Hong Kong Special Administrative Region
of the People's Republic of China

Green Bond Report 2023

Contents

The Government Green Bond Programme

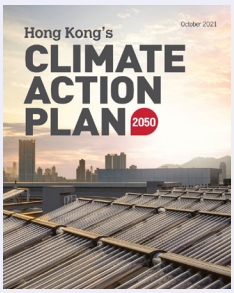
In February 2018, the Financial Secretary (FS) of the Government of the Hong Kong Special Administrative Region of the People's Republic of China (the Government) announced in his 2018-19 Budget to launch the **Government Green Bond Programme** (GGBP) with a borrowing ceiling[1] of HK$100 billion (about US$12.8 billion) to demonstrate the commitment to promoting green finance and developing the Hong Kong Special Administrative Region (the HKSAR or Hong Kong) into a more sustainable and liveable city.

As authorised by the Legislative Council of the HKSAR in November 2018, the sums raised under the GGBP are credited to the Capital Works Reserve Fund (CWRF) to provide funding for the Government's major public works projects with environmental benefits. The Steering Committee on the GGBP, chaired by the FS, has been established to oversee and give strategic direction on the implementation and development of the GGBP. The Hong Kong Monetary Authority (HKMA) assists in implementing green bond issuance under the GGBP.

As a consistent step to consolidate and develop Hong Kong's position as a premier green finance hub regionally and internationally, the FS announced in his **2021-22 Budget** the plan to double the borrowing ceiling of the GGBP to HK$200 billion (about US$25.6 billion), giving the Government more room for piloting the issuance of green bonds that involves more types of currencies, project types and issuance channels. The Legislative Council approved in July 2021 the Government's proposal to expand the scope of and raise the borrowing ceiling to HK$200 billion under the GGBP. Under the expanded scope of the GGBP, the sums raised and credited to the CWRF will fund, in addition to major public works projects, a wider variety of green projects including minor works projects, major systems and equipment, as well as capital subvention projects implemented by non-government organisations. The FS announced in his **2023-24 Budget** the plan to further expand the scope of the GGBP to cover sustainable finance projects. The implementation details will be announced in due course. As of 31 July 2023, the Government has successfully issued close to HK$170 billion (US$22 billion) worth of green bonds under the GGBP.

[1] It refers to the maximum amount of outstanding principal at any time under the GGBP, i.e. the principal amount of bonds issued minus that of bonds matured.

Hong Kong's Commitments on Climate and Environmental Protection



The Central People's Government sets out in "The Outline of the 14th Five-Year Plan for National Economic and Social Development of the People's Republic of China and the Long-Range Objectives Through the Year 2035" the plan to promote a comprehensive green transformation for economic and social development, and to endeavour to have carbon emissions peak before 2030 and achieve carbon neutrality before 2060 (Dual Carbon Targets). To align with the country's Dual Carbon Targets, the Government announced in 2020 that Hong Kong would strive to achieve carbon neutrality before 2050. An inter-departmental "Steering Committee on Climate Change and Carbon Neutrality" was formed to formulate the overall strategy and oversee work progress. The Government announced four major decarbonisation strategies in 2021 to help Hong Kong achieve carbon neutrality before 2050, namely "net-zero electricity generation", "energy saving and green buildings", "green transport" and "waste reduction", as well as the interim target to reduce Hong Kong's total carbon emissions from the 2005 levels by half before 2035. The then Environment Bureau[2] announced **Hong Kong's Climate Action Plan 2050** on 8 October 2021 to set out the above mitigation strategies and targets in detail.

In 2021, electricity generation continued to be Hong Kong's largest source of carbon emissions (63%), followed by transport (19%) and waste (8%). Therefore, Hong Kong's decarbonisation work would focus on these three key areas. The four major decarbonisation strategies in the Hong Kong's Climate Action Plan 2050 cover the following targets and measures -

- Net-zero electricity generation: Achieve the long-term target of net-zero electricity generation before 2050 by ceasing the use of coal for daily electricity generation by 2035; increasing the share of renewable energy in the fuel mix for electricity generation to 7.5% to 10% by 2035, and to 15% subsequently; and trying out the use of new energy and strengthening co-operation with neighbouring regions to raise the share of zero-carbon energy for electricity generation to about 60% to 70%.

- Energy saving and green buildings: Reduce the overall electricity consumption of buildings through promoting green buildings, improving buildings' energy efficiency and promoting a low-carbon lifestyle. The goal is to reduce the electricity consumption of commercial buildings by 30% to 40% and that of residential buildings by 20% to 30% from the 2015 level by 2050, and to achieve half of the above targets by 2035.

[2] The Environment Bureau has been renamed as the Environment and Ecology Bureau with effect from 1 July 2022.

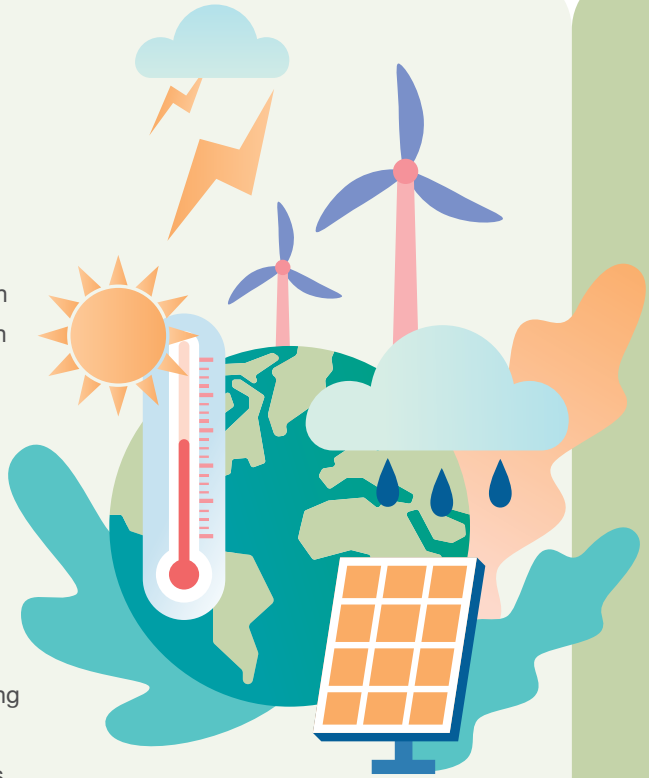
- Green transport: Achieve the long-term target of attaining zero vehicular emissions and zero carbon emissions in the transport sector before 2050, through the electrification of vehicles and ferries, development of new-energy transport and measures to improve traffic management. The Government will cease the new registration of fuel-propelled and hybrid private cars in 2035 or earlier. Apart from promoting electric buses and commercial vehicles, the Government also plans to collaborate with the franchised bus companies and other stakeholders to test out hydrogen fuel cell electric buses (by 2023) and heavy vehicles (by 2024).

- Waste reduction: To achieve the long-term target of carbon neutrality in waste management before 2050, the Government will strive to develop adequate waste-to-energy facilities by 2035, so as to move away from reliance on landfills for municipal waste disposal. The Government will continue to promote waste reduction and recycling, and preparatory work is underway for the implementation of municipal solid waste charging.

In the next 15 to 20 years, the Government will devote about HK$240 billion to take forward various measures on climate change mitigation and adaptation. The Environment and Ecology Bureau set up a new Office of Climate Change and Carbon Neutrality in January 2023 to strengthen co-ordination and promotion of deep decarbonisation in the community. Also, a new Council for Carbon Neutrality and Sustainable Development was established in May 2023 to offer advice on decarbonisation strategies and to encourage different sectors in the community, including young people, to participate actively in climate actions.

Green and Sustainable Finance Initiatives in Hong Kong

Combating climate change is an important issue across the globe. In light of global efforts in promoting green transformation and sustainable development, there is accelerating demand for green and sustainable finance. The financial sector can be part of the solution by facilitating matching between capital and quality green and sustainable projects. To contribute proactively to the country's Dual Carbon Targets in relation to carbon emission peak and carbon neutrality, as well as propel Hong Kong towards its own carbon neutrality target before 2050, the Government continues to promote the development of green and sustainable finance in Hong Kong. The FS announced in the 2023-24 Budget that the Government will accelerate the development of Hong Kong into an international centre for green technology and finance and proceed in five directions, namely (a) building a green technology ecosystem; (b) green finance application and innovation; (c) green certification and alignment with international standards; (d) training for talents; and (e) enhancing the exchange and co-operation with the Guangdong-Hong Kong-Macao Greater Bay Area and international markets.



The Government continues to join hands with the financial sector and relevant stakeholders to take forward the initiatives under the Green and Sustainable Finance Cross-Agency Steering Group (Steering Group)[3], including market regulation and development, ecosystem enhancement, and capacity building, etc.

The Government continues to promote the **Green and Sustainable Finance Grant Scheme**, which was launched in May 2021 to provide subsidies to eligible green and sustainable bond issuers and loan borrowers to cover their expenses on bond issuance and external review services. The scheme has been well received by the industry. As of end-July 2023, grants of about HK$186 million have been approved to close to 280 green and sustainable debt instruments issued in Hong Kong, involving a total underlying debt issuance of around US$86 billion.

The Hong Kong Exchanges and Clearing Limited launched an international carbon marketplace Core Climate in October 2022, which is currently the sole carbon marketplace that offers Hong Kong dollar (HKD) and Renminbi (RMB) settlement for the trading of international voluntary carbon credits.

[3] The Steering Group is co-chaired by the HKMA and the Securities and Futures Commission of Hong Kong. Members include the Environment and Ecology Bureau, the Financial Services and the Treasury Bureau, the Hong Kong Exchanges and Clearing Limited, the Insurance Authority and the Mandatory Provident Fund Schemes Authority.

The Government launched in December 2022 a three-year Pilot Green and Sustainable Finance Capacity Building Support Scheme to provide subsidies to market practitioners and related professionals as well as students and graduates of relevant disciplines to undertake training in green and sustainable finance. The scheme has received positive response. As of July 2023, the scheme includes 37 eligible training programmes offered by the professional and continuing education schools of local universities, professional institutions and international training providers.

The Stock Exchange of Hong Kong Limited published a consultation paper in April 2023 seeking market feedback on proposals to enhance climate-related disclosures under the ESG framework, which cover requirements for all issuers to make climate-related disclosures in their ESG reports. The consultation period ended in mid-July 2023.

To increase transparency and consistency in green classification, the Steering Group has been exploring the development of a green classification framework for adoption in the local market, with a view to facilitating easy navigation across the Common Ground Taxonomy, Mainland China's and the European Union's taxonomies. In May 2023, the HKMA released a discussion paper "Prototype of a Green Classification Framework for Hong Kong" to outline the thinking on a local green classification framework and seek to gather feedback from stakeholders on its development and application. Based on the feedback received from the consultation, the HKMA will fine-tune the prototype and summarise the consultation with recommendations on the future work.

The Green Bond Framework

As a core component of the GGBP, the Government first published a **Green Bond Framework** (the Framework) in March 2019 to set out how it intended to issue green bonds to fund projects that would improve the environment and facilitate the transition to a low carbon economy. The Framework and the bonds issued under it were aligned with the Green Bond Principles (GBP) 2018 of the International Capital Market Association (ICMA). In February 2022, the Government released an **updated version of the Framework**, reflecting Hong Kong's latest climate commitments and strategy and aligning with the latest international standards and practices in the green bond market, including the GBP 2021 of the ICMA. The updated Framework (February 2022 version) is applicable to the Government's green bond issuances thereafter.

In accordance with the updated Framework released in February 2022, the proceeds of issuances will be used exclusively to finance or re-finance green projects covered by one or more of the nine Eligible Categories, i.e. renewable energy; energy efficiency and conservation; pollution prevention and control; waste management and resource recovery; water and wastewater management; nature conservation / biodiversity; clean transportation; green buildings; and climate change adaptation.

The Steering Committee on the GGBP reviews and approves each project submitted by bureaux and departments as "Eligible Project" based on the eligibility criteria outlined in the Use of Proceeds section and the allocation of proceeds of each Green Bond Transaction (GBT) to Eligible Projects according to the process in the Project Evaluation and Selection section of the Framework.

The proceeds of each GBT will be credited to the CWRF pending earmarking to Eligible Projects, and will be allocated to expenditures within the last two or next two financial years from the issuance date. It is expected that more than half of the proceeds will be allocated to future expenditures.

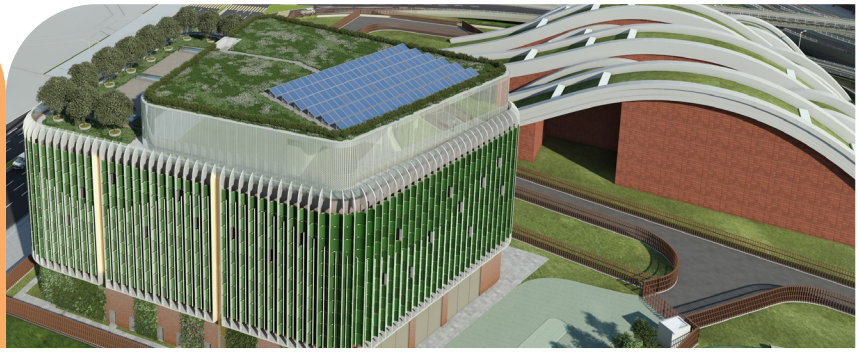
The Government will provide information on the allocation of the proceeds and expected environmental benefits on an annual basis.

