Green Finance Performance and Role of Sustainability Engineers in the Greater Bay Area

Hei Yan Lee¹, Gladys So², Ellie Tang³, Tony Lam¹, Vincent Cheng¹

¹ Sustainability, Arup, Hong Kong
² Sustainability, K11 Concepts Limited, Hong Kong
³ Sustainability, New World Development Company Limited, Hong Kong

Email: zoe.lee@arup.com

Abstract. To encourage the implementation of sustainable green features, large scale infrastructure and transportation projects, the Central Government and HKSAR government is keen to promote green finance, determined to develop Hong Kong as the leading hub in the Greater Bay Area region [1]. Since 2016, a series of green finance developments accelerated, including the setting up of Hong Kong Green Finance Association (HKGFA) and the launching of Green Finance Certification Scheme. The green finance development in the Greater Bay Area, in particular Hong Kong, is outlined using a case study of the New World Development Company Limited (“the Group”) approach to green financing and their recently completed project – K11 ATELIER King’s Road. The paper discusses the role of sustainability engineer in green finance project throughout the four components of green finance project by providing technical support to quantify and assess the environmental impacts and benefits. In particular, sustainability engineers can contribute in green finance by developing a standardized benchmarking system on green building environmental impacts and benefits. The need of benchmarking system is discussed using the first green loan project in Hong Kong, K11 ATELIER King’s Road, as case study. The harmonious collaboration between financial experts and engineering professionals is encouraged in order to push the boundary of sustainability technology. The authors discuss an effective collaboration approach delivered by sustainability engineering professionals to support and create a greater impact of the green finance development in the Greater Bay Area.

1. Introduction

The international focus on climate change and sustainability has continued to rise across private and public sectors. World leaders have reached a consensus on climate change through the 2015 Paris Agreement within the United Nations Framework Convention on Climate Change (UNFCCC). The objective of the Paris Agreement is to limit global temperature increase to well-below 2°C and towards 1.5°C above pre-industrial levels, by adopting advanced technologies to reduce greenhouse gas (GHG) emissions. To achieve Paris Climate Agreement’s goal, the Organisation for Economic Co-operation and Development (OECD) has estimated that around US$ 6.9 trillion a year will be required between 2018 and 2030, equates to a total of US$ 90 trillion of capital [2]. Thus, a market-based solutions and innovative financing is needed to drive climate actions. China domestic green bond market has started in late 2015, after the introduction of the People’s Bank of China (PBoC)’s Green Bond Endorsed
Project Catalogue and the National Development and Reform Commission (NDRC)’s Guidance on Green Bond Issuance, provided the national green definition for labelling. In 2017, green bond issuance reached US$ 37.1 billion, and it became the world’s no.1 green bond issuer. However, on 62% (US$ 22.9 billion) of the issued green bond aligns with international green bond definitions [3]. To overcome the gap, China has established the first set of green finance pilot zones in in Zhejiang, Jiangxi, Guangdong, Guizhou, and Xinjiang in mid-2017. The key goals of these pilot zones is to support country’s environmental protection goals through testing green finance innovations and explore practical and replicable solutions to support scaling up green finance at national level [4]. Since the establishment of China’s green finance pilot zones, more green bonds from China met the international standard. In 2018, China has issued USD42.8 billion green bonds, of which USD31.2 billion (73%) aligned with international definitions [5]. In Hong Kong, International Capital Market Association (ICMA) has held the 2018 Green and Social Bond Principles Annual General Meeting & Conference, co-organised with the Hong Kong Monetary Authority (HKMA) and supported by the Hong Kong Financial Services Development Council (FSDC) on 14 June 2018, which ignited the local green finance interest. Hong Kong has then leveraged the market momentum and launched the Hong Kong Green Finance Association (HKGFA) in September 2018, which marked the milestone in developing Hong Kong as a green finance hub. The Association brings together the talent and expertise of financial institutions and green businesses in Hong Kong. At the opening remarks of the HKGFA official launch, the Hon Laura M Cha, Chairman of Hong Kong Exchanges and Clearing Limited and Honorary Advisor of HKGFA stated that “Green finance is different from traditional financial products as its proceeds are required to be invested into green projects. Therefore, certifying the environmental elements in green financial products is crucial task. “. She also believes “Hong Kong possesses every element in its role as a ‘super-connector’ for green finance.” [6] HKGFA has been continuing to build upon this vision and at the subsequent HKGFA 2019 Annual Forum, the Association has announced the plan to establish the Green Finance Alliance to facilitate the greening of the Greater Bay Area. Dr Ma Jun, Chairman and President of the HKGFA, remarked, “As a rapidly growing green finance market, Hong Kong will play a key role in the development of the Greater Bay Area as a leading centre for green finance in Asia, with great potential to grow the city’s bond and project finance markets. The government’s blueprint for the Greater Bay Area provides a golden opportunity for the green finance sector in the region, stimulating further knock-on growth for Hong Kong’s banking, investment management, insurance and private equity industries.” [7]

