-type: none"> Providing safe and reliable product Stable employment Publicity of environmental protection ideas 	<ul style="list-style-type: none"> Talent cultivation Lead industry development Scientific and technological innovation
Action and measures	<ul style="list-style-type: none"> Accelerate the asset-light service transformation Improve ESG management system and governance structure Build customer service and quality assurance system Establish risk prevention and control system to implement risk control work Conduct climate-related risks identification and response 	<ul style="list-style-type: none"> Set up Objectives and Key Results (OKR) incentive mechanisms for integrity and compliance Implement industry and employment assistance Respond to "dual carbon" goals to promote ecological civilization progress Safeguard stable production and operation Build intelligent control system Pursue low-carbon operation and develop low-carbon technology 	<ul style="list-style-type: none"> Optimise customer relation management and provide 24/7 service hotline Disclose results of satisfaction surveys and carry out external product and technology cooperation 	<ul style="list-style-type: none"> Create an equal and diverse working environment Ensure safety and health of employees Build multi-tier training system Provide competitive salary and non-salary benefits 	<ul style="list-style-type: none"> Strengthen lifecycle supplier management Adopt strict supplier access evaluation and process evaluation Conduct ESG risk assessment of suppliers 	<ul style="list-style-type: none"> Undertake major national special projects and key research and development projects Participate in the formulation of national and industrial standards Make industry-leading technological innovations 	<ul style="list-style-type: none"> Support local community construction Conduct rural sewage treatment Build environment protection bases Conduct industry and donation assistance 	<ul style="list-style-type: none"> Improve emergency response mechanisms and safeguard a stable water supply Cultivate environmental protection talent for society Conduct popularisation and education of environmental protection science 	<ul style="list-style-type: none"> Build industrial talent pipeline Build open science and technology innovation platforms and systems Carry out external product and technology cooperation
Location	<ul style="list-style-type: none"> To stakeholders ESG management Risk management Spotlight 1: Responding to climate change and taking low-carbon action Customer services 	<ul style="list-style-type: none"> Climate change targets and metrics Excellent quality Innovation empowerment Supporting rural revitalisation Code of business conduct 	<ul style="list-style-type: none"> About us Customer services 	<ul style="list-style-type: none"> Talent management Safety and health 	<ul style="list-style-type: none"> Supply chain management 	<ul style="list-style-type: none"> About us Innovation empowerment 	<ul style="list-style-type: none"> Contributing to society 	<ul style="list-style-type: none"> Talent development Customer services Continuous environment 	<ul style="list-style-type: none"> About us Talent development Innovation empowerment



Materiality assessment

In 2023, BEWG constantly followed capital market ratings, and analysed the Group's material ESG issues by benchmarking the trends of international mainstream ESG rating as well as peer performance. Through in-depth interviews and seminars with executives, employees and external stakeholders, with reference to opinions of various stakeholders, we identified and assessed the material issues, and determined the outcome that is described in the matrix below.

BEWG ESG material issue matrix



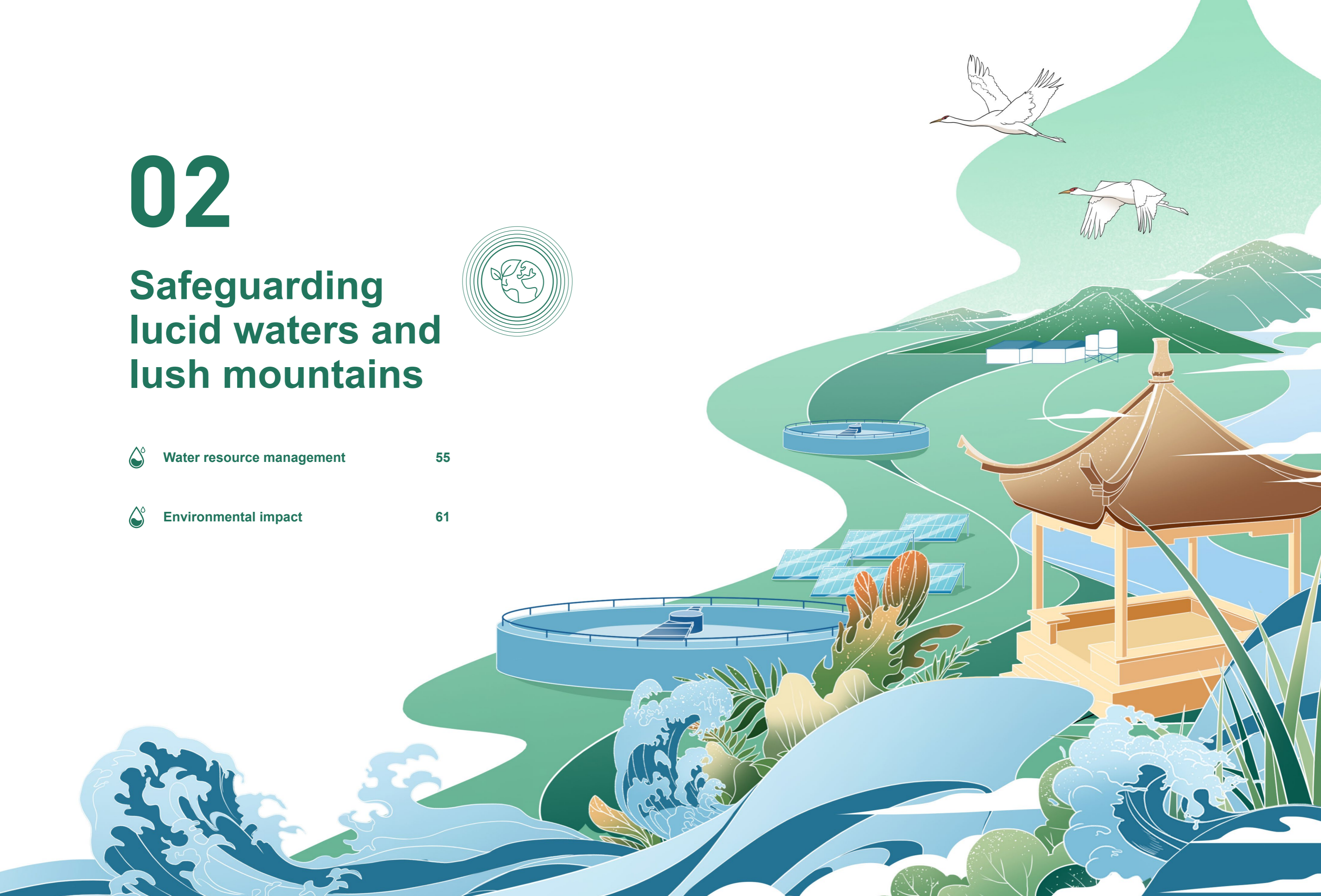
02

Safeguarding lucid waters and lush mountains



 Water resource management 55

 Environmental impact 61



Contributing to the sustainable utilisation of water resources and the protection of aquatic ecological environments is a crucial responsibility of BEWG. In active response to the State Council's *Action Plan for Prevention and Control of Water Pollution* and, in accordance with national laws and regulations, we have formulated the *Measures for Water Resources Management of BEWG*⁹ to continuously consolidate our efforts to water resource management.

In 2023, the Group took science-based approaches to control water resource exploitation, utilisation, and protection throughout the entire process of water resource management. Through measures such as water conservation, improvement of water use efficiency, and recycling, BEWG aims to promote the sustainable utilisation of water resources, striving to provide access to safe and reliable water resource for society. In the meantime, by leveraging industry-leading water treatment technologies, we actively engage in the development of unconventional water sources and create ecological restoration and purification systems in rivers, lakes, and wetlands. This effort contributes to the circulating utilisation of social and ecological water resources.

Water source conservation and protection

Each year, the urgency and significance of addressing issues such as urban water scarcity and the deterioration of water ecology are increasing. BEWG actively engages in water source conservation and protection, effectively addressing water safety issues and improving water environment.

Water conservation plays a fundamental part in water purification, rainwater storage and retention, and biodiversity conservation. BEWG develops technologies related to reclaimed water wetlands and tailwater wetlands, providing stable, intensive, and ecological artificial wetland solutions. We also implement projects to reduce pollution and enhance self-purification capabilities, ensure a balanced maintenance of water quality, quantity, and ecology in target waters. Additionally, we participate in the sponge city project, which integrates water treatment with urban ecological development, and can regulate urban water circulation, effectively protect against water logging, and relieve pressure on municipal pipeline networks.

Efficient utilisation of water resources

While ensuring the safety and quality of water, BEWG strengthens water resource management from the source and actively explores alternative water sources to enhance water use efficiency.

We strictly control the amount of reused water and establish evaluation criteria for star-level water plants that are stricter than the national *Standard for Design of Outdoor Water Supply Engineering*. By continuously optimising production processes, upgrading existing technologies, and advancing new technology research and development, we achieve efficient utilisation of water resources. In newly constructed water plants, we install water reuse systems and encourage spreading such systems among older plants. According to our rules, reclaimed water is the first choice for equipment cleaning and plant landscaping. This year, we implemented a variable water level operation for biological tank, empowering them to regulate water volume deviations between day and night. This approach increases daytime water intake, improving water use efficiency.



⁹ Public disclosure URL: <https://www.bewg.net/uploadfile/2020/1013/20201013050444485.pdf>

Production water management goals



The self-use water ratio for plants that engage in process water reclamation should be

≤1%

The self-use water ratio for plants that do not engage in process water reclamation should be

≤3%



The proportion of production water¹⁰

≤5%

Achievements of production water management goals in 2023:

Achieved the management target of production water



The self-use water ratio in the Group decreased from 1.6% in 2022 to 1.4% in 2023, marking an 12.5% year-on-year decrease. All water supply plants achieved the production water management goals.



The proportion of water used in the production of the Group's sewage plant is controlled to

3%

In 2024, the Group will continue to pursue this goal and carry out water resource management.

Fresh water consumption of BEWG in 2021-2023

Indicator	Unit	2023	2022	2021
Fresh water consumption in Chinese mainland's water treatment business	m ³	2,681,665	3,628,257	3,884,969
Fresh water consumption in overseas water treatment business	m ³	792	1,846	302
Fresh water consumption in solid waste business	m ³	1,415,513	913,331	669,457
Office building	m ³	33,043	61,870	57,597
Total fresh water consumption	m ³	4,131,013	4,605,304	4,612,325
Fresh water density	m ³ /10,000 RMB	1.68	2.14	1.99

Note:

- The density of fresh water = the amount of fresh water / the Group's operating income for the year.
- In 2023, the statistical scope of the data in the Report changed, we sort out the indicator scope, and some data of year 2022 is retroactively adjusted. Meanwhile, this report followed the presentation of currency changes in the Annual Report, changing the unit of the "Fresh water density" from "10,000 HKD" to "10,000 RMB".

The consumption and ratio of self-use water by the water supply plants of BEWG in 2021-2023

2021	2.1%	26,390,000
2022	1.6%	19,501,896
2023	1.4%	22,059,279

Note:

The national standard *Design of Outdoor Water Supply Engineering (GB50013-2018)* released by the department of housing and urban-rural development in 2018 states that, water from the water use ratio can adopt the design scale of 5%-10%.

¹⁰ Refers to the amount of tap water and reclaimed water used in the production process.

Ensuring water quality

BEWG, based on its own business development, focuses on water supply and wastewater treatment services. Through key initiatives on improving water quality and controlling pipeline network leakage, the Group is dedicated to building a high-quality and sustainable water supply and wastewater treatment network. This effort provides access to safe and reliable water resource for society.

Improving quality for water supply

In terms of water supply services, the Group adheres to relevant standards such as the *Standards for Drinking Water Quality* and optimises internal management systems and standards. In 2023, we set stricter standards for water quality control and management, requiring water supply plants to establish at least 5 indicators in this regard and put in place online monitoring or manual detection measures, for the purpose of achieving a qualification rate of over 99% through internal control. Meanwhile, we monitor water quality anomalies monthly, and for potential risk projects, we customize plans for water quality improvement or emergency response.

We actively explore innovative, stable, and efficient water treatment processes, implementing a series of measures to improve water quality, including:

- Developing green and efficient technology for regulating raw water quality, thus reducing treated water/tapwater and residual aluminum concentration to ensure the quality of water supply.
- Building a comprehensive system of advanced treatment technologies, including ozone activated carbon, UF-NF/RO membrane technology, advanced oxidation process package and so on. These technologies have been applied to multiple projects, achieving high-quality water supply.

In 2023, BEWG stably operates 155 water supply plants domestically and internationally, delivering 8,343.1 million tonnes of tap water, with a qualification rate¹¹ of 100% that satisfies the needs of residential water usage.

Case: Guigang Water Project, Guangxi Province

The Guigang Water Project in Guangxi Province is a water supply project operated by BEWG in the Guangxi Zhuang Autonomous Region. The project adopts a "Mega-Manager" model with an integrated plant and network system. It involves a layout of over 1,000 kilometres of water supply pipelines, serving over 500,000 residents. The project supplies 258,500 tonnes of water per day, with an urban water supply coverage rate at 95%. Without compromising the water quality, the project achieves convenience for people through "zero-distance, one-stop" smart water supply services.



Guigang Water Project, Guangxi Province

¹¹ The qualification rate of water supply is the average of the qualified rate of water from the plant and the qualified rate of water from the pipeline network. The standard for water qualification rate is in reference to the *Water Quality Standards for Urban Water Supply (CJ/T 206)*.

Managing and controlling network leakage

BEWG continues to build on a network leakage control system throughout the life cycle, implements various measures in design, construction, and operation to effectively reduce network leakage rates. This enables us to better control network leakage, thus improving water supply operation quality and reducing water wastage.

In 2023, we optimised the big data model for higher accuracy and has been granted a national patent for invention.

Network design management

During the design stage, we rigorously adhere to relevant standards and specifications. We conduct a comprehensive assessment of local geographical and hydrological conditions, and perform measurement and analysis on site to ensure the accuracy and rationality of pipeline layout.

Network construction management

During the construction stage, strict control is exercised over the quality of construction materials. Such situations as pipe leaking and dripping are covered in the quality assessment. A video surveillance system is in place for real-time supervision of all construction projects, ensuring timely rectification of potential issues by the project personnel.

Network operation management

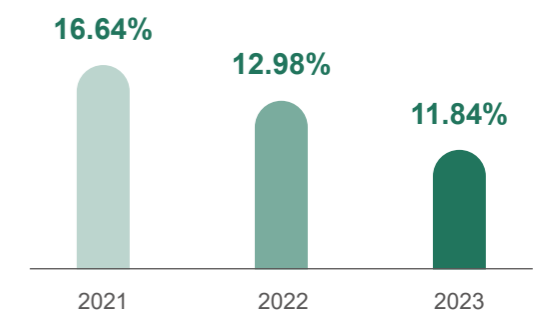
During the operational stage, the smart water supply platform enables intelligent leakage control. Information analysis tools such as Geographic Information System (GIS), hydraulic models, and district metering management systems help achieve real-time monitoring and control of the water supply network. The big data model is adopted to predict the probability of network damage, and the dispatch system is used to monitor pressure distribution. In this way, we can grasp real-time information, upgrade leak detection equipment, and enhance the skills of leak detection personnel. Besides, regular inspections for network leakage are conducted, and aging pipelines are replaced and maintained. An independently developed metering assessment tool is used for precise control of metering losses, covering aspects like water meter selection, installation, and evaluation, thereby reducing cost difference between production and sales.

Case: Guangxi Nanning BEWG Co., Ltd. utilising big data model for predicting water supply network damage risk

Guangxi Nanning BEWG Co., Ltd. deploys a big data model for predicting the risk of water supply network damage. This approach facilitates regular inspections, leak detection and maintenance, and network update and renovation. And it helps prevent water wastage, enhances the effectiveness of water supply, and results in an estimated annual economic benefit of RMB 380,000.

Pipeline network leakage rate from 2021 to 2023

To reduce pipeline network leakage and improve water quality for users, we continue to conduct renovation of old and aged network. During the year, we invested a total of RMB 200 million to update and renovate the networks in certain municipal areas and aged residential blocks. The number of leakage repairs for the entire year decreased by 4,008, with a year-on-year reduction of 11.17%, and a leakage rate reduction of 8.8%. At the same time, we optimised the leakage rate assessment criteria, setting the leakage rate target at 10.89% for the next year.



Water resource management

Advancing wastewater purification

In terms of wastewater treatment, BEWG possesses extensive experience in operational governance, steady operating 987 sewage treatment plants within/outside the country. In 2023, 5,556.39 million tonnes of wastewater has been treated, which contributes to the harmonious development of people and the environment.

This year, the Group continuously optimised the implementation rules of assessments with stricter requirements, which emphasises relevant requirements for influent management and effluent water quality to maximize the ecological value.

BEWG's pollutant reduction in 2021-2023

Indicator	Unit	2023	2022	2021
Water business in Chinese mainland				
Reduction in suspended solids	tonne	791,954	749,361	683,108
Reduction in COD	tonne	1,027,813	961,112	904,218
Reduction in ammonia nitrogen	tonne	132,510	121,839	104,595
Reduction in total phosphorus	tonne	18,086	16,463	14,717
Total reduction in pollutants	tonne	1,970,363	1,848,775	1,706,638
Overseas water business				
Reduction in COD	tonne	26,566	16,450	16,426
Reduction in ammonia nitrogen	tonne	373	554	562
Reduction in total phosphorus	tonne	34	100	84
Total reduction in pollutants	tonne	26,973	17,104	17,072

Developing alternative water sources

BEWG is committed to achieving the recycling of water resources and actively promoting the development and utilisation of unconventional water sources. The Group positions reclaimed water business as a strategic direction for future development and emphasises that following the trend of using wastewater as a resource is the right way ahead for the water treatment industry.

Reclaimed water development and utilisation

We continue to build reclaimed water plants, and launch a new brand called "AQENT®". We improve water purification technology for a higher quality of reclaimed water. In 2023, BEWG produced a total of 473.34 million tonnes of reclaimed water.

Rainwater and flood water recycling

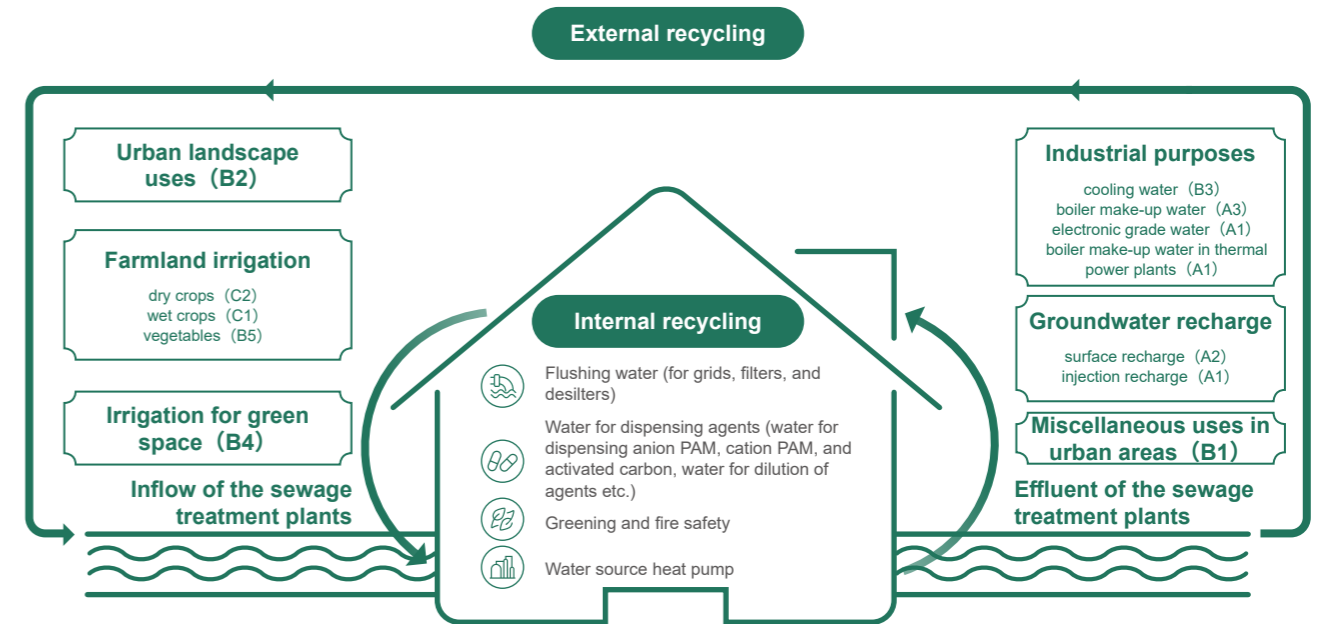
Rainwater recycling devices are added to various projects to optimise rainwater filtration devices. High-quality filtered rainwater is utilised for replenishing urban underground water resources, recharging landscape water bodies, and for greening and industrial purposes.

Exploration of seawater desalination technology

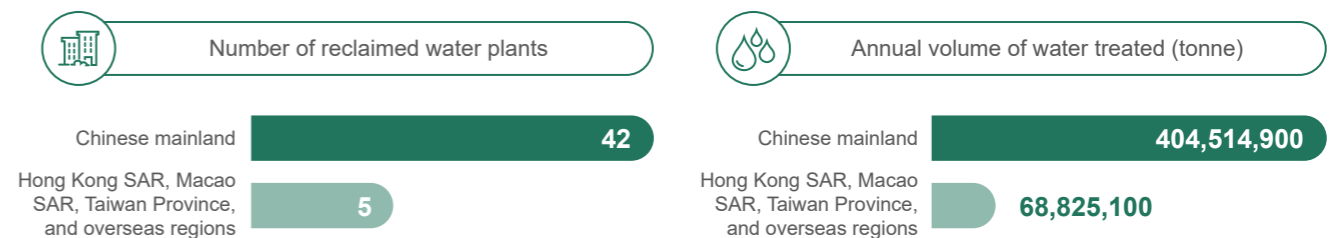
BEWG applies seawater desalination technology in Australia, optimises local seawater desalination systems to improve the output water quality, and alleviates water supply and demand conflicts in water-scarce areas.

Considering its business characteristics, the Group strengthens internal recycling and reuse of reclaimed water in sewage treatment plants to achieve internal water efficiency. In the meantime, efforts are made to explore applications of reclaimed water in industrial production, ecological replenishment, municipal water use, etc. All these can tackle water scarcity and build a sustainable circular water ecology.

Diagram of dual-cycle reuse of reclaimed water inside and outside sewage treatment plants



BEWG's reclaimed water supply performance in 2023





As a responsible enterprise devoted to environmental protection, BEWG puts the concept of sustainable development into practice, placing a strong emphasis on minimising the impact of its business operations on biodiversity. Tailoring strategies to the unique characteristics of each project, we consistently focus on biodiversity conservation, environmental system management, emission management, and chemical agent management. Our goal is to protect the nature and achieve high-quality green development.

