

REVIEW OF OPERATIONS

HONG KONG BUSINESSES

MAINLAND BUSINESSES

DIVERSIFIED BUSINESSES

**ENVIRONMENTAL, SOCIAL
AND GOVERNANCE**



HONG KONG BUSINESSES

As we celebrated our 160th anniversary in 2022, we overcame the challenges of the difficult business environment. We not only provided customers with new ways to conserve energy and reduce their carbon emissions, but also extended a helping hand to those affected by the epidemic with programmes that provide relief to struggling restaurants, food processing plants, hotels and hospitals.

Resilience in a Year of Continuing Challenges

In 2022, tight social distancing measures to contain the epidemic remained in effect. As a result, GDP for the year contracted by 3.5 per cent, despite the gradual relaxation of these measures towards the end of 2022. Total gas sales dropped slightly

by 1 per cent compared to 2021, while customer accounts rose to over 1.99 million.

Our Commercial and Industrial (C&I) customers, particularly hotels and catering services, faced a challenging business environment at the start of the year due to the citywide lockdown that closed off inbound tourism.

During this period, some boosts to gas sales were provided through the Community Isolation Facility Hotel Scheme and Designated Hotels for Quarantine Scheme, while aviation catering businesses turned to other catering services.



Town gas hot water boilers provide stable hot water supply for the brand-new Regala Skycity Hotel.



Town gas hot water boilers installed by Tai Po Tung Cheong Street Leisure Building achieved significant reductions in maintenance costs and soot.

For our part, we continuously monitored the business environment and launched a variety of programmes to assist C&I customers in need. Among these were promotions to help new small- and medium-sized restaurants get started and our Credit Period Extension Scheme for the Catering Industry in support of local catering operators.

The picture looked less gloomy as travel restrictions were progressively lifted and social activities such as international conferences and events resumed. As we entered the third

quarter of 2022, our gas business began to recover as more restaurants were fully opened for business, flights resumed and tourist arrivals slowly picked up. Moreover, hotels and aviation-related services such as flight catering and commercial laundry businesses revived.

With this gradual return to normal, we believe our business prospects for 2023 look much brighter as Hong Kong reopens its border to visitors from the Chinese mainland and overseas.

Tariff adjustment

For the first time in three years, Towngas raised its basic tariff after delaying the increase by one year owing to the epidemic. The increase was necessary as operating costs, including materials and staff expenses, have risen substantially since the last tariff adjustment. The increase of 4.4 per cent, effective 1st August 2022, amounts to up to an additional HK\$10 per month for around 70 per cent of residential customers and less than HK\$290 for about 50 per cent of commercial and industrial customers.

Around 50,000 beneficiaries of the Towngas Concession Schemes, including the eligible elderly, people with disabilities, single-parent families and low-income families, will continue to enjoy a 50 per cent discount on the first 500 MJ of town gas consumed.

Innovative Carbon Reduction Solutions

Acceptance of our Integrated PAU with Desiccant Wheel (Integrated D-PAU) gained traction among customers during the year, due to its cost-effectiveness and proven indoor air quality and carbon reduction capabilities.

In 2022, we secured a contract for our Integrated D-PAU that will enhance the air conditioning system at the Heritage Conservation and Resource Centre in Tin Shui Wai and preserve the valuable artefacts at Hong Kong's public museums.

Now underway, the project is scheduled for completion in 2026. We also arranged to have Integrated D-PAU systems installed at the wet laboratory buildings of the Hong Kong-Shenzhen Innovation and Technology Park in the Lok Ma Chau Loop area. A total of 31 Integrated D-PAUs will be installed for these buildings' laboratory rooms, which are expected to be completed in 2024.

In the hotel sector, the newly opened Regala Skycity Hotel has adopted gas hot water boiler system for hot water supply. Furthermore, two upcoming large-scale hotel developments, Hopewell Centre II and Cheung Sha Wan Hotel of Sun Hung Kai, will adopt town gas for different applications, including hot water type desiccant dehumidifiers for active indoor humidity control, hot water boiler system for hot water supply and energy efficient gas appliances for food and beverage services.

The innovative technology that goes into our Integrated D-PAU system won recognition at the 2021-22 Hong Kong Awards for Industries: Equipment and Machinery Design Award, organised by The Chinese

Award, organised by The Chinese Manufacturers' Association of Hong Kong. This is the third award for the Integrated D-PAU in both local and international markets.

In a separate demonstration of Towngas' environmentally-friendly technology, we built Hong Kong's first cross-boundary waste-to-energy application for Maxim Group's fourth food factory next to our gas production plant. The waste heat captured by the plant delivers hot water to the factory, saving up to 790 tonnes in annual carbon emissions. The project also

showcases how the circular economy can be effectively implemented in Hong Kong's industrial estates.

Another green technology, our combined heat and power (CHP) system, is helping to reduce carbon emissions for our C&I customers. In 2022, we upgraded the existing CHP system at Nethersole Hospital to provide a Combined Cooling, Heating and Power (CCHP) function through the utilisation of waste heat. This brought an additional saving of 5.7 TJ in energy and a 530 tonnes reduction in carbon emissions. Moreover, a new landfill gas-powered CCHP system will supply 1.5 MWe of electricity for North District Hospital. This project,

which is scheduled for completion in 2028, will reduce carbon emissions by a further 5,268 tonnes per year.

At Precious Blood Hospital, we replaced the old diesel boilers with our new gas hot water system. The system not only helps to meet the increased demand for heating in the hospital, but also reduces carbon emissions by 11 tonnes (equivalent to planting 478 trees) to create a greener environment for the surrounding residential neighbourhood. Other hospitals have since expressed strong interest in this gas-powered system.

On board with hydrogen

In 2021, we began looking at the feasibility of extracting hydrogen from the town gas in our pipeline network for the fuel cell application of Hong Kong's bus companies. A trial project was then commissioned at our Tai Po Gas Production Plant in 2022. Towngas hydrogen has many advantages to better equip us to support Hong Kong's Climate Action Plan 2050 for carbon reduction:

- Hydrogen already makes up around 50 per cent of our town gas mix
- We have extensive experience in the careful handling of hydrogen
- Our 3,700-km pipeline network carrying hydrogen eliminates the need to transport and store highly pressured hydrogen cylinders
- Hydrogen is cleaner as it emits only water vapour

Interest in this project is very high among the city's bus operators and oil companies.



