



BUSINESS
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Climate Readiness of the Construction Sector in Hong Kong

SECTOR BRIEFING



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1. Background

Business Environment Council (BEC) is supported by NWS Holdings Limited in conducting a study over the group's climate readiness for four selected sectors, namely construction, insurance, logistics, and facilities management.

The objective of this study is to comprehensively assess the level of understanding among businesses regarding the concept of net-zero. It aims to gain insights into how businesses are actively striving towards achieving net-zero goals and to understand the good practices followed by various sectors and industries in this regard. Additionally, the study aims to recognise the awareness among businesses about the global trend towards net-zero and to identify the priorities and measures that can assist them in achieving net-zero targets. By examining these points, the study seeks to provide a comprehensive understanding of the current state of businesses' efforts towards net-zero and offer valuable recommendations for achieving a sustainable and environmentally friendly future.

A comprehensive approach was adopted for this study, combining desktop research, stakeholder engagement, and expert input. It involved conducting focus group discussions with sector experts to gain an understanding of the challenges they face within their sector and gain insights into their progress towards climate transition. It mainly discussed the construction sector's engagement and response to climate change, including awareness of global net-zero emissions trends and familiarity with concepts like "climate transition," "carbon neutrality," and "net-zero." The challenges faced by the construction sector in achieving climate transition were discussed, along with potential incentives and policies to accelerate this transition. Additionally, the feasibility of establishing shared carbon reduction goals within the sector was deliberated. Following the focus group discussion, an online survey was distributed to stakeholders to gather their input. This multi-faceted approach ensures a holistic understanding of the sector's climate transition progress and captures diverse perspectives from key stakeholders.

This Sector Briefing summarises the performance and challenges of the construction sector in relation to its climate readiness, drawing on insights obtained from stakeholder engagement. It offers valuable recommendations that can support the sector in its efforts towards a sustainable and environmentally friendly future. By assessing the sector's current state, challenges and providing actionable insights, this briefing aims to contribute to the construction industry's transition to a low-carbon economy.

2. Global Lens



Image credit: Canva

The global trend in decarbonisation is gradually increasing, with many countries, companies and organisations setting ambitious targets to reduce their greenhouse gas emissions.

The 2015 Paris Agreement committed countries to limit global warming to below 2°C above pre-industrial levels, with efforts to achieve a limit of 1.5°C. This agreement has driven global decarbonisation efforts as countries strive to reduce greenhouse gas emissions and transition to a low-carbon economy. Recognising the urgent and irreversible threat of climate change, the Agreement calls on nations to take action to mitigate emissions and enhance resilience to climate impacts.

Countries have set decarbonisation targets in response to this, aiming for net-zero emissions by 2050 or earlier. However, significant challenges remain in achieving decarbonisation. This will necessitate sustained efforts from governments, companies, and individuals to invest in multiple sectors, implement emission reduction policies and regulations, and adopt behavioural changes. Globally, the construction sector recognises the increasing importance of climate readiness in its operations. With its long-lasting products like buildings and infrastructure, the construction industry is particularly vulnerable to these impacts. It is also a significant contributor to greenhouse gas emissions, with buildings alone accounting for approximately 39% of energy-related carbon dioxide emissions (World Green Building Council, 2019). The sector's emissions, known as embodied carbon, are released during manufacturing, transportation, construction, and end-of-life phases of built assets. Historically, these emissions have been overlooked, despite contributing at least 11% of global carbon emissions (World Green Building Council, 2019). Given these factors, the construction industry plays a crucial role in global climate change mitigation and enhancing climate readiness.

3. Hong Kong's Climate Readiness in the Construction Sector

Climate change poses a myriad of risks to the construction sector. Sea-level rise and increased frequency of extreme weather events threaten the structural integrity of existing buildings and the feasibility of future projects. It is crucial for the sector to adapt and mitigate these impacts to ensure its sustainability and resilience.

Hong Kong, a global city known for its towering skyscrapers, faces unique challenges in the face of climate change. With its densely populated urban areas and limited land resources, the city faces challenges in adapting to changing weather patterns, sea level rise, and extreme weather events. The construction sector in Hong Kong is a critical industry that plays a vital role in the city's climate resilience efforts. This sector is responsible for building and maintaining the city's infrastructure and buildings, which are essential in providing a safe and comfortable environment for its residents.

