



# Renewable Energy Business





# Review of Operations



## Chapter 1: Renewable Energy Business

In 2021, the Group achieved several new milestones in its business development plan, including the introduction of the new investor Affinity Equity Partners, the completion of the first phase of the plan for cross-shareholding with Shanghai Gas, and the business transformation from a single gas business entity into an integrated clean energy supplier, focusing on promoting smart energy solutions in the zero-carbon smart industrial park scenario. In line with the new development direction, the Company passed a resolution at the extraordinary general meeting on 26 November to officially rename the Company as Towngas Smart Energy Company Limited.

The world is at a critical period of transitioning from fossil energy to renewable energy. The energy structure of various countries is constantly being adjusted, with the share of the more efficient and clean energy expanding and the demand for low-carbon energy increasing. The Chinese mainland's renewable energy industry has grown significantly over the past decade, witnessing the total installed capacity growing at a compound annual growth rate of 14% since 2012 and the share of renewable energy in total energy consumption increasing from 9.1% to 15.9%. The government of the

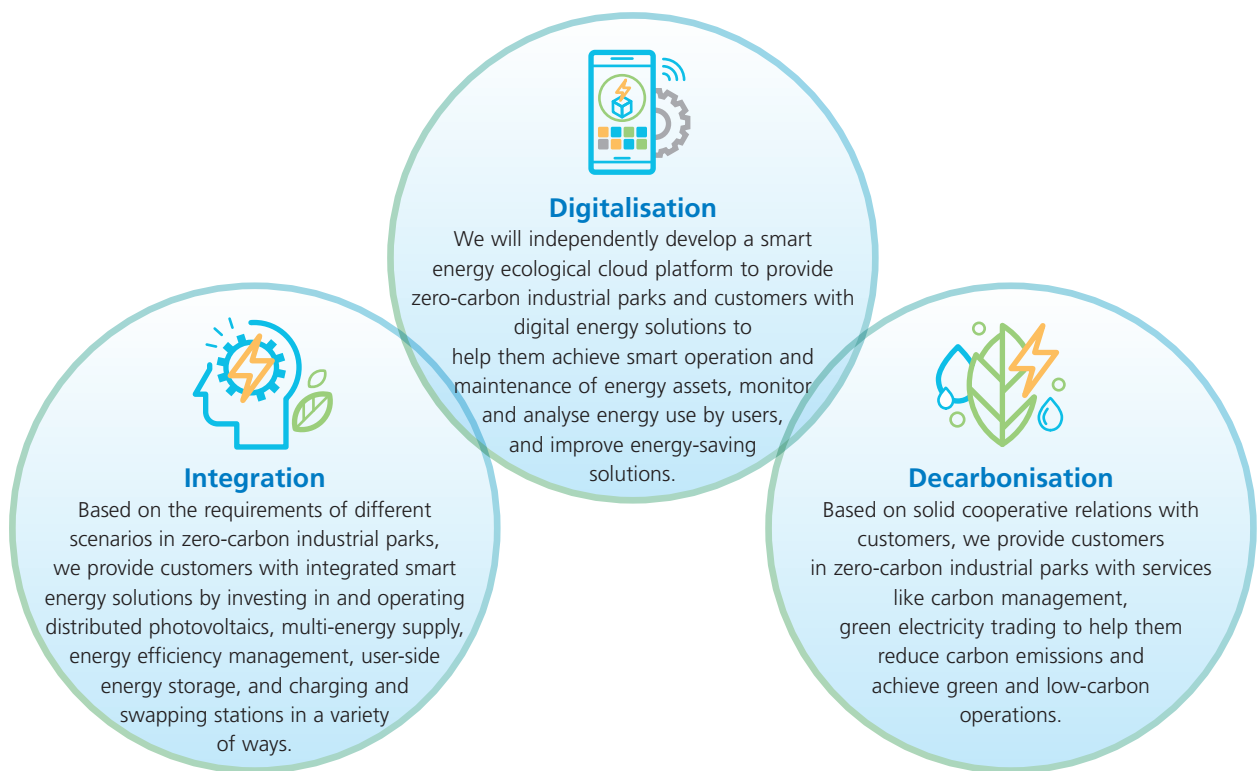
Chinese mainland has set specific medium-term goals of further increasing the share of renewable energy consumption to 25% and expanding the total installed capacity of photovoltaic and wind power to more than 1.2 billion kilowatts by 2030. Possessing the absolute advantages in terms of scalability, cost and safety, solar energy and wind energy industries are expected to be the key driver towards the goals.