Biodiversity

BEWG actively fulfills its responsibility to protect and improve the ecological environment. We practise ecological protection throughout the life cycle of projects, conduct research and development of products and technologies that contribute to biodiversity conservation, and actively engage in biodiversity protection and ecological restoration efforts. This commitment adds to the development of an ecological civilisation.

We actively respond to national initiatives such as the *China National Biodiversity Conservation Strategy and Action Plan (2011-2030)* and strictly adhere to regulations like the *Regulations on the Administration of Construction Project Environmental Protection*. Our internal management system, the *Biodiversity Protection Management Measures of BEWG¹²*, is in place to continually enhance biodiversity-related management. Our overseas operational sites are also in strict compliance with local biodiversity conservation policies, which met the relevant requirements of local governments.

Biodiversity protection throughout the life cycle of project

Planning and design stage

- Conduct ecological basic investigation, assessing the environmental impact, mainly considering factors related to biodiversity protection, giving priority to the protection of local characteristic species and their habitats, and developing special protection and restoration plans;
- Organise targeted publicity and education on biodiversity among employees to improve their awareness of biodiversity protection.

Construction stage

- Implement regular monitoring and strict abide by environmental supervision systems. Take targeted protective measures and maintain records for timely restoration work.;
- Adopt materials, devices, and equipment that facilitate biodiversity protection;
- Focus on preventing and controlling factors like light pollution, noise pollution, environmental pollution, and traffic problems that have impact on the surrounding ecosystem of project sites;
- Establish a aquatic ecological health assessment indicator system to evaluate the project's ecological benefits.
- Conduct ecological restoration for areas affected during construction, followed by ongoing maintenance.

¹² Public disclosure URL: <https://www.bewg.net/uploadfile/2020/1013/20201013050528831.pdf>

Operation and maintenance stage

- Monitor changes in biological indicators during operation in real time with the smart water system, timely identifying biological risks and responding to them promptly;
- Monitor and control designated ecological conservation and preservation areas within the scope of project operations;
- Adopt restorative measures, such as creating environments conducive to the survival of species in the food chain to enhance biodiversity on a small scale;
- Explicitly prohibit employees from harming fish and other plants and animals protected by national laws.



Case: Ecological restoration and biodiversity protection in Yuhang Canal Project, Zhejiang Province

In addition to pollution reduction by plant-network-river smart linkage system of whole catchment, the Yuhang Canal Water Environment Comprehensive Treatment Project employed an integrated water-land approach to biodiversity protection, which yields significant results. In the transition zone between water and land, we expanded the construction of gentle-slope ecological buffer zones. Utilising a mix of different vegetation species, we created riparian ecological spaces. Within the river channels, we employed intelligent bio-chain targeted water treatment technology, mimicking the self-repairing function of aquatic ecosystems in nature. This facilitated the rapid conversion of nitrogen and phosphorus substances from pollution sources into beneficial bacteria and algae. Eventually, through the harvest of economic species like freshwater pearl mussels, pollutants were removed from the water, enhancing water quality while safeguarding the diversity of native aquatic species.



Ecological restoration and biodiversity protection in Yuhang Canal project, Zhejiang Province



Case: Yuhang Canal aquatic ecosystem health assessment project, Zhejiang Province

From 2021 to 2023, BEWG collaborated with Hangzhou Normal University on a field-based study, conducting a water ecosystem health assessment of the Yuhang Canal. This project involved the development of a comprehensive aquatic ecosystem health assessment system covering various biological indicators. Quantitative analysis was performed to evaluate the health status of the aquatic ecosystem after implementing different engineering measures. The results indicated a significant improvement in water quality and ecological restoration effects following the implementation of the Yuhang Canal restoration project.

Environmental impact

Products and technologies related to biodiversity protection

Leveraging our expertise in water pollution control and comprehensive environmental management, the Group focuses on green infrastructure and in-situ ecological restoration system. We develop new ecological restoration technologies for a community with a shared ecological destiny, safeguarding lucid waters and lush mountains.

Green infrastructure

We develop and apply various green infrastructure products and technologies, represented by artificial wetlands. Combining wastewater treatment with ecological protection, we achieve synergistic development. The Group's developed prefabricated wetland utilises a novel wetland purification process independently, effectively in order to enhance water purification efficiency. The "Weak Electrical Mediated Enhanced Water Environment Ecological Restoration Technology Application", a project in which the Group participated, won the first prize in the 2023 Environmental Science and Technology Award.

In-situ ecological restoration

Promoting the industry-university-research cooperation, we carry out research and development of in-situ water ecological restoration technologies, applying them in engineering practices. At the same time, we establish aquatic biological ecosystems to rapidly restore riverine ecological stability, enhancing biodiversity protection and aesthetic value.

Case: Liaocheng Qingquan River Wetland Project, Shandong Province

The Qingquan River Wetland Project in Liaocheng, Shandong Province, employs a combination of horizontal subsurface flow constructed wetlands and surface flow wetlands. This technology is primarily used for the advanced purification treatment of reclaimed water from the Guanxian Sewage Treatment Plant (Grade A standards). The project's treated water reaches quasi-class III level of Environmental Quality standards for Surface Water to Class IV standards, significantly improving the water quality of the Qingquan River and enhancing the local level of ecological environmental governance.



Liaocheng Qingquan River Wetland Project, Shandong Province

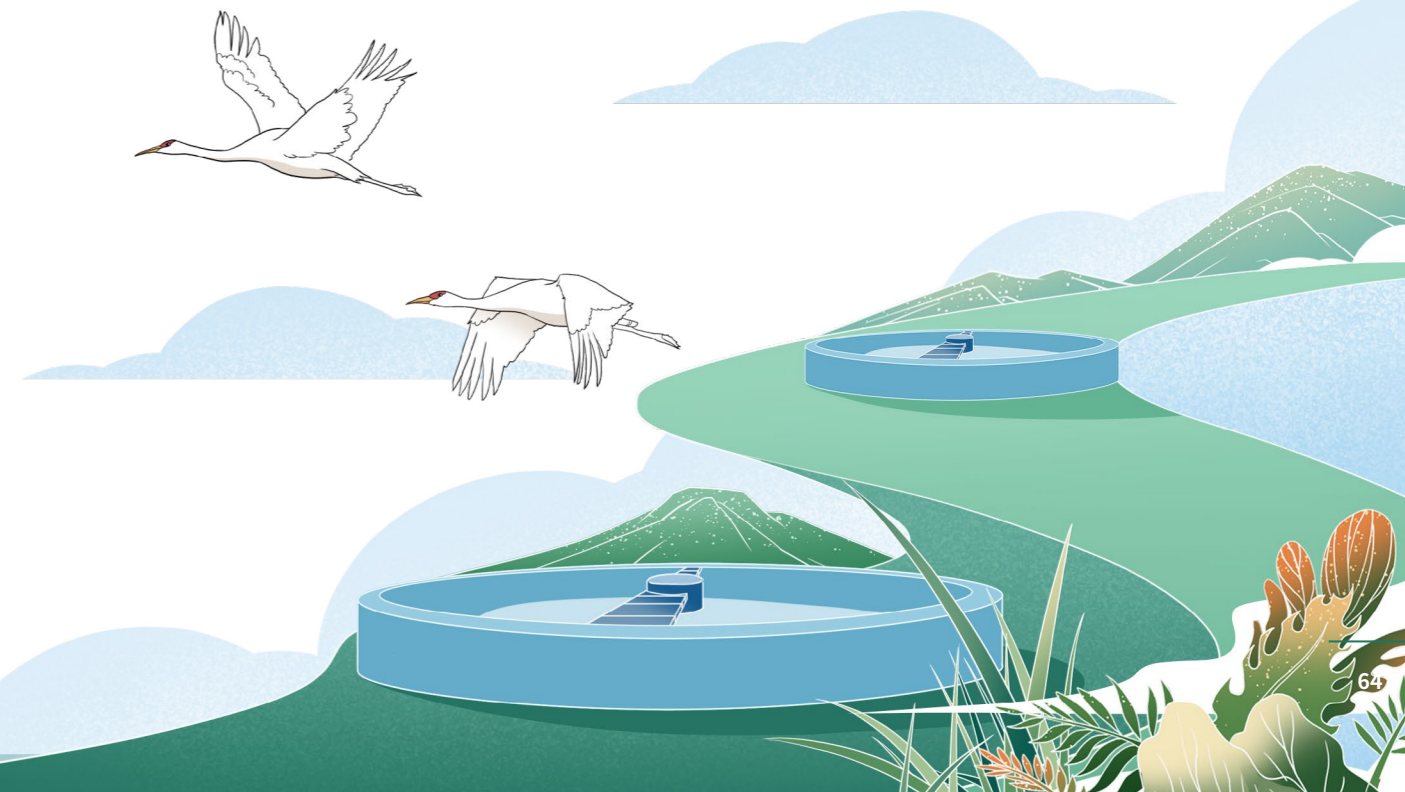
Case: Comprehensive Management Project of Xinfeng River Basin in Daxing District, Beijing

The Comprehensive Management Project of Xinfeng River Basin, Daxing District, Beijing, effectively protects the biodiversity of the area through artificial wetland technology and ecological restoration of natural wetlands. Two artificial wetlands were constructed in the basin to purify the water quality of the main stream and major tributaries. Among them, the An'nan Wetland took advantage of plants and water features to create a landscape integrating ecologically functional wetlands, cultural landscape elements, and wetland landscape features.

The Laofeng River section in the basin has undergone two years of water ecosystem construction, the overall biodiversity has increased, and the population of *Pelophylax plancyi*, a national first-class protected frog species inhabited in Beijing, has seen an increase year by year. In 2023, the Xinfeng River Basin Comprehensive Management Project in Daxing was selected the *Urban Renewal - Beijing Sample*.



Comprehensive Management Project of Xinfeng River Basin





Environmental system management

BEWG strictly complies with environmental laws and regulations such as the *Environmental Protection Law of the People's Republic of China*, and has developed internal environmental management systems including the *Environmental Index Assessment System*, the *Environmental Factor Identification, Evaluation and Control Procedures*, in accordance with the ISO 14001 standard for an environmental management system. In 2023, the Group and some overseas branches passed ISO 14001 certification.

Having set the environmental goals of "saving energy, reducing consumption, reducing pollution, and increasing efficiency", we carry out feasibility assessments and environmental impact assessments in parallel with new projects, and strictly control environmental risks throughout the life cycle of the projects.



Emission management

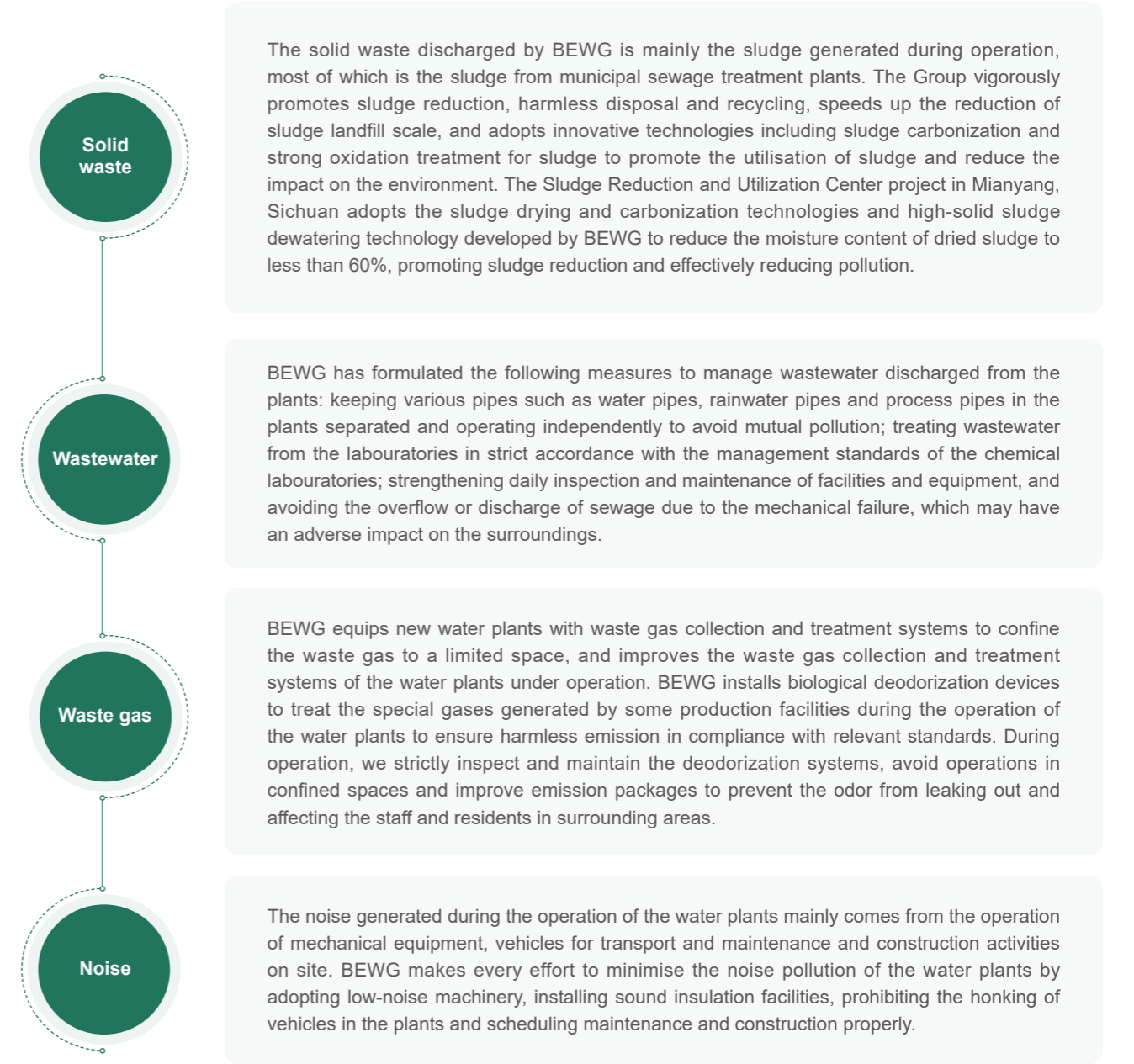
In strict accordance with the requirements of the *Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste*, *Water Pollution Prevention and Control Law of the People's Republic of China*, *Atmospheric Pollution Prevention and Control Law of the People's Republic of China*, and the *Law of the People's Republic of China on Prevention and Control of Pollution from Environmental Noise*, BEWG has formulated internal systems including *BEWG Management Manual on Quality, Environment, and Occupational Health and Safety* and the *Quality, Environment, and Occupational Health and Safety Procedure Documents*. This year, we improved the management of emission-related risks and enhanced routine monitoring of major environmental pollution accidents.

Construction stage

BEWG requires contractors to attach great importance to the emission of environmental pollution such as wastewater, waste gas and noise during construction, and improve the utilisation efficiency of recyclable materials as much as possible.

During the project construction, with precise control methods, the Group makes every effort to reduce the emissions of noise, dust, harmful gases and solid waste at the construction sites, and strictly identify, classify, monitor, control and dispose of the waste. Recyclable wastes such as scrap metal, plastic foam and other materials shall be recycled as much as possible.

Operation stage





Waste discharge of BEWG in 2021-2023

Indicator	Unit	2023	2022	2021
Water business in Chinese mainland				
Hazardous solid waste	tonne	256	326	198
Non-hazardous solid waste	tonne	2,764,326	2,704,446	2,525,025
Overseas water business				
Non-hazardous solid waste	tonne	54,570	30,146	30,608
Solid waste business				
Sulfur oxide emission	tonne	64	48	37
NO _x emission	tonne	566	337	305
Smoke particles	tonne	22	7	3.05
Boiler residue discharge	tonne	154,131	87,156	64,723
Office building				
Hazardous solid waste	tonne	2.32	2.41	1.19
Non-hazardous solid waste	tonne	142.61	128.02	54.03
Total				
Hazardous solid waste	tonne	259	328	199
Hazardous solid waste density	kg/10,000 RMB	0.11	0.15	0.09
Non-hazardous solid waste	tonne	2,819,039	2,734,720	2,555,687
Non-hazardous solid waste density	tonne/10,000 RMB	1.15	1.27	1.10

Note:

1. The density of hazardous solid waste = hazardous solid waste/ the Group's operating income for the year.
2. The density of non-hazardous solid waste = non-hazardous solid waste/ the Group's operating income for the year.
3. In 2023, the statistical scope of the data in the Report changed, we sort out the indicator scope and some data of year 2022 is retroactively adjusted. Meanwhile, this report followed the presentation of currency changes in the Annual Report, changing the unit of the "Hazardous solid waste density" and the "Non-hazardous solid waste density" from "10,000 HKD" to "10,000 RMB".



Chemical agent management

Chemical agent management is critical for water plants to operate safely, compliance with standards, economically, and efficiently, and remains a crucial step for the low-carbon operation of water plants. In strict accordance with the *Environmental Protection Law of the People's Republic of China*, the *Water Pollution Prevention and Control Law of the People's Republic of China* and other relevant laws and regulations, BEWG has formulated relevant regulations, such as the *Production and Operation Management Measures* and the *Chemical Agent Management Measures*. BEWG also set up a special working group responsible for reducing chemical agent consumption and implementing strict and precise control over the supply, use and emission of chemicals throughout the life cycle of projects.

Main agent management measures of BEWG



Case: Kai Fat Harbour Cleaning Services Limited strengthened chemical agent management

In 2023, Kai Fat Harbour Cleaning Services Limited in Hong Kong formulated the *Guidelines for Environmentally Handle and Store Chemicals* to strictly regulate the handling and storage of chemicals, and continuously optimise the standards for chemical agent management by focusing on source control, container control, storage control, inspection and maintenance.



Case: BECFBR technology

BECFBR technology is a new generation of low-carbon, high-quality, and high-efficiency enhanced biological mud membrane composite treatment technology. This technology can reduce the energy consumption in filler fluidization process by 30-50% and achieve near zero carbon source addition. In 2023, 8 projects using BECFBR technology have been put into operation in Shangdong and Guangxi.

Consumption of chemical agents of BEWG in 2021-2023

Indicator	Unit	2023	2022	2021
Water business in Chinese mainland				
Consumption of carbon source	tonne	29,037	27,518	84,386
Consumption of dephosphorisation agents	tonne	26,261	22,542	224,346

Note:

1. The usage of major pharmaceutical products covers sewage/reclaimed water plants operated by the Group's subsidiaries in the mainland region.
2. In 2023, the statistical scope of the data in the Report changed, we sort out the indicator scope, and some data of year 2022 is be retroactively adjusted.

03

Building a harmonious society



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Talent management

BEWG prioritises talent development and adheres to corporate social responsibility. We released the *Statement on Employee Rights* and pledge to implement anti-discrimination and diversified employee management. Meanwhile, we ensure that our employees are provided with adequate welfare and healthcare, further develop the talent training system and strategies, support employees' career development and maintain a solid talent pool.

Employment management

We are committed to providing a fair, compliant and equal recruitment environment and continue to improve the *Recruitment Management System*, strictly comply with lawful employment and clearly prohibit any form of violence against child labour. We oppose workplace discrimination in recruitment on the basis of race, nationality, and gender, among others. Furthermore, we offer jobs to candidates based on their competencies, ensure equal employment opportunities and equal pay, and conduct external market-based salary surveys to ensure that we offer market-competitive salaries.

We are implementing the Campus Recruitment Plan to attract talents, which takes into account the transformation needs of BEWG and focuses on 42 colleges and universities with talents in the target professions, so as to attract more capable fresh graduates to join us. We are committed to recruiting targeted talents, using consistent standards to assess the competency of fresh graduates and ensure professionalism and fairness in recruitment.

In 2023, BEWG accelerated the digital transformation of the human resources system and launched a regional digital human resources management system that integrates online AI interviews, talent assessment, remote interviews and evaluation, so as to simplify the recruitment process, improve efficiency, and help the departments quickly identify outstanding talents.

To achieve democratic management, we adhere to a management philosophy that is inclusive and diverse, respecting the basic human rights of our employees and encouraging them to participate in company affairs. BEWG strictly complies with labour laws in all of our business regions worldwide and supports international human rights norms and standards, such as the *Universal Declaration of Human Rights*. The Group's trade union is dedicated to protecting the legal rights and interests of employees, holding staff communication events regularly, and encouraging and supporting employees to share their concerns, thereby fostering the sustainable development of employees and the Company.

Additionally, we are committed to establishing a fair and motivating employee performance management system that includes semi-annual and annual evaluations, and sets performance metrics, key tasks and corporate cultural values to fairly and justly assess employee performance, providing an fair career development and promotion pathway. We have established a performance feedback and grievance mechanism, through which appraisees can appeal to the Human Resources Center if they have any doubts regarding their performance results. The Company coaches employees to enhance their skills, optimises training platforms and improves performance coaching to foster employee development, improve management effectiveness and maintain stable and harmonious labour relations.