3.1 Current State of the Construction Sector

Hong Kong's construction sector is a significant contributor to the city's economy, accounting for around 5% of its gross domestic product (GDP) (Construction Industry Council, 2018). The sector is responsible for building and maintaining the city's infrastructure and buildings, including schools, hospitals, residential buildings, and commercial properties. Buildings-related activities in Hong Kong account for 90% of the total electricity consumption while contributing over 60% of carbon emissions attributed to generating electricity for our buildings (Hong Kong Environmental Bureau, 2021), making industry decarbonisation critical.

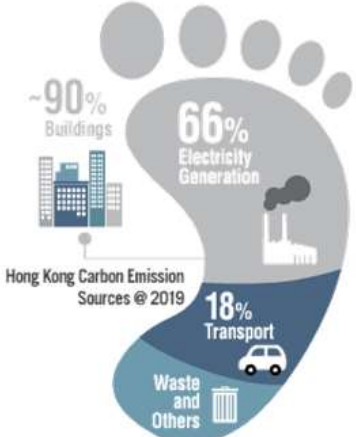


Image credit: Environment and Ecology Bureau

The Hong Kong government has set ambitious carbon reduction targets for the built environment sector, implementing various initiatives and policies to promote sustainable building practices and reduce greenhouse gas emissions.

3.2 Policy Measures and Regulations

In response to global calls for climate action, the Hong Kong Government has implemented policies and regulations, together with efforts from industry players, to promote sustainability in the construction sector.

Decarbonisation Strategies - Hong Kong's Climate Action Plan 2050

The Government launched the Hong Kong's Climate Action Plan 2050 in 2021, outlining the strategies and targets for combating climate change and achieving carbon neutrality (Hong Kong Environmental Bureau, 2021). Leading Hong Kong towards the goal of carbon neutrality by 2050, the new plan outlined the four major decarbonisation strategies and measures, namely Net-zero Electricity Generation, Energy-saving and Green Buildings, Waste Reduction, and Green Transport. The government has actively promoted energy-saving and green building measures, with the aim to gradually reduce the electricity consumption of new and existing commercial buildings by 30 to 40% and that of residential buildings by 20% to 30% from 2015 by 2050, and to achieve half of the above targets by 2035.

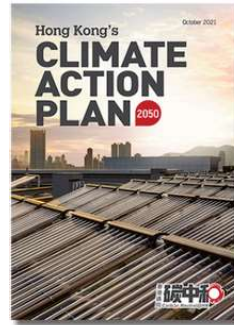


Image credit: Environment and Ecology Bureau



Image credit: Environment and Ecology Bureau

Energy Saving Blueprint - Energy Saving Plan

The Energy Saving Plan for Hong Kong's Built Environment 2015-2025+ was launched in 2015. The plan aims to reduce the energy consumption of buildings by 40% by 2025 and increase energy efficiency by 40% (Hong Kong Environment Bureau et al., 2015). To achieve this goal, the plan includes various strategies, such as promoting the use of renewable energy, improving energy efficiency in existing buildings, and promoting the development of green buildings.

Construction Requirement - BEAM Plus New Buildings 2.0

BEAM Plus is a widely recognised and respected certification scheme in Hong Kong that assesses and evaluates the environmental performance of buildings. It covers a wide range of environmental aspects, including energy efficiency, indoor environmental quality, and water conservation, among others (Hong Kong Green Building Council Limited & BEAM Society Limited, 2019).

To further promote green building, certification by BEAM Plus is one of the prerequisites for the granting of gross floor area (GFA) concessions for certain green and amenity features in development projects since April 2011. BEAM Plus encourages the industry to utilise green building technologies, aligning with the recent policy announced by the Buildings Department through the Practice Notes "PNAP APP-151". Starting from June 30, 2024, building projects will generally need to obtain a "Gold" rating or above in order to be eligible for Gross Floor Area (GFA) concessions for green and amenity features. This effectively encourages the industry to strive for Gold or above certification. This demonstrates the direct link between achieving specific environmental performance targets through BEAM Plus NB and the potential for GFA concessions in new building developments.



