

HONG
KONG
2050
IS NOW

GREEN BUILDING RATING SYSTEMS

ENERGY BENCHMARKING STUDY

November 2020

EXECUTIVE
SUMMARY



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DISCLAIMER

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POINTS TO NOTE

A wide range of green building terminologies are used in the study. As the study provides a comparison across the GBRs, with each GBR having a slightly different glossary of green building terminologies, when referring to a particular GBR, the study tends to use the specific term that the GBR uses, for readers’ clear reference to the GBRs.

ABOUT CIVIC EXCHANGE

Civic Exchange is an independent Hong Kong public-policy think tank established in 2000 with a vision to shape a liveable and sustainable Hong Kong. Its mission is to engage society and influence public policy through in-depth research, dialogue, and the development of practical solutions. With research covering four areas — environmental, economic, social, and governance—Civic Exchange has been ranked among the top 50 environmental think tanks in the world by the Lauder Institute at the University of Pennsylvania since 2011.

ABOUT THE HONG KONG GREEN FINANCE ASSOCIATION

Founded in September 2018, the Hong Kong Green Finance Association (HKGFA) is a platform that offers channels and opportunities to facilitate the development of green finance and sustainable investments in Hong Kong and beyond. It aims to mobilise public- and private-sector resources and talents in developing green finance policies, to promote business and product innovation within financial institutions. HKGFA's main goal is to position Hong Kong as a leading international green finance hub by providing greater access and opportunities for Hong Kong's financial institutions to participate in green financing transactions locally, in mainland China, and in markets along the Belt & Road Initiative. This is in line with the global trend of implementing the UN sustainable development goals and the Paris Agreement. Currently, the Association has members of over 100 financial institutions, companies, service providers and other key stakeholders.

ABOUT THE GREATER BAY AREA GREEN FINANCE ALLIANCE

The Greater Bay Area Green Finance Alliance (GBA-GFA) is a collaboration between the Hong Kong Green Finance Association (HKGFA), the Green Finance Committee of the Guangdong Society for Finance and Banking (GDGFC), the Green Finance Committee of the Financial Society of the Shenzhen Special Economic Zone (SZGFC), and the Macau Association of Banks. The Alliance aims to promote research and to incubate green investments that will benefit the GBA by leveraging the vast green investment demand in Guangdong and green finance capacities in Hong Kong and Macau.

ABOUT HONG KONG 2050 IS NOW

Hong Kong 2050 is Now is a partnership initiative led by Civic Exchange, World Resources Institute, ADM Capital Foundation and RS Group that seeks a pathway to carbon neutrality for Hong Kong. We aim both to inspire ambition and mobilise collective action to move Hong Kong through transition, along the way setting examples for how the city might mitigate the risks of climate change. To achieve this, we align diverse HK climate action, from policy to education to media and community engagement, all underpinned by sound evidence based research. The partnership was formed in response to the 2018 Intergovernmental Panel on Climate Change (IPCC) report that said without urgent, large-scale action, global warming is likely to reach 1.5 degrees Celsius above pre-industrial levels, with potentially significant and dangerous consequences globally. We believe that a decarbonised city not only is a safer city, but it is people-centric, more liveable, healthier and successful. That's what we want for Hong Kong.

ABOUT CECEPEC

CECEP Environmental Consulting Group Limited (CECEPEC) was established by the China Energy Conservation and Environmental Protection Group, the only state-owned company specialising in energy conservation, emissions reduction, and environmental protection. With our outstanding industry-specific professional expertise, CECEPEC is committed to providing all-round solutions tailored for customers through our strong relationships with shareholders, and corporate governance consultancy teams composed of domestic and international experts. CECEPEC provides customers with a diverse range of professional consulting services, such as corporate sustainability consulting, green finance consulting and products, professional training and more. Clients and cooperative partners include national-level governmental authorities, business, and industry associations, multinational financial institutions, and brand-led organisations, which also proves our competency in our service quality and professionalism.

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BACKGROUND

China announced at the United Nations in September 2020 that it was setting the ambitious goal of becoming carbon neutral by 2060, a process that will generate trillions of dollars worth of green and sustainable finance investment opportunities. This decision was made in the context of the Paris Agreement, a framework which aims to limit global warming ideally to 1.5 degrees Celsius above pre-industrial levels.

In Hong Kong's uniquely high-density built environment, activities in buildings account for more than 90% of electricity consumption and 60% of greenhouse gas emissions. Reducing energy consumption in buildings is therefore crucial, especially in the short- and medium-term, before the power supply is fully decarbonised.