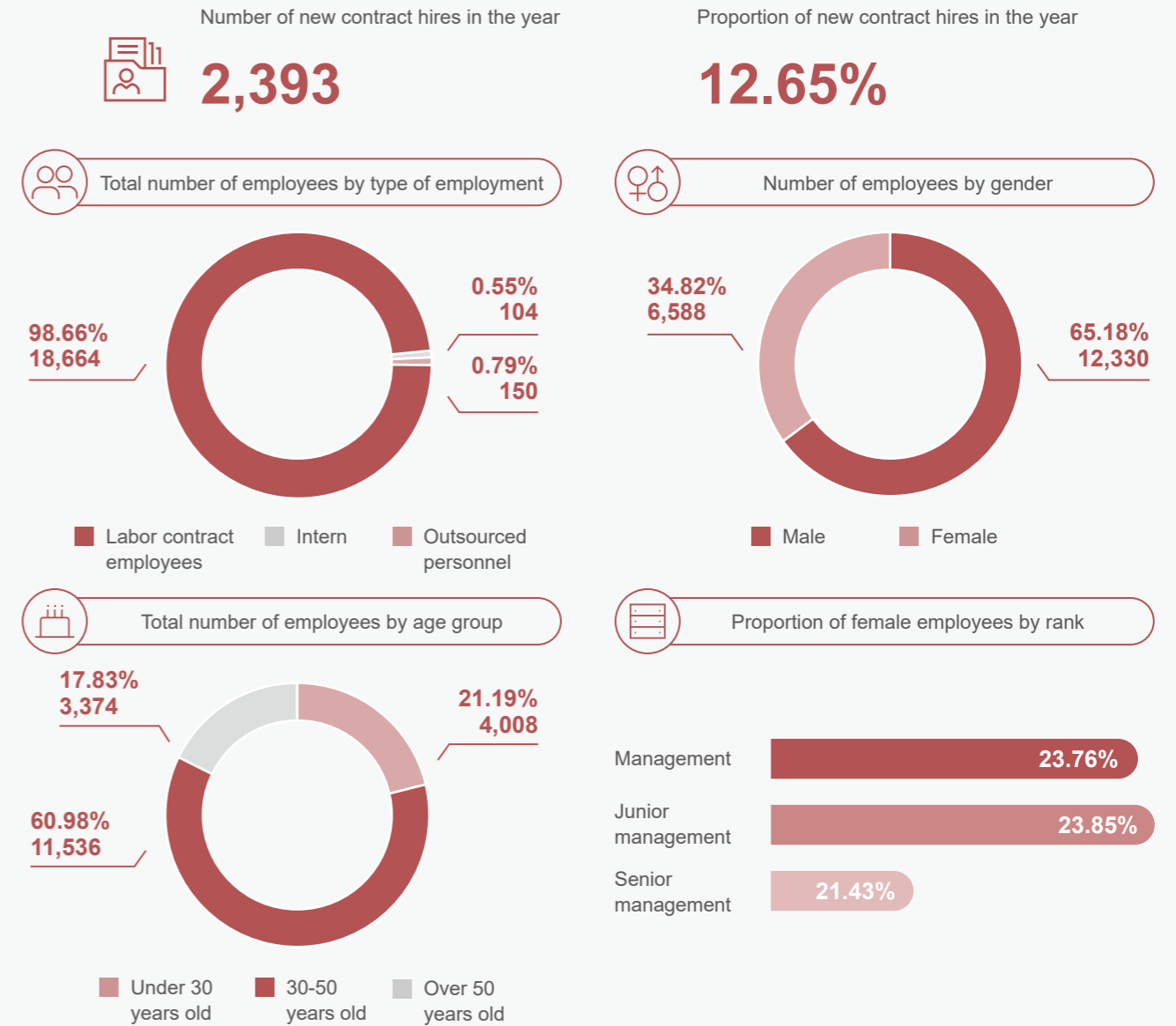
As of 31 December, 2023, BEWG had a total of 19,832 employees, including 18,918 employees on the Chinese mainland and 914 employees in China's Hong Kong, Macao, Taiwan and overseas regions.

As of 31 December, 2023

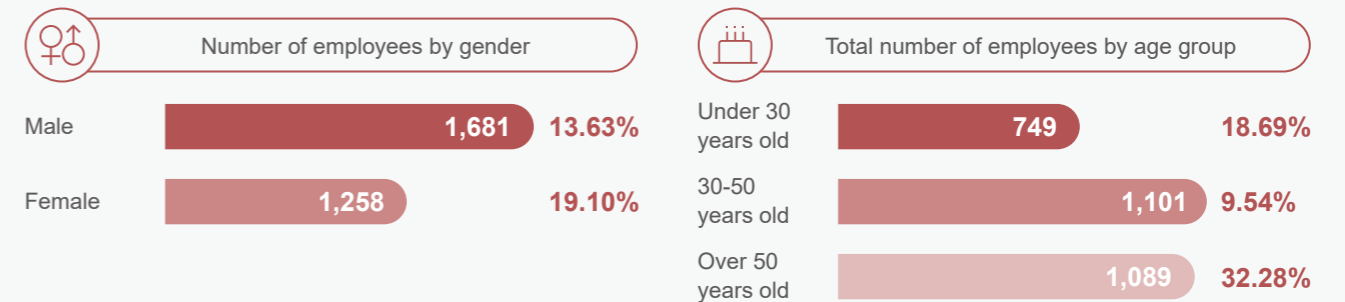
BEWG had a total of The Chinese mainland China's Hong Kong, Macao, Taiwan and overseas regions

19,832 employees **18,918** employees **914** employees

Total number and proportion of BEWG employees by category in Chinese mainland in 2023¹²



Total number of employees leaving¹³ and turnover rate¹⁴ by gender and age of BEWG on the Chinese Mainland in 2023



¹³ Considering that the business of BEWG is mainly concentrated in Chinese mainland, so only the information of employees in Chinese mainland is disclosed.

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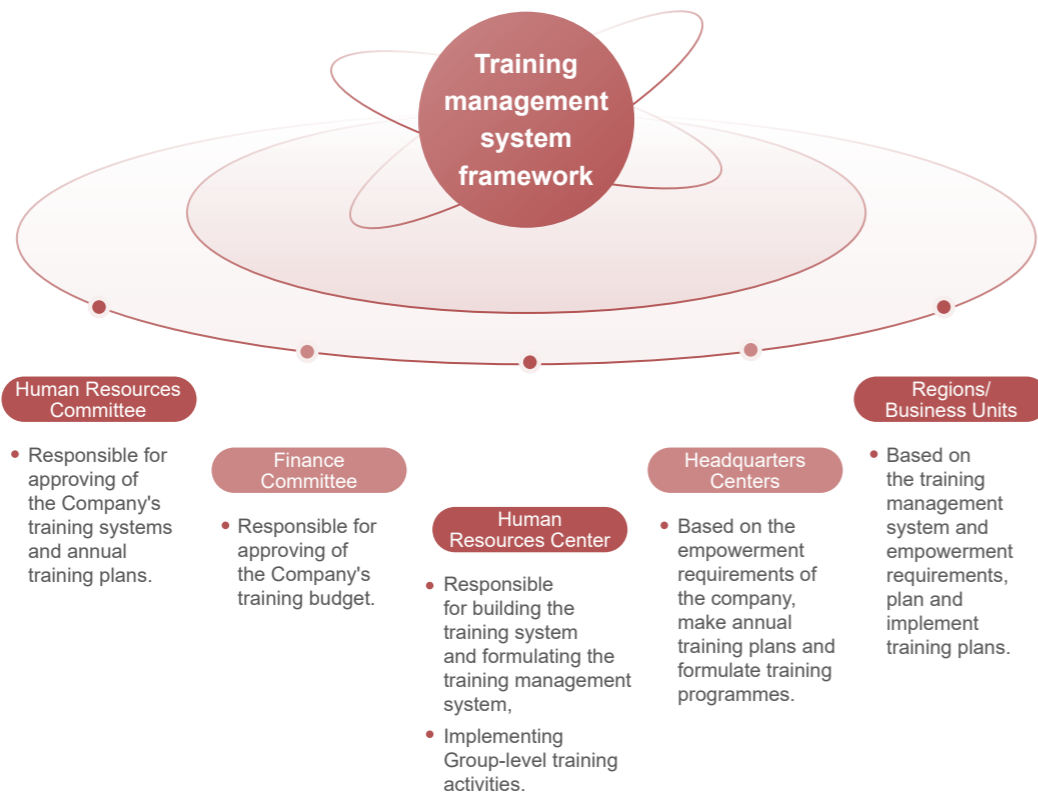
¹⁵ Turnover rate for each category = number of employees in that category leaving / total number of employees in that category * 100%

Talent development

Talents are critical to the sustainable development of BEWG. We are dedicated to establishing a comprehensive and innovative talent development system that supports our employees in an ever-changing business environment. By implementing a robust training management system, we ensure our training plans are implemented in an efficient and organised manner, while providing a variety of learning opportunities tailored to various individual needs.

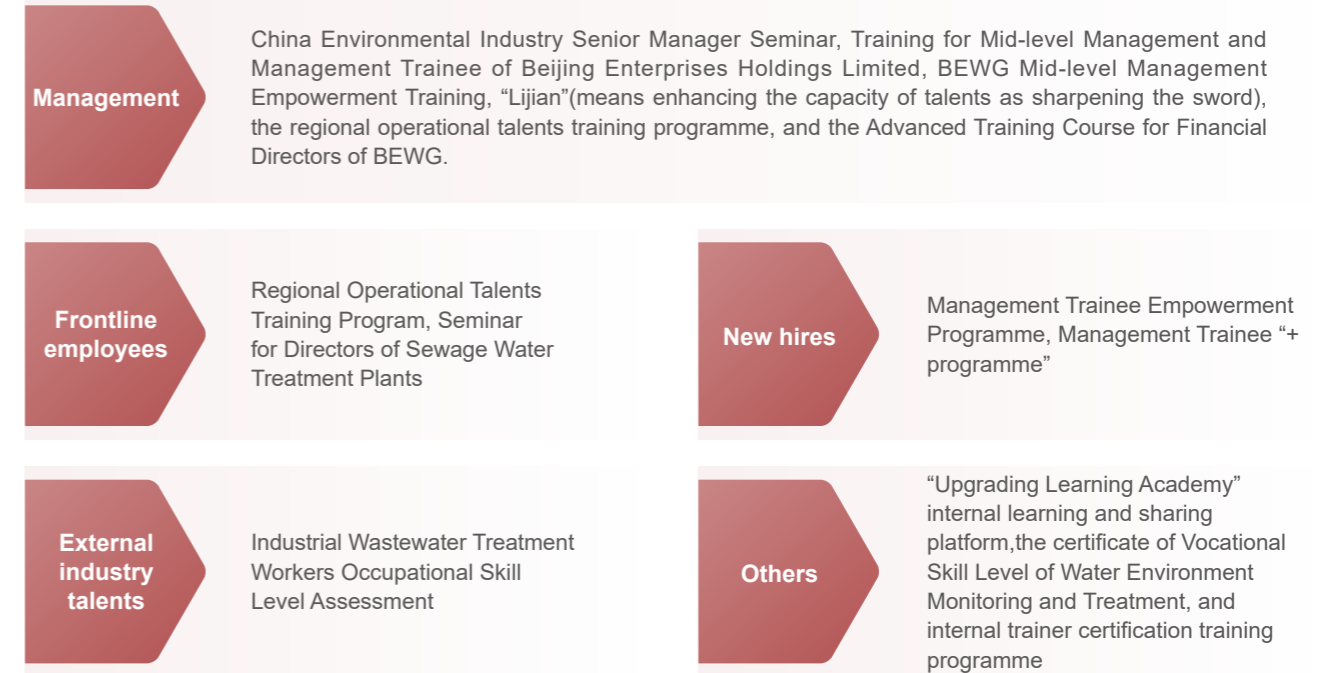
Training management system

The Group has established a comprehensive and effective training management system to improve the overall quality of our staff and meet our development needs.

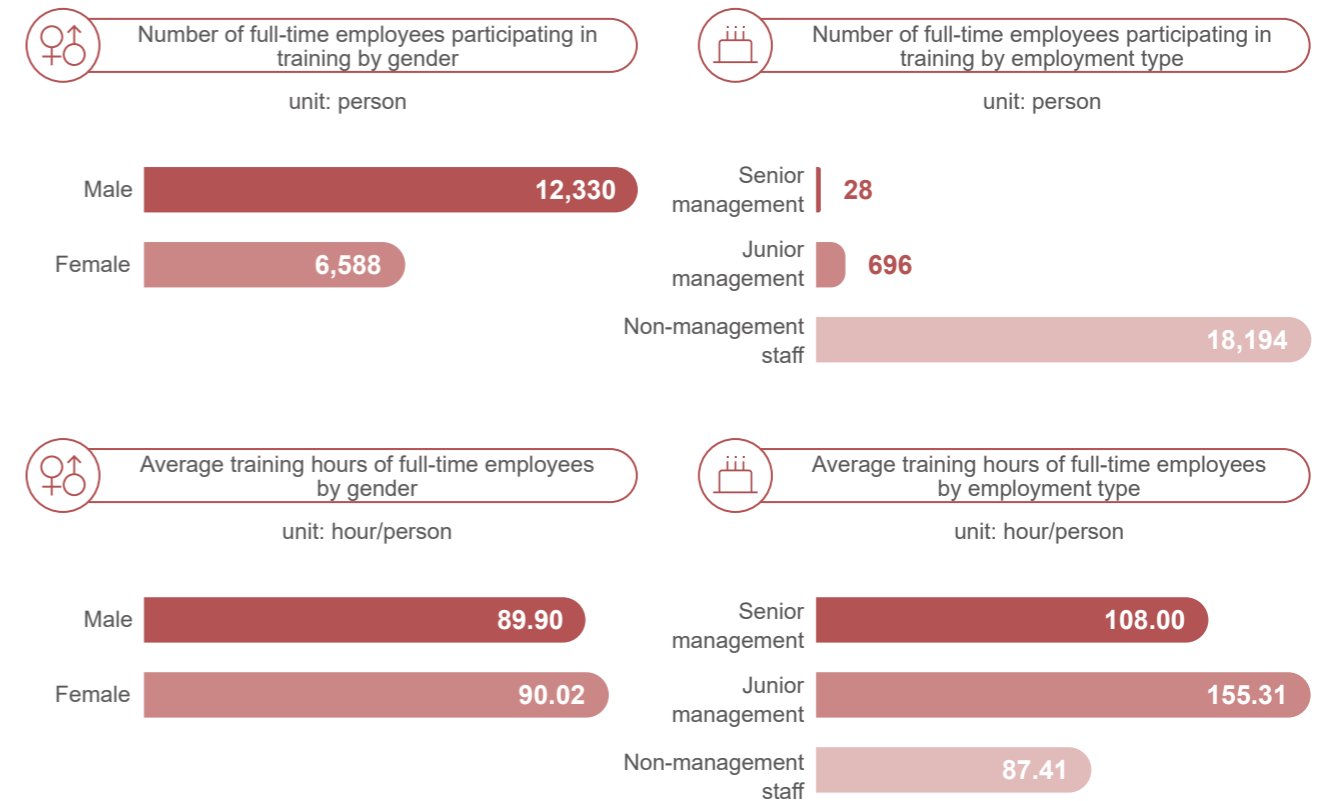


In 2023, BEWG was dedicated to establishing a comprehensive and dynamic talent ecosystem that emphasises personal development and innovative talent cultivation and developing a holistic training framework which drives sustainable talent development. We encourage employees to take the initiative to learn and have established an internal learning and sharing platform called "Upgrading Learning Academy", which integrates learning resources and accumulates internal experience. We are also dedicated to strengthening our talent reserve in the industry, sharing our talent development practices with our peers, inviting external experts to provide trainings for our employees to cultivate composite talents, and actively creating an environment for talent development in the industry.

Overview of BEWG employee training in 2023



BEWG employee training performance in 2023¹⁶



¹⁶ Considering that the business of BEWG is mainly concentrated in Chinese mainland, so only the information of employees in Chinese mainland is disclosed.

Major talent training programmes in 2023 are as follows:

Case: Management talent training programme - Lijian Programme

The Lijian Programme was officially initiated in March 2023, with the participation of leaders from member companies, as well as over 120 general managers and their core team members from regional companies. The Group's President led the executive body to deeply engage in course design and professional teaching, assembling a team of lecturers comprising 7 group executives and 13 group experts, and delivered 27 hours of high-quality courses. The courses were designed to enhance 4 fundamental capabilities of regional organisations, namely, managing existing operations, engaging with customers, understanding products, and identifying business opportunities, in order to cultivate high-caliber regional business talents.



BEWG Lijian programme

Case: BEWG Upgrading Learning Academy training platform

As the major learning platform for BEWG employees, the Upgrading Learning Academy aims to help BEWG become a learning organisation that sticks to company strategies, strengthens management's abilities, broadens horizons and promotes business exchanges. The Upgrading Learning Academy has set up a weekly sharing and learning mechanism and a dual-platform sharing system (online and offline), and is open to all employees (including employees at all levels, member companies, interns and expatriates).

As of December 2023, the Upgrading Learning Academy has successfully organised 31 events covering 22,881 participants, with an overall course rating of 9.4, covering 13 types of topics such as group strategy and operational development. This comprehensive learning platform promotes the sustainable growth of talents and contributes to the long-term stable development of the Company.



The Upgrading Learning Academy

BEWG is committed to absorbing young talents and devotedly developing each batch of the Company's management trainees. Through the internal job rotation programme, we help trainees explore their potential and strengths and identify their career development direction, contributing to the vitality and innovation of the Company.

In 2023, the Group focused on upgrading the skills of employees by holding internal and external training programmes such as the Japan International Training Course, the Seminar for Senior Managers in China's Environmental Industry (the 14th Huangpu session), and the Seminar for Directors of Sewage Water Treatment Plants, as well as assisting employees in obtaining appropriate qualifications to support the long-term development of employees.



Selection of management trainees



Training for management trainees

Case: BEWG employee skill enhancement and certification project

In 2023, BEWG cooperated with the Hebei Society for Environmental Sciences and other organisations to help employees improve their vocational skills and obtain appropriate skill certificates by organising courses to obtain the certificate of Vocational Skill Level of Water Environment Monitoring And Treatment. In 2023, a total of 104 employees obtained relevant vocational skill certificates.



Case: BEWG technical talent training “Seminar for Directors of Sewage Water Treatment Plants”

To support the business growth of BEWG, we held the ninth session of “Seminar for Heads of Sewage Water Treatment Plants” in Chengdu and Yinchuan respectively, aiming at cultivating specialised technical talents with both technical and managerial abilities, and combining both theory and practice to help the operation managers improve their comprehensive quality in technical professional fields.

In 2023, a total of 96 operation managers participated in the seminar and received 60 hours of training. By the end of 2023, the seminar had successfully run for 9 sessions, with a total of 750 outstanding plant directors having completed the training and taken up leadership positions.



Trainees of the Seminar for Directors of Sewage Water Treatment Plants



Group photo of the Seminar for Heads of Sewage Water Treatment Plants



Case: Selection and certification of outstanding lecturers in the BEWG - “Environmental Protection Professionals” Project

We are committed to building a team of professional lecturers that meets the Group’s faculty requirements, and have developed a series of high-quality professional courses to further develop the Environmental Protection Teacher Project.

In April 2023, the Group organised a specialised training for internal lecturer empowerment and certification in Qufu, Shandong Province. 54 trainees from different units of the Group attended the training, which aims to provide customized courses for trainees, enrich their expertise and enhance their delivery skills as lecturers. The training played a significant role in enhancing the quality of teaching by internal lecturers, strengthening the capability of the lecturer team in terms of expertise and lecturing skills, and strongly improving the overall quality of the Group’s internal education and training.



Environmental Protection Teacher Project



Employee care

BEWG prioritises the overall well-being and health of our employees to ensure they have a good working experience in the workplace. The Group follows the *Headquarters Employee Welfare System* and provides diversified benefits to our employees. In addition, we formulated the *Management Measures for Organisation and Implementation of Corporate Culture Activities of BEWG* and carried out team-building activities to help employees broaden their horizons and enhance team cohesion and collective identity. We care about our employees' leisure time and organise various cultural and sports activities, such as executive luncheons, BEWG Thinking-sharing sessions, fun games and themed photography competitions. We provide our employees with fitness equipment, reading spaces and other hardware facilities to enrich their daily lives. Moreover, the Company's trade union organises cultural and sports activities, such as walking, hiking, basketball and rope skipping to promote the physical and mental health of our employees through a variety of recreational activities.

We always adhere to the "people-oriented" concept, work to strengthen safety and health awareness, and actively improve working conditions and medical security. We set up a "staff medical kit" to respond to emergencies and ensure timely medical support for employees who have experience physical discomfort or other urgent situations. To enhance the mental health of our employees, we carried out professional training and public education activities to assist our employees in effectively managing the stress and challenges in the workplace.

Medical Care

The Group collaborates with multiple healthcare providers to deliver compassionate health services to our employees, including implementing group-wide tumor marker screenings and offering annual health examination packages, to safeguard and enhance the health and well-being of our employees. In 2023, we have established partnerships with 6 hospitals and medical examination institutions, and purchased annual health examination packages for all employees to choose from them according to their needs.

Medical Security

The Company is dedicated to offering comprehensive medical coverage, including supplementary health insurance, accidental injury insurance, critical illness insurance, insurance for illness-related death, and children's healthcare insurance. This range of benefits is designed to provide employees and their families with comprehensive protection against health risks. By doing so, we aim to improve the overall well-being of our employees and ensure that we live up to our commitment to the health and well-being of our employees and continuously enhance the quality of their work and lives. This year, we have upgraded employee insurance to expand coverage for their parents and spouses without a premium increase.

Childcare

To enhance childcare support, we have secured commercial insurance coverage specifically for their children. In addition, we have extended employee maternity leave, increased parental leave and nursing care leave beyond the minimum legal requirements. We have added paid breastfeeding leave for female employees. During the period when the breastfeeding infant is within one year old, female employees are entitled to one hour of fully paid leave per day. In addition, each level of companies under our Group has set up a mother and infant care room where conditions permit. In addition to planning special activities for International Women's Day, we have designed an online course on breast cancer prevention for female employees, which was well received by most employees, and the participation rate was 100%.

Beijing Enterprises Group, the parent company of BEWG, has established a "Sunshine" special fund under the account of the Warm Foundation of Beijing General Federation of Trade Unions. The fund aims to aid union members and other employees of the Group who are facing difficulties, with a focus on helping those in need to solve their daily living difficulties and children's education problems. For employees who were laid off due to organisational change, we offer comprehensive support, including career counseling, job hunting support and the provision of alternative employment opportunities within the Group, in order to help them adapt to their new career.

Furthermore, we established a dedicated and open channel for our staff to communicate. We also built a specific platform for feedback and suggestions named "Wenbei" Q&A platform on Dingding. We carry out staff engagement events regularly, including the BEWG Thinking-sharing sessions and Ideas Exchange Meeting, all designed to foster the positive exchange of information across the Company.

Case: "Wenbei" Q&A platform on Dingding under the BEWG Thinking-sharing sessions

We encourage our employees to "Ask if you wish to know", so we have developed the "Wenbei" Q&A platform on Dingding, which aims to help answer work questions and integrate knowledge about BEWG. At the same time, we set up "Wenbei Little Bugle" to enhance the interaction of the platform and open up the communication channel to all employees.



Case: BEWG Ideas Exchange Meeting

In 2023, we launched the first "BEWG Ideas Exchange Meeting", which aims to promote two-way communication between employees and management. While facilitating the exchange of information, the meeting effectively improved internal communication and exchange, enhanced the Group's internal cohesion.



Case: Children's Day - BEWG painting activity

We hold diverse activities for employees and their families on different festivals. On the Children's Day in 2023, we invited our employees and their children to the Company to create paintings and paint their favorite colors on BEWG's different water plants, so as to help children understand the current situation of China's water industry and the importance of protecting lucid waters and lush mountains.

Safe production is the robust foundation for the long-term growth of the Company. We prioritise the safety of production sites in our safety management. We secure the health and well-being of our employees by proactively addressing potential safety risks, executing comprehensive safety plans, and fostering safety consensus.

