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The Green Bond Market in Hong Kong:

Developing a Robust Ecosystem for Sustainable Growth

November 2020

Hong Kong Institute for Monetary and Financial Research

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CONTENTS

FOREWORD

Climate change is a major risk threatening the well-being of mankind. It leads to more severe weather, problems with food security, water resources, as well as human health and is likely to affect economies and businesses in the long term. Countries around the globe have agreed to put in place policies to implement the 2015 Paris Agreement with the aim of limiting global warming to below 2 degrees Celsius, and preferably to 1.5 degrees. Green bonds play a crucial role in supporting the transition to a low-carbon economy, as a sizeable reallocation of capital is required to address the consequences of climate change.

Hong Kong, as a leading financial centre, can make a substantial contribution to bringing this goal into reality. Given its broad investor base, supportive infrastructure and robust green bond platform, Hong Kong is already one of the major green bond hubs globally with green bonds arranged and issued totalling USD 10bn in 2019. Over the years, regulators and policymakers have been actively promoting the development of the local green bond market. Multiple incentive policies have been launched to attract market participants to join the great green wave.

This report offers a comprehensive overview of the development of green bond markets globally and particularly in Hong Kong. It explores issues of common interest in green bond markets. It also discusses the results of a survey commissioned by the Hong Kong Institute for Monetary and Financial Research (HKIMR) which gathered views and insights of local market participants, highlighting both the opportunities and challenges in the green bond market in Hong Kong. It proposes a set of suggestions to accelerate its development.

We hope that this report raises awareness of the general public on the benefits of green finance and serves as a starting point of an active dialogue among market participants, researchers, and policymakers, who share the common goal of making our home a greener and better place for future generations.

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EXECUTIVE SUMMARY

Investing sustainably with Environmental, Social, and Governance (ESG) criteria alongside financial factors is a widely accepted trend in recent years. **As a subset of the ESG space, green bonds are novel financial instruments designed to fund projects with positive environmental effects.**

This report illustrates in detail the state of the green bond market globally and particularly in Hong Kong, highlighting recent international initiatives and measures in Hong Kong and the extent to which they shape market trends. In addition, it brings together findings from academic and industry research, as well as insights from market participants in Hong Kong, identifying the positive impacts of participating in green bond markets and the challenges faced by market participants. The report synthesises these elements and concludes with recommendations to accelerate the development of Hong Kong as a leading green bond hub.

The green bond market exemplifies how an appropriate regulatory framework can drive market incentives to align with social responsibility. Although different organisations and jurisdictions have provided their own taxonomies and standards to define green bonds, efforts have been made to harmonise these definitions and to make them more user-friendly. To ensure that proceeds are truly used in green projects, external reviews are emerging as a norm in the market. These developments have been met with enthusiasm by market participants. **Global green bond markets are growing rapidly, with the issuance amount reaching USD 261bn in 2019 and the outstanding amount exceeding USD 700bn by the end of 2019.** Private enterprises have been increasingly involved in recent years.

To keep pace with the global trend and nurture uptake of the local market, Hong Kong has taken a series of proactive and broad-ranging steps. Key achievements include one of the world's largest government green bond issuance programmes, a government-established approved verifier under Climate Bonds Initiative's Climate Bonds Standard, and a first-of-its-kind sustainable finance platform in Asia. **In response to these supportive measures, the market has picked up rapidly with cumulative green bonds arranged and issued in Hong Kong reaching USD 26bn by the end of 2019.** Mainland entities were the largest issuer, accounting for more than 70% of the total market. Financial institutions and corporate issuers contributed around 50% and 35% of green bond issuances in Hong Kong, respectively. All the issuances benefited from at least one type of external review.

Green bonds are well-recognised as an innovative and win-win financial market solution, creating benefits to both issuers and investors. For issuers, green bonds reduce a firm's cost of borrowing. The cost advantage is prominent when the green bond is verified or certified by an external party. **Issuers of green bonds also benefit from the equity market as well.** On issuance of green bonds, the share price of the firm typically reacts with an upward jump when the green bond has received independent verification or certification, again reflecting the importance of transparency.

For investors, accumulating evidence suggests that ESG investments, including green bonds, may outperform their non-ESG counterparts and better weather adverse situations. For instance, during the Covid-19 epidemic green bonds have been found to provide a better risk-return tradeoff when compared to conventional bonds.

Issuers and investors participate in the green bond market in Hong Kong for both financial and non-financial considerations, and they enjoy various benefits. According to the HKIMR Green Bond Survey conducted in June to August 2020, existing issuers view brand development needs, issuance costs, and the size of international investors as key factors when issuing green bonds. Moreover, **existing issuers consider the broad scale of international investors, availability of government subsidies, and low legal and marketing expenses as important advantages of the Hong Kong market.** Meanwhile, **investors highlight investment returns as their primary investing consideration. The listing location plays an essential role in the attractiveness of green bonds** since the requirement on ESG information disclosure varies across markets. To this end, over 40% of existing investors view the presence of socially responsible issuers and transparent ESG information disclosure as key advantages of the Hong Kong market that motivate their participation. Reflecting their satisfaction with the Hong Kong market, 71% and 100% of existing issuers and investors in our survey respectively indicate that they have plans to participate again in the future.

Despite the various advantages that the Hong Kong market has provided, challenges still remain. **Areas highlighted by the respondents include costs involved in verification and certification procedures, low public awareness, and heterogeneous standards.** These challenges are common in all green bond markets around the world. Potential issuers and potential investors alike rate having an external review, improved quality of ESG information disclosure, as well as convergence towards international green bond practices and standards as key factors that will make green bonds issued in Hong Kong more attractive.

Based on our survey findings and the rich experience in other jurisdictions, this report proposes a wide range of suggestions with the objectives of perfecting the green infrastructure in the local market and encouraging market participants to play a more active role. Strategies to improve the green infrastructure include improving transparency of ESG information disclosure, supporting responsible investment and government issuance, encouraging convergence towards international green bond practices, facilitating cross-border green bond issuance, as well as constructing green bond indices and promoting green exchange. To encourage active participation, efforts can be made to raise awareness of the benefits brought by green bonds. Implementing effective incentive policies and providing subsidies for certification by more recognised certification bodies would also enhance the appeal to green bond issuers.

Although this report focuses only on green bonds, the overall ESG landscape locally and internationally is very vibrant, with rising popularity of other social products such as social and sustainable bonds. Their growth suggests that they will play an important role in the future to form a robust ecosystem for sustainable growth.

1 GREEN BONDS — GATEWAY TO A SUSTAINABLE FUTURE

ROBUST REGULATORY DEVELOPMENT WITH RAPID RISE IN ISSUANCE

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ROBUST REGULATORY DEVELOPMENT WITH RAPID RISE IN ISSUANCE

HIGHLIGHTS:

- **Recent years have witnessed the tendency of investing sustainably with Environmental, Social, and Governance (ESG) criteria along with financial factors. As a subset of the ESG space, green bonds are novel financial instruments designed to fund projects with positive environmental effects.**
- **Although a unified taxonomy or standard across jurisdictions is not yet available, international efforts have been made to harmonise these definitions.**
- **A majority of issuers use external reviews and post-issuance reporting as tools to increase transparency of their green bonds.**
- **Global green bond markets have picked up rapidly, with the issuance amount reaching USD 261bn in 2019 and the outstanding amount exceeding USD 700bn by the end of 2019. Private enterprises have been participating actively in recent years.**

1.1 WHAT IS ESG INVESTING?

ESG investing takes account of Environmental, Social, and Governance factors in the investment decision-making process, alongside financial factors. In fact, ESG investing has its origin in socially responsible investing. For example, some investors exclude assets with negative effects on society from their portfolios, such as equities of tobacco companies. This philosophy has gradually grown to a point where investors play more active roles in effecting positive changes.

Growth in ESG assets under management has accelerated in recent years, and so has the number of signatories to the Principles for Responsible Investment (who commit to incorporating ESG factors into investment decisions). Importantly, the growth of ESG assets is much faster than conventional assets.

For example, according to Bloomberg, the five-year average annual growth rate of ESG bond issuance during the period 2014-2019 exceeded 50%, compared to around 3-4% annual growth for overall bond issuance over the same period. (Chart 1.1).

Chart 1.1: Growth in ESG assets under management and PRI signatories

Source: United Nations Principles for Responsible Investment.

ESG factors cover a broad range of issues and there is no one exhaustive list of ESG examples. Table 1.1 lists the key ESG issues for consideration by the World Bank.

Table 1.1: Environmental, Social, and Governance (ESG) criteria

Environmental:	Social:	Governance:
Climate change	Human rights	Corporate governance
Carbon emissions	Labour standards	Corruption
Pollution	Health & safety	Rule of law
Resource efficiency	Gender and diversity	Institutional strength
Biodiversity	Community relations	Transparency
	Development of human capital	

Source: Inderst, G., & Stewart, F. (2018). "Incorporating Environmental, Social and Governance Factors Into Fixed Income Investments." World Bank, Washington, DC.

The green bond market provides an excellent example to show how, with an appropriate regulatory framework, incentives of market participants can align with social responsibility, thus enabling ESG investments to thrive.

An essential aspect of ESG investments is the increase in availability of information and data. With improving regulatory frameworks, companies disclose more ESG information, ESG investment metrics proliferate, independent third-party agencies provide ESG rating, and new indices allow for benchmarking.

This report focuses on green bonds, a subset of the ESG space. Green bonds dominate the fixed income products in the ESG universe. Taking the market framework of green bonds as a blueprint, other sustainable finance products (such as sustainability bonds, which finance both green and social projects) also recorded rapid growth in 2018–19. (Chart 1.2.)

Chart 1.2: Issuance of ESG bonds

Sources: Climate Bonds Initiative 2018 Green Bond Market Highlights and 2019 Green Bond Market Summary.

1.2 WHAT IS A GREEN BOND?

Green bonds are fixed-income instruments used to finance new or existing green projects which deliver environmental benefits. They are structured in the same way as standard bonds, with the same characteristics in terms of seniority, rating, execution process, and pricing. Green bonds are usually backed by the issuer's entire balance sheet so that investors are not exposed solely to the risk of the bond's underlying green projects.

From a broader perspective, the Paris Agreement was signed in 2015 with an aim to control the rise of global temperature within 1.5–2°C. Climate experts estimated that a total of USD 90tn in green investment will be needed over the next 15 years to fight climate change. Green bonds are well-recognised as an innovative and win-win financial market solution, creating benefits to issuers, investors as well as human societies. (Table 1.2.)

Various market surveys reveal that both issuers and investors derive reasonable benefits from the green bond market. In Chapter 3 of this report, we draw on results from quantitative research to assess the pricing and valuation advantages to green bond issuers, as well as risk-hedging benefits for green bond investors.

Market participants also report several downsides associated with green bonds. Some problems (such as the difference in taxonomies) have to be addressed through international collaboration, while others (such as verification and certification costs) might be mitigated by well-designed policies. Relevant suggestions are discussed in Chapter 5 of this report.

Table 1.2: Advantages and disadvantages of green bonds for issuers and investors

Advantages	Disadvantages
For issuers	
Demonstrate dedication to sustainability Diversify investor base Enjoy pricing and valuation advantages Provide reputational benefits Enhance credibility of environmental strategy Tracking of proceeds use and reporting leads to improved internal governance structures	Incur costs from labelling and associated reporting requirements Bear reputational risk if a bond's green credentials are challenged Investors may seek penalties for a "green default"
For investors	
Balance risk-adjusted financial returns with environmental benefits Create extra diversification benefits Satisfy ESG requirements and green investment mandates Improve risk assessment through use of proceeds reporting	Small and illiquid market, small bond sizes Lack of unified standards Limited scope for legal enforcement of green integrity

Sources: OECD/Bloomberg Philanthropies. (2015). "Green bonds: Mobilising the debt capital markets for a low-carbon transition." and HKIMR staff compilation.

1.3 TAXONOMIES, GUIDELINES AND DISCLOSURE

A "green" label is perceived as a desirable feature by market participants. In practice, however, there is no unique classification of green bonds. Some issuers self-label their green bonds. Others make available the description of the use of proceeds and other documents for investors and financial intermediaries to screen.