V.E.[4] has provided a second party opinion regarding, amongst others, the alignment of the Framework (February 2022 version) with the GBP 2021.

[4] The second party opinion was originally conducted by V.E., which is now part of Moody's Corporation.

Renewable Energy

Energy Efficiency and Conservation



Pollution Prevention and Control

Waste Management and Resource Recovery

Water and Wastewater Management

Nature Conservation / Biodiversity

Clean Transportation

Green Buildings

Climate Change Adaptation

Government Green Bond Issuances

Milestone

November 2018
Establishment of GGBP

March 2019
Green Bond Framework (March 2019 version)

May 2019
Inaugural institutional issuance
US$1 billion (1 USD tranche)

January 2021
Establishment of a Global Medium Term Note Programme

February 2021
February 2021 institutional issuances
US$2.5 billion (3 USD tranches)

July 2021
GGBP's borrowing ceiling doubled to HK$200 billion

November 2021
November 2021 institutional issuances
US$1 billion (1 USD tranche)
EUR1.75 billion (2 Euro tranches)
RMB5 billion (2 RMB tranches)

February 2022
Green Bond Framework (February 2022 version)

May 2022
Inaugural retail issuance
HK$20 billion

January 2023
January 2023 institutional issuances
US$3 billion (4 USD tranches)
EUR1.25 billion (2 Euro tranches)
RMB10 billion (2 RMB tranches)

February 2023
Inaugural tokenised issuance
HK$800 million

June 2023
June 2023 institutional issuances
US$2.25 billion (3 USD tranches)
EUR1.5 billion (2 Euro tranches)
RMB15 billion (3 RMB tranches)

Cumulative Government Green Bond Issuances:

Institutional:

Retail:

(~US$2.6 billion)

Breakthroughs Achieved

Year	Breakthroughs at Issuance
2021	The world's first Global Medium Term Note Programme dedicated to green bond issuances by a government The world's largest USD government green bond deal The longest tenor USD government green bond ever in Asia The longest tenor Euro government green bond ever in Asia
2022	The world's largest retail green bond issuance
2023	The largest ESG bond issuance ever in Asia The world's first government tokenised green bond issuance

Summary of Issuances

The Government has made seven rounds of green bond issuances as of 31 July 2023. The proceeds raised from the first six rounds of issuances have been fully allocated or earmarked to eligible green projects. The details of the green projects and the allocation of proceeds are reported in the ensuing sections.

Round	Date	Descriptions
1	May 2019	• Inaugural institutional green bond • The proceeds were fully allocated to 7 green projects across 4 eligible categories
2	February 2021	• Comprised 3 tranches • First 30-year green bond issued by an Asian government • The proceeds were fully allocated to 12 green projects across 4 eligible categories
3	November 2021	• Comprised 5 tranches, involving 3 currencies: USD, Euro, and RMB, as well as more green projects • Inaugural offering of Euro-denominated and RMB-denominated bonds • The longest tenor (20-year) Euro government green bond ever in Asia
4	May 2022	• Inaugural retail green bond • The largest retail green bond issuance across the globe at the time
5	January 2023	• Comprised 8 tranches, involving 3 currencies: USD, Euro, and RMB with different tenors • The largest ESG bond issuance in Asia • The RMB tranches were doubled in size to a total of RMB10 billion to cater for investor demand
6	February 2023	• First tokenised green bond issued by a government globally
7	June 2023	• Comprised 8 tranches, involving 3 currencies: USD, Euro, and RMB with different tenors • The RMB tranches were further expanded to RMB15 billion, with issuance of a new 10-year tranche

The January 2023 Green Bond Issuances

The Government has continued to issue green bonds targeting institutional investors under the Global Medium Term Note (GMTN) Programme since the last report. Following a virtual roadshow for global investors on 3 January 2023, around US$5.75 billion worth of green bonds, comprising eight tranches, were successfully issued on 11 January 2023.

Details of the January 2023 Issuances

Issue Date	11 January 2023
Ratings (at issuance)	Fitch: AA- / S&P: AA+
Listing	Hong Kong Stock Exchange and London Stock Exchange

ISIN	Size (million)	Proceeds in HK$[5] (million)	Tenor (year)	Maturity Date	Issue Price	Coupon Rate
US43858AAF75 / USY3422VCU09	US$500	3,891	3	11 January 2026	99.669%	4.375%
US43858AAG58 / USY3422VCV81	US$1,000	7,778	5	11 January 2028	99.624%	4.500%
US43858AAH32 / USY3422VCW64	US$1,000	7,778	10	11 January 2033	99.628%	4.625%
US43858AAJ97 / USY3422VCX48	US$500	3,864	30	11 January 2053	98.986%	5.250%
HK0000895893	EUR750	6,246	2	11 January 2025	99.915%	3.875%
HK0000895901	EUR500	4,145	7	11 January 2030	99.465%	3.875%
HK0000895919	RMB5,000	5,745	2	The last interest payment date falling on or nearest to 11 January 2025	100.000%	3.000%
HK0000895927	RMB5,000	5,745	5	The last interest payment date falling on or nearest to 11 January 2028	100.000%	3.300%

The issuances were well received by global investors, attracting over US$36 billion equivalent in orders. The offering attracted new investors who had not participated in the HKSAR Government's green bond issuances before, with continued participation from a diverse group of conventional and green investors. In particular, the RMB tranches attracted increased participation of Mainland investors through Southbound Trading under Bond Connect, demonstrating Hong Kong's position as the leading offshore RMB hub. The issuances received the Green Finance Certificate (Pre-issuance Stage) from the Hong Kong Quality Assurance Agency (HKQAA).

[5] The bond proceeds were exchanged to Hong Kong dollars immediately upon receipt.

The Inaugural Tokenised Issuance

The Government successfully issued HK$800 million of a 1-year tokenised green bond on 16 February 2023. This was the first tokenised green bond issued by a government globally. Unlike conventional issuances, this tokenised issuance made use of a tokenisation platform and was settled on a private blockchain network. The processes of the bond lifecycle thereafter, including coupon payment, settlement of secondary trading and maturity redemption, will also be digitalised and performed on the private blockchain network. The issuance received the Green and Sustainable Finance Certificate (Pre-issuance Stage) from the HKQAA.

Details of Inaugural Tokenised Issuance

ISIN	HK0000895216
Size	HK$800 million
Proceeds	HK$800 million
Tenor	365 days
Issue Date	16 February 2023
Maturity Date	The last interest payment date falling on or nearest to 16 February 2024
Issue Price	100.000%
Coupon Rate	4.050%
Ratings (at issuance)	Fitch: F1+ / S&P: A-1+

This issuance marked an important milestone of demonstrating Hong Kong's strengths in combining the bond market, green and sustainable finance as well as fintech. The HKMA issued a report in August this year to summarise the experience gained from this issuance. The Government will review the development potential and prospects of tokenised bond issuance in Hong Kong, and consider policy initiatives to promote the wider use of tokenisation technology in the capital market.

The June 2023 Green Bond Issuances

Following a virtual roadshow for global investors on 30 May 2023, close to US$6 billion worth of green bonds, comprising eight tranches, were successfully issued on 7 June 2023 under the GMTN Programme.

Details of the June 2023 Issuances

Issue Date	7 June 2023
Ratings (at issuance)	Fitch: AA- / S&P: AA+
Listing	Hong Kong Stock Exchange and London Stock Exchange

ISIN	Size (million)	Proceeds in HK$[6] (million)	Tenor (year)	Maturity Date	Issue Price	Coupon Rate
US43858AAK60 / USY3422VCY21	US$500	3,910	3	7 June 2026	99.747%	4.250%
US43858AAL44 / USY3422VCZ95	US$750	5,854	5	7 June 2028	99.570%	4.000%
US43858AAM27 / USY3422VDA36	US$1,000	7,813	10	7 June 2033	99.665%	4.000%
HK0000929676	EUR750	6,284	4	7 June 2027	99.886%	3.375%
HK0000929684	EUR 750	6,245	9	7 June 2032	99.274%	3.750%
HK0000929692	RMB6,000	6,611	2	The last interest payment date falling on or nearest to 7 June 2025	100.000%	2.700%
HK0000929700	RMB6,000	6,611	5	The last interest payment date falling on or nearest to 7 June 2028	100.000%	2.950%
HK0000929999	RMB3,000	3,305	10	The last interest payment date falling on or nearest to 7 June 2033	100.000%	3.300%

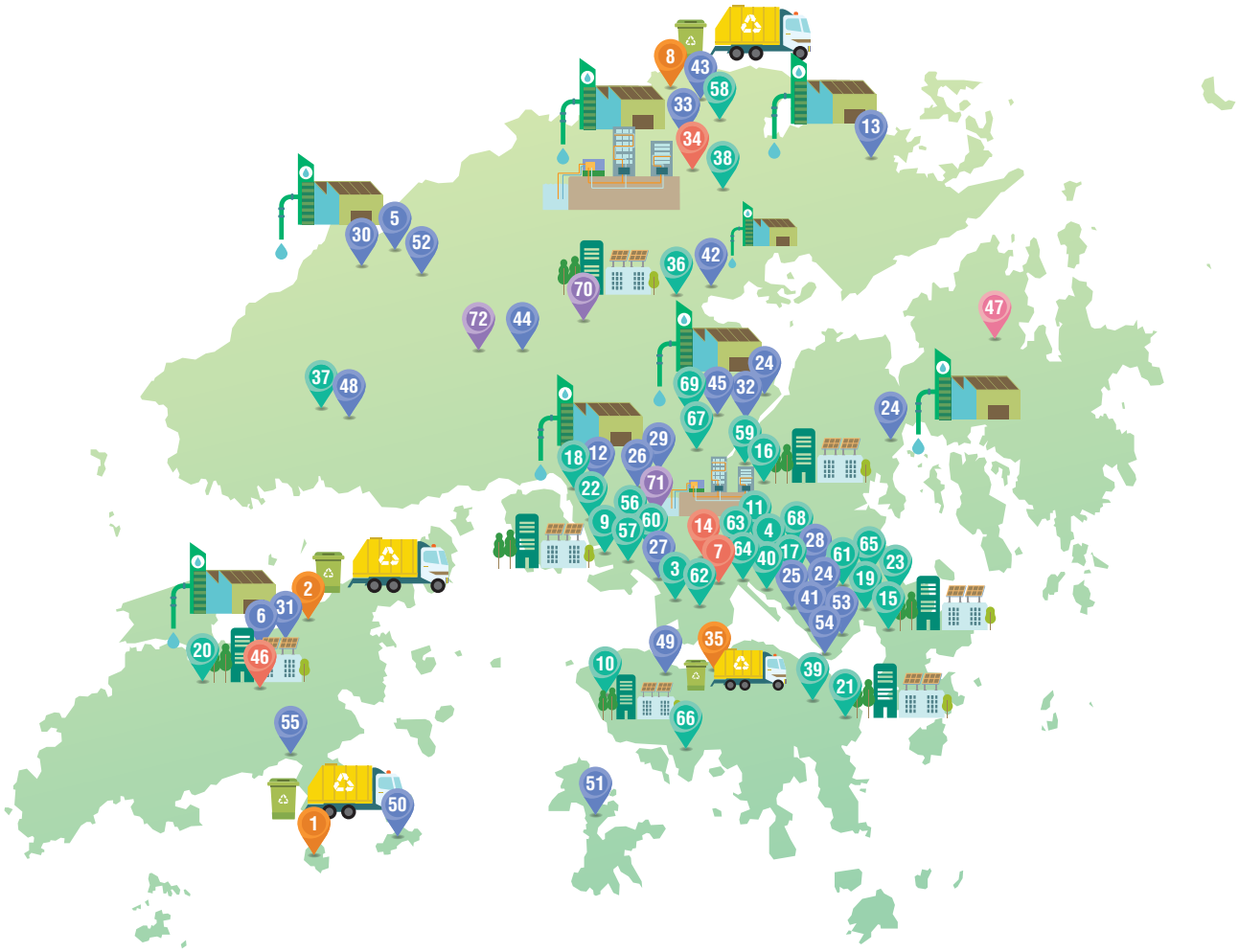
The issuances continued to attract a wide spectrum of investors and were well received, with close to US$30 billion equivalent in orders. In particular, the RMB tranches were expanded from a combined RMB10 billion in the January 2023 issuances to RMB15 billion in this issuance. The issuance also introduced a new 10-year RMB tranche which helps extend the offshore RMB yield curve and enrich offshore RMB product offerings. The issuances also received the Green and Sustainable Finance Certificate (Pre-issuance Stage) from the HKQAA.

[6] The bond proceeds were exchanged to Hong Kong dollars immediately upon receipt.

Green Projects

Overview

As of 31 July 2023, the following 72 projects under six eligible categories have been included in the GGBP. Details of all the projects including their major expected impacts are set out in **Appendix A**. Of these 72 projects, 27 (Projects 46 to 72) are newly selected and approved by the Steering Committee on the GGBP as Eligible Projects since the last report, and the major expected impacts of these 27 projects are outlined on page 20 of this report.