Given the fast-tracked development of green finance and importance of certifying environmental elements of green financial products, this paper examines the questions on the debate of “how green is green?” presents a case study of New World Development Company Limited’s green financing approach, and proposes an effective collaboration approach between financial experts and sustainability engineering professionals. The common type of financial instruments within green finance includes Green Bond, Sustainability Bond, Social Bond, Climate Bond, Sustainability-linked loan and Green Loan, and this paper focuses on Green Bond and Green Loan.

2. Current problem in green finance: How green is green?
Green or sustainable finance refers to “the process of taking due account of environmental and social considerations when making investment decisions, leading to increased investment in longer-term and sustainable activities.” according to the European Commission [8]. Unlike conventional financing, which considers the cost, risk and return of investment, green finance additionally investigates environmental impacts of investment, for example measures to reduce natural resource consumption. As different environmental impacts are inextricably intertwined together, problem arises in how to quantify these environmental impact, while the lack of clarity would jeopardize the credibility of green finance market [9].
The domain experts, sustainability engineering professionals, are recommended to answer the question in two ways: 1) As part of the project team to provide technical supports on quantifying the target sustainability performance and environmental benefits of projects when declaring the use of proceeds and/or applying green finance support; 2) As part of the third-party authority to access and approve the design and sustainability performance of the project. These are important in ensuring the green finance project is beneficial to the environment and society, while eliminating ‘greenwashing’ and allowing the public to have a full understanding on the technical risk and sustainability effectiveness of the project, as some of the projects may ‘seem to be green’ but does not have any environmental benefits. Furthermore, the same green features would have different environmental benefits when adopted in different climates and site context. Taking the installation of photovoltaic system as a green finance project example, the site context analysis is required in order to understand the solar irradiance availability for electricity generation, as shading from surrounding high-rise and trees would reduce the amount of electricity generated. In urban context, shading from surroundings is impossible to avoid, hence, sustainability engineer is crucial in accessing the effectiveness of the project. For instance, climate characteristics such as the rainy tropical climate with its corresponding annual sun hour available at the panels, the annual solar irradiance and annual electricity generation according to the efficiency of photovoltaic panels, the design and installation of the system. Technical risk and safety issues, such as the wind load during typhoon. By comparing these data to the cost of projects, the effectiveness and environmental benefits of the project can be quantified, and hence, understanding if the green finance project is worth investing or not.

Sustainability engineers and financial experts can collaborate in a win-win situation to facilitate the assessment of a green finance project in Hong Kong, with reference to the Green Finance Principal published in HKGFA [10]. As a green finance project is initiated, the project scope and profile can be first sent to sustainability engineering for technical assessment and support. Besides, analysing and quantifying the sustainability performance of the project, technical guidance and concerns can also be provided to ensure the safety and further enhance the design and system effectiveness. Based on the technical assessment, the financial experts can conduct financial assessment on the project, for instance, conducting financial risk management of the project with reference to the technical issues of the project, recommending the project to go for which green finance products, i.e. green bond, green loan or direct government subsidies and recommend the interest rate of green bond, etc. Together, the technical and financial assessment would further encourage the development of green finance market in Hong Kong.
The Hong Kong Monetary Authority (HKMA) seems to welcome the involvement of sustainability engineers in green bond assessment, stating that “the HKMA will collaborate with relevant international bodies to provide technical support to banks in Hong Kong to better understand the green principles and methodology in undertaking the baseline assessment” [11]. Yet, there is no information on the ‘relevant international bodies’ published by the HKMA by this time. On the other hand, the Securities and Futures Commission (SFC) has stated that there is a growing concern over the risk of ‘greenwashing’ due to the “lack of regulatory involvement in asset manager” [12]. Hence, it is recommended to involve sustainability engineer as part of the project team or certified body to provide technical support to the green bond assessment.