Public and private institutions have provided taxonomies for eligible assets or projects, reflecting the varying industry structures across jurisdictions and the evolving green technology over time. Taxonomies are being revised from time to time to incorporate the latest advancement in green technologies. For instance, "clean coal" was included in the 2015 version of Mainland China's Green Bond Endorsed Project Catalogue, but removed in the 2020 version to be consistent with international practice. (Table 1.3.)

Table 1.3: Examples of green bond taxonomies

Climate Bonds Taxonomy	The Climate Bonds Taxonomy developed by the Climate Bonds Initiative (CBI), an international not-for-profit organisation, identifies assets and projects needed to deliver a low carbon economy consistent with the 2-degree global warming target.
EU Taxonomy	The EU Technical Expert Group on Sustainable Finance proposed the EU Taxonomy in 2019. The taxonomy emphasises activities that not only make a substantial contribution to climate change mitigation, but also do no significant harm to other environmental objectives.
Green Bond Endorsed Project Catalogue (China)	In Mainland China, the People's Bank of China (PBoC) released the Green Bond Endorsed Project Catalogue in 2015. The taxonomy balances between conforming to national conditions and staying in line with international practice. A draft for the 2020 addition is available.

Source: HKIMR staff compilation.

Some public and private institutions provide standards to issue green bonds. A standard consists of (i) guidelines which list out conditions under which a bond can be assessed as a green bond; and (ii) disclosure requirement on the management of proceeds and reporting before and after the issuance.

Convergence towards green bond standards mitigates concerns about "greenwashing" — the risk that the underlying investment does not yield expected environmental benefits.

The Green Bond Principles (GBP), developed by the International Capital Markets Association (ICMA), are among the most popular standards in the market. The first principle, "use of proceeds", defines what constitutes a green bond, and the others specify the disclosure requirement regarding project selection, management of proceeds and post-issuance reporting. Green bond standards give confidence to investors who worry about "greenwashing", the risk that a green bond may be not as green as it claims. (Table 1.4.)

Table 1.4: The Green Bond Principles

The Green Bond Principles (GBP) have four core principles:

- **Use of Proceeds:** The GBP define eligible categories under which projects can be labelled green.
- **Process for Project Evaluation and Selection:** Green bond issuers should clearly communicate the environmental sustainability of the projects to their investors. A high level of transparency is encouraged.
- **Management of Proceeds:** Proceeds should be managed in a sub-account or otherwise tracked by the issuer in an appropriate manner. The GBP recommend a high level of transparency about the process by which the proceeds are managed.
- **Reporting:** Issuers should provide up to date information on the use of proceeds to be renewed annually, and on a timely basis in case of significant developments. The issuer may also report on the expected impact of its green bonds.

Source: International Capital Markets Association. (2018). "Green bond principles – voluntary process guidelines for issuing green bonds." June.

However, the proliferation of standards and multiplicity of criteria may confuse the issuers and investors. For example, the GBP require annual reporting, whereas in China post-issuance reporting requirements for green bonds vary across different types of issuers. Significant efforts have been made by international organisations and financial institutions to harmonise the taxonomies and standards.

In order to meet green bond standards, issuers of green bonds typically go through external reviews by independent third parties. Different types of external reviews are conducted before and after issuance, and the costs (ranging from USD 10,000 to USD 100,000) are borne by issuers. (Table1.5.)

External reviews mitigate the risk of "green default", which refers to events in which funds are not actually applied to green projects or do not yield the expected environmental benefits. Chapter 3 presents evidence that suggests going through independent external reviews is associated with tangible benefits. Currently, around 90% of green bond issuance by volume have at least one form of external review, according to the Climate Bonds Initiative (CBI).

Table 1.5: Types of external review

Pre-issuance reviews:

- **Second party opinion:** green credentials assessed by an external organisation with environmental expertise.
- **Third party assurance:** independent assurance on compliance with a reputable international framework.
- **Pre-issuance certification:** certification of green bonds against standards by approved verifiers.
- **Green bond rating:** rating agencies assess the bond's green credentials.

Post-issuance reviews:

- **Second/third party assurance report:** assurance of allocation of proceeds to eligible green projects.
- **Impact reporting:** reporting that quantifies the environmental impact of a project.
- **Post-issuance certification:** verification of use of proceeds and environmental impact by approved verifiers.

Sources: OECD/ICMA/CBI/China GFC. (2016). "Green Bonds: Country Experiences, Barriers and Options." and CBI.

1.4 DEVELOPMENT OF GLOBAL GREEN BOND MARKETS

The world's first green bond was issued in 2007 by the European Investment Bank. In the early stages, most green bonds were issued by supranationals and self-labelled. The turning point occurred in 2013, featuring the inaugural issuance of municipal green bonds and corporate green bonds. Since then, the market has grown rapidly. (Chart 1.3.)

International initiatives played an important role in the development of green bond markets. Pivotal moments include the development of the first Green Bond Principles by the ICMA in 2014, the signing of COP 21 Paris Agreement in 2015 and the development of the EU Green Bond Standard and the EU Taxonomy in 2019.

Mainland China did not see its first green bond issuance until 2015 by the People's Bank of China. The first green bond issued in Hong Kong came from a Mainland corporate in 2015 and the first local green bond issuer in Hong Kong appeared in 2016. In 2019, the HKSAR Government successfully completed its inaugural green bond offering. The next Chapter provides more details of green bond market development in Hong Kong.

Chart 1.3: Timeline of key events in global green bond markets

Year	Events
2007	First "Climate awareness bond" issued by European Investment Bank.
2008	World Bank issued the first labelled green bond.
2009	Climate Bonds Initiatives (CBI) founded.
2013	First municipal green bond issuance.
	First Corporate green bond issued in France.
2014	The first Green Bond Principles (GBP) developed by ICMA.
2015	First green bond issued in Hong Kong.
	COP 21 Paris Agreement signed.
	First green bond in Mainland China issued by the PBoC.
2016	First green bond issued by a local corporate in Hong Kong.
	First government green bond issuance.
	Task Force on Climate-related Financial Disclosures (TCFD) launched to develop voluntary financial risk disclosures for companies.
2017	The Social Bond Principles and the Sustainability Bond Guidelines developed by ICMA.
	Mainland China became the second largest green bond issuer, after the US.
2018	Significant rise in issuance of sustainability bonds and social bonds.
2019	EU TEG proposed a Green Bond Standard with an EU Taxonomy.
	First Hong Kong government green bond issuance.

Source: HKIMR staff compilation.

Global green bond markets have seen a dramatic increase in scale since 2013. In 2019, global issuance amount of green bonds reached USD 261bn and the outstanding amount has exceeded USD 700bn. Currently representing less than 1% of the total bond market, the green bond market has enormous growth potential. (Chart 1.4.)

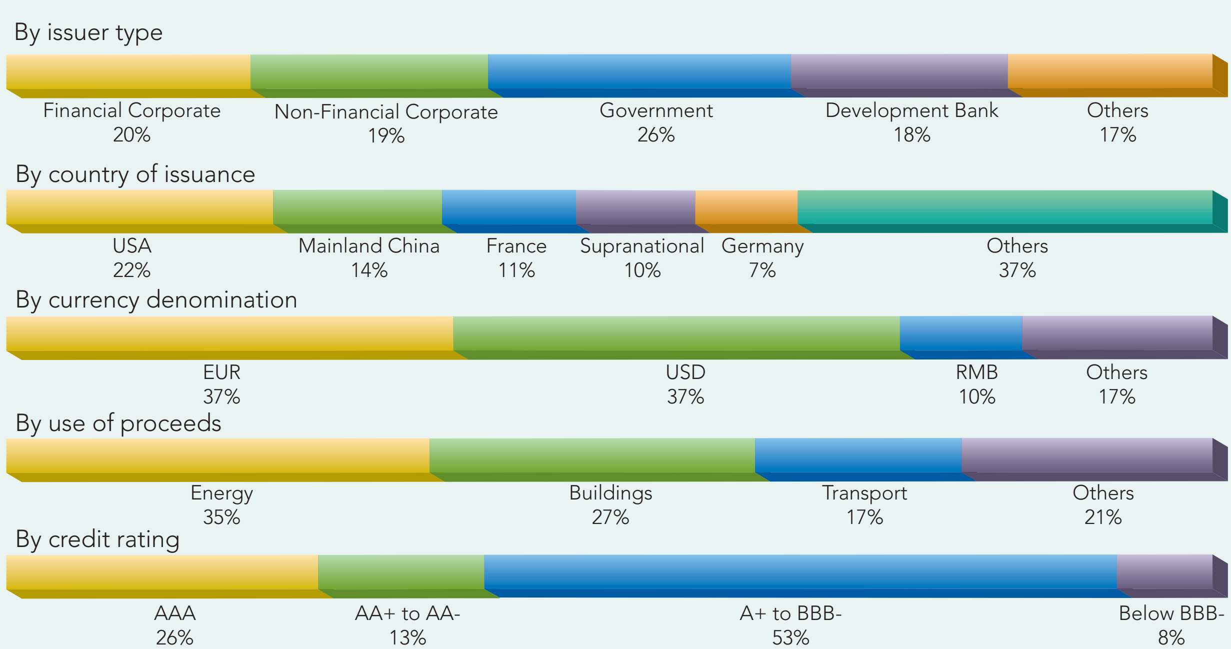
Chart 1.5 presents the breakdowns of global green bond markets in several important dimensions based on the cumulative volume from 2013 to 2019. Regarding issuer types, the private sector accounts for roughly 40% of total green bond issuance, which is split almost equally between financial and non-financial corporates. Government (including sovereign, government-backed entity and local government) accounts for roughly 30%. Issuance by private corporates appears to be increasing as a share of total green bond issuance, while the share of development banks is falling over time.

Chart 1.4: Global green bond issuance

Note: Only bonds with at least 95% of proceeds dedicated to green assets and projects that are aligned with the Climate Bonds Taxonomy are included. For more details, please refer to the CBI website.

Source: CBI.

Chart 1.5: Breakdown of green bonds by various aspects



Sources: CBI and Bloomberg.

As for country of issuance, the US is the leading issuer, representing about 20% of total issuance. The European Union is another key participant, with France, Germany and the Netherlands being the biggest issuers. Mainland China is the second largest issuer in the world with roughly 15% of global issuance.

From the perspective of currency denomination, most green bonds are denominated in international currencies. Both EUR and USD denominate roughly 35% of the green bonds. About 10% of green bonds are denominated in RMB, driven by robust growth of the Mainland market since 2015.

In terms of the use of proceeds, the top three uses are energy, green buildings, and green transportation, together constituting 80% of the universe. The share of energy in the mix appears to be dropping gradually, while the shares of green buildings and transportation are rising, driven by Mainland issuers' increasing investment in projects in the latter categories.

According to available data[1], issuers of green bonds tend to be highly rated, with less than 10% rated below investment grade. Rating seems to be better in early years because issuance then was dominated by supranationals. The overall distribution of credit ratings of green bonds is similar to, if not better than, that of conventional bonds.

According to the CBI, private corporates issue about 40% of green bonds around the world. Meanwhile, the United States and Mainland China are the two largest green bond issuers.

[1] Based on Bloomberg composite rating, weighted by issuance amount.