Project	Name of Project	Location
1	I·PARK1	Near Shek Kwu Chau
2	O·PARK1	Siu Ho Wan, Lantau Island
3	West Kowloon Government Offices	Yau Ma Tei
4	Inland Revenue Centre	Kai Tak
5	Upgrading of San Wai Sewage Treatment Works - Phase 1	Yuen Long
6	Additional Sewage Rising Main and Rehabilitation of the Existing Sewage Rising Main between Tung Chung and Siu Ho Wan	Between Tung Chung and Siu Ho Wan
7	District Cooling System at the Kai Tak Development	Kai Tak
8	O·PARK2	North District
9	Treasury Building	Cheung Sha Wan
10	Redevelopment of Queen Mary Hospital, Phase 1	Pok Fu Lam
11	East Kowloon Cultural Centre	Lower Ngau Tau Kok
12	West Kowloon Drainage Improvement - Inter-reservoirs Transfer Scheme	Kowloon Byewash Reservoir and Lower Shing Mun Reservoir
13	Expansion of Sha Tau Kok Sewage Treatment Works - Phase 1	Sha Tau Kok
14	Additional District Cooling System at the Kai Tak Development	Kai Tak
15	Fire Services Department Pak Shing Kok Married Quarters	Tseung Kwan O
16	Customs and Excise Department Quarters at Tsz Wan Shan	Tsz Wan Shan
17	Reprovisioning of the Hongkong Post's Headquarters	Kowloon Bay
18	Redevelopment of Kwai Chung Hospital, Phase 2	Kwai Chung
19	Customs and Excise Department Quarters at Tseung Kwan O Area 123 (Po Lam Road)	Tseung Kwan O
20	Hospital Authority Supporting Services Centre	Tung Chung
21	The Water Supplies Department Building and the Correctional Services Headquarters Building	Chai Wan
22	Drainage Services Tower	Cheung Sha Wan
23	Tseung Kwan O Government Offices	Tseung Kwan O
24	Rehabilitation of Trunk Sewers in Kowloon, Sha Tin and Sai Kung	Kowloon, Sha Tin and Sai Kung
25	Upgrading of Kwun Tong Preliminary Treatment Works	Kwun Tong
26	Upgrading of West Kowloon and Tsuen Wan Sewerage Phase 1	West Kowloon and Tsuen Wan
27	Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert	Near New Yau Ma Tei Typhoon Shelter
28	Revitalisation of Tsui Ping River	Kwun Tong
29	Upgrading of West Kowloon and Tsuen Wan Sewerage Phase 2	West Kowloon and Tsuen Wan

Project	Name of Project	Location
30	Yuen Long Effluent Polishing Plant Stage 1	Yuen Long
31	Siu Ho Wan Water Treatment Works Extension	Siu Ho Wan
32	Relocation of Sha Tin Sewage Treatment Works to Caverns	Sha Tin
33	Shek Wu Hui Effluent Polishing Plant	Sheung Shui
34	District Cooling System at the Kwu Tung North New Development Area	Kwu Tung North
35	GREEN@WAN CHAI	Wan Chai
36	Sports Centre, Community Hall and Football Pitches in Area 1, Tai Po	Tai Po
37	Extension of Operating Theatre Block for Tuen Mun Hospital	Tuen Mun
38	North District Community Health Centre Building	Sheung Shui
39	Joint User Complex at Lei King Road	Sai Wan Ho
40	New Acute Hospital at Kai Tak Development Area	Kai Tak
41	Enhancement Works for Kwun Tong Sewage Pumping Station	Kwun Tong
42	Upgrading of Sewage Pumping Stations and Sewerage along Ting Kok Road	Tai Po
43	Water Supply to New Housing Developments in Sheung Shui and Fanling	Sheung Shui and Fanling
44	Implementation of Water Intelligent Network	Entire Hong Kong
45	In-situ Reprovisioning of Sha Tin Water Treatment Works (South Works)	Sha Tin
46	District Cooling System for Tung Chung New Town Extension (East)	Tung Chung New Town Extension (East)
47	Three-dimensional Air Pollution Monitoring Network	Four sites at the periphery of Hong Kong and the fifth in the city center
48	Rehabilitation of Trunk Sewers in Tuen Mun	Tuen Mun
49	Upgrading of Central and East Kowloon Sewerage – Phase 3	Central and East Kowloon
50	Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities	Cheung Chau
51	Lamma Village Sewerage Phase 2, Package 2	Lamma Island
52	Construction and Rehabilitation of Trunk Sewage Rising Mains in Yuen Long	Yuen Long
53	Construction and Rehabilitation of Trunk Sewage Rising Mains in Yau Tong	Yau Tong
54	Construction of San Shek Wan Sewage Treatment Works and Pui O Village Sewerage	Pui O
55	Reclaimed Water Supply to Sheung Shui and Fanling	Sheung Shui and Fanling
56	School Premises of Cheung Sha Wan Catholic Primary School	Cheung Sha Wan
57	School Premises of The Salvation Army Centaline Charity Fund Queen's Hill School	Fanling

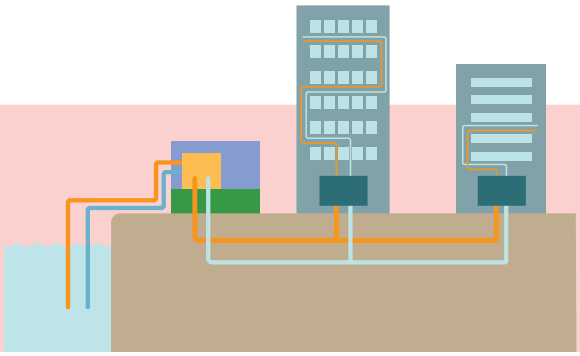
Project	Name of Project	Location
58	School Premises of TWGHs Tseng Hin Pei Primary School	Fanling
59	School Premises of TWGHs Tsoi Wing Sing Primary School	Sha Tin
60	School Premises of Maryknoll Secondary School	Kwun Tong
61	Academic Building at No. 3 Sassoon Road	Pok Fu Lam
62	Fire Services Department West Kowloon Complex	Jordan
63	Animal Management and Animal Welfare Building Complex in Kai Tak Development	Kai Tak
64	Kai Tak Sports Park	Kai Tak
65	Fire Station-cum-ambulance Depot with Departmental Quarters and Facilities in Area 72, Tseung Kwan O	Tseung Kwan O
66	Redevelopment of Grantham Hospital, Phase 1	Wong Chuk Hang
67	Redevelopment of Our Lady of Maryknoll Hospital	Wong Tai Sin
68	Expansion of United Christian Hospital	Kwun Tong
69	Redevelopment of Prince of Wales Hospital, Phase 2 (Stage 1)	Sha Tin
70	Replacement of the Storm-detecting Weather Radar at Tai Mo Shan	Tai Mo Shan Peak
71	High Performance Computer System for the Hong Kong Observatory	Cheung Sha Wan
72	Rehabilitation of Underground Stormwater Drains	Entire Hong Kong

Major Expected Impacts of Newly Selected Projects

Energy Efficiency and Conservation (Project 46)

(i) Maximum 31 million kWh of electricity saved per year

(ii) 21 500 tonnes of greenhouse gas emissions avoided or reduced per year, in carbon dioxide equivalent



Pollution Prevention and Control (Project 47)

(i) Improve the air quality modelling and forecasting abilities and accuracies

(ii) Provide more robust and scientific basis for developing emission control strategies

Water and Wastewater Management (Projects 48 to 55)

(i) Wastewater treatment capacity raised by 5 800 m^3 per day

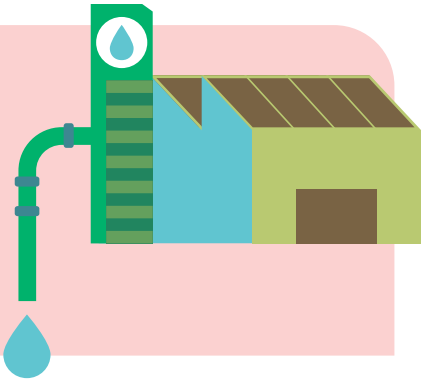
(ii) Additional 6 620 m^3 of wastewater treated per day

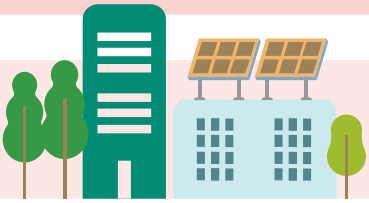
(iii) Production capacity of reclaimed water raised by 73 000 m^3 of per day

(iv) Additional 9 500 m^3 of effluent reclaimed for re-use per year

(v) Operation reliability of the sewerage system enhanced

(vi) Sewage flow capacity increased and risk of sewage overflow greatly reduced





Green Buildings (Projects 56 to 69)

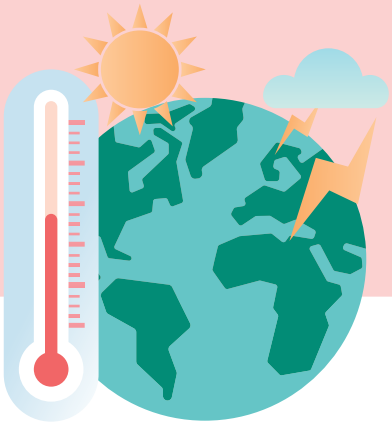
Received or expect to receive a BEAM Plus[7] New Buildings certification at Gold rating or above

Climate Change Adaptation (Projects 70 to 72)

(i) Allow more timely and reliable weather forecasts, which help reduce loss of life and damage to property and minimise disruption to economic and social activities during hazardous weather

(ii) Minimise the risk of stormwater drains collapse

(iii) Ensure the proper function of stormwater drainage (flood protection) system

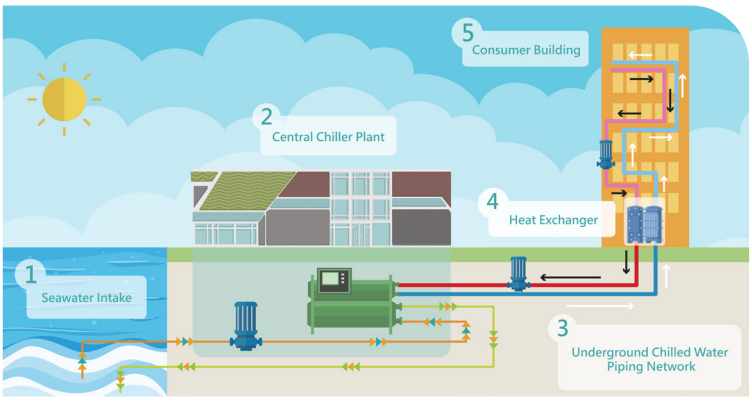


[7] Recognised and certified by the Hong Kong Green Building Council, BEAM Plus offers a comprehensive set of performance criteria for a wide range of sustainability issues relating to the planning, design, construction, commissioning, management, operation and maintenance of a building. By providing a fair and objective assessment of a building's overall performance throughout its life cycle, BEAM Plus enables organisations and companies to demonstrate their commitment to sustainable development. For more information, please visit **www.hkgbc.org.hk**.

Project Highlights

Energy Efficiency and Conservation

District Cooling System for Tung Chung New Town Extension (East) (Project 46)



In addition to the District Cooling System (DCS) projects under construction at the Kai Tak Development (Project 7 and Project 14) and Kwu Tung North New Development Area (Project 34) to meet the cooling demand of user buildings, another DCS is being built at the Tung Chung New Town Extension (East) (TCE) in support of its low-carbon development. With an estimated cooling capacity of about 123 megawatt of refrigeration, the DCS at TCE can cover a total air-conditioned floor area of about 0.7 million square metres.

The energy efficiency of DCS is generally better than that of traditional central air-conditioning systems in individual buildings, which brings significant environmental benefits and helps mitigate climate change. Upon full utilisation, the project is estimated to save up to 31 million kWh of electricity a year, corresponding to an annual reduction of about 21 500 tonnes of carbon dioxide emissions[8].

Apart from being an energy-efficient air-conditioning system itself, the DCS is designed to include various forms of energy efficient features and renewable energy technologies, including light-emitting diode general lighting, occupancy sensors for lighting control and a photovoltaic system. The DCS plant building is expected to achieve Gold Rating under the BEAM Plus New Buildings scheme.

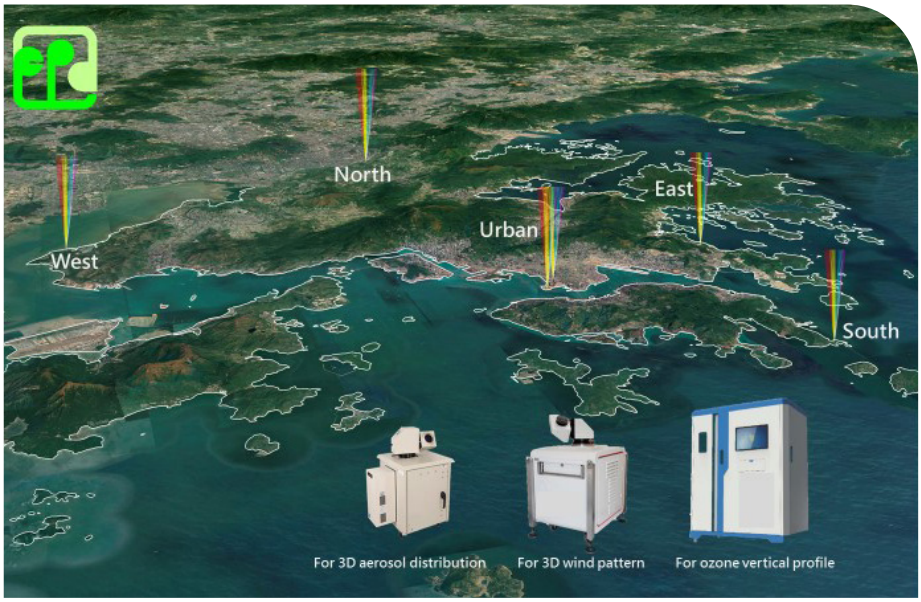
The DCS can also bring along the following benefits for individual users and the community -

- about 5% to 10% reduction in upfront capital cost for installing chiller plants in individual buildings
- more flexible building design
- reduced heat island effects at TCE; and no noise and vibration arising from the operation of heat rejection equipment and chillers of air-conditioning plants in user buildings
- a more adaptable air-conditioning system to meet the varying demand of buildings as compared to individual air-conditioning systems

[8] This is based on the estimated amount of greenhouse gas emissions avoided or reduced owing to the electricity saved with DCS as compared to traditional air-cooled systems.