3. Case study of New World Group Corporate Portfolio

New World Development Company Limited (the Group) was founded in 1970 and was publicly listed in Hong Kong in 1972, and is a constituent stock of the Hong Kong Hang Seng Index. A premium brand infused with a unique personality defined by The Artisanal Movement, New World Group’s core business areas include property development, property investment, roads, aviation and construction. Its operations in Greater China, especially the Greater Bay Area, had a total asset value of approximately HK$503.3 billion (US$64.7 billion) as at 30 June 2019. In reference to the Group’s long-term business strategy and the United Nations Sustainable Development Goals, the “New World Sustainability Vision 2030” (NWSV2030) was developed to enrich the artisanal living experience with products and initiatives that demonstrate one or more of the four focus areas to individual customers. The focus areas include 1) Green (environmental protection), 2) Wellness (promotion of healthy living), 3) Smart (technology adoption) and 4) Caring (for all community stakeholders).

With the Group’s diverse portfolio, together with businesses covering the whole value chain of property development, enables the company to adopt a whole lifecycle approach to property development. The Group’s Sustainability Building Policy [13] provides practical guidance for achieving a sustainable property development lifecycle, from project design and construction to property management and stakeholder engagement applicable to new and existing buildings.

Below presents the New World Development Green Finance Framework, which is the foundation for the Group’s first Green Loan and Green Bond. In addition to these two financing mechanism, the Group has also raised a 5-year HKD 1 billion sustainability-linked loan in equal tranches of HKD 500 million each for a term loan and a revolving loan in November 2019 [14]. This is the first sustainability-linked loan of NWD, the proceeds of which will be used for funding measures driving the long term sustainability targets and enhancing buildings’ climate resilience, as well as for general corporate funding and refinancing purposes. This novelty instrument is beyond the Green Bond Principles, with alternative financial arrangement. A discount on the interest rate of the loan will be provided when NWD achieves pre-determined sustainability milestones, including NWD’s environmental impact reduction targets (refer to table below) which form part of the Group-wide SV2030 targets, as well as the key performance indicators ranked annually by GRESB. This loan is the first in Asia to link with GRESB performance.

3.1 New World Development Green Finance Framework

NWD is a founding member of the Hong Kong Green Finance Association and demonstrates their support for the HKSAR Government’s efforts to establish Hong Kong as the regional green finance hub. Prior to the establishment of HKGFA, the Group developed a bespoke Green Finance Framework (the “Framework”) in March 2018. The Framework demonstrates how the Group and its other entities, including New World China Land Limited (“NWCL”) and K11 Group Limited (“K11”) will create investment opportunities for related financial partners that deliver funds for application to the solutions emerging from the NW SV2030, particularly those related to improving the environmental performance
of their buildings/landscape and the communities in which they are located, as well as the health of their building/landscape users [15].

Fundraising will include bonds and loans with structures tailored to contribute to sustainable development by application of the proceeds to Eligible Projects as defined in this Framework. Bonds issued under the Framework will be aligned with the Green Bond Principles 2018, while loans borrowed under the Framework will be aligned with the Green Loan Principles 2018. The Framework was also reviewed by Sustainalytics, an independent environmental, social and governance (ESG) research and rating provider. The Group also has an internal Green Finance Review Panel is in place to propose eligible projects for endorsement by senior management. The Framework includes six categories, including Green Buildings (with reference to green building standards), Green landscapes, Energy Efficiency and Renewable Energy, Waster Management, Waste Management and Climate Change Adaption. The eligibility criteria of each category are listed under Table 1:

Table 1 Eligibility criteria of each category in the Framework

| Category                          | Eligibility criteria                                                                                                                                                                                                 |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Green Buildings                  | Development/redevelopment of residential, commercial and retail buildings to be certified by a third party in accordance with any one or more of the following green building standards:  
  - Hong Kong BEAM Plus (Gold or above);  
  - China Green Building Evaluation Standard (Two-star or above); and  
  - LEED (Gold or above)  
  These green buildings may additionally achieve a certification (any level) of any version of the WELL Building Standard™ with the aim of improving the environmental health of the buildings and the overall well-being of their occupants.  
  Refurbishment and/or tenant engagement initiatives that will reduce building environmental impact and improve the health and well-being of occupants in accordance with BEAM Plus, the China Green Building Evaluation Standard or LEED Existing Building standard;  
  Research & Development/procurement of building materials and technologies that fulfil the requirements of the listed green/healthy building standards; |
| Green Landscapes                 | Development/redevelopment of landscapes to be certified by a third party in accordance with the Sustainable SITES Initiative™ (SITES) (any level); in addition to any or more of the following standards:  
  - Hong Kong BEAM Plus (Gold or above);  
  - China Green Building Evaluation Standard (Two-star or above); and  
  - LEED (Gold or above) |
| Energy Efficiency and Renewable Energy | Projects that will achieve at least a 10% improvement in energy efficiency through technology adoption or equipment upgrades in new/existing buildings;  
  Renewable energy system adoption to reduce the consumption of fossil fuel based sources |
| Water Management                 | Projects that will improve water efficiency through sustainable design (e.g. “Sponge City” concept) and wastewater recycling and treatment system installation |
| Waste Management                 | Projects that will reduce waste volume or divert waste from landfills and/or encourage recycling, upcycling, and composting, such as installation of food decomposers and other waste management technologies |
| Climate Change Adaptation        | Projects that will strengthen building/landscape resilience to climate change impacts such as extreme weather events and natural disasters, e.g. installation and upgrades of enhanced flood protection systems, additional insulation, etc. |

Since the establishment of the Framework, the Group has completed transactions of over US$776.1 million of Green Bond and Green Loan under Green Buildings Category. The first transaction was Hong Kong’s first green loan raised in March 2018 for a certified green commercial re-development project, now named K11 ATELIER King’s Road, North Point, Hong Kong. The project was completed in 2019 and has achieved Platinum level of the WELL Building Standard™, Hong Kong BEAM Plus Provisional Certification and the U.S. LEED certification as of Jan 2020. It has received a Green Finance Certificate (pre-issuance) from the Hong Kong Quality Assurance Agency (HKQAA). Subsequently,
the “New World China First Green Bond” (ISIN Code: XS1915712233) was issued on 5 December 2018 under NWCL’s USD 2 billion medium-term note programme. This USD 310 million green bond carries a coupon rate of 4.75% and a 5-year maturity due 2023. The proceeds from the green bond are used to finance the following two green projects in the Greater Bay Area, both due for completion by the end of 2021. The “New World China First Green Bond” had received the “Green Finance Certificate (Pre-issuance)” from Hong Kong Quality Assurance Agency and recognised by an international financial magazine – The Asset, achieved the “Best Green Bond — Real Estate (Asia-Pacific region)” award [14].

4. Challenge and Opportunity in Green Financing
Despite its huge site constraints, the grade A office redevelopment building features more than 70 sustainability strategies aligning with 11 UNSDGs, with the involvement of sustainability engineer in the project team. The building is designed to target platinum rating in local green building certification BEAM Plus New Buildings and achieved international certification at platinum rating of LEED and WELL Building Standard.

The key sustainability strategies in K11 ATELIER King’s Road for Green Building Criteria are highlighted:

- Renewable Energy Use: The largest photovoltaic & thermal (PVT) system in Asia is installed on the roof, with an annual energy generation of 1.3% of the total building energy use. The co-generation of electricity and hot water from PVT system enhance the energy efficiency.
- Energy Efficient System: Energy savings of 34% is achieved against the ASHRAE standard and by incorporating passive and active design with over 12 key energy saving measures. Smart metering is also crucial for monitoring the energy consumption data in order to facilitate the future energy saving opportunity.
- Excessive Greenery: An area of 6,700m$^2$ is planted on the building envelope, which is equivalent to 220% of its site area, approximately 26 tennis courts. As the building is located in urban context of “concrete jungle”, this extensive greenery is appreciated by the neighbourhood.