Riding the trend of energy development of the Chinese mainland, the Group established the Towngas Energy brand in 2016 with a particular focus on investing in natural gas distributed energy and central heating projects, providing energy planning, energy conservation consultancy and other services for more than 170 city gas project companies of the Group, laying a solid foundation for the development of the renewable energy business. By the end of the year, Towngas Smart Energy, together with its parent company HKCG, had a customer base of more than 40 million, including nearly 400,000 industrial and commercial customers, many of which were located in industrial parks. Therefore, the installation and operating costs of photovoltaic systems could be effectively reduced, providing strong support for photovoltaic projects targeting industrial parks.



At present, the Chinese mainland has about 2,600 industrial parks at national and provincial levels. Towngas Smart Energy aims to provide smart energy solutions for 200 of these industrial parks by 2025. By 2021, the Group and its parent company HKCG had carried out more than 110 renewable energy projects in 21 provinces, autonomous regions and municipalities and developed 32 zero-carbon smart industrial parks, with business scope spanning multi-energy supply (cooling, heat, electricity), photovoltaics, energy storage, charging and swapping stations, integrated energy services for industrial and commercial customers.

Towngas Smart Energy will build an integrated, smart, and sustainable renewable energy business based on three core pillars: integration, digitalisation and decarbonisation. By leveraging the new business development model of building and managing zero-carbon smart industrial parks, and applying cutting-edge technologies such as advanced energy storage technology, smart energy platform, blockchain and chips, the Group can create an integrated source-grid-load-storage smart regional energy supply management system.





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## Case demonstration of zero-carbon smart industrial parks



### Taizhou city, Jiangsu province

Towngas Smart Energy cooperated with the government of Hailing District in Taizhou City, Jiangsu province to invest in the construction of green energy and carbon reduction projects, such as rooftop photovoltaics, charging piles for electric vehicles, natural gas distributed energy and energy conservation projects for industrial customers in three provincial industrial parks.

The installed capacity of the first phase of the rooftop photovoltaic project reached 80 megawatts. Meanwhile, using this project as a pilot, the Group cooperated with Tencent to develop a regional smart energy ecological platform, providing the government and customers in the park with digital energy management systems, forming a regional energy internet and creating a zero-carbon smart industrial park.



### Tangshan city, Hebei province

Located in Hebei province, Fengnan Economic Development Zone is a provincial development zone, covering an area of approximately 160 square kilometres, and includes three industrial parks: Lingang Economic Park, Xiaoji Economic Park and High-tech Industrial Park. To help Fengnan achieve green economic development, Tangshan Towngas China Integrated Energy Co., Ltd. invested in the construction of a zero-carbon smart energy project in the park. The installed capacity of the rooftop photovoltaic project under construction exceeds 60 megawatts.

In addition, the project provides customers with services such as carbon management, energy management, energy saving for air conditioners, energy saving for air compressors, and power operation. It also invests in charging and swapping stations and offers quick battery replacement for heavy-duty transport vehicles. With the first management system for carbon peak and carbon neutrality in industrial parks in the Chinese mainland being put into use in the region soon, whereupon digital management of energy saving and carbon reduction can be attained in the park, and the efficient and smart operation of integrated energy can be achieved.