The Green Building Project, a collaboration between Hong Kong 2050 is Now and the Greater Bay Area Green Finance Alliance (GBA-GFA), aims to decarbonise the region, using Hong Kong as a pilot, and to maximise green finance opportunities in the building industry. Hong Kong must develop a concrete plan to transform the city into a zero-emissions economy and society.

This study, which covers green building certification energy benchmarking, is part of the Green Building Project's multi-pronged approach, which will also include research, policy gap analysis, and the development of finance solutions.

ABOUT THE STUDY

Green Building Rating Systems (GBRSs) play a key role in assessing environmental impact and sustainability, and in facilitating decarbonisation in the building sector.

Eight GBRSs were chosen for this comparative study: CGBL, BEAM Plus, BREEAM, Green Mark, Green Star, LEED, EDGE, and NABERS Energy. They are categorised into two main types: scoring-based rating systems and performance-based rating systems, based on their certification methodologies. Of these, BEAM Plus is a Hong Kong-based GBRS and the others are from other jurisdictions.

This study compares the similarities and differences between the GBRSs, in particular taking a deep dive into energy-related requirements. The purpose is to gain insight into whether existing GBRSs sufficiently facilitate decarbonisation in the building sector.

HIGHLIGHTS

1

The study finds that the energy aspects of the two performance-based rating systems, EDGE and NABERS, constitute a significantly higher percentage to the overall certification, compared to scoring-based rating systems.

2

Clearly defined energy savings requirements at each certification levels are crucial for the building sector to move towards net zero, with a clear pathway towards 100% energy savings. Six out of eight GBRs (BREEAM and NABERS Energy are out of scope for this exercise) were examined, only EDGE and Green Star recognise 100% energy saving, and LEED recognises up to 50%.

3

While on-site renewable energy is widely accepted by the eight examined GBRs, less than half of the GBRs accept both off-site renewable energy (Green Power, RECs) and carbon mitigation projects.

4

Incentives are the key drivers for GBRs to scale up. In Hong Kong, since the roll out of the Gross Floor Area (GFA) concession incentive, around 60% of new buildings have applied for BEAM Plus assessment and more than 95% of the projects have applied for GFA concessions, based on a BEAM Society Ltd (BSL) estimation. Singapore provides financial incentives on retrofitting with Green Mark, which can be used as a case study for Hong Kong.

5

Actual energy performance data is still lacking in Hong Kong, as ongoing monitoring and data disclosure are not prerequisites for GBRs certification. One exception is NABERS, in which the Australia government requires office space over 1,000m² to disclose energy performance data and certification needs to be renewed annually. LEED sets actual energy data monitoring as a prerequisite, but data is only shared with certification bodies. The role of regulation will be further examined in the Building Policy Decarbonisation Report.

6

For existing buildings, actual operational energy performance data should be used to measure the accuracy of energy efficiency achieved for certification, enhancing energy data transparency, and incentivising the green transformation of the building industry.

7

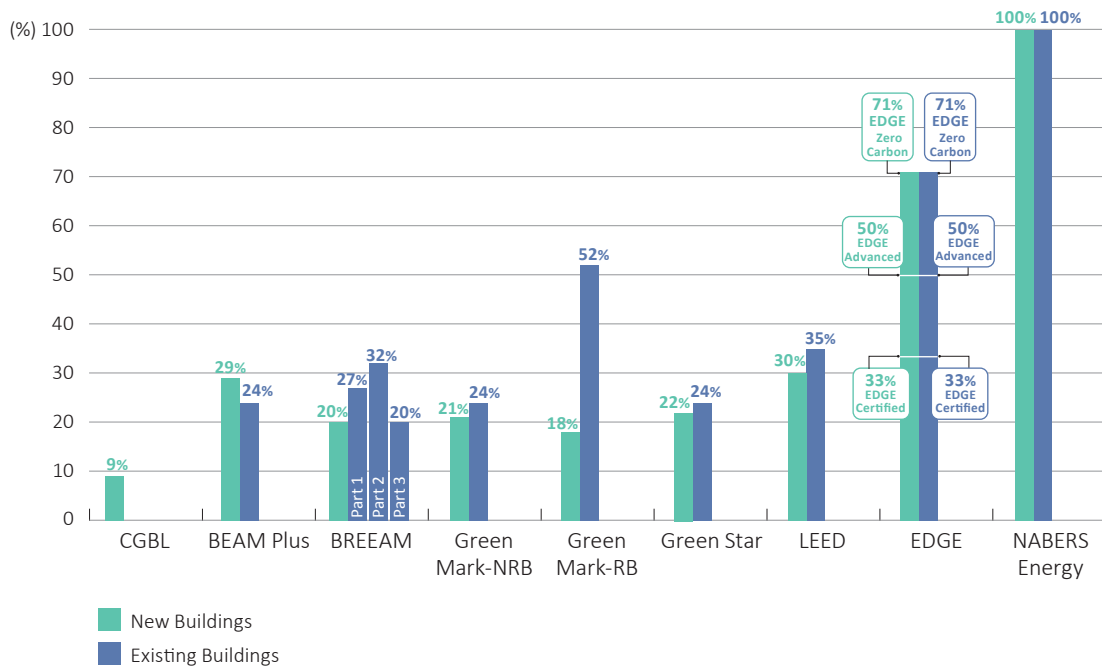
Opportunities are identified for BEAM Plus, the Hong Kong GBRs, to collaborate with performance-based GBRs to enhance operational energy performance and transparency, in order to further market coverage and to attract international investors.

