

MAINLAND UTILITY BUSINESSES

# elevating standards.

The Group's mainland operations recorded doubledigit growth in unit gas sales, heralding a new era in tackling air quality issues The mainland's first-ever residential gas clothes dryer launched, selling 10,000 units and each boosting household gas consumption by 30 per cent

Towngas China was honoured with the 2016 HKMA Quality Award Grand Award, which was given for the first time in respect of operations outside of Hong Kong

Hua Yan Water established a state-of-the-art bio-waste treatment facility that extracts methane for integration into Towngas China's pipelines



# MAINLAND UTILITY BUSINESSES

With the evolving socioeconomic landscape in mainland China, we are witnessing opportunities not only to expand our operations, but to establish environmentally sound directives in the industrial, commercial and residential sectors. Towngas will strive for continuous improvement in products and services, providing a quality living environment for our customers and the society.

A direct fired absorption chiller/heater and boiler powered by natural gas is installed in the Oceanic Museum in Weihai, Shandong province, to provide cooling and heating, as well as temperature modulated hot water.



#### **Our City-gas Operations**

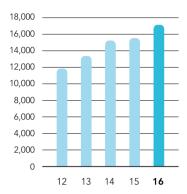
The year 2016 saw a substantial push to consolidate and strengthen the Group's 131 city-gas ventures across 23 provinces, autonomous regions and municipalities in mainland China, which together serve over 23 million residential, commercial and industrial customers. Challenges of a weak global economy notwithstanding, we recorded a 10.3 per cent volume growth in total gas sales, accounting for 8.3 per cent of the national city-gas market.

National demand for natural gas saw a mild recovery in 2016, though the consecutive decline of China's GDP growth over recent years and the weakening of its exports have affected our industrial gas sales. Low international oil prices depressed the cost of other petroleum fuels, leading some customers in the first half of the year to abandon piped city-gas in favour of cheaper alternatives. Fortunately, we were able to implement more competitive pricing in 2016 by virtue of a city-gate price reduction in non-residential

natural gas, which was introduced in a timely fashion by the National Development and Reform Commission at the end of 2015. With an extra boost from a significant marketing push, we succeeded in regaining customers lost earlier in the year.

Despite the challenges of a stagnant economy throughout the majority of the year, our long-term prospects paint a positive picture. In an effort to alleviate pollution and improve air quality, the mainland government's 13th Five Year Plan established carbon

#### China Joint Ventures Gas Sales (million m³)



intensity reduction targets of 40 to 45 per cent from 2005 levels by 2020, with a 60 per cent ceiling by 2030. With government policies stimulating the adoption of natural gas and giving structure to China's growing natural gas market, we anticipate a growth in gas sales in the coming years, particularly in the industrial sector. Severe pollution is also accelerating restrictions on coal and oil-fired burners, driving industrial operators to cleaner fuels like natural gas, which currently

comprises 6 per cent of the national energy mix. National adoption targets were set at 10 per cent by 2020 and 15 per cent by 2030, leaving a substantial gap to be filled. This will have a profound effect on our portfolio of businesses for the next five years.

To begin weaning from the reliance on coal-fired power, the mainland government is endorsing Distributed Energy Centres, which are gas-fired power generators coupled with cooling and heating systems that supply a localised district. The reduction of natural gas city-gate prices at the end of 2015 has made this a viable business, spurring the formation within the Group of two companies to grasp this potential market. Such projects offer several advantages; not only do they represent good long-term investments, they will boost city-gas sales significantly, promote sustainability via enhanced energy efficiency and offer the

potential for the business of thermal energy and electricity.

Already experiencing the benefits of China's expanding gas infrastructure, our commercial city-gas projects recorded a 12.1 per cent volume growth in 2016. With our piped-gas networks becoming more accessible to the market, restaurants and other commercial businesses are switching from bottled liquefied petroleum gas to piped gas as it is a safer and more convenient alternative.

The growth of the nation's middle class and the rise of urbanisation present much promise for our city-gas projects. Under the mainland government's 13th Five Year Plan, urbanisation is targeted to reach 60 per cent by 2020 and 70 per cent by 2030, giving rise to a more prosperous middle class. This will herald improved standards of living and increased gas consumption as public amenities proliferate, and household applications expand from cooking and water-heating to more modern applications like gas space heating and clothes drying, particularly in the regions along the Yangtze River.



A brewery in Jinan, Shandong province, utilises steam generated by natural gas boilers not only in the process of barley fermentation, but also to clean and sanitise beer bottles.

Our gas-fired home-based space heating boilers are a particularly effective driver of gas sales during winter, generating a tenfold increase in gas consumption over the year's average cooking and water heating usage.

#### **Midstream Facilities**

With operations stabilising over the year in spite of the sluggish economy, business proceeded smoothly for our midstream natural gas operations in 2016. We currently operate a total of eight midstream projects, including our Taigang Gas midstream long-haul pipeline project in Taian, Shandong province, the Xuancheng-Huangshan natural gas substream and downstream city-gas projects in Anhui province, natural gas pipeline projects in Anhui and Hebei provinces, natural gas extension projects in Jilin and

Henan provinces, a Guangdong Liquefied Natural Gas Receiving Terminal as well as a natural gas storage project under construction in Jiangsu province, which together support the growing natural gas market in mainland China.

To meet a growing demand for natural gas in response to the mainland government's targeted green energy policies, we are now constructing a natural gas storage facility in underground salt caverns in Jintan, Jiangsu province, with a total storage capacity of 460 million standard cubic metres. Phase one of the project, capable of storing 150 million standard cubic metres, is expected to be completed in the second quarter of 2017. The facility will facilitate the more efficient management of our gas inventory and reduce supply bottlenecks during high-demand periods, such as the winter months.

China's gas consumption in 2016 reached 206 billion cubic metres, and is forecast to double by 2030. Considering the nation's robust foreign and indigenous natural gas supply, as well as growing demand from the shifting national energy mix, we foresee considerable opportunities to expand our midstream frameworks as China strives to meet its clean energy targets in the coming years.

# Water Supply and Wastewater Operations

Spearheaded by Hong Kong & China Water Limited (Hua Yan Water), our burgeoning business encompasses six water projects, serving a total of 1.19 million customers across the two provinces of Jiangsu and Anhui. Buffered from the effects of a weak economic climate, our water projects enjoyed stable sales in 2016, recording a 3 per cent rise in revenue in 2016 with a sales volume of 455 million tonnes. Business expanded in 2016 to the maintenance of water supply systems within buildings, providing a further boost to the year's revenue.



Our underground natural gas storage facility in Jintan, Jiangsu province, will facilitate the management of our gas inventory in East China during high-demand periods.



To meet the substantial market demand for more sanitary and quicker means of drying clothes, Bauhinia launched the first-ever residential gas clothes dryer on the mainland.

Our modern treatment plants cover the production and distribution of drinking water as well as the treatment of wastewater. These include water supply joint venture projects located in Wujiang of Suzhou, and Wuhu; wholly-owned water supply projects in Zhengpugang Xin Qu, Maanshan and Jiangbei Xin Qu, Wuhu; and an integrated water supply and wastewater treatment joint venture project in Suzhou Industrial Park (the Park), together with an integrated wastewater treatment joint venture project, catering to an internationallybased company's TV screen production plant in the Park.

Essentially an environmental endeavour, these treatment facilities purify wastewater to required standards before discharging it back into the public sewage system, alleviating local pollution levels. Following the success of its integrated project at the Park, Hua Yan Water acquired a government-led project to establish a waste treatment plant, which will be capable of processing 500 tonnes of food waste, green waste and landfill leachate per day for conversion into natural gas, oil products, solid fuel and fertilizers. The project is expected to be commissioned in the third quarter of 2018.

The facility's advanced bio-waste treatment processes extract useful matter such as methane gas, which is fed to our neighbouring city-gas supply system, while wastewater is directed to our nearby treatment plant, establishing a crucial synergy between the Group's facilities within the Park. The bio-waste is in fact completely broken down into useful components that can be sold to nearby businesses for additional revenue, forming a new milestone in our journey of transforming waste into reusable matter. Considering the prolific demand for bio-waste treatment and the government's keenness to pursue this fledgling endeavour, such an arrangement forms a model blueprint that can be implemented in other cities across the mainland.

