

GREEN BOND FRAMEWORK



THE HONG KONG AND CHINA GAS COMPANY LIMITED

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1. Introduction

Founded in 1862, The Hong Kong and China Gas Company Limited ("HKCG") was Hong Kong's first public utility. Today, HKCG is one of the largest energy suppliers in Hong Kong, operating with world-class corporate management and leading-edge business practices. HKCG has grown with Hong Kong, evolving from its beginnings as a simple gas company supplying fuel for street lamps to a group of companies currently occupying a leading position in the energy industry in mainland China (the "Towngas Group" or the "Group"). HKCG is the holding company of the Group and conducts its activities either directly or through its subsidiaries and associates. Expanding its business horizons in recent years, the Towngas Group has diversified its business into telecommunications, building services, engineering and the new eco-energies, among many others. The Towngas Group moved into the gas business in mainland China in 1994 and has invested into more than 241 projects in both Hong Kong and mainland China, including piped city-gas projects, upstream and midstream developments, water and wastewater treatment schemes, natural gas filling stations, as well as new energy exploration and utilisation ventures, across 26 provinces, municipalities and autonomous regions throughout the country.

Sustainability is central to the Group's identity as a business and is critical to all aspects of its operations. Its attitude to sustainability is enshrined in its vision: "To be Asia's leading energy supplier and service provider, with an environmentally-friendly focus". Its mission statement is "To provide our customers with a safe, reliable supply of energy and the caring, competent and efficient service they expect, while working to preserve, protect and improve our environment".

Whilst HKCG originally produced its product using less clean feedstock such as coal and heavy oil, the Group has moved away from these over the course of the last 40 years. Towngas Group is now committed to playing a leading role in protecting the environment by mitigating greenhouse gas (GHG) emissions. Natural gas, a far cleaner feedstock now comprises around 60% of its fuel mix in Hong Kong. The remaining around 38% and 2% are currently taken up by naphtha and landfill gas respectively. The company has just finished construction of a landfill gas treatment plant at the South East New Territories (SENT) landfill site. When this comes into operation in late 2017 or 2018, the proportion of naphtha in the fuel mix is set to decrease to around 35%. Landfill gas will then take up around 5% of the fuel mix.

HKCG has achieved a 23% reduction in GHG emissions per unit of gas produced from its gas production in Hong Kong since 2005. The Group's intention is to continue reducing its per unit emissions in Hong Kong by optimising its fuel mix and investing in further new energy projects as opportunities arise.

The Chinese government has committed to reducing its carbon intensity by 60% to 65% from its 2005 level by the year 2030, while capping the absolute amount of carbon emission. To achieve this, the Chinese government encourages converting biomass into clean energy and chemical products, as well as using cleaner fuels, among other policies. Towngas Group has espoused the Chinese government's initiative wholeheartedly and actively seeks opportunities to invest in new energy and other sustainability projects in China. The Group's current projects in mainland China include biomass and waste treatment projects, as well as water treatment projects. With diversification and an increase in the number of projects, the Group have gradually transformed from a locally based company in Hong Kong centred on a single town gas business into a sizable, nationwide, multi-business corporation focused on environmentally-friendly energy ventures and utility sectors.

This Green Bond Framework sets out how HKCG proposes to raise Green Bonds and to use the proceeds of those bonds to finance or refinance selected investment in projects within the Towngas Group that are consistent with its strategy to reduce GHG emissions, as well as natural resources consumption.

2. Green Bond Framework

HKCG's Green Bond Framework has been drafted in alignment with the Green Bond Principles 2017 ("GBP")¹. As such, it will follow the four components as described by the GBP: Use of Proceeds, Process for Project Selection, Management of Proceeds and Reporting.

2.1 Use of Proceeds

Proceeds raised through the Green Bond issuances will be exclusively used to finance or refinance investments in whole or in part Eligible Green Projects as defined below owned by HKCG or its subsidiaries or associates. Eligible Green Projects means projects in the conception, construction and installation of:

- Wastewater treatment projects, i.e. purifying wastewater to required standards before discharging it back into the public sewage system or lake or river, alleviating local pollution levels,
- Waste treatment projects, i.e., converting waste products or by-products into biofuel and/or bio products,
- Landfill gas projects, i.e., converting landfill gas into synthetic natural gas,
- Biomass projects, i.e., converting agricultural or other biomass waste into bio fuel or other bio products, and
- Any other eligible projects involving or facilitating the production of energy from renewable or new sustainable energy sources (for the avoidance of doubt, excluding nuclear energy), or improving energy efficiency (improvements of fossil fuel based technology or operations are excluded).

Towngas Group will, in its investments, target projects which reduce GHG emissions and the consumption of natural resources, and follow strict Environmental, Social and Governance criteria, for instance, but not exclusively, regarding the sustainability of feedstock. It may in future include further types of projects insofar as such projects are recognized as eligible project categories by the Green Bond Principles in force at the time.

The Eligible Green Projects can be projects that have been disbursed up to 24 months before the issuance of any Green Bond issued under this Green Bond Framework.

