# CLEAN ENERGY FOR ALL

#### MAINLAND UTILITY BUSINESSES

In 2020, Towngas China signed a capital increase agreement with Shanghai Gas Co., Ltd (Shanghai Gas) and Shenergy (Group) Company Limited (Shenergy Group), which is expected to give us access to 6.3 million more customers and increase our customer base to a total of about 40 million households in mainland China.



#### **MAINLAND UTILITY BUSINESSES**

For more than 25 years, Towngas has been providing people in mainland China with a clean, reliable and economic supply of fuel as well as other products that contribute to a more comfortable life and promote a sustainable future. Our businesses today cover 282 city-gas projects serving around 31.81 million customers in 23 provinces, autonomous regions and municipalities (2019 year end: 273 projects, inclusive of city-gas projects re-invested by the Group's companies). Through these businesses, we are meeting the growing demand for energy that will power the nation's economy while assuring a cleaner environment for all.

#### **Progress amid Challenges**

In 2020, trade disputes between mainland China and the United States continued to have a negative impact on exports as a whole. Our gas sales in mainland market were also affected in the early part of the year by the outbreak of COVID-19. As some cities went into lockdown, most industrial and commercial activities came to a halt in the first quarter of the year and overall gas volume fell. Once the epidemic began to come under control in March, our commercial and industrial (C&I) clients resumed normal operation and production in an orderly manner. The mainland economy has also gradually recovered since then.

This auto parts factory in Xuzhou, Jiangsu province uses natural gas for drying, controlling indoor temperature and treating exhaust fumes.

During the period, local governments issued a series of measures to support small and medium-sized enterprises. As a responsible utility group, Towngas provided special offers on tariffs in some cities for customers in need. We also ensured our gas supply would remain uninterrupted and continued to carry out safety inspections. At the same time, we collaborated closely with our C&I clients to help them resume production or get back to work as soon as possible after the lockdown was lifted.

For the year as a whole, total sales of our city-gas amounted to approximately 26,900 million cubic metres, which was 5 per cent higher than in 2019. The margin on gas sales was also better than the year before, as the Government had lowered the city gate price, which contributed to increased gas use.





# A LANDMARK **PARTNERSHIP** WITH SHANGHAI GAS



In October 2020, Towngas China signed a capital increase agreement with Shanghai Gas and Shenergy Group to acquire a 25 per cent stake in Shanghai Gas, one of the largest city-gas operators in mainland China, with a customer base of 6.3 million accounts and annual gas sales of over 9,000 million cubic metres. The partnership will help the Group to expand into Shanghai and recently developed surrounding areas, including Lingang New District, Qingpu New District and the Yangtze River Delta Integrated Development Demonstration Zone. As a result, our market position in the eastern part of mainland China is set to be further strengthened. Moreover, Shanghai Gas and Shenergy Group have two liquefied natural gas (LNG) receiving terminals at Wuhaogou and Yangshan Port. Combined with our underground salt cavern gas storage facility in Jintan, Changzhou, Jiangsu province, the receiving terminals will create synergy and assurance for the Group's gas supply, thereby establishing a solid foundation for our entry into the natural gas trading market.

Shanghai is a wealthy municipality, with a population of over 24 million. Through our partnership, we have an opportunity to extend our businesses to the strong customer base of Shanghai Gas, including space heating systems, insurance services, gas appliances and kitchen and bathroom products.

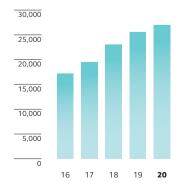
#### Igniting a Low-carbon Economy

Natural gas, the cleanest fossil fuel with much lower carbon emissions than coal or oil, will continue to be our main business focus in the foreseeable future. At the same time, we have also been exploring other opportunities for our continued business growth, such as renewable energy and smart energy. This strategy aligns with the Chinese government's Fourteenth Five-Year Plan, which calls for the development of intelligent, green production technologies that help to reduce carbon emissions. We are also contributing towards mainland China's goal of peaking carbon emissions before 2030 and achieving carbon neutrality before 2060, as announced in September 2020 at the United Nations General Assembly. During the year we continued to vigorously promote coal-to-gas conversion in line with the Chinese government's environmental policies and commitment to carbon neutrality. The annual gas consumption among our coal-togas customers increased by 17 per cent from last year to reach 3.4 billion cubic metres.

Customers benefitting from our high-efficiency gas applications can be found in a wide range of trades and industries, including steel manufacturing, ceramics, glass, textiles and food, as well as hotel, restaurant and theme park businesses. During the year, we continued to look for business opportunities by initiating new projects for our gas applications. One example is the laundry business we started in 2019, which is currently in operation in Hangzhou, Chengdu, Shaoguan and Guilin. More new projects in Nanjing, Tangshan and other cities are expected to be commissioned in 2021.

In addition, we have been involved in the Distributed Energy Systems (DES) business since 2017. Widely acclaimed by our C&I customers, DES offers a decentralised energy supply for generating electricity as well as producing hot water, steam and chilled water using waste heat. The economies of scale available

#### China Joint Ventures Gas Sales (million m<sup>3</sup>)



with DES have enabled us to extend these efficient, costsaving systems into residential districts for space heating and industrial development zones for steam supply. In 2020, we recorded a total of 260 million cubic metres in DES gas sales, an increase of 76 per cent compared with 2019.

In order to expand our sustainable energy business, we have developed a Smart Energy system that utilises artificial intelligence (AI), big data and the Internet to achieve higher energy efficiency and lower emissions. The system covers a portfolio of electricity, steam, natural gas, renewable energy and energy storage. During the year, we acquired 40 solar photovoltaic power generation projects and five energy storage projects, with a total capacity of 300 megawatts and total storage capacity of over 100 megawatthours respectively.

#### Strengthening Our Midstream and Upstream Businesses

Securing a reliable supply of natural gas is critical for the success of our businesses in mainland China. This is achieved through our investments in midstream facilities, including long-haul pipelines, gas storage facilities and joint purchases of gas directly from upstream gas sources, in accordance with our diversified gas sourcing strategy.

In Jintan, Changzhou, Jiangsu province, we operate an underground salt-cavern gas storage facility, which is the first of its kind built by a city-gas enterprise on the mainland. With four wells now in operation, it will eventually comprise 25 wells with a total storage capacity of 1.1 billion cubic metres and a working capacity of 660 million standard cubic metres. This facility will increase our gas storage capacity and help us to regulate gas supply and prices more effectively, while opening up business opportunities for gas trading.

During the year, we acquired two storage tanks at the LNG receiving terminal in Tangshan, Hebei province. With a total capacity of 400,000 cubic metres, they are targeted for use before the end of 2023. We have also been granted the right to use the jetty at the terminal for importing 1 million tonnes of LNG per year. Under a 50-year contract, this project will both enhance the Group's gas storage capacity and reduce the cost of building separate gas storage facilities by individual companies under the Group.

We also maintained a presence in Sichuan province by establishing a company in Weiyuan to invest in a shale gas liquefaction plant and gas storage tanks. The facilities will serve our many Sichuan city-gas companies and provide another reliable source of supply for our nearby projects.





With the encouraging development of our food waste project in Suzhou Industrial Park, Jiangsu province, plans were made for a new food waste treatment line to serve residential districts.