### Extended Service Businesses

Supporting contemporary living for over 23 million customers, we offer innovative products and services that include home appliances, kitchen furnishings, household goods and our jointly offered gas insurance policies. Our success this year was bolstered by a conscious shift in our promotional strategy, putting greater focus on the merits of gas appliances for contemporary comfort and convenience.

Through our online services platform, customers in mainland China can access our premium services anywhere, at any time.

The featured product of 2016 was the mainland's first-ever residential gas clothes dryer, which debuted under the Bauhinia brand in selected cities. Having been available in Hong Kong for over 20 years, these energyefficient appliances dry quicker, are gentler on fabric, are more economical to use than electric dryers and are more sanitary than outdoor clotheslines. Post-launch sales were at the 10.000-unit level. each boosting household gas usage by 30 per cent. The utilisation of gas for clothes drying will be extended to the commercial laundry sector, broadening our gas sales opportunities.

Bauhinia's home appliances, including cooking appliances and water heaters, continued to appeal to the mainland market, selling over 750,000 units in 2016 and accumulating sales of about 4.5 million units in total since the 2005 launch of the brand. Appreciated by customers for the high-quality construction and reliability of its products, the Bauhinia brand was the recipient of numerous awards in 2016, including Hong Kong Top Brand, Typical Outstanding



Enterprises of National Quality and Integrity and the Gold Tripod Award of the Chinese Top Chef Star Avenue Cup.

Another successful endeavour making its way from Hong Kong was our Total Kitchen Solution. Introduced in 13 mainland cities in 2016, it packages premium kitchen appliances together with our flagship Mia Cucina kitchen cabinetry and other household merchandise. These enjoyed a warm reception among project developers, with a total of 1,700 units sold post launch, and will be introduced gradually to other markets across the mainland in the years to come.

Channelling this momentum, we will be introducing our range of consumer appliances, including white goods under the Mia Cucina name in both Hong Kong and mainland China in early 2017, bringing our popular kitchen solutions under one unified brand.

In light of the progress made in 2016, we anticipate a positive response for the expanded Mia Cucina brand.

Partnering with Ping An Property and Casualty Insurance Company of China, Ltd, and Huatai Property Insurance Company Ltd, we began offering household gas insurance protection in 2015. Providing an accident cover for a low premium, these could be purchased online or through our customer centres. Our insurance plan gained favourable traction in 2016, achieving total sales of over RMB89 million across 43 of our city-gas projects. As part of our diversified business model, we are actively exploring other possible protection lines to offer in the coming years.

#### **Serving Our Customers**

To extend brand favourability and awareness in 2016, we sought to strengthen ties with our customer base, continuing to forge a relationship of trust based on our established reliability, safety focus and customer-centric culture.

Our customer service network expanded to 244 customer centres across 82 mainland cities in 2016, offering customers a comprehensive destination addressing gas usage and household appliance needs.

Our rigorous service ethic extended to the digital sphere when we brought our business online in March 2016, prompted by the unrivalled opportunities of mainland China's Internet Plus movement. Our new online customer centre and the Towngas Lifestyle WeChat service account offer integrated lifestyle service platforms which enable customers to shop for our household goods and healthy food products online, in addition to settling gas bills and making installation or maintenance reservations and other service requests.

Our digital customer service channels will give customers access to different services anywhere, at any time. We will also be transitioning our platform to a membership model, making every customer a member of our club with exclusive privileges such as discounts on household goods, healthy food and medical consultations, as well as other third-party services.

#### **Enhancing Safety**

A key differentiator that sets us apart as one of the most trusted gas companies on the mainland is our attractive safety record. As a result of group-wide endeavours to weave a safety focus into our corporate DNA, major gas-related accidents and casualties have remained at a low level even as our customer numbers have gone up. Customers choose city-gas instead of other fuels mainly because they trust the safety of our gas networks, the reliability of the systems and equipment

we supply and the rigorous training undergone by our maintenance and regular inspection teams. During the year, we offered comprehensive safety training to employees across our mainland utility operations with a total of over 850.000 hours.

At the corporate level, we continued to promote Total Quality Management (TQM) as a means of holistic quality and risk management, rolling out initiatives that encompassed every organisational level. Taking a proactive approach to ensuring the continued integrity of our gas equipment and infrastructure, senior management maintained their ongoing safety visits to worksites and customer premises, and convened regularly for the evaluation of current safety issues and corporate risks. Reputational risks were also brought to the table in 2016 as part of our comprehensive risk management directive. Corporate safety manuals from February 2015 were also updated in December 2016 in light of a shift in local regulations and company requirements, placing greater emphasis on environmental standards.



Towngas China was honoured with the 2016 HKMA Quality Award Grand Award presented by The Hong Kong Management Association for its excellent standards of management.

2016
Utility Businesses
in Mainland China

Panyu	Towngas Piped City-Gas Projects	Year of Establishment	Project Investment Rmb M	Registered Capital Rmb M	Equity Share %	
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	NORTHWESTERN CHINA					
	Xi'an	2006	1,668	1,000	49%	
HAINAN PROVINCE	HAINAN PROVINCE					
Qionghai 2008 110 50 49%		2008	110	50	49%	

Midstream Projects		Year of Establishment	Project Investment Rmb M	Registered Capital Rmb M	Equity Share %	
Guangdong LNG		2004	8,595	2,578	3%	
Anhui NG		2005	_	252	27.5%	
Hebei NG		2005	2,760	920	43%	
Jilin NG		2007	360	220	49%	
		2012	125	50	49%	
Henan NG Jintan NG		2012	180	100	64%	
		2010	100	100	0.76	
LNG Refilling Statio	on					
Nanjing (Marine)		2014	600	217	37.6%	
Water/Waste Treatr	ment Projects					
Wujiang		2005	2,450	860	80%	
Suzhou Industrial Park		2005	4,705	1,597	50%	
Wuhu		2005	1,000	400	75%	
Suzhou Industrial Park (Industri	ial Wastewater Treatme	ent) 2011	550	185	49%	
Maanshan		2013	157	63	100%	
Jiangbei		2013	1,049	374	100%	
Suzhou Industrial Park		2013	1,047	3/4	10070	
(food waste processing and	utilisation)	2016	220	75	55%	
Towngas China i ip	ed City-Gas Pr	ojects				
GUANGDONG	Tongxiang Huzhou	Laiyang	Anshan Lvshun		SOUTHWESTERN CHINA	ı
GUANGDONG PROVINCE Foshan	Tongxiang	Laiyang Zhaoyuan			CHINA	ı
GUANGDONG PROVINCE	Tongxiang Huzhou	Laiyang	Lvshun			I
GUANGDONG PROVINCE Foshan	Tongxiang Huzhou Yuhang	Laiyang Zhaoyuan Pingyin	Lvshun Kazuo	dian	CHINA Ziyang	I
GUANGDONG PROVINCE Foshan Shaoguan	Tongxiang Huzhou Yuhang Songyang	Laiyang Zhaoyuan Pingyin Feicheng	Lvshun Kazuo Beipiao	dian	CHINA Ziyang Weiyuan Pengxi Lezhi	I
GUANGDONG PROVINCE Foshan Shaoguan Qingyuan Yangdong	Tongxiang Huzhou Yuhang Songyang Changjiu Fuzhou Jiujiang	Laiyang Zhaoyuan Pingyin Feicheng Boxing Economic Development Zone Yangxin	Lvshun Kazuo Beipiao Wafango Xinqiu Jianping	}	CHINA Ziyang Weiyuan Pengxi Lezhi Pingchang	I
GUANGDONG PROVINCE Foshan Shaoguan Qingyuan Yangdong Fengxi	Tongxiang Huzhou Yuhang Songyang Changjiu Fuzhou Jiujiang Wuning	Laiyang Zhaoyuan Pingyin Feicheng Boxing Economic Development Zone	Lvshun Kazuo Beipiao Wafango Xinqiu Jianping Changcl	J nun	CHINA Ziyang Weiyuan Pengxi Lezhi Pingchang Dayi	I
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Qiqihar (Lianfu) Qiqihar (Xingqixiang)

Xuancheng Huangshan Taian Taigang Zhuojia Public Engineering Sichuan Distributed Energy Systems Towngas China Energy Investment





"With our new kitchen,
I love making
delicious healthy food for
my family every day."