Challenge emerges as there is currently no standardized technical assessment system on green building dedicated to green finance that can benchmark green buildings according to the corresponding building type and green features adopted. Hong Kong BEAM Plus is a local independent assessment system of building sustainability performance, which can provide an overview on the green performance of K11 ATELIER King’s Road. With the highest platinum rating, the project is ranked among the top 12% according to the its project directory and statistics [16], as shown in Figure 3. However, the BEAM Plus system poses limitation in green finance as it does not serve to quantify the sustainability impact and benchmark the sustainability performance.
Accordingly, opportunity arises in standardizing and benchmarking environmental impact indicators for annual green finance related to impact reporting, while sustainability engineer provides technical support in reporting and benchmarking the relevant sustainability performance parameters. The impact reporting in green buildings can cover energy and carbon performance, water savings, waste management etc. [17]; [18]. It is also included as one of the action plan for financing sustainable growth by the European Commission with the aim to increase its market credibility by putting emphasis on the report transparency, data disclosure and portfolio basis with the use of qualitative performance indicators [19].

With the green finance benchmarking system, sustainability performance of outstanding projects can be quantified for future energy-saving and sustainability opportunities. For instance, K11 ATELIER King’s Road has a project annual operating energy use of 150 kWh/m² through the adoption of PVT, high performance chiller, etc. However, there is currently no database that can distinguish and monitor its performance among other commercial buildings that consists of office and exhibition hall, and that the effective sustainability measures and technology cannot be identified.

Furthermore, having a common standard would encourage more awareness and participation in green finance projects and support the global agenda of driving capital towards verified sustainable initiatives. Incentives, such as international reputation or further financial support, can be provided to participants to strive and perform further for the benefits of the environment.

Another reason for benchmarking the environmental impact/benefits of green finance projects is to facilitate the green finance market analysis. By understanding the market trends and patterns of green finance project in Hong Kong and the Greater Bay Area can be observed. These large numbers of indictors collected as information data allows sustainability engineers to analyse the effectiveness, practicality and performance of individual sustainability strategy in the market. Thus, providing the future improvement opportunities of sustainability. For instance, the most common and least popular renewable energy systems adopted in green finance project can be identified and analysed. As many sustainability strategies are in a prototype or pilot phase, more investment is needed to realize the new technology application. In conclusion, the proposed change of practice could enable the adoption of more sustainability strategies with greater environmental and social benefits.

5. Conclusion
Through global and regional observations and the case study of New World Development’s corporate portfolio including K11 ATELIER King’s Road, it is concluded that the development of green finance and green bond in the Greater Bay Area and Hong Kong will continue to develop. Sustainability engineers is recommended to play a part on improving the comparability and transparency of green impacts for green finance initiatives. The robustness of green impact measurement and disclosure will welcome more green investment in the Greater Bay Area, a region that urgently requires climate resilience improvement.
Acknowledgements

Would like to thank the Hong Kong Green Finance Association for their support and provision of green finance information and research materials.

References

[1] Acting Chief Executive Matthew Cheung, “Gov’t backs green financing.” Mar. 25, 2019. [Online]. Available: https://www.news.gov.hk/eng/2019/03/20190325/20190325_171653_647.html [Accessed Apr.4, 2020]

[2] OECD, UN Environment, and the World Bank Group, “Financing Climate Futures: Rethinking Infrastructure Policy Highlights.” OECD Publishing, Paris, 2018.

[3] HKEX, “Research Report The green bond trend: Global, Mainland China and Hong Kong.” Hong Kong: HKEX, 2018

[4] Paulson Institute, “China’s Green Finance Pilot Zones: Ready for Takeoff?”, Paulson Institute, Apr. 4, 2019. [Online]. Available: https://www.paulsoninstitute.org/green-finance/green-scene/chinas-green-finance-pilot-zones-ready-for-takeoff/ [Accessed Jan. 4, 2020]

[5] A. Whiteley, “New: China green Bond Market 2018 Report: China cements position as a leading green bond market with USD424bn issued in 2018,” Climate Bonds Initiative, Feb. 28, 2019. [Online]. Available: https://www.climatebonds.net/2019/02/new-china-green-bond-market-2018-report-2018-china-cements-position-leading-green [Accessed Jan. 4, 2020]