In 2019, the Government integrated the national oil and gas pipeline network under China Oil & Gas Pipeline Network Corporation, enabling us to purchase LNG directly from overseas suppliers or trade it on the Shanghai Petroleum and Natural Gas Exchange for our city-gas projects or gas storage facilities. This has further diversified our gas supply channels and provided new opportunities for our businesses.

#### Water and Environmental Business

Our wholly-owned subsidiary, Hong Kong & China Water Limited (Hua Yan Water), currently operates seven urban water projects in mainland China. These businesses include tap water supply and wastewater treatment, purified water production and sales, water quality and meter testing, as well as smart water services. The performance of the water business in 2020, despite COVID-19, remained stable with sales of 917 million tonnes of water, a slight decrease of about 1 per cent.

As a public utility company, Hua Yan Water considers the safety of its water supply to be its highest priority. Accordingly, the company started two projects for water quality analysis and intelligent water management during the year. One of these offers comprehensive water testing services at a laboratory that has obtained China Inspection Body and Laboratory Mandatory Approval and China National Accreditation Service for Conformity Assessment. The other new project is involved in developing technologies and software for building smart water systems and upgrading management systems for water supply companies.

Capitalising on our rich experience in sewage treatment, we established Hong Kong and China Environmental Holdings Company Limited (Hua Yan Environmental) to coordinate the development of our environmental governance businesses.

Our urban organic waste resource utilisation project in Suzhou Industrial Park, Jiangsu province made satisfactory progress during the year. The project has cumulatively processed more than 170,000 tonnes of organic waste to date and produced nearly 5 million cubic metres of bio-natural gas. Plans were also made for a new food waste treatment line to serve residential districts with a designed daily capacity of 300 tonnes of food waste. It is expected to go into operation in the second quarter of 2021.

We also acquired a food waste resource utilisation project in Tongling, Anhui province in July 2020. With a working capacity of 100 tonnes per day, the plant has already processed 25,000 tonnes of food waste during the year. We are currently expanding the project to increase its annual capacity to a total of 73,000 tonnes by the second half of 2021. Another new food waste project was secured in Xinbei, Changzhou, Jiangsu province, where we plan to construct a treatment plant with a working capacity of 300 tonnes per day. Commissioning of this plant is expected in 2024.

Moreover, in Changzhou we expanded into an environmental and sanitation business that will convert urban solid waste into valuable products in order to build a total recycling system that includes domestic waste incineration, waste screening, kitchen waste treatment and a garbage disposal network. Construction of an incineration treatment facility in Jiashan, Changzhou will begin by the end of 2021. Upon its completion, the facility will be capable of producing 320,000 megawatthours of electricity each year.

Looking further ahead, we will expand the urban organic waste and sanitation market and develop the appropriate infrastructure for this business, with the aim of constructing a smart sanitation system for more hygienic cities.

#### **Services beyond Gas**

At Towngas we are in not just the business of supplying a safe and reliable source of energy, but also a lifestyle business catering to customers' everyday needs. With a strong customer base of over 30 million accounts, we have expanded into new Live-streaming on Towngas Lifestyle makes increased interactions possible with customers and helps stimulate sales of products.

markets, including smart appliances, kitchen cabinets, insurance, home care and other services, for a better, more comprehensive customer experience.

Products under our Bauhinia brand, mainly gas appliances, continued to be popular among customers in 2020, due mostly to the brand's growing reputation for high quality and safety features. During the year, approximately 800,000 appliances were sold, with sales of combi boilers achieving an increase of nearly 50 per cent to about 45,000 units.

In 2020, we launched additional smart Bauhinia kitchen products in the market. Smart appliances in this line include stoves, water heaters, range hoods and space heaters. All are equipped with Internet of Things functions that customers can control with an app. Another smart appliance launched during the year was a cooking appliance with an intelligent temperature control function for enhanced safety, which will automatically shut off when the temperature exceeds a pre-set level.

Mia Cucina, our Total Kitchen Solution of premium kitchen



equipment and cabinets, achieved sales of over 9,400 sets in 2020 at a value of more than RMB90 million. Our marketing focus continued to be on residential projects during the year, and we negotiated with major property developers to install kitchen cabinets in residential complexes in provinces such as Jiangsu, Shandong and Guangdong.

We also enhanced our online services for the greater convenience of our customers. On our online platforms, customers can now manage their gas accounts, make maintenance appointments, pay gas bills and enjoy other services, or even go e-shopping. In addition, we have adopted new technologies to provide smart kitchen solutions, such as an Intelligent Kitchen Helper service that we pilot tested in 2020. With this new service, customers can "talk" to our smart speaker and gain access to our online services, monitor their appliances or shut off gas valves.



During the COVID-19 epidemic, we saw a surge in demand for online shopping. This benefitted our e-commerce platform, Towngas Lifestyle, which achieved total sales of RMB18.78 million in 2020, a nearly fourfold increase over the previous year.

With Towngas Lifestyle, we offer a total home solution ranging from cooking and health tips to high quality home accessories, kitchenware, seasonal and festive food, insurance and a new housework service that includes cooking and cleaning.

Providing high quality service has always been our competitive advantage as we take care of our customers along the journey from purchase to delivery and offline interactions. During the year, we set up a Home Lifestyle Centre in Suzhou for offline engagement with our customers and as a business sharing platform for training the staff of our service providers and partners. In future, we plan to launch more outlets to reach a total of 50 outlets in 2021.

#### **Ensuring Gas Safety**

Safety, as always, is our greatest priority. This was particularly challenging in 2020 with the outbreak of COVID-19 and its associated risks to our stakeholders. In accordance with our enhanced health and safety guidelines, we not only offered adequate protective equipment for our employees but also implemented a variety of measures on our premises. These included stepping up our cleaning procedures and limiting access to our offices and plants by visitors in order to minimise the risk of infection.

To ensure the safety of our customers, we continued to carry out proactive gas inspections in their homes and businesses, although the number of these inspections was lower than in previous years due to the epidemic. We also utilised online channels, including popular social media platforms such as WeChat and Tiktok, to promote gas safety to the public.

With "Preventing Risks and Ensuring Safety" as our theme for 2020, we made every effort to strengthen our safety management and maintain the highest standards of safety. In 2020, the number of general managers' safety inspections increased from once a month to twice a month. In total, 45 safety audits were conducted to identify potential risks for rectification, with public health information added as one of the inspection and audit items. To demonstrate our commitment to safe production, we also promoted responsibility for production safety, which all project companies were required to implement.

During the year, no serious gas incidents were reported. The number of cases per 100 km of third-party damage and gas pipe network leakages declined by 14 per cent and 11 per cent respectively.



Even during the COVID-19 epidemic, our technicians continued to carry out regular inspections of our gas infrastructure to ensure public safety.

# SPREADING GOOP VIBESCOR

#### HONG KONG GAS BUSINESS

Following the outbreak of COVID-19, more and more of our customers went online for shopping and cooking tips. Our new e-commerce platform, Towngas Fun, and the top-of-the-town Towngas Cooking YouTube channel featuring celebrity chefs were especially popular.