HONG KONG
GAS BUSINESS

# heartfelt warmth.

The first commercialised project utilising landfill gas to fuel the combined heat and power system in Hong Kong was commissioned at a hospital in Tai Po

Gas appliance sales increased by 7.7 per cent, contributing to profits as well as enhancing regular maintenance operations by provision of high-quality products Our Total Kitchen Solution, under the Mia Cucina brand name, enjoyed a growth in sales to 4,186 units in 2016, bringing our market share in the private development projects sector to 30 per cent

# HONG KONG GAS BUSINESS

Towngas has been serving the people of Hong Kong since the 1800s. We have constantly sought fresh ideas to enhance modern living and enable the growth of our business. By embracing creative thinking and delivering practical solutions, we have benefited our communities and ensured our sustainable development.





Towngas Managing Director
Alfred Chan (right) explains the
combined heat and power
(CHP) system to Secretary
for the Environment
Wong Kam Sing (left) at the
launching ceremony of the CHP
system at Alice Ho Miu Ling
Nethersole Hospital.

#### Residential and Commercial Activities

The dampening effects of modest economic growth and a drop in overnight tourists were offset by a surge in gas consumption driven by low temperatures early in the year. Total gas sales of Hong Kong of 28,814 TJ were recorded in 2016, representing a growth of 1.4 per cent over the preceding year. Our customer base likewise maintained its stable growth by increasing 20,153 accounts to a total of 1,859,414 as at the end of the year.

Residential gas consumption rose 3.3 per cent over 2015 levels, due in part to the lower average temperatures recorded. Promising developments in the commercial sector also contributed significantly to our gas sales, including the expansions of the Cape Collinson Crematorium and a local theme park, as well as the fuel conversion of Pok Oi Hospital from diesel to gas.

New gas applications continued to take hold among our environmentally conscious customers, driven by our targeted marketing strategies. Both theme parks in Hong Kong now have our gas-fired absorption chiller plants and dehumidifiers installed in place of their electric counterparts. With more installations of gas-fired facilities

in progress as the two parks move forward with their own expansion plans, we expect our commercial gas sales to continue on an upward trajectory in the coming years.

We are also intensifying the integration of landfill gas into Hong Kong's energy mix, harnessing it from local landfill sites and treating it for use as recycled fuel to extend local gas utilisation opportunities.

At the Alice Ho Miu Ling
Nethersole Hospital in Tai Po,
we installed Hong Kong's first
combined heat and power system
driven by treated landfill gas,
reducing the hospital's reliance
on electricity to reduce carbon

emissions. Its thermal by-products can be harnessed to generate steam for the hospital's daily use, enhancing the energy efficiency of the system to 85 per cent. Recognising the benefits of these systems for other energy-intensive operators, we actively canvassed potential users in the Tseung Kwan O area as the landfill gas treatment facility in the South East New Territories (SENT) approached commission. Our landfill gas treatment projects can provide businesses in the vicinity with a renewable energy option.

Catering to Hong Kong's evolving culinary tastes, we established stable growth this year in the restaurant trade through a range of new commercial western cooking appliances, programmable roasters as well as noodle-cookers. For local restaurants, we introduced high-efficiency stockpots featuring technology that not only shortens boiling

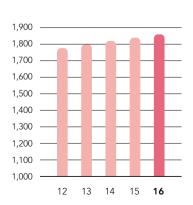
time by half compared to traditional stockpots, but also reduces heat and noise significantly for a better kitchen environment. Several large catering groups – including the popular Hong Kong Maxim's Group and Tsui Wah Group – have commissioned them for their restaurant chains. We also equipped local Korean barbeque chains with a series of new Korean-style gas grillers in light of the growing popularity of this cuisine among local diners.

Aside from our reputation as a safe and reliable provider of clean fuel, we continue to be a household name in high-quality consumer appliances and stellar after-sales services. Despite the weak economy, 275,361 sets of appliances were sold in 2016 with a 24.9 per cent increase in sales

revenue, driven chiefly by the remarkable performance in the large property development projects.

Particularly well received among property developers was our Total Kitchen Solution, which combines our TGC appliances with our popular Mia Cucina kitchen cabinets and other branded products in a one-stop solution for retail consumers and commercial developers. Unit sales rose to 4,186 in 2016, bringing our market share in the private development projects sector to 30 per cent. We expect this momentum to continue with the launch in early 2017 of our unified Mia Cucina kitchen series in tandem with the mainland market, offering one brand name that encompasses appliances and cabinetry.

### Number of Customers Company (Thousand)





Exuding style and elegance, TGC's rose gold temperature-modulated gas water heater is perfect for customers seeking a touch of class.



The Towngas Cooking Centre offers quality courses for culinary enthusiasts to master sophisticated techniques so they can prepare delicious cuisines and embrace the joy of cooking.

Additions to our line-up that will be introduced under the new Mia Cucina appliance brand include gas ovens, our new highly rated 8kW gas hob (the highest rated residential hob available in Hong Kong), range hoods and built-in refrigerators, amongst others. In recognition of their exceptional quality, our Mia Cucina projects were accredited by the Hong Kong Professional Building Inspection Academy in 2016, enhancing their competitiveness in the residential market.

Our robust performance in the face of a weak economy is attributable to more than mere marketing acumen. In addition to our promotions in home décor publications and websites, Mia Cucina continued to gain traction on the strength of our multifaceted customer engagement efforts. We also launched the international

Reinventing Home Kitchen –
Design Contest 2016, which drew in over 100 submissions created by design professionals and culinary talent alike from 17 different countries. Winning entries will come to fruition through the Mia Cucina brand, providing us creative ideas of reinventing kitchen design.

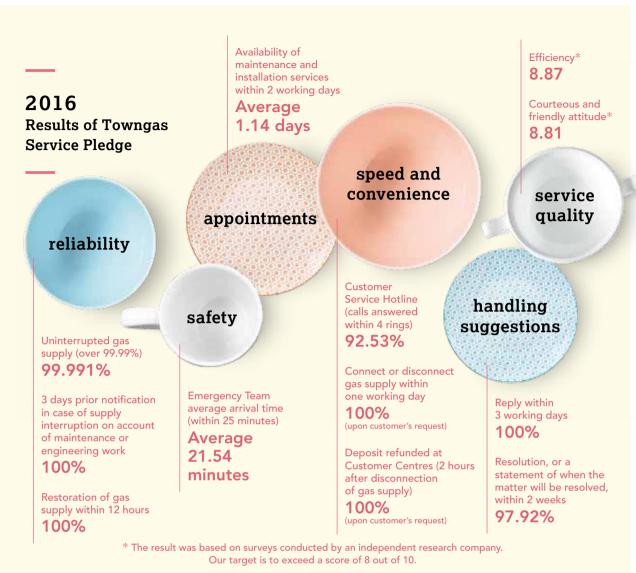
To drive gas sales, we continued to promote flame cooking, particularly among a younger segment of consumers. Taking our message to social media, we produced a series of popular cooking videos featuring celebrity chefs who discussed the benefits of flame cooking, along with other light-hearted cooking segments that were launched online, rekindling the joy of healthy home cooking. Video interviews were also conducted with restaurant gurus and trade leaders from the food industry for the commercial sector, highlighting the

superiority of flame cooking with Towngas.

Another focus of our promotional efforts was our gas dryer. Highlighting advantages like speed, fabric-friendliness and environmental benefits, our promotions extended across a range of promotional channels, including social media, where we launched a photo contest and referral programme. Dryer sales rose by 14.4 per cent as a result, attesting to the enduring appeal of our unique dryers.

In a nostalgic nod to our roots in the 19th century, our gas lamps continued to radiate throughout the streets of Hong Kong.

Together with new installations in Wan Chai and Repulse Bay this year, over 40 gas lamps are located throughout the city, evoking the romance of an earlier era for the enjoyment of a new generation.



## A Commitment to Customer Service

We are a utility company offering services that directly impact everyday life. Customer satisfaction has been a key driver of our business and we were honoured to receive over 6,400 complimentary letters throughout the year as a testimony to our quality services and products.

The backbone of our customer service structure is formed by our technical teams. Customer service achieved new levels of efficiency this year with the expansion of our mobility solution to our maintenance teams. Our technicians are equipped with mobile devices to provide instant quotations, eliminating the need for paperwork. Information like appliance instructions, safety videos and product promotions could also be called up instantaneously to keep customers informed on ways to keep appliances running safely. Already in use by our Regular Safety Inspection Teams,

Emergency Teams and Installation Teams, this system helps us save over 2 million pieces of paper per year. In 2017, we plan to introduce a number of internet channels aimed at communicating with our new generation of customers.