Tse Chin-wan, Secretary for Environment and Ecology of the Hong Kong SAR (photo on top, third from right) and Regina Ip, Convenor of the Non-official Members of the Executive Council (the following photo, centre), visited our Tai Po Gas Production Plant to learn about our newly developed hydrogen extraction system.

CELEBRATING OUR 160TH ANNIVERSARY

Since 1862, we have evolved from a company that lit up the streets of Hong Kong into a leading provider of gas products and services for people from every walk of life. As we celebrate our 160th anniversary, we are looking back at our heritage of achievement and looking forward to a smart energy future powered by Towngas innovation.

At the 160th anniversary celebration reception on 12th August 2022, our officiating guest John Lee, Chief Executive of the Hong Kong SAR, praised Towngas for the safe, reliable high-quality gas services we have been providing to the people of Hong Kong. Accompanying Mr Lee were our Joint Chairmen, Dr Lee Ka-kit and Dr Lee Ka-shing. We invited a number of notable political and business figures to join us for the celebration.



The opening of CulinArt 1862 at our Towngas flagship store in Causeway Bay was another of our 160th anniversary celebrations. This contemporary new gastronomic concept offers both casual and fine dining in the same space, with specially designed menus featuring exquisite dishes from all over the world. ESG (Eco, Sustainable, Green) principles were integrated into the chef's creations for a unique and extraordinary experience.



To thank our customers for their support over the years, we launched a free 160th anniversary commemorative NFT project and held a lucky draw for eService users with more than HK\$1.6 million in prizes.



Towngas created a beautiful miniature set featuring the four gas lamps on Duddell Street in Central and the stone steps where they are located. Net proceeds from the sale of the sets went to Hong Kong Community Network, a charity helping children of ethnic minorities.

Music to our ears! In 2022, we commissioned two popular young singers to reinterpret our Towngas theme song. The song, which appeals to both young and mature audiences, was publicised on TV, radio, outdoor media and social media.



Convenient Smart Appliances and Services

In 2022, we continued to launch more smart appliances under our TGC and SIMPA brands. One of these was our first series of smart water heaters, which come with Internet of Things (IoT) functions such as a remote or scheduled hot water circulation on or off function, personalised temperature settings, gas and water consumption monitoring, and appliance error notifications. All these gas appliances can be monitored by smart phones, which not only enhances user convenience but also helps to save energy and water consumption.

Our gas cookers can now also be retrofitted with a smart controller to provide IoT functions. These include remote monitoring of the appliance and emergency shutdown, as well as mobile phone alerts when burners have not been turned off when customers leave their homes. The device is a perfect and economical solution for customers who want to upgrade their existing cooking appliances without purchasing new ones. During the year, we launched a new rechargeable battery module for gas cooking appliances that require battery cells for ignition and functional controls. Since the rechargeable battery does not need replacing, customers can save time and money and reduce waste to landfill.

To improve our customer service, we continued enhancing our online services, such as our popular AI Chatbot, Tinny. It can now be used to make maintenance appointments and other general enquiries, as well as checking outstanding bill accounts. As a result, Chatbot usage increased by 68 per cent compared to the previous year. Additionally, we developed an AI

2022 Results of Towngas Service Pledge



Installation Intelligence System that recommends the most appropriate options for customers browsing for appliances online. By saving customers time, the system increased 83 per cent in sales of appliances online. We also began notifying customers via SMS that they had the option of switching to an online service when queuing up in our telephone system for maintenance enquiries. With the introduction of this e-initiative, the number of online maintenance appointment bookings increased by 56 per cent.

Gas Supply Network Expansion

Our pipeline network covered 86 per cent of Hong Kong households. We have continuously expanded our network to meet the growing demands for gas supply.

Following the announcement of the Northern Metropolis plan by the Government in 2021, we began preliminary planning for a supply network of medium- and low-pressure pipelines to serve the new housing developments that will be located there. The Northern Metropolis covers an area of about 300 square kilometres, where the

population is expected to increase from around 960,000 residents to 2.5 million. Piping work has already started for the first batch of residents who will move into the area in 2026. When the Northern Metropolis is fully occupied, annual gas demand is expected to increase. We also undertook a route study during the year for a high-pressure pipeline section linking Lam Kam and Au Tau to enhance gas supply reliability to the North-West New Territories and Lantau Island.

To meet the gas supply needs of new housing developments in Hong Kong West, we started plans for a cross-harbour submarine pipeline together with the associated offtake or pigging stations. A feasibility study will commence in 2023. To reinforce gas supply reliability to existing customers in Tseung Kwan O and Kowloon East, we began laying a 3km Intermediate Pressure 600mm pipeline from New Clear Water Bay Road to Sau Mau Ping Road. The new pipeline will also serve new housing development projects at the Anderson Road Quarry Site and the Kai Tak Development area.

MAINLAND BUSINESSES

Despite the challenging operating environment, our utility businesses on the Chinese mainland maintained steady growth in 2022. Beyond our traditional business of gas supply, we also became increasingly focused on the provision of integrated energy solutions, in line with our strategy of decarbonisation and digitalisation that contributes to the country's low-carbon transformation.

Meeting Challenges in a Year of Uncertainty

In 2022, affected by the epidemic, there was a decline in economic and industrial activities and a corresponding drop in natural gas consumption. Although we had to contend with high gas prices in the year, we were able to achieve positive growth of approximately 3 per cent in total volume of gas sales to approximately 32,100 million cubic metres.

International gas prices fluctuated wildly during the year, causing an overall increase over the previous

year. In view of the Group's strategy of independent gas sources, we established a gas source operation centre to coordinate and make good use of gas source procurement. We have been diversifying our supply sources through leveraging our own energy investments along with the strategic cooperation with PipeChina to promote the interconnection of provincial pipelines. All these initiatives helped us secure a more reliable supply of gas, relieve pressure on costs and improve the gross profit of gas business.

In 2022, we continued to aggressively target high-consumption industrial clients

and manufacturers of green energy products, such as photovoltaic (PV) glass and lithium batteries. In addition, we made a concerted effort to promote our coal-to-gas boiler conversion business in strategic industries and further develop our Gas + Thermal Energy business.

During the year, the number of city-gas projects in our portfolio continued to expand, with the total number of projects we operate rising to 315. By the end of 2022, we were serving more than 37 million customers in 24 provincial regions.