Image credit: BEAM Society Limited

Consistent Data Reference - Construction Industry Carbon Assessment Tool



Image credit: Construction Industry Council

To facilitate the construction industry to contribute to the carbon reduction goal, the development of the Construction Industry Council (CIC) Carbon Assessment Tool aims to create a common platform to extract available data and evaluate the carbon performance of buildings and infrastructure in Hong Kong from raw material extraction to the end of construction. It provides a user-friendly and common platform with localised carbon emissions data, benchmarks for both new buildings and infrastructure projects, and compatibility with BEAM Plus, carbon audits and ESG reporting. The tool is designed to develop carbon emission factors for over 300 construction materials, measure embodied carbon of construction materials and carbon emissions of on-site construction processes, as well as analyse the carbon performance of construction projects and establish carbon reduction targets for the construction industry.

Standardised Good Practice Framework - Climate Change Framework for Built Environment

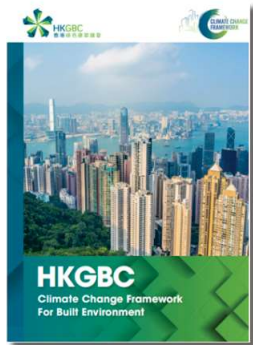


Image credit: Hong Kong Green Building Council Limited

In June 2023, the Hong Kong Green Building Council (HKGBC) published the “Climate Change Framework for Built Environment” (CCF), which can be seen as another milestone in establishing a more sustainable construction industry. The new Climate Change Framework contributes to standardising sustainable and ESG-aligned practices and catalyse climate transition in the construction industries (Hong Kong Green Building Council Limited, 2023). The best practices listed in the Framework capacitates practitioners to be aware of and distinguish sustainable construction activities and encourage them to adopt some of those practices in construction and development projects.

The Framework provides guidance on operational carbon management, climate risks assessment and disclosure in the context of the construction sector, climate adaptation and resilience, and even embodied carbon. As embodied carbon is usually the most significant carbon emission source throughout the life cycles of construction projects, the guidelines describe how practitioners can address embodied carbon and foster deeper decarbonisation of the construction industry.

4. Challenges

Overall, the construction sector in Hong Kong has taken significant progress towards achieving climate readiness. Through the adoption of relevant policies and standards, also green building practices, the industry has demonstrated its commitment to mitigating climate change and creating a more sustainable future.

Despite these efforts made in promoting sustainability and green practices, the construction sector in Hong Kong still faces several challenges that impede its climate readiness. These challenges stem from a variety of factors.



4.1 Top Down Approach

- **The statutory body plays an active role in promoting decarbonisation**

In Hong Kong, decarbonisation efforts are primarily driven by government policies and regulations, which are then implemented by developers and contractors in their projects.

Overreliance on top-down decarbonisation policy would also hamper decarbonisation progress. There is a lack of coordination and collaboration among stakeholders in the construction sector. This may be due to limited awareness of the common benefits, competing interests and priorities, and the absence of sufficient incentives and funding support. This fragmented working style makes it challenging to address environmental concerns and incorporate sustainable materials and construction methods into projects.

As a result, the construction sector may struggle to keep pace with evolving sustainability standards and miss opportunities to collectively enhance its environmental performance. There is a need for the construction sector to better address environmental issues, improve the collaboration among stakeholders, adopt more sustainable practices, and contribute to a greener and more sustainable future for Hong Kong together.

- **Role of contractor for decarbonisation is greatly influenced by developers**

Cultivating a working relationship between developers and contractors is particularly vital to advance decarbonisation. Contractors and subcontractors are the main parties who deliver the actual construction projects, their awareness of sustainability and green construction would determine if the final products are sustainable. Implementing sustainable practices may also require investments in new technologies, materials, and training, which can pose financial challenges for contractors, especially in highly competitive markets. There are currently not enough incentives for contractors to pursue decarbonisation efforts. For example, there may not be enough scores or credits given back to contractors for incorporating sustainable practices into their projects. This can make it difficult for contractors to justify the additional time and resources required to pursue decarbonisation. Therefore, developers must make sure the constructors integrate sustainability principles during the tender process and encourage them to contractually consider sustainability, in addition to cost consideration.