FINDINGS

The energy aspects of performance-based rating systems, EDGE and NABERS, contribute a significantly higher percentage to the overall certification, compared to scoring-based rating systems. Although the energy aspect is one of the top three contributors across all GBRs in both new and existing buildings, the contribution varies largely, in particular between scoring-based and performance-based rating systems (Figure ES-1). Performance-based rating systems (NABERS Energy and EDGE) outperform in terms of total energy aspect contribution to the overall rating, ranging between 33% (EDGE) to 100% (NABERS Energy), across both new and existing buildings. NABERS Energy is the only standalone energy certification in which a compulsory green building certification is required, in this case by the Australian authorities. EDGE has the highest total energy contribution to the overall certification when compared to all the voluntary GBRs across both new and existing buildings, ranging between 33% and 71%, according to different certification levels. Scoring-based rating systems' total energy aspect contribution range between 9% (CGBL) and 30% (LEED) for new buildings and between 20% (BREEAM) and 52% (Green Mark) for existing buildings.

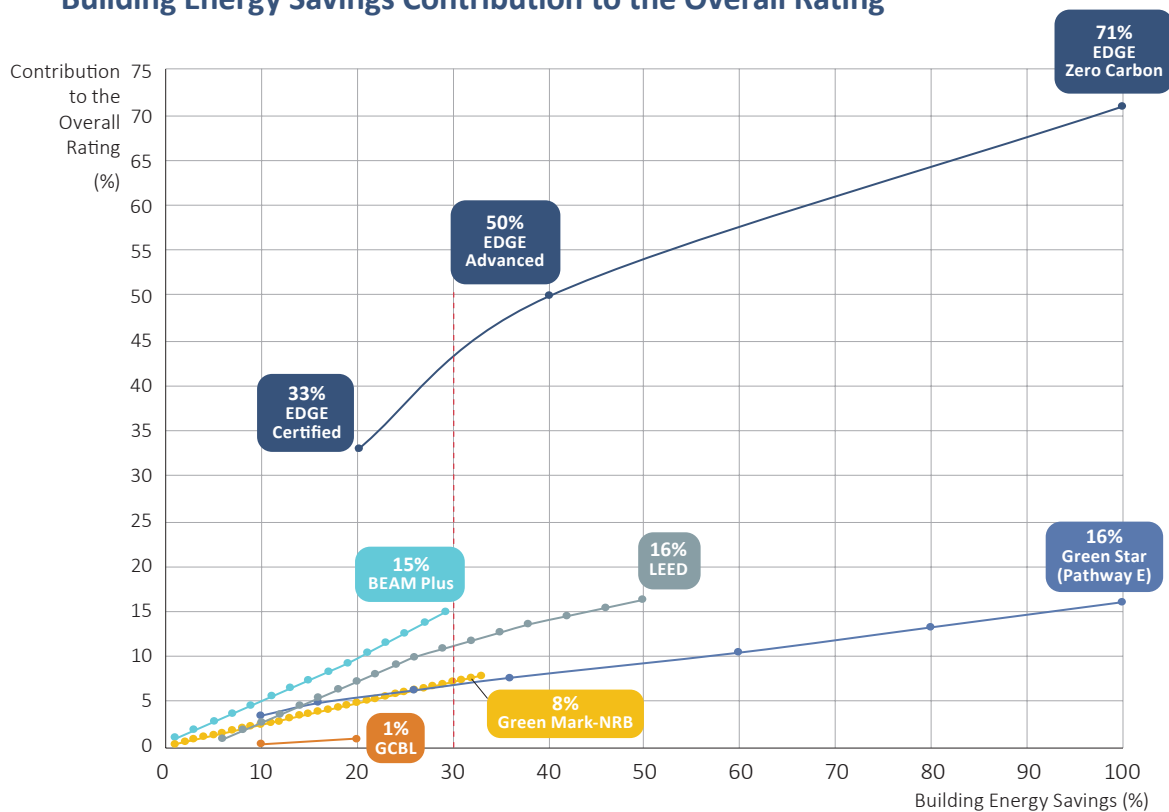
FIGURE ES-1

Energy Aspect of the Overall Rating



Improving energy efficiency and incorporating renewable energy strategies can help buildings reach net zero. The study looks into the requirements of GBRs on overall energy saving and renewable energy. It compares the energy saving requirements across GBRs (BREEAM and NABERS Energy are out of scope for this exercise). Among the six other GBRs, only two (Green Star and EDGE) award scores or certification for recognising energy saving up to 100%, which is an important factor for moving towards net zero. The remaining four GBRs provide limited recognition for building energy savings. (Figure ES-2)

FIGURE ES-2
Building Energy Savings Contribution to the Overall Rating



The study examines the GBRs’ renewable energy requirements. All allow on-site carbon emissions offset, however the level of contributions varies largely: 33% to 100% from performance-based rating systems on both new and existing buildings vs. <11% and <5% on all scoring-based GBRs for new and existing buildings respectively. (Figures ES-3 and ES-4)

Both performance-based GBRs, EDGE and NABERS Energy, recognise carbon emission offset with off-site renewable energy and carbon mitigation projects. EDGE awards Zero Carbon certification to project buildings that achieve carbon neutrality with 40% or more energy savings on-site, then achieving 100% through on-site renewable energy, off-site renewable energy, or carbon mitigation projects. NABERS provides a Climate Active Carbon Neutral Building Certification for project buildings that achieve full carbon neutrality. For scoring-based rating systems, only Green Star provides meaningful recognition on off-site renewable energy and carbon mitigation projects, at an overall contribution of 16% and 23% on new and existing buildings respectively.