We generate steam using natural gas and have set up an energy station to provide heat for the clients at the Economic and Technological Development Zone in Maanshan, Anhui province.

GAS + THERMAL ENERGY BUSINESS

In line with the global drive for carbon neutrality, our business customers must meet increased Environmental, Social and Governance (ESG) requirements, such as disclosures of their environmental footprint. We are in the unique position of being able to provide these customers with a total integrated energy solution that helps them meet these requirements, as we have deep expertise in this area gained in both the Chinese mainland and Hong Kong.

During the year, we made a tremendous effort to bring our Gas + Thermal Energy services to more customers as a new avenue of growth and significant business strategy for Towngas. These include Combined Cooling, Heating and Power solutions with individual power and district power stations to bring heating, hot water supply, cooling and steam to residential, commercial and industrial customers.

We see great potential for this new direction in our expanded gas business, as we can leverage the more than 400,000 industrial and commercial customers we serve across the Chinese mainland. Moreover, demand is particularly high in northern areas of the country for the residential space heating products. By targeting industrial parks and residential districts, we can conduct better energy planning and develop solutions, capturing large concentrations of high energy-consuming customers.



We provide a stable supply of steam to help various clients save energy at the textile industrial park in Suzhou, Jiangsu province.



We offer specialised energy-saving and eco-friendly solutions to improve environmental and economic efficiency at the commercial building in Jinan, Shandong province.

Following the success of our Gas + Thermal Energy projects, there are additional opportunities to secure more regional energy projects, as well as other related businesses within our mix of integrated energy solutions. To that end, we are exploring the possibility of providing renewable energy and energy and carbon management services, based on local conditions and the individual needs of customers.

The Zero-carbon Smart Industrial Park in Nanjing, Jiangsu province, uses natural gas to supply heating, cooling and hot water, serving nearly 200,000 users.



The biopharmaceutical plant in Suzhou, Jiangsu province, uses natural gas to generate energy including heating, cooling and steam.

Exploring the Potential of Hydrogen

In our transition to cleaner energy, we have been exploring the feasibility of integrating natural gas and hydrogen, which we believe has great development potential. During the year, we launched a demonstration project of blending hydrogen into natural gas pipelines in Weifang, Shandong province. We also explored the idea of transforming existing natural gas stations into hydrogen refuelling stations in Guangdong and Jiangsu provinces, as well as the potential of using our underground gas storage facilities for storing hydrogen.

All these developments are part of the bigger story taking place at Towngas, as we evolve from a traditional company merely supplying gas into an integrated energy solutions provider focused on decarbonisation and digitalisation.

Progress in Our Midstream and Upstream Projects

We invest in midstream and upstream projects, as these enable us to increase the capability of owning the independence of gas sources, helping guarantee a variety of supply sources and reduce costs. At the end of 2022, we operated 14 midstream and upstream projects, including long-haul pipelines, gas storage facilities and liquefied natural gas (LNG) terminals.

We also made steady progress on our shale gas liquefaction plant in Weiyuan, Sichuan province. Part of the production capacity will be completed and commissioned in 2023. It will be used by companies in Sichuan province not only for peak shaving but also for natural gas trading and sales.

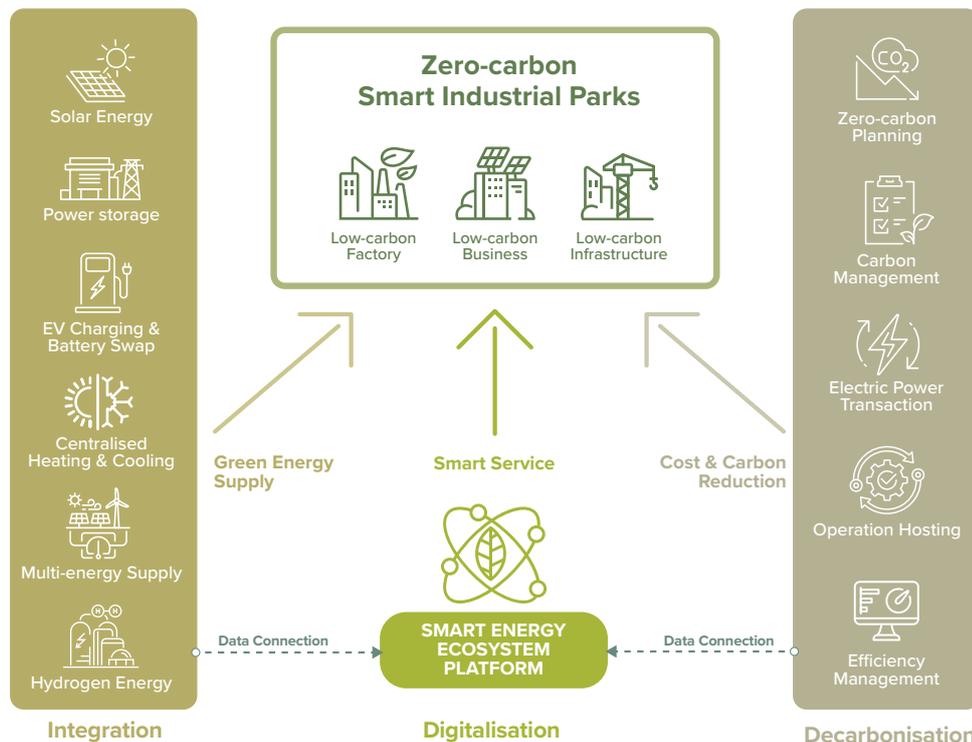
In 2022, two new gas wells were commissioned in our underground salt-cavern gas storage project in Jintan, Changzhou, Jiangsu province. After connecting to the national pipeline network and completing interconnection with the Jiangsu provincial network, the facility increased its operating capacity to 277 million cubic metres, further expanding peak-shaving capability and providing a reliable, stable and cost-efficient gas supply for our local industrial customers and city-gas projects in eastern China.

Our investment in the LNG receiving terminal project in Caofeidian, Tangshan, Hebei province, will provide gas storage and peak-shaving capacity for our city-gas companies and partners in north and northeast China when it is expected to be commissioned in 2023.



In Jintan, Changzhou, Jiangsu province, we operate an underground gas storage facility with increasing peak-shaving capability.