2 THE GREEN BOND MARKET IN HONG KONG

A VIBRANT INTERNATIONAL HUB DRIVEN BY SUPPORTIVE MEASURES

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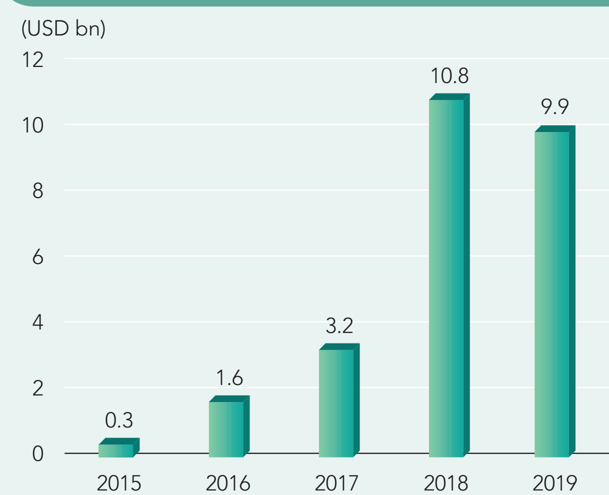
HIGHLIGHTS:

- **Hong Kong has launched a set of proactive and broad-ranging initiatives to foster development of the local green bond market.**
- **Leading achievements include one of the world's largest government green bond issuance programmes, a government-established approved verifier under Climate Bonds Initiative's Climate Bonds Standard, and a first-of-its-kind sustainable finance platform in Asia.**
- **The cumulative amount of green bonds arranged and issued in Hong Kong has risen rapidly since 2018 and reached USD 26bn by the end of 2019. Mainland entities were the largest issuer, accounting for more than 70% of the market.**
- **Financial institutions and corporate issuers contributed around 50% and 35% of green bond issuances in Hong Kong respectively. USD dominated the universe in terms of currency denomination and green buildings topped the list based on use of proceeds. All the issuances benefited from at least one type of external review.**

2.1 DEVELOPMENT OF GREEN BOND MARKET IN HONG KONG

In 2015, Goldwind New Energy (HK) Investment Limited brought its debut green bond to Hong Kong, becoming the first ever green bond arranged and issued in the Hong Kong market. The subsequent USD 500mn benchmark-size deal in 2016 by real estate investment trust Link REIT marked the first green bond issued by a Hong Kong entity. Following a series of policy measures by the Hong Kong government and regulators, the market picked up strongly in 2018, with a 237% increase by amount issued from the year before.[2] (See Chart 2.1.) More initiatives were introduced in 2019-20 to facilitate the growth of the green bond market in Hong Kong. (See Chart 2.2.)

Chart 2.1: Green bonds arranged and issued in Hong Kong



Source: HKIMR compilation based on HKMA definition

[2] The HKMA considers a green bond as issued in Hong Kong if a majority of its arranging activities take place in Hong Kong. Bond arranging activities comprise originating and structuring, legal and transaction documentation preparation, and sale and distribution. HKMA's approach aims to reflect the size of Hong Kong as a financial centre for green bond issuance. Albeit the CBI and the HKMA use different approaches to determine market size, all the green bonds captured by the HKMA are aligned with the CBI's green definition. Unless otherwise specified, this report follows the definition adopted by the HKMA.

Chart 2.2: Timeline of green bond market development in Hong Kong

Jul 2015	First green bond issued in Hong Kong
Jul 2016	First green bond issued by a local corporate
Dec 2017	Hong Kong Quality Assurance Agency completed the first green bond certification under Green Finance Certification Scheme
May 2018	Launch of Pilot Bond Grant Scheme
Jun 2018	Launch of Green Bond Grant Scheme
Nov 2018	Launch of Government Green Bond Programme
May 2019	– Inaugural government green bond offering – The HKMA organised a Green Finance Forum. It announced three measures: (1) green and sustainable banking; (2) responsible investment; (3) establishment of the Centre for Green Finance.
May 2020	Establishment of Green and Sustainable Finance Cross-Agency Steering Group
June 2020	Hong Kong Exchanges and Clearing Limited announced plans to launch the Sustainable and Green Exchange (STAGE)

Source: HKIMR staff compilation.

2.2 GREEN INITIATIVES IN HONG KONG

The government, regulators, and the private sector in Hong Kong have moved quickly to roll out a set of broad-ranging measures to foster the development of green finance and, in particular, the green bond market. These initiatives make Hong Kong one of the most market-friendly centres in the world.

Key achievements include one of the world's largest government green bond issuance programmes, a government-established approved verifier under the CBI's Climate Bonds Standard, and a first-of-its-kind sustainable finance platform in Asia.

Cross-Agency Collaboration

- The HKMA and the Securities and Futures Commission initiated the establishment of the Green and Sustainable Finance Cross-Agency Steering Group[3]
- Other members include five government bureaus and financial regulators

Government Bond Issuance

- The Government Green Bond Programme was announced in the 2018-19 Budget with a borrowing ceiling of HKD 100bn (USD 12.8bn)
- An inaugural issuance of USD 1bn took place in May 2019

Assurance and Certification

- The Hong Kong Quality Assurance Association (HKQAA) developed the Green Finance Certification Scheme in 2016
- It provides third-party conformity assessments for green finance issuers at both the pre-issuance and post-issuance stage

Subsidies

- The Green Bond Grant Scheme subsidises the cost for HKQAA's Green Finance Certification, up to a maximum of HKD 800k per bond issuance
- The Pilot Bond Grant Scheme targets first-time bond issuers, including green bond issuers

Supporting Responsible Investment

- The HKMA announced that it will commit to supporting responsible investment
- Investment priority of the Exchange Fund will generally be given to ESG investments if long-term risk-adjusted return is comparable to other investments

Capacity Building and International Cooperation

- The HKMA established the Centre for Green Finance to enhance capacity building and experience sharing
- It also actively participates in international green finance initiatives[4]

Green and Sustainable Banking

- The HKMA introduced a three-phased approach to develop green and sustainable banking in May 2019
- This policy includes (1) developing a common framework to assess how "green" the banks are, (2) setting supervisory requirements with tangible deliverables, and (3) implementing relevant measures and continuously evaluating the green progress of banks

Green Exchange

- In June 2020, the Hong Kong Exchanges and Clearing Limited announced plans to launch the Sustainable and Green Exchange (STAGE)
- The platform acts as a central hub for data and information on sustainable and green finance investment in the region

[3] The Steering Group aims to co-ordinate the management of climate and environmental risks to the financial sector, accelerate the growth of green and sustainable finance in Hong Kong and support the Government's climate strategies.

[4] The HKMA is a member of the Central Banks and Supervisors Network for Greening the Financial System (NGFS) and Focusing Capital on the Long Term (FCLTGlobal), a signatory of the United Nations Principles for Responsible Investment (UNPRI), and a supporter of the Task Force on Climate-related Financial Disclosures (TCFD).

At the same time, some other measures are implemented by jurisdictions elsewhere. For example, in addition to subsidies to costs of external review, Malaysia also offers tax reduction on issuance costs. Singapore has set up a USD 2bn green investment programme to invest in public market investment strategies that have a strong green focus. In Mainland China, the PBoC adopts a macro-prudential assessment system that gives a bank a higher score when it has more green assets. A number of global and regional stock exchanges have established dedicated green bond segments.

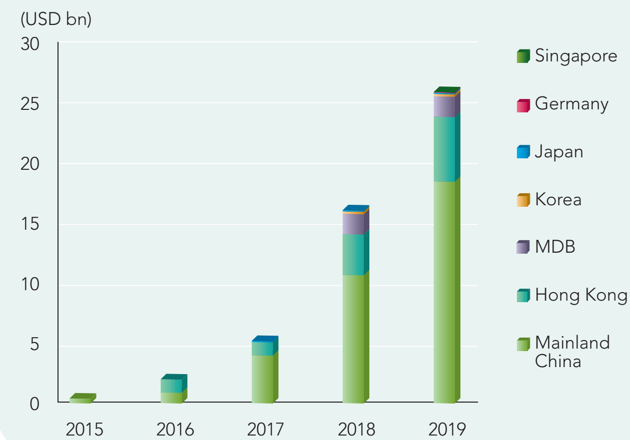
2.3 THE HONG KONG GREEN BOND MARKET AT A GLANCE

According to HKMA data, the cumulative volume of green bonds arranged and issued in Hong Kong reached USD 26bn by the end of 2019. With supportive policies, bond issuance more than tripled from USD 3bn in 2017 to USD 11bn in 2018. The market continued to evolve and consolidate in 2019, with increasing diversification in product types such as sustainable bonds, Greater Bay Area (GBA)-themed green bonds, as well as green and sustainability-linked loans.

> Cumulative green bond issuance in Hong Kong has reached USD 26bn by the end of 2019. Mainland entities were the largest issuer.

Mainland entities were the largest issuer group by origin, with a total issuance amount of USD 18bn by the end of 2019, or more than 70% of the total market. The issuance volume of USD 8bn in 2019 represented a 10% year-on-year growth from 2018. Hong Kong has always been the preferred offshore fundraising centre for enterprises in Mainland China, given its broad investor base, supporting infrastructure and favourable terms for foreign currency-denominated bond issuances. Hong Kong has also attracted corporate issuers from the rest of Asia (Japan, Korea and Singapore) and Europe (Germany). (Chart 2.3.)

Chart 2.3: Cumulative green bonds arranged and issued in Hong Kong by issuers

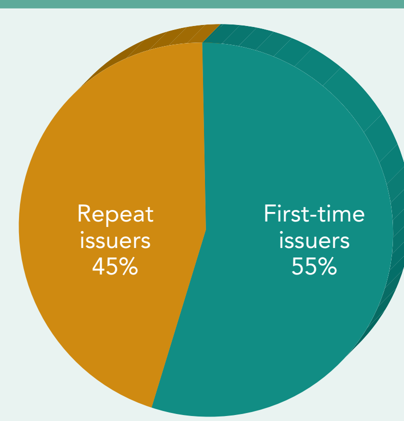


Note: MDB refers to multilateral development bank.

Source: HKIMR compilation.

In 2019, more than half (55%) of the issuers in Hong Kong were first-time issuers, reflecting the strong appeal of Hong Kong to new issuers due to its supportive government policies, strong expertise, robust green bond infrastructure and broad investor base. (Chart 2.4.)

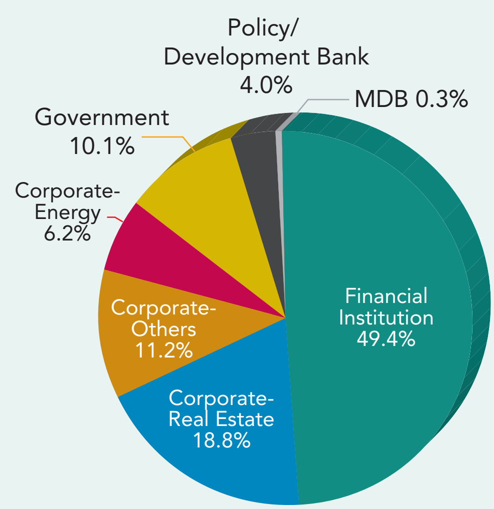
Chart 2.4: First-time issuers and repeat issuers in Hong Kong in 2019



Source: HKIMR compilation.

Financial institutions made up nearly half of the green bond issuance in Hong Kong in 2019. Corporates ranked second by issuer type, accounting for 36% of the total market. Real estate companies and energy firms contributed 19% and 6% of the green bond issuance volume respectively. The dominance of private issuers, financial institutions in particular, in the Hong Kong market is striking. In the global market, financial and non-financial corporates made up only 22% and 23% of the total market respectively in 2019. (Chart 2.5.)

Chart 2.5: Breakdown of deals by issuer type in 2019

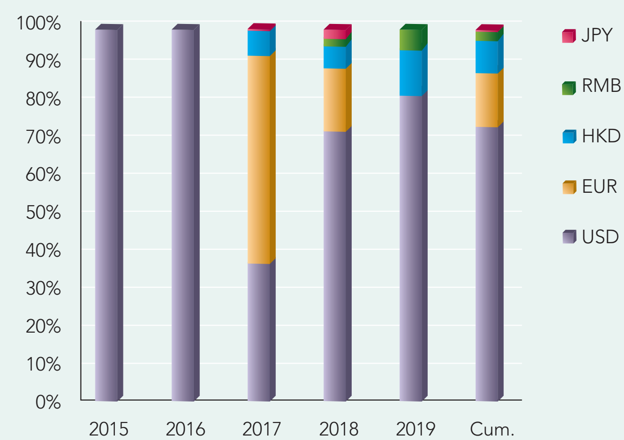


Note: MDB refers to multilateral development bank.

Source: HKIMR compilation.