In recognition of our dedication to service excellence, we also received the Sing Tao Service Awards – After Sales Service for the eighth consecutive year and East Week's Hong Kong Service Awards – Public Utilities for the sixth year running.

#### **Gas Infrastructure**

Keeping pace with new housing and commercial developments that are currently underway, our piped-gas network and infrastructure in Hong Kong continued to expand in 2016, supporting the growth of our gas business and enhancing supply reliability. New residential developments in Kai Tak, Sha Tin and Kwun Tong were connected to our gas mains this year, as were several large laundering facilities and Phase II of a theme park currently under development.

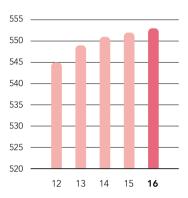
With areas of the North East New Territories and Shenzhen River Loop coming into focus under the government's comprehensive development plans, we are preparing for a substantial expansion of our piped-gas network to cope with the anticipated surge in gas demand. Network design is currently in progress for development areas in Fanling North, Kwu Tung North, Hung Shui Kiu and Tung Chung East, while in Lantau, over 15 km of pipeline are being planned for

the third runway project and the new commercial development in Chek Lap Kok. The new pipelines will be laid in conjunction with the government's road infrastructure.

Progress continues in the laying of a 9 km stretch of looped intermediate-pressure pipeline along Castle Peak Road, as well as the modification of our adjoining stations in Tai Lam and Tuen Mun North. This will enhance the stability of the gas supply to the North West New Territories once complete. The replacement of our medium-pressure ductile iron pipes for gas supply enhancement is also progressing, and is now in its final stages.

Our piped gas network has a reputation for reliability and a low seepage rate, which we achieve through diligent monitoring and the proactive maintenance of our infrastructure. In 2016, on a 10-year cycle, we carried out in-line assessments of our high-pressure pipelines using

### Number of Customers per km of Mains Company

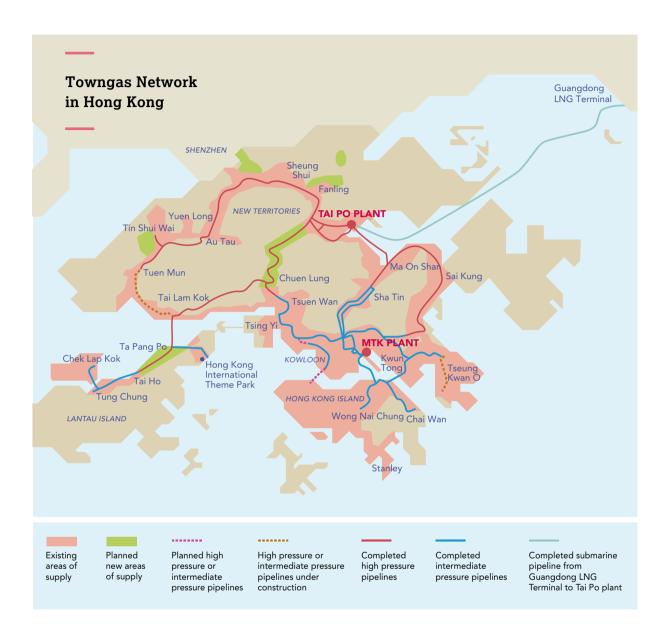


intelligent pipeline inspection gauges, enabling us to ensure the continued integrity of our pipeline system.

Our innovations also extend towards enhancing safety and efficiency in gas supply system maintenance and repair works. The Smart Jacket is a PVC sleeve we developed to enclose targeted riser sections to halt corrosion, reducing the need to replace pipes that are otherwise uncompromised. Automation via the application of robotics this

We introduced remotecontrolled mini excavators to accelerate the schedule of our roadworks, while protecting the health of our employees.





year saw our roadwork benefit from the introduction of our Little Swan, which is a fleet of mini excavators that can be controlled remotely and manoeuvred easily even in tight spaces, reducing our reliance on cumbersome equipment. Our rapid rock drilling and splitting machine likewise reduces the need for traditional manual rock splitting. Capable

of drilling and splitting hard rock 20 times more quickly, it allows for a substantial reduction in manual labour.

We make effective use of technology to conduct remote monitoring of our pipe system. Our computerised pipe replacement automated point system maps sections of pipe that need to be replaced based

on a point system. Factors taken into consideration include the pipe's age, leakage history, material used, gas pressure, size and location, amongst others. Photogrammetry is another digital tool we use to measure the precise positioning of our pipelines, translating a series of images into engineering records that aid us in asset management.

"Now I can do
my part in protecting the
environment, as a
contribution to my son."



# eco-friendly choices.

The ECO's renewable energy initiative is underway, with the construction of a plant converting bio-oil into high-quality chemical products and fuel substitutes nearing completion

The construction of our South East New Territories (SENT) landfill gas treatment facility has been completed, further actualising our sustainable development goals

ECO's pilot project converting agricultural waste into furfural and levulinic acid is anticipated to have significant implications for the nation's environmental practices





# NEW ENERGY AND DIVERSIFIED BUSINESSES

Towngas is environmentally conscious in all business considerations. Our research and development initiatives continue to cultivate clean fuel alternatives with considerable environmental benefits and economic potential. Looking forward, our innovative ventures are expected to contribute to a sustainable future for the Group and the environment.



Expected to commence by the end of 2017, our new facility in Zhangjiagang, Jiangsu province, will convert low-grade by-products of the oil refining process into valuable feedstock.

#### **New ECO Energy**

ECO Environmental Investments Limited (ECO) is the Group's new energy platform. With strong research and development in alternative energy, ECO has successfully introduced innovative technology turning low-grade waste materials into high-value energy products, bringing the Group closer to its new energy vision. Currently, our product portfolio comprises clean fuels such as liquefied natural gas (LNG), methanol and other gasoline substitutes, with more high-value, environmentally-friendly energy, chemical and material products soon to be added. By building a diverse energy portfolio sourced

from indigenous low-value feedstock, ECO is defining a new route for mainland China to simultaneously meet its future energy demands and address its environmental concerns.

One of ECO's key strategies is to develop a robust LNG value chain. To secure our supply of LNG, we are converting various types of feedstock abundant on the mainland, including coalbed methane. Our coalbed methane liquefaction facility in Jincheng, Shanxi province, converts 250 million cubic metres into LNG each year. Though depressed LNG market prices in the first half of 2016 presented a challenge, our operations have continued to run smoothly. Meanwhile, construction of another facility in Xuzhou, Jiangsu province, which converts coke oven gas, an industrial by-product of the coke-making process, into methane and LNG, is nearing completion. With this project expanding ECO's LNG production capacity, business is expected to improve in 2017, in tandem with recovering international crude oil prices.

Our coal-based chemical plant in Inner Mongolia employs clean coal technology to generate syngas, which is then synthesised into methanol. Production capacity of the plant was expanded to exceed 1,000 tonnes of methanol a day in 2016, and we also began construction of a facility to upgrade methanol into natural gasoline that can be used to substitute high-grade gasoline. The facility is currently undergoing operational trials, and is expected to be completed by mid-2017.



By expanding ECO's refilling station network, we continue to drive the conversion from diesel to cleaner natural gas for vehicles across the mainland.

In 2016, we launched another construction project at our Inner Mongolia plant to convert 40 per cent of the coal-based syngas into ethylene glycol, a high-value chemical product in great demand for the production of polyester fibres and antifreeze formulations. The project is expected to start trial production by the end of 2017, and marks significant progress in our efforts to transform the Inner Mongolia coal chemical plant into a downstream value-adding facility that uses our own state-of-the-art technology to turn coal feedstock into environmentally-friendly products of high economic value.

The construction of a plant to upgrade low-grade inedible bio-oil in Zhangjiagang, Jiangsu province, is proceeding as planned, with production trials set for the third guarter of 2017. Integrating ECO's proprietary technology for the highest efficiency and yield, the plant will have the capacity to convert up to 220,000 tonnes of palm acid oil per year into high-value fuel substitutes by extracting high-quality oleic acid and upgrading the residue into surfactant chemical products. Further research and development is underway to refine even purer forms of oleic acid and linoleic acid for greater added value.



Our SENT landfill gas treatment plant will be commissioned in the second quarter of 2017.