FIGURE ES-3

On-site Renewable Energy Contribution to the Overall Rating for New Buildings

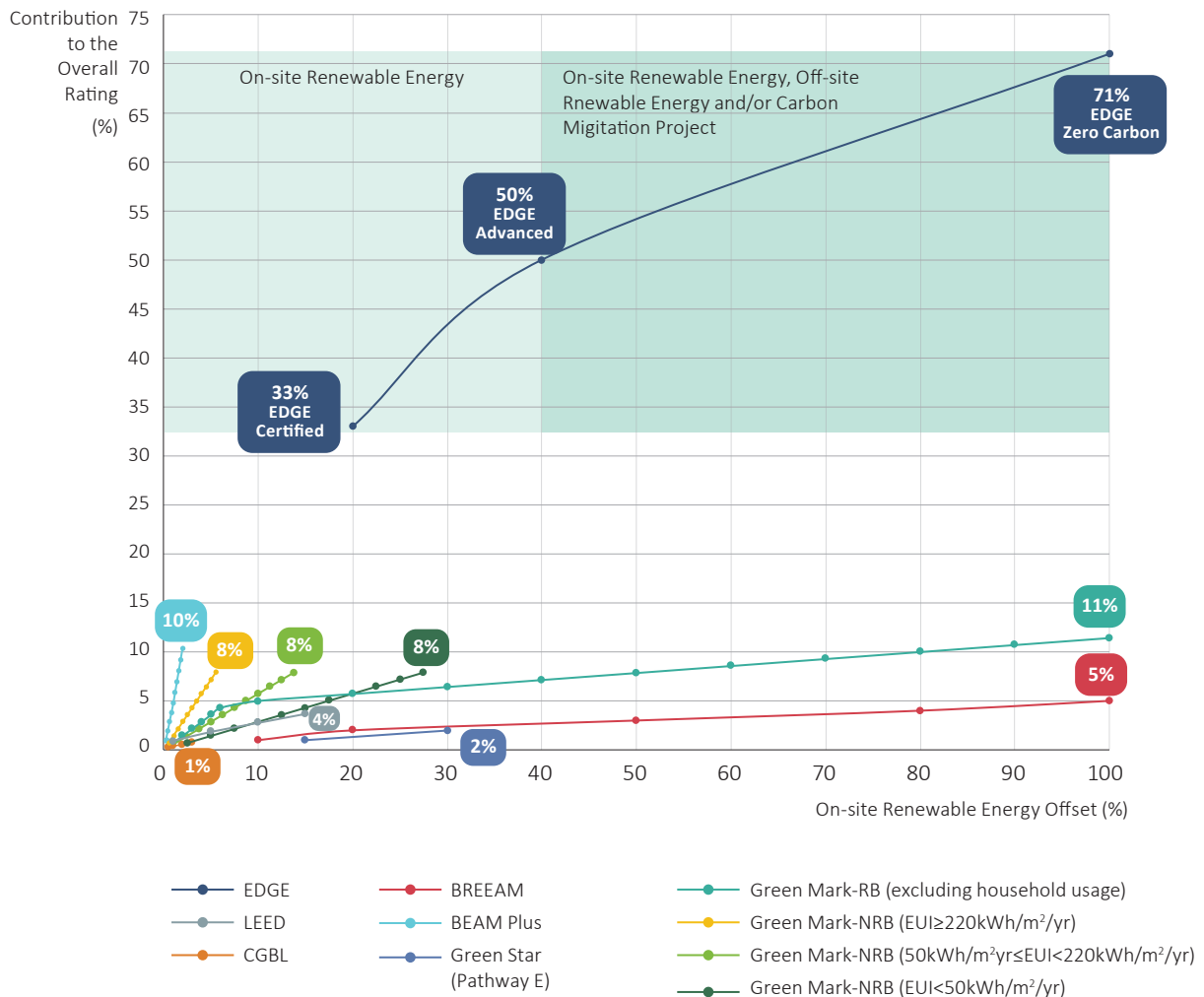
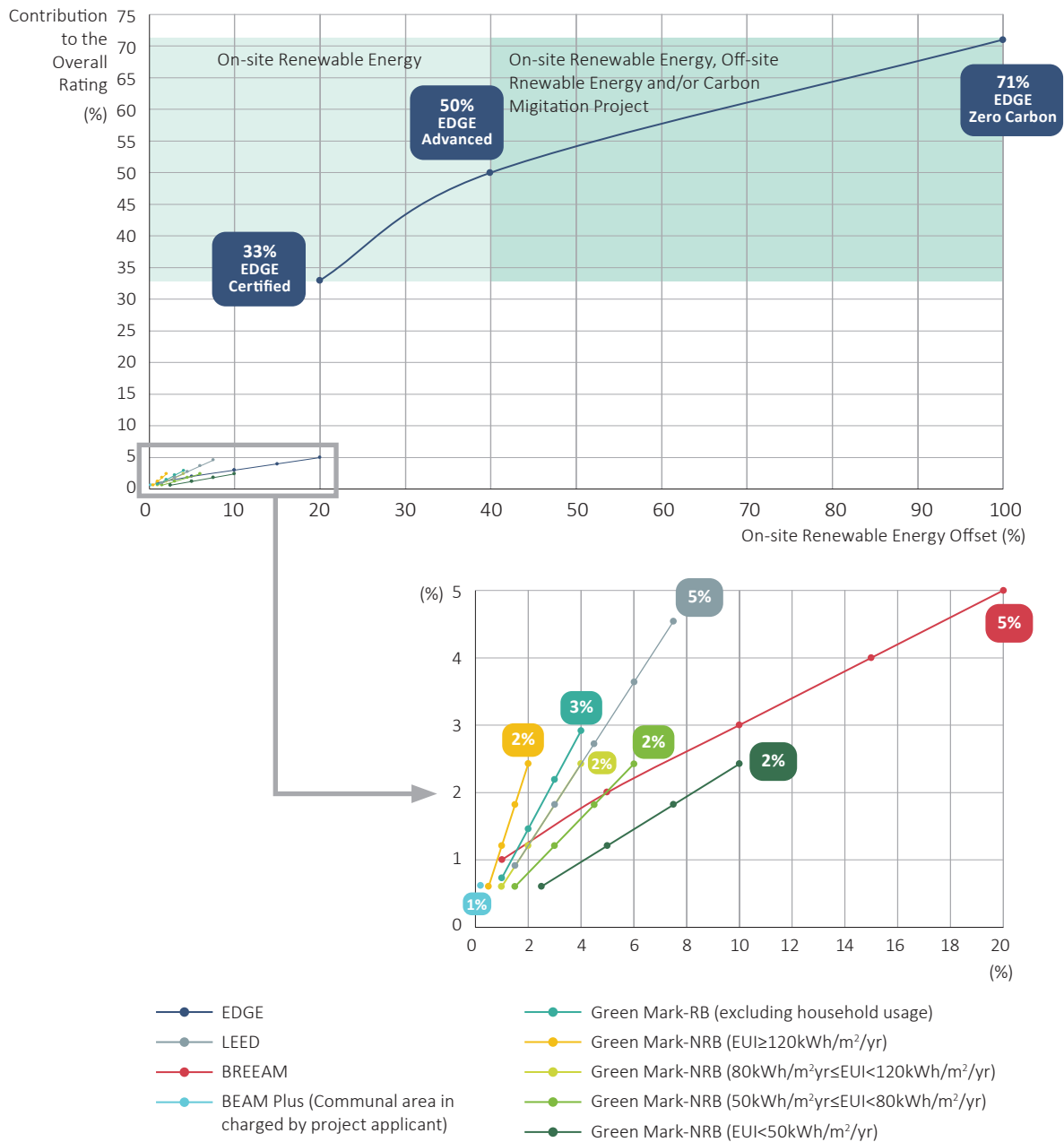