Pollution Prevention and Control

Three-dimensional Air Pollution Monitoring Network (Project 47)



Pollutants can be formed through chemical reactions in the atmosphere and transported over long distances at high altitudes. Both quantifying the pollutants composition near ground level and understanding of its atmospheric transport above ground are important in tackling the regional pollution problem.

The Environmental Protection Department (EPD) has been keeping abreast of the developments in air monitoring technology and adopting new technology in a timely manner to enhance the department's ability to monitor air quality. The new three-dimensional (3D) air pollution monitoring network uses the Light Detection and Ranging (LiDAR) system to measure the real-time vertical and 3D distribution of air pollutant concentration and wind profile up to several kilometers above ground. It can supplement the information gathered at near ground level by the traditional air quality monitoring stations. It can help identify the trajectories of regional ozone and suspended particulates transport and enhance EPD's understanding of the sources of pollutants and the formation processes.

EPD plans to set up five LiDAR stations, with four stations at the periphery of Hong Kong to capture the properties of air plumes entering and leaving the territory and the fifth one in the city center to monitor the impact of buildings in urban areas on microclimate and pollutant dispersion. The LiDAR network will be gradually implemented in 2024. Each station will be equipped with ozone, aerosols and wind LiDAR system.

The monitoring network will collect invaluable data to improve the accuracy of the air quality model and EPD's ability in air quality forecast, as well as provide the data to universities and research institutes for developing and validating air quality and microclimate models. The measurement data will provide more robust and scientific basis for developing appropriate emission control strategies to tackle the regional pollution problem.

Green Buildings

Kai Tak Sports Park (Project 64)

The Kai Tak Sports Park is the most important sports infrastructure in the recent decades of Hong Kong. Occupying an area of about 28 hectares in the north apron of the former airport in Kai Tak and with a project cost of HK$31.9 billion, the Kai Tak Sports Park, upon completion, will provide modern and multi-purpose sports and recreation facilities not only allowing staging of more large-scale international sports events, but also providing the general public with leisure and sports venues for community use, thereby facilitating the sports development in Hong Kong. Major facilities of the Sports Park include a 50 000-seat Main Stadium with retractable roof, a 10 000-seat Indoor Sports Centre, a 5 000-seat Public Sports Ground, about 14-hectare landscaped open space and other ancillary facilities.

The Kai Tak Sports Park adopts a number of green and sustainable designs, including renewable energy technologies such as photovoltaic system and solar hot water system on the roof, charging facilities for electric vehicles at all private car parking spaces, and use of efficient and reliable DCS at the Kai Tak Development to reduce overall energy consumption. Furthermore, the Sports Park will bring to the community vast public open space and soft landscape with green roof and vertical greening to enhance the urban ecology, reduce heat island effect and improve visual comfort. In order to promote biodiversity, the soft landscape design adopts various native species to achieve sustainable greenery and environmental features.

During the construction stage, the project adopts new technologies and measures including the use of Building Information Modelling (BIM) with the 3S construction concept, i.e. Standardisation, Simplification and Single integrated element; and an on-site Automatic Power System which reduces the use of diesel generator. The project also widely adopts prefabricated elements, such as steel trusses, precast concrete seatings, facades and roof panels, etc., to enhance construction productivity and reduce construction waste.

The project has received a number of green building certificates, including Platinum rating under the BEAM Plus Neighbourhood of the Hong Kong Green Building Council and the China 3-Star Design Label from the China Green Building (Hong Kong) Council. Three major facilities (i.e. Main Stadium, Indoor Sports Centre and Public Sports Ground) of the project have also achieved Provisional Platinum rating under the BEAM Plus New Buildings and Gold Pre-certification under LEED for Building Design and Construction.

The design and construction team of the project also received the “Green Management Award – Project Management (Large Corporation) – Gold Award” at the Green Council “Hong Kong Green Awards” for four consecutive years from 2019 to 2022. The award acknowledges the project’s exceptional green management performance.

For more details, please refer to the **Kai Tak Sports Park webpage**.

Climate Change Adaptation

Replacement of the Storm-detecting Weather Radar at Tai Mo Shan (Project 70)

The project of installing a new storm-detecting weather radar at Tai Mo Shan (TMSWR) is particularly important in view of the growing impact of climate change. According to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, global warming has led to more frequent and intense extreme weather events around the world, including more severe rainstorms and more intense tropical cyclones. Like other cities, Hong Kong is facing more extreme weather phenomena. There was an increasing trend in both the annual rainfall and number of heavy rain days based on the rainfall records of the Hong Kong Observatory (HKO). Being a coastal city, Hong Kong is particularly susceptible to weather-related threats such as tropical cyclones, rainstorms and storm surges such as Super Typhoons Hato in 2017 and Mangkhut in 2018 that caused extensive damage to low-lying areas and waterfront facilities. To enhance Hong Kong's resilience to climate change, it would be necessary to deploy an up-to-date TMSWR to monitor environmental hazards such as landslip and flooding that may arise due to severe weather.

To support the TMSWR operation and promote green initiatives, including energy conservation, variable frequency air-conditioners have been installed since 2018, helping reduce electricity consumption by around 10%. HKO is also exploring the possibility of installing wind turbines inside the TMSWR station to generate renewable energy to support the operation of the new radar system.

Allocation of the Proceeds of the Green Bond Issuances

As of 30 June 2020, the total proceeds of the inaugural May 2019 issuance amounting to HK$7,829 million were fully allocated to seven green projects. For more details of the allocation, please refer to the **Green Bond Report 2020**.

The allocation of proceeds raised from the February 2021 issuances, November 2021 issuances, Retail Green Bond 2022, January 2023 issuances and inaugural tokenised issuance have been fully allocated or earmarked[9] to eligible green projects. Their allocation[10] by financial year and eligible category as of 31 July 2023 are reported in this section.

UPDATE The February 2021 Issuances

Allocation by Financial Year

The total proceeds of the February 2021 issuances amounting to HK$19,304 million were fully allocated to 12 green projects across five financial years from 2018-19 to 2022-23 as shown in the table below.

Green Bond (ISIN) \ Year	2018-19 (re-financing) HK$ million	2019-20 (re-financing) HK$ million	2020-21 (new financing) HK$ million	2021-22 (new financing) HK$ million	2022-23 (new financing) HK$ million	Total proceeds allocated HK$ million
5-year USD (US43858AAC45 / USY3422VCR79)	331 (4.3%)	695 (9.0%)	2,404 (31.0%)	2,447 (31.6%)	1,873 (24.2%)	**7,749 (100%)**
	Total for re-financing: 1,026 (13.2%)		Total for new financing: 6,723 (86.8%)			
10-year USD (US43858AAD28 / USY3422VCS52)	331 (4.3%)	695 (9.0%)	2,186 (28.3%)	2,645 (34.2%)	1,868 (24.2%)	**7,725 (100%)**
	Total for re-financing: 1,026 (13.3%)		Total for new financing: 6,699 (86.7%)			
30-year USD (US43858AAE01 / USY3422VCT36)	165 (4.3%)	347 (9.1%)	1,093 (28.5%)	1,323 (34.5%)	902 (23.5%)	**3,830 (100%)**
	Total for re-financing: 513 (13.4%)		Total for new financing: 3,317 (86.6%)			

[9] The final allocation for the proceeds earmarked will be subject to the actual expenditures of the projects from 2023-24 and reported in subsequent Green Bond Reports.

[10] Individual figures reported in each table may not add up to the total owing to rounding. A financial year of the Government runs from 1 April of a calendar year to 31 March of the next calendar year.

Allocation by Eligible Category

Green Bond (ISIN) \ Eligible Category	Energy Efficiency and Conservation HK$ million	Waste Management and Resource Recovery HK$ million	Water and Wastewater Management HK$ million	Green Buildings HK$ million	Total proceeds allocated HK$ million
5-year USD (US43858AAC45 / USY3422VCR79)	515 (6.6%)	2,712 (35.0%)	808 (10.4%)	3,713 (47.9%)	**7,749** **(100%)**
10-year USD (US43858AAD28 / USY3422VCS52)	1,020 (13.2%)	2,712 (35.1%)	808 (10.5%)	3,184 (41.2%)	**7,725** **(100%)**
30-year USD (US43858AAE01 / USY3422VCT36)	510 (13.3%)	1,356 (35.4%)	404 (10.6%)	1,560 (40.7%)	**3,830** **(100%)**

UPDATE The November 2021 Issuances

Allocation by Financial Year

The total proceeds of the November 2021 issuances amounting to HK$29,124 million were fully allocated or earmarked to 32 green projects across five financial years from 2019-20 to 2023-24 as shown in the table below.

Green Bond (ISIN) \ Year	2019-20 (allocated for re-financing) HK$ million	2020-21 (allocated for re-financing) HK$ million	2021-22 (allocated for new financing) HK$ million	2022-23 (allocated for new financing) HK$ million	2023-24 (earmarked for new financing) HK$ million	Total proceeds allocated / earmarked HK$ million
10-year USD (HK0000789823)	227 (2.9%)	568 (7.4%)	1,243 (16.1%)	2,603 (33.7%)	3,075 (39.9%)	**7,717 (100%)**
	Total for re-financing: 795 (10.3%)		Total for new financing: 6,922 (89.7%)			
5-year EUR (HK0000789849)	117 (1.1%)	646 (5.9%)	1,586 (14.5%)	3,060 (27.9%)	5,556 (50.7%)	**10,965 (100%)**
	Total for re-financing: 763 (7.0%)		Total for new financing: 10,202 (93.0%)			
20-year EUR (HK0000789856)	86 (2.0%)	673 (15.5%)	1,154 (26.6%)	1,360 (31.3%)	1,071 (24.6%)	**4,344 (100%)**
	Total for re-financing: 759 (17.5%)		Total for new financing: 3,585 (82.5%)			
3-year RMB (HK0000789864)	477 (15.7%)	948 (31.1%)	373 (12.2%)	967 (31.7%)	284 (9.3%)	**3,049 (100%)**
	Total for re-financing: 1,425 (46.7%)		Total for new financing: 1,624 (53.3%)			
5-year RMB (HK0000789872)	119 (3.9%)	262 (8.6%)	450 (14.8%)	1,237 (40.6%)	981 (32.2%)	**3,049 (100%)**
	Total for re-financing: 381 (12.5%)		Total for new financing: 2,668 (87.5%)			

Allocation by Eligible Category

Green Bond (ISIN) \ Eligible Category	Energy Efficiency and Conservation HK$ million	Waste Management and Resource Recovery HK$ million	Water and Wastewater Management HK$ million	Green Buildings HK$ million	Total proceeds allocated HK$ million
10-year USD (HK0000789823)	718 (9.3%)	123 (1.6%)	5,850 (75.8%)	1,027 (13.3%)	**7,717 (100%)**
5-year EUR (HK0000789849)	84 (0.8%)	2,181 (19.9%)	879 (8.0%)	7,821 (71.3%)	**10,965 (100%)**
20-year EUR (HK0000789856)	177 (4.1%)	74 (1.7%)	2,549 (58.7%)	1,544 (35.5%)	**4,344 (100%)**
3-year RMB (HK0000789864)	28 (0.9%)	49 (1.6%)	817 (26.8%)	2,155 (70.7%)	**3,049 (100%)**
5-year RMB (HK0000789872)	28 (0.9%)	49 (1.6%)	856 (28.1%)	2,116 (69.4%)	**3,049 (100%)**

UPDATE Retail Green Bond 2022

Allocation by Financial Year

The proceeds of the Retail Green Bond 2022 amounting to HK$20,000 million were fully allocated or earmarked to 12 green projects across five financial years from 2020-21 to 2024-25 as shown in the table below.

Green Bond (ISIN) \ Year	2020-21 (allocated for re-financing) HK$ million	2021-22 (allocated for re-financing) HK$ million	2022-23 (allocated for new financing) HK$ million	2023-24 & 2024-25 (earmarked for new financing) HK$ million	Total proceeds allocated / earmarked HK$ million
3-year HKD (HK0000844578)	3,013 (15.1%)	3,222 (16.1%)	3,510 (17.6%)	10,256 (51.3%)	**20,000 (100%)**
	Total for re-financing: 6,235 (31.2%)		Total for new financing: 13,765 (68.8%)		

Allocation by Eligible Category

Green Bond (ISIN) \ Eligible Category	Waste Management and Resource Recovery HK$ million	Water and Wastewater Management HK$ million	Green Buildings HK$ million	Total proceeds allocated / earmarked HK$ million
3-year HKD (HK0000844578)	105 (0.5%)	6,981 (34.9%)	12,914 (64.6%)	**20,000 (100%)**

NEW The January 2023 Issuances

Allocation by Financial Year

The total proceeds of the January 2023 issuances amounting to HK$45,192 million were fully allocated or earmarked to 27 green projects across five financial years from 2020-21 to 2024-25 as shown in the table below.