USD green bonds dominated the Hong Kong market, accounting for 81% of issuance by volume in 2019, compared with a global average of 32%. This is consistent with the overall picture of bond markets in Asia where USD predominates as well. HKD ranked second, representing 13% of total issuance volume. Despite a large presence of Mainland issuers, the share of green bonds denominated in RMB was only 6% (relative to 8% globally). This is because most of them raised funds in Hong Kong in foreign currencies, mostly in USD. While HKD ranked a distant second compared with USD, its market share registered a significant increase from 6% in 2018 to 13% in 2019. (Chart 2.6.)

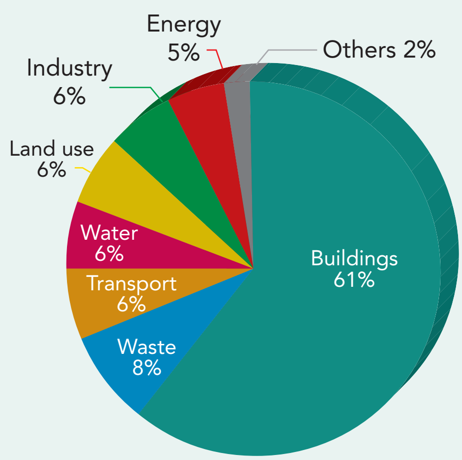
Chart 2.6: Breakdown of deals by currency denomination



Source: HKIMR compilation.

The use of proceeds of green bonds in Hong Kong in 2019 was dominated by green buildings (61%), and the second most common use of proceeds was waste (8%). This is different from the global pattern in which energy, buildings and transport are the three most popular allocations. (Chart 2.7.)

Chart 2.7: Breakdown of deals by use of proceeds in 2019



Source: CBI.

Based on CBI data, all green bonds issued in Hong Kong benefited from at least one type of external review in 2019, relative to a share of 86% globally. One key factor leading to the high rate of pre-issuance external review is the Green Finance Certification Scheme. By the end of 2019, 23 green bonds arranged in Hong Kong have obtained pre-issuance stage certificate by the HKQAA. Since 2016, 81% of Hong Kong green bonds carry post-issuance disclosure, comparable to the share in global green bond markets.

> In 2019, 100% green bond issuance in Hong Kong by volume had external review, and 81% had post-issuance reporting.

According to Bloomberg, the Hong Kong green bond market ranked second in the Asia-Pacific region by market of syndication in 2019, accounting for more than 4% of global green bond volume. This suggests that Hong Kong has become an important hub for green bond underwriters to launch various arranging activities.

While European stock exchanges have been leaders in terms of green bond listings, the Hong Kong stock exchange has seen strong momentum recently. In 2019, the number of listed green bonds in Hong Kong stock exchange reached 20, a 33% increase from 15 listings in 2018.[5]

[5] Individual bonds may be simultaneously listed on several stock exchanges; the summary statistics above take into account all bonds as long as they are listed in a specific stock exchange.

3 A WIN-WIN SOLUTION FOR MARKET PARTICIPANTS

RESEARCH SHOWS NON-TRIVIAL BENEFITS FOR ISSUERS AND INVESTORS INTERNATIONALLY

3 A WIN-WIN SOLUTION FOR MARKET PARTICIPANTS

RESEARCH SHOWS NON-TRIVIAL BENEFITS FOR ISSUERS AND INVESTORS INTERNATIONALLY

HIGHLIGHTS:

- **From issuers' perspective, green bonds enjoy a lower cost of borrowing on average. Moreover, the cost reduction is tangible if green bonds are verified or certified by external parties.**
- **Green bond issuance also leads to positive equity price reactions around the issuance period when the green bond has received independent verification or certification.**
- **From investors' perspective, green bonds are traded at a slightly higher price on average than comparable bonds. The difference diverges across different green bonds and over time.**
- **Accumulating evidence suggests that ESG investments, including green bonds, may outperform their non-ESG counterparts and appear more resilient to economic downturns. During the Covid-19 epidemic some green bond indices are found to provide a better risk-return tradeoff when compared to conventional bond indices.**

3.1 GREEN BENEFITS FOR ISSUERS AND INVESTORS

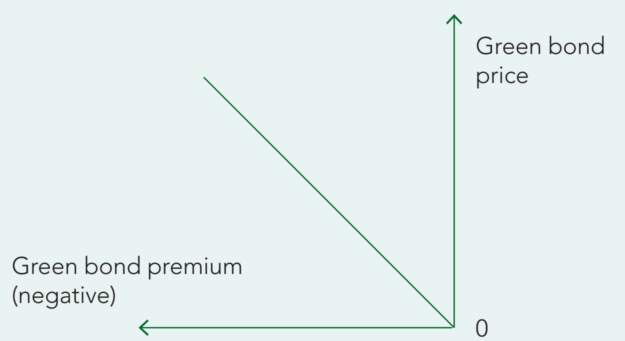
In order to meet the immense green investment needs, any effective financial solution has to leverage a large pool of issuers and investors. For this reason, the green bond market will not be sustainable in the long run unless both issuers and investors derive reasonable benefits from it. Supplementing Chapter 1 which discussed benefits for issuers and investors in the green bond market qualitatively, this chapter aims to quantify the benefits based on research findings. With respect to issuers, this chapter investigates the cost advantage and shareholders' benefits from green bond issuance. From the perspective of investors, this chapter reports recent findings about the performance of ESG investments over a long horizon and during economic downturns.

3.2 BENEFITS TO ISSUERS: WHAT IS THE GREEN BOND PREMIUM?

To measure the benefit of issuing green bonds, one key quantity is the green bond premium, also known as the "greenium". The green bond premium is defined as the difference in yield to maturity between a green bond and a conventional bond with identical features otherwise. These features include the issuer's characteristics such as its industry sector and firm size, as well as bond characteristics such as bond size, seniority, liquidity and credit rating.

Given their popularity, green bonds are usually traded at a higher price than conventional bonds with similar features. As bond price is inversely related to its yield, the green bond premium is usually negative. Moreover, the higher the price at which a green bond is traded, the more negative is the premium. For issuers, a more negative green bond premium is favourable because funds can be raised at a lower cost. (See Chart 3.1.)

Chart 3.1: Green bond price and premium

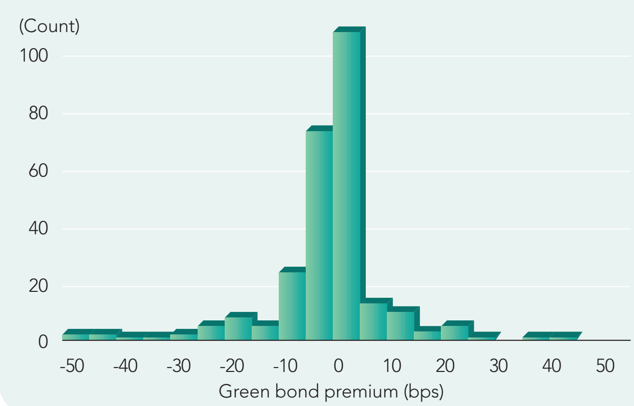


Source: HKIMR staff compilation.

Conceptually, the green bond premium is determined by market forces, together with the size of the green bond market. Drawing on a supply-demand argument, supply increases with a higher issuance price of green bonds, which means a reduction of issuers' cost of borrowing. On the demand side, a lower price of green bonds increases investors' return and induces higher demand. The interaction of supply and demand pins down the price of green bonds (hence the premium) and the resulting size of the green bond market.

In reality, the average green bond premium is small and negative. A study carried out by the Market Research Department of the HKMA in collaboration with the HKIMR shows that, out of a representative sample of 267 green bonds, the average green bond premium is -1.2 basis points.[6,7] A premium of this tiny size is unlikely to substantially affect issuers' decisions. Nevertheless, the premium diverges across different green bonds. While the majority have premia around zero, some green bonds possess a premium up to -50 basis points. (Chart 3.2.)

Chart 3.2: Distribution of the green bond premia



Note: Each bar shows the number of green bonds whose premium falls within a given range.

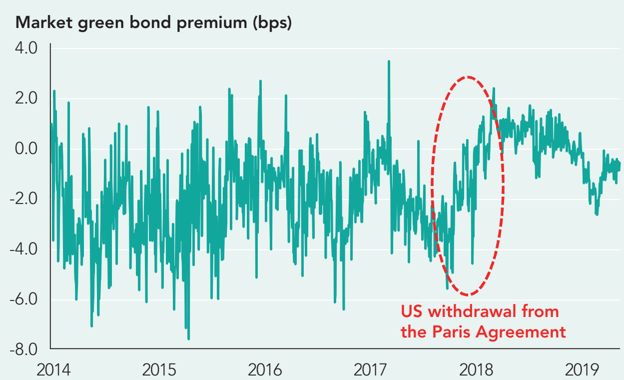
Sources: Lau et al. (2020) and HKIMR staff compilation.

[6] This analysis of the green bond premium is conducted by Lau et al. (2020) and released as HKIMR Working Paper No. 09/2020. For further details, please refer to Appendix A.1.

[7] This finding is in line with recent academic studies related to the green bond premium. A detailed literature review can be found in Lau et al. (2020).

The results also suggest that the premium varies over time. For instance, the US announcement of its withdrawal from the Paris Agreement in mid-2017 was followed by a sharp shrinkage of the negative green bond premium, which may reflect demand and supply factors at work. (Chart 3.3.)

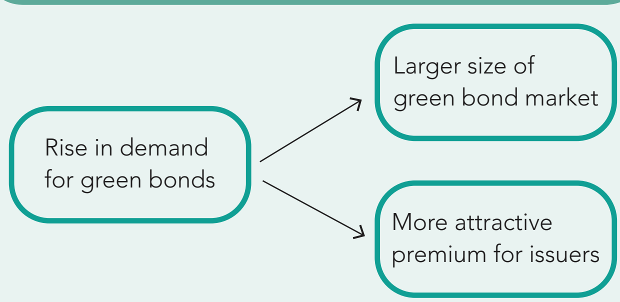
Chart 3.3: Market component of the green bond premium



Sources: Lau et al. (2020) and HKIMR staff compilation.

Even though the green bond premium at present seems small, with growing awareness of climate change by the public and investors, demand for green bonds is likely to rise in the future. Growing demand will not only increase the size of the green bond market, but also lead to a more attractive premium for issuers. A larger negative premium may, in turn, induce more potential issuers to participate in the green bond market. (Chart 3.4.)

Chart 3.4: Rising green bond demand will make premium more attractive for issuers



Source: HKIMR staff compilation.

3.3 VERIFICATION AND CERTIFICATION MAKE GREEN BONDS ATTRACTIVE

Although the average level is currently small, the green bond premium depends on the specific features of the bonds. For example, when green bonds are properly verified or certified, the negative premium is tangible.

Another study commissioned by the HKIMR looks at green firms in the US, Mainland China, and Hong Kong which have issued at least one green bond since 2013 and computes yield spreads at the issuance date between the green bonds and the matching conventional bonds by brown firms.[8,9] Chart 3.5 shows these yield spreads grouped by the green bonds' verification status.

Green bonds with verification or certification have tangible negative premium.

8 The analysis of the verification effect of the green bond premium and the analysis of equity market reaction to green bond issuance are conducted in a study for the HKIMR by Moinas and Bao (2020). For further details, please refer to Appendix A.2.

9 Brown firms refer to firms that have never issued green bonds.

The leftmost bar in Chart 3.5 shows that, on average, issuing green bonds can reduce the green firm's cost of borrowing, by 33 basis points, relative to their matched conventional bonds. This can be due to the reputation effect of committing to sustainable development, which is priced in by the investors.

Moreover, investors care about verification and certification. When a green bond is verified or certified, its yield at the issuance date is about 50 basis points lower than its matching conventional bond. The process of verification and certification not only makes a green bond credible, but also helps investors with green mandates to justify their investment. The relatively limited supply of verified and certified green bonds versus the large demand may explain the existence of lower yield.[10]

Chart 3.5: Yield spread of green bonds against conventional bonds by verification status

Sources: Moinas and Bao (2020) and HKIMR staff compilation.

3.4 POSITIVE EQUITY MARKET REACTION TO GREEN BOND ISSUANCE

> Green bond issuance is viewed favourably in the Hong Kong equity market, leading to positive equity price reaction.