#### HONG KONG GAS BUSINESS

The outbreak of COVID-19 in early 2020 deeply affected our commercial customers, particularly those in the catering, hospitality and tourism sectors. Despite this challenging environment, we continued to supply our customers with reliable, clean energy for their needs. As a socially responsible company, we also helped businesses experiencing financial difficulties because of the pandemic and extended our care to those in need through our community initiatives.

#### A Year of Continuing Challenges

Year 2020 was again remarkably difficult. The Hong Kong tourism and hospitality sectors were severely affected by the COVID-19 pandemic, as tourist arrivals dropped substantially. Social distancing and venue closures also dealt a heavy blow to companies in the restaurant trade as well as the clubhouse and party room business, many of which are consumers of town gas. At the same time, we saw a significant increase in residential gas demand with large numbers of people working from home, many of whom used gas for cooking and heating water.

During the year, the volume of commercial and industrial (C&I) gas sales decreased notably, but this was partially offset by an increase in residential sales. Total volume of gas sales was approximately 27,947 million MJ, a slight decrease of 2.7 per cent from the previous year. The number of new customers in 2020 rose only by 10,050 accounts to over 1.94 million, as a result of delays in new housing move-ins.

# Exploring Opportunities in a Demanding Market

In the tourism sector, travel restrictions led to a drastic decline of 93.6 per cent in the number of visitors, while hotel occupancy rates experienced a precipitous drop from 79 per cent in 2019 to 46 per cent. Both trends had a serious impact on our gas sales, particularly to our C&I customers who prepare in-flight meals or provide laundry services.



Our integrated Primary Air-handling Unit was installed at H Zentre to help reduce energy consumption and improve indoor air quality.



# **SUPPORT** FOR THE CATERING INDUSTRY DURING COVID-19



Among the most affected by COVID-19 were our C&I clients, especially those in the catering and restaurant industry. To assist these mostly small and medium-sized businesses, we distributed about 40,000 bottles of nano photocatalytic spray so that they could disinfect their premises and help restore customer confidence about dining-in. In May 2020, we launched the Supporting F&B and the Economy campaign. We distributed complimentary dining coupons under our newly launched loyalty programme, Towngas Fun, to increase patronage. Also, we provided aid to qualifying restaurants in the form of an interest-free kitchen equipment rental and purchase scheme.

Despite the negative business environment for hotel operators, new hotels continued to open in 2020, such as The Hari Hong Kong and Sheraton Hong Kong Tung Chung Hotel, along with several other new hotel development projects that secured the installation of gas applications for hot water, cooking as well as dehumidification. In a similar vein, the social gathering ban during the pandemic led to school suspensions and the closure of venues such as two theme parks, public swimming pools and sport stadiums. The expansion of the two theme parks was also delayed, while a project was temporarily put on hold. Nevertheless, we continued to identify emerging opportunities in our C&I business with the conversion of ageing diesel boilers to use town gas.

An exceptionally promising market is for a gas-fired desiccant dehumidification system we developed, which enhances humidity control and provides significant improvements to indoor air quality. This compact integrated Desiccant+Primary Air-handling Unit (D-PAU) has already been installed at H Zentre



Our top-of-the-town professional flame cooking platform, the Towngas Cooking YouTube channel, was launched to help audiences become culinary experts.



Towngas Fun, our new membership programme combined with online redemption platform, allows members to earn points and redeem special offers.

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on Middle Road and in the patient ward area of Hong Kong Baptist Hospital. The system can meet higher hygiene standards by integrating other air quality control devices for filtering fine particles and eliminating microbes.

Potential users for our D-PAU system include hospitals with hydrotherapy pools and operating theatres, hotels, office buildings, pharmacies, laundries, rehabilitation centres and homes for the elderly. As Hong Kong has a massive plan for hospital development, the potential for gas dehumidification application will be substantial.

#### Building a Contemporary Home

Our branded gas appliances are favoured for their quality and smart features as well as the backing of our service professionals.

Our kitchen appliances are especially well received among customers for their convenience and safety. In keeping with our Smart Kitchen concept, we have developed a cooking appliance with anti-scorch function as well as another series of models that can be remotely controlled through a mobile app. As the demand for Internet of Thingsenabled smart home grows, we will continue to launch more innovative products with smart features.

In 2020, we achieved satisfactory sales for our Mia Cucina line of kitchen cabinets, which are popular among residential customers as well as property developers for their high quality. To promote sales, we showcased different Mia Cucina kitchen projects and shared design tips on digital platforms in addition to conventional channels, with the aim of providing design inspiration and increasing brand awareness among customers planning to renovate their kitchens.

Our desiccant dehumidifier entered the residential market for the first time during the year. We see the market potential for this new gas consumption application in the luxury



residential sector. In addition to protecting cloakrooms, wine cellars, furniture and valuable works of art. our desiccant dehumidification system improves indoor air quality and comfort levels, while reducing electrical load and overall energy costs.

#### Marketing under the **New Normal**

During a challenging year when people's lifestyles changed as a result of the COVID-19 pandemic, our sales and marketing teams came up with a variety of innovative promotions to keep Towngas top of mind among consumers.

To build customer loyalty and generate additional online revenue, we launched an exciting new membership programme titled Towngas Fun with redemption offers. The programme is designed to provide not only value-added services to our customers but also publicity exposure for participating merchants.

### 2020 **RESULTS OF TOWNGAS SERVICE** PLEDGE

Safety

**Emergency Team** 

average arrival

time (within

25 minutes)

**Average** 

minutes

21.57



#### **Speed and** Convenience

Customer Service Hotline (calls answered within 4 rings) 96.10%

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Connect or disconnect gas supply within 1 working day (upon customer's request) 100%

#### Handling **Suggestions**

**Reply within** 3 working days 100%

#### Resolution or a statement of how and when the matter will be resolved, within 2 weeks 100%

#### Reliability

Uninterrupted gas supply (over 99.99%) 99.99%

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3 days' prior notification in case of supply interruption on account of maintenance or engineering work 100%

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Restoration of gas supply within 12 hours 99.99%

#### **Appointments**

Availability of maintenance and installation services within 2 working days Average 1.21 days

The result was based on surveys conducted by an

#### **Service**

Quality Efficiency\* 9.00

> Courteous and friendly attitude\* 8.98

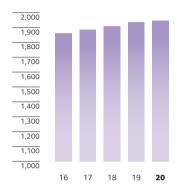
Deposit refunded at **Customer Centres** 2 hours after disconnection of gas supply (upon customer's request) 100%

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independent research company. Our target is to exceed a score of 8.5 out of 10.

#### **Number of Customers**

Company (Thousand)



In 2020, we unveiled the top-of-the-town Towngas Cooking YouTube channel as a platform for flame cooking with celebrity chefs and experts. Topics included green and healthy diets, training for domestic helpers, and cooking tips for parents. Additionally, under the "new normal" of social distancing, the Towngas Cooking Centre offered a series of live cooking classes online, with ingredients for the courses delivered to participants' homes in advance.

#### Achieving Service Excellence

Innovation continued to play a key role in improving our productivity and service quality. One of our innovations is our artificial intelligence (AI) Chatbot that can handle customer enquiries and requests for gas services regardless of location and time. For the convenience of our customers, we introduced a new Wi-Fi/BLE (Bluetooth low energy) series during the year as an upgrade of our Smart Metering System. With this new device, meter readings can be done automatically and sent to our system via home Wi-Fi or Bluetooth.