Our Model of Zero-carbon Smart Industrial Parks



Government Support for Clean Energy

While the Chinese government remains committed to the “30-60” dual carbon goals, natural gas is an indispensable transitional energy source.

In a paper released in November 2022, the National Development and Reform Commission and the National Energy Administration asserted that natural gas and new energy as well as multi-energy solutions, not only provide a clean and low-carbon form of energy, but also contribute to the security and stability of the new energy supply system. The government has therefore issued policies encouraging high energy-

consumption industries to switch from coal to gas and other forms of green energy in order to reduce emissions.

These policies bode well for Towngas’ future business prospects on the Chinese mainland over both the short and long term, given our unrivalled expertise in green energy.

Expanding Renewable Energy Business

During the year, we made a tremendous effort to develop renewable businesses. Our total solution services in integrated smart energy can help our customers fulfil their emission requirements, reduce the cost of energy, and achieve better green governance. At the end of 2022, we had 183 renewable energy projects in 24 provincial regions on the Chinese mainland. These projects

included multi-energy supply (cooling, heating and electricity), photovoltaics, energy storage, charging and swapping power stations, and integrated energy services for industrial and commercial customers.

Throughout the Chinese mainland, there are approximately 2,600 industrial parks at the national and provincial levels. We are installing solar PV power generation systems for these industrial parks, mainly on the rooftops of their production plants and logistics warehouses. By rapidly capturing a dominant share of this market, we can achieve higher returns and explore more business opportunities. We are now among the industry-leading companies involved in rooftop PV installation on the Chinese mainland.

NEW BENCHMARKS IN SMART ENERGY

During the year, we created several showcase projects in zero-carbon industrial parks and low-carbon factories that demonstrate our capabilities in providing integrated smart energy solutions. The success of this model can be rapidly replicated to further expand our businesses.

One of our most notable success stories is the zero-carbon industrial park in Taizhou, Jiangsu province. In this project, we have been providing a full range of smart energy services for companies in Hailing district, such

as distributed PV systems, energy storage, EV charging and energy saving as well as our Towngas Smart Energy Platform. Developed in collaboration with Tencent Cloud, this smart energy platform has connected more than 10 per cent of the clients in the park and helped them monitor and analyse their energy data more efficiently.

At our zero-carbon industrial park project in Tangshan, Hebei province, we are serving companies in the steel, ceramics, food and chemical

industries, all of which are highly energy-consuming. Our services to these customers include the installation of distributed photovoltaic systems and EV charging stations, as well as centralised space heating facilities utilising waste heat. Equipped with a SaaS system, the park can utilise the cloud-based system to effectively manage its carbon emissions and energy use thereby setting an example for other high energy consumption industrial parks.



Zero-carbon industrial park in Taizhou, Jiangsu province.





Zero-carbon industrial park in Tangshan, Hebei province.



A model low-carbon factory

In addition to distributed photovoltaic projects, many of our customers are looking for energy-saving systems for their equipments, such as boilers, air conditioners and air compressors. One example is IPE Group, a Hong Kong-based company that makes metal components for customers on the Chinese mainland and worldwide.

For this company's Guangzhou-based factory, Xinhao Precision Technology, we provided an integrated smart energy solution based on the four-pronged approach of "Green Power + Energy Saving + Intelligence + Offsetting". It includes a 5.2MW distributed



photovoltaic system with the capacity to generate 5.4 million kWh of green power annually. We also upgraded their industrial central air-conditioning and air compressor systems and installed a waste heat recovery system that supplies domestic hot water for 3,000 customers. With our solutions, the client has obtained the 2021 carbon-neutral certification issued by the Guangzhou Emissions Exchange.

In August 2022, we acquired a project to offer low-carbon solutions for the public building complex in Futian district, Shenzhen. The first batch of buildings we serve consists of 129 public buildings, including large offices, schools, hospitals, convention and exhibition centres. In this project, our services include PV system, storage and charging integration, high-efficiency air-conditioning system and smart energy

management platform, helping these organisations save energy and reduce carbon emissions.

Under the national's 14th Five-Year Plan, industrial parks have become the primary target for reducing carbon emissions since they contribute nearly one-third of all carbon emitted on the Chinese mainland. The first step is to quantify the carbon emissions in these parks, a service in which we have already demonstrated our expertise. Eight

major industry sectors have been identified by the Government as priorities for meeting its dual carbon reduction goals: petrochemicals, chemicals, building materials, steel, non-ferrous metals, paper making, electricity and aviation. Pressure is further being exerted on companies that are part of global supply chains to achieve carbon neutrality with respect to Scope 3 emissions, in compliance with international standards.

New energy storage products

Together with Contemporary Amperex Technology Co. Limited (CATL), we have set out to develop advanced technology focused on energy storage, including energy storage equipment, energy management systems and cloud platforms. In November 2022, we commissioned our first energy storage system in Zhejiang, with a capacity of 2,260 kWh. It is capable of monitoring energy usage and storage during low consumption periods for use in peak periods. Its cloud-based smart management system provides real-time monitoring, safety alerts, demand-side responses, electricity trading and a virtual power plant.

Water and Environmental Businesses

Our water supply business served 2.7 million households on the Chinese mainland with total water sales of 1,027 million tonnes in 2022.

Over the past few years, our business has been expanding from tap water supply and wastewater treatment to urban waste utilisation and intelligent water plant facilities. Under our subsidiary Hua Yan Environmental, major projects include urban organic waste utilisation in Jiangsu province and Anhui province.

The Group's urban organic waste utilisation project in Suzhou Industrial

Park has cumulatively processed approximately 500,000 tonnes of organic waste to produce 22 million cubic metres of bio-natural gas. This is achieved by fermenting organic food waste and then purifying the resulting product into natural gas for injection into the pipeline network. What is left over (the treated solid residue) is turned into organic fertiliser for park greening. The project is part of the country's efforts to build zero-waste cities and reduce the burial of solid waste. We see this drive as an opportunity for us to step up the collection and treatment of food waste, including expired food and other organic waste, by entering

into long-term contracts with large-scale food enterprises. As a result, we will be able not only to reduce urban waste but also to increase the output of bio-natural gas for our gas projects.