Given the cost advantages of green bonds to issuers, the benefits of green bond issuance may also translate into higher firm value and positive equity returns of the issuer. There are several reasons. First, green bond issuers benefit from lower borrowing costs, leading to higher equity prices. Second, green bonds demonstrate the issuer's commitment to sustainable development, which enhances reputation. There may also be longer term benefits such as higher resilience to climate or regulatory shocks. Third, verification and certification reduces information asymmetries between the issuing firm and its investors, which is valued by investors.[11]

[10] The study also explores the difference in the cost of borrowing between a conventional bond issued by a green firm and a conventional bond issued by a brown firm, and it finds that there is a cost advantage for green firms. More details are provided in Appendix A.2.

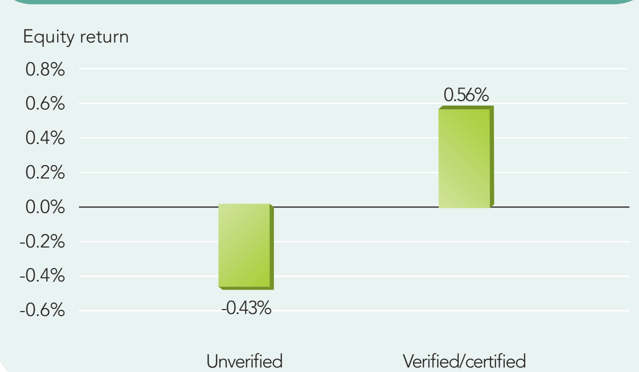
[11] Additional evidence by Wu (2020) suggests that ESG disclosure improves information efficiency and reduces the uncertainty of equity valuation, and that firms with more ESG disclosure have a lower bid-ask spread of the equity price.

To gauge the effect of green bond issuance on a firm's equity price, the firm's equity returns around the issuance date of its green bond is studied in the work carried out by Moinas and Bao (2020) commissioned by the HKIMR.[12] A positive number means that green bond issuance increases equity returns and is profitable for shareholders.

During periods of green bond issuance, the issuing firms in Hong Kong on average experience a positive cumulative return of 0.66%. This suggests that investors in Hong Kong view green bond issuance favourably, leading to positive equity returns.

Moreover, cumulative equity returns computed across jurisdictions are remarkably higher when the bond is verified/certified (0.56%) than unverified (-0.43%). Independent verification and certification are perceived as a strong positive signal by equity investors. (Chart 3.6.)

Chart 3.6: Equity returns around green bond issuance



Note: The values reported in the figure are equity return differentials with the benchmark (CAPM) cumulated over 20 trading days (10 days before to 10 days after the bond issuance).

Sources: Moinas and Bao (2020) and HKIMR staff compilation.

3.5 BENEFITS TO INVESTORS

It would be ideal to directly quantify the benefits to investors by focusing on green bonds. Nevertheless, given the short history of green bonds, there have been limited systematic studies in this area. As green bonds are an important part of ESG investments, the performance of the latter will shed light on what one expects when investing in green bonds.

First, evidence suggests that sustainable funds delivered higher returns than equivalent conventional funds over the past decade. A recent research conducted by Morningstar[12] with a sample of 745 Europe-based sustainable funds shows that sustainable funds have delivered superior returns on average relative to their traditional peers over 1, 3, 5, and 10 years horizon. Sustainable funds are also found to have greater survivorship rates than non-ESG vehicles.

Green bonds may offer resilience in market downturns. During the Covid-19 epidemic, some green bond indices exhibited a better risk-return tradeoff than their conventional bond counterparts.

There is some evidence suggesting superior performance of green bonds. According to a report by the Bank for International Settlements in 2017[14], from July 2014 to June 2017, the overall performance of green bond indices has been similar to that of global bond indices of comparable credit rating composition. However, the ratio of average monthly returns to their standard deviation (Sharpe ratio), a standard measure for risk-adjusted performance, was slightly higher for green bond indices. (Table 3.1.)

12 Details of the computation of the cumulative equity returns are discussed in Appendix A.2.

13 Bioy, H., & Boyadzhiev, D. (2020). "How does European Sustainable Funds' Performance Measure Up?" Morningstar Manager Research. June.

14 Ehlers, T., & Packer, F. (2017). "Green Bond Finance and Certification." BIS Quarterly Review. September. Pages 89–104.

Table 3.1: Green bond indices: return characteristics (July 2014–June 2017)

		Cumulated return	Mean (1)	Std. dev. (2)	Sharpe ratio = (1)/(2)
Green bond indices	BofA Merrill Lynch	9.17	3.06	8.64	**0.35**
	Barclays MSCI	10.23	3.41	9.61	**0.35**
Global bond indices	Broad-based	11.26	3.75	11.64	0.32
	AA average rating	10.29	3.43	10.21	0.34
	A average rating	11.02	3.67	10.99	0.33

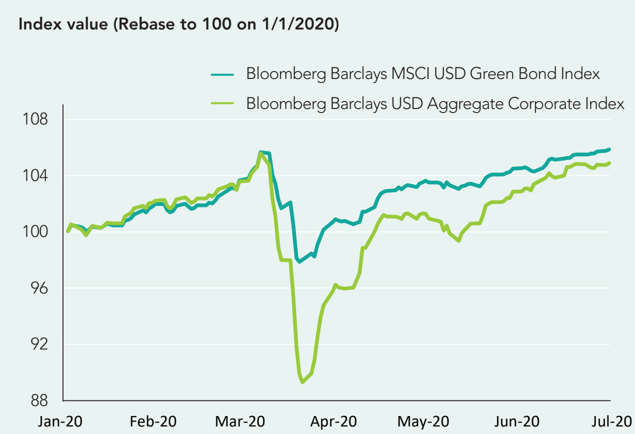
Note: The returns for indices are hedged against currency risks.

Source: Bank for International Settlements.

Second, the risk-return tradeoff seems more favourable for green bonds during periods of market downturns. Consider the first half of 2020 for example, when Covid-19 caused global markets to swoon. Over the period, the Bloomberg Barclays MSCI USD Green Bond Index earned 2% higher return (annualised) relative to the Bloomberg Barclays USD Aggregate Corporate Index[15]. Moreover, the green bond index had lower volatility. (Chart 3.7.) During the same period, the analogous European green bond index exhibited 0.4% annualised higher return compared with the aggregate bond index. In addition, using a globally-representative, widely-analysed set of 32 sustainable indices, BlackRock[16] found that during notable market downturns in 2015–2016, 2018 and the first quarter of 2020, sustainable indices tended to outperform their non-sustainable counterparts.

One reason for the relative resilience of green investment is the reputation for the underlying green firms, which increases customer and employee loyalty. As a result, these firms' operations and profits are less vulnerable to adverse economic shocks, which translate into higher firm value and lower asset volatility.[17] From a portfolio management perspective, anecdotal evidence suggests that investors may unwind their positions in other assets before green bonds during market downturns, which leads to the relative resilience of the green bond index.

Chart 3.7: Green bonds exhibited higher resilience during Covid-19



Source: Bloomberg.

In conclusion, green bonds bring benefits to both issuers and investors. On the issuers' side, despite a small and negative green bond premium on average, empirical results show that green bond issuance, especially with independent verification or certification, is advantageous to issuers. The resulting reduction in the cost of borrowing and the rise in equity returns are both tangible. On the investors' side, accumulating evidence suggests that ESG investments, including green bonds, may outperform non-ESG counterparts over different horizons and better weather adverse situations such as the recent Covid-19 outbreak. It is expected that, with growing awareness of climate change, the popularity of green investments will lead to an increasing demand for green bonds and a more attractive premium for issuers in the future.

15 The evidence is not exhaustive. For example, other studies suggest that the performance of green bonds is comparable to other bonds during market downturns. (Barclays, 2020)

16 BlackRock. (2020). "Sustainable investing: resilience amid uncertainty."

17 Albuquerque, R., Koskinen, Y., & Zhang, C. (2019). "Corporate Social Responsibility and Firm Risk: Theory and Empirical Evidence." *Management Science*, 65(10), 4451–4469.

4 REASSURING FEEDBACK FROM MARKET PLAYERS

PARTICIPANTS ARE SATISFIED WHILE SOME CHALLENGES REMAIN

4 REASSURING FEEDBACK FROM MARKET PLAYERS

PARTICIPANTS ARE SATISFIED WHILE SOME CHALLENGES REMAIN

HIGHLIGHTS:

- **A survey commissioned by the HKIMR and conducted by Ernst & Young (China) Advisory Limited reveals that key considerations of green bond market participants in Hong Kong include not only financial factors, but also non-financial factors.**
- **The top three considerations for existing issuers are brand development needs, issuance costs, and the size of international investors. They rate the broad scale of international investors, availability of government subsidies, and low legal and marketing expenses as important advantages of the Hong Kong market.**
- **Investment returns are identified by existing investors as the primary consideration. The listing location affects the attractiveness of green bonds as the requirement on ESG information disclosure varies across markets. Over 40% of existing investors view the presence of socially responsible issuers and transparent ESG information disclosure as key advantages of the Hong Kong market that motivate them to invest.**
- **Challenges still remain, including the costs involved in verification and certification procedures, low public awareness, and heterogeneous standards. These challenges are shared by many green bond markets internationally.**
- **71% and 100% of existing issuers and investors in the survey respectively indicate that they have plans to participate again in the future.**

4.1 SURVEY AND INTERVIEW BACKGROUND

Surveys on ESG market developments and green bonds investments have been conducted by different organisations internationally. The CFA Institute in 2018 has conducted a global survey to understand how ESG considerations are integrated into the investment decision process. Survey results show that environmental factors are gaining acceptance and the main barriers are due to a limited understanding of ESG issues and a lack of comparable ESG data. Also in 2019, the CBI has surveyed European investors and found that they exhibit a large demand for green bonds, especially the ones with green credentials.

Against this background, it is useful to gather insights from green bond issuers and investors into green bond market development in Hong Kong. The HKIMR commissioned Ernst & Young (China) Advisory Limited the survey entitled *Developing Hong Kong into a global green bond hub* (hereinafter Green Bond Survey) in June to August 2020.[18] In addition to the survey, market participants were invited to interviews to share their in-depth insights on green bonds. The focus of the Green Bond Survey is on market participants' views of the opportunities and challenges in the Hong Kong green bond market. This chapter presents the key findings of the survey.

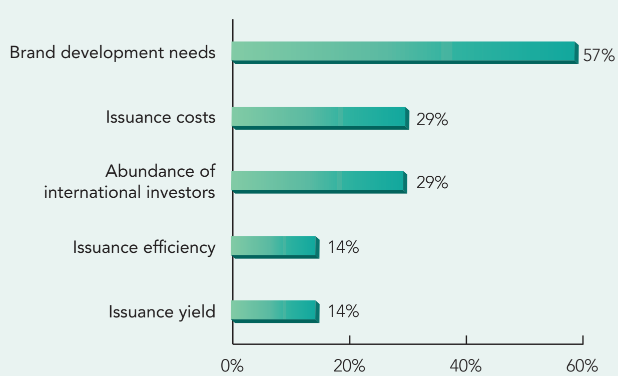
[18] The Green Bond Survey covers 48 institutions associated with the green bond market in Hong Kong. Details on the composition of responding issuers and investors can be found in Appendix B. Unless otherwise specified, charts and tables in this chapter refer to findings of the survey.

4.2 MAIN CONSIDERATIONS FOR GREEN BOND MARKET PARTICIPANTS

Issuing and investing in green bonds are fundamentally financial and portfolio management decisions. Institutional factors, such as convergence towards green bond standards and disclosure requirements, are other key considerations for green bond market participants. Furthermore, due to the existence of social and environmental benefits, participation in the green bond market may be attractive from the perspectives of corporate social responsibility and brand building. As an international financial centre, Hong Kong may help green bond market participants to maximise their international exposure, which brings other intangible benefits to the market participants.

Among the various factors taken into account by existing green bond issuers in the Hong Kong market, the key considerations include non-financial factors, such as brand development needs and the availability of international investors, as well as financial factors, such as issuance costs. (Chart 4.1.)