During the year, we received over 5,800 compliment letters. In recognition of our service excellence, we received the Sing Tao Service Awards – After Sales Services award for the 12th year, and East Week's Hong Kong Service Awards – Public Utilities for the 10th year.

#### Expanding Gas Supply Network

Our comprehensive network infrastructure is well regarded for its safe and reliable supply. To maintain a high level of supply reliability, we have been forming a ring-feed transmission network in the New Territories. The last 9 km of transmission pipelines linking Tuen Mun and Tsuen Wan were mostly completed in 2020, with commissioning expected in 2021.

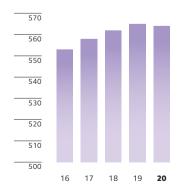
The announcement of two new railway developments, the Tung Chung West Extension and Tuen Mun South Extension, in 2020 will ultimately bring us about 20,000 potential customers. Work on these two projects is scheduled to commence in 2023. We are also undertaking the construction of a ring-feed supply network to the Airport Island and Ocean Park in order to increase supply security. Despite COVID-19, works progressed smoothly during the year. Additionally, in 2021 we will start a network upgrading project for all of Wong Chuk Hang District.

#### **Innovation and Safety**

During the year, we continued to conduct regular gas leakage surveys, monitor third-party construction activities and replace ageing pipes in our network. The number of leaks reported by the public in 2020 again reached a record low for a third consecutive year. Third-party damage dropped to the singledigit level again, as compared with approximately 100 cases per year two decades ago.

#### Number of Customers per km of Mains

Company





To maintain a high level of safety, we use the sophisticated Supervisory Control and Data Acquisition system for monitoring and controlling our pressure-regulating stations and network. Other advanced gas detection technologies include the use of drones to scan and take videos to identify potential risks of pipe corrosion.

When analysing X-ray films of weld joints on steel pipes, we have been exploring the use of machine learning and AI to help identify any welding defects and improve the efficiency of quality checks. AI is also being used to monitor third-party construction works carried out in the vicinity of strategic gas pipelines.

#### Towngas Network in Hong Kong



Existing areas of supply

Planned

new areas

of supply

Planned high pressure or intermediate pressure pipelines

High pressure or intermediate pressure pipelines under

construction

Existing high pressure pipelines

Existing intermediate pressure pipelines Existing submarine pipeline from Guangdong LNG Terminal to Tai Po plant

# FROM WASTE INTO TREASURE

#### NEW ENERGY AND DIVERSIFIED BUSINESSES

ECO is refining its technology to produce cellulosic ethanol, an advanced biofuel, from agricultural waste. When this process is proven successful at a pilot plant now under construction, ECO will become a world leading producer of advanced biofuels, including hydro-treated vegetable oil and cellulosic ethanol.





#### **NEW ENERGY AND DIVERSIFIED BUSINESSES**

The demand for sustainable energy as a means of combatting climate change is growing across the world. ECO's business is helping to meet this demand by turning low-value waste-based feedstock from renewable sources into high-value products. Through our proprietary technologies, we are providing sustainable solutions that will help to decarbonise our world and make it a better place for future generations.

#### ECO: A Leader in Green Energy

ECO Environmental Investments Limited (ECO) was established in Hong Kong in 2000 under the concept of "turning waste into treasure". Starting with early initiatives to produce clean energy from waste sources, ECO has extended its range of clean products to cover fuels, chemicals and other renewable materials.

Guided by the vision of a carbon neutral world, our business development is powered by the innovative endeavours at our research and development bases in Shanghai and Suzhou. As several of our key research projects come into fruition, ECO is emerging as a global forerunner in the green industry,

ECO established research and development bases in Shanghai and Suzhou to develop products related to advanced biofuels and eco-friendly materials.

with solutions that address the environmental challenges associated with climate change.

ECO is focusing on businesses related to the development of clean, renewable energy from biomass, including inedible bio-grease and agricultural waste. At present, these businesses comprise a bio-grease utilisation project in Jiangsu province and two biomass utilisation projects in Hebei province.

In the third quarter of 2020, our hydro-treated vegetable oil (HVO) project went into full production. This project has been performing well despite the challenges of COVID-19.

Using patented technologies developed in-house, ECO produces HVO accredited under the International Sustainability and Carbon Certification Scheme that is capable of reducing carbon emissions by 90 per cent. The product is exported to EU markets, where it helps to meet the EU's latest targets under Renewable Energy Directive (RED) II and its commitment to reduce emissions under the Paris Agreement.







The second phase of the HVO project in Zhangjiagang, Jiangsu province was fully commissioned, expanding its annual production capacity to 250,000 tonnes of HVO.

After only a few months in operation, the HVO facility produced around 88,000 tonnes of HVO, of which 90 per cent was sold to customers in Europe in 2020. With the proven success of our processes and technologies, we are now planning to further increase our HVO production capacity.

Additionally, we plan to upgrade the processes at our HVO facility to enable the production of sustainable aviation fuel (SAF). We believe that SAF will become one of the key pillars for achieving carbon neutrality in a global context and thus has huge market potential.

Also during the year, two new plants were under construction in Hebei province. Both facilities will make use of our patented hydrolysis and saccharisation technologies to convert locally collected agricultural waste, such as corn cobs and straw, into a wide variety of useful bio-chemical products. The first plant will commence trial production in the second quarter of 2021, when it will begin producing furfural and paper pulp. This will create a solid foundation for a whole new range of bio-products.

The second plant, also in Hebei, is expected to commence trial production of furfural and cellulosic ethanol in the fourth guarter of 2021. Cellulosic ethanol is yet another advanced biofuel, as defined under the EU RED II framework, which can be added to gasoline to reduce its carbon emissions. With the successful completion of this facility, ECO will emerge as a forerunner in the economical production of cellulosic ethanol on a commercial scale and will likely be the only company worldwide capable of producing both HVO and cellulosic ethanol.

Recognising that the world is looking for a viable supply of green hydrogen, we are now exploring the possibility of adapting our patented biomass gasification technology to produce hydrogen-rich gas from agricultural waste. The success of this technology will have profound implications for a hydrogen-based economy, as green hydrogen will then become readily available wherever agricultural waste can be conveniently collected in fields surrounding urban areas.

Going forward, ECO will continue to pursue the expansion of its low-carbon business, powered by its ground-breaking technological innovations.

#### Telecommunications

We operate telecommunications businesses in both Hong Kong and mainland China through Towngas Telecommunications Company Limited, a whollyowned subsidiary of the Group, and its subsidiaries (collectively known as "TGT"). With solid infrastructure and resources, TGT provides services for Hong Kong, mainland China and international telecommunications service providers, operators, and corporations.

Today, TGT has grown into a company with seven world-class data centres across Hong Kong and mainland China, offering Together with Henderson Land Development, TGT launched the Smart Mall service to provide customers with a stable, high speed 5G mobile communication experience at a shopping mall in Ma On Shan.

strong connectivity and advanced data services such as fog and cloud computing.

One of TGT's strongest competitive advantages is its Glass-In-Gas technology, which allows optical fibres to be installed within our extensive gas pipe network for a more cost-effective, interference-free alternative to traditional road opening methods. This technology is now also being applied in mainland China, where we obtained approval from the China Gas Association for our Technical Standards for Laying Fibre Casing Pipe in Gas Pipeline.