We have integrated our environmental sanitation business in Changzhou, Jiangsu province, by providing one-stop services in waste collection, transportation and waste treatment. Projects underway include a sewage treatment project in Wujin High-Tech Industry Development Zone with a processing capacity of 30,000 tonnes per day, which will be commissioned in the third quarter of 2023. Moreover, the preliminary work has also commenced for the construction of two projects in Changzhou, including a domestic waste incineration treatment facility for power generation in Jiashan and a domestic waste transfer station in Wujin district.

This distributed PV pilot project at a water plant in Xiliangshan, Anhui province, will help save electricity costs and reduce carbon emissions.



A TOTAL TOWNGAS LIFESTYLE EXPERIENCE



Advocating healthy lifestyle, we provide high quality services such as cooking classes at our Moment+ Community Healthy Lifestyle Experience Centres.

From the Group's strong base of more than 37 million users, we have extended our businesses beyond gas into a wide range of home and health services and products. Under the Towngas Lifestyle umbrella, we are

building smart kitchens that utilise the latest IoT technology and providing value-added services that enable our customers to enjoy a safer, healthier and more comfortable home.



We provide comprehensive door-to-door services such as home cleaning and cooking.

IoT Smart Kitchen

Smart Range Hood

Smart timer

Presetting activation time

Remote control

Switching on or off and adjusting fan speed anywhere, anytime

Easy monitoring

Showing fan speed, air change duration, connection status

Smart Water Heater

Smart timer

Setting up an instant hot water supply schedule

Control via mobile device

Remotely adjusting water temperature, instant hot water supply schedule and energy-saving settings

Overtime and error notifications

Smart Stove

Remote control

Turning off the stove remotely

Safety notifications

Automatic cut-off for protection
Disconnection notification to mobile phone
Out-of-home cut-off reminder



REVIEW OF OPERATIONS - MAINLAND BUSINESSES

Focus on Smart Kitchens

During the year we explored new opportunities for our smart kitchen solutions, including our Bauhinia appliances and Mia Cucina kitchen cabinets as well as smart home systems, HVAC systems and gas alarms. We also established strategic partnerships with well-known industry brands, including Viessmann, Gearea 5H Home and Meida Integrated Stove, to expand our product range and reinforce our brand reputation for safety and reliability. Moreover, we participated in marketing events such as a kitchen and bathroom industry conference and strengthened our engagement with household appliance and kitchenware associations to increase the reach of our products and services.

Despite the challenges of the epidemic and significant increases in raw material costs during the year, our premium Mia Cucina cabinets recorded steady performance as a result of our marketing efforts aimed at regional property developers on project sales. In the future, we will expand business beyond kitchens to include entire homes.

To enhance customer loyalty, we have been developing the healthy lifestyle business with a focus on healthcare products and services. We also connected our online and offline businesses by setting

up Moment+ Community Healthy Lifestyle Experience Centres as one-stop physical venues offering a variety of community activities and healthy lifestyle experiences. The comprehensive range of services and activities provided by these centres include health management, nutrition and diet consultation, cooking classes and in-home cleaning services.

The Towngas China Comfort Living Festival utilised multiple social networking and livestreaming channels to reach potential customers and increase sales.



Mia Cucina, our Total Kitchen Solution of premium kitchen equipment and cabinets are well received among customers.

During the year, we made greater use of various social media channels to increase the frequency of our customer engagements. In addition to our official social media accounts, we targeted potential customers through micro-groups on WeChat, which helped us maximise publicity and increase sales leads for our healthy lifestyle products and services.

Looking ahead, we see tremendous growth potential for this market as people became more health conscious, particularly during the post-epidemic era and in light of the Healthy China Initiative.

Annual sales of the insurance business achieved satisfactory growth. In 2022, we signed a strategic cooperation framework

agreement with Beijing Nova Insurance, an affiliated organisation of FSE Lifestyle Services Limited, to form joint working teams for providing insurance brokerage services. In the future, we will explore more business opportunities in home- and health-related insurance to enrich our product line and generate additional revenue.

To support our city-gas and Towngas Lifestyle businesses, we continued to enhance the Towngas Lifestyle Cloud Platform. In 2022, the number of registered members of the platform reached approximately 15 million. The integrated platform will be compatible with the back-end systems for smart kitchens, Moment App, our insurance business, hotline centres and other

business operations. By putting all these services under one roof, we will be able to increase service efficiency, reduce manpower costs and create better customer experience while accelerating the digital transformation of the Group.

Breakthrough in cybersecurity – Towngas security chip (TGSE CHIP)

Towngas Lifestyle has formed a new partnership with StarFive and China Five to develop smart chips in line with the national data security policies and the digital transformation of the industry. In 2022, we launched a new IoT chip and security platform based on a high-performance RISC-V core, the first product of its kind in the industry. Initially, the new IoT chip will be applied in our gas meters, making them safer, smarter, more energy efficient and more capable of defending against cybersecurity threats. We will continue to expand its application in our smart kitchen platforms and gas network systems.



DIVERSIFIED BUSINESSES

Our investments in sustainable energy and innovative green solutions made satisfactory progress during the year. The Group's diversified businesses achieved solid performance and continued to offer manufacturing and engineering services, not only to support our core businesses but also to generate additional returns for external clients.

Sustainable Energy

In Shanxi province, we operate sustainable gas to liquefied natural gas (LNG) projects using feedstock derived from coalbed methane, while in Ningxia province we produce LNG with coke oven gas as feedstock. Both achieved exceptional results in the year, owing to skyrocketing LNG prices and tight global supply. These additional sources of gas to our city-gas projects help to ensure stable supply and save costs.

During the year, we made good progress in establishing a business platform with strategic joint venture partners for marketing our proprietary technology that produces advanced high-value carbon materials.

We also had our sustainable chemicals business certified by an international sustainability and carbon certification body in the third quarter of 2022.

Sales of our sustainable product, which have environmental value in maritime fuel and chemical markets, are expected to begin in second half of 2023.

EcoCeres, Inc. (EcoCeres) was set up in 2021 to develop businesses using waste-based biomass as feedstock. Utilising the patented technologies and R&D capabilities previously developed by the company, EcoCeres offers decarbonisation solutions to attain carbon neutrality.

EcoCeres' plant for the production of hydro-treated vegetable oil (HVO) and sustainable aviation fuel (SAF) in Jiangsu province started industrial-scale production in the fourth quarter of 2020. In 2022, our SAF production facility acquired ISCC-CORSIA Plus

certification – a world's first in this industry that is so critical for the future of sustainable aviation. Since its commissioning in the first quarter of the year, the plant has reached its annual design capacity of 300,000 metric tonnes, with daily output exceeding 1,000 metric tonnes. As at the end of 2022, almost 40,000 metric tonnes of SAF had been produced and sold to aviation markets in Europe and the Far East.