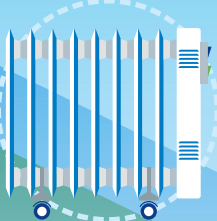
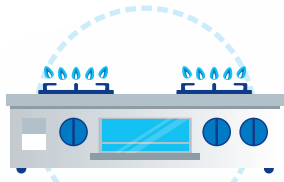
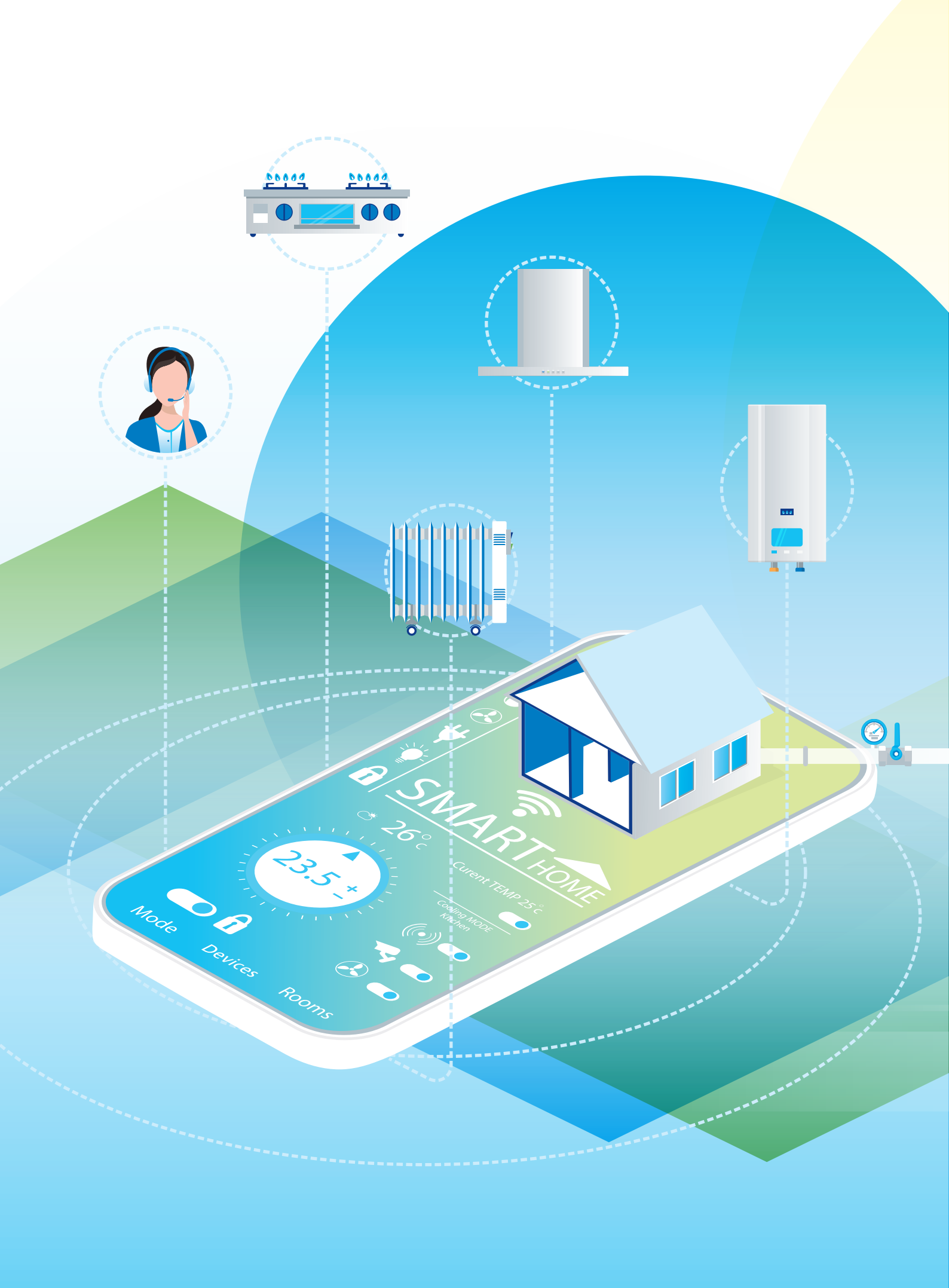
During the year, Towngas Smart Energy cooperated with multiple industry-leading enterprises to accelerate the business planning of the Group:

- The Group jointly established with CATL the joint venture Towngas CATL Smart Energy Technology (Suzhou) Company Limited (港華時代智慧能源科技(蘇州)有限公司), an innovative energy technology enterprise integrating advanced energy storage technology, system integration service provision and energy storage project operation with a particular focus on shared energy storage and user-side energy storage for zero-carbon smart industrial parks.
- The Group set up the Joint Research Centre for Regional Integrated Energy Planning Technology with Tsinghua University to explore regional integrated energy planning, multi-energy complementation, integrated gas use and other key technologies, contribute towards the development of the Chinese mainland's clean, low-carbon, safe and efficient modern energy system, and jointly drive the speedy development of integrated energy technology.
- The Group collaborated with Tencent Cloud to create a smart energy ecological platform to carry out innovations in business areas such as energy and carbon monitoring, energy operation, energy and carbon trading, and auxiliary services using digital technologies

including cloud computing, big data, artificial intelligence, edge computing and Internet of Things. The platform can be used for various application development and system access, laying a solid foundation for digital and smart energy operation.

- The Group and State Power Investment Corporation (SPIC) reached a strategic cooperation in the field of battery charging and swapping for heavy trucks, in an effort to jointly promote the development of zero-carbon industrial parks and source-grid-load-storage integration and to achieve the implementation of business scenarios and building of charging and swapping stations.





# Gas Business







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## Chapter 2: Gas Business

In 2021, the Chinese mainland's apparent consumption of natural gas reached 372.6 billion cubic metres, an increase of approximately 12.7% over the same period last year; and the economy grew by 8.1%. With steady economic recovery and the state's goal of achieving carbon emission peak by 2030 and carbon neutrality by 2060, natural gas, as one of the cleanest fossil energy sources, will undoubtedly play an important role in the Chinese mainland's energy structure transition. The demand for natural gas will undoubtedly go up.

Under this circumstances, the gas sales volume of Towngas Smart Energy increased robustly by 21% to about 14,579 million cubic metres during the year. Specifically, the increase in industrial, commercial and wholesale markets was the most significant. Industrial gas sales volume was 7,667 million cubic metres, representing an increase of 28% over 6,008 million cubic metres in 2020 and accounting for 53% of the total gas sales volume of the Group; wholesale gas sales volume was 2,032 million cubic metres, representing an increase of 29% over 1,573 million cubic metres of last year and accounting for 14% of the total gas sales volume of the Group; commercial gas sales volume was 1,719 million cubic metres, representing an increase of 13% over 1,515 million cubic metres of last year and accounting for 12% of the total gas sales volume of the Group; residential gas sales volume increased from 2,643 million cubic metres of last year to 2,796 million cubic metres, up 6%, accounting for 19% of the total gas sales volume. Distributed energy business recorded the equivalent of 365 million cubic metres of natural gas sales in 2021, compared with the equivalent of 264 million cubic metres of natural gas sales of last year and accounting for approximately 2% of the total gas sales volume of the Group. The total number of customers of the Group reached 15.09 million, representing an increase of 950,000 over that of last year.

In 2021, the COVID-19 pandemic affected the global demand for LNG. In the first half of the year, in the context of oversupply and oil price decline, international LNG prices remained stable. However, in the second half of the year, given the surge in demand and shortage of natural gas supply, international LNG prices reached a record



high. Meanwhile, with significantly rising upstream natural gas prices in the Chinese mainland and intensifying pressure on ensuring supply in the Chinese mainland during winter, the Group faced downside pressure on the gross margin of gas sales in the second half of the year. In addition, strongly promoting coal-to-gas conversion to industrial customers through a gas spread with a lower gross margin to boost gas sales also diluted the overall gross margin of the Group's gas business.

In the upstream, the Group continued to expand channels to purchase lower-cost international LNG, including signing a long-term LNG import agreements together with its parent company HKCG, building a shale gas liquefaction project in Weiyuan County, Sichuan Province, and HKCG's investment in LNG terminal storage tanks in Tangshan, Hebei Province, thus consolidating the Group's independent gas sources and preparing for future natural gas transactions. By the end of the year, the LNG terminal storage tank project in Tangshan, Hebei Province had started preliminary construction. After being put into use, it is expected to enhance the Group's peak shaving capacity in North China and Northeast China.