4.2 Limited Knowledge & Awareness

- **[Design Phase] – Working level stakeholders do not consider decarbonisation as their top priority while designing new buildings**

In the design phase, one significant challenge is that working-level stakeholders often do not prioritise decarbonisation when designing new buildings. Their focus may primarily be on other aspects such as functionality, aesthetics, or cost efficiency. Decarbonisation, which involves reducing carbon emissions and promoting sustainable practices, may not be given the attention it deserves. This lack of priority during the design phase can hinder the integration of environmentally friendly features and strategies into the building's blueprint, potentially resulting in missed opportunities for energy efficiency and sustainability.



Image credit: freepik

- **[Construction Phase] – Some stakeholders view decarbonisation as an additional cost and do not have immediate financial benefits**

Moving into the construction phase, another hurdle arises as some stakeholders perceive decarbonisation as an additional cost without immediate financial benefits. They may view sustainable practices and technologies as investments that do not provide immediate economic returns. This perspective can lead to resistance or reluctance in adopting decarbonisation measures, as stakeholders prioritise short-term financial considerations over long-term environmental sustainability. It is crucial to address these concerns and demonstrate the potential long-term financial advantages, such as energy savings and operational efficiencies, associated with decarbonisation.

Furthermore, practitioners involved in the construction phase may fail to recognise the intrinsic value of investing time and resources into decarbonisation. This oversight can stem from a lack of knowledge and awareness regarding the environmental and societal impacts of carbon emissions and climate change. Without a comprehensive understanding of the consequences of carbon emissions and the urgency of addressing climate change, practitioners may not fully appreciate the importance of integrating decarbonisation measures into their work.

In summary, addressing decarbonisation challenges requires addressing the lack of priority given to it by working-level stakeholders during both the design and construction phases. Education and awareness-building efforts are necessary to ensure that practitioners recognise the broader benefits and significance of decarbonisation as it is crucial to foster a greater appreciation for the value of investing in decarbonisation.

4.3 High Cost

In the realm of sustainable construction, there are persistent challenges that hinder the widespread adoption of green practices by developers and contractors. Two particular obstacles are the high upfront costs associated with green construction materials and the reluctance of contractors to allocate financial resources towards decarbonisation due to perceived additional costs without immediate financial benefits.

- **The high upfront cost of green construction discourages developers to adopt sustainability**

A significant obstacle is the high upfront cost of sustainable construction. Adopting sustainable design is an essential step in lowering the overall life cycle carbon emissions of a construction project. For example, using more sustainable and greener construction materials and integrating sustainable elements into the design of buildings are the best ways to reduce embodied carbon and operation carbon emitted by the users of the buildings at a later stage. However, even though these measures have proven to yield substantial long-term returns in terms of energy efficiency and operational cost savings, the initial investment in sustainable construction can be prohibitive. The higher price tags associated with eco-friendly materials and advanced technologies often deter developers from incorporating sustainable features into their projects. Consequently, there is a need to address the perception that green construction is cost-prohibitive by highlighting the potential long-term return on investment and the positive environmental impact.



Image credit: freepik

- **Contractors are passive to allocate financial resources towards decarbonisation**

The second challenge involves the passive attitude of contractors towards allocating financial resources towards decarbonisation. Many contractors view sustainability measures as additional costs that may not provide immediate financial benefits. This mindset, coupled with a competitive market, can discourage contractors from proactively embracing sustainable practices, for instance, incorporating energy-efficient design, adopting low-carbon building materials and effective waste management practices. However, it is essential to recognise that incorporating sustainable elements into construction projects can lead to significant advantages in the long run, such as reduced carbon footprint, improved resource management, enhanced market competitiveness and new business opportunities focused on sustainability. By considering the life cycle costs of buildings, contractors can demonstrate the value of sustainable construction by highlighting the reduced operational and maintenance expenses associated with energy-efficient systems, as well as the potential for increased market demand driven by environmentally conscious consumers. It is crucial to emphasise the long-term benefits and showcase successful case studies that highlight the positive financial and reputational outcomes of adopting sustainable construction practices.