To deliver decarbonisation solutions and meet the growing demand for green energy products, EcoCeres began constructing a new facility for the production of HVO and SAF in Malaysia during the year. It will produce biofuels based on 100 per cent waste-based feedstock.

EcoCeres' HVO plant in Zhangjiagang, Jiangsu province, utilises proprietary technologies to convert waste-based bio-grease into hydro-treated vegetable oil.



Engineering

U-Tech Engineering Company Limited (U-Tech) provides clients with a comprehensive one-stop-shop service for its building services, civil engineering, specialised trenchless technologies and technical expertise. In 2022, U-Tech secured a fire services installation contract for residential developments in the Kai Tak Development area. It also participated in the regular maintenance of new marine-related works, such as the seawalls and piers of Hong Kong's Civil Engineering and Development Department. In line with Towngas' ESG policies, U-Tech also installed more than 660 solar panels at the Tai Po Gas Production Plant, which are designed to generate 330,000 kWh annually.

Manufacturing

M-Tech Metering Solutions Company Limited (M-Tech) is in the business of developing and marketing smart gas meters. It makes use of the latest advances in technology, such as Micro-Electro Mechanical Systems and Narrowband Internet of Things (NB-IoT), to deliver wider measuring ranges and smart features. During the year M-Tech achieved record sales of 500,000 residential NB-IoT meters. For the year ahead, we plan to introduce an even smarter residential meter that will incorporate an end-to-end RISC-V encryption chip that complies with the national tier-two encryption standard for more secure data transfer. Another new product, the Ultrasonic Gas Meter, was launched in partnership with a leading Japanese company.

G-Tech Piping System (Zhongshan) Company Limited (G-Tech) supplies high-quality polyethylene (PE) piping and related ancillary products. This business is supported by



M-Tech plans to introduce an even smarter residential meter that will incorporate an end-to-end RISC-V encryption chip for more secure data transfer.

GH-Fusion Corporation Limited (GHF), a joint venture between Towngas and Fusion Group (United Kingdom), which specialises in PE fittings. G-Tech's production sites are located in Zhongshan, Guangdong province, and Maanshan, Anhui province, with a total production capacity of more than 22,000 tonnes of pipes per year. These facilities, along with the company's strategically located logistics centres, make G-Tech a preferable choice among customers looking for quality products and high distribution efficiency. Since 2021, GHF has also been operating from a new, expanded factory capable of handling overseas orders from India and other developing countries with excellent sales potential.

Telecommunications

Towngas Telecommunications Company Limited (TGT) provides telecommunications services to Hong Kong, the Chinese mainland and international telecommunications service providers, operators and corporations. TGT today has world-class data centres across Hong Kong and the Chinese mainland, offering

strong connectivity and advanced ICT services. To meet the rising demand for data centre services in Hong Kong, TGT is undertaking an expansion project at the Tseung Kwan O Data Centre in two phases. The first phase, which was completed in 2022, offers the latest data centre design to customers, particularly those in the financial sector.

TGT is also developing one-stop smart building solutions to meet the requirements of the Internet of Things (IoT) era, including 5G Sharing System and Wi-Fi 6 coverage. In 2022, TGT deployed these solutions in commercial buildings, hotels and residential sites.

ENVIRONMENTAL, SOCIAL AND GOVERNANCE

ESG (Environmental, Social and Governance) is at the heart of everything we plan and do at Towngas and is embedded into our daily operations and businesses in Hong Kong and the Chinese mainland. In 2022, we continued to provide innovative solutions that contribute to a greener future and long-term value, while carrying out our tradition of caring for the community through our socially responsible programmes.

Our ESG Approach: Leadership from the top

The leaders of the Group set the direction for Towngas' ESG strategy, with a special focus on energy transition and the development of low-carbon and zero-carbon businesses.

During the year, we have formulated a new ESG Strategy "ENERGY" with six pillars: **Energising the Ecosystem, Neutralising our Footprint, Engaging**

with Society, Revitalising our Strengths, Greening the Future and Young-at-heart with Resilience.

This Strategy has been endorsed by Towngas' ESG Committee.

The ESG Committee, which oversees Towngas' ESG strategies, policies and practices, comprises our Executive Committee Members and relevant senior executives.

👏 We recognise that climate change is happening right now, and extreme weather will have a huge impact on the ecological chain. Therefore, we must reduce our GHG emissions to slow down the effects of climate change. All of us must take collective and immediate action to limit temperature rise in order to address this pivotal challenge for the sustainability of our planet. 🌱

Dr Lee Ka-kit, Towngas Chairman

ESG Symposium 2022

On 11th November, Towngas joined the Hong Kong Management Association to host the ESG Symposium 2022, the first event of its kind in Hong Kong by commercial sector, covering a wide spectrum of ESG topics in one venue. Tse Chin-wan, the Secretary for the Environment and Ecology of the HKSAR, was the officiating guest. Other guests from sectors such as public utilities, finance and investment, social welfare and corporate governance also gave keynote speeches and participated in panel discussions. A total of more than 5,000 participants from Hong Kong, the Chinese mainland and other countries/regions attended the hybrid Symposium.



Energising the Ecosystem

Conserve and utilise resources mindfully with innovative technology and mitigate the impact on biodiversity.

Towngas is committed to minimising the impact of our operations on the environment, which includes mitigating our impacts on biodiversity. During the year, we published the *Climate-related and Nature-related Directive Guide* in response to the Taskforce on Nature-related Financial Disclosures (TNFD) framework. This made Towngas the first Hong Kong company to respond to the TNFD framework for evaluating biodiversity risk. Also, in alignment with the TNFD, we conducted a LEAP nature risk assessment and identified 11 priority sites from a natural capital and biodiversity perspective.

We also make a strong effort to avoid areas rich in biodiversity or close to World Heritage areas and International Union for Conservation of Nature (IUCN) Category I-IV protected areas. Other measures include minimising digging on public roads and using trenchless technology during pipeline construction and maintenance. Additionally, we are promoting biodiversity awareness through community investment and training programmes.