In July 2021, the Group completed the capital injection to Shanghai Gas, and held 25% of its equity interest. Shanghai Gas has a huge customer base of 6.4 million in Shanghai and the right to manage and operate two LNG receiving terminals. As the location of the carbon trading centre, Shanghai is expected to become a pilot zone for the opening of the carbon market and the trial implementation in various industries in the future. As the natural gas pricing mechanism of Shanghai Gas will be refined in 2022, the Group reached an agreement with Shanghai Gas and Shenergy Group,



the controlling shareholder of Shanghai Gas, to extend the transition period to the end of 2021. The Group will share the results of Shanghai Gas in proportion to its shareholding from 1 January 2022. Based on the Enhanced Strategic Cooperation Agreement entered into with Shanghai Gas, the Group has fully cooperated with Shanghai Gas in the fields of natural gas procurement, extended business and renewable energy to achieve common strategic goals.

Apart from Shanghai Gas, with the reinvestment projects of its project companies taken into account, the Group had four new city-gas projects in the year, namely Changchun Gas Gongzhuling Fengrui Energy Development Co., Ltd. in Jilin province, Hangzhou Yuhang Hong Kong and China Gas Co., Ltd. in Zhejiang province, and Chizhou Qianjiang Gas Co., Ltd. and Anqing Changcheng Hong Kong and China Gas Co., Ltd. in Anhui province. These four projects are expected to bring the Group an annual gas consumption equivalent of 245 million cubic metres five years later.

In addition, with the connection of natural gas pipelines between Russia and the Chinese mainland, the gas bottleneck in Northeast China has been greatly eased. Gas sources have broadened and become more sufficient than in the past, and the energy supply is now more stable. To date, six enterprises in Northeast China (Gongzhuling, Tieling, Benxi, Anshan, Dalian Economic and Technical Development Zone and Shenyang Coastal Economic Zone) have purchased gas from Russia. Sufficient natural gas resources will speed up the upgrading and transformation of the old industrial area in Northeast China. The construction of gas pipelines will stimulate the development of metallurgy, building materials and other industries, and further promote natural gas sales.

In terms of the industrial segment, the coal-to-gas conversion of boilers had contributed 2.7 billion cubic metres of gas sales by the end of the year. In North China, the provincial governments of Shandong, Hebei and Henan successively introduced the coal-to-gas policy of eliminating boilers below 35 steam tonnes. The Group completed coal-to-gas conversion for 1,444 steam tonnes of boilers in the region. For ceramic-making customers with high energy consumption in Northeast China, the Group offered them tailored energy solutions, including the renovation of their kilns and other production equipment, so as to improve energy efficiency and reduce

carbon emissions. It is estimated that when the renovation works are completed in 2022, it will bring an increase of 20 million cubic metres in the Group's gas sales. In Anhui and Jiangxi provinces, the Group made new progress in promoting coal-to-gas conversion of kilns and signed contracts with customers for kiln renovation. After the renovation, their annual gas consumption is expected to reach approximately 19 million cubic metres.

In terms of the commercial segment, the Group used innovative energy solutions to provide customers with a convenient energy use experience and helped drive the Group's overall gas sales.

The Chinese mainland saw frequent occurrence of gas accidents in 2021. On 4 November, the Office of Work Safety Commission of the State Council issued a circular requiring all regions, relevant departments and units to earnestly implement the requirements of the central government, learn lessons from gas accidents, and comprehensively strengthen gas safety in urban areas, in an effort to curb the frequent occurrence of gas accidents.

The Group regards safety production as the top priority. Our parent company HKCG, introduced regular indoor inspection into the Chinese mainland as early as in the 1990s, and became the first gas group to use safety stoves with ignition detection devices in 2005. These two measures were later incorporated into the regulations of the Ministry of Housing and Urban-Rural Development for regulating the gas industry, raising the safety standards for the domestic gas industry. The Board of Director of the Group spearheaded the establishment of the Safety and Environmental Protection Committee composed of relevant senior management, and made comprehensive arrangements for the safety risk management of the Group by holding at least 8 meetings and a number of on-site inspections. The actions taken by the Group's management not only set up a good example, but also promoted the implementation of various safety measures of the Group.