Production safety

BEWG has established Safety Production Committees at headquarters and first-tier business units to comprehensively set a coordinated and effective safety management mechanism and conduct systematic and standardised safety management. We strictly comply with the requirements of the *Production Safety Law of the People's Republic of China* (Revised in 2021) and other relevant laws and regulations, and in reference to *ISO 45001 - Occupational Health and Safety Management System*, we revised internal management regulations for production safety, such as the *BEWG Identification List of Laws, Regulations and Standards for Safety Production*, the *BEWG Responsibility System for Safety in Production*, the *BEWG Regulations on Production Safety Accident Reporting and Investigation* and the *BEWG Comprehensive Emergency Plan for Unexpected Incidents* in 2023, so as to establish a sound safety production accountability system. Besides, to comprehensively fulfill our responsibility for production safety and enhance the safety awareness of management at all levels, we conducted safety training and case studies for all employees and meticulously examined the primary issues and potential risks in production safety endeavors.

To improve safety management, the Group has formulated policies such as the *BEWG Management Provisions on Safety Rewards and Punishments* and the *BEWG Management Provisions on Safety Production Interviews*. The Group signs a safety management target responsibility letter with each business unit annually, clearly outlining safety objectives and the scope of assessment. Additionally, the Group has established annual key performance indicators regarding production safety, which are linked to project bonuses. In 2023, there were no major safety accidents at BEWG, and the headquarters of BEWG passed the ISO 45001 Occupational Health and Safety System certification.

BEWG adheres to relevant regulations such as the *BEWG Hazardous and Harmful Factor Evaluation and Management Regulations*, *BEWG Major Hazard Source Management Regulations*, and *BEWG Management Regulations for Dangerous Materials Safety*, and regularly carries out identification and evaluation of hazardous and harmful factors, evaluates major hazard sources, and strengthens hazardous material safety management.

BEWG focuses on the safety management of project sites and integrates the safety inspection with the acceptance of star-level water plants by strengthening safety monitoring and upgrading the safety inspection mode. While regular safety inspections are conducted for star-level operation projects, safety inspections have been stepped up for transitional projects with more complex risks, or the management of which has not been fully aligned with Group's expectation. The scope of inspection covers a wide range of businesses, including village sewage, water environment, solid waste and pipeline networks. Each unit takes the initiative to investigate and eliminate hidden dangers, strictly follows relevant management regulations and operating procedures, and effectively implements all safety measures, so as to continuously improve the safety capability.

In addition, to control risks in advance, we have established an effective system for hidden danger investigation and risk classification and control, and regularly carry out special actions for the investigation and treatment of hidden dangers and production safety inspections, so as to build up a comprehensive safety defense line. Each unit has compiled a constantly updated risk control list and a closed-loop rectification list of hidden dangers, and carefully analysed the regularity and characteristics of similar hidden dangers and formulated corresponding control measures in a timely manner to comprehensively consolidate the safety barrier.

Driven by the Company's overall strategy, we have strengthened education on safety warning cases, increased capital investment in labour protection, safety facility maintenance, and special equipment testing. We also purchase labour protection products for our employees, improve and maintain facilities, and regularly test large equipment. In 2023, BEWG's investment in safety production totalling RMB 31.22 million.

BEWG observes applicable laws and regulations in the locations of our projects, strictly requiring employees to wear safety protective gears and dispose of scrapped equipment and vessels in a timely manner. Moreover, we equip our project sites with first aid devices and safety signs and monitor the relevant safety indicators on an ongoing basis to protect our employees' health and safety.



In 2023

BEWG's investment in safety production totaled RMB

31.22 million



Man in personal protective gears



Safety signs at the project site

Safety culture

BEWG actively fosters a culture of safety production and raises the safety awareness of all employees through a series of activities. We organise safety education and training activities regularly, including the “Ankang Cup” knowledge competition, as well as combination of network interaction and online experience as a supplement to the training, to strengthen employees’ safety production skills.

We conducted safety production training for all staff members and provided safety information to them through various channels, such as our “Safety Outlook” platform, the “Safety Production Month” campaign, publications on electronic screens, and safety education videos. In 2023, we unveiled a column on our intranet and DingTalk portal to share accident cases, enabling our employees to better draw lessons from them. Meanwhile, we launched the programme “2023 Online Safety Training for All Staff of BEWG”, covering 16,965¹⁷ employees. We also organised relevant safety exams, with a passing rate of 99.66% recorded. A total of 9,784 safety education and training sessions was carried out at all units. By doing so, we have effectively improved the safety awareness and ability of all employees.

To enhance the management and professional competence of our safety management personnel, we conducted targeted training for more than 200 safety management personnel at different levels in April 2023, earnestly implementing the safety training contents in all production processes.

Case: The “Safety Production Month” campaign

In June 2023, we welcomed the 22nd nationwide “Safety Production Month”, and carried out a range of featured safety training activities on the theme of “Everyone with Awareness and Ability of Safety and Emergency Response”, including awareness-raising publicity and education, potential risk identification and treatment, and emergency drills. Taking new approaches such as online interaction and experiencing, the activities helped to promote safety knowledge, enhance our staff members’ safety awareness and emergency response skills, and foster a positive atmosphere of safety culture among our employees.



Publicity of the “Safety Production Month” campaign

¹⁷ The data includes only BEWG and its subsidiaries where it holds operational control. It does not include subsidiaries under joint financial control but with independent operational policies.

Case: The “Ankang Cup” competition

BEWG organised the fifth “Ankang Cup” competition in September 2023, with a view to heightening employees’ safety production awareness, enhancing their emergency response skills, and fostering a safe working environment.

The competition consisted of three parts: an online safety knowledge assessment, a confined-space operation and emergency rescue drill, and a knowledge contest. Participated in by regional general managers, project operation leaders, project delivery managers, safety management personnel, and front-line workers, the competition strengthened our safety production management in a comprehensive manner.



Scenes of the “Ankang Cup” competition

Case: Our projects in Zhuhai, Baise, and Jiangmen won the honour of “Demonstration Site of Safe and Civilised Construction”

In 2023, our Xinqing Industrial Sewage Treatment Plant Project in Zhuhai, Baise Sewage Treatment Plant Phase III Project, and Xinhui Bird Paradise Water System and Infrastructure Improvement Project in Jiangmen won the municipal honour of the annual “Demonstration Site of Safe and Civilised Construction”.



Xinqing Industrial Sewage Treatment Plant Project in Zhuhai wins the honour of “Demonstration Site of Safe and Civilised Construction”



Xinqing Industrial Sewage Treatment Plant Project Site in Zhuhai

Safety and health



Occupational health

BEWG has formulated and implemented the *BEWG Regulations on Labour Protection Equipment Management* and the *BEWG Regulations on Occupational Health Management*. The regulations specify the overall requirements of occupational health management and provide employees with clear operation guidelines to effectively safeguard their occupational health and safety.

Recognising the importance of occupational health and safety of employees in special positions, we regularly organise occupational hazard tests on those positions and monitor the health conditions of relevant employees. We provide employees in special positions with specific health training to ensure that 100% of new employees take all required training. Moreover, occupational disease screening is conducted on a regular basis, and we establish an occupational health record and a worker health monitoring record for every employee in special positions.

We have developed procedures to investigate and deal with work-related injuries and occupational disease accidents, and provide employees with emergency relief and compensation. In the incident, we will concern about the injury of the employee at the first time, help them to declare the determination of work-related injury, concerned about the injury and provide other rescue assistance to them.



BEWG 2023 key performance indicators for safety and health¹⁸



	2023	2022	2021
Number of major work-related fatalities in the past three years	0	0	0

¹⁸ Considering that the business of BEWG is mainly concentrated in Chinese mainland, so only the information in Chinese mainland is disclosed.
¹⁹ Employee work-related injury rate = Number of injured employees / Total number of employees
²⁰ It involves one non-production safety work-related deaths. According to the Classification Standard for the Casualty Accidents of Enterprise staff and workers (GB6441-86), it is calculated at 6,000 day/person.
²¹ Work-related injury incident rate per million working hours = Number of work-related injury cases * 1,000,000/Actual total working hours
²² Rate of work-related accidents per thousand people = 1,000 * Number of work-related injury cases / Total number of employees

Adhering to the business philosophy of “customer orientation through innovation capability”, we strive to respond quickly to customers’ needs with efficient and high-quality services to win more customers’ satisfaction and achieve win-win cooperation.

In 2023, based on the actual conditions of our business, we established a customer management system, upgraded the customer information management system, and developed marketing workflows. We carried out various customer-related work, which upskilled our customer service personnel and improved their performance, including inviting customers to visit BEWG, planning senior visits, organising demonstration site inspections, organising marketing competitions, establishing the *Promotion of Good Practices in Joint Engagements of BEWG* and the *Scenario-based Marketing* and other standardised marketing instruments, and publicising excellent marketing cases, continuously empower customer service personnel to enhance the level of customer service.

Case: Co-hosting the Shanxi Forum on the Development of the Reclaimed Water Industry

On 23 July, 2023, BEWG assisted the Department of Housing and Urban-Rural Development of Shanxi Province in hosting the Shanxi Forum on the Development of the Reclaimed Water Industry. On the forum, based on the status quo of reclaimed water utilisation, BEWG made an in-depth analysis of the opportunities and challenges of reclaimed water utilisation, mode innovation practices, and the shaping of the reclaimed water industry landscape in Shanxi Province. We also gave advice on management, technologies, patterns, and policies for the development of the reclaimed water industry in the province, providing customers with professional knowledge support.



Shanxi Forum on the Development of the Reclaimed Water Industry

Excellent quality

Quality is the lifeline of an enterprise. During the year, BEWG made efforts in policies and quality control measures to further ensure product and services qualities, aiming to give full play to the “large delivery management” system that is customer-oriented and product-based and develop “benchmark water environmental projects” and “benchmark water plants” at the national level. In 2023, the BEWG headquarters passed the ISO 9001 Quality Management System certification.

Guarantee mechanism

In terms of policies and regulations, we have introduced the *BEWG Guidelines for the Operation of Standardised Product Development Systems V2.0*, underpinning higher collaboration efficiency and better product quality by setting out procedures and rules for the development of standardised products across all lines and collaborative work procedures. By optimising the plant-specific indicator system, we continue to enhance our operation baseline management and quality management capacities. We have also put in place the *Joint Acceptance Check Management Measures* for the first time to better control the quality of plant operation projects in the early stage and rectify findings in a timely manner.

In terms of quality control measures, we include suppliers’ performance on contract fulfillment in the annual supplier evaluation, refine the three-level quality management and control mechanism, and provide quality control training, striving to ensure good performance in quality control.

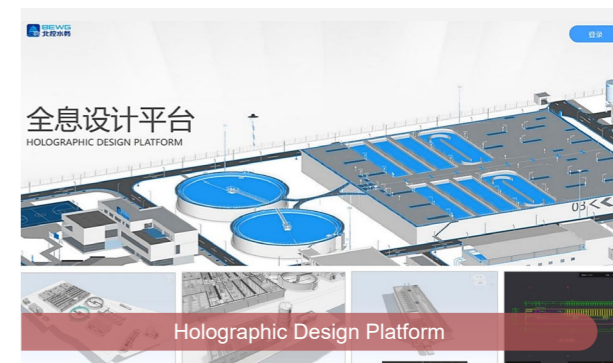
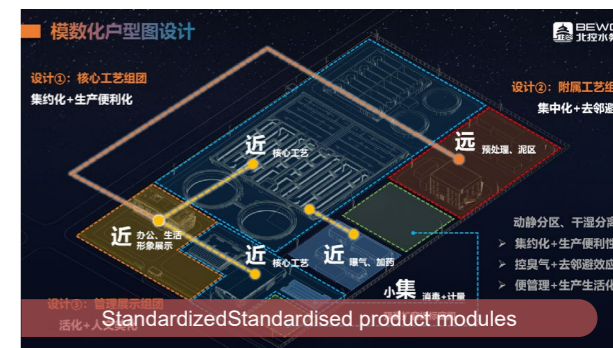
Product design

BEWG continuously promotes the transformation of technological products to drive technology development and innovation and enhance product performance and quality in a comprehensive manner. Based on the standardised development and intelligent design of core product modules, we have developed universal standard modules and proprietary process packages and products and achieved the transformation from technology to product development. Thanks to those efforts, the overall application rate of standardised technological products in new projects has exceeded 90%.

By developing standardised product modules, we drive our projects to transform from “project-specific” to “universal”, enabling municipal water plants to operate with higher efficiency, less cost and better performance. In 2023, we succeeded in meeting needs in various scenarios with our upgraded standardised product modules that can be assembled in different combinations as needed, achieving the fast proposal and design of a project. We have also technical parameter standardisation to control product performance and improve outcomes.

In addition, to fully improve product quality and implementation efficiency, BEWG has adopted product visualisation standards with a broader scope. By presenting product design standards, model selection rules, with 3D simulation models, we help customers have a three-dimensional picture of what the projects would look like after their completion.

In 2023, the Group worked hard to promote innovative practices in operation and design automation to help users improve work efficiency. We have rolled out the “Holographic Design Platform”, an automatic design system featuring one-click drawing generation. By integrating modules of process analysis & calculation and building information, the platform can customize professional solutions based on selected product modules for all common working conditions of sewage treatment. Accordingly, it facilitates an entire design process, covering design calculation, monomer modeling, elevation calculation and general layout, shortening the water plant design cycle by 90%.



High-quality delivery

BEWG implements a high-quality delivery strategy and continues to build and improve a product quality control system that incorporates the standard system, the control system, and the guarantee system in its core, so as to effectively control product quality at different levels during the entire process. During the year, we further optimised the three-level quality management and control mechanism following the standard system, and organised training on the guarantee system for all the constructors. By doing so, we have enhanced the implementation of our high-quality delivery standards in a broader scope.

Optimising the quality management and control mechanism and continuously improving product performance

Based on BEWG's years of experience in project construction and delivery, the Group has systematically reviewed and refined the key nodes and processes that affect the delivery quality of water plant construction. This year, the Group has innovatively formulated the *BEWG Implementation Rules for Quality Control Points of Urban Water Construction Projects* to strengthen multi-level control over project pre-construction, process aspects, helping to promote standardised, refined, and process-oriented management of construction projects and effectively improve the quality of project delivery.

To effectively manage and control project delivery quality, in addition to the three-level (the Group (A), business regions (B), and project companies (C)) quality management and control mechanism, BEWG places emphasis on holding constructors accountable for their project quality and requires them to pass project acceptance inspection at specified quality control points²³. Projects failing for the inspection are not allowed to enter into next step. We also take digital management and control approaches to enhance the effectiveness and efficiency of acceptance inspections, minimise the number of acceptance inspections, and incorporate standard practices for product details, early operation intervention and other requirements in high-quality delivery.

In 2023, the Group achieved a

100%

coverage rate for the acceptance of quality control points in construction projects

with a total of over

14,000

qualified acceptance inspections at quality control points completed

The acceptance pass rate reached

100%

Strictly implementing quality standards to deliver high-quality projects in line with internal and external standards

In addition to existing group-level quality standards, we promote the management philosophy of pursuing "first-attempt excellence" through "planning first, leading the way with samples, acceptance inspections at quality control points and solid after-sales service". We will reach consensus with suppliers at the project level to practise the management philosophy in our practical work. In 2023, we were granted 7 quality engineering project awards at the provincial level and 1 award at the municipal level.

²³ In the process of project implementation, the group, region/business department, project company, supervision unit, construction general contractor and other responsible entities verify whether the quality of the engineering construction entity is qualified and whether the performance behavior is in place through acceptance, inspection, self-inspection, testing, testing, etc., and release and control after acceptance, mainly including major nodes, important parts, key processes, weak links, quality shortcomings, customer sensitive points, etc.

Quality awards for BEWG's construction projects, 2023

S/N	Project name	Award	Level
1	Upgrading and Expansion Phase III Project, Jiaozhou, Qingdao, Shandong	"Taishan Cup" Constructional Engineering Quality Award of Shandong Province	Provincial
2	Sutuoyuan Sewage Treatment Plant Phase I Project, Changsha, Hunan	Hunan Quality Engineering Award	Provincial
3	Yinchuan No. 1 Reclaimed Water Plant Project, Ningxia	"Xixia Cup" Quality Engineering Award of Ningxia	Provincial
4	Beiyuan Sewage Treatment Plant, Beijing	"Great Wall Cup" Silver Award of Beijing	Provincial
5	Expansion and Supporting Pipeline Project of Liuqing River No. 2 Sewage Treatment Plant, Linyi, Shandong	"Taishan Cup" Constructional Engineering Quality Award of Shandong Province	Provincial
6	Sewage Treatment Plant and Supporting Pipeline for Shanggu Area, Linyi, Shandong	"Taishan Cup" Constructional Engineering Quality Award of Shandong Province	Provincial
7	Sewage Treatment Plant and Supporting Pipeline for the International Eco City, Linyi, Shandong	"Taishan Cup" Constructional Engineering Quality Award of Shandong Province	Provincial
8	Wote Sewage Treatment Plant Project, Danyang, Zhenjiang, Jiangsu	"Phoenix Cup" Engineering Quality Award of Danyang	Municipal

Consistently implementing standards for high-quality delivery and improving projects via on-going supervision



In 2023, BEWG set up a joint contract performance inspection team consisting of personnel from "the Group + business regions". The team carried out 41 contract performance inspections online and offline over suppliers, achieving an annual performance inspection coverage rate of 100% for construction projects, with over 3,000 issues identified cumulatively. As of January 2024, the completion rate for rectifying performance inspection issues is 100%.

Organizing publicity and training activities to guarantee high-quality delivery



To raise the quality awareness of our employees and constructors, we have organised online and offline publicity and training on quality standards through the "Quality Safety Month", high quality benchmarking research and project contract performance inspection. Attendees include key management personnel of business regions, project companies, supervision units, and constructors. In 2023, we gave 13 offline training sessions and 6 online training sessions, with 39 projects involved.



Employees at a "Quality Safety Month" activity



Excellent operation

Leveraging the star-level evaluation system as the key driver, BEWG is continuously improving operational management performances in five dimensions and working out standardised management modes through the construction of standardised water plants. Moreover, we apply Internet of Things (IoT) technologies, standardised product modules, visualisation standards, and other measures to operations management to better operate and manage projects.

Operations management of star-level water plants

BEWG's Star-level Evaluation System for Enterprise Operation is the first systematic standard for graded operation evaluation in the industry. It evaluates enterprises in five dimensions: process management, operational quality, operational performance, personnel capabilities, and digital operational capabilities. Based on the comprehensive rating results, enterprises under evaluation are rated in five grades, from the lowest "one-star" to the highest "five-star". We have formulated the *Guidelines for Inspection and Acceptance of Star-Rated Enterprises* and other relevant supporting regulations. We keep on working hard to improve the documents related to the seven key stages tools of the acceptance inspection, including star-level water plants acceptance inspection guidelines, data models and tools, to raise the quality and efficiency of the star-level acceptance inspection.

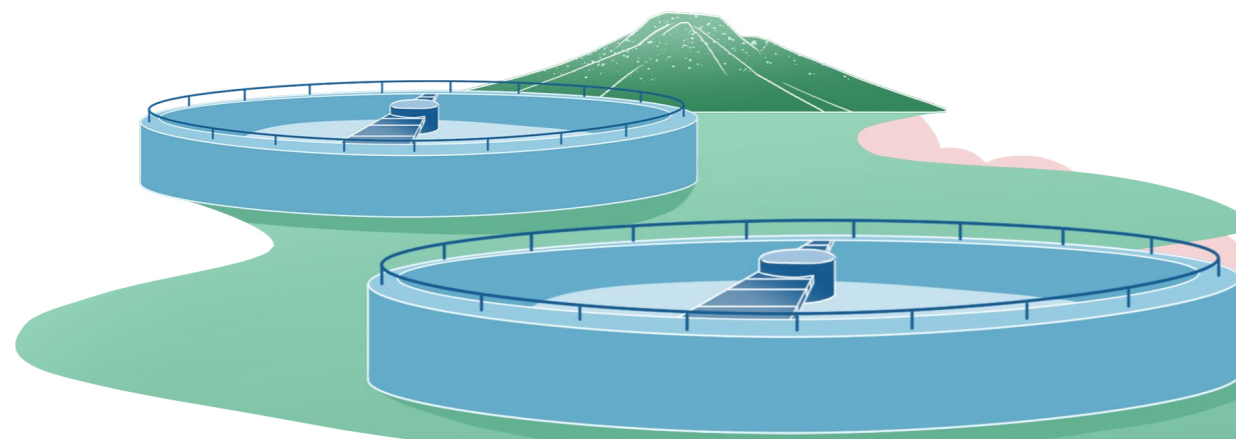
In 2023, all water plants in BEWG went through a star-level evaluation and acceptance inspection for operation performance. Over 38% were rated "three-star" or above, an overall improvement to the rating.



Over **38%**

were rated "three-star" or above, an overall improvement to the rating

We step up efforts to seek innovative management modes for star-level enterprises and for water plant operation and maintenance, to transform star-rating management from standardised management to lean management, and to build efficient water plants of nationwide influence. Starting with promoting process and operation automation, we strive to realise less-attended or unattended operations of all process units based on automatic operation functions. In the star-rating process for the year, we gave weight to the evaluation and improvement of automatic control, unit programmable control, and intelligent control, laying the foundation for digital and platform-based management.



Building standardised water plants

To achieve the Group's digital transformation and smart operation strategies, we continuously facilitate the construction of standardised water plants. By establishing data standards and business process standards, we make comprehensive efforts to advance standardised plant operation management and develop standardised management solutions that are replicable and widely applicable. The construction of standardised water plants fully complies with the ISO 9001 Quality Management System, with our profound experiences in operation and service fully integrated. On such basis, we have created standardised operation management systems, achieved the overall goals of improving quality and efficiency, delivered better performances and higher efficiency, and provided useful standardised paradigms for front-line operation management.

With the constant refinement of the standardised operation management system, all water plants of BEWG had implemented the standardised system documents by the end of 2023. We have established unified standards for data sources, data analysis, and business processes according to the standardization system. With our independently developed sewage operation management platform (SED), we have completed the integration of standardised business processes, providing a more effective and high-quality approach to promoting standardised water plants. Through continuous system deployment and application, we have gradually achieved refined management in multiple aspects, including production operation, equipment and facilities, laboratory testing, data recording and analysis, etc. Each plant has achieved different degrees of energy-saving and consumption reduction and has been recognised by local governments and regulatory authorities. In 2023, the platform continued to empower standardised water plants via the development and deployment of various modules, such as early warning, fundamentals analysis, and multidimensional query. This helped to closely connect the platform with water plants and realise more efficient operation and management modes.