In April 2020, TGT cooperated with Henderson Land Development Company Limited (Henderson Land Development) to introduce the 5G Sharing System at nine shopping malls of Henderson Land Development. The system offers high speed, low latency and stable 5G mobile services as well as related applications for the convenience of customers. The project earned the Best 5G Connected Arena -Gold Award in the 2020 CAHK STAR Awards. TGT is currently preparing to develop 5G services for use in the public areas of residential premises.



#### **Information Technology**

Our wholly-owned subsidiary, S-Tech Technoloay Holdinas Limited (S-Tech), was established to provide our city-gas companies with information technology that supports customer service management. Today, this business is engaged in cloud software development, solutions implementation and systems integration services, which enable our city-gas businesses to manage their advanced customer service and gas piping network systems more efficiently.

The Towngas Customer Information System (TCIS) developed by S-Tech covers 87 per cent of the Group's city-gas companies on the mainland. Of these, 89 per cent are using the latest cloud version of the system, which helps them reduce operational costs, shorten development cycles and provide quality services to more than 17 million customers. The TCIS has now been updated to accommodate data uploads and downloads from millions of smart meters. In 2020, the cloud and non-cloud based versions of TCIS3.0 were implemented in 126 city-gas companies, achieving 100 per cent availability (servicelevel agreement: 99 per cent).

During the year, S-Tech launched the TCIS3.0 and mobile application project with Changchun Gas Co., Ltd. (Changchun Gas), a major city-gas project of the Group in Jilin province serving more than 1.6 million customers. Changchun Gas plans to adopt S-Tech's mobility application, paperless customer service office and Artificial Intelligence Call Centre system with the TCIS3.0 for their Smart Gas projects and Towngas Total Solution+.

#### Civil and Building Services Engineering

U-Tech Engineering Company Limited (U-Tech) is a whollyowned subsidiary of the Group providing consultancy and engineering contractor services



in Hong Kong and Macao. These services include utilities installation, infrastructure construction and civil and building services engineering for public and private projects.

During the year, U-Tech acquired a landfill gas pipe construction contract from Chun Wo Construction and Engineering Company Limited for South East New Territories Landfill Extension in Tseung Kwan O. Other contracts were secured in 2020, including a fire services installation works project for a residential development at Un Chau Street by Henderson Land Development under the Urban Renewal Authority, as well as the supply and installation of electrical works for Henderson Land Development's residential development on Seymour Road.



In addition, U-Tech continued to construct district cooling mains for the Electrical and Mechanical Services Department at Kai Tak Development Area.

#### Manufacturing

M-Tech Metering Solutions Company Limited (M-Tech) is a wholly-owned subsidiary of the Group that develops and markets smart gas meters. It takes advantage of rapid developments in advanced technology, including Micro-Electro Mechanical Systems (MEMS) and Narrowband Internet of Things (NB-IoT), to provide products with wider measuring ranges and smart features.

In 2020, M-Tech incorporated NB-IoT into its residential and commercial MEMS meters. Connected seamlessly with the TCIS3.0 platform, the NB-IoT meters allow mobile payments, automatic meter readings, remote valve shut-off and other safety monitoring functions. These smart meters have become widely accepted by household users and restaurant clients. During the COVID-19 epidemic, they enabled gas companies to obtain meter

U-Tech's advanced trenchless approach to tunnel boring is being used to install cooling pipes for the District Cooling System at Kai Tak Development Area. readings without accessing customers' premises.

M-Tech is also developing other advanced meters and meter accessories such as filters and connecting pipes, to offer customers a complete solution package.

Another wholly-owned subsidiary of the Group, G-Tech Piping System (Zhongshan) Company Limited (G-Tech), supplies high-quality polyethylene (PE) piping and related ancillary products with the support of GH-Fusion Corporation Limited, a joint venture between Towngas and Fusion Group (United Kingdom) specialising in PE fittings.

G-Tech has a wide range of quality products to meet the different needs of national and international markets. The PE ball valve fittings we launched in 2019 achieved satisfactory sales among our city-gas projects. Although the COVID-19 pandemic in Europe slowed down export sales of PE fittings in 2020, market growth in mainland China made up the shortfall.

G-Tech's production sites are located in Zhongshan, Guangdong province and Maanshan, Anhui province, which had a total production capacity of up to 20,000 tonnes of pipes at the end of 2020. Together with its two logistics centres, G-Tech offers quality products, high distribution efficiency and excellent customer service.

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#### **SUSTAINABILITY**

As financial pressures mounted during the COVID-19 pandemic, we launched the Towngas Love on Delivery programme and distributed 30,000 fresh food packs to 1,000 families who required immediate relief with food expenses.



#### **SUSTAINABILITY**

As a leading utility company in Hong Kong and mainland China, we take our responsibilities to stakeholders very seriously. Guided by our Environmental, Social and Governance (ESG) framework, Towngas has a commitment to sustainability that extends to how we conduct our business, ensure health and safety, protect the environment, serve the community and strengthen corporate governance. Our aspiration is to become one of the greenest and most esteemed companies in Hong Kong and mainland China.

#### A Leader in Sustainability

In recognition of our sustainability efforts, Towngas has received an average of over 50 awards each year since 2015. In 2020, we were ranked first on both the Greater Bay Area Business Sustainability Index (GBABSI) and the Hong Kong Business Sustainability Index organised by The Chinese University of Hong Kong Business School's Centre for Business Sustainability. We were also the only company on the GBABSI to be ranked at the highest Exemplar tier. These rankings acknowledge our commitment to ESG.

Our corporate governance and business practices are guided by sound business ethics. During



# GREEN PROMOTION DURING COVID-19



During the year, working from home as well as online shopping and learning became the "new normal". To engage our customers and the public on the subject of environmental protection, we made greater use of digital platforms such as Facebook, Instagram and other social media. One example is our *Towngas Low Carbon Action!* page on Facebook for sharing green information, tips and recipes, as well as promoting green events by our company and environmental groups. Workshops, quizzes and thematic webinar were also held online to promote environmental awareness.



### KEY ENVIRONMENTAL PERFORMANCE IN 2020 (HONG KONG)

All major legal requirements relating to environmental protection were fully complied with.

Water

Quality

Total waste

of town gas

water output

was **3.5 m<sup>3</sup>/TJ** 

#### Air Quality

Total NOx output was **4 kg/TJ** of town gas Total SOx output

was **0.01 kg/TJ** of town gas

Total CO2 output was **11.9 metric tonnes/TJ** of town gas

#### Greenhouse Gas Emissions

Greenhouse gas emissions from major gas production equipment were **344,549 metric tonnes** 

in terms of CO2 equivalent

#### Carbon Intensity of Gas Production

0.592 kg CO2e/ unit of town gas; reduced by 23% compared with 2005

#### Ozone Layer Protection

All of our vehicle air conditioning systems now operate with refrigerant R134A

All BCF portable fire extinguishers have been replaced with dry powder extinguishers

The central chiller plant system in our North Point headquarters and Ma Tau Kok building are operated with HCFC-free refrigerants

#### Chemical Waste

Total chemical waste output was **2 kg/TJ** of town gas

#### Noise

All installations and operations complied with the statutory requirements

No noise abatement notice has ever been received

the year, we complied with laws and regulations that have a significant impact on the Group.