[6] Hong Kong Green Finance Association, “2018 Hong Kong Green Finance Forum & Launch of Hong Kong Green Finance Association (HKGFA),” Sep. 21, 2018. [Online]. Available: http://www.hkgreenfinance.org/newsdetail/28/#en [Accessed Jan. 4, 2020]

[7] Hong Kong Green Finance Association, “HKGFA 2019 Annual Forum “Fast Tracking Green Finance for the Greater Bay Area”,” Sep. 23, 2019. [Online]. Available: http://www.hkgreenfinance.org/newsdetail/70/#en [Accessed Jan. 4, 2020]

[8] European Commission, “Sustainable finance,” Mar. 21, 2019. [Online]. Available: https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance_en#commitments [Accessed Jan. 4, 2020]

[9] M. Migliorelli and P. Dessertine, “An Overview of Green Finance,” in The Rise of Green Finance in Europe. Palgrave Macmillan, 2019, Ch. 2, pp. 3-29

[10] Hong Kong Green Finance Association, “Our Guide to Green Finance,” 2019. [Online]. Available: http://www.hkgreenfinance.org/casedetail/47/#en [Accessed Jan. 4, 2020]

[11] Hong Kong Monetary Authority, “HKMA introduces key measures on sustainable banking and green finance,” May 7, 2019. [Online]. Available: https://www.hkma.gov.hk/eng/news-and-media/press-releases/2019/05/20190507-4/ [Accessed Jan. 4, 2020]

[12] Securities and Futures Commission, “Strategic Framework for Green Finance,” 2018. [Online]. Available: https://www.sfc.hk/en/ER/PDF/SFCs%20Strategic%20Framework%20for%20Green%20Finance-%202018%20Final%20Report%20(21%20Sept%202018...pdf [Accessed Jan. 4, 2020]

[13] New World Development Company Limited, “Sustainable Building Policy,” 2012. [Online]. Available: https://www.nwd.com.hk/sustainability/storage/policy/Sustainable_Building_Policy.pdf [Accessed Jan. 4, 2020]

[14] New World Development Company Limited, “Sustainability Report 2019 – New World New Purpose.” 2019. [Online]. Available: https://www.nwd.com.hk/sustainability/storage/report/NWD_SR2019_EN.pdf [Accessed Jan. 4, 2020]

[15] New World Development Company Limited, “New World Development Green Finance Framework,’ 2018. [Online]. Available: https://www.nwd.com.hk/sustainability/storage/group/NWDGreenFinanceFrameworkFinal20Mar2018_v1.pdf [Accessed Jan. 4, 2020]

[16] Hong Kong Green Building Council, “BEAM Plus Project Directory and Statistics,” 2012. [Online]. Available: https://www.hkgbc.org.hk/eng beam-plus beam-plus-dir-stat BEAMPlusDirectory.jsp. [Accessed Mar. 20, 2020]

[17] International Capital Market Association, “The GBP Impact Reporting Working Group – Suggested Impact Reporting Metrics for Green Building Projects,” 2019. [Online]. Available: https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/Resource-Centre/Final-Green-Buildings-Reporting-Metrics-March-2019-including-Reporting-Templates-200319.pdf [Accessed Mar. 20, 2020]

[18] EU Technical Expert Group on Sustainable Finance, “Taxonomy: Final report of the Technical Expert Group on Sustainable Finance,” European Commission, 2020

[19] Financial Stability, Financial Services and Capital Markets Union, “Commission action plan on financing sustainable growth,” European Commission, 2018.

[20] R. Landberg, A. Massa and D. Pogkas, “Green Finance Is Now $31 Trillion and Growing,” Bloomberg, June 7, 2019, [Online]. Available: https://www.bloomberg.com/graphics/2019-green-finance/ [Accessed Jan. 4, 2020]

[21] D. Lehr, “China’s green finance model shows how saving the planet can also be a savvy investment,” South China Morning Post, Feb. 20, 2019. [Online]. Available: https://www.scmp.com/comment/insight-opinion/united-states/article/2186814/chinas-green-finance-model-shows-how-saving. [Accessed Jan. 4, 2020]