Green Bond (ISIN) / Year	2020-21 (allocated for re-financing) HK$ million	2021-22 (allocated for re-financing) HK$ million	2022-23 (allocated for new financing) HK$ million	2023-24 & 2024-25 (earmarked for new financing) HK$ million	Total proceeds allocated / earmarked HK$ million
3-year USD (US43858AAF75 / USY3422VCU09)	337 (8.7%)	519 (13.3%)	999 (25.7%)	2,036 (52.3%)	**3,891 (100%)**
	Total for re-financing: 856 (22.0%)		Total for new financing: 3,035 (78.0%)		
5-year USD (US43858AAG58 / USY3422VCV81)	735 (9.4%)	1,215 (15.6%)	1,343 (17.3%)	4,486 (57.7%)	**7,778 (100%)**
	Total for re-financing: 1,950 (25.1%)		Total for new financing: 5,828 (74.9%)		
10-year USD (US43858AAH32 / USY3422VCW64)	397 (5.1%)	849 (10.9%)	1,564 (20.1%)	4,968 (63.9%)	**7,778 (100%)**
	Total for re-financing: 1,247 (16.0%)		Total for new financing: 6,531 (84.0%)		
30-year USD (US43858AAJ97 / USY3422VCX48)	322 (8.3%)	709 (18.4%)	617 (16.0%)	2,216 (57.4%)	**3,864 (100%)**
	Total for re-financing: 1,031 (26.7%)		Total for new financing: 2,833 (73.3%)		
2-year EUR (HK0000895893)	1,201 (19.2%)	1,404 (22.5%)	1,205 (19.3%)	2,435 (39.0%)	**6,246 (100%)**
	Total for re-financing: 2,606 (41.7%)		Total for new financing: 3,640 (58.3%)		
7-year EUR (HK0000895901)	240 (5.8%)	459 (11.1%)	716 (17.3%)	2,731 (65.9%)	**4,145 (100%)**
	Total for re-financing: 699 (16.9%)		Total for new financing: 3,447 (83.1%)		
2-year RMB (HK0000895919)	777 (13.5%)	1,189 (20.7%)	1,116 (19.4%)	2,663 (46.4%)	**5,745 (100%)**
	Total for re-financing: 1,966 (34.2%)		Total for new financing: 3,779 (65.8%)		
5-year RMB (HK0000895927)	552 (9.6%)	875 (15.2%)	1,309 (22.8%)	3,009 (52.4%)	**5,745 (100%)**
	Total for re-financing: 1,427 (24.8%)		Total for new financing: 4,318 (75.2%)		

Allocation by Eligible Category

Green Bond (ISIN) / Eligible Category	Energy Efficiency and Conservation HK$ million	Pollution Prevention and Control HK$ million	Water and Wastewater Management HK$ million	Green Buildings HK$ million	Climate Change Adaptation HK$ million	Total proceeds allocated / earmarked HK$ million
3-year USD (US43858AAF75 / USY3422VCU09)	-	9 (0.2%)	311 (8.0%)	3,536 (90.9%)	34 (0.9%)	**3,891 (100%)**
5-year USD (US43858AAG58 / USY3422VCV81)	-	-	914 (11.8%)	6,630 (85.2%)	233 (3.0%)	**7,778 (100%)**
10-year USD (US43858AAH32 / USY3422VCW64)	-	-	768 (9.9%)	6,830 (87.8%)	180 (2.3%)	**7,778 (100%)**
30-year USD (US43858AAJ97 / USY3422VCX48)	773 (20.0%)	-	560 (14.5%)	2,530 (65.5%)	-	**3,864 (100%)**
2-year EUR (HK0000895893)	-	-	100 (1.6%)	6,099 (97.7%)	46 (0.7%)	**6,246 (100%)**
7-year EUR (HK0000895901)	-	-	238 (5.7%)	3,778 (91.1%)	130 (3.1%)	**4,145 (100%)**
2-year RMB (HK0000895919)	-	-	92 (1.6%)	5,564 (96.8%)	89 (1.5%)	**5,745 (100%)**
5-year RMB (HK0000895927)	-	-	589 (10.3%)	5,089 (88.6%)	67 (1.2%)	**5,745 (100%)**

NEW The Inaugural Tokenised Issuance

Allocation by Financial Year

The proceeds of the inaugural tokenised issuance amounting to HK$800 million were fully allocated to five green projects across three financial years from 2020-21 to 2022-23 as shown in the table below.

Year / Green Bond (ISIN)	2020-21 (re-financing) HK$ million	2021-22 (re-financing) HK$ million	2022-23 (new financing) HK$ million	Total proceeds allocated HK$ million
365-day HKD (HK0000895216)	94 (11.8%)	206 (25.7%)	500 (62.5%)	**800 (100%)**
	Total for re-financing: 300 (37.5%)		Total for new financing: 500 (62.5%)	

Allocation by Eligible Category

Eligible Category / Green Bond (ISIN)	Pollution Prevention and Control HK$ million	Water and Wastewater Management HK$ million	Green Buildings HK$ million	Climate Change Adaptation HK$ million	Total proceeds allocated HK$ million
365-day HKD (HK0000895216)	0.42 (0.1%)	241 (30.1%)	556 (69.5%)	3 (0.3%)	**800 (100%)**

External Review

The Green Bond Report 2023 is approved by the Steering Committee on the GGBP. All Government green bonds issued under the Framework in February 2023 or before have received the Green and Sustainable Finance Certificate (Post-issuance Stage) from the HKQAA. Further information regarding the HKQAA and its assessment is set out in **Appendix B**.

Green Bond
Post-issuance Stage
Certificate No.: CC 8233
CC 8234 to CC 8245

Appendix A

Summary of Green Projects under the Government Green Bond Programme

Project	Name of Project	Brief Description	Eligible Category	Year / Expected Year of Completion	Total Project Estimate (HK$ million)	Expenditure up to 2022-23 (HK$ million)	Green Bond Proceeds Allocated (as of 31 July 2023) (HK$ million) [Breakdown by bond][1]	Major Expected Impacts[2]
1	I·PARK1	Construction of a municipal solid waste (MSW) incineration plant aiming to substantially reduce the bulk size of MSW and recover useful resources through employment of advanced technologies	Waste Management and Resource Recovery	2025	19,204	9,398	9,346 [B1 : 3,779 B2 : 2,022 B3 : 2,022 B4 : 1,011 B6 : 513]	• Treatment capacity of 3 000 tonnes of MSW per day • Useful materials recovered from up to 200 tonnes of MSW per day • 480 million kWh of electricity generated every year • 440 000 tonnes of greenhouse gas emissions avoided in carbon dioxide equivalent (CO2e) per year
2	O·PARK1	Construction of the first organic resources recovery centre that adopts anaerobic digestion technology in Hong Kong to convert food waste into biogas for electricity generation	Waste Management and Resource Recovery	2018	1,589	1,428	266 [B1 : 266]	• Treatment capacity of 200 tonnes of food waste per day • 14 million kWh of electricity generated every year • 42 000 tonnes of greenhouse gas emissions avoided in CO2e per year • Achieved Final Platinum rating under the BEAM Plus New Buildings V1.2
3	West Kowloon Government Offices	Construction of a new Government twin-tower building with a total construction floor area of about 98 000 m^2 accommodating various Government departments	Green Buildings	2019	4,743	3,611	1,769 [B1 : 1,769]	• Achieved Final Platinum rating under the BEAM Plus New Buildings V1.2 • About 41.9% (office) and 47.2% (carpark) reduction of energy consumption
4	Inland Revenue Centre	Construction of a new Government office building providing about 45 000 m^2 of net operational floor area and connecting to the District Cooling System (DCS) at the Kai Tak Development (KTD)	Green Buildings	2022	3,600	2,946	2,946 [B1 : 386 B2 : 792 B3 : 792 B4 : 396 B8 : 580]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V1.2 • About 29.7% (office) and 11.6% (carpark) reduction of CO2 emissions
5	Upgrading of San Wai Sewage Treatment Works - Phase 1	Upgrading of the sewage treatment level from preliminary treatment to chemically enhanced primary treatment with UV disinfection and expansion of the treatment capacity from 164 000 m^3 per day to 200 000 m^3 per day	Water and Wastewater Management	2020	2,572	1,904	1,367 [B1 : 886 B2 : 180 B3 : 180 B4 : 90 B8 : 32]	• Wastewater treatment capacity raised by 36 000 m^3 per day • 275 000 m^3 of water recycled per year • Achieved Final Platinum rating under the BEAM Plus New Buildings V1.2 • About 38.4% reduction of CO2 emissions

[1] See legend at page 46. Individual figures may not add up to the total owing to rounding.

[2] The major expected impacts are reported based on the latest assessment, including the assessed result in the BEAM Plus Assessment Report. Further updates, where applicable, will be provided in subsequent Green Bond Reports.

Project	Name of Project	Brief Description	Eligible Category	Year / Expected Year of Completion	Total Project Estimate (HK$ million)	Expenditure up to 2022-23 (HK$ million)	Green Bond Proceeds Allocated (as of 31 July 2023) (HK$ million) [Breakdown by bond][1]	Major Expected Impacts[2]
6	Additional Sewage Rising Main and Rehabilitation of the Existing Sewage Rising Main between Tung Chung and Siu Ho Wan	Construction and rehabilitation of about 6.5 km new and 6.5 km existing sewage rising main respectively between Tung Chung Sewage Pumping Station and Siu Ho Wan Sewage Treatment Works to raise the handling capacity from 60 000 m^3 per day to 120 000 m^3 per day	Water and Wastewater Management	2025	1,363	563	473 [B1: 241 B2 : 70 B3 : 70 B4 : 35 B9 : 57]	• Wastewater handling capacity raised by 60 000 m^3 per day • Around 165 000 of the population potentially benefited
7	District Cooling System at the Kai Tak Development	Construction of the first DCS at the KTD, a large-scale energy-efficient centralised air-conditioning system, to provide cooling to multiple buildings	Energy Efficiency and Conservation	2025	4,946	4,316	1,041 [B1 : 501 B2 : 515 B6 : 16 B8 : 4 B9 : 4]	• 35% energy efficiency improvement compared to air-cooled cooling system • 85 million kWh of electricity saved per year • 59 500 tonnes of greenhouse gas emissions avoided or reduced in CO2e per year
8	O·PARK2	Construction of the second organic resources recovery centre that adopts anaerobic digestion technology in Hong Kong to convert food waste into biogas for electricity generation	Waste Management and Resource Recovery	2024	2,453	2,043	2,043 [B2 : 690 B3 : 690 B4 : 345 B5 : 72 B6 : 45 B7 : 43 B8 : 29 B9 : 29 B10 : 100]	• Treatment capacity of 300 tonnes of food waste per day • 24 million kWh of electricity generated every year • 67 000 tonnes of greenhouse gas emissions avoided in CO2e per year • Achieved Provisional Platinum rating under the BEAM Plus New Buildings V1.2
9	Treasury Building	Construction of a new 22-storey Government building providing about 26 500 m^2 of net operational floor area for facilities including offices of various bureaux and departments, a general out-patient clinic, a child care centre and an elderly day care centre	Green Buildings	2022	2,281	1,550	1,550 [B2 : 583 B3 : 645 B4 : 322]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V1.2 • About 29.11% (office) and 12.87% (carpark) reduction of energy consumption
10	Redevelopment of Queen Mary Hospital, Phase 1	Construction of a new hospital block and the associated facilities with a construction floor area of about 143 000 m^2 near the existing Queen Mary Hospital compound to enhance its medical service capacity	Green Buildings	2024	13,556	3,587	3,587 [B2 : 1,555 B3 : 1,026 B4 : 481 B6 : 525]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V1.2 • About 18.2% (hospital) and 29.3% (carpark) reduction of CO2 emissions
11	East Kowloon Cultural Centre	Construction of a new cultural centre with a construction floor area of about 50 900 m^2 to provide various cultural facilities and services as well as public open space for the community[3]	Green Buildings	2023	4,176	2,625	2,238 [B2 : 783 B3 : 722 B4 : 361 B9 : 372]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V1.1 • About 13.2% reduction of energy consumption

[3] According to the latest design and work plan, the East Kowloon Cultural Centre will accommodate facilities including The Hall and The Theatre with seating capacity of 1 200 and 550 seats respectively, two multi-purpose studios with seating capacity ranging from 120 to 180, an arts and technology testbed studio called The Lab, rehearsal rooms and other ancillary facilities.