#### Protecting the Environment

With the growing concerns about climate change across the world, many global leaders have set out strategies for reducing carbon emissions in accordance with the Paris Agreement signed in 2016. At the United Nations General Assembly in September 2020, mainland China declared it would aim to peak its carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060.

At Towngas, we are committed to this vision through our core businesses of providing cleaner forms of energy, in many cases by assisting our customers to switch from fuels such as coal to natural gas, which lowers carbon emissions by about 40 per cent. With our focus on innovation, we have also pioneered a number of alternative energy projects, such as advanced biofuels, that help to conserve resources and reduce pollution.

#### Our Journey to a Low-carbon Future

Our environmental policy guides us in how we conduct our business. Since the 1970s, we have been utilising naphtha, a clean oil product, to replace coal and heavy oil as our production fuel in Hong Kong. We have also introduced natural gas and landfill gas in our fuel mix, which has further reduced our carbon footprint. Greenhouse gas emissions from the production and consumption of town gas represent only about 1 per cent and 3.8 per cent of Hong Kong's total emissions respectively.

In mainland China, our city-gas projects help the country to build a cleaner environment by providing low-carbon, highly efficient and economical energy solutions. One such initiative is our business in Distributed Energy Systems, which offer an energy efficiency rate of up to 80 per cent and can supply power and heat for both industrial parks and residential districts. We are also developing a smart energy business, which combines photovoltaic power generation with power storage functions and harnesses the Internet and big data in analytics and management systems in order to achieve higher energy efficiency and reduce emissions.

As the first energy utility in Hong Kong to issue a green bond, we have dedicated considerable resources towards the development of green technologies. These include converting waste into energy or other valuable materials, such as biomass-based vehicular fuels and chemical products. Our plant in Jiangsu province is currently in full operation with an annual production capacity of 250,000 tonnes of hydro-treated vegetable oil. Given the success of this project, we plan to upgrade our facilities with the capability to produce sustainable aviation fuel. We are also exploring the possibility of using our patented biomass gasification technology to produce hydrogen-rich gas from agricultural waste.

During the year, the Group incurred over HK\$180 million in total research and development related expenditures in Hong Kong and mainland China. In the future, we will bring more green projects that contribute to a carbon neutral world on stream.

Additionally, we have implemented the recommendations of the Task Force on Climate-related Financial Disclosures and conducted a gap analysis to examine our current practices against these recommendations. Various risk assessments and management exercises were also conducted to ensure we remain resilient to climate change.

#### **Promoting Green Awareness**

On an ongoing basis, we support education initiatives and events by environmental groups, although many were either postponed or cancelled due to social distancing during the pandemic. We also continued our Plantation Enrichment Project with The Green Earth to maintain biodiversity in country parks at a new planting site at Shing Mun Country Park. Other green programmes in which we



Our agricultural waste utilisation pilot project in Tangshan, Hebei province, produces high-value chemical products with patented biomass gasification technology.





The Towngas Volunteer Service Team joined over 100 welfare organisations to deliver mooncakes to the elderly and disadvantaged.



We distributed fresh food packs to families in need during the Towngas Love on Delivery programme.

### CARING INITIATIVES IN 2020

#### Towngas Concession Schemes

benefit the elderly, people with disabilities, and single-parent and low-income families

Total gas concessions: HK\$26 million

Total beneficiaries: **Over 45,000 households** 

participated included WWF's Earth Hour, which calls on the public to switch their lights off for one hour to combat climate change, and the Used Clothes Recycling Bin Design Competition for primary and secondary students with Friends of the Earth (Hong Kong).

#### Serving the Community

We make every effort to care for the community and provide services that improve public health, social integration and personal wellbeing. During the COVID-19 pandemic, we maintained our caring intiatives through a wide range of volunteer and philanthropic activities to serve the elderly and help the disadvantaged.

#### Love on Delivery

Together with the Christian Family Service Centre, Towngas launched the Love on Delivery programme for underprivileged families suffering financial

# Festive Foods for the Community

Rice dumplings distributed: 154,300

Mooncakes delivered: **130,500** 

#### Donations to Support Community Activities

HK\$7.9 million

Number of volunteer hours Hong Kong: 16,633 Mainland China: 714,300



hardship as a result of job loss or underemployment due to COVID-19. From May to December 2020, 30,000 fresh food packs were distributed to 1,000 families. As volunteer visits were not possible during the pandemic, we offered our voluntary services online. We also organised small-scale interactive contests and published information on Towngas job openings, health, gas safety, and home repairs.

#### Unemployed Support Scheme

To help people in the community who had lost their jobs as a result of the economic downturn, we set up the Unemployed Support Scheme. Short-term employment opportunities were offered under the scheme to about 60 job seekers. Selected candidates who demonstrated outstanding performance were offered a one-year contract after completing their short-term jobs with us.

#### Mad Dog Café Charity Programme

In the past, our employees prepared foods to raise funds for the annual Mad Dog Café charity programme. Although the event had to be cancelled in 2020 due to the pandemic, the Company contributed funds towards the purchase of air purifiers, which were much in need for sanitising care homes for the elderly and disabled.

#### Mainland Caring Initiatives

To deal with the challenges of COVID-19, we donated health supplies and medicine to mainland hospitals as well as medical staff and their families. These included supplies such as face masks, medical gloves, protective clothing, goggles and disinfectant as well as financial assistance. Health education programmes were also organised in local districts across the country.

Our project companies also rolled out various initiatives in their cities. In Anhui, Guangdong, Liaoning and Shandong provinces, for instance, they waived gas bills or donated

appliances for medical staff who had been dispatched to Hubei province, while in Suzhou our volunteer team distributed food to the families of medical workers. When discovering that blood banks were understocked during the epidemic, our companies in cities such as Guangzhou, Tongling and Fuxin, initiated a blood donation drive and called on all healthy and eligible employees to participate. Another programme, the Bauhinia Action initiative, was launched to meet the basic needs of underprivileged families in 26 cities, including donations of gas appliances and daily necessities.

In 2020, we once again organised activities for the Gentle Breeze Movement programme. These included donations of school

We donated stationery and teaching supplies to schools in Qijiang, Chongqing under the Gentle Breeze Movement programme.



Volunteers from our project companies participated in anti-epidemic work in communities during the early phase of the COVID-19 outbreak.





#### **Revenue per Employee**

Company (HK\$ thousand) 5.000 4,500 4,000 3,500 3,000 2,500 2 000 1 500 1.000 500 0 16 17 18 19 20

supplies and stationery in Qijiang, Chongqing, where we also distributed 2 tonnes of rice from our Towngas Bauhinia Farm to 22 primary schools. During a visit to a primary school in Qingyuan, Guangdong province, we delivered school supplies such as computers, desks, chairs and physical education necessities. Our volunteers also helped set up a Towngas China Charity Library and repaired the school's facilities.

#### Building a Sustainable Workforce

We strive to retain and nurture our people by providing a desirable work environment that enables them to develop a fulfilling career with us. To help our employees achieve better work-life balance, we implemented flexible working hours at the beginning of 2020. In addition, we enhanced our medical benefits in Hong Kong and provided additional insurance coverage in mainland China related to the coronavirus.