2.2 Process for Project Evaluation and Selection

HKCG proposes to raise Green Bonds and to use the proceeds of those bonds to finance or refinance selected investment in projects within the Towngas Group that are consistent with the global Group strategy and its sustainability ambition to reduce GHG emissions, as well as natural resources consumption.

HKCG conducts a thorough assessment of the projects that will be financed with the proceeds raised from a Green Bond issuance which will have to be aligned with the Use of Proceeds.

Any project that is proposed to be financed or refinanced through a Green Bond issuance under this Green Bond Framework will be proposed by HKCG's Corporate Treasury & Financing Department. It will then be approved by a Green Bond Committee comprising senior management including representatives from Hong Kong Gas Business, Mainland Utility Business, New Energy Business, the Head of Corporate Health, Safety and Environment Department, the Head of Corporate Treasury & Financing Department as well as Chief Financial Officer.

¹ More information on <http://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/green-bond-principles/>.

2.3 Management of Proceeds

For each Green Bond issue, the funds will be specially earmarked within HKCG to ensure that such funds are only disbursed to identified projects qualifying as Eligible Green Projects as defined under the Use of Proceeds. Any balance of issuance proceeds not allocated to Eligible Green Projects will be held in accordance with HKCG's treasury policies, invested in cash, cash equivalent and/or money market instruments

2.4 Reporting

Until the net proceeds are allocated in full to Eligible Green Projects, HKCG will prepare a Green Bond report, on an annual basis, that will provide an overview of the projects financed through the proceeds raised from a Green Bond issuance in HKCG's annual Sustainability Report. The following information will be provided on the Eligible Green Projects financed:

- Project Category
- Project Location
- HKCG's share percentage
- Project Costs
- Currency
- Starting date of operation/age of the project
- Amount of the Green Bond allocated to each Eligible Project

Environmental Impact Reporting

HKCG will promote the use of impact reporting and will provide with the information per Eligible Project. Depending on the type of each of the projects, the following indicator metrics will be included - the avoided or reduced greenhouse gas emissions (in tons of equivalent CO₂ per year), the volume of treated wastewater and/or the volume of processed waste.

HKCG will also provide the consolidated figures for all the Eligible Projects and the ratio per the amount financed through each Green Bond.

All reporting is publicly available on HKCG's website <http://www.towngas.com/en/Social-Responsibility/Sustainability-Report>

3. External Assurance

3.1. Second Opinion

HKCG has asked *Sustainalytics* to provide an independent assessment on the alignment of the HKCG Green Bond Framework to the Green Bond Principles (the "Second Opinion").

This document is publicly available on HKCG's website <http://www.towngas.com/en/Green-Bond/gbf-second-opinion>

3.2 Annual Assurance Report

Until the net proceeds of any Green Bond are allocated in full to Eligible Green Projects, HKCG auditors are expected to prepare a report on (i) the compliance of the Eligible Green Projects with the process defined in clause 2.1 and (ii) the details of the Green Bond proceeds allocation.

4. Potential Projects for the inaugural Green Bond issuance

Eligible Green Projects included in the inaugural Green Bond issuance may include:

Project name	Type of project	Comment	Allocated Amount	Impact
Tseung Kwan O	Landfilled Gas Utilization	Conversion of landfill gas into town gas enabling to avoid 1,000 TJ of flaring per year	USD45m	56,000 tCO ₂ /yr
Zhangjiagang	Palm Acid Oil (Waste to Energy)	ISCC certified palm acid oil	USD 90m	350,000 tCO ₂ /yr ¹
Suzhou	Kitchen Waste Processing (Waste to Energy)	Biogas-producing technology by anaerobic digestion. Water in the treatment process comes from the recycled water of No. 2 Sewage Treatment Plant of Suzhou Hua Yan in the neighborhood instead of fresh tap water.	USD 37m	16,000 tCO ₂ /yr ²
Hubei	Agricultural Waste Utilization	Conversion of agricultural waste to green chemicals and paper pulp to avoid emission of open field burning of agricultural waste	USD 25m	278,000 tCO ₂ /yr ³

1: calculated based on the ISCC methodology. The emission value is calculated based on actual data (e.g. production consumption) and using EU agreed specific emission factor (e.g. how much CO₂ emitted when using 1KWH power). The emission saving is calculated based on the comparison of well to tank emission of our biofuel comparing to traditional petroleum product (traditional petroleum production well to tank life cycle emission: 83.8g/MJ , ZJG project: <10g/MJ)

2: The energy obtained from biogas offset 70% to 80% energy used in treatment. Carbon emission of one ton of food waste is estimated to be reduced by about 150 kg. The annual annual capacity is 109,000 tons of kitchen waste/expired food processed per year.

3. CO₂ emission of open field burning of agricultural waste was calculated based on emission factor of local crop mix quoted from research literature published in Journal of Agro-Environment Science, China, 2011 and Transactions of the Chinese Society of Agricultural Engineering, 2013. The project is designed to treat 200,000t/yr (dry base) of agricultural waste. Applying a CO₂ emission factor of 1.39kg/kg, the estimated emission avoided is 278,000 tCO₂/yr.