Pipeline leakage study

In collaboration with a university in Hong Kong, we organised a research project and developed a method for quantifying our pipeline leakages according to the unique pipeline landscape in Hong Kong during the year. The project concluded the leakage rate from our pipeline falls between the range of 0.045 to 0.13 per cent.

Neutralising our Footprint

Decarbonise our operations and value chain to achieve carbon neutrality and strengthen climate resilience.

As a responsible business, we believe it is vital to factor climate change impacts into our business decisions and to promote decarbonisation. To that end, we strive to minimise our emissions with the aim of achieving carbon neutrality by 2050, in support of the Chinese mainland's "30-60" dual carbon goals and Hong Kong's Climate Action Plan 2050. Our two intermediate targets for 2025 are:

- To reduce group operational GHG emissions by 10% (2020 baseline), and
- To reduce 10 million tonnes of GHG emissions in the environment per year through coal-to-gas, solar photovoltaic power generation, and energy efficiency improvement projects, among others.

Carbon Intensity of Our Gas Production



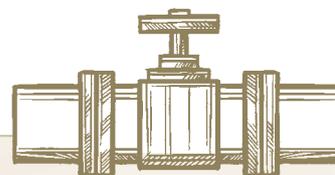
0.576 kg CO₂e/unit of town gas
(a reduction of 25 per cent since 2005)

TCFD Alignment

We have been reporting our climate efforts against the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) since 2019. In 2022, we updated the climate scenarios with the latest internationally-recognised models and enhanced our disclosures with financial impacts. This allows us to factor climate change impacts into our business decisions and improve our climate resilience. During the year, we also became an official supporter of the TCFD.

Methane Emissions Reduction

We are also striving to reduce methane emissions. During the year, we became a signatory of the Methane Guiding Principles partnership, while Towngas Smart Energy joined the China Oil and Gas Methane Alliance to control methane emissions.



Supporting a voluntary carbon trading market in Hong Kong

During the year, we joined the Hong Kong Exchanges and Clearing Limited's (HKEX) Hong Kong International Carbon Market Council, for which we will be offering our expertise on the development of carbon trading. We were also among the first users to complete a carbon trade through Core Climate, the new international carbon marketplace established by HKEX.



Engaging with Society

Fulfil our responsibilities as a corporate citizen and create shared value for our customers and communities.

As a socially-responsible organisation, we recognise that our mission extends to the people in the communities we serve. To promote community health and wellness, the environment and youth development, we continued to collaborate with a variety of associations and institutions in 2022.

We also provided caring programmes for the people on the Chinese mainland, with a focus on the underprivileged and schoolchildren in rural areas.

Community Health and Wellness

Sharing the Warmth in Mid-Autumn Festival

Since 2001, we have distributed 2.96 million mooncakes in our Mooncakes for the Community initiative. In 2022, nearly 200 charities and local organisations benefitted from this initiative. On 3rd September, Towngas volunteers joined hands with the

Hong Kong Housing Society to stage an online and offline programme to celebrate Mid-Autumn Festival with over 250 elderly. In the Love on Delivery: Mid-Autumn Edition programme, we collaborated with the Christian Family Service Centre to donate HK\$300,000 worth of food and beverage vouchers to 500 families.



Peter Wong (first from right), Managing Director of Towngas, gives away mooncakes and gift bags to the elderly.



Chef Anchor 2.0

Since 2017, we have been running the Chef Anchor programme, Hong Kong's first procedural cooking training programme, with a focus on mild cognitive impairment patients. A report on the effectiveness of Chef Anchor 2.0 was released in 2022, which showed this programme has been effective in enhancing the physical, mental and social health of elderly people with subjective memory impairment.

Fight against the Epidemic Together

During the year, we donated anti-epidemic items worth HK\$3 million to disadvantaged groups in the community. Through our HK\$10 million Dining Coupon Scheme, every Towngas Concession Scheme account holder was entitled to a set of dining coupons worth HK\$200, benefitting approximately 50,000 households in Hong Kong.



Providing a reliable gas supply to combat the epidemic

When the fifth wave of the epidemic emerged early in the year, Hong Kong stepped up its efforts to construct community isolation and treatment facilities (Makeshift Hospitals) to accommodate patients. Towngas was tasked with building a 1.5km gas pipeline for the largest of these hospitals, which is located in the Lok Ma Chau Loop area. A team of 200 was quickly assembled

to complete the project against a seemingly impossible deadline. As a result of their efforts, it was possible to provide a safe and reliable supply of gas to approximately 10,000 patients and 4,000 staff members.



Towngas engineering team worked on the Lok Ma Chau Makeshift Hospital construction site for laying gas pipeline.

The Environment

Green Flame Project

In the Green Flame Project – Smart Energy Competition organised with Hong Kong Education City, we encouraged students to submit their smart energy solutions based on one or more of the following three themes: integration of multiple energy sources, digitalisation, and decarbonisation. A total of 139 participating teams from 66 primary or secondary schools had entered the competition for prizes, including a scholarship of HK\$100,000 as the top reward.



Educating the next generation about environment

In early 2022, we collaborated with The Hong Kong Polytechnic University and the Hong Kong Design Institute to produce original animations under the theme of low-carbon living and conserving resources. Aimed at young schoolchildren, the animations are designed to instil environmentally-friendly living habits at an early age.

Youth Development

Co-Uni Inclusion Programme

To promote social inclusiveness, we teamed up with the Diversity and Inclusion Office of The Chinese University of Hong Kong to offer a series of activities which include cooking class for experiencing diverse food cultures, audio description workshop for understanding the challenges of the visually impaired and workshop about how ethnic minority students started their business with sustainable beer.



Gentle Breeze Movement

To improve learning in schools across the country, we have been organising activities under the Gentle Breeze Movement since 2013. As at 2022, we had donated educational materials worth more than RMB 4.9 million to 46 schools in the provinces and autonomous regions of Jiangxi, Anhui, Jiangsu, Shandong, Guizhou, Shaanxi, Liaoning, Guangdong, Hubei, Fujian, Inner Mongolia, Sichuan, Heilongjiang and Chongqing.