Moving forward, the Group will vigorously invest in developing integrated energy projects such as industrial, residential and commercial distributed heating projects in the city gas market, with a view to providing strong support for the Group's gas sales growth during the 14th Five-Year Plan period. Meanwhile, the Group's companies in all regions are actively expanding the distributed heating business and employing the "gas + integrated energy" development model to tap the potential of existing customers in operating areas.



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## Extended Business

During the year, the Group extended its business footprint and used digital technology to build a lifestyle cloud platform focusing on the two themes of comfort and health, covering a variety of products and health services, including smart stoves, high-end kitchen cabinets, home services, insurance, cooking courses, healthy food, and other lifestyle-related products.

In July 2021, the Group completed the capital injection into Shanghai Gas to hold a 25% stake in it. As one of the largest comprehensive city gas operators in the Chinese mainland, Shanghai Gas occupies a market share of over 90% in Shanghai's gas market, has more than 6.4 million premium natural gas customers, and sells over 9 billion cubic metres of gas annually. The cooperation between Towngas Smart Energy and Shanghai Gas has increased the number of customers of the Group and our parent company HKCG nationwide to nearly 40 million. Shanghai is the city with the highest GDP in the Chinese mainland, and its citizens have considerable spending power. In 2021, Shanghai's per capita disposable income exceeded RMB78,000, ranking first among first-tier cities in the Chinese mainland. Its citizens have a demand for smart home products and a comfortable, healthy lives. By deepening cooperation with Shanghai Gas, the Group gains access to the huge and premium customer base of Shanghai Gas which can boost the initial development momentum of the Group's extended business in the local market. The Group will further tap the consumption potential and demand of customers to open a new chapter for the expansion of extended business.



In 2021, under the favourable “Healthy China” policy, the Group launched the health brand “Moment+”. The Towngas Lifestyle e-commerce platform was upgraded into a comprehensive service platform, “Moment+”, promoting a healthy lifestyle through an online and offline integrated operating model. As at the end of 2021, the number of registered members of the platform reached 6 million, and a total of 30 Taste “Bauhinia” companies affiliated to the Group had entered the e-commerce platform, with total annual sales of RMB4 million.

On the basis of the original gas service and product sales function, the online platform “Moment+” provides articles and short videos on the theme of healthy living, including nutritional recipes, weight management tips, skin care techniques, with a view to giving one-stop health management information. In terms of offline operations, the Group opened six Moment+ Community Lifestyle Experience Centres during the year, and another 20 stores were set up in the traditional customer centres. In addition to gas payment and maintenance appointment services, these stores also provide healthy home service, nutrition consultation, healthy product tasting and cooking classes. Each experience centre is deeply rooted in the community and will provide tailored services that reflect local characteristics.





In terms of stove sales, the sales volume of Bauhinia products has increased year after year. During the year, the Group introduced the smart heating business brand “Towngas Heating” and launched more energy-saving and eco-friendly products to seize business opportunities in the heating market and the coal-to-gas reform. As such, the sales volume of heating products increased significantly, and approximately 20,000 gas heating customers were newly acquired.

The Group continued to enrich the portfolio of smart home products and launched a water heater with remote control function during the year to target customers who find it inconvenient to directly control gas appliances due to narrow home space and installation limitations, in a drive to improve their quality of life and home safety.

Based on the huge customer base nationwide, the Group will accelerate the integration of gas and insurance scenarios services and strive to promote the gas insurance business to increase the value per customer. By doing so, the Group aims to provide customers with more diversified value-added services and an additional protection for their life and property safety while generating extra income. The Group plans to sign cooperation agreements with national insurance brokerage companies to provide brokerage services for gas users within the business scope of the Group and its member companies. Looking ahead, in addition to gas insurance, the Group will expand to property insurance and health-related insurance to provide diversified insurance services. During the year, the gas insurance business had been extended to 80 project companies of the Group.