Project	Name of Project	Brief Description	Eligible Category	Year / Expected Year of Completion	Total Project Estimate (HK$ million)	Expenditure up to 2022-23 (HK$ million)	Green Bond Proceeds Allocated (as of 31 July 2023) (HK$ million) [Breakdown by bond][1]	Major Expected Impacts[2]
12	West Kowloon Drainage Improvement - Inter-reservoirs Transfer Scheme	Construction of a water tunnel from the Kowloon Byewash Reservoir to the Lower Shing Mun Reservoir as well as the intake and outfall structures for transferring collected surface runoff from the Kowloon group of reservoirs to the Lower Shing Mun Reservoir	Water and Wastewater Management	2022	1,222	631	631 [B2 : 229 B3 : 229 B4 : 115 B8 : 58]	• Additional 3.4 million m^3 of fresh water yield per year
13	Expansion of Sha Tau Kok Sewage Treatment Works - Phase 1	Reconstruction of the existing Sha Tau Kok Sewage Treatment Works to increase its capacity from 1 660 m^3 per day to 5 000 m^3 per day and construction of a larger and longer submarine outfall to improve quality of the receiving waters of Starling Inlet	Water and Wastewater Management	2025	2,041	1,033	1,033 [B2 : 329 B3 : 329 B4 : 165 B9 : 209]	• Additional 3 340 m^3 of wastewater treated per day • Expected to achieve Gold rating under the BEAM Plus New Buildings V1.2 • The energy efficient features of the project are expected to achieve 15% energy saving in the annual energy consumption • 24 m^2 of photovoltaic panels will be installed
14	Additional District Cooling System at the Kai Tak Development	Construction of the second DCS at the KTD, a large-scale energy-efficient centralised air-conditioning system, to meet the projected growth in cooling demand of user buildings including the New Acute Hospital and the Kai Tak Sports Park	Energy Efficiency and Conservation	2028	4,269	1,590	1,590 [B3 : 1,020 B4 : 510 B5 : 59]	• 35% energy efficiency improvement compared to air-cooled cooling system • 53 million kWh of electricity saved per year • 37 000 tonnes of greenhouse gas emissions avoided or reduced in CO2e per year
15	Fire Services Department Pak Shing Kok Married Quarters	Construction of five new 16 to 17-storey quarters blocks with a total construction floor area of about 47 140 m^2 for the provision of 648 departmental quarters units and the ancillary facilities	Green Buildings	2021	1,625	1,283	1,168 [B8 : 1,168]	• Achieved Final Platinum rating under the BEAM Plus New Buildings V2.0 • About 13.1% reduction of CO2 emissions
16	Customs and Excise Department Quarters at Tsz Wan Shan	Construction of one new 25-storey quarters block with a construction floor area of about 13 300 m^2 for the provision of 175 departmental quarters units and the ancillary facilities	Green Buildings	2022	533	331	326 [B7 : 326]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V1.2 • About 30.5% reduction of energy consumption
17	Reprovisioning of the Hongkong Post's Headquarters	Construction of an eight-storey high new building with a construction floor area of about 25 750 m^2 to accommodate the Hongkong Post's Headquarters, some out-housed units and a new delivery office	Green Buildings	2023	1,601	868	868 [B6 : 868]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V1.2 • About 18.4% reduction of energy consumption
18	Redevelopment of Kwai Chung Hospital, phase 2	Construction of a new Main Block and Child & Adolescent Block and the ancillary facilities within the existing compound of Kwai Chung Hospital to facilitate its adaptation of modernised model of psychiatric care	Green Buildings	2024	7,452[4]	2,185	2,185 [B5 : 639 B6 : 651 B7 : 384 B8 : 256 B9 : 256]	• Achieved Provisional Platinum rating under the BEAM Plus New Buildings V2.0 • About 13% reduction of CO2 emissions

[4] The Total Project Estimate is for both phases 2 and 3 of the project. Green bond proceeds will only fund phase 2 of the project.

Project	Name of Project	Brief Description	Eligible Category	Year / Expected Year of Completion	Total Project Estimate (HK$ million)	Expenditure up to 2022-23 (HK$ million)	Green Bond Proceeds Allocated (as of 31 July 2023) (HK$ million) [Breakdown by bond][1]	Major Expected Impacts[2]
19	Customs and Excise Department Quarters at Tseung Kwan O Area 123 (Po Lam Road)	Construction of two new 25 to 26-storey quarters blocks with a total construction floor area of about 23 860 m^2 for the provision of 306 departmental quarters units and the ancillary facilities	Green Buildings	2024	1,035	200	199 [B9 : 199]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V1.2 • Natural ventilation is adopted in common area resulting in 55.9% energy reduction for fan power in all common area compared with Building Energy Code (BEC) 2018 • Over 30% energy reduction for artificial lighting system in common area compared with BEC 2018
20	Hospital Authority Supporting Services Centre	Construction of a new supporting services building with a construction floor area of about 52 540 m^2 to accommodate a laundry, a central food production unit for patient meals, a data centre and central emergency stores to meet the demand of the Hospital Authority	Green Buildings	2024	3,788	940	940 [B6 : 940]	• Achieved Provisional Platinum rating under the BEAM Plus New Buildings V2.0 • About 7% reduction of CO2 emissions
21	The Water Supplies Department Building and the Correctional Services Headquarters Building	Construction of a new 15-storey high twin-tower office building with a net operational floor area of about 37 000 m^2 for accommodating the Water Supplies Department Headquarters and its Hong Kong and Islands Regional Office, the Correctional Services Department Headquarters Building, a government dental clinic and a public carpark	Green Buildings	2025	3,253	489	489 [B9 : 489]	• Achieved Provisional Platinum rating under the BEAM Plus New Buildings V2.0 • About 23% reduction of CO2 emissions
22	Drainage Services Tower	Construction of a new 21-storey office building with a net operational floor area of about 19 220 m^2 for reprovisioning the facilities for both the Drainage Services Department and the Social Welfare Department	Green Buildings	2025	2,158	316	316 [B7 : 316]	• Achieved Provisional Platinum rating under the BEAM Plus New Buildings V2.0 • About 16.7% reduction of CO2 emissions
23	Tseung Kwan O Government Offices	Construction of a new 16 to 18-storey twin-tower building with a net operational floor area of about 44 000 m^2 for accommodating various Government departments and facilities, including a general out-patient clinic, a job centre, a government families clinic, a government dental clinic and a child care centre for government employees	Green Buildings	2025	5,228	1,239	1,239 [B6 : 1,239]	• Expected to achieve at least Gold rating under the BEAM Plus New Buildings V1.2 • The energy efficient features of the project are expected to achieve 10.5% energy saving in the annual energy consumption
24	Rehabilitation of Trunk Sewers in Kowloon, Sha Tin and Sai Kung	Rehabilitation of four existing trunk sewers ranging from 50 m to 1 km long and construction of additional trunk sewers in Kowloon, Sha Tin and Sai Kung to reduce the risk of sewage overflow	Water and Wastewater Management	2022	679	326	292 [B9 : 292]	• Risk of sewage overflow from the sewers of 1.65 km long in total greatly reduced • Construction of new trunk sewers in Sha Tin and Sai Kung is expected to increase the sewage flow capacity • Around 900 000 of the population potentially benefited

Project	Name of Project	Brief Description	Eligible Category	Year / Expected Year of Completion	Total Project Estimate (HK$ million)	Expenditure up to 2022-23 (HK$ million)	Green Bond Proceeds Allocated (as of 31 July 2023) (HK$ million) [Breakdown by bond][1]	Major Expected Impacts[2]
25	Upgrading of Kwun Tong Preliminary Treatment Works	Upgrading of the preliminary treatment works to increase its treatment capacity from 330 000 m^3 per day to 440 000 m^3 per day	Water and Wastewater Management	2022	350	339	267 [B8 : 267]	• Wastewater treatment capacity raised by 110 000 m^3 per day • Photovoltaic panels on the rooftop of workshop and pump hall installed
26	Upgrading of West Kowloon and Tsuen Wan Sewerage Phase 1	Construction of new or modification of existing dry weather flow interceptors (DWFIs) in Tsuen Wan and West Kowloon areas to intercept the polluted stormwater during dry weather period and convey it to Stonecutters Island Sewage Treatment Works for proper treatment and disposal	Water and Wastewater Management	2022	277	141	114 [B9 : 114]	• About 70% of the total annual pollution loading from the respective stormwater systems is estimated to be removed
27	Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert	Construction of an underground DWFI with automatic penstocks at Cherry Street box culvert, a pumping station, an underground stormwater bypass box culvert, and an underground twin rising main to intercept the polluted stormwater during dry weather period and pump it to Stonecutters Island Sewage Treatment Works for proper treatment and disposal	Water and Wastewater Management	2022	665	376	324 [B8 : 324]	• About 70% of the total annual pollution load that enters New Yau Ma Tei Typhoon Shelter through the Cherry Street Box Culvert is estimated to be removed • Photovoltaic panels on the rooftop of sewage pumping station installed
28	Revitalisation of Tsui Ping River	Revitalisation of the existing King Yip Street nullah to turn it into a green and vibrant Tsui Ping River with environmental, ecological and landscaping upgrading, while enhancing the flood conveyance capability of the nullah	Water and Wastewater Management	2024	1,342	463	463 [B5 : 116 B6 : 185 B7 : 69 B8 : 46 B9 : 46]	• The appearance and habitat of the nullah with a length of approximately one km enhanced • Nullah bed of around 1.73 hectares revitalised • Polluted discharge into the nullah reduced • The flood conveyance capability of the nullah enhanced
29	Upgrading of West Kowloon and Tsuen Wan Sewerage Phase 2	Upgrading of the existing sewerage system in West Kowloon and Tsuen Wan, including construction of new gravity sewers of about 14.5 km long and replacement of existing gravity sewers of about 19 km long, to accommodate the projected flow increase and to reduce the risk of pollution caused by leakage from ageing sewers	Water and Wastewater Management	2026	2,286	426	426 [B6 : 426]	• Sewage conveyance capacity increased • Risk of sewage leakage and overflow reduced • Coastal water quality improved and the associated odour problem alleviated

Project	Name of Project	Brief Description	Eligible Category	Year / Expected Year of Completion	Total Project Estimate (HK$ million)	Expenditure up to 2022-23 (HK$ million)	Green Bond Proceeds Allocated (as of 31 July 2023) (HK$ million) [Breakdown by bond][7]	Major Expected Impacts[2]
30	Yuen Long Effluent Polishing Plant Stage 1	Reconstruction of part of the existing Yuen Long Sewage Treatment Works to increase its treatment capacity from 70 000 m^3 per day to 100 000 m^3 per day and reserve space for future construction of co-digestion facilities for sludge and food waste	Water and Wastewater Management	2027	6,950	1,386	1,343 [B5 : 1,343]	• Wastewater treatment capacity raised by 30 000 m^3 per day • 235 000 m^3 of water recycled per year • Residual organic content of the effluent reduced by 50% • Photovoltaic panels will be installed on the rooftop of most of the buildings • Achieved Platinum rating under BEAM Plus Neighbourhood V1.0 and Provisional Platinum rating under BEAM Plus New Buildings V1.2
31	Siu Ho Wan Water Treatment Works Extension	Upgrading of the Siu Ho Wan Water Treatment Works to increase its water treatment capacity from 150 000 m^3 per day to 300 000 m^3 per day and increase the transfer capacity of the related raw water supply systems	Water and Wastewater Management	2027	3,806	604	600 [B5 : 600]	• Water treatment capacity raised by 150 000 m^3 per day
32	Relocation of Sha Tin Sewage Treatment Works to Caverns	Relocation of Sha Tin Sewage Treatment Works (STSTW) to caverns to release the existing site for innovation and technology development and other uses beneficial to people's livelihood and social development and improve the environment of the existing site and its surroundings	Water and Wastewater Management	2031	19,916[5]	2,158	1,812 [B5 : 1,812]	• The environment of the existing STSTW site and its surroundings greatly improved • Odour management efficiently enhanced for the benefit of the surrounding communities • About 28 hectares of land released, bringing multifold benefits to the community and the economy • Treated effluent utilised for equipment cooling to save energy • Existing E&M equipment in Upstream Sewerage and Pumping Stations (USPS) upgraded (e.g. 31.5% of capacity upgrade for Ma On Shan Sewage Pumping Station), ensuring sufficient future development potential in Ma On Shan area as well as maintaining the durability of USPS

[5] The Total Project Estimate is updated to reflect the approval of funding by the Finance Committee of the Legislative Council in July 2023 for the Stage 3 Works of the project (buildings, cavern ventilation system and associated works).

Project	Name of Project	Brief Description	Eligible Category	Year / Expected Year of Completion	Total Project Estimate (HK$ million)	Expenditure up to 2022-23 (HK$ million)	Green Bond Proceeds Allocated (as of 31 July 2023) (HK$ million) [Breakdown by bond][7]	Major Expected Impacts[2]
33	Shek Wu Hui Effluent Polishing Plant	Reconstruction of the existing Shek Wu Hui Sewage Treatment Works to increase the treatment capacity from 105 000 m^3 per day to 170 000 m^3 per day[6], and upgrading of the sewage treatment level to tertiary standard for conversion into a "Shek Wu Hui Effluent Polishing Plant"	Water and Wastewater Management	2034	11,973	2,090	2,090 [B7 : 2,090]	• Wastewater treatment capacity raised by 65 000 m^3 per day • Treatment level enhanced from secondary to tertiary • 34 million kWh of electricity generated by renewable energy installation every year[7] • 26 million m^3 of effluent for water reclamation per year • Around 600 000 of the population to be served • Achieved Provisional Platinum rating under the BEAM Plus New Buildings V1.2
34	District Cooling System at the Kwu Tung North New Development Area	Construction of a DCS, a large-scale energy-efficient centralised air-conditioning system, in support of the low-carbon development at the Kwu Tung North New Development Area	Energy Efficiency and Conservation	2034	5,788	45	45 [B7 : 45]	• Approximately 35% energy efficiency improvement compared to air-cooled cooling system • 42 million kWh of electricity saved per year • 29 400 tonnes of greenhouse gas emissions avoided or reduced in CO2e per year
35	GREEN@WAN CHAI	Design and construction of facilities for holding publicity and educational programmes, and collecting and handling recyclables for the community in Wan Chai District	Waste Management and Resource Recovery	2020	29	22	3 [B10 : 3]	• Opened to the public since October 2021 • Received 14 979 visitors in 2022 • Collected more than 438 tonnes of recyclables in 2022 • Organised 231 educational events in 2022
36	Sports Centre, Community Hall and Football Pitches in Area 1, Tai Po	Construction of a new sports centre cum swimming pools, a community hall, football pitch and ancillary facilities at a project site of about 25 100 m^2	Green Buildings	2021	2,163	1,382	880 [B10 : 880]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V1.2 • About 38.8% reduction of energy consumption

[6] The ultimate treatment capacity of Shek Wu Hui Sewage Treatment Works is 190 000 m^3 per day. Part of the increased capacity (i.e. 20 000 m^3 per day) is proposed to cater for the needs of the First Phase development of Kwu Tung North and Fanling North New Development Area and is funded separately.