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4.4 Methodology and Data Management

Methodology and data management play crucial roles in tracking and reporting sustainability performance within the industry. However, there are certain challenges that need to be addressed.

- **Lack of a standardised methodology in calculating whole life cycle carbon**

One of the major challenges is the lack of a standardised methodology in calculating the whole life cycle carbon. Without a consistent and widely accepted approach, organisations may struggle to accurately measure and compare their carbon emissions throughout the entire life cycle of their products or services. This inconsistency poses a hindrance to effectively managing and mitigating carbon footprints.

- **Lack of a standardised data platform hinders the industry from tracking and reporting sustainability performance**

Another challenge is the lack of a standardised data platform. The industry faces difficulties in tracking and reporting sustainability performance due to the absence of a unified system for managing and sharing sustainability-related data. This lack of a common platform hampers efforts to collect, analyse, and report sustainability data consistently across organisations. As a result, it becomes challenging to benchmark performance, identify areas for improvement, and establish industry-wide sustainability targets.

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4.5 Incomprehensive Coverage of Certifications

- **Limited certifications cover responsible sourcing of materials**

Another challenge in Hong Kong is the slow adoption of responsible sourcing practices, despite it being a growing international trend. This is particularly notable when considering that the Authority in Hong Kong does not provide a list of approved sustainable materials, and there are limited certifications covering this area. Since major developers are subject to increasingly stringent ESG and climate-related disclosure requirements, and more demands for sustainability data, many practitioners in the industry would like to see greater transparency and traceability of materials, from production to use, to reduce the risks of greenwashing and ensure that sustainable practices are being adopted throughout the supply chain.

As a result, more and more practitioners consider adopting responsible sourcing of their construction materials, which empowers developers, contractors and other practitioners to be engaged in deep decarbonisation, and particularly tackle their embodied carbon. Being able to trace all of the emissions associated with the purchased materials and understanding their environmental impact, especially their impact on climate change is necessary for developers to understand the accurate emissions of their entire value chain. Better still, responsible sourcing enables practitioners to identify areas of improvement, as they are able to evaluate where and how they can reduce the carbon emissions from construction materials.

5. Recommendations

Looking ahead, Hong Kong's construction sector is poised to play a vital role in the city's climate change mitigation and adaptation efforts. As the urgency to address climate change intensifies, the industry has witnessed a surge in innovation and the emergence of new markets. This transformation encompasses a broad spectrum of key players within the sector, including statutory bodies and industry practitioners, spanning the design, construction, and operation phases. To effectively combat climate change, it is essential for all stakeholders in the construction sector to collaborate and align their efforts.



Image credit: canva

Statutory Body



Image credit: canva

Industry Practitioners (Design Phase)

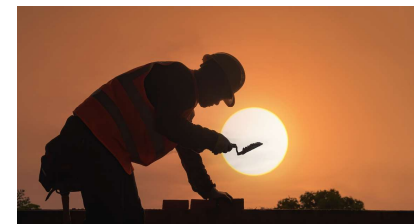


Image credit: canva

Industry Practitioners (Construction and Operation Phase)

Statutory Body

The Hong Kong government has set a target of achieving carbon neutrality by 2050, but there is a lack of clear policies and regulations to support this target and ensure sustainable practices are being adopted across the sector.

Decarbonisation efforts in the Hong Kong construction sector are mainly driven by developers. Developers are often the main decision-makers when it comes to building design and construction, and they have the power to influence the sustainability of a building. Many developers are now recognising the importance of decarbonisation and are taking proactive steps to incorporate sustainable practices into their projects. This includes the use of sustainable materials, energy-efficient design, and renewable energy sources, among others.

To address this gap, there is a need for more policy support in Hong Kong to incentivise the adoption of sustainable practices in the construction sector. This could include incentives for the adoption of sustainable materials and practices. By providing clear policies and regulations, Hong Kong can accelerate its decarbonisation efforts and become a leader in sustainable construction in the Asia-Pacific region. The involvement of statutory bodies, such as government agencies and regulatory authorities, would ensure that environmental considerations are integrated into the decision-making processes from the early stages of project planning, ultimately leading to reduced carbon emissions and enhanced climate resilience.