As an agrarian economy, mainland China produces an abundance of agricultural waste after harvest seasons annually, which ECO has targeted as an important source of raw material for our renewable initiatives. Traditionally, agricultural waste is burned on-site, causing severe smog pollution during harvest seasons. Using innovative technology developed in-house, ECO has launched a pilot project in Tangshan, Hebei province, converting agricultural waste into furfural and levulinic acid, which can be further upgraded into valuable clean fuel additives. It is expected to begin operational trials in the second half of 2017.

New energy vehicles are being championed worldwide in an effort to combat air pollution. Much research is being carried out to achieve a breakthrough in battery technology, which

dictates the performance of the vehicle. ECO has developed and patented a technology to produce high-grade pitch from tar oil. This pitch has the potential to produce high-quality carbon material products in bulk, including activated carbon with a high specific surface area, an essential material for supercapacitors, and mesocarbon microbead, the preferred material for high performance battery anode production. Both are crucial components of high performance power storage systems. Currently, ECO is conducting a mid-scale industrial test to ready the technology for commercial application. In addition, ECO is pursuing advanced development works to formulate silicon-carbon composite anode materials with even higher power storage capacity.

On the demand end of our LNG value chain, ECO is focusing on initiatives that drive the conversion from diesel to cleaner and less expensive LNG for heavy-duty trucks and marine vessels across the mainland. ECO currently possesses 62 vehicular refilling stations in operation, under construction or at the planning stage, forming an extensive network in provinces and autonomous regions including Shaanxi, Inner Mongolia, Ningxia, Shandong, Shanxi, Jiangsu, Henan and Liaoning. Our facilities are strategically stationed, for example, at depots and along the routes of Guangzhou's publicly operated waste disposal fleet. By expanding our network of refilling stations, we are forging a highly integrated LNG value chain in anticipation of expanding LNG fleets on the mainland.

In Hong Kong, ECO's major businesses – a facility supplying aviation fuel to Hong Kong International Airport, dedicated liquefied petroleum gas (LPG) vehicular refilling stations serving a network of taxis and mini-buses, and landfill gas utilisation projects, continued to operate smoothly in 2016.

ECO's aviation fuel facility provided a safe and reliable fuel supply to Hong Kong International Airport, with a total turnover of approximately 6.2 million tonnes in 2016, it continues to contribute a steadily growing return on investment. Despite depressed international oil prices over the past year, our five dedicated LPG refilling stations were able to reap a satisfactory profit margin and pass the benefit of lower LPG

prices on to customers at the same time.

ECO continues striving for wider utilisation of landfill gas - an otherwise wasted source of energy generated by the decomposition of municipal waste which, apart from a small portion used for on-site power generation, is typically flared off in a polluting manner. In 2003, ECO began its acclaimed project at the North East New Territories (NENT) site, one of Hong Kong's three strategic landfill sites, transporting treated landfill gas to our Tai Po gas production plant through a dedicated 19 km pipeline. Furthering our carbon emission reduction efforts in Hong Kong, ECO's second landfill gas utilisation project, located at the SENT landfill site,

was progressing smoothly and is expected to commission in the first half of 2017, marking the start of a new chapter in our green journey.

#### **Telecommunications**

Towngas Telecommunications Company Limited (TGT) provides connectivity and cloud computing services to professional clients, such as telecommunications carriers, international network service providers and reputable corporations.

Our synergistic connection and comprehensive portfolio are tailored to meet customer demand with colocation, server hosting and various value-added services that have received high satisfaction ratings.



TGT now operates six data centres across Hong Kong and mainland China with a total capacity of 15.000 server racks. This year, we expanded our capabilities by joining with strategic partners, including Hong Kong Broadband Network, to create two joint ventures, TGgo and Broadbandgo, which provide cloud computing, broadband and Wi-Fi services. We also continued our efforts to facilitate business application development on cloud technology, creating clouds for finance, gas utilities and more.

While seizing business opportunities in the Big Data Era, TGT is privileged to serve as Vice President of the Shenzhen Big Data Industry Association. This is a remarkable and beneficial opportunity for us to expand our business and establish our plans for long-term development on the mainland.

TGT was honoured with numerous international awards and recognitions this year. TGT Hong Kong Data Centre 2 was awarded

the ISO14001, ISO20000-1, ISO27001 and Level II security guidelines issued by the Hong Kong government, and TGT Dalian Data Centre 1 won the U.S. Green Building Council's LEED Core and Shell System Gold Level Certificate, among others.

#### **Information Technology**

As a wholly-owned subsidiary of Towngas, S-Tech Technology Holding Limited (S-Tech) is responsible for software development, project implementation and system integration, all of which have successfully enhanced service quality and efficiency for the Group.

Currently, S-Tech has deployed its Towngas Customer Information System to 80 per cent of the Company's city-gas joint ventures on the mainland. By using cloud and mobility solution,

we developed applications such as Mobility Regular Safety Inspection, Mobility Meter Reading and Mobility Maintenance Service, saving management costs and improving customer service quality. To provide a more interactive and comprehensive service to Towngas customers, we leverage innovative technology to link up with several key service platforms, including an online service centre, payment gateway, smart metering and call centre system. S-Tech also invests in developing gas-specific Supervisory Control and Data Acquisition and Geographic Information System to further enhance operational safety while offering high-quality and efficient gas services.

## Civil and Building Services Engineering

U-Tech Engineering Company Limited (U-Tech), another

The advanced Near Field
Communication (NFC)
residential gas meters
developed by M-Tech
offer more accurate
gas consumption readings
and allow for
tariff prepayment.



wholly-owned subsidiary, provides consultancy and engineering contractor services in Hong Kong and Macau. It specialises in utilities installation, infrastructure construction, trenchless technologies and civil and building services engineering for public and private projects.

2016 was an excellent year for U-Tech, with the successful completion of several landmark projects, including the supply and installation of electrical works and air-conditioning for the Manulife Tower in Kowloon Bay, the construction of a footbridge linking Tsing Yi North Bridge and Tsing Yi MTR Station, and the rehabilitation of seawater cooling mains for the Electrical and Mechanical Services Department in Central and Wan Chai. During the year, U-Tech secured several new contracts, including the installation of electrical works, fire services and air-conditioning for the Manulife Financial Centre in Kwun Tong, and the construction of 13 pedestrian elevators for the Civil Engineering and Development Department. U-Tech also won its first slope improvement contract from the Agriculture, Fisheries and Conservation Department.

In recognition of its high standards of quality and safety, U-Tech was awarded the Safety Performance Award – Construction from the Occupational Safety and Health Council for the third consecutive year. U-Tech also received the HKCA Proactive Safety Contractors Award from the Hong Kong Construction Association.

#### Manufacturing Businesses

Proprietary smart gas meter solutions are developed and marketed by our subsidiary, M-Tech Metering Solutions Company Limited (M-Tech). These gas meters incorporate Micro-Electro-Mechanical Systems (MEMS) technology to eliminate the effect of temperature and pressure towards meter accuracy, achieving a more accurate measurement in gas consumption. These features have driven down the cost of installation. We are planning to supply these solutions to all our city-gas businesses, as well as others in mainland China and overseas.

In 2016, M-Tech launched a new generation of NFC residential gas meters to meet the requirement for tier tariffs on the mainland. These meters allow for tariff prepayment, tier tariff settings and gas consumption records to avoid conflict during tariff adjustment. They also have several gas safety features, such as regular safety inspection alerts,

excess flow cut-off and external interference alarms. Committed to customer satisfaction, M-Tech developed an advanced small-scale commercial meter with MEMS technology to provide more options for metering solution.