Consumers in the Chinese mainland have a growing pursuit of higher living standards and quality. Mia Cucina, the high-end kitchen cabinet brand of the Group, is well received by large developers and residential customers by virtue of its quality materials and elegant and fashionable design. Mia Cucina is planning to extend its services to the home space beyond the kitchen, such as designing and customising wardrobes and porch cabinets, so as to provide more comprehensive home design services and meet the market demand for customised design.







# Environmental, Social and Governance





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## Chapter 3: Environmental, Social and Governance (ESG)

The Group continues to uphold the principles of “benefitting society through active participation in social services; and contributing to the community through dedicated efforts in environmental protection”. In doing so, it strives to undertake its corporate social responsibilities to make itself an industry role model in community caring, environmental protection and promotion of the sustainable development of society as a whole to create a better future for its stakeholders.

The Group’s Board of Directors places great emphasis on committing resources to environmental protection, community services and corporate governance. It has set up the ESG Committee consisting of senior management members, who are required to report to the Board of Directors on the implementation of projects and to regularly review the progress of these projects. A department is dedicated to the coordination of community initiatives and environmental activities. The Towngas Smart Energy Volunteer Team has recruited an increasing number of volunteers. As at the end of 2021, the team had over 7,000 volunteers, and the Group contributed more than 300,000 hours to social services during the year.

Moreover, to address investors’ concerns about the ESG performance, the Group continues its efforts to raise the performance in relevant ratings so as to increase transparency. Towngas Smart Energy has

been awarded excellent ratings by several rating agencies engaged in the environmental, social and governance aspects. During the year, it was also rated for the first time by internationally recognised Sustainalytics and included in FTSE Russell ESG Index.

### Charitable Donations

The COVID-19 pandemic continued into 2021. To express our gratitude and support to the frontline healthcare workers committed to combating the pandemic, we donated supplies that catered to their needs. Our volunteers contributed to the community’s fight against the pandemic by donating more than 300 boxes of supplies, including drinks, food, sunscreens, etc., to the frontline healthcare workers. Moreover, the Group continued to launch “Bauhinia Movement” during the year by providing free gas appliances and installation services for impoverished families and disadvantaged groups, conducting safety inspections, and promoting safety awareness in gas uses among the public. In 2021, “Bauhinia Movement” was rolled out in over 30 cities across the Chinese mainland. Highly praised and enjoying recognition by consumers and the government because of its efforts in providing free gas appliances and installation services for the beneficiaries, the Group was featured in the picture album Epic of the New Era – A Pictorial Description of Poverty Alleviation that marked the centennial anniversary of the Communist Party of China, making itself the only selected brand in the gas appliance industry.





## Promotion of Environmental Protection

Towngas Smart Energy holds a large-scale event carrying an environmental theme every year. The event's theme of 2021 was "Environmental Naturalists", which encouraged project companies and employees to reduce waste at source in their daily operations and lives, and strive to turn waste into treasure. The event featured the four themes of "Green Project", "Natural Dreamers", "Towngas Green Planting Day", and "Earth Hour", in which more than 90 project companies participated. In particular, around 60 companies participated in the "Towngas Green Planting Day", on which around 9,600 saplings were seeded.

Moreover, the "Marine Environmental Charity Walk" was held during the year, in which volunteers picked up marine and beach rubbish at Dapeng, Shenzhen and created artworks with the collected garbage. They called on the public to protect the ocean, reduce the use of disposables and cherish the resources on this planet.



## Heart-warming Giveaways during Festival

During the Dragon Boat Festival, the Group once again held the annual charity event "Rice Dumplings for the Community". More than 50 project companies participated in the event, and nearly 1,000 volunteers showed up in reaction to the Group's appeal. Together with members from the local community, education institutions and charities, they made and donated over 20,000 rice dumplings to the communities in need.

## Gentle Breeze Movement

"Gentle Breeze Movement", was launched in 2013 with the purpose of caring for the disadvantaged and those in need. Over the years, the Group has been involved in renovation and repair projects for schools to improve their facilities and learning environment. It also donated books and supplies to many students and provided substantial support to schools and deprived families.