#### Protecting Our Staff against COVID-19

With the outbreak of COVID-19, our primary concern was to minimise the risk of infection among our staff and to keep them healthy.

For our employees and contractors, particularly frontline technicians who had to visit customers' homes, we provided appropriate protective gear and disinfectant supplies. To reduce employees' potential exposure at work and during their daily commutes, we introduced work-from-home arrangements and offered flexible working hours. Some non-emergency on-site services, such as regular safety inspections and meter readings, were suspended. We also required employees to guarantine themselves under specified circumstances and offered free tests if it was thought that they had come into contact with suspected COVID-19 cases.

During a year of global economic downturn and the worldwide COVID-19 pandemic, we organised training programmes under the theme of "Overcoming Challenges" to equip our staff with a positive mindset, skills and knowledge. In keeping with our work-from-home arrangements and social distancing practices, we replaced many of our face-toface activities with online platforms and webinars or adopted blended training methods that combined online learning with smaller face-toface classroom sessions. We also produced new in-house e-learning videos and online training programmes, which were shared on our Smart Learning System. Topics included work practices during COVID-19, coaching and communication skills, as well as sales skills, among others. In 2020, we provided an average of 17.5 hours of training per employee in Hong Kong.

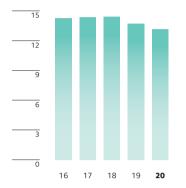
#### Developing the Talent Pipeline

To meet the demands of our business development, we are directing our recruitment efforts to candidates of different age groups in various job categories, including both technical and non-technical personnel. Through our apprenticeship training schemes, we continued to recruit and develop young talent to ensure a competent workforce. During the year, we expanded the scope of our sponsorships so that our apprentices could pursue further studies or academic gualifications.

In support of the Post-50 Internship Programme organised by the Employees Retraining Board, we offered a four-week internship for candidates aged 50

#### Town Gas Sales per Employee

Company (million MJ)



or above to help them develop new skills. For students, we provided the opportunity to gain real-life work experience as summer interns and co-operative trainees and, in 2020, recruited 95 of them for the programme. Moreover, we launched a graduate trainee programme for mainland China in which young candidates were selected to train as future managers in our mainland utility businesses.

The Towngas Engineering Academy provides professional training to our technical staff, gas technicians, contractors and new joiners. This training underlies our excellent reputation for gas safety and customer service and helps attract young people to the gas industry. During the year, the apprentices in our gas utilisation, network and mechanical engineering training schemes won the Outstanding Apprentice Award organised by the Vocational Training Council

(VTC), which reaffirmed the high calibre of our apprentices and effectiveness of our training approach.

In addition, we sponsored apprentice graduates and frontline staff for the Diploma of Vocational Education in Gas Services Engineering. This diploma, which has been accredited by the Institution of Gas Engineers and Managers (IGEM), enables apprentices and our staff to acquire the professional EngTech MIGEM gualification. For our Professional Diploma in Gas Engineering programme, a second intake of 30 students started their studies in August 2020 at VTC.

#### Occupational Safety and Health

Our usual work of promoting health and safety did not come to a stop during the pandemic. In 2020, we strengthened our operational safety measures and improved our standards of health, safety and environmental management. We also continued our audits to identify hidden hazards for rectification in a timely and effective manner.

> Our online fitness programmes featured yoga and Pilates exercises, encouraging our staff to maintain a healthy lifestyle while working from home.

During the year, we held a seasonal Occupational Safety and Health (OSH) Promotion series, with training sessions organised every quarter in topics such as infectious disease control, prevention of heat stroke, and work stress management. We also continued our subsidised flu prevention programmes in Hong Kong, with 326 employees and their family members participating in the vaccination programme.

For contractors, we organised OSH programmes, which included training courses and the Safe Foreman Award, to promote accident prevention and OSH focused supervision.

#### **Engaging Stakeholders**

We regularly engage in ongoing dialogues with our stakeholders as we understand that as a sustainable organisation we must have their support.





## KEY ENGAGEMENT INITIATIVES IN 2020

	EMPLOYEES	<ul> <li>Innovation Funding to encourage employees to propose innovative ideas</li> <li>Annual Quality Festival including an online seminar and a visit to a pulp mill that recycles beverage cartons</li> <li>Internal newsletters</li> </ul>
Î	CONTRACTORS AND SUPPLIERS	<ul> <li>e-Tendering System that managed 5,000 global suppliers</li> <li>Supply Management and Research Topics Programme in mainland China, with awards to encourage suppliers to submit proposals that improve product competitiveness</li> <li>Seminars and workshops</li> </ul>
	CUSTOMERS	<ul> <li>Online channels such as our website, social media platforms and Towngas App</li> <li>Customer Focus Team with online safety talks</li> <li>Monthly surveys on our performance of services and products</li> </ul>
	LOCAL COMMUNITIES	<ul> <li>Green partnership and sponsorship programmes</li> <li>Charity and community programmes</li> <li>Towngas Volunteer Service Team</li> </ul>
	INVESTORS	<ul> <li>Annual General Meeting</li> <li>Investor and securities analyst briefings for annual and interim results</li> <li>Conferences and meetings with investors, securities analysts and credit rating agencies</li> </ul>

Local and overseas roadshow meetings

From what we learn in our discussions with stakeholders, we are able to formulate strategies that address their concerns, minimise our risks and align with their values. At the same time, our diverse communication channels enable our stakeholders to have a better understanding of us, and for our employees, contractors and suppliers in particular to share our values and follow the same principles and standards in how we deliver products and services.

#### Creating Long-term Value for Stakeholders

At Towngas, we are committed to delivering enhanced value for our stakeholders over the long term by addressing their needs and concerns.

We believe that our long-term focus on creating value will lead to more robust growth and better investment outcomes. This commitment is also reflected in our corporate culture and high standards of corporate governance, as well as the way we develop our human capital and promote innovation.

With our strong commitment to sustainability, we are confident that we can fulfil our vision of being "Asia's leading clean energy supplier and quality service provider, with a focus on innovation and environmental friendliness."

#### **BUSINESS PROJECTS IN 2020**

#### UTILITY BUSINESSES IN MAINLAND CHINA

(City-gas projects re-invested by the Group's Companies are excluded)

#### Towngas (Stock Code: 3)

#### **Piped City-Gas Projects**

#### Guangdong Province

Panyu Zhongshan Dongyong Shenzhen Chaoan Chaozhou Raoping

#### Central China

Wuhan Xinmi

#### **Eastern China**

Yixina Taizhou Zhangjiagang Wujiang Xuzhou Suining Fengxian Peixian Danyang Jintan Tongling Suzhou Industrial Park Changzhou Nanjing Fengcheng Pingxiang Jiangxi Zhangshu Yonganzhou Hangzhou

#### **Shandong Province**

Jinan East

#### **Northern China**

Jilin Beijing Economic-Technological Development Area Hebei Jingxian

#### Northwestern China Xi'an

**Hainan Province** Qionghai

#### **Midstream Projects**

Guangdong LNG Anhui NG Hebei NG Jilin NG Henan NG Jintan NG (Phase 1) Jintan NG (Phase 2) Huanghua Port LNG Taizhou (District High Pressure Network) Tangshan Caofeidian LNG Terminal (Storage Tanks)