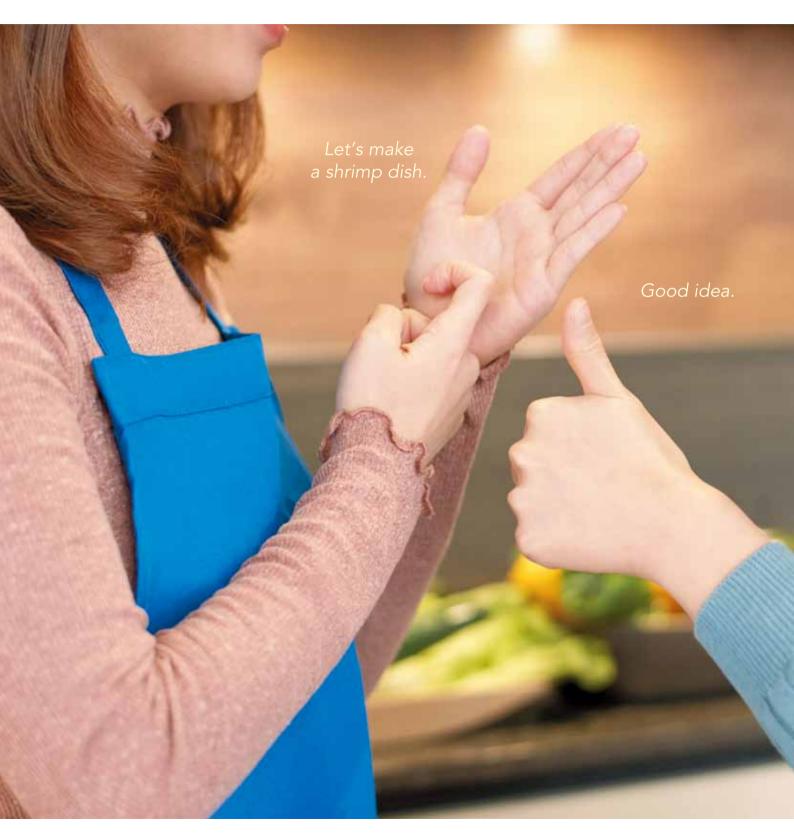
To ensure the highest standards of quality across the supply chain, G-Tech Piping System (Zhongshan) Company Limited (G-Tech) supplies high-quality polyethylene (PE) pipes, supported by our joint venture with the UK-based Fusion Group, GH-Fusion Corporation Limited (GH-Fusion), which specialises in PE fittings.

Despite the relatively weak export climate in mainland China, the PE piping business expanded rapidly in 2016, reinforced by steadily increasing export opportunities. During the year, the business supplied approximately one-third of the Group's mainland markets and started developing business in other regions as well as markets outside the Group. To capture these opportunities, a second G-Tech PE pipe factory came into operation in Maanshan, Anhui province in the last quarter of 2016, doubling total production capacity and enabling a wider market reach on the mainland. GH-Fusion also developed a number of new PE fittings to address the needs of the market.

**2016**New Energy and Other Projects

_	Year of Establishment	Project Investment Rmb M	Registered Capital Rmb M	Equity Share %	
New Energy Projects					
COAL MINING					
Jiangxi Fengcheng	2008	1,100	236	25%	
Inner Mongolia Erdos Kejian	2011	450	150	100%	
COAL-BASED CHEMICAL					
Jiangxi Fengcheng	2009	1,250	350	40%	
Inner Mongolia Erdos	2009	1,170	867	100%	
CNG/LNG REFILLING STATIONS					
Shaanxi Xianyang	2008	12	12	100%	
Shaanxi Huitai	2010	54	27	100%	
Shaanxi Lueyang	2014	21	13	100%	
Shaanxi Fengxiang	2014	30	15	100%	
Shaanxi Shenmu	2015	60	38	100%	
Shaanxi Baoji	2015	29	14	100%	
Shaanxi Zhouzhi	2016	14	10	100%	
Shaanxi Weinan Gushi	2016	15	11	100%	
Shaanxi Weinan Tianshi	2016	21	14 41	100% 90%	
Shaanxi Hancheng Shanxi Yuanping	2016 2008	47 40	20	42%	
Shanxi Lingshi	2013	25	20	75%	
Shanxi Pinglu	2014	27	14	100%	
Shanxi Xinzhou	2016	30	15	100%	
Shandong Chiping	2010	30	15	100%	
Shandong Jining	2010	11	8	100%	
Shandong Dongping	2010	43	26	91%	
Shandong Jiaxiang	2012	50	28	70%	
Shandong Weishan	2014	58	29	100%	
Shandong Shanxian	2014	28	14	100%	
Shandong Linqing	2014	22	13	100%	
Shandong Heze	2015	23	13	90%	
Hebei Shijiazhuang	2014	65	31	100%	
Xingtai (Gangxing)	2014 2016	20 24	17 23	80% 80%	
Xingtai (Xinghua) Henan Xinmi	2010	29	15	100%	
Henan Anyang	2012	29	14	100%	
Henan Kaifeng	2013	29	15	100%	
Henan Linzhou	2013	30	20	100%	
Henan Nanyang	2015	14	10	100%	
Henan Luoyang Yanshi	2016	15	10	100%	
Inner Mongolia Huhhot	2014	28	14	90%	
Inner Mongolia Wulatezhong Qi	2015	11	8	100%	
Inner Mongolia Xiwuzhumuqin Qi	2015	30	15	100%	
Inner Mongolia Chifeng	2015	30	15	100%	
Inner Mongolia Chaha'eryouyiqian Qi	2015	30	15	90%	
Inner Mongolia Xilingol	2016	18	15	100%	
Inner Mongolia Ulanqab Huade Inner Mongolia Ulanqab Chahar	2016 2016	29 15	14 6	100% 100%	
Inner Mongolia Olanqab Chanar Inner Mongolia Bayannur Uradqian Qi	2016	15	7	100%	
Inner Mongolia Bayannur Linhe	2016	15	6	90%	
Inner Mongolia Bayannur Hanggin	2016	25	18	90%	
Ningxia Guangwuxian	2015	15	11	100%	
3					

New Energy Projects	Year of Establishment	Project Investment Rmb M	Registered Capital Rmb M	Equity Share %	
CNG/LNG REFILLING STATIONS Ningxia Qingtongxia Ningxia Jinyintan Ningxia Zhongwei Ningxia Zhongwei Haixing Development Zone Jiangxu Xuzhou Anhui Maanshan Jiangxi Pengze Guangdong Guangzhou UPSTREAM PROJECTS	2015 2015 2016 2016 2015 2006 2015 2013	21 28 18 30 40 15 45 26	15 14 12 15 20 11 30 13	100% 100% 100% 100% 80% 30% 70%	
Shanxi LCBM Jilin Tianyuan Xuzhou COG Heze COG	2006 2007 2014 2014	600 140 453 450	200 5 151 150	70% 50% 80% 90%	
COAL LOGISTIC PROJECT Shandong Jining Jiaxianggang Logistic Port	2011	540	180	88%	
BIOMASS Zhangjiagang Tangshan Yutian	2014 2016	610 180	205 60	100% 100%	
Oilfield Project					
Phetchabun Province in Thailand	2012	USD 181M	USD 12,000	100%	
<b>Telecommunication Projects</b>					
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)	2008 2009 2011 2011 2012 2010 2011 2013 2014 2014 2013 2014 2015	80 504 14 11 13 14 190 158 14 14 240 59	40 168 10 8 9 10 76 63 10 10 80 29.5 40	90.1% 81.4% 90% 100% 100% 49% 90% 80% 49% 97% 60% 100% 30%	
Other Projects					
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 Towngas Technology S-Tech (Zhuhai) ECO Engineering Management (Shenzhen) Towngas Livestyle Towngas Payment Technology (Shenzhen) Hong Kong & China Gas International Energy Trading	2011 2014 2012 2013 2015 2011 2001 2012 2011 2014 2014 2015 2015 2016	4 13 170 184 USD 4.75M 60 87 77.5 30 7 30 7 50 125	3 9 71 184 USD 4.75M 30 43 31 21 5 15 5	60% 100% 25% 100% 100% 100% 50% 100% 100% 100% 100	





"After attending the sign language courses, we made a great team at the cooking contest."

CORPORATE SOCIAL RESPONSIBILITY

# inclusive community.

Towngas was honoured with three awards of the Hong Kong Outstanding Corporate Citizenship Awards for the achievements in corporate social responsibility Towngas championed the inclusion of people with disabilities with a series of activities in partnership with SAHK and the Hong Kong Society for the Deaf (HKSOD)

Caring for vulnerable people in society, we distributed about 330,000 rice dumplings and more than 100,000 mooncakes

# CORPORATE SOCIAL RESPONSIBILITY

As a leader in the energy industry, it is our responsibility to pioneer the development of green energy solutions and build a better environment for the next generation. To create an inclusive society, we partner with employees, customers, contractors and the public to better serve the community as a whole.

#### **Caring for the Environment**

We are committed to protecting and improving the environment so as to ensure sustainable development. By developing innovative methods to conserve energy, supply competitive clean fuel alternatives and utilise wasted energy sources, we continually work on new standards in sustainable business practices.