Enabling digital and intelligent system operation

BEWG uses IoT technologies to connect the core equipment of water plants to the internet and incorporates those technologies into the workflows of technical and operation & maintenance personnel, facilitating them to monitor equipment operation in real time, accurately identify abnormal equipment statuses, and conduct joint treatment of abnormal conditions through the work order system. Furthermore, we test equipment status and predict failures with status-awareness technologies and data model algorithms, allowing us to intervene in advance and avoid serious equipment failures. The practices have been adopted in projects in four places, making good progress.

Regional clustering management

We continue to advance the "1+N" cluster model and improve the intensive management system for water plant. During the year, we introduced 8 guidelines including the *Guidelines for Regional Intensive Management* and the *Guidelines for Transition from Operation to Operation and Maintenance*, laying a solid foundation for the standardization of individual plants for intensive management.

This year, we drove innovative changes to the regional intensive management model, united regional companies to share management and technical talents, promoted high-level processes across projects, and improved personnel efficiency. At the same time, we upgraded the level of equipment automation and transformed the factory process personnel and the equipment personnel into the operation and maintenance personnel to implement unified management, thus improving the operation efficiency of the sewage plant.





Emergency response

To secure steady business operation and prevent negative impacts on raw water quality, water plants, pump stations, and pipeline networks from extreme weather conditions such as droughts and floods, BEWG optimised emergency plans for water quality under extreme weather conditions and made the *Guidelines for Emergency Response to Abnormal Influent* in 2023. We also required the projects to put forward and take practical water intake emergency response measures.

Floods

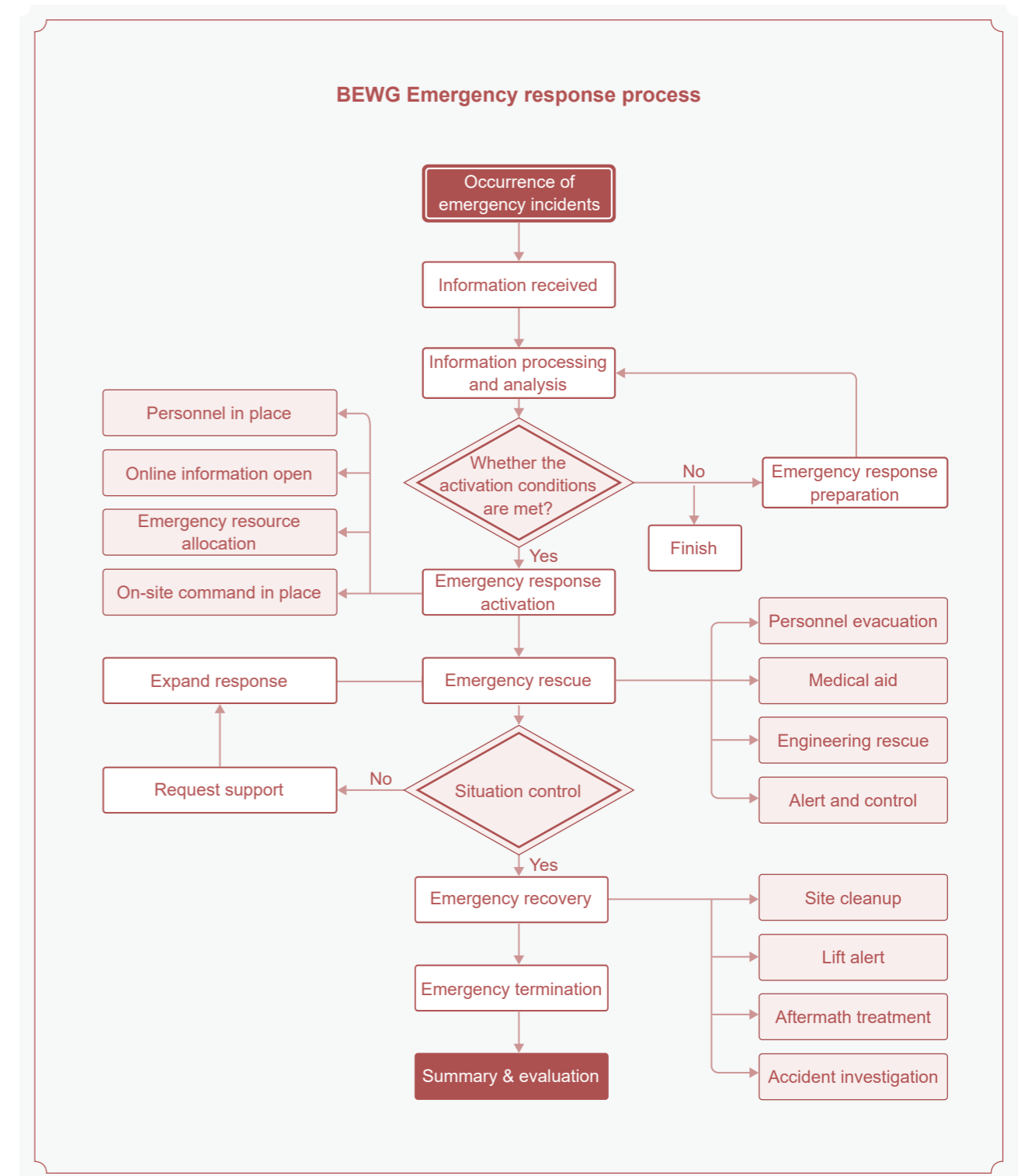
All water supply projects are required by the Group to develop emergency plans to ensure water quality and production operations in the event of sudden flooding and to have corresponding emergency supplies on hand, such as sufficient water purification chemicals, sandbags, drainage pumps and water hoses.

Droughts

All water supply projects are required by the Group to develop emergency plans and water supply measures to address potential raw water quality issues during droughts.

- Minimise the impact of water shortages during droughts at the source, by actively encouraging and supporting local governments to prepare backup/emergency water sources.
- Reach agreements with water source management entities on prioritising water supply to our projects during droughts. Connect our water supply pipeline networks to those of external water supply entities to complement each other and better guarantee water supply.
- Establish plans for emergency water intake when the water level at water sources is low.
- Manage self-use water and reduce the leakage rate in a more effective manner, to better conserve water resources.

To deal with safety emergencies, BEWG has built a three-level emergency plan system, specified emergency response workflows, and enhanced the response capacities for all kinds of emergencies with higher efficiency.



Customer services

Customer satisfaction

We maintain close communication with customers and collect their opinions in our daily work to improve their experience.

In our daily work

We keep building our customer communication capacity. In 2023, we organised a sharing meeting, inviting persons in charge of business and marketing to share successful marketing cases, and we carried out an award programme, selecting excellent performers in building and enhancing customer relationships in eastern China among 20 regional companies, so as to improve our customer relationship management ability.

In emergencies

We would reach out to customers spontaneously. In 2023, we actively supported customers to solve tough problems. Specifically, our Linyi project company helped the Linyi National High-tech Zone with river training, and via emergency technological transformation, the regional company in Jincheng City assisted a local sewage treatment plant in successful upgrading and expansion, in which the plant failed previously.

During the year, we also took a customer satisfaction survey as one of our priorities to clearly understand how many customers were satisfied with us and figure out how to improve their experience. We conducted a customer satisfaction survey, interviewing key persons among about 200 governmental customers at the municipal and district (county) levels. To this end, survey teams consisting of our marketing personnel and professionals from consulting companies were set up. At least two survey personnel were arranged for each of the customers. According to the survey results, the 55 regional companies concerned got an average score of 94.20.

According to the annual customer satisfaction survey results, BEWG formed the "Customer Satisfaction Report", and conducted targeted measures based on the customer praise and complaints in the research. According to customer praises, we summarised the experience and shared within the Group; we gave timely feedback regarding the problems found in the survey, to the region, the Group, and the regional empowerment of the regional cooperation in the development of customer problem solutions, and targeted matching of marketing resources in order to continuously improve customer satisfaction.



Coverage rate of the survey
78.3%



Customer satisfaction
94.2

From January to December 2023, our water supply companies accepted about 414,600 water supply service requests and conducted a follow-up survey for 148,200 requests, with a satisfaction rate of 99.77%.



From January to December 2023

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99.77%





BEWG regarded technological innovation as an essential driving force not only for the Group itself but also for the development of the water industry. Based on continuous investment in technical upgrading and innovation and in-depth application of technologies to our business, we manage to provide customers with more efficient, greener and smarter solutions. Adhering to the business purpose of “customer orientation through innovation capability”, we establish internal and external channels to boost innovation, take various measures to secure the earnest implementation of the innovation strategies and employ cutting-edge technologies to promote smarter business operations, to drive the water industry as a whole towards a smarter, more efficient, and sustainable future.

Innovation competition platform

Technology is the foundation of national prosperity and the soul of national progress. BEWG highly values innovation ability cultivation and improves innovation mechanisms. We continue to improve our technological product innovation ability by instilling innovation awareness in the staff, establishing internal and external innovation mechanisms, and building innovation competition platforms.

Internally, we have launched the “Beidou Award” Innovation Competition within the Group. With the purpose of “Placing equal emphasis on independent innovation and the application of achievements”, we encourage all our staff members to participate in the competition to meet the practical business needs of the Group. The competition has delivered fruitful results since its launch. Besides, we continue to upgrade it to better apply, commercialize, and promote excellent innovation achievements. The “Beidou Award” Innovation Competition was upgraded in 2023. With new standards and competition modes introduced, it further drove the application and commercialisation of innovation achievements, supporting BEWG to become a leading high-tech water enterprise in China.

Case: The fifth BEWG “Beidou Award” Innovation Competition

In December 2023, the fifth BEWG “Beidou Award” Innovation Competition was concluded, with a total of 2,963 projects registered and 329 projects awarded. This year, the competition was divided into three categories: operational innovation, technological innovation and management innovation, with additional themes of independent innovation as the main category and achievement application as the subcategory. A panel of judges led by experts conducted the evaluation. After fierce competition, the independent innovation-main category produced 4 the first prizes, 11 the second prizes, and 23 the third prizes, while the achievement application-subcategory produced 1 the first prize, 6 the second prizes, and 8 the third prizes.

During the inheritance and development, the Beidou Award continually adapts to the practical needs of BEWG and steadily enhances its emphasis on the transformation of results, fostering a corporate culture of all-involvement innovation.

Externally, we collaborate with academic institutions and businesses, discover and nurture technological innovation talents in the ecological environment field, and drive the transformation of scientific and technological achievements, contributing significant efforts to the overall industry’s innovation capability.

Over the years, BEWG has actively promoted the “Internet+” Ecological Environment Innovation and Entrepreneurship Competition and the Technological Venture Capital Competition in China, so as to lead the industry’s development. By organising these competitions, we bring together top experts and investors in the ecological environment field to build a platform for resource integration in the industry, education, and technology markets, and foster an ecosystem for innovation and entrepreneurship.

²⁴ The promotion rate = the number of promotion projects/the number of applicable projects.



Case: The 6th China International “Internet+” Innovation and Entrepreneurship Competition and the 3rd Technological Venture Capital Competition

BEWG successfully hosted the 6th China International “Internet+” Innovation and Entrepreneurship Competition and the 3rd Science and Technological Venture Capital Competition (hereinafter referred to as the “Double Innovation Competition”) in 2023. The competition has been held for six sessions, attracting a total of 5,319 projects across the country, involving 1,408 universities, 29,437 students, and 7,905 teachers. It resulted in the signing of 46 intention-based agreements for ecological cooperation. The successful hosting of the Double Innovation Competition has provided a platform for communication among talents in the industry and contributed to the practical implementation of innovative achievements in the ecological sector.



The 6th “Internet+” Innovation and Entrepreneurship Competition and the 3rd Technological Venture Capital Competition at the main venue

Innovation achievements and promotion

BEWG actively responds to national strategies, keeps pace with the times, adheres to the principle of “customer orientation through innovation capability” and continuously explores the transformation of results from the industry-university-research cooperation. While focusing on innovation, we also place emphasis on implementation. In recent years, numerous innovative achievements have been promoted and implemented. In 2023, we promoted approximately 43 innovative cases, achieving an overall promotion rate²⁴ of 95%.



Case: The transformation of outcome application promoted by the “Beidou Award” Innovation Competition

In this session of the “Beidou Award” Innovation Competition, we established the “Outcome Application Award” to enhance the application and promotion of excellent achievements from projects winning the “Beidou Award”, thereby raising the technological level of BEWG projects.

The award-winning project “Seven-stage” biochemical combination process has been applied to the expansion project of the Liuqing River No.2 Sewage Treatment Plant in Lanshan District, Linyi City, and the standard raising of Phase I and Phase II of Danyang Wote Sewage Treatment Plant and Phase III expansion project. The award-winning project “Smart Leakage Control Solution for Water Supply Network” has been implemented in the Nanning Dashatian Smart Water Project.

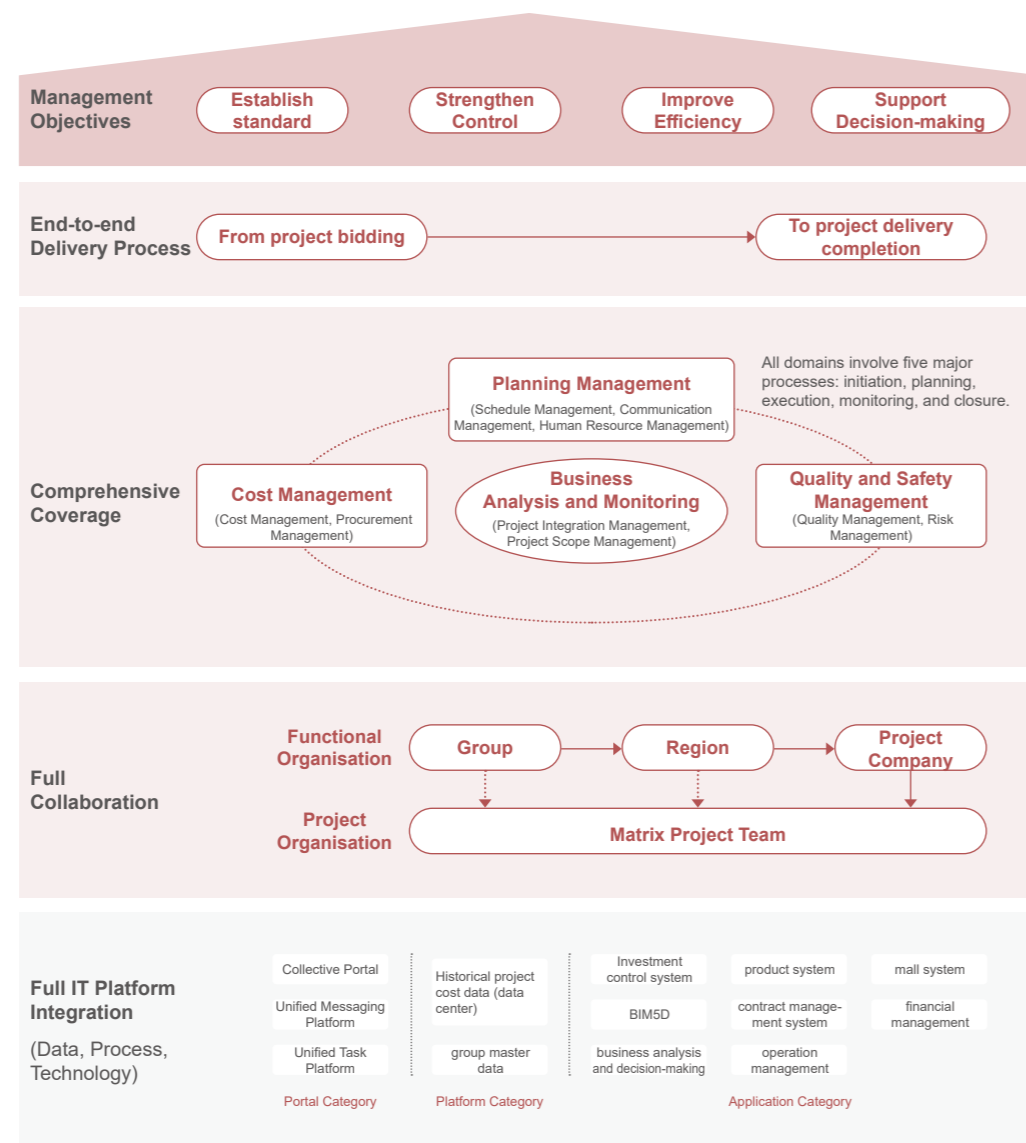
The winning project of the second session of the “Beidou Award”, “Targeted Flocculant Product to Improve Compliance Rate”, was applied to the Qingyuan project in Jincheng, Shanxi in 2023. This innovative application significantly improved the water quality, maximally mitigated the risk of sludge bulking, and achieved high-quality project operation.

Innovation never stops. In 2023, BEWG made numerous innovative achievements in three major dimensions: operations, management and technology.

Management innovation

We continuously upgraded the BEWG Yuehui Digital Technology Platform to facilitate efficient, transparent, and quality-controlled project delivery. The BEWG Integrated Delivery Platform ensures project quality control through standard embedding and process oversight for efficient delivery of high-quality projects.

Diagram of BEWG Integrated Delivery Platform



Case: Idle Productive Asset Sharing Platform

The Idle Productive Asset Sharing Platform is a winning project in the “Beidou Award” Management Innovation category. This project, aimed at cost reduction, efficiency improvement, and operational optimisation, focuses on the reuse of internal “Idle Productive Assets” and has created the Idle Productive Asset Sharing Platform.

Through this platform, we have accelerated the circulation of idle assets, reduced unnecessary asset purchases, and achieved resource complementarity and a virtuous cycle. Currently, more than 90 project companies have initially applied this sharing platform, successfully saving over RMB 500,000 in project costs and providing strong support for the sustainable development of the Group.

Operational innovation

Operational innovation focuses on frontline employees improving operational technology, equipment, and processes to achieve increased work efficiency, cost savings, and enhanced quality. We encourage innovative efficiency initiatives across projects, continually advancing the value transformation of research achievements. In 2023, several award-winning innovative operational projects for the “Beidou Award” were implemented, driving operational upgrades through innovation.

Case: Innovative non-slam check valve

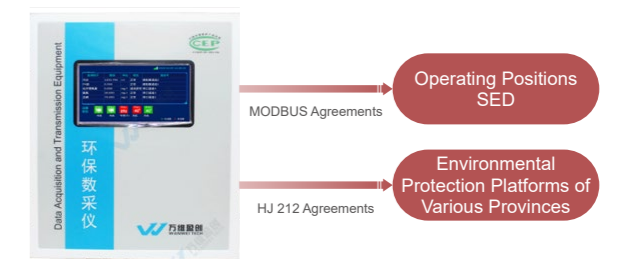
The “Innovative Non-slam Check Valve”, a recipient of the Beidou Award in operational innovation, made a significant breakthrough in solving the challenges of multiple parallel lifting systems. It provided a viable solution for improving system efficiency, reducing water loss, and lowering energy consumption.

This project achieved real-time monitoring of valve leakage, and contributed to reducing energy consumption. Its application successfully addressed the high pipeline network leakage rate faced by approximately 40% of the Group’s multiple parallel lifting systems.

Case: IoT data perception upgrade based on regional intensification

To meet the requirements of standards such as the *Data Transmission Standard for Online Monitoring Systems of Pollutant* (HJ212-2017) and address the need for online monitoring device data upload to the environmental protection platform, we conducted an IoT data perception upgrade based on regional intensification.

Such upgrade not only enhances operational efficiency but also resolves abnormal data transmission during manual maintenance, reducing a significant amount of unnecessary alarm information on both sides of the project and the Group.





Case: Warning/alarm system for sewage treatment plant at night with few staff or in unattended operation

Precise warning and alarm systems are essential for achieving unattended operations. In 2023, during the the work mode without on-site night duty at the Mianyang Taziba Sewage Treatment Plant, it was discovered that there were too many non-critical alarms, hindering the realisation of unattended operations. The plant team, through careful identification and classification, identified 62 key alarm points affecting water quality and quantity, and then established a localised warning and alarm system.

From April to August 2023, this system facilitated the plant's effective night time emergency response, enabling unattended operations. The project team continuously optimised the early warning system, resulting in fewer than 2 night time emergency incidents per month and achieving intelligent operational management.



Technical meeting for unattended warning/alarm system



Diagram of unattended warning/alarm system operation

Technological innovation

BEWG adheres to integrating technological innovation into the concept of sustainable development and has established the *BEWG Science and Technology Development Plan Outline (2021-2025)*, the *Incentive Program for Scientific and technological achievements (2023)*, and the latest *2024-2028 Technology Plan*. These documents provide direction for technological innovation within the Group. Innovation is deeply integrated with business operations, and emphasis is put on the collaborative advancement of digitization, technological productization, efficient management, and other strategic goals with sustainable development. The *Incentive Programme for Technological Innovation Achievements (2023)* is designed to motivate the emergence of technological innovation achievements, promote the build-up of technological brands, and improve the Group's innovation capabilities.

BEWG is committed to independent innovation, actively advancing the development of cutting-edge technologies, and promoting deep technological transformation. We, based on our business needs, integrate technological achievements into the entire business process, promote the step-by-step upgrading of industrial technology, conducting cutting-edge technology research, continually enhance technological capabilities, and taking technological innovation to lead the future development and business progress of water services.

In 2023, BEWG introduced market-oriented systematic products and solutions. Besides, BEWG released a total of 28 products across four categories to meet the demands of new construction, updates for existing resources, distributed systems, and water plants, in a bid to provide customers with more comprehensive, efficient, and sustainable services.



- 01 Economically Affordable Type
- 02 Ultimate Integrated Type
- 03 Expansion
- 04 Upgrading
- 05 Equipment-based
- 06 + Pipeline Network
- 07 + Sludge
- 08 + Ecological



Sludge carbonization technology

Based on continuous tracking and research of domestic sludge treatment policies, market demands, and the latest developments in pyrolysis technology, we have developed the latest generation of sludge pyrolysis technology products --- BEWG skid mounted equipment for sludge drying and biochar. The pilot test of this product is being carried out on the Qufu verification platform of BEWG, and the project scale is 10 tons/day (80% moisture content).

Compared to the previous technology, this one boasts advanced technology and energy-efficient processes, exhaust gas cleaning, low carbon emissions, safety, stability, etc. The produced sludge biochar product can improve soil and realise resource utilisation.



The latest generation of sludge pyrolysis carbonization equipment



Case: Mianyang BEWG sludge reduction and resource center project

The Mianyang BEWG sludge reduction and resource center project adopts the latest generation of sludge drying and carbonization technology as well as the advanced sludge dewatering technology developed by BEWG to ensure that the moisture content of the dried sludge is below 60%, reducing chemical reagents consumption for dewatering at source. The project also uses locally available waste materials such as discarded sawdust, biomass, and garden waste as coagulant aids for sludge dewatering aids to lower sludge operational energy consumption effectively.