[7] Based on the ultimate treatment capacity of Shek Wu Hui Sewage Treatment Works of 190 000 m^3 per day.

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37	Extension of Operating Theatre Block for Tuen Mun Hospital	Construction of a new operating theatre (OT) extension block with a construction floor area of about 21 982 m^2 to accommodate 20 OTs, intensive care unit and associated supporting areas, the linkage with the existing OT block, a new Electrical Building and an additional Dangerous Good Building; as well as expansion and refurbishment of the existing facilities and building for integration with the extension block	Green Buildings	2024	2,730	1,551	1,096 [B10 : 1,096]	• Expected to achieve Gold rating under the BEAM Plus New Buildings V1.2 • About 15.4% reduction of CO2 emissions
38	North District Community Health Centre Building	Construction of a new joint-user building with a construction floor area of about 31 000 m^2 to accommodate a community health centre, a maternal and child health centre, a student health service centre, an elderly health centre, offices of the Department of Health and other facilities	Green Buildings	2024	1,780	634	634 [B10 : 634]	• Achieved Provisional Platinum rating under the BEAM Plus New Buildings V2.0 • About 16.6% reduction of CO2 emissions
39	Joint User Complex at Lei King Road	Construction of a new joint-user building with a construction floor area of about 12 180 m^2 to accommodate a district library and other facilities	Green Buildings	2025	674	153	153 [B10 : 153]	• Expected to achieve Gold rating under the BEAM Plus New Buildings V2.0 • The energy efficient features of the project are expected to achieve 10.5% energy saving in the annual energy consumption
40	New Acute Hospital at Kai Tak Development Area	Construction of a new acute hospital comprising five building blocks - the Acute Block, the Administration Block, the Education Block, the Oncology Block and the Specialist Out-patient Clinic Block with a total construction floor area of about 573 595 m^2	Green Buildings	2026	36,567	4,123	2,842 [B10 : 2,842]	• Achieved Provisional Platinum rating under the BEAM Plus New Buildings V1.2 • About 21.2% reduction of CO2 emissions
41	Enhancement Works for Kwun Tong Sewage Pumping Station	Construction of an underground balancing facility with a temporary storage capacity of 16 000 m^3 at the Kwun Tong Sewage Pumping Station site to regulate the excessive preliminarily treated sewage from Kwun Tong Preliminary Treatment Works during its extreme peak flow periods	Water and Wastewater Management	2022	1,054	916	502 [B10 : 502]	• Additional 16 000 m^3 of sewage temporary storage capacity • Rainwater harvesting system is provided at the rooftop of sewage pumping station and is expected to save 862 000 L of irrigation water demand per annum • Expected about 29% reduction of CO2 emissions annually • Photovoltaic panels on the rooftop of the plant house installed and is expected to generate 15 700 kWh of electricity every year • Achieved Provisional Platinum rating under BEAM Plus New Buildings V1.2
42	Upgrading of Sewage Pumping Stations and Sewerage along Ting Kok Road	Upgrading of the existing Ting Kok Road sewerage system in Tai Po to increase its treatment capacity from 11 500 m^3 to 22 000 m^3 per day	Water and Wastewater Management	2023	847	472	410 [B10 : 410]	• Wastewater treatment capacity raised by 10 500 m^3 per day • Around 64 000 of the population potentially benefited

Project	Name of Project	Brief Description	Eligible Category	Year / Expected Year of Completion	Total Project Estimate (HK$ million)	Expenditure up to 2022-23 (HK$ million)	Green Bond Proceeds Allocated (as of 31 July 2023) (HK$ million) [Breakdown by bond][7]	Major Expected Impacts[2]
43	Water Supply to New Housing Developments in Sheung Shui and Fanling	Construction of a fresh water service reservoir and the associated trunk mains and distribution mains to improve the fresh water supply to Sheung Shui and Fanling areas for the planned new housing developments	Water and Wastewater Management	2024	1,700	685	582 [B10 : 582]	• Total service reservoir storage capacity raised by 55 000 m^3 • Around 160 000 of the population potentially benefited
44	Implementation of Water Intelligent Network	Establishment of a water intelligent network across Hong Kong to monitor the water loss of the fresh water distribution network for follow-up actions	Water and Wastewater Management	2025	2,131	611	466 [B10 : 466]	• Leakage rate in government water mains reduced from about 15% in 2019 to below 10% by 2030 with full implementation of the project and other measures
45	In-situ Reprovisioning of Sha Tin Water Treatment Works (South Works)	In-situ reprovisioning of Sha Tin Water Treatment Works (South Works) to replace the aged treatment facilities and uprate the treatment capacity of the South Works from 360 000 m^3 per day to 550 000 m^3 per day	Water and Wastewater Management	2026	8,827	3,296	2,076 [B10 : 2,076]	• Water treatment capacity raised by 190 000m^3 per day • Around 300 000 of the population potentially benefited
46	District Cooling System for Tung Chung New Town Extension (East)	Construction of a DCS for Tung Chung New Town Extension (East) to promote energy efficiency and conservation. The scope of works comprise chiller plants, chilled water distribution pipes, electrical and mechanical equipment at chiller plants and connection facilities at user buildings	Energy Efficiency and Conservation	2030	3,918	37	37 [B14 : 37]	• The maximum annual saving in electricity consumption upon full utilisation of the plant is estimated to be 31 million kWh, with a corresponding reduction of about 21 500 tonnes of CO2 emissions per annum
47	Three-dimensional Air Pollution Monitoring Network	The new 3D air pollution monitoring network uses the Light Detection and Ranging (LiDAR) system to measure the real-time vertical and 3D distribution of air pollutant concentration and wind profile up to several kilometers above ground to identify the trajectories of regional ozone and suspended particulates transport, enhance the understanding of their sources and the formation processes	Pollution Prevention and Control	2025	55	1.1	1.1 [B11 : 0.7 B19 : 0.4]	• Complement the traditional air quality monitoring network by providing real-time 3D measurement • Enhance the understanding of regional pollutants formation and transportation • Improve the air quality modelling and forecasting abilities and accuracies • Provide more robust and scientific basis for developing emission control strategies
48	Rehabilitation of Trunk Sewers in Tuen Mun	Rehabilitation of existing trunk sewers of about 4.6 km long along Tin Hau Road, Lung Mun Road and across Tuen Mun River and construction of new duplicated trunk sewer of 600 m long in Tuen Mun to reduce the risk of sewage overflow	Water and Wastewater Management	2023	807	424	353 [B11 : 112 B19 : 241]	• Risks of trunk sewers structural failure and sewage overflow from the sewers of 4.6 km long in total substantially reduced • Around 500 000 of the population potentially benefited
49	Upgrading of Central and East Kowloon Sewerage – Phase 3	Rehabilitation of existing sewers of about 450 m long in Tsim Sha Tsui, and demolition and construction of sewers of about 7 km long in Central and East Kowloon to reduce the risk of sewage overflow	Water and Wastewater Management	2024	681	301	271 [B11 : 78 B15 : 100 B17 : 92]	• Risk of sewage overflow from the sewers of 7.5 km long in total substantially reduced • Construction of about 7 km long gravity sewer is expected to increase the sewage flow capacity • Around 800 000 of the population potentially benefited

Project	Name of Project	Brief Description	Eligible Category	Year / Expected Year of Completion	Total Project Estimate (HK$ million)	Expenditure up to 2022-23 (HK$ million)	Green Bond Proceeds Allocated (as of 31 July 2023) (HK$ million) [Breakdown by bond][7]	Major Expected Impacts[2]
50	Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities	Upgrading of the Cheung Chau Sewage Treatment Works to increase its treatment capacity from 4 000 m^3 per day to 9 800 m^3 per day and upgrade its treatment standard from primary level to secondary level, and upgrading of the existing Pak She Sewerage Pumping Station to increase its treatment capacity from 29 000 m^3 per day to 42 000 m^3 per day	Water and Wastewater Management	2026	2,607	407	407 [B12 : 407]	• Wastewater treatment capacity of Cheung Chau Sewage Treatment Works raised by 5 800 m^3 per day • Treatment level enhanced from primary to secondary • Around 16 000 of more population potentially benefited • Photovoltaic panels will be installed on the rooftop of most of the buildings
51	Lamma Village Sewerage Phase 2, Package 2	To provide public sewerage system for seven unsewered village areas, and Hung Shing Yeh Beach on Lamma Island	Water and Wastewater Management	2026	503	45	45 [B18 : 45]	• Additional 820 m^3 of wastewater treated per day • Around 2 000 of the population and a large number of beach-goers potentially benefited
52	Construction and Rehabilitation of Trunk Sewage Rising Mains in Yuen Long	Construction and rehabilitation of about 3.7 km new and 3.7 km existing sewage rising main respectively between sewerage network at Tin Fuk Road and Wang Lok Street	Water and Wastewater Management	2026	886	98	98 [B18 : 98]	• The operation reliability of the sewerage system is enhanced • Around 280 000 of the population potentially benefited
53	Construction and Rehabilitation of Trunk Sewage Rising Mains in Yau Tong	Construction and rehabilitation of about 3.1 km new and 2.5 km existing sewage rising main respectively between Yau Tong Sewage Pumping Station and Kwun Tong Preliminary Treatment Works	Water and Wastewater Management	2026	621	87	87 [B16 : 87]	• The operation reliability of the sewerage system is enhanced • Around 180 000 of the population potentially benefited
54	Construction of San Shek Wan Sewage Treatment Works and Pui O Village Sewerage	Construction of secondary sewage treatment works with a design capacity of 5 800 m^3 per day at San Shek Wan in South Lantau, construction of about 1.4 km of submarine outfall for disposal of treated effluent, and provision of trunk sewers and village sewerage in Pui O	Water and Wastewater Management	2026	1,689	271	271 [B13 : 271]	• Additional 5 800 m^3 of wastewater treated per day • Around 13 000 of the population potentially benefited • Photovoltaic panels will be installed at San Shek Wan sewage treatment works and are expected to generate 83 220 kWh of electricity every year • About 9 500 m^3 of effluent reclaimed for re-use per year
55	Reclaimed Water Supply to Sheung Shui and Fanling	Construction of Shek Wu Hui water reclamation plant, laying of about 25 km of pumping and distribution mains in northeastern part of Sheung Shui and Fanling areas, and the associated water main connection works, so as to supply reclaimed water to Sheung Shui and Fanling areas	Water and Wastewater Management	2026	1,256	282	282 [B14 : 282]	• Ultimate production capacity of 73 000 m^3 of reclaimed water per day • Expansion of the use of lower grade water (i.e. seawater and recycled water) for non-potable purposes to ensure sustainable use of fresh water • Estimated that about 22 million m^3 of fresh water can be saved each year ultimately
56	School Premises of Cheung Sha Wan Catholic Primary School	Construction of a new five-storey high 30-classroom primary school with a construction floor area of about 10 000 m^2 for the reprovisioning of Pak Tin Catholic Primary School	Green Buildings	2021	346	258	206 [B15 : 206]	• Achieved Final Gold rating under the BEAM Plus New Buildings V1.2 • About 21.15% reduction of energy consumption

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57	School Premises of The Salvation Army Centaline Charity Fund Queen's Hill School	Construction of a 30-classroom primary school with a construction floor area of about 11 255 m^2 to meet the projected demand for public sector primary school places in the North District	Green Buildings	2021	386	254	211 [B15 : 211]	• Achieved Final Gold rating under the BEAM Plus New Buildings V1.2 • About 25.11% reduction of energy consumption
58	School Premises of TWGHs Tseng Hin Pei Primary School	Construction of a 30-classroom primary school with a construction floor area of about 11 469 m^2 to meet the projected demand for public sector primary school places in the North District	Green Buildings	2021	387	247	210 [B15 : 210]	• Achieved Final Gold rating under the BEAM Plus New Buildings V1.2 • About 37.2% reduction of energy consumption
59	School Premises of TWGHs Tsoi Wing Sing Primary School	Construction of a 30-classroom primary school with a construction floor area of about 10 998 m^2 at Shui Chuen O, Sha Tin to meet the projected long-term demand for public sector primary school places of the Sha Tin District	Green Buildings	2022	363	335	333 [B15 : 333]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V1.2 • About 24.2% reduction of energy consumption
60	School Premises of Maryknoll Secondary School	Construction of a new eight-storey high 30-classroom secondary school with a construction floor area of about 13 300 m^2 for the reprovisioning of Maryknoll Secondary School	Green Buildings	2022	435	293	285 [B15 : 285]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V1.2 • About 26.59% reduction of energy consumption
61	Academic Building at No. 3 Sassoon Road	Construction of a new eight-storey academic building, providing approximately 10 400 m^2 in net operational floor area of space for the relocation of various teaching and research facilities at some old buildings under the Li Ka Shing Faculty of Medicine of the University of Hong Kong	Green Buildings	2022	811	753	658 [B17 : 658]	• Achieved Provisional Platinum rating under the BEAM Plus New Buildings V1.2 • About 14.9% reduction of energy consumption
62	Fire Services Department West Kowloon Complex	Construction of a new building with total construction floor area of about 20 110 m^2 for the relocation of the supporting operational facilities of Tsim Sha Tsui Fire Station Complex, Fire Services Club and other accommodations of the Fire Services Department	Green Buildings	2023	981	281	281 [B17 : 281]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V1.2 • The energy efficient features of the project are expected to achieve 10.9% energy saving in the annual energy consumption
63	Animal Management and Animal Welfare Building Complex in Kai Tak Development	Construction of a new Animal Management and Animal Welfare Building Complex with a construction floor area of 21 316 m^2 in Kai Tak Development, for safeguarding and promoting animal welfare, controlling local animal diseases, protecting public health and enhancing animal management measures	Green Buildings	2024	882	231	231 [B17 : 231]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V1.2 • About 38.6% reduction of CO2 emissions