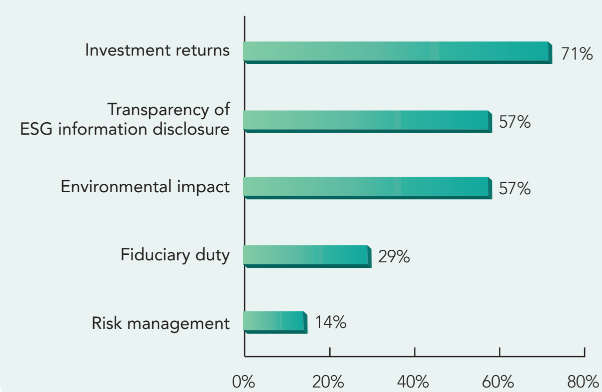
Chart 4.1: Main considerations for existing issuers in the Hong Kong green bond market



Source: HKIMR staff calculations based on the Green Bond Survey.

Existing green bond investors in the Hong Kong market have a different set of considerations. Investment returns are identified as the most important consideration by 71% of existing investors. Non-financial factors such as transparency of ESG information disclosure and the environmental impacts of their investment are also key considerations for more than half of the existing investors. (Chart 4.2.)

Chart 4.2: Main considerations for existing investors in the Hong Kong green bond market



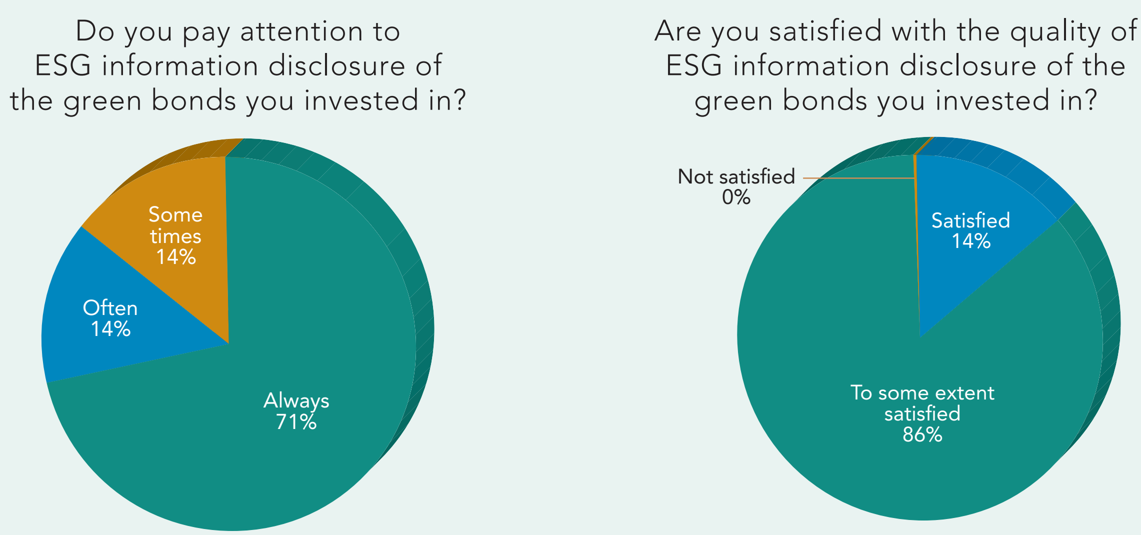
Source: HKIMR staff calculations based on the Green Bond Survey.

In line with these findings, in the interviews, the majority of green bond investors reveal that they primarily focus on firm-level and bond-level factors, including investment returns, fundamentals of the firm, and ESG information disclosure. The listing location plays an essential role in the attractiveness of green bonds because exchange houses have different requirements on financial and ESG information disclosure.

> The Green Bond Survey shows that existing issuers are driven by brand development needs, issuance costs, and the size of international investors when issuing green bonds. Meanwhile, existing investors cite investment returns as their main consideration.

Existing investors in the survey generally favour green bonds in the Hong Kong market issued by financial institutions, energy corporates, governments, and real estate corporates. They do not have strong preference on the use of proceeds of green bonds. The majority of existing investors pay close attention to disclosed ESG information of the green bonds in the Hong Kong market in which they invested. All existing investors report that they are either satisfied (14%) or to some extent satisfied (86%) with the quality of ESG information disclosure. (Chart 4.3.)

Chart 4.3: Existing green bond investors' attention on ESG information disclosure in Hong Kong



Source: HKIMR staff calculations based on the Green Bond Survey.

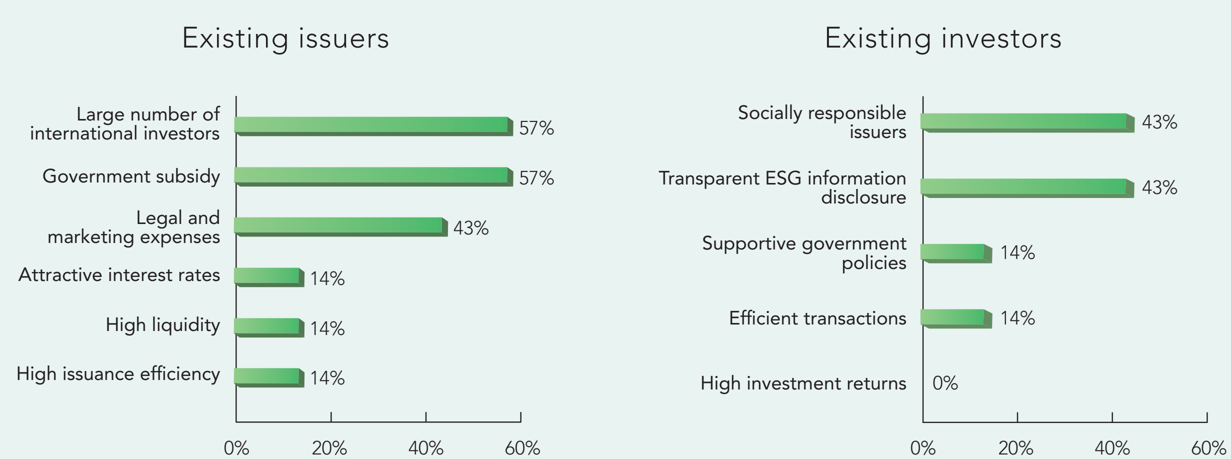
4.3 ADVANTAGES AND POSITIVE IMPACTS

Many factors have contributed to the strong growth momentum of the green bond market in Hong Kong. These factors, which may include a sophisticated financial sector, a sound legal and regulatory system, supportive government measures and many others, facilitate market participants to maximise the benefits associated with green bond issuance and investment. The Green Bond Survey explores what market participants perceive as the main advantages of the Hong Kong green bond market.

According to the Green Bond Survey, more than 40% of the existing issuers identify a large number of international investors, government subsidy, and low legal and marketing expenses as the top three advantages of the Hong Kong market. Over 40% of existing investors are motivated by socially responsible issuers and transparent ESG information disclosure to make green bond investment in Hong Kong. These results may be attributed to Hong Kong's role as a leading international financial centre, as well as its robust green bond infrastructure, such as the presence of international green advisory firms, external reviewers, and other experts in green finance. The role of government initiatives is also well-recognised by market participants. (Chart 4.4.)

The Green Bond Survey asks market participants what they perceive as the positive impacts of participating in the Hong Kong green bond market. Existing issuers highlight that issuing green bonds in Hong Kong would attract more investors, improve their institutional brand, and gain international recognition. Existing investors report that investing in green bonds in the Hong Kong market would improve reputation, expand shareholder benefits, and gain government recognition. Both existing issuers and investors acknowledge the intangible benefits brought by participating in the Hong Kong green bond market. (Table 4.1.)

Chart 4.4: Advantages of the Hong Kong green bond market that motivate participation



Source: HKIMR staff calculations based on the Green Bond Survey.

Table 4.1: Positive impacts of participating in the Hong Kong green bond market

	Attract more investors	Improve green finance capacity	Improve institutional brand	Gain international recognition
Existing issuers	1		2	3

	Improve reputation	Expand shareholder benefits	Lower risks	Gain government recognition
Existing investors	1	2		3

Note: Numbers indicate the three most popular choices.

Source: HKIMR staff calculations based on the Green Bond Survey.

4.4 CHALLENGES IN THE WAY

Despite the various advantages and positive impacts on green bond market players, challenges remain that may affect the development of the market. To gain further insights, survey respondents are asked to rate factors that may hold back their participation in the green bond market.

Existing issuers point out that one of the challenges is the verification and certification procedures which involve financial and time costs. In the interviews, existing issuers mention other areas of development including increasing the size of local green investors, improving issuer diversity, and better communication of government initiatives. Meanwhile, existing investors indicate that they want more attractive investment returns relative to ordinary bonds.[19] They also point out that the ESG information reported by issuers varies in terms of the scope, key performance indicators, metrics and methodologies used, which sometimes makes their investment decisions difficult. Recognising that these challenges are shared by all green bond markets around the world, investors suggest the use of common standards and assurance to enhance disclosure and accountability of green information. (Table 4.2.)

Table 4.2: Challenges faced by existing market participants

(% of respondents)	Existing issuers	Existing investors
Verification and certification procedures	100%	N.A.
Low investment returns	N.A.	43%
Heterogeneous standards	0%	43%
Existing incentive policies	0%	29%
Low public awareness	0%	29%

Note: Numbers indicate the percentage of market participants who view a factor as a challenge of the Hong Kong green bond market. "N.A." stands for Not Applicable.

Source: HKIMR staff calculations based on the Green Bond Survey.

Potential issuers echo the views of the existing issuers, with 80% of them citing verification and certification procedures as a challenge. Some mention that they have no financing needs. A number of potential issuers also express concerns about inadequate incentive policies, in contrast to what is reported by existing issuers. While potential participants may pay less attention to the green bond market relative to existing participants, the results also imply that increasing awareness and knowledge sharing about green bonds, as well as the green bond market in Hong Kong, would be helpful. Potential investors express similar views as their existing counterparts, identifying heterogeneous ESG reporting standards, low public awareness and low investment returns as challenges of the Hong Kong green bond market. (Table 4.3.)

19 Growing evidence suggests that green bonds may offer better risk-return tradeoff over longer horizons and during market downturns. See also Section 3.5 of this report.

Table 4.3: Challenges faced by potential market participants

(% of respondents)	Potential issuers	Potential investors
Verification and certification procedures	80%	N.A.
Low investment returns	N.A.	30%
No financing need	37%	N.A.
Heterogeneous standards	12%	40%
Existing incentive policies	64%	10%
Low public awareness	29%	40%

Note: Numbers indicate the percentage of market participants who view a factor as a challenge of the Hong Kong green bond market. "N.A." stands for Not Applicable.

Source: HKIMR staff calculations based on the Green Bond Survey.

Potential issuers and potential investors alike rate having external reviews and improved quality of ESG information disclosure as key factors that make green bonds issued in Hong Kong more attractive. Another factor cited by potential issuers is convergence towards international green bond practices and standards. Attractive investment returns are again highlighted by potential investors as a leading factor, consistent with the previous observation that investment returns are the primary consideration for their decision to invest in green bonds. (Table 4.4.)

Table 4.4: Factors to make the green bonds issued in Hong Kong more attractive

Potential issuers

- Receive external reviews
- Convergence towards international green bond practices and standards
- Improved quality of ESG information disclosure

Potential investors

- Attractive investment returns
- Receive external reviews
- Improved quality of ESG information disclosure

Source: HKIMR staff compilation based on the Green Bond Survey.

4.5 EXISTING PARTICIPANTS KEEN TO PARTICIPATE IN THE FUTURE

Existing issuers and investors are asked whether they have plans to continue to participate in the green bond market in Hong Kong. 71% of existing issuers report that they plan to dedicate more resources to enhance the capacity and increase the share of green bond issuance in the Hong Kong market. The rest either do not have financial needs currently, or are uncertain about the allocation of proceeds. Importantly, all existing issuers indicate that their financing expectations have been met. On the investor side, all existing investors indicate that they would invest more in the local market in the future. In addition, around half of the potential investors interviewed express their interest to make investment in the Hong Kong green bond market.