2022 Caring Initiatives

Towngas Concession Scheme

Benefiting the elderly, people with disabilities, as well as single-parent and low-income families during the year:

Total gas concessions:

HK\$25 million

Total beneficiaries:

Over **43,000 households**



Festive Foods for the Community

In 2022, we donated

254,000 mooncakes



100,000 rice dumplings



6,000 bowls of soup



Number of Volunteer Hours

Hong Kong:

9,239 hours

Mainland Utilities:

584,329 hours

Charitable Donations towards Community Activities

HK\$8.6 million



Revitalising our Strengths

Maintain high standards of corporate governance and business integrity to contribute to our sustainable competitive advantages.

Towngas is committed to the highest standards of accountability and transparency in its corporate governance. All our people are required to be ethical and transparent in their interactions with stakeholders.

Linking Executive Compensation with ESG

The variable compensations of the Managing Director and senior executives are linked to a broad range of financial returns (including return on assets, equity and capital) and ESG material issues (including

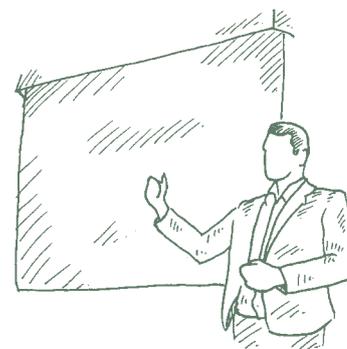
climate change, health and safety, workplace diversity, etc), while additional performance bonuses are provided to encourage employees to implement ESG excellence projects and initiatives. This affirmed the Group's commitment to integrating ESG for driving performance improvements.

Enhancing Board Diversity

To ensure our Board is gender diverse, we will appoint at least one female board member on or before 31st December 2024. A diverse senior management team will help to broaden perspectives in the decision-making process.

Anti-corruption-related training provided to employees in Hong Kong:

1,101 hours



Greening the Future

Devote to developing low-carbon energy and leaving the world a better place for future generations.

To grow our business, we are transforming our business ecosystem, encouraging innovation, developing green and sustainable finance and investing in smart and clean energy. Our goal during this transformation is to collaborate and partner with stakeholders in order to innovate, excel and build long-term value.

TERA-Award: Innovative Solutions for a Greener Future

Together with the State Power Investment Corporation Limited, we established the TERA-Award competition to encourage organisations around the world to submit innovative ideas that contribute to carbon neutrality. Due to the overwhelming response to the first TERA-Award, we have launched a second TERA-Award Smart Energy Innovation Competition with the objective of identifying more innovative technologies and solutions for a green future powered by smart energy. For the second edition of the TERA-Award, 275 submissions were received from 41 countries and regions. The results have already been announced in 2023.

Green campaigns were organised to invite staff to adopt more environmentally-friendly transportation methods.

Partners in Technology: Towngas Energy Academy

In 2022, we established Hong Kong's first funded clean energy application research institute, the Towngas Energy Academy, in the Shenzhen-Hong Kong Innovation and Technology Co-operation Zone. The main focus of the Academy is to commercialise scientific research innovations related to smart green energy. One of the projects will be the commercial development of one of the winning entries in the TERA-Award competition by Luquos Energy Limited. Working with the Luquos team, the Academy will help to bring its new energy storage battery technology, a liquid flow battery, to the nickel-hydrogen battery industry. The Academy will continue to collaborate with governments, industry experts, and science and technology institutions to form a zero-carbon smart energy ecosystem.

Young-at-heart with Resilience

Create a sustainable talent pipeline and supply chain, and safeguard our stakeholders' health and safety.

As a sustainable public utility, we have a long-standing commitment to protect stakeholders against health and safety risks, build an inclusive workplace and support our people through training and growth opportunities. We also incorporate ESG factors into our supply chain management process.

Ensuring Health and Safety

During the year, we remained committed to protecting the health and safety of our workers and customers, as well as the public.

In addition to our worker training programmes, webinars and workshops, we recertified our International Safe Workplace Programme that ensures we are following best practices in injury prevention.



For our customers, we conducted 834,799 regular safety inspections in 2022. We also launched innovative new devices, such as a smart controller, to improve customer safety (see page 32 for details).

Towngas strives to protect public safety. In 2022, network leaks reported by the public per 10km of gas pipes was 0.191, a 7 per cent reduction over the past 10 years. On the Chinese mainland, we conducted a total of 133 internal HSE audits for our project companies.

Developing a Sustainable Talent Pipeline

The future of Towngas depends on our ability to recruit, retain and develop new talent into a knowledgeable, well-trained workforce. Our internal training organisation, the Towngas Engineering Academy, changed its name in 2022 to the Towngas Training Institute, and will continue to provide career-focused education and training in gas engineering. In addition, we offer students the opportunity to learn about our industry through programmes such as Career in a Nutshell, summer internships and the Co-operative Education Programme.

During the year, Towngas again joined the NewGen Programme with partners from different leading corporations. The aim of this programme is to cultivate a mindset of innovation among millennials, widen their industry knowledge and provide networking opportunities through cross-corporate engagement activities.

Promoting Diversity and Inclusion

Towngas offers careers and career advancement opportunities to any qualified person. We make every effort to ensure our company is an attractive place to work.

As an equal opportunity employer, we endeavour to develop a diverse talent pipeline. In 2022, Towngas became a signatory of “The Racial Diversity and Inclusion Charter for Employers” by the Equal Opportunity Commission in Hong Kong. To create a more inclusive work environment, we offer flexible work arrangement to support working mothers with family needs, barrier-free access to the disabled, and support for elderly-related programmes in Hong Kong, such as the Labour Department’s Employment Programme for the Elderly and Middle-aged.

Building a Sustainable Supply Chain

In 2022, we conducted a supply chain resilience assessment and identified key measures to improve our resilience. These included diversifying our supply chain through

multi-sourcing, advancing digital technologies to improve efficiency, achieving full supply chain visibility and monitoring suppliers’ GHG emissions.

We have a formal risk identification process to assess and identify suppliers that may pose high sustainability risks. To address the ESG performance gaps among these suppliers, we communicated the enhancement recommendations including GHG emission quantification to them in 2022.

To help suppliers monitor their GHG emissions, we have adopted the S-Carbon platform. Towngas was the first public utility in Asia to implement this platform for supply chain management after a successful trial run in early 2022. Through this system, we are able to digitalise suppliers’ GHG emissions and better monitor and manage our Scope 3 GHG emissions. Suppliers who joined the first phase of this platform accounted for around 20 per cent of Towngas’ purchasing value on products and materials for Hong Kong operations, which will be further increased to approximately 90 per cent in the near future.