In 2016, we focused on driving a shift from the use of coal and diesel to natural gas, a cleaner and safer option, in mainland China. While securing supplies of natural gas from low-value waste resources, we made progress expanding our network of gas refilling stations, furthering our efforts to reduce the country's pollution levels.

Towngas is a significant initiator in terms of renewable landfill gas utilisation in Hong Kong.

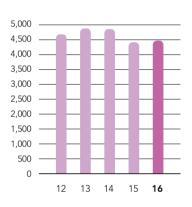
The landfill gas initiative is one of Hong Kong's most effective forays into renewable energy to date, delivering the dual benefits of offsetting the city's carbon

footprint by harnessing greenhouse gas, as well as partially substituting fossil-based feedstock alternatives. Alice Ho Miu Ling Nethersole Hospital's combined heat and power generation (CHP) system is fuelled by our North East New Territories (NENT) landfill gas treatment plant. On top of this, the HK\$350 million South East New Territories landfill gas treatment plant is expected to be commissioned in the first half of 2017, and capable to reduce carbon emissions by 56,000 tonnes a year, equivalent to the planting of 2.4 million tree seedlings. This plant will produce enough treated landfill gas, together with our NENT landfill site and Tai Po Shuen Wan facilities, to constitute around 5 per cent of the feedstock for our local gas production.

Our commitment to the environment also guides the way we conduct our operations. Towngas headquarters is Hong Kong's first non-residential building to earn the Final Platinum rating under the BEAM Plus Existing Building

#### Revenue per Employee

Company (HK\$ thousand)



Version 1.2 standard and was named U Favourite Hong Kong Green Building by U Magazine during the year.

To further reduce our carbon footprint, we began using old cast iron pipes as host pipes to renew gas pipes via trenchless technology, reducing construction waste by 90 per cent and carbon emissions by 60 per cent. The Group's climate change risk assessment practice was expanded to include our mainland operations with a series of workshops conducted in selected regions, implementing structures for close monitoring and reviewing.



Towngas headquarters is
Hong Kong's first non-residential
building to attain the Final
Platinum rating under BEAM Plus.
Secretary for the Environment
Wong Kam Sing (middle)
presented the award to
Towngas Managing Director
Alfred Chan (right).

Towngas believes that for environmental initiatives to be effective, public education is essential. During the year, we continued to be active in environmental campaigns organised by community groups. Highlighting the issue of food waste in Hong Kong, for example, we partnered with Food Grace to organise workshops and a product design competition to educate the community on methods of recycling food waste. In Hong Kong, the quantity of paper towels sent to landfill matches that of plastic bags. To raise awareness of this issue, Towngas supported Get in Gear Volunteers, an event organised by the Junior Chamber International Lion Rock with the theme, "Green City, Green Life, Stop Using Paper Towels!". We also encourage our staff to use handkerchiefs instead of paper tissues.

On the mainland, Towngas organises an annual carbon reduction competition that has seen the creation of 195 projects since 2010. It was expanded to include projects in Hong Kong in 2016, leading to a reduction in carbon emissions by about 120,500 tonnes annually.

During the year, more than 30 mainland companies of the Group invited staff and their families, customers and the general public to join our Low Carbon Creative SHOW. The campaign included more than 50 events, such as low carbon commutes, Earth Hour and the planting of over 2,500 trees, greening an area of more than 6,600 square metres in mainland China.

In recognition of our efforts, Towngas was honoured with the BOCHK Corporate Environmental Leadership Awards 2015 – Gold Award (Manufacturing section), and named a Hong Kong Green Organisation by the Environmental Campaign Committee and the Environmental Protection Department. Moreover, Towngas was awarded the World Green Organisation's Sustainable Business Award.

# Supporting our Communities

At Towngas, employees generously volunteer their free time to create a better society for all. Throughout 2016, the Towngas Volunteer Service Team took part in 248 community service projects in Hong Kong. The team comprises 830 customers and employees, who have collaboratively logged 697,594 volunteering hours since the team was established in 1999.

Towngas pays particular attention to promoting the integration of people with disabilities into society. During the year, we joined with SAHK to organise Games of Friendship, which saw over 60 Towngas volunteers facilitating around 300 SAHK service users to participate in sports activities. In addition, the Hong Kong and China Gas Charity Foundation donated HK\$100,000 to SAHK for new sporting equipment.

We also held the Social Harmony Cooking Contest in collaboration with the HKSOD – the first contest of its kind in the city. Towngas volunteers teamed up with hearing-impaired partners and communicated in sign language to cook a winning dish.

In 2016, we supported ethnic minorities by organising a Hand-in-Hand Mooncakes of Love workshop with the Hong Kong Community Network's LINK Centre, sponsored by the Home Affairs Department. We invited 124 charity groups and local organisations to share mooncakes with ethnic minorities and those in need, and together we have donated more than 1.8 million mooncakes during Mid-Autumn Festivals over the years. For Dragon Boat Festival, we also garnered the support of nearly 220 Legislative Councillors and District Councillors, together with 25 local organisations and other volunteers to donate about 330,000 rice dumplings to the elderly and vulnerable groups in society.

Caring for senior citizens and needy families, Towngas offers concession schemes and free maintenance services, currently benefiting 45,719 households. The Group's Electrical Toilet Washlet Donation programme continued to enhance self-care and confidence for the elderly while reducing the workload

of caretakers. In 2016, the amount raised by employees and matched by the Company exceeded HK\$330,000, and the programme has installed over 200 washlets in elderly hostels since its inception. Our Soup to Warm the Heart campaign, held in collaboration with the Social Welfare Department and six elderly community centres, saw approximately 600 servings of soup delivered to senior citizens living alone. Since 1999, Towngas has distributed more than 470,000 bottles of soup to the elderly in Hong Kong.

One of the Group's major volunteering activities is our Farming for Fun programme, launched in 2014. Volunteers and their families work at the organic farm every Saturday. During the year, approximately 640 kg of vegetables were harvested and distributed to 29 social centres.

Towngas sponsored
The Conservancy
Association's Eco Rangers
2016 event, raising
public awareness of
environmental protection.



Towngas China's Gentle
Breeze Movement
continued helping schools
in impoverished rural
areas of mainland China
by donating new teaching
equipment.



Towngas takes great care to ensure our community values are honoured across our operations in all regions. Currently, almost 90 per cent of our city-gas and water enterprises have established volunteer service teams, collectively contributing 93,701 hours to serving their communities this year.

As an advocate of quality education, the Group launched the Gentle Breeze Movement in mainland China to help improve learning and living condition for children living in rural areas. In 2016, nearly 900 teachers and students benefitted from the programme. We donated learning supplies and dormitory supplies to schools in Sichuan and Liaoning provinces respectively. Furthermore, we sponsored renovation work and the purchase of learning materials and teaching equipment for primary school in Shaanxi province. Since 2013, the initiative has donated more than RMB2.9 million to 32 schools and 200 households.

We continued to support
Shanghai Soong Ching Ling
Foundation – BEA Charity Fund,
donating more than RMB200,000
worth of electronic education
equipment for over 1,300 students
at a school in Tai'an, Shandong
province. We funded and built the
Firefly Centre for the school and
repainted the computer classroom.
In future, we aim to purchase
computers, projectors and
audio-visual equipment, and
establish multimedia classrooms
for schools in need.

Our Rice Dumplings for the Community project in 2016 mobilised more than 80 mainland companies to participate. Altogether, 46,000 rice dumplings and festive gifts valued at RMB200,000 were handed out, benefitting nearly 9,000 people.

Our dedication to the community has been widely recognised. Towngas was honoured by the Hong Kong Productivity Council with the Gold Awards in both Enterprise category and Volunteer Team category, together with a Special Commendation for Community Care at the Hong Kong Outstanding Corporate Citizenship Awards. The Towngas Volunteer Service Team won the Champion of the Highest Service Hour Award in the Private Organisation – Best Customer Participation category for the ninth consecutive year.

## Caring for the Well-Being of Our Employees

At Towngas, our employees are free to lead balanced lives, ensuring happiness at home and productivity at work.



We kicked off our annual Mooncakes for the Community initiative with a workshop celebrating the Mid-Autumn Festival with ethnic minorities, promoting inclusion and diversity.

Towngas headquarters in Hong Kong hosts a library, fitness facilities and clinic, as well as a mother care room, which will double in size in 2017. In addition to annual, maternity, paternity and compassionate leave, the Company allows employees who are undertaking professional development courses to take time off for examinations. With a long history in Hong Kong, our scholarship programmes for employees' children were launched in mainland China in 2013 and the number of approved applications was the highest in 2016.