Project	Name of Project	Brief Description	Eligible Category	Year / Expected Year of Completion	Total Project Estimate (HK$ million)	Expenditure up to 2022-23 (HK$ million)	Green Bond Proceeds Allocated (as of 31 July 2023) (HK$ million) [Breakdown by bond][1]	Major Expected Impacts[2]
64	Kai Tak Sports Park	Design, build and operate a new sports infrastructure comprises a 50 000-seat Main Stadium, a 10 000-seat Indoor Sports Centre, a 5 000-seat Public Sports Ground, with about 14-hectare landscaped open space and other ancillary facilities. The total construction floor area is about 460 000 m^2	Green Buildings	2024	31,898	14,675	12,369 [B11 : 1,583 B12 : 2,821 B15 : 2,419 B16 : 666 B17 : 1,731 B18 : 2,593 B19 : 556]	• Achieved Platinum rating under the BEAM Plus Neighborhood V1.0 • The Main Stadium, Indoor Sports Centre and Public Sports Ground achieved Provisional Platinum rating under the BEAM Plus New Buildings V1.2 • About 15.8% to 61.8% reduction of energy consumption in different areas of the Main Stadium • About 19% to 36% reduction of energy consumption in different areas of the Indoor Sports Centre • About 21.5% reduction of energy consumption in the Public Sports Ground
65	Fire Station-cum-ambulance Depot with Departmental Quarters and Facilities in Area 72, Tseung Kwan O	Construction of a 17-storey building with a construction floor area of 16 026 m^2 to accommodate a fire station-cum-ambulance depot, departmental quarters and other facilities of the Fire Services Department	Green Buildings	2025	655	81	81 [B11 : 81]	• Expected to achieve Gold rating under the BEAM Plus New Buildings V2.0 • The energy efficient features of the project are expected to achieve 5.5% energy saving in the annual energy consumption
66	Redevelopment of Grantham Hospital, Phase 1	Construction of a new 14-storey clinical block and 13-storey university block with a total construction floor area of 149 655 m^2, including in-patient wards, ambulatory care facilities, an oncology centre, operating theatres, a centre for clinical innovation and discovery and an institute of cancer care	Green Buildings	2026	11,538	565	518 [B16 : 518]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V2.0 • About 10.7% reduction of CO2 emissions
67	Redevelopment of Our Lady of Maryknoll Hospital	Construction of a new hospital block with a total construction floor area of about 58 700 m^2 for Our Lady of Maryknoll Hospital to enhance its medical services capacity	Green Buildings	2026	4,544	185	170 [B13 : 75 B16 : 95]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V1.2 • About 14.7% reduction of CO2 emissions
68	Expansion of United Christian Hospital	(i) Construction of a new ambulatory block with a total construction floor area of about 170 500 m^2 and (ii) construction of a new extension to Block S and the auxiliary electrical and mechanical building with a total construction area of about 43 750 m^2 to enhance the medical service capacity for United Christian Hospital	Green Buildings	2027	18,358	4,092	2,184 [B13 : 2,184]	• Expected to achieve Gold rating under the BEAM Plus New Buildings V1.1 • The energy efficient features of the project are expected to achieve 10% energy saving in the annual energy consumption

Project	Name of Project	Brief Description	Eligible Category	Year / Expected Year of Completion	Total Project Estimate (HK$ million)	Expenditure up to 2022-23 (HK$ million)	Green Bond Proceeds Allocated (as of 31 July 2023) (HK$ million) [Breakdown by bond][1]	Major Expected Impacts[2]
69	Redevelopment of Prince of Wales Hospital, Phase 2 (Stage 1)	Construction of a new In-patient Extension Block with a total construction floor area of about 300 000 m^2 accommodating various major clinical facilities	Green Buildings	2026	24,935	2,157	1,549 [B13 : 220 B14 : 1,329]	• Achieved Provisional Gold rating under the BEAM Plus New Buildings V1.2 • About 30.9% reduction of CO_2 emissions
70	Replacement of the Storm-detecting Weather Radar at Tai Mo Shan	Installation of an up-to-date storm-detecting weather radar at Tai Mo Shan to replace the existing one which has been in operation for over 20 years	Climate Change Adaptation	2024	48	3	3 [B11 : 1 B19 : 2]	• The up-to-date storm-detecting weather radar is primarily used for monitoring heavy rain and strong winds associated with severe weather, allowing the Hong Kong Observatory to issue timely forecasts and warnings for tropical cyclone, thunderstorm, rainstorm, flood and landslip • Timely and reliable weather forecasts and warnings can help reduce loss of life and damage to property and minimise disruption to economic and social activities during hazardous weather
71	High Performance Computer System for the Hong Kong Observatory	Procurement of a high performance computer (HPC) system to enable Hong Kong Observatory to sustain quality weather services to the Hong Kong community and enhance its capability for forecasting high-impact weather affecting Hong Kong	Climate Change Adaptation	2025	90	1.2	1.2 [B18 : 0.4 B19 : 0.8]	• Higher computing power for generating more detailed local weather forecast for Hong Kong up to at least five days ahead and at a finer resolution up to 24 hours • Strengthen support for probabilistic forecasts of high-impact weather • By working with the existing HPC system for the Hong Kong International Airport to improve weather services for specialised users, such as aviation community, by generating probabilistic forecasts on the trajectory of aircraft under the effect of hazardous weather
72	Rehabilitation of Underground Stormwater Drains	Condition survey of about 90 km and rehabilitation of about 41 km underground stormwater drains and associated manholes throughout the territory	Climate Change Adaptation	2025	1,341	316	309 [B12 : 63 B13 : 60 B15 : 46 B16 : 50 B17 : 89]	• Minimise the risk of stormwater drains collapse • Ensure the proper function of stormwater drainage (flood protection) system

Breakdown by Bond — Legend

Legend	Issuance	Green Bond (ISIN)
B1	The inaugural issuance (May 2019)	5-year USD (US43858AAB61 / USY2836BAN48)
B2	The February 2021 issuances	5-year USD (US43858AAC45 / USY3422VCR79)
B3	The February 2021 issuances	10-year USD (US43858AAD28 / USY3422VCS52)
B4	The February 2021 issuances	30-year USD (US43858AAE01 / USY3422VCT36)
B5	The November 2021 issuances	10-year USD (HK0000789823)
B6	The November 2021 issuances	5-year EUR (HK0000789849)
B7	The November 2021 issuances	20-year EUR (HK0000789856)
B8	The November 2021 issuances	3-year RMB (HK0000789864)
B9	The November 2021 issuances	5-year RMB (HK0000789872)
B10	Retail Green Bond 2022	3-year HKD (HK0000844578)
B11	The January 2023 issuances	3-year USD (US43858AAF75 / USY3422VCU09)
B12	The January 2023 issuances	5-year USD (US43858AAG58 / USY3422VCV81)
B13	The January 2023 issuances	10-year USD (US43858AAH32 / USY3422VCW64)
B14	The January 2023 issuances	30-year USD (US43858AAJ97 / USY3422VCX48)
B15	The January 2023 issuances	2-year EUR (HK0000895893)
B16	The January 2023 issuances	7-year EUR (HK0000895901)
B17	The January 2023 issuances	2-year RMB (HK0000895919)
B18	The January 2023 issuances	5-year RMB (HK0000895927)
B19	The inaugural tokenised issuance (February 2023)	365-day HKD (HK0000895216)

Appendix B

Assessment Summary of the Hong Kong Quality Assurance Agency

Scope and Objectives

Hong Kong Quality Assurance Agency (HKQAA) has been engaged by the Government of the Hong Kong Special Administrative Region of the People's Republic of China (the HKSARG) to undertake an independent assessment on the information presented in its Green Bond Report 2023 (the Report). The assessment provides assurance, in accordance with the HKQAA Green and Sustainable Finance Certification Scheme 2021 (GSFCS)[1] – Post-Issuance requirements, on the alignment of the green bonds and the projects financed by their proceeds mentioned in the Report against the Green Bond Framework and the Environmental Method Statement of the HKSARG. This summary reflects our opinion for the issuance of the HKQAA Green and Sustainable Finance Certificate. The scope of HKQAA's assessment covers the data and information for the period between 1 August 2022 and 31 July 2023.

Process and Methodology

The process applied to this assessment is set out in GSFCS. The evidence gathering process set out in the scheme was designed to ensure an independent assessment process.

Our assessment procedures performed include:

- reviewing relevant documentation;
- visiting the relevant sites;
- interviewing persons who prepare the Report; and
- verifying the selected representative sample of projects, data and information.

Raw data and supporting evidence of the selected samples have been thoroughly examined by HKQAA's assessment team during the assessment process.

Independence

The HKSARG is responsible for the collection and presentation of the information in the Report. HKQAA is not involved in the collection and calculation of data presented in or the compilation and development of the Report. Our assessment activities are independent from the HKSARG.

[1] GSFCS is developed with reference to widely adopted international and national guidelines and principles. For details, please refer to Section B1.0, C1.0 and Section 2.5 of the GSFCS Handbook. Please contact HKQAA to obtain the Handbook.

Limitations

There are inherent limitations in performing the assessment. Assurance engagements are based on selective testing of the information and data being examined. It is possible that fraud, error or non-compliance may occur and not be detected. The assessment does not provide assurance on the information outside the defined reporting boundary and period.

There are additional inherent risks associated with the assurance over the information presented in the Report against the relevant requirements or criteria. Such assurance requires the information to be examined against source data compiled using definitions and estimation methods developed by the HKSARG. Finally, the assessment of the Report against GSFCS is subjective and will be interpreted differently by different stakeholder groups.

Our assessment is limited to assurance in accordance with the GSFCS post-issuance requirements, as well as the related policies and procedures of the scheme in place on 10 August 2023.

Conclusion

The information on the green bond activities presented in the Report are verified by the assessment team of HKQAA as consistent with the agreed assessment scope, objectives and criteria.

HKQAA adopts a risk-based approach. Our examination includes assessing the evidence relevant to the information and disclosures by the HKSARG in the Report.

Based on the assessment results, the assessment team has concluded that no material error or omission has been identified in the Report. It is materially correct and is a fair representation of the data and information for the reporting periods. The Report is prepared in accordance with the post-issuance requirements of GSFCS.

Hong Kong Quality Assurance Agency

Hong Kong Quality Assurance Agency (HKQAA) is a non-profit organisation established in 1989. As one of the leading conformity assessment organisations in the region, HKQAA is committed to providing certification and assessment services for the industries. Through knowledge sharing and technology transfer, HKQAA helps enterprises enhance management performance and competitiveness.

Ample Experience in Fostering Sustainable Finance

HKQAA has developed diverse services and obtained ample experience in the fields of social responsibility, environmental protection, sustainability and responsible investment:

- Under the nomination of the China National Institute of Standardization and the Innovation and Technology Commission of the Government of the Hong Kong Special Administrative Region (HKSAR), expert of HKQAA represents China and the HKSAR respectively to join the related ISO technical committees to develop the **ISO 14030 Green Debt Instruments – Environmental performance of nominated projects and assets** and **ISO 32210 Framework for sustainable finance: Principles and guidance**
- Observer of the Green Bond Principles (GBP) under the International Capital Market Association (ICMA)
- Approved verifier under the Climate Bonds Standard
- Provision of assessment and rating services on listed companies' sustainability performance for the Hang Seng Corporate Sustainability Index Series

Enhancing Credibility in Green Finance

In keeping with the green finance development in the region, HKQAA launched the Green Finance Certification Scheme in 2018 to provide third-party conformity assessments for green bond and green loan issuers, so as to enhance credibility and stakeholder confidence in green finance.

HKQAA has developed the Scheme with reference to a number of widely recognised international and national standards on green finance including, among others:

- CDM under the UNFCCC;
- GBP under the ICMA;
- China Guiding Catalogue for the Green Industry;
- China Green Bond Endorsed Projects Catalogue;
- EU Final TEG report for Sustainable Finance Taxonomy; and
- ISO 26000:2010 Guidance on Social Responsibility.

In May 2021, in response to Government policies and market needs, HKQAA took a further step and rolled out **the Green and Sustainable Finance Certification Scheme**, which aimed to promote more capital flows towards green and sustainable uses. This echoes the Government's goals of achieving carbon neutrality before 2050 and developing Hong Kong into a regional green and sustainable finance hub.

Enquiry

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