FIGURE ES-4

On-site Renewable Energy Contribution to the Overall Rating for Existing Buildings



Most of the GBRs do not validate the actual operational energy performance of new buildings before certification. Before the completion of certification, only NABERS Energy, Green Mark and EDGE (Zero Carbon) require new buildings to provide actual energy data for at least one year to validate their actual energy efficiency. Moreover, ongoing energy data monitoring and disclosure after the award of certification is not a mandatory requirement for most of the GBRs, except LEED.

RECOMMENDATIONS

GBRSs play a key role in guiding the building industry to transitioning to net zero. This section lays out some recommendations for GBRSs to consider in general, and for the Hong Kong building sector specifically.

General

1. In order to provide a clearer illustration of the buildings' energy performance, GBRSs' energy performance requirements must be clearly defined at each certification level, with a clear pathway towards 100% energy saving. For examples, EDGE requires 20% for EDGE Certified, 40% for EDGE Advanced, and 100% for Zero Carbon Certification.
2. GBRSs should fully recognise carbon emission reductions from both on- and off-site renewable energy, and from carbon mitigation projects.
3. GBRSs should be recognised by international green and sustainable finance certification bodies or principles, e.g. the International Capital Market Association (ICMA)¹, the Climate Bonds Initiative (CBI)², the Asia Pacific Loan Market Association (APLMA)³, to immediately qualify for international investors.
4. Ongoing energy data monitoring should be set as a prerequisite.
5. Local incentives should be tightened to encourage the building sector to move towards net zero, including energy data performance and disclosure, life cycle assessment on carbon emissions, and by achieving certain GBRS certification levels. This will be further examined separately in the Building Policy Decarbonisation Report.

Hong Kong

Short-term

- BEAM Plus (the Hong Kong GBRS) should consider collaboration with EDGE, i.e. dual certifications, as EDGE already covers items #1-3 and is the least labour- and technically intense.
- BEAM Plus should enhance operational energy certification with tools to quantify carbon emissions.
- International GBRS coverage should be widened in Hong Kong. EDGE will roll out software coverage for Hong Kong.

Medium- to longer-term

- BEAM Plus should work towards being automatically recognised by international green and sustainable finance certification bodies.
- CBI should establish a Hong Kong low-carbon buildings criteria baseline as part of its Climate Bonds Standard Certification Scheme.
- A feasibility study should be conducted for Hong Kong to move towards mandatory disclosure on energy performance data.
- A one-stop energy performance collection centre should be established to host all building energy performance data and be made accessible to the public

ENDNOTES:

1. The International Capital Market Association provides services and assistance to participants in the international capital and securities markets. ICMA has published frameworks that are adopted globally for the issuance of green, social and sustainability bonds, such as the Green Bond Principles, the Social Bond Principles and the Sustainability-Linked Bonds..
2. The Climate Bonds Initiative is an international organisation focused on climate change solutions. CBI has developed the Climate Bonds Standard and Certification Scheme, a labelling scheme for bonds and loans to ensure that bonds and loans are consistent with the 2 degrees Celsius warming limit in the Paris Agreement.
3. The Asia Pacific Loan Market Association represents the interests of institutions active in the syndicated loan markets in the Asia-Pacific region. APLMA is one of the developers of the Green Loan Principles.