#### **LNG Refilling Station**

Nanjing (Marine)

#### **Smart Energy**

#### Photovoltaic

Suqian Changzhou Qingdao Weifang Foshan Zhaoqing Nanyang Xiamen Quanzhou

**Energy Storage** Dunhuang Danyang

Energy Savings Management Changsha

#### Water/Waste Treatment

Wujiang Suzhou Industrial Park Wuhu Suzhou Industrial Park (Industrial Wastewater Treatment) Maanshan Jiangbei Suzhou Industrial Park (Food & Green Waste Processing and Utilisation) Foshan Water Environmental Protection Tongling Food Waste Treatment Changzhou Jiashan Waste Incineration and Power Generation Changzhou Wujin Kitchen Waste Treatment



#### Towngas China (Stock Code: 1083)

#### **Piped City-Gas Projects**

#### Guangdong Province

Foshan Shaoguan Qingyuan Yangdong Fengxi

#### Eastern China

Nanjing Gaochun Dafeng Tongshan Hubei Zhongxiang Maanshan Bowang Zhengpugang Xin Qu Modern Industrial Zone Wuhu Fanchang Wuhu Jiangbei Anging Chizhou Tunxi Huangshan Huizhou Tongxiang Huzhou Yuhang Songyang Changjiu Fuzhou Jiujiang Wuning Xiushui Yifeng Changting

#### Shandong Province

Jimo Laoshan Laoshan Bay Zibo Zibo Lvbo Longkou Jinan West Weifang Weihai Taian Chiping Linqu Laiyang Zhaoyuan Pingyin Feicheng Boxing Economic Development Zone Yangxin Wulian

#### **Hunan Province** Miluo

#### Northeastern China

Benxi Chaoyang Tieling Fuxin Shenyang Coastal Economic Zone Yingkou Dalian Changxingdao Dalian Economic and Technical Development Zone Anshan Lvshun Kazuo Beipiao Wafangdian Xingiu

Jianping Changchun Gongzhuling Siping Qigihar

#### Hebei Province

Qinhuangdao Yanshan Cangxian Mengcun Shijiazhuang

#### **Inner Mongolia** Baotou

#### Southwestern China

Ziyang Weiyuan Pengxi Lezhi Pingchang Dayi Yuechi Cangxi Chengdu Zhongjiang Jianyang Pengshan Mianyang Xinjin Xindu Mianzhu Jiajiang Qijiang Guilin Zhongwei (Fusui) Xingyi Luliang Liujiang District, Liuzhou

#### UTILITY BUSINESSES IN MAINLAND CHINA (continued)

(City-gas projects re-invested by the Group's Companies are excluded)

#### Towngas China (Stock Code: 1083)

#### **Midstream Projects**

Xuancheng Huangshan Taian Taigang Inner Mongolia Transmission Pipeline Jinan-Liaocheng Pipeline & Chiping South Citygate

#### **Upstream Project**

Sichuan Liquefaction of Shale Gas

#### **CNG Refilling Stations**

Qiqihar (Lianfu) Qiqihar (Xingqixiang)

#### Distributed Energy Systems

Sichuan Shenyang Economic and Technical Development Zone Jiawang District, Xuzhou Qingdao Jimo Chuangzhi New District Yangxin Economic & Technological Development Zone, Binzhou Changchun Guilin Tangshan Chengnan Economic Development Zone Boxing Economic Development Zone, Binzhou Xuzhou Biomedical Industrial Park Maanshan Economic and Technological Development Zone South District

Zhengzhou Xinmi Yinji International Tourism Resort Shenzhen Gas Building Dangtu Economic Development Zone Northern District Lishui Songyang Wangcun Industrial Park Tangshan Fengnan Lingang Economic Development Zone Anhui Electricity Company Changzhou Photovoltaic Industrial Park Eastern Park of Tongling Economic and Technological Development Zone Fuxin Industrial Park Haicheng Xiliu Textile Industrial Park

#### Others

Zhuojia Public Engineering Towngas Natural Gas Sales U-Tech (Guang Dong) Engineering Liaoning Clean Energy Group Towngas Cosy Home (Chengdu) Technological Services



#### NEW ENERGY AND OTHER PROJECTS

#### **New Energy**

**Coal Mining** Inner Mongolia Ordos Kejian

#### **Coal-Based Chemicals**

Jiangxi Fengcheng Inner Mongolia Ordos

#### **CNG/LNG Refilling Stations**

Shaanxi Xianyang Shaanxi Huitai Shaanxi Lueyang Shaanxi Fengxiang Shaanxi Shenmu Shaanxi Baoji Shaanxi Hancheng Shanxi Yuanping Shanxi Lingshi Shanxi Xinfu Shandong Chiping Shandong Dongping Shandong Jiaxiang Shandong Weishan Shandong Shanxian Shandong Linging Shandong Heze Hebei Shijiazhuang Xingtai (Gangxing) Xingtai (Xinghua) Henan Kaifeng Henan Linzhou Henan Nanyang Henan Wuyang Inner Mongolia Huhhot Inner Mongolia Wulatezhong Qi Inner Mongolia

Xiwuzhumuqin Qi Inner Mongolia Chifeng Inner Mongolia

Chaha'eryouyiqian Qi Inner Mongolia Xilingol League Inner Mongolia Ulangab Huade Inner Mongolia Ulanqab Chahar Inner Mongolia Bayannur Uradqian Qi Inner Mongolia Bayannur Linhe Inner Mongolia Bayannur Hanggin Ningxia Jinyintan Ningxia Zhongwei Ningxia Zhongwei Ningxia Zhongwei Haixing Development Zone Jiangsu Xuzhou Anhui Maanshan Jiangxi Pengze Guangdong Guangzhou

#### **Upstream Projects**

Shanxi LCBM

Jilin Tianyuan

Xuzhou COG

Coal Logistics Shandong Jining Jiaxianggang Logistics Port

#### Biomass

Zhangjiagang Hubei Jingzhou Luanzhou Cangzhou (Biofuel)

#### Oilfield

Phetchabun Province in Thailand

#### **Telecommunications**

Shandong Jinan Shandong Jinan Chibo Shandong Laiyang Xuzhou Fengxian Xuzhou Peixian Liaoning Dalian DETA Dalian Yida Harbin Beijing Zhongjing Beijing Chibo Dongguan Shenzhen (Qianhai) Shenzhen (Interlink Connectivity) Yingtong TGT Network Services (Shenzhen)

#### Others

Shenyang Sanquan Construction Supervisory ECO Engineering Management (Xi'an) Suzhou Industrial Park Broad Energy Services GH Yixing Ecology Dalian (New Energy Technology) M-Tech **GH-Fusion** G-Tech S-Tech (Wuhan) S-Tech (Zhuhai) ECO Engineering Management (Shenzhen) Towngas Lifestyle Towngas Payment Technology (Shenzhen) Hong Kong & China Gas International Energy Trading Mia Cucina Kitchen Cabinets (Shenzhen) Inner Mongolia Ordos Carbon Material Towngas Agriculture Investment (Nanjing) Tangshan Laundry Factory Danyang Laundry Factory Suzhou Industrial Park Suxiang Cooperation Zone Urban Utilities Development