Through our mainland Employee Caring Programme, employees learned valuable lifestyle tips with workshops which focused on four topics: Living with Positive Energy, My Healthy Life, My Low Carbon Life and My Happiness. Understanding the challenges faced by working parents, we initiate staff activities focusing on building positive parent-child relationships. Our annual

"Whole Family Together for Love" event is an opportunity for staff to spend a fun day at a farm, boosting team spirit with their families and colleagues.

During the year, we received our second Distinguished Family-Friendly Employers 2015/16 Award and Special Mention 2015/16 (Gold) by the Home Affairs Bureau and the Family Council.

#### **Developing Our People**

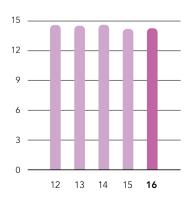
Talent development is a high priority at Towngas, as we require an ever-increasing number of highly skilled people to sustain our expanding business.

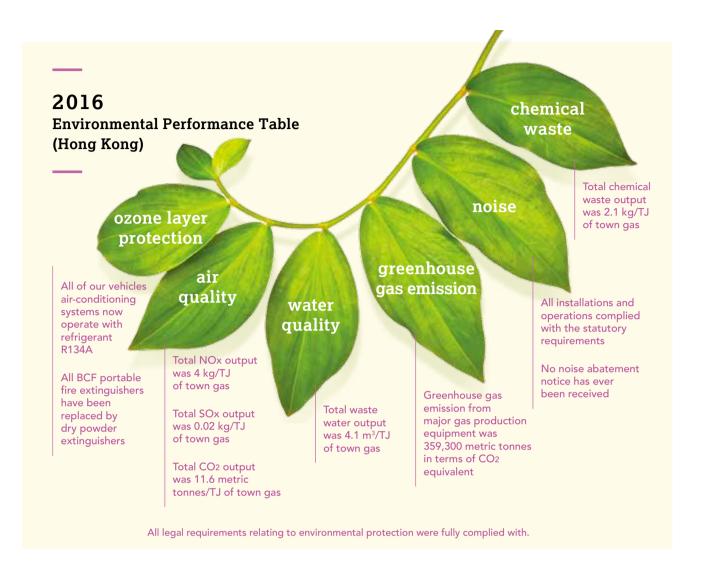
To fulfil the management requirements of all our businesses, our comprehensive leadership learning curriculum offered a series of workshops on driving change, spurring team innovation and providing top quality customer service in regional hubs, including Qingdao, Jinan, Suzhou and Shenzhen, throughout 2016.

Our flagship Executive Development Programme, a collaborative effort between Towngas and Tsinghua University, was organised in its ninth year with 46 senior executives from different business sectors graduate. The Towngas Leadership Competencies Acceleration Programme is designed to prepare middle management for future leadership. In 2016, 18 managers completed the programme, ready to assume greater responsibility in driving business forward while furthering their own careers within the Company. We plan to continue training high potential talent at all levels through similar schemes next year.

Towngas treasures graduates as the foundation for a powerful leadership pipeline. In 2016, we hired 26 graduate trainees from universities in Hong Kong, mainland China and overseas. The programme included work placement in different locations and cross-learning events, as an

### Town Gas Sales per Employee Company (million MJ)





opportunity for trainees to collaborate and gain a wider view of the Group's operations. Since 2014, 41 staff members from Hong Kong have started or completed the short-term mobility assignment in China. Additionally, 380 mainland employees participated in exchange trips to Hong Kong for training in safety standards and technical skills this year.

The Towngas Engineering
Academy (TEA) offers technical
training for our employees.
Towngas is the first and only gas
company in mainland China,

accredited by the Hong Kong Institution of Engineers and the Institution of Gas Engineers and Managers (IGEM), to provide dedicated training schemes for gas engineers. Our Masters programme, offered in partnership with the Hong Kong Management Association and the University of Technology Sydney, saw 23 engineers graduate in Hong Kong and Shenzhen, some of whom are already applying for the globally recognised IGEM qualification.

Keeping pace with advancing engineering standards, we opened a new Commercial and Industrial System Simulation Area, equipped with cutting-edge technology for interactive learning.

Guided by our Growth = Innovation × Implementation (G=ixi) campaign, numerous initiatives fostering out-of-the-box thinking were developed. The TEA's Continuing Transformation Office published an internal newsletter, Innovation Headlines, in 2015, as an avenue for our joint ventures to exchange ideas. In 2016, we launched the public WeChat group, TG's World of Innovation, to share instant news and insights with our colleagues.



As one example of our efforts to provide an ideal workplace for our employees, we installed height-adjustable desks to cater to the needs of staff with disabilities.

Additionally, the Towngas Hall of Innovation at our Hong Kong headquarters continues to showcase employee innovations that have significantly improved workflow, safety and productivity. We are constantly seeking creative solutions because innovation is the cornerstone of our corporate DNA. We setup the G=ixi Laboratory to provide a technical platform for the rapid prototyping of creative ideas from our staff.

Our Total Quality Management programme continues to motivate employees in their pursuit of excellence, with emphasis on the "Three Courtesies": etiquette, politeness and care. We promoted the Three Courtesies culture in Hong Kong and mainland China, and have already seen marked improvement in work attitudes, service behaviour and colleague relationships.

As a gas supply and infrastructure company, a large portion of our business relies on the quality of technical work. In 2016, the Group launched the MasterCraft programme to cultivate craftsmanship among our frontline technicians. The final competitions of MasterCraft Award were held in Hong Kong headquarters to recognise technicians who use innovative methods and tools with attention to aesthetic details to produce high quality installation work.

In 2017, we will provide more training programmes building the resilience and creativity of our employees, with topics centred on market awareness, innovative industry solutions, change management, stress management and social media understanding.

#### **Supplier Relationship**

Towngas is committed to reliable long-term business relationships

with suppliers through fair and ethical purchasing practices. We work closely with our business partners to meet the needs of our customers, while maximising the advantages of our strong collective position across the Group. Our web-based e-commerce system facilitates tendering processes and purchasing transactions between our joint ventures and suppliers for effective supply chain management. In 2016, we promoted use of the 6S application among our suppliers' management teams to improve product quality, efficiency and productivity, and reduce the risk of industrial accidents.

#### **Putting Safety First**

Towngas works with employees to continuously develop new methods of enhancing personal and workplace safety and health. In 2016, we drove the improvement of safe working at height and heat stroke prevention. The Group's Stay Healthy programme increased awareness of health in the workplace, and the 2016 Health, Safety and

Environment month brought employees and contractors together for a similar purpose with a strong focus on occupational health and safety, and environmental protection. Our efforts to advance our safety culture and performance was recognised as we have successfully renewed the International Safe Workplace Programme certification.

To prepare our staff for handling crises, we organised the Towngas Telecom Corporate Emergency Table Top exercise to improve our management team's skill to handle emergency situations. We also worked with the Hong Kong Fire Services Department to organise safety exercises at our premises, including gas production plants, liquefied petroleum gas refilling stations and Towngas headquarters, etc. Our operations team were equipped with firefighting and fire prevention techniques after receiving a five-day practical firefighting training course through the Fire and Ambulance Services Academy conducted by Fire Services Department.

#### Driving Growth and Building Long-term Value

As a socially responsible industry leader, we implement sound corporate values throughout our business practices to achieve sustainable growth. During the

year, we complied with laws and regulations that had significant impact on the Company.

Our success is rooted in the communities we serve, and we view our influence on society not only as a privilege but also a great responsibility. With extensive reach throughout Hong Kong and mainland China, we are poised to impact society with cultural values of quality, courtesy and environmental awareness in a significant way.

Fuelled by our management theme "Expanding New Horizons", we are moving in new and exciting directions on all fronts. We strive to ensure continuous growth by advocating the G=ixi formula to foster an innovative work culture and bring pioneering ideas to fruition. By investing in further opportunities over the coming years, we aim to reaffirm our reputation as a caring leader in public utilities and clean energy.

#### Organisation Values

#### **Business** Accountability **Drivers** Creativity Leadership Growth Value Open Communication **Improved** Shareholder Return Driving Achievement Innovation Respect and Safety and Integrity Reliability Continuous Products and Learning Services **Operational** Teamwork Excellence **Entrepreneurial** Corporate Spirit Citizenship