5.1 Statutory Body

01 Put BEAM Plus certification as a mandatory requirement for all new buildings

Capacity and expertise should be built by first implementing potential decarbonisation strategies on public projects. Since 2009, all new government buildings with construction floor area of more than 10,000 square meters have been targeting to achieve at least a “Gold” rating under BEAM Plus. From October 2015, this target was further expanded to cover all new government buildings with construction floor area of more than 5,000 square meters and with central air conditioning. From 2015-2016, all new public housing projects would aim to attain the performance equivalent to BEAM Plus Gold or above (The Government of the Hong Kong Special Administrative Region, 2022).



It is noted that the practice of adopting BEAM Plus has been well established for government buildings, and is considered suitable for widespread adoption. Currently, BEAM Plus is a voluntary rating scheme for non-government projects, it is recommended that the certification be extended beyond government projects and made mandatory for all new buildings. Thus, the construction industry as a whole will be encouraged to adopt best practices in sustainability. Transforming BEAM Plus from a voluntary scheme to a mandatory requirement will ensure consistent adherence to sustainable building standards and drive the industry towards a greener future.

02 Mandate to conduct a whole life cycle assessment in statutory body's tenders

The Government should embed a whole life approach to sustainability, including carbon management and wider environmental benefits during the development of the business case, then into the project design phase. Referencing the UK, the contracting authorities should require a Whole-Life Carbon Assessment (WLCA) to be conducted in accordance with contracting authority specific guidelines as part of the tender requirement. The Guidelines must be built upon industry recognised standards and guidelines, such that the WLCA results can be used for benchmarking and target setting. This can help ensure that sustainability is a key consideration in the construction process and can promote the adoption of sustainable practices across the industry.



Image credit: Royal Institution of Chartered Surveyors

Moreover, incorporating a WLCA requirement into statutory body's tenders sends a clear message that sustainability is a key consideration for government projects. This requirement will encourage contractors and developers to integrate sustainable design principles, energy-efficient technologies, and materials with a lower carbon footprint into their projects. It will also incentivise innovation and the development of low-carbon solutions within the construction industry.

Specify the use of certified green materials in projects 03

To foster climate transition of the construction sector, it is recommended that the government takes an active leadership role in promoting responsible sourcing practices. One specific measure is to specify the use of a certain percentage of certified green materials in construction projects. This requirement would provide clear guidelines and set stringent standards for sourcing materials, fostering a shift towards more sustainable procurement practices.

By mandating the use of certified green materials, the government can effectively reduce the carbon footprint of the construction sector. Green materials, such as recycled or renewable resources, low-carbon concrete, and energy-efficient products, have a lower environmental impact compared to their conventional counterparts. Prioritising the use of these materials can significantly contribute to Hong Kong's climate goals by reducing resource consumption and minimising greenhouse gas emissions throughout the life cycle of buildings.

The government's influential role in the industry allows for the facilitation of responsible sourcing practices. By working closely with industry stakeholders, such as developers, contractors, and suppliers, the government can provide guidance and support in adopting sustainable procurement strategies. This collaboration can include initiatives such as promoting transparency in the supply chain, encouraging the use of eco-labels and certifications for materials, developing a list of approved sustainable materials and facilitating information sharing on sustainable sourcing options.

Furthermore, the government can incentivise the adoption of responsible sourcing practices through financial support. Providing subsidies or grants for projects that meet or exceed the specified percentage of certified green materials can encourage the industry to embrace sustainability. Financial incentives not only offset the potential higher costs associated with sustainable materials but also create a competitive advantage for developers and contractors who proactively incorporate responsible sourcing into their projects.



Image credit: The American Society of Mechanical Engineers



Image credit: AZO Materials



Image credit: Bigrentz

5.1 Statutory Body

Education

01 Strengthen education to improve the industry's awareness

Education is a crucial component in driving climate readiness in the construction sector. It is essential to educate builders, developers, and architects about the environmental impact of their projects and the benefits of sustainable building design. Some critical areas for education include raising awareness about green materials, impact of climate change on buildings, etc.