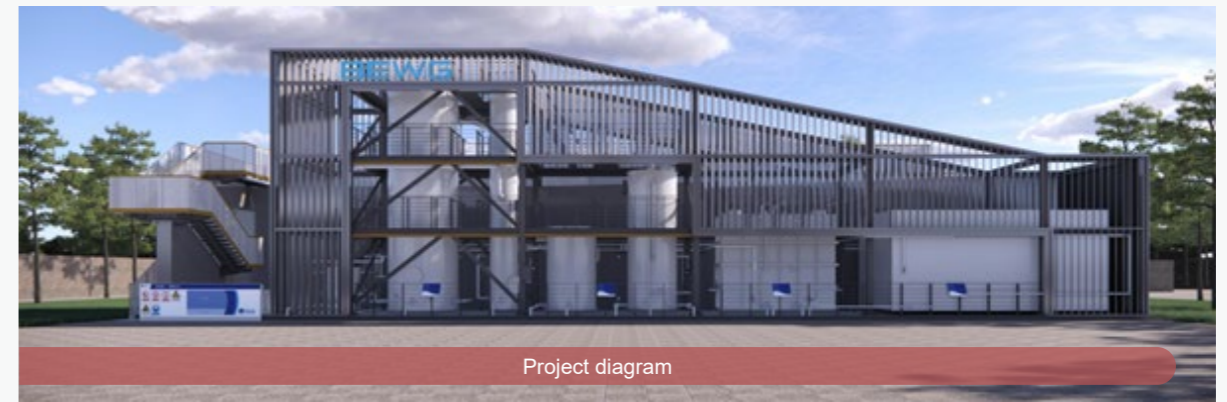
Diagram of Mianyang BEWG sludge reduction and resource center project



New technology for sewage treatment-Anaerobic Ammonium Oxidation (ANAMMOX)

BEWG's Reaction and Precipitation Integrated One-stage Anaerobic Anammox Reactor (ANAMMOX) is a autotrophic nitrogen removal short-process technology developed by BEWG. This technology, as a low-carbon and energy-saving green water treatment technology, provides a creative solution of "lower footprint, higher efficiency and lower energy consumption". Compared to traditional processes, this technology can significantly reduce aeration energy consumption, save organic carbon sources, reduce sludge production, and contribute to reducing greenhouse gas emissions.

Currently, this technological product has been applied to the engineering project of kitchen waste treatment in Kunming and has been operating stably for over 6 months. Aeration energy consumption is 55%~60% of traditional processes, and greenhouse gas emissions and sludge production are both reduced by 90%.



Project diagram



Prefabricated artificial wetland

In 2023, we introduced the prefabricated artificial wetland. Based on standardised and modular design, we integrate the subsurface flow artificial wetland system into ecological wetland modules. Practical applications in Tongzhou, Beijing, and Heshan, Guangdong have shown that this technology significantly reduces land occupation, lowers construction difficulty, improves the convenience of wetland operation and maintenance, and achieves a reduction in the overall carbon footprint, setting an example for the industry to achieve sustainable development.

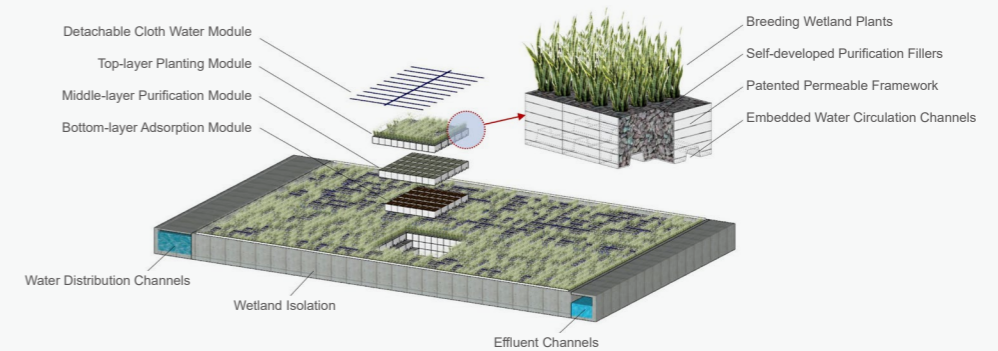


Diagram of prefabricated artificial wetland



Innovation leadership

Innovating the integration of industry and education

We are committed to deeply integrating industry and education, facilitating the fusion of production and education, and advancing the coordination of the industrial chain to accelerate the high-quality development of talents in the water industry. BEWG has formulated a key work plan for school-enterprise cooperation, which provides special services such as developing new majors and course materials, and has established a demonstration benchmark for ecological and environmental industry academies. This initiative actively promotes the transformation and improvement of talents in China's environmental industry.

We have set up the "Eco-environmental Industry and Education Alliance" to explore the long-term mechanism of cooperation between enterprises and universities by uniting industry associations, key enterprises, higher education institutions and scientific research institutions in the spirit of voluntariness, equality, cooperation and win-win results. This move also aims to create a three-dimensional talent value chain of "industry, university, research, application and innovation", provide one-stop production-education integration services such as consulting and operation related to school-enterprise cooperation, and cultivate high-quality talent suitable for the future development of China's environmental protection industry.

Additionally, BEWG has developed the "Job-Course-Competition-Certificate Integration" talent development model to contribute in enhancing the level of participation of enterprises in running schools, establishing a sound and diversified school-running system, and comprehensively promoting the school-enterprise coordination. In 2023, we established collaborations with institutions such as Guangxi Eco-Engineering Vocational & Technical College-BEWG Industry College, Yellow River Conservancy Technical Institute-BEWG Smart Water Industry Modern College. We launched projects of course offering by enterprise lecturers from the Intelligent Water Management of Shandong Water Conservancy Vocational College and by enterprise lecturers from the Environmental Science (Smart Water) of Qilu University of Technology. Agreements with Chongqing University and the School of the Environment of Nanjing University were signed to effectively connect the education chain, talent chain, industry chain, and innovation chain, fostering a new pattern of integration of industry and education.



List of outstanding case for the Notice on Announcing the List of Outstanding Cases for Professional Cooperation in Integration of Industry and Education in 2023

Case: Integration between Industry and Education Community of Ecological and Environmental Protection Industry

In August 2023, BEWG, in collaboration with Nanjing University and Changsha Environmental Protection Vocational College, jointly initiated and established the "Integration between Industry and Education Community of Ecological and Environmental Protection Industry" (hereinafter referred to as the "Community"). The Community primarily promotes professional guidance and coordination in education, scientific research, management, and industry. It has received positive responses from more than 300 representatives of 99 schools, 67 enterprises, and industry associations.

Since its establishment, the Community has accepted applications from 148 schools and 241 enterprises nationwide, achieving cross-provincial distribution. The establishment of the Community is not only a profound practise of integration of industry and education but also injects strong impetus into the excellent development of the environmental protection industry chain.



Intellectual property management

BEWG firmly holds that effective management of intellectual property rights that can ensure the safety of business operations. We strictly abide by the *Patent Law of the People's Republic of China*, the *Trademark Law of the People's Republic of China* and other relevant laws and regulations. We revise and improve the internal system such as the *BEWG Intellectual Property Management System*. We standardise and sort out the processes of application and approval, transfer and transformation, management and use, and rewards and punishments of confidentiality, improve the intellectual property management system, and enhance intellectual property management. In 2023, the Group obtained 280 new authorised patents, with a cumulative number of 1,454, which has effectively protected the Group's technological innovation achievements and enhanced our intellectual property advantages. Through technological research and development, consultation of patent exploration and layout for product lines, patent navigation, and patent search, we have systematically developed a series of measures conducive to intellectual property management, core technology protection, and the transformation and application of intellectual property. These measures include incentive methods for intellectual property efforts, confidentiality systems, technical data file management methods, and scientific and technological file management methods. Additionally, by increasing investment in research and development, the Group ensures intellectual property management in a normal and orderly manner from various aspects such as systems, technologies, manpower, and resources. In 2023, the Group invested approximately RMB 3 million in intellectual property protection.

This year, comprehensive planning and layout were carried out for the product line patents, covering product lines of prefabricated artificial wetlands, sludge, BESWIFT, and anaerobic ammonia oxidation, design platform product lines, and research topics. Efforts were made to gradually promote patent layout and progress.

Case: The fifth concentrated training of the China Environmental Industry Senior Manager Training Programme (thirteenth session)

To promote the transformation and improvement of talents in China's environmental industry, BEWG Education provides training to government agencies, corporate units and other organisations engaging, and aims to build a platform-oriented, ecological, and digital industrial education and training development platform.

In August 2023, the thirteenth session of the China Environmental Industry Senior Manager Training Programme was successfully completed. A total of 37 internal trainees from BEWG Group and 17 external trainees from ecological cooperative enterprises completed the training and received certificates. By continuously promoting the integration of industry and education, the Group actively leads the development of industrial talents and contributes to the flourishing development of China's environmental industry.



Completion of the China Environmental Industry Senior Manager Training Programme (thirteenth session)



In 2023, the Group obtained

280

new authorised patents

with a cumulative number of

1,454

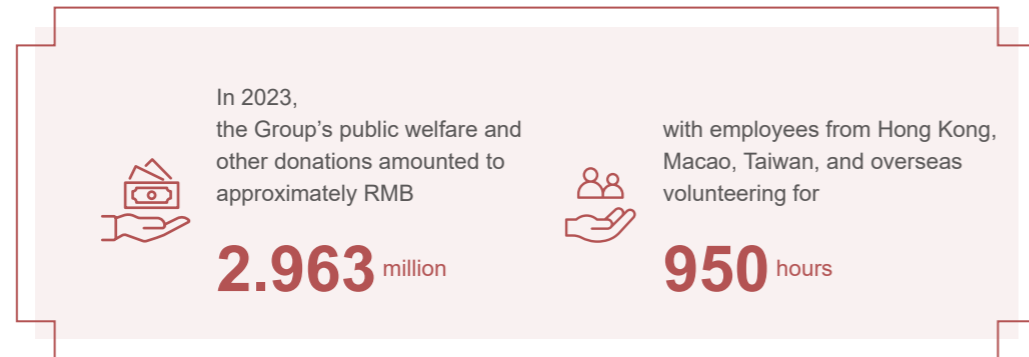
In 2023, the Group invested approximately RMB

3 million

in intellectual property protection

In 2023, BEWG continued to uphold its core values of “Responsible, Valuable, and Sharing”. We focused on environmental popularization and education, provided community services, and contributed to rural revitalization, so as to fulfill our social responsibilities and embody the responsibility of a state-owned enterprise.

During the current year, we formulated the *BEWG Group External Donation Management System* to clarify guidance principles, division of responsibilities, and approval norms for external donations. Thus, the external donation practices were further standardised. In 2023, the Group’s public welfare and other donations amounted to approximately RMB2,693,000, with employees from Hong Kong, Macao, Taiwan, and overseas volunteering for 950 hours.



Continuous environmental education

BEWG closely integrates its business operations with social welfare and is consistently engaged in educational events related to water resources, environment, and biodiversity conservation, so as to popularise water treatment and ecological protection knowledge in all sectors of society. The Group has established exhibition halls across the country that utilise emerging technologies such as VR to strengthen public awareness and attention to water conservation and water ecological protection.

- Through events like “World Water Day” and “Water Week of China,” BEWG fosters citizens’ awareness of water conservation and river protection and becomes both practitioners and promoters of water conservation and river protection.
- In the “clam opening” event organised by the Yuhang Canal Water Environment Comprehensive Treatment Project, elementary school students were invited to participate in eco-friendly knowledge quizzes, clam opening, and other events at the riverbank, so as to understand the concept of water management in the ecological chain.
- The Jiangmen Pengjiang Smart Water Hall introduced the “Environmental Science Picture Book Classroom” for children aged 2-6, delivering environmental knowledge through picture book readings.



Case: “Past and Present of a Water Droplet” exhibition arranged by Yinchuan No.1 Reclaimed Water Plant

The environmental education exhibition hall at the Yinchuan No.1 Reclaimed Water Plant, under the theme of the “Past and Present of a Water Droplet”, introduced the historical development of ecological protection in the Yellow River Basin, illustrated the current situation of water scarcity, and urged visitors to save and cherish water. The exhibition presented models of sewage treatment equipment and reclaimed water equipment, and the process of reclaimed water treatment. Through VR experiences and the advocacy board, visitors gained in-depth knowledge of water conservation and fully understood the importance of protecting water resources and the ecological environment of water.



The Yinchuan No.1 Reclaimed Water Plant has become an essential base for local environmental education, which received over 1,800 visits from primary and secondary school students by the end of 2023.

Case: Hangzhou Yushang Ecological Civilization Education Museum-from “NIMBY” to “Mutual Benefit”

In March 2023, the Yushang Ecological Civilization Education Museum, under the joint creation and construction of BEWG and the Yuhang District Government, officially opened. The underground part of the museum is a Underground W Treatment Plant, while the outside part is Yushang Ecological Park, covering 52,000 square metres. The museum’s comprehensive educational resources attracted numerous students for science education and practical events and received positive appraisals from all sectors of society.



In 2023, the museum was awarded the title of “Yuhang District Ecological Civilization Education Base”.

Case: TRILITY Group Pty Ltd supports the “School Recycling Challenge”

In July 2023, BEWG’s TRILITY Group Pty Ltd in Australia sponsored the “Recycling Challenge” in the Berri Barmera region to support the local “Plastic-Free July” event. This initiative encouraged local students to recycle items, so they could obtain knowledge of sustainable development and deepen their understanding of earth resources and sustainability.



Engaging in community service

BEWG always pays attention to the impact of its operations on the surrounding communities, strives to enhance understanding with the surrounding communities, and contributes to community services through various means. In the current year, we actively engaged in education, culture, sports, and various community affairs through community donations, event sponsorships, disaster relief, and training, so as to give back to society and demonstrate a sense of responsibility.

Case: Our enthusiasm and charm in the marathon race

In May 2023, the Anshan marathon was successfully held. Our Anshan branch actively participated, provided RMB 300,000 in sponsorship, and became a strategic partner to support public fitness and sports. More than 30 employees participated in the race, with many cheering along the route, conveying vitality and enthusiasm to society.



Our Anshan branch supported the Anshan marathon

Case: BEWG's resilience in the face of relentless rainfall

In July 2023, the Mentougou district in Beijing faced severe flooding due to heavy rain. BEWG promptly arranged emergency power supply vehicles, conducted pipeline repairs, and provided assistance for damaged urban facilities. Additionally, the Group procured emergency supplies, utilised emergency water supply facilities, and conducted dredging to ensure drinking water for residents in affected areas. During the disaster, BEWG inspected 76 kilometres of sewage pipelines, repaired 3.45 kilometres of damaged pipelines, and addressed temporary drainage issues in 14 villages. The Group deployed 1,267 personnel, 219 pieces of machinery, and approximately RMB 5.76 million in funds, contributing to the resumption of operations, post-disaster assistance, and reconstruction.



BEWG's contribution to emergency rescue in Mentougou district

Supporting rural revitalisation

"There will be no national rejuvenation without a thriving countryside." BEWG always keeps in mind its responsibilities and missions as a state-owned enterprise, pioneering in rural revitalisation. In 2023, leveraging our expertise in sewage treatment, the Group publicised rural sewage management and transformation to beautiful village to village residents. We engaged in consumption support and donated funds for agricultural events to enhance farmers' labour productivity and support the production and development of husbandry.

Case: Joint efforts in sewage management and transformation to beautiful village

In May 2023, the Shanghai Chongming Project Company, relevant departments of Chongming district, and the Red Star Neighbourhood Committee in Xinhai Town jointly conducted a publicity campaign called "Rural Sewage Treatment in the Community". During this event, staffs explained the significance of sewage treatment, provided knowledge about sewage treatment, and guided residents through the integrated sewage treatment equipment at the sewage treatment station while providing introduction of the equipment according to the process flow. They urged residents to take joint care of the sewage treatment station and contribute to building a beautiful countryside.



The Shanghai Chongming Project Company held the event of rural sewage treatment in the community

Case: Book donation to gain knowledge and enrich spiritual life

In August 2023, the Luzhou BEWG Environmental Protection Engineering Investment Co., Ltd., together with the Luzhou Municipal Commerce and Exhibition Bureau, donated books on law, literature and other aspects valued at over RMB 4,500 to Longfeng Village in Luzhou, Sichuan. They also donated learning stationeries to school-age children in poverty-stricken and low-income households. The Company representatives visited the children's home and library in Longfeng Village, and held collective discussions with village representatives to learn about the spiritual lives and poverty-alleviation lifestyles of the villagers, in a bid to contribute to common prosperity.



Books and learning stationeries donated by Luzhou BEWG Environmental Protection Engineering Investment Co., Ltd.

Case: Sincere assistance to farmers despite the distance

In 2023, BEWG labour union actively carried out consumption assistance to support rural revitalization. They purchased products from areas such as Sunit Right Banner in Xilingol League, Inner Mongolia, and Xibailianyu Village in Miyun district, Beijing, with a total expenditure of RMB 532,180. They also bought 100 pieces of clothing produced in Hotan, Xinjiang to support sales from poverty-stricken areas.




In the same year, BEWG donated RMB 500,000 each to two local governments in Chifeng City to support the production and development of local agriculture and animal husbandry.

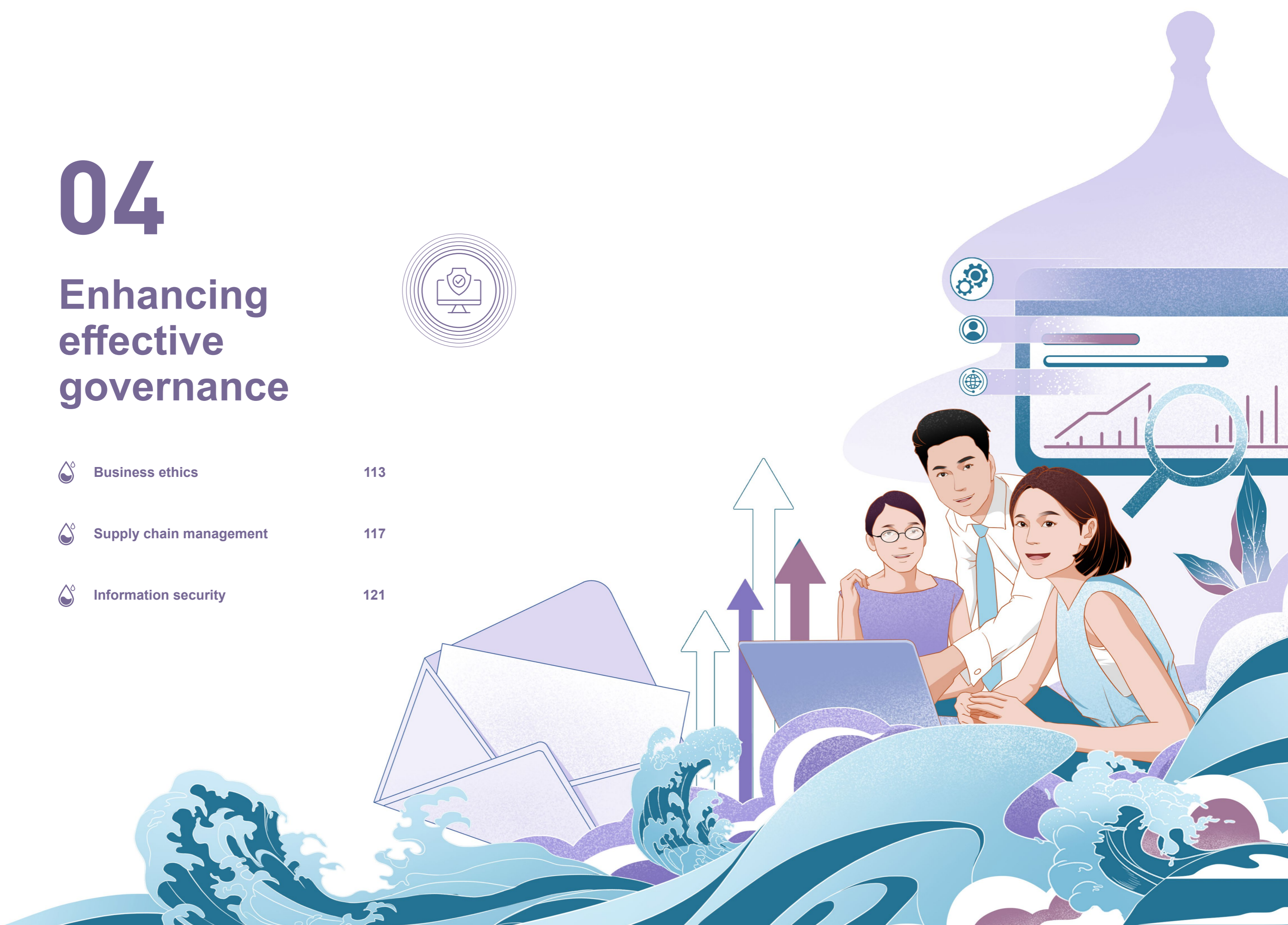


04

Enhancing effective governance



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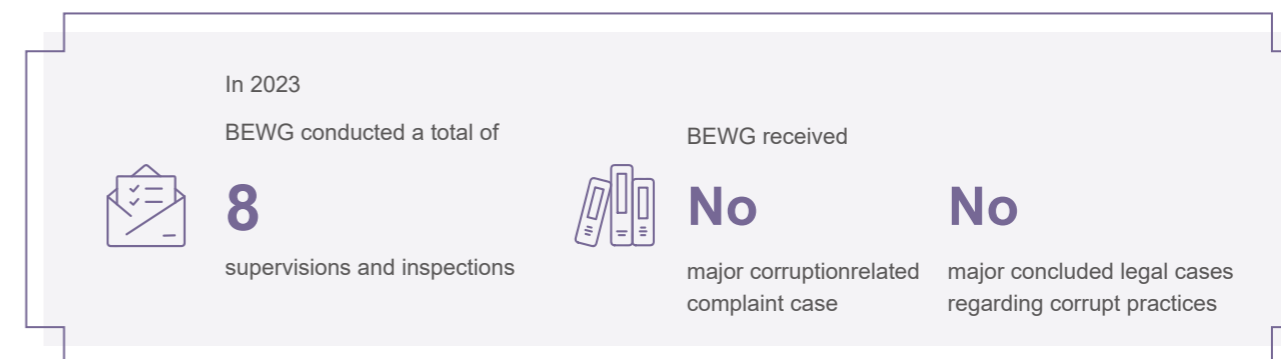
Anti-corruption and anti-bribery

BEWG adheres to the requirements of relevant laws and regulations, such as the *Law of the People's Republic of China Against Unfair Competition* and the *United Nations Convention against Corruption*. The Group continuously implements the *BEWG Anti-bribery and Anti-corruption System*,²⁷ the *BEWG Overseas Anti-corruption System*,²⁸ and the *Implementation Rules for Supervision and Inspection at Critical Milestones*. These management frameworks govern the execution of anti-corruption measures and the prevention and control of integrity risks.