71% and 100% of existing issuers and investors respectively indicate that they have plans to participate in the Hong Kong green bond market in the future.

5 EMBRACING A GREENER FUTURE

PERFECTING THE INFRASTRUCTURE AND ENCOURAGING PARTICIPATION ARE KEY TO MARKET DEVELOPMENT

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HIGHLIGHTS:

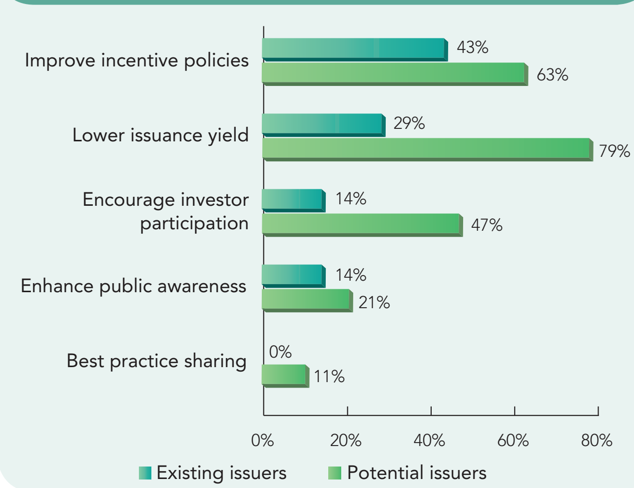
- **Based on our survey findings and the rich experience in other jurisdictions, this report proposes a wide range of recommendations aiming at perfecting the green infrastructure in the local market and encouraging market participants to play a more active role.**
- **Suggestions to perfect the green infrastructure include improving transparency of ESG information disclosure, supporting responsible investment and government issuance, encouraging convergence towards international green bond practices, facilitating cross-border green bond issuance, as well as constructing green bond indices and promoting green exchange.**
- **Strategies to encourage broader market participation involve efforts to raise awareness of the benefits brought by green bonds and broadening incentive policies. Suggestions by market participants include tax exemption or reduction for interest income of green bonds and providing subsidies for certification by more recognised certification bodies.**

5.1 MARKET VIEWS ON HOW TO ADDRESS THE CHALLENGES

With respect to the challenges encountered in the Hong Kong green bond market, market participants are asked to rate possible actions that are helpful to improve the situation.

Existing and potential issuers consider improving incentive policies and lowering issuance yield the two most important actions to overcome the barriers to issue green bonds in Hong Kong. In the interviews, issuers also suggest defining eligible green assets/projects and improving issuance efficiency as possible actions. (Chart 5.1.)

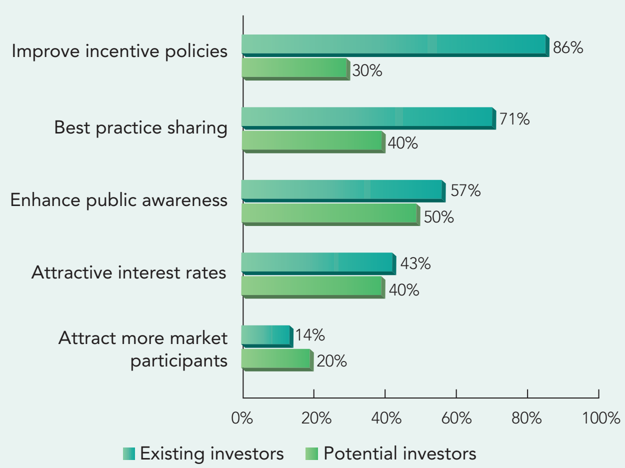
Chart 5.1: Actions to address challenges of green bond issuance in Hong Kong



Source: HKIMR staff calculations based on the Green Bond Survey.

Both existing and potential investors regard improving incentive policies, best practice sharing, enhancing public awareness, and making investment returns more attractive as important actions to address the challenges of green bond investment in Hong Kong. Investors express in the interviews that improved quality of ESG information disclosure, a clarified government green strategy and attracting more ESG-related or sustainable funds and ETFs may fuel the growth of the market as well. (Chart 5.2.)

Chart 5.2: Actions to address challenges of green bond investment in Hong Kong



Source: HKIMR staff calculations based on the Green Bond Survey.

Both issuers and investors view effective incentive policies as a useful tool to address the challenges in the Hong Kong green bond market.

5.2 ADVANCE ON A GREENER FUTURE

Combining the recommendations proposed by survey respondents, the opportunities and challenges in the Hong Kong green bond market and the rich experience in other jurisdictions, we make the following suggestions which may be helpful to develop Hong Kong into a global green bond hub. The set of suggestions may play a role by (a) perfecting the green bond market infrastructure; and (b) encouraging broader market participation. (Table 5.1.)

Improve transparency of ESG information disclosure

According to the survey and interviews, investors pay regular attention to the green reporting of the green bonds in which they invest, such as use of proceeds, third party assurance and impact reporting. While 14% of respondents are satisfied with the quality of ESG information disclosure, the remaining 86% of respondents are merely satisfied to some extent, which implies room for further improvement. These findings suggest that developing a system of more transparent ESG information disclosure is imperative. Moreover, green bonds with good credentials may attract demand from ESG-mandated funds as well.

Support responsible investment and government issuance

Having further clarity on the government's concrete plan and strategy to decarbonise would be helpful. The Exchange Fund generally gives priority to ESG investments if the long-term risk-adjusted return is comparable to other investments, which sends a positive signal to the market and encourages market participants to incorporate ESG principles into their decision-making process. Repeated government green bond issuance is another way to signal the government's commitment to its sustainable, low-carbon growth strategies and spur green bond supply in the local market.

Table 5.1: Suggestions to grow the green bond market in Hong Kong

Perfect the green bond market infrastructure	Improve transparency of ESG information disclosure	• Develop a system of more transparent ESG information disclosure • Higher transparency attracts demand from ESG-mandated funds
	Support responsible investment and government issuance	• Clarify the concrete plan and strategy to decarbonise • The Exchange Fund's commitment to ESG investments is a positive signal • Repeated government green bond issuance is helpful
	Encourage convergence towards international green bond practices	• Encourage convergence towards international good practices such as the Green Bond Principles and the Climate Bonds Standard
	Facilitate cross-border green bond issuance	• Establish a "green channel" to facilitate green bond issuance in Hong Kong for enterprises from Mainland China
	Construct green bond indices and promote green exchange	• Construct green bond indices to help expand the investor base • Further promote the Sustainable and Green Exchange (STAGE)
Encourage broader market participation	Promote public awareness and increase investor base	• Promote public awareness to increase the size of local green investors • Provide subsidies on green training and courses
	Broaden incentive policies	• Broaden the subsidies for certification by more recognised certification bodies • Some participants suggest more generous tax exemption or reduction for interest income of green bonds

Source: HKIMR staff compilation.

Encourage convergence towards international green bond practices

One hurdle for green bond markets lies in the multiplicity of green definitions, which is amongst the top concerns hindering potential investors from investing in green bonds as indicated in the survey. To alleviate this concern, it would be useful to encourage convergence towards international good practices, such as the Green Bond Principles and the Climate Bonds Standard.

Facilitate cross-border green bond issuance

Hong Kong, as a leading international financial centre, has always been the preferred offshore fundraising centre for enterprises in Mainland China, particularly when financing instruments are denominated in foreign currency. By the end of 2019 the green bond issuance volume of Mainland entities accounted for more than 70% of the total market. As suggested by interviewees, closer connection between Mainland China and Hong Kong, together with a plausible "green channel" to facilitate green bond issuance in Hong Kong for Mainland enterprises, would be conducive to the further development of the market.

Construct green bond indices and promote green exchange

Apart from the four major global green bond index series, namely Bloomberg Barclays MSCI Green Bond Index, BAML Green Bond Index, S&P Green Bond Index, and Solactive Green Bond Index, some regional green bond indices have been constructed such as ChinaBond China Green Bond Index and ChinaBond China Green Bond Select Index. Availability of green bond indices would expand investor base, improving the breadth and depth of the market.

The Sustainable and Green Exchange (STAGE) announced by the Hong Kong Exchanges and Clearing Limited, which provides access to a comprehensive online database of sustainable and green financial products, is a constructive step forward in this direction.

Promote public awareness and increase investor base

As pointed out by survey respondents, the Hong Kong green bond market would benefit from a greater number of local green investors. Regulators in Hong Kong can support the green bond market by promoting public awareness and encouraging investors to engage in green investing. The government could also provide subsidies on green training and courses to create a favourable policy environment for green investments.

Broaden incentive policies

The subsidies applicable to green bond issuance include the Green Bond Grant Scheme, which was set up to subsidise the cost of HKQAA certification, and the Pilot Bond Grant Scheme, which targets first-time (green) bond issuers in Hong Kong. While both schemes are welcomed by market participants, some suggest broadening the subsidies for certification by other recognised certification bodies to enhance competition. Some issuers and investors in the survey suggest incentive schemes such as tax exemption or reduction for interest income of green bonds, similar to those implemented in Mainland China, the Netherlands, and Malaysia.

CONCLUSIONS

The green bond market has experienced a tremendous increase in scale, with record-breaking issuance amount in 2019. The private sector has been playing an increasingly important role in the global market. Currently representing less than 1% of the total bond market, the green bond market has enormous growth potential. As one of the major financial centres, **Hong Kong has witnessed the rapid rise of the local green bond market, with Mainland issuers accounting for over 70% of the total.** In the HKIMR Green Bond Survey, issuers express the view that the Hong Kong green bond market provides a broad base of international investors, institutional brand improvement, and international recognition.

Transparency is a prominent feature of mature green bond markets. Research findings show that the green label may entitle issuers to enjoy lower cost of borrowing and higher equity returns. This, however, leads to greenwashing concerns that firms may exaggerate the "greenness" of their business. In response, external reviews and post-issuance reporting are adopted by issuers to increase the transparency of their green bonds. Green bonds with external verification or certification are also sought by investors. Moreover, international efforts have been made to harmonise the standards and taxonomies across jurisdictions and to enhance their clarity and practicability. Survey respondents almost unanimously view that transparent ESG information disclosure is crucial for their decision to participate in the green bond market.

Enhanced public and investor awareness of the benefits brought by green bonds will assist the market's growth. It is acknowledged that green bonds are innovative financial products and investors may have to expend effort to screen their green credentials. Meanwhile, accumulating evidence suggests that ESG investments, including green bonds, may produce a better risk-return tradeoff and are more resilient to economic downturns. These features appeal to investors wanting better performance from investment, such as the investors in our survey, who name investment returns as their primary consideration. Enhanced public awareness would incentivise more issuers and investors to get involved, improving their international branding, deepening and broadening the market, and at the same time accelerating the transition to a low-carbon economy.

The set of proactive and broad-ranging measures launched by Hong Kong is on the right track. Initiatives such as HKQAA certification, subsidies for certification costs and green exchange serve to encourage a more transparent ESG information disclosure. Policies to enhance public awareness of the benefits brought by green bonds comprise government bond issuance, capacity building, and international cooperation. Survey respondents in general consider attractive incentive policies, transparent ESG information disclosure, and a large pool of international investors as the leading advantages of the Hong Kong market.

Further actions can address the challenges and accelerate the development of Hong Kong into a global green bond hub. Areas of development highlighted by survey respondents include insufficient public awareness, costs related to verification and certification procedures, and heterogenous standards. To advance on a greener future, a wide range of suggestions are proposed with the objectives of perfecting the green infrastructure in the local market and encouraging market participants to play a more active role. Efforts to raise public and investor awareness as well as effective incentive policies would be helpful.