The Discipline Inspection Commission of the Group has established the Disciplinary Committee Office, which is responsible for implementing the assignments of the higher authorities, performing the duties of supervising, executing disciplinary action and accountability sourcing, and managing anti-corruption of the Group. The Discipline Inspection Commission of the Group consists of five senior management employees, which supervises and guides the follow-up work according to the feedback from the regular work report of the Disciplinary Committee Office. The Group's Discipline Inspection Commission mandates that all centres and regions annually sign the *Integrity Practice Commitment Letter*, which explicitly enjoins key position holders to exercise probity and heighten their anti-corruption consciousness.

The Group keeps on building the Discipline Inspection and Supervision Team and strictly implements the requirements for anti-corruption. In 2023, the Discipline Inspection Commission of the Group organised specialized training for the Group's headquarters as well as full-time and part-time discipline inspectors. The training offered an in-depth interpretation of the roles of discipline inspection and shared ideas and focuses for discipline inspection under the new circumstances. In addition, the committee organized collective conversations with new members and "one-on-one" exchanges with front-line discipline inspectors, requiring them to play their role as "watchmen" well and solve the "last mile" problem of the front-line supervision.

We strictly forbid any form of corruption by sending anti-corruption emails to suppliers on an irregular basis and organising presentations and trainings on business ethics for suppliers during their daily work.



²⁷ <https://www.bewg.net/gwym/ljhg/>

²⁸ https://www.bewg.net/uploadfile/2_haiwai.pdf

Business ethics

BEWG attaches great importance to business ethics and strictly adheres to laws and regulations related to anti-bribery, anti-extortion, anti-fraud, and anti-money laundering. The Group fortifies moral safeguards, nurtures a culture of probity, and mitigates risks to business ethics. This solid foundation ensures compliant governance and trustworthy operations. We are equally dedicated to fostering a new paradigm of "transparent" and "ethical" government-business relationship, maintaining a positive cooperation mechanism with suppliers, ecological partners and customers, and jointly establishing an honest and clean business environment.

Business ethics management system

Based on relevant laws and regulations, and overseas operational business ethics provisions, BEWG, combined with our actual situation, continuously standardises business ethics policies and employee codes of conduct, and takes strict measures against violations of business ethics. To strengthen awareness of business ethics among all employees, the Group has introduced the *BEWG Code of Business Conduct* applicable to all employees²⁵, encouraging transparency and integrity in fulfilling their responsibilities.

BEWG Group's Board of Directors oversees the Group's governance rules and anti-corruption strategies and promotes the improvement of a clean and compliant management system. The Group's management implements the Board resolutions, establishes and improves a clean and compliant management framework, and integrates the requirements of integrity and compliance into the entire production, operation and talent management processes. The Group has set up a Leadership Group for Ethics and Compliance, which is responsible for supervising the implementation of professional ethics by employees at all levels in accordance with regulations and disciplines, and handling employees' violations of professional ethics.

This year, BEWG put great efforts into building a "big supervision" work pattern. The Party and Mass Work Department, Disciplinary Committee Office, Group Office, Risk Management Center, Finance and Resources Center, Human Resources Center, and other relevant functional departments jointly played a supervisory role, forming a collaborative supervisory force to further enhance the effectiveness of supervision. Meanwhile, we have instituted an OKR²⁶-based incentive scheme for integrity and adherence to regulations, setting the absence of significant corruption litigation as a key objective to guarantee standardised conduct and champion forthright administration.

The Risk Management Centre conducts internal business ethics compliance audits every year to review the implementation process and results of relevant business ethics regulations, and transfer any ethical issues found during the audit to the Leadership Group for Ethics and Compliance for resolution.



Joint supervision coordination meeting

²⁵ <https://www.bewg.net/uploadfile/2020/1013/20201013050251742.pdf>

²⁶ Objective and Key Results





Reporting mechanisms and whistleblower protection

We strictly abide by the relevant provisions of the *Rules for Disciplinary Inspection and Supervision Organs Handling Reports and Accusations* and *Provisions of the Supreme People's Procuratorate on Protecting Citizens' Right to Report* and have developed the *BEWG Confidentiality System for Whistleblowing and Accusation*, the *BEWG Whistleblower Protection System*, the *BEWG False Accusation Investigation and Punishment System*²⁹, and other internal prosecution management systems.

We encourage organisations or individuals to actively report any clues to cases that violate national laws and regulations and the Group's rules. BEWG supports whistleblowers in objective and faithful reporting by opening up various whistleblowing channels including e-mails, telephones, letters, and visits. Such channels are publicized on the "Integrity and Compliance" section of the official website. Upon receipt of reporting clues, the Group is committed to addressing them through measures including interview and inquiry, preliminary confirmation, recording for further investigations and final settlement, and never condones any violation of laws, regulations or disciplines.

We promise to protect whistleblowers' legitimate rights by strictly implementing whistleblower protection measures and opposing any form of retaliation. We require all relevant personnel involved in handling the complaint to sign the *Confidentiality Commitment* to strictly protect the personal information of whistleblowers and the reported content. In addition, we promise to take false accusations and frame-ups seriously and send the cases violating laws to state authorities for legal accountability in accordance with laws.



²⁹ <https://www.bewg.net/gwym/ljhg/>

Business ethics training

To reinforce a culture of integrity within the company, BEWG held a themed event called "Integrity and Commitment from the Heart" for all employees to cultivate their active compliance with regulations through various methods such as video training on rules and legal matters, discussions of typical case studies, and assessments related to disciplines and legal requirements.

In 2023, the Group launched a cautionary educational programme called "Learning from Typical Cases to Enhance Integrity" where detailed analyses of such cases served as deterrents for all employees". In addition, we organised employees to watch educational films *Strict Prevention of Misconducts in Disguise* and *The Moment of Awareness* and coordinated visits to instructional sites and other events that promote cautionary education and nurture a culture of integrity.

To further reinforce ethical standards and maintain the integrity of festival celebrations, the Group provided reminders about integrity practices to key personnel ahead of major holidays including New Year's Day, Spring Festival, May Day, Dragon Boat Festival, Mid-Autumn Festival and National Day to solidate the front line in the fight against corruption. Additionally, we published notices and shared examples of corrupt cases on our internal websites prior to these holidays to remind employees of the importance of ethical conduct and to strengthen our defense against corruption.

In 2023, BEWG held 3 anti-corruption training sessions for its Board of Directors. These sessions featured thematic events such as an analysis of the "Integrity and Anti-corruption Guide for Dealing with Public Officials," an explanation of "Success through Integrity Management", an overview of ICAC (Independent Commission Against Corruption) cases, and screenings of integrity training videos. On average, each Board member underwent two hours of anti-corruption training.

In 2023, BEWG organised a total of 3 anti-corruption training sessions for senior management of the Group with an average duration of 80 minutes per person. In 2023, BEWG organized 32 integrity training sessions for employees, totalling more than 23,100 hours of training.



In 2023
BEWG organised a total of

3

anti-corruption training
sessions for the Board



with an average duration of

2 hours

per person

Supply chain management

The Group strictly complies with relevant laws and regulations, such as the *Civil Code of the People's Republic of China* and the *Bidding Law of the People's Republic of China*, and keeps improving the supply chain management system. To build a sustainable partnership that is stable, efficient, mutually beneficial and successful, the Group has integrated the ESG philosophy into the supplier lifecycle management process and created a comprehensive, quality and responsible supply chain. The Group performs prudent identification and assessment of suppliers' environmental and social risks at stages of supplier admittance, audit, evaluation, and elimination, prioritises environmental and green products and services, and works with partners to explore an environmentally friendly and clean business model of integrity.

As of 31 December, 2023, the Group had a total of 472 domestic qualified suppliers.

Procurement from BEWG's direct suppliers in 2023³⁰

Total tier-1 suppliers (qualified)



Critical tier-1 suppliers (qualified)³¹



Number of direct suppliers by region in 2023

Suppliers from Chinese mainland
292

Suppliers from China's Hong Kong, Macao, Taiwan regions and oversea
27

³⁰ Note: The total number of domestic suppliers in 2023 refers to qualified suppliers. 472 suppliers including 319 direct ones and 153 indirect ones. (Direct procurement: productive procurement, such as water treatment and environmental protection facilities directly used for processing water resource; indirect procurement: non-productive procurement, such as procurement for administrative purposes; potential suppliers: suppliers that are not included in the qualified supplier pool of BEWG).

³¹ Note: The Group has optimised standards for supplier admittance and improved the quality of suppliers. All tier-1 direct suppliers (qualified) meet the requirements of critical tier-1 suppliers (qualified).



Supplier lifecycle management

To enhance the oversight of supplier admission, auditing, evaluation, and other processes, the Group revised *Supplier Management Policies of BEWG* in 2023. These updates included more stringent criteria for suppliers concerning labour and human rights, health and workplace safety, environmental protection, and anti-corruption as outlined in the BEWG Code of Conduct for Suppliers. Additionally, we developed other internal guidelines like the *Quality Management Rules for Suppliers*, which detail specific expectations for the quality of supplier deliveries.

Regarding management tools, BEWG leverages digital technology to continuously enhance supply chain oversight. This year, we launched an online supplier service platform that integrates the entirety of the procurement process, from contracting, ordering, acceptance and payment, and accounting into a streamlined and transparent system. Each step of the process is made traceable and accountable. This integration has not only standardised our procurement operations but also boosted the efficiency of our supply chain management.

Supplier entry

The Group has formulated a standardised process and approval policy for supplier acceptance to ensure the transparency, fairness and sustainability of procurement. This year, we enhanced the *Supplier Access Audit Form*, to conduct a comprehensive assessment and review of suppliers at the acceptance stage. The evaluation covers 4 key areas, including business credential's, technical feasibility, production facilities and product examples, with a total of 28 distinct dimensions such as R&D and design capabilities, environmental impact, ESG (Environmental, Social, and Governance) management system, and product safety.

Our ESG evaluation criteria for suppliers includes a range of factors, including certification of the ESG management system, enforcement of ESG management policies, identification and management of potential hazards, EHS (Environment, Health and Safety) remedial and preventative measures, waste and hazardous material management, as well as adherence to the *BEWG Supplier Code of Conduct*. In addition, we engage auditors to carry out audits and verification on prospect suppliers during the acceptance approval and selection stages to ensure legal compliance and transparency of the procurement process.

The Group places a high priority on the integrity of supply chains and includes the *Integrity and Self-discipline Commitment Agreement* within the bidding documents. All suppliers participating in the bidding process are required to sign the commitment letter with their legal names and pledging to uphold standards of integrity, honesty and confidentiality.

This year, the coverage of Group's audits on the ESG criteria among new suppliers reached 100%, and every supplier signed the *Integrity and Self-discipline Commitment Agreement*.



This year the coverage of Group's audits on the ESG criteria among new suppliers reached

100%

Supplier signed the *Integrity and Self-discipline Commitment Agreement*

100%

Supply chain management



Standard Terms of ESG Audits on Suppliers

- ESG system certification**
 ESG management system has been established and environmental, health and safety system certifications have been obtained, such as ISO 9001, ISO 14001 and ISO 45001 certification, etc.
- ESG management system**
 ESG-related management systems have been put in place in compliance with relevant laws and regulations, such as the prohibition of child labour, business ethics and other provisions.
- Hazard identification and management**
 The hazards in the equipment and process are systematically identified and handled, and the management signs and measures to identify the hazards can be seen on the site.
- EHS Correction and prevention**
 Cause analysis of environmental, health and safety accidents is conducted, corrective measures are developed and implemented with an objective evaluation on their effectiveness and closed-loop tracking management.
- Management of waste and hazardous substances**
 Management processes or relevant management standards for identifying and controlling hazardous substances such as the three wastes (wastewater, waste gas and solid waste) have been established and strictly implemented.
- Compliance with the Group's policies**
 Observe and comply with the requirements of the *BEWG Code of Conduct for Suppliers*.



³² Note: 313 suppliers out of the 319 direct suppliers qualified by BEWG in 2023 have obtained ISO 9001, ISO 14001 and ISO 45001 certifications, accounting for 98%, and the remaining 2% are agents and traders.

Supplier management and evaluation

We attach great importance to communication and exchange with suppliers. To achieve shared development with suppliers, we schedule regular topical discussions to enhance supplier management, assisting them in improving their capability of fulfilling duties.

The Group conducts annual process and performance assessments on active suppliers. The process evaluation is based on the appraisal of suppliers' fulfillment of engineering obligations. For instance, when evaluating general contractors, we regularly scrutinize their performance in areas such as quality, safety, timeliness, and business administration. The findings from these process evaluations contribute to the annual overall assessment of each supplier.

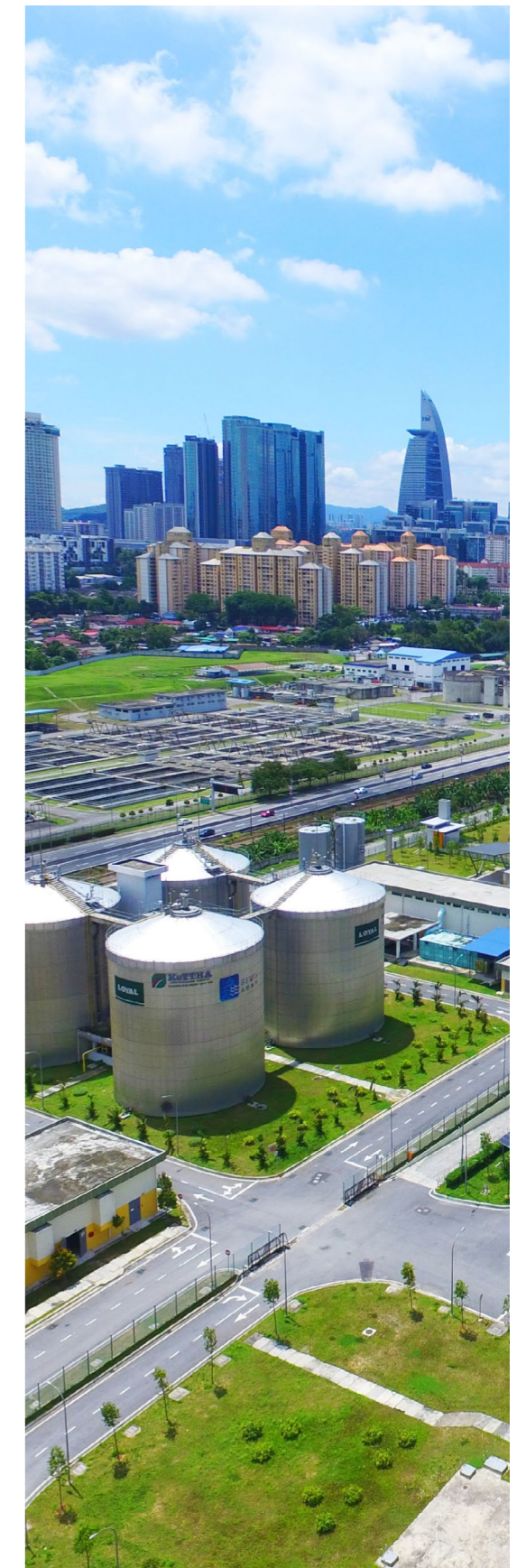
In addition to the assessment of obligation fulfillment, the Group consistently audits and assesses suppliers' ESG performance through categorical ratings and scoring to identify and mitigate supplier ESG risks. Based on audit results, we categorize suppliers into four levels: "Excellent", "Developing", "Needs improvement", "Unqualified (not yet eliminated)" and manage them accordingly.

For non-conformities found in the on-site audits, we mandate suppliers to prepare and implement corrective plans within 15 days of receiving formal notices from the Group and the corrective plan shall be completed within one to three months depending on the complexity of required corrections. The effectiveness and practicality of these corrective action plans are validated through document evaluations or follow-up on-site inspections. Suppliers who breach the *BEWG Supplier Code of Conduct* during our partnership, or fail to rectify issues after two attempts, will face termination of their business relationship with us.

Reinforcing a culture of integrity is a pivotal aspect of our supply chain management and we strictly forbid any form of corruption. In this regard, we send anti-corruption emails to suppliers prior to conducting audits and obligate them to sign the *Integrity and Self-discipline Commitment Agreement*. As part of our routine operations, we initiate educational events and conduct training sessions on business ethics for our suppliers.

Green procurement

BEWG is committed to the concept of "green first" and engages in low-carbon procurement practices. This year, the Group successfully met the 2022 goal of "cutting overall energy consumption in pump valve systems by 5%." We encourage suppliers to be mindful of their environmental impacts, properly manage waste, and keep reducing pollutant emissions to minimise suppliers' negative impacts on the environment. The Group mandates suppliers to establish and strictly implement management processes or relevant management standards for identifying and controlling hazardous substances such as wastewater, waste gas and solid waste. Additionally, we have made the management of waste and hazardous substances a "veto" criterion, underscoring BEWG's zero tolerance policy toward environmental harm.



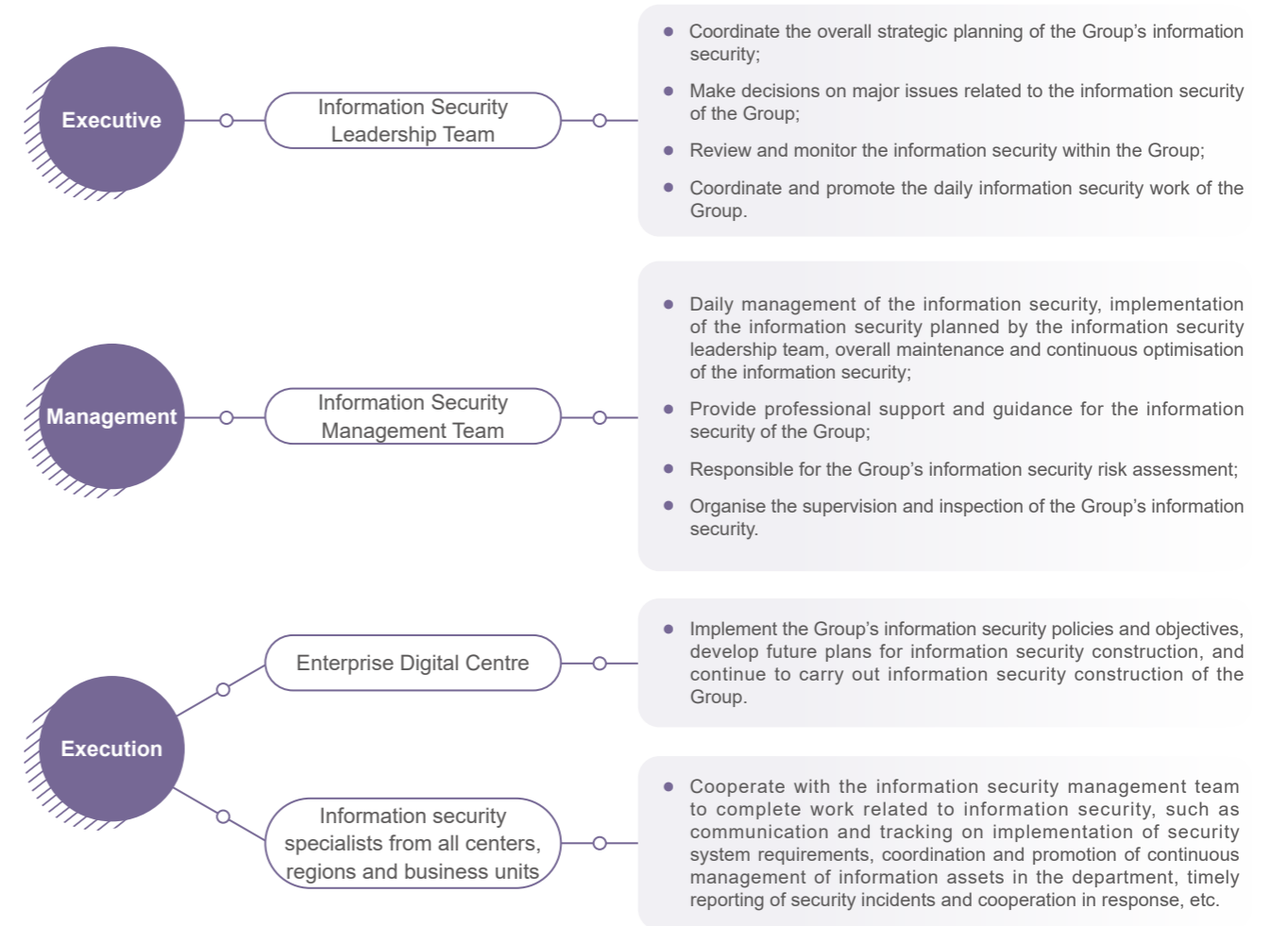
BEWG is committed to building a secure corporate network and safeguarding the information security of users and the Group. To bolster our defense against cyber threats, the Group enhances its entire information security framework by refining our management practices, advancing our security technology and operations, and intensifying our focus on information security education.

Information security management

In strict accordance with the *Cybersecurity Law of the People's Republic of China*, the *Data Security Law of the People's Republic of China*, the *Personal Information Protection Law of the People's Republic of China* and other laws and regulations, we have formulated and improved the *BEWG Information Security Management System*, the *BEWG Information Security Policy System* and other internal policies. This year, the Group included the determination of information security risks, development risks, security vulnerability management and other new contents into the *Information Security Management System* according to the latest requirements for information security management.

In accordance with relevant requirements of the ISO 27001 Information Security Management System Certification, the Group keeps revising and improving the management system focusing on 15 areas, such as information security strategy and governance structure, system operation, security of information assets, and data security, and performs external audits on information security. This year, BEWG successfully passed the annual audit for ISO 27001 Information Security Management System Certification, affirming our commitment to rigorous information security standards. Furthermore, we advanced our efforts in cyber security risk management. In 2023, BEWG's industry-education alliance met the National Cybersecurity Classified Protection (Level 3) criteria, while BEWG's official website, e-commerce platform, and holographic design platform achieved compliance with the National Cybersecurity Classified Protection (Level 2), earning the *Cybersecurity Level Assessment Report*.

BEWG has built a three-tier information security management structure consisting of executive, management and execution and continues to improve the management responsibilities of information security at each level.