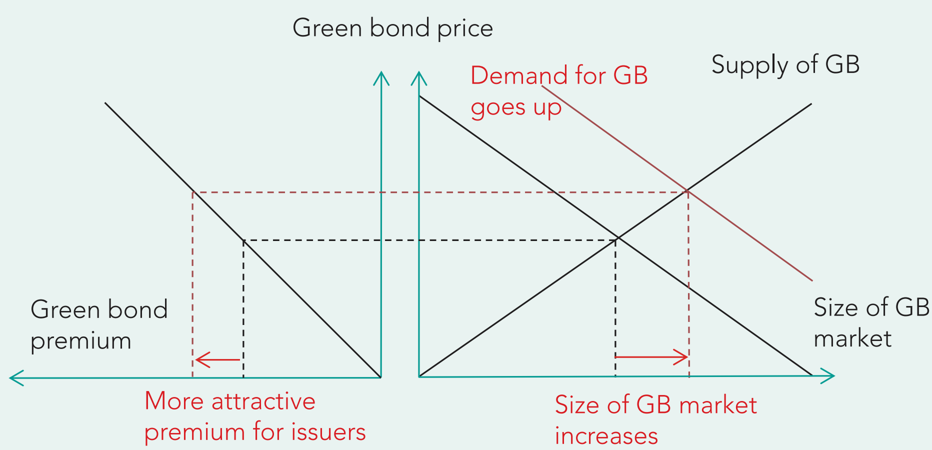
Apart from green bonds, other ESG products are rising in popularity in Hong Kong and globally. These products include sustainable bonds, green loans and many others. They will play a more important role in the future to form a robust ecosystem for sustainable growth.

APPENDIX A: ANALYSIS OF GREEN BOND PREMIUM AND EQUITY MARKET REACTION TO GREEN BOND ISSUANCE

APPENDIX A.1: ANALYSIS OF THE GREEN BOND PREMIUM (LAU ET AL., 2020)

The analysis by Lau et al. (2020) shows that a rise in the demand for green bond in the future, will lead to an increase in the size of the green bond market. At the same time, the green bond premium will become more attractive for issuers. These findings by Lau et al. (2020) can be visualised in an alternative way using a simple supply-demand framework.

Chart A.1: Rising green bond demand will make premium more attractive for issuers



Source: HKIMR staff compilation.

Lau et al. (2020) also study the green bond premium based on 267 global green bonds, covering issuers in different sectors (financials, non-financials, and government/supranationals). The data is consolidated from Bloomberg, Climate Bonds Initiative, and Dealogic. Each green bond is matched with two conventional bonds. Yield spreads are maturity-adjusted, with liquidity and volatility differentials being controlled for.

Table A.1: Green premia across sectors

Sectors	Median	Number of Green Bonds
Financials	–0.5**	98
Non-financials	–2.2***	15
Government/Supranationals	–0.4**	154

*** p<0.01, ** p<0.05, *p<0.1
Source: Lau et al. (2020).

The green bond premium for each bond is decomposed into a market component and an individual component. The market component of the green bond premium is negative most of the time, suggesting that the market is willing to pay a small premium for green bonds. The individual component is separately estimated by the sector to which the issuer belongs. Results suggest that the median green bond premium for financials and government/supranationals are close to zero, whereas the median premium for non-financial corporates is larger, at 2.2 basis points. (Table A.1.) Overall, the estimated mean of total green bond premium is -1.2 basis points, and the median is zero.

APPENDIX A.2: VERIFICATION EFFECT OF THE GREEN BOND PREMIUM AND EQUITY MARKET REACTION TO GREEN BOND ISSUANCE (MOINAS AND BAO, 2020)

In a research carried out for the HKIMR, Moinas and Bao (2020) study the verification effect on the green bond premium. It is based on listed green firms in the US (November 2013–December 2019), Mainland China, and Hong Kong (May 2014–December 2019), using Thomson Reuters EIKON data. Each of the green bonds and the two subsequent conventional bonds is matched with a conventional bond issued by a brown firm with similar characteristics[20]. The final sample has 135 green bonds and 99 conventional bonds issued by green firms, together with 234 matched conventional bonds issued by brown firms.

A regression model is used to study the ways in which bond yield at the issuance date depends on the greenness of the issuing firm and of the bond, together with the bond's verification status. Based on CBI data and hand-collected data, each green firm may or may not have its green bond framework verified, and green bonds are partitioned by whether they have their use of proceeds verified, and whether they are certified by the CBI. The regression includes area, year, and industry fixed effects, together with various bond- and firm-level control variables. (See Table A.2.)

[20] As Lau et al. (2020) and Monias and Bao (2020) use different methods to find a matching conventional bond, caution should be exercised when comparing the green bond premia estimated by the two studies.

Table A.2: Regression analysis for yield to maturity to bond verification process

VARIABLES	(1) YTM
Green firm	0.001
	(0.0020)
Green firm * Framework verified	–0.0056**
	(0.0026)
Green bond	–0.0024
	(0.0025)
Green bond * Framework verified	0.0045
	(0.0037)
Green bond * Framework verified * Use of proceeds verified	–0.003
	(0.0029)
Green bond * Framework verified * CBI certified	–0.0114***
	(0.0041)
Observations	468
Adj. R2	0.46

Robust p-value in parenthesis, *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Source: Moinas and Bao (2020).

The estimation results show that a green firm which has had its green bond framework verified benefits from a 56 basis points fall in yield. A green bond that receives use of proceeds verification enjoys a lower yield by 30 basis points (statistically insignificant), whereas one that receives CBI certification benefits from a fall in yield by 114 basis points. Although the regression results are quantitatively different from what is reported in Chart 3.5 (due to the existence of additional control variables), the key findings remain valid, i.e. issuing verified or certified green bonds is associated with lower cost of borrowing for the issuing firms.

To gauge the effect of green bond issuance on equity prices, the return for the equities of green bond-issuing listed firms around the bond issuance day is estimated using an event study approach. A rise in the equity returns increases firm value and is good for shareholders. For each listed green bond issuer, a capital asset pricing model (CAPM) is estimated over the period [–252, –30]. The returns reported in Chart 3.6 are actual cumulative returns minus expected returns implied by the CAPM for the period [–10, 10].

A simple regression model is also employed to study the ways in which cumulative equity returns depend on the characteristics of the green bond issuers. The return around the issuance date of a green bond is explained by whether it is the firm's first issuance of green bonds, its external review status and their interaction term. The analysis controls the bond size, listing location, as well as industry and year fixed effects. (See Table A.3.)

Table A.3: Regression analysis for equity price reactions to green bond issuances

VARIABLES	(1) Cumulative equity return	(2) Cumulative equity return
First issuance	0.0547***	0.0500***
	(0.0132)	(0.0127)
External review	0.0387**	
	(0.0154)	
Framework verified		0.0354**
		(0.0146)
Use of proceeds verified		0.0298*
		(0.0162)
CBI certified		0.0403**
		(0.0187)
First issuance * External review	–0.0554***	
	(0.0158)	
First issuance * Framework verified		–0.0404**
		(0.0187)
First issuance * Use of proceeds verified		–0.0561***
		(0.0183)
First issuance * CBI certified		–0.0378
		(0.0261)
Observations	189	189
Adj. R2	0.096	0.087

Robust p-value in parenthesis, *** p<0.01, ** p<0.05, * p<0.1. All control variables are statistically insignificant.

Source: Moinas and Bao (2020).

The estimation results in regression (1) show that first issuance and external review increase cumulative equity returns by about 5% and 4% respectively around the issuance date. These effects are both statistically and economically significant, and the latter effect is qualitatively consistent with the unconditional returns reported in Chart 3.6. Furthermore, results in regression (2) show that all external verification steps are important. These results suggest that equity investors view green bond issuance favourably. Moreover, independent verification or certification process is perceived as a strong positive signal.

APPENDIX B: SURVEY BACKGROUND

The results presented in this report are based on a survey entitled "Developing Hong Kong into a global green bond hub", conducted in June to August 2020 in collaboration with Ernst & Young (China) Advisory Limited to obtain qualitative and quantitative information from market participants and to gather insights into green bond development in the Hong Kong market.

In total, 48 institutions participated in the survey, including 28 issuers and 20 investors. The 28 issuers can be further broken down into 8 existing issuers, who have issued green bonds in the Hong Kong market, and 20 potential issuers, who may issue green bonds in Hong Kong in the future. Similarly, the 20 investors can be divided into two groups: one group consisting of 10 existing investors (3 of which are also underwriters) and the other group 10 potential investors, depending on whether the participant has invested in green bonds in the Hong Kong market. (Table B.1.)

Table B.1: Participants of the survey

48 institutions participated in the survey			
28 issuers		20 investors	
8 existing issuers	20 potential issuers	10 existing investors	10 potential investors

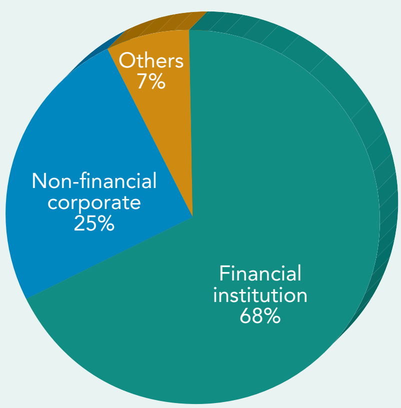
Sources: HKIMR staff calculations based on the Green Bond Survey.

The sample of issuers and investors in this survey is constructed to cover a broad representation of the market landscape. In terms of issuance amount, the 8 existing issuers together account for over one third of green bond issuance by amount as of the end of 2019. With respect to the market participants' business activities, 68% of issuers are financial institutions, 25% non-financial corporates, and the rest other types. On the investors' side, 90% are financial institutions, including banks, funds, and trusts. The rest belong to other types including non-financial corporates and governments. (Chart B.1.)

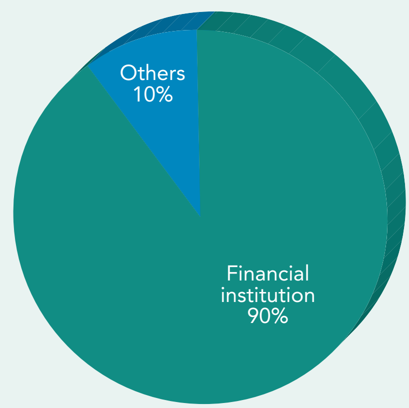
As for the head office location of the issuers, 86% are located in Mainland China, 11% Hong Kong, and 4% multilateral development banks. Regarding the head offices of the investors, Mainland China and Hong Kong account for 10% and 30% respectively, while regions outside Mainland China or Hong Kong make up around 60% of total. (Chart B.2.)

Chart B.1: Type of institution

Issuers



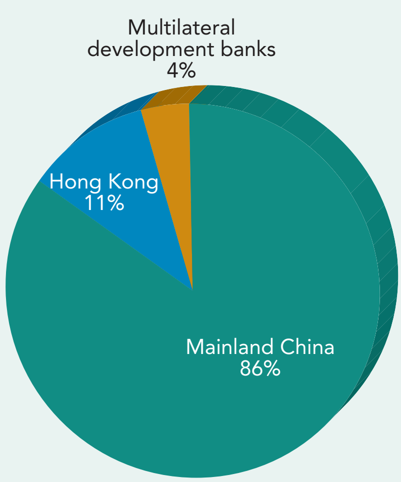
Investors



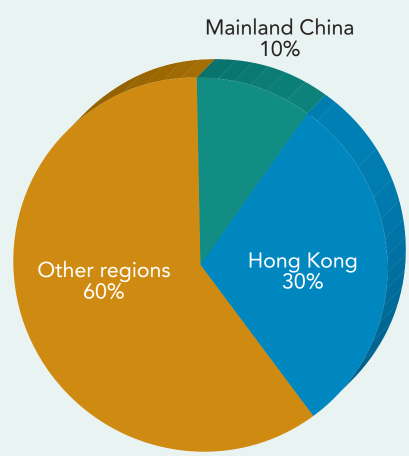
Source: HKIMR staff calculations based on the Green Bond Survey.

Chart B.2: Region of head office

Issuers



Investors



Source: HKIMR staff calculations based on the Green Bond Survey.

Apart from the questionnaires, 14 interviews were also conducted to gain insights and suggestions of respondents in more detail. The 14 interviewees include 6 issuers and 8 investors, making up a representative sample of different groups of market participants. All issuers and 5 investors being interviewed are existing participants, and the rest are potential participants.

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