Information security awareness education

In 2023, BEWG organised the "Information Security Awareness Training" session, which included a video presentation from an external security expert platform to educate employees about information security fundamentals. All employees were required to complete these courses and participate in online assessments. The online security training lasted for a month and engaged more than 10,000 participants, significantly improving their understanding of information security concepts, typical risks, and preventive measures, while effectively boosting their awareness of information security.

Information security technology and operations

BEWG unceasingly improves information security technology and strengthens the management of information security operations to enhance the protection of security and privacy of user data. This year, combined with information security management and responsibility requirements, the Group clarified the responsibilities of people in charge of the security management of different systems and tracked their fulfillment of these responsibilities. We comprehensively sort out and optimize IT infrastructure assets, improve resource utilization efficiency, and further improve Internet security protection measures and intrusion prevention capabilities according to the needs of business systems. In 2023, the Group addressed information security risks by implementing strategies like Internet exposure management, auditing of endpoint security deployments, and enforcing corrective actions for identified information security vulnerabilities.

In 2023, the Group did not experience any significant information security breaches, and we received no complaints concerning user privacy.



In 2023

No

major information security accidents occurred in the Group

No

complaints about user privacy were received

Information Security



Equipment and server security

Review and improve anti-virus strategies of the server system to strengthen its security defense.

Cybersecurity

Enhance the cybersecurity technology framework by developing technical safeguards such as firewalls, IPS (Intrusion Prevention System), bastion host, vulnerability scanning tool, antivirus software, online behavior management systems and WAF (Web Application Firewall) to fulfill the standards for three-level information security prevention and control; review and improve the WAF, IPS, firewall and other security policies of the business systems in a unified manner to fortify the defense against intrusions.

Data security

Develop and implement remote data disaster recovery policy and database audit policy for key business systems; maintain and optimise the data centre to enhance the lifecycle management and control of data security.



Vulnerability scanning and remediation

Develop procedures for vulnerability scanning and remediation, perform vulnerability scanning on a quarterly basis and implement vulnerability remediation for application systems. In 2023, the Group remediated a total of more than 60 high-risk vulnerabilities.

Operation and maintenance service management

Establish a process management system, optimise the process system of O&M management that includes service requests, event management, problem management, change management, release management, demand management and other core processes, so as to standardise operation and maintenance operation mechanism, and improve operation and maintenance efficiency.

Disaster recovery simulation drill

Establish a disaster recovery system to maintain business continuity and prevent and resolve the operational security risks of the information system; carry out disaster recovery simulation drills of the financial system; verify the reliability of the system, the recovery ability from disaster and the feasibility of emergency plan for important information systems through drills; enhance the level of disaster recovery and safe operation of the information system; improve the ability of the Group's emergency response, crisis communication and coordination among departments.



Key ESG performance

Environmental					
Indicator	Unit	2023	2022	2021	
Environmental management					
Major environmental pollution accidents	/	0	0	0	
Pollutants emissions and discharge					
Total COD abatement in sewage treatment plants	tonne	1,054,379	977,562	920,644	
Total ammonia nitrogen abatement in sewage treatment plants	tonne	132,883	122,393	105,157	
Total reduction of total phosphorus in sewage treatment plants	tonne	18,120	16,563	14,801	
Total suspended solids reduction	tonne	791,954	749,361	683,108	
Total pollutant abatement	tonne	1,997,336	1,865,879	1,723,710	
Total sulphur oxide Emissions	tonne	64	48	37	
Total nitrogen oxide emissions	tonne	566	337	305	
Total smoke particles	tonne	22	7	3.05	
Total discharge of boiler residues	tonne	154,131	87,156	64,723	
Hazardous solid waste	tonne	259	328	199	
Hazardous solid waste density	kg/10,000 RMB	0.11	0.15	0.09	
Non-hazardous solid waste	tonne	2,819,039	2,734,720	2,555,687	
Non-hazardous solid waste density	tonne/10,000 RMB	1.15	1.27	1.10	
Resource and energy consumption					
Non-renewable energy substitution	kWh	2,073,486,348	1,915,878,044	1,699,021,945	
Renewable energy substitution	kWh	70,445,094	51,517,716	39,576,096	
Gasoline consumption	tonne	1,259	938	581	
Diesel consumption	tonne	1,657	1,638	782	
Natural gas consumption	m ³	1,846,652	1,349,411	2,019,398	
Purchased steam for heating	GJ	3,781	4,087	10,005	
LPG consumption	tonne	73	80	340	
Total fresh water consumption	tonne	4,131,013	4,605,304	4,612,325	
Fresh water density	tonne/10,000 RMB	1.68	2.14	1.99	
Pipeline network leakage rate	%	11.84	12.98	16.64	
Proportion of self-supply water of water distribution plants	%	1.4	1.6	2.1	
Agent consumption	Total consumption of carbon source	tonne	29,037	27,518	84,386
	Total consumption of dephosphorisation agents	tonne	26,261	22,542	224,346
Comprehensive energy consumption & GHG Emission					
Comprehensive energy consumption	tce	261,808	241,299	214,414	
Comprehensive energy consumption density	tonne/10,000 RMB	0.107	0.112	0.093	
Total GHG emissions	tCO ₂ e	1,200,564	1,114,020	1,050,131	
GHG emissions density	tCO ₂ e/10,000 RMB	0.49	0.52	0.45	

Social				
Indicator	Unit	2023	2022	2021
Employment				
Total workforce	person	19,832	20,606	17,888
New contract employees	person	2,393	2,734	2,318
Number of employees by region				
Chinese mainland	person	18,918	19,537	16,768
Overseas, China's Hong Kong, Macao and Taiwan	person	914	1,069	1,120
Number of employees by employment type				
Contract employees	person	18,664	19,198	16,565
Intern	person	104	163	77
Outsourced personnel	person	150	176	126
The proportion of employees by employment type				
Contract employees	%	98.66	98.26	98.79
Intern	%	0.55	0.83	0.46
Outsourced personnel	%	0.79	0.90	0.75
Number of employees by gender				
Male employees	person	12,330	12,447	11,028
Female employees	person	6,588	7,090	5,740
Proportion of employees by gender				
Male employees	%	65.18	63.71	65.77
Female employees	%	34.82	36.29	34.23
Number of employees by age				
Under 30 years old	person	4,008	4,273	4,033
30-50 years old	person	11,536	11,080	10,365
Over 50 years old	person	3,374	4,184	2,370
Proportion of employees by age				
Under 30 years old	%	21.19	21.87	24.05
30-50 years old	%	60.98	56.71	61.81
Over 50 years old	%	17.83	21.42	14.13
Proportion of female employees by rank				
Management	%	23.76	23.80	23.20
Junior management	%	23.85	24.19	24.04
Senior management	%	21.43	15.63	15.15

Social				
Indicator	Unit	2023	2022	2021
Employee turnover				
Number of employees leaving by gender				
Male employees	person	1,681	1,576	1,310
Female employees	person	1,258	954	652
Number of employees leaving by age group				
Under 30 years old	person	749	788	669
30-50 years old	person	1,101	848	924
Over 50 years old	person	1,089	894	369
Turnover rate by gender				
Male employees	%	13.63	12.66	11.88
Female employees	%	19.10	13.46	11.36
Turnover rate by age group				
Under 30 years old	%	18.69	18.44	16.59
30-50 years old	%	9.54	7.65	8.91
Over 50 years old	%	32.28	21.37	15.57
Employee development and training				
Total number of employees trained	person	18,918	19,537	16,768
Percentage of employees trained in Chinese mainland	%	100	100	100
Regular employees trained by gender				
Male employees	person	12,330	12,447	11,028
Female employees	person	6,588	7,090	5,740
Regular employees trained by rank				
Senior management	person	28	32	33
Junior management	person	696	686	618
Non-management staff	person	18,194	18,819	16,117
Average training hour of regular employees by gender				
Male employees	hour	89.90	95.93	102.00
Female employees	hour	90.02	92.66	102.00
Average training hour of regular employees by rank				
Senior management	hour	108.00	108.00	115.00
Junior management	hour	153.31	153.33	163.00
Management staff	hour	87.41	79.23	86.00

Social				
Indicator	Unit	2023	2022	2021
Employee health and safety				
Employees' work-related injury cases	number	15	21	7
Rate of employee work-related injury rate	%	0.08	0.11	0.04
Number of lost working days due to work	day	6,914	18,675	659
Injury rate per million working hours	/	0.40	0.54	0.21
Rate of work-related accidents per thousand people	/	0.79	1.07	0.42
Cumulative input in safety production	RMB	31,219,300	29,410,000	22,300,000
Enrollments of safety training	person-times	181,645	153,732	153,034
Work-related fatalities	person	0	0	0
Supplier management				
The cumulative number of domestic qualified suppliers	/	472	691	601
The number of critical suppliers by region				
Chinese mainland	/	292	381	283
China's Hong Kong, Macao and Taiwan regions and oversea	/	27	48	48
Procurement from direct suppliers				
Total Tier-1 suppliers	/	319	429	331
Critical Tier-1 suppliers	/	319	278	217
Certification of suppliers				
ISO 9001 certified	%	98	100	100
ISO 14001 certified	%	98	95	95
ISO 45001/OHSAS 18001 certified	%	98	90	90
Customer service				
Customer satisfaction	%	94.2	-	-
Research and innovation				
Number of new authorised patents	/	280	462	229
The cumulative number of authorised patents	/	1,454	1,282	772
Intellectual property and external standards that fell within the scope of rewards	/	115	216	64
Community welfare				
Total amount of charitable donations	10,000 RMB	293.3	112.3	183.9
Employee volunteer service	hour	950	418	63,555

List of key ESG policies

Category	Name
Environmental	
Environmental management	Environmental Yardstick Assessment System
	Environmental Factor Identification, Evaluation and Control Procedures
	Interim Administrative Measures for Engineering Products Appraisal of BEWG
	Interim Administrative Measures for Engineering Products Appraisal of BEWG
Emissions	BEWG Management Manual on Quality, Environment, and Occupational Health and Safety
	BEWG Management Procedure on Quality, Environment, and Occupational Health and Safety
	BEWG Water Management Measures
	Technical Specification for Low-carbon Operation Evaluation of Sewage Treatment Plant
	Chemical Agent Management Measures
Ecological protection	Low-Carbon Operations Management Measures of BEWG
Ecological protection	Biodiversity Protection Management Measures of BEWG
Social	
Employment	Recruitment Management Mechanism
	Management Measures for Campus Recruitment of BEWG
Employee rights and benefits	Statement of Employee Rights and Benefits
	Headquarters Employee Welfare System
Occupational health and safety	Management Measures for Organisation and Implementation of Corporate Culture Activities of BEWG
	BEWG Manual on Safe and Civilised Construction Standard for Project Delivery
	BEWG Management Manual on Quality, Environment, and Occupational Health and Safety
	BEWG Management Regulations for Dangerous Materials Safety
	Supplier Management Policies of BEWG
	BEWG Regulations on Occupational Health Management
	BEWG Regulations on Labour Protection Articles Management
	BEWG Manual on Sewage Treatment Plant Delivery Quality Standards
	BEWG Identification List of Laws, Regulations and Standards for Safety Production
	BEWG Responsibility System for Safety in Production
Quality management	BEWG Regulations on Production Safety Accident Reporting and Investigation
	BEWG Comprehensive Emergency Plan for Unexpected Incidents
	BEWG Hazardous and Harmful Factor Evaluation and Management Regulations
	BEWG Major Hazard Source Management Regulations
	BEWG Special Emergency Plan for Production Safety Accidents
	BEWG Dangerous Incident Management Regulations
	BEWG Management Provisions on Safety Rewards and Punishments
	BEWG Management Provisions on Safety Production Interviews
Quality management	BEWG Guidance Manual on 5-4-1 Safety Management for Project Delivery
	BEWG Guidelines for the Operation of Standardised Product Development Systems V2.0

Category	Name
Quality management	BEWG Performance Management System for Engineering Construction
	BEWG Implementation Rules for Quality Control Points of Urban Water Construction Projects
	BEWG Handbook of Key Points for Lean Management of Engineering Quality in Urban Water Construction Projects
	Guidelines for Inspection and Acceptance of Star-Level Enterprises
	1+N Cluster Construction Process Guidelines
	1+N Cluster Operation and Management Guidelines
	1+N Regional Cluster Model Organisation Structure and Job Positioning
	Guidelines for Emergency Response to Abnormal Influent
	BEWG Guidance Manual for Sewage Plant Auto-control System Hardware Defect Elimination
	BEWG Guidance Manual for Sewage Plant Auto-control System PLC Programming
Intellectual property rights protection	BEWG Guidance Manual for Sewage Plant Auto-control System SCADA Development
	Incentive Programme for Technological Innovation Achievements (2023)
	BEWG Intellectual Property Management System
Supply chain	BEWG Guidelines for Promoting Technological Innovation Implementation
	BEWG Science and Technology Development Plan Outline (2021-2025)
	Supplier Management Policies of BEWG
	Quality Management Rules for Suppliers
	Customer Satisfaction Management Measures
Information and data security	Supplier Access Audit Form
	Code of Conduct for Suppliers
Community investment	Integrity and Self-discipline Commitment Agreement
	BEWG Information Security Policy System
Board diversity	BEWG Information Security Management System
	BEWG External Donation Management System
Governance	
Risk management	Board Diversity Policy
	BEWG Overall Risk Management System
	General Principles of Risk Management of Beijing Enterprises Water Group Limited
Business ethics	Detailed Rules for Risk Communication Management of Beijing Enterprises Water Group Limited
	BEWG Code of Conduct
	BEWG Overseas Anti-corruption System
	BEWG Anti-bribery and Anti-corruption System
	Integrity Commitment
	BEWG Confidentiality System for Whistleblowing and Accusation
	BEWG Whistleblower Protection System
	BEWG False Accusation Investigation and Punishment System
Confidentiality Commitment	
	Implementation Rules for Supervision and Inspection at Critical Milestones

HKEX ESG Index

Mandatory Disclosure Requirements		
Requirements		Page
Governance Structure	A statement from the board containing the following elements: (i) a disclosure of the board's oversight of ESG issues; (ii) the board's ESG management approach and strategy, including the process used to evaluate, prioritise and manage material ESG-related issues (including risks to the issuer's businesses); and (iii) how the board reviews progress made against ESG-related goals and targets with an explanation of how they relate to the issuer's businesses.	P43
Reporting Principles	A description of, or an explanation on, the application of the following Reporting Principles in the preparation of the ESG Report: Materiality: The ESG report should disclose: (i) the process to identify and the criteria for the selection of material ESG factors; (ii) if a stakeholder engagement is conducted, a description of significant stakeholders identified, and the process and results of the issuer's stakeholder engagement. Quantitative: Information on the standards, methodologies, assumptions and/or calculation tools used, and source of conversion factors used, for the reporting of emissions/energy consumption (where applicable) should be disclosed. Consistency: The issuer should disclose in the ESG report any changes to the methods or KPIs used, or any other relevant factors affecting a meaningful comparison.	P1
Reporting Boundary	A narrative explaining the reporting boundaries of the ESG report and describing the process used to identify which entities or operations are included in the ESG report. If there is a change in the scope, the issuer should explain the difference and reason for the change.	P1
Category	Disclosure requirements	Page
Environmental		
Aspect A1: Emissions	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to air and greenhouse gas emissions, discharges into water and land, and generation of hazardous and non-hazardous waste.	P65-68
	A1.1 The types of emissions and respective emissions data	P67
	A1.2 Direct (Scope 1) and energy indirect (Scope 2) greenhouse gas emissions (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	P13
	A1.3 Total hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	P67
	A1.4 Total non-hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	P67
	A1.5 Description of emissions target(s) set and steps taken to achieve them.	P14-15, P65-66
	A1.6 Description of how hazardous and non-hazardous wastes are handled, and a description of reduction target(s) set and steps taken to achieve them.	P65-66
Aspect A2: Use of Resources	General Disclosure Policies on the efficient use of resources, including energy, water and other raw materials.	P14, P55, P65
	A2.1 Direct and / or indirect energy consumption by type (e.g. electricity, gas or oil) in total (kWh) and intensity (e.g. per unit of production volume, per facility).	P11-12

Category	Disclosure requirements	Page
Aspect A2: Use of Resources	A2.2 Water consumption in total and intensity (e.g. per unit of production volume, per facility).	P56
	A2.3 Description of energy use efficiency target(s) set and steps taken to achieve them.	P14
	A2.4 Description of whether there is any issue in sourcing water that is fit for purpose, water efficiency target(s) set and steps taken to achieve them.	P55-56
	A2.5 Total packaging material used for finished products (in tonnes) and, if applicable, with reference to per unit produced.	Not Applicable
	General Disclosure Policies on minimising the issuer's significant impact on the environment and natural resources.	P55, P61, P65
Aspect A3: The Environment and Natural Resources	A3.1 Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them.	P14-22, P55-60
	General Disclosure Policies on identification and mitigation of significant climate-related issues which have impacted, and those which may impact, the issuer.	P45-46
Aspect A4: Climate Change	A4.1 Description of the significant climate-related issues which have impacted, and those which may impact, the issuer, and the actions taken to manage them.	P7-11, P45-46
	Social	
Aspect B1: Employment	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination, and other benefits and welfare.	P71
	B1.1 Total workforce by gender, employment type, age group and geographical region.	P71-72
	B1.2 Employee turnover rate by gender, age group and geographical region.	P72
Aspect B2: Health and Safety	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to providing a safe working environment and protecting employees from occupational hazards.	P81-85
	B2.1 Number and rate of work-related fatalities occurred in each of the past three years including the reporting year.	P86
	B2.2 Lost days due to work injury.	P86
	B2.3 Description of occupational health and safety measures adopted, how they are implemented and monitored.	P81-85
	General Disclosure Policies on improving employees' knowledge and skills for discharging duties at work. Description of training activities.	P73-78
Aspect B3: Development and Training	B3.1 The percentage of employees trained by gender and employee category (e.g. senior management, middle management)	P74
	B3.2 The average training hours completed per employee by gender and employee category.	P74

Category	Disclosure requirements	Page
Social		
Aspect B4: Development and Training	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to preventing child and forced labour.	P71
	B4.1 Description of measures to review employment practices to avoid child and forced labour.	P71
	B4.2 Description of steps taken to eliminate such practices when discovered.	P71
Aspect B5: Supply Chain Management	General Disclosure Policies on managing environmental and social risks of the supply chain.	P118
	B5.1 Number of suppliers by geographical region.	P117
	B5.2 Description of practices relating to engaging suppliers, number of suppliers where the practices are being implemented, how they are implemented and monitored.	P118
	B5.3 Description of practices used to identify environmental and social risks along the supply chain, and how they are implemented and monitored.	P118-120
	B5.4 Description of practices used to promote environmentally preferable products and services when selecting suppliers, and how they are implemented and monitored.	P118-120
Aspect B6: Product Responsibility	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to providing a safe working environment and protecting employees from occupational hazards.	P87-96, P123-124
	B6.1 Percentage of total products sold or shipped subject to recalls for safety and health reasons.	Not Applicable
	B6.2 Number of products and service-related complaints received and how they are dealt with.	P95-96
	B6.3 Description of practices relating to observing and protecting intellectual property rights.	P106
	B6.4 Description of quality assurance process and recall procedures.	P87-90
	B6.5 Description of consumer data protection and privacy policies, and how they are implemented and monitored.	P121-123
Aspect B7: Anti-corruption	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to bribery, extortion, fraud and money laundering.	P113-115
	B7.1 Number of concluded legal cases regarding corrupt practices brought against the issuer or its employees during the reporting period and the outcomes of the cases.	P114
	B7.2 Description of preventive measures and whistle-blowing procedures, and how they are implemented and monitored.	P113-115
	B7.3 Description of anti-corruption training provided to directors and staff.	P116
Aspect B8: Community Investment	General Disclosure Policies on community engagement to understand the needs of the communities where the issuer operates and to ensure its activities take into consideration the communities' interests.	P107-110
	B8.1 Focus areas of contribution (e.g. education, environmental concerns, labour needs, health, culture, sport).	P107-110
	B8.2 Resources contributed (e.g. money or time) to the focus area.	P107

GRI Index

Statement of use	BEWG has reported in accordance with the GRI Standards for the period [1 January, 2023 to 31 December, 2023].
GRI 1 used	GRI 1: Foundation 2021

GRI standard	Disclosure	Chapters Page
GRI 2: General Disclosures 2021	2-1 Organisational details	P01, P33-34
	2-2 Entities included in the organisation's sustainability reporting	P01
	2-3 Reporting period, frequency and contact point	P01
	2-4 Restatements of information	P01
	2-6 Restatements of information	P33-34
	2-7 Employees	P71-72
	2-8 Workers who are not employees	P71-72
	2-9 Governance structure and composition	P43
	2-10 Nomination and selection of the highest governance body	P44
	2-11 Chair of the highest governance body	P43-44
	2-12 Role of the highest governance body in overseeing the management of impacts	P43-44
	2-13 Delegation of responsibility for managing impacts	P43
	2-14 Role of the highest governance body in sustainability reporting	P02
	2-15 Conflicts of interest	P44
	2-16 Communication of critical concerns	P49-52
	2-17 Collective knowledge of the highest governance body	P43
	2-18 Evaluation of the performance of the highest governance body	P44
	GRI 3: Material Topics 2021	2-22 Statement on sustainable development strategy
2-23 Policy commitments		P71, P113
2-24 Embedding policy commitments		P116-118
2-25 Processes to remediate negative impacts		P85, P120
2-26 Mechanisms for seeking advice and raising concerns		P115
2-27 Compliance with laws and regulations		P65, P81, P114
	2-28 Membership associations	P37-38
	2-29 Approach to stakeholder engagement	P49-50
	2-30 Collective bargaining agreements	P71
	3-1 Process to determine material topics	P51
	3-2 List of material topics	P51
	3-3 Management of material topics	P51

GRI standard	Disclosure	Chapters Page
GRI 201: Economic Performance 2016	201-2 Financial implications and other risks and opportunities due to climate change	P7-10
	201-3 Defined benefit plan obligations and other retirement plans	P79-80
GRI 203: Indirect Economic Impacts 2016	203-1 Infrastructure investments and services supported	P27-30, P37-38, P110
	203-2 Significant indirect economic impacts	P37, P110
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Reader's Feedback

Dear readers,

Thank you for reading the Beijing Enterprises Water Group Limited Sustainability Report (2023). We expect to listen to your feedback on our report and work. Your opinions and suggestions are the important basis for us to improve our sustainability management and practice.

We are looking forward to your reply.

Optional questions (please mark ✓ on your answer)

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- Yes Maybe No

4. Can the information you are concerned about be easily searched in the report?

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Your contact information

Name: _____ Employer: _____