Education programmes should be strengthened to keep construction professionals up-to-date with the latest advancements and developments in sustainable building practices. This involves sharing information about emerging technologies, innovative design approaches, and best practices in energy efficiency and resource conservation. By staying informed, professionals can continuously improve their skills and adopt cutting-edge techniques that enhance the sustainability performance of their projects.

To maximise the impact of education, it is essential to tailor programmes to address the specific needs and roles of different professionals within the construction industry, from architects and engineers to site managers and contractors to enhance the skills of construction professionals and raise awareness of sustainable building practices.



Image credit: Construction Education

5.1 Statutory Body

Innovative Technology

01 Wider use of innovation

As Hong Kong continues to urbanise, prioritising the adoption of smart and sustainable building solutions becomes paramount for the climate transition of the sector and society as a whole. Innovation could be defined as the discovery and application of new approaches and tools that support the planning, design, construction, funding, and operation of built assets to achieve enhanced outcomes over the norm.

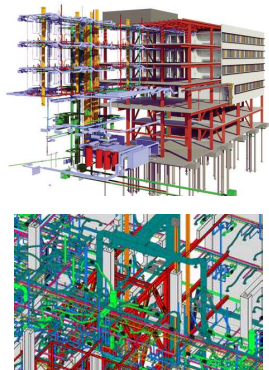


Image credit: Archaus

Technology has been a significant enabler of climate readiness in Hong Kong's construction sector. The adoption of various technologies is necessary to improve efficiency throughout the building lifecycle. For example, design consultants and construction engineers use Building Information Modelling (BIM) to collaborate on designs, manage version control, and coordinate work processes. The utilisation of BIM enables stakeholders to enhance energy efficiency, reduce errors, and optimise resource utilisation, leading to more sustainable and climate-friendly outcomes. The widespread implementation of BIM and other relevant technologies is a crucial recommendation to promote sustainable practices, minimise waste, and propel Hong Kong's construction industry towards a greener and more resilient future.

In the planning of new development areas and urban renewal projects, it is essential to consider design and construction methods from an environmental perspective to minimise embodied carbon emissions during the construction process. Off-site construction using the Design for Manufacture and Assembly (DfMA) and Modular Integrated Construction (MiC) methods is having an increasing impact on the global construction industry.

MiC refers to the complete off-site factory pre-construction of volumetric modules of buildings with all finishes, building services, and even furniture. The adoption of the MiC method is encouraged in suitable projects, as it involves conducting most operations at off-site prefabrication yards, simplifying the construction process and reducing construction waste.



Image credit: Buildings Department



Image credit: Construction Industry Council

Additionally, the DfMA approach aims to enhance productivity, quality, safety, and sustainability by focusing on efficient manufacturing and assembly of high-quality construction components. DfMA enables offsite manufacture of components and efficient on-site assembly, allowing for the identification, quantification, and elimination of waste or inefficiency in product manufacture and assembly to achieve lean construction.



Image credit: Gammon Construction

Furthermore, carbon removal and storage technologies can play a crucial role in addressing climate change and reducing carbon emissions in the construction sector. These technologies can help mitigate the environmental impact of construction activities and contribute to Hong Kong's carbon reduction targets. Carbon removal technologies, also known as carbon capture, utilisation, and storage (CCUS), involve various methods to capture and store carbon dioxide emissions from the atmosphere or directly from emission sources. These technologies can help offset residual carbon emissions that may be difficult to reduce through efficiency improvements or other measures. Similarly, carbon storage technologies focus on the safe and long-term storage of captured carbon dioxide to prevent its release back into the atmosphere, contributing to climate stabilisation and mitigating the risk of inadvertent release of stored carbon.

Embracing these technologies not only contributes to the environmental goals of the city but also leads to cost savings and improved long-term sustainability for the construction industry.

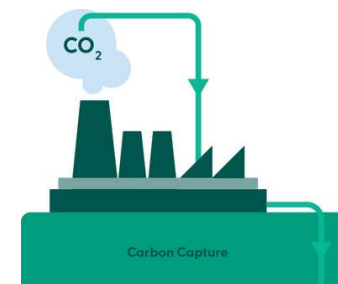


Image credit: MNZ Cluster

Industry Practitioners

Industry practitioners, comprising architects, engineers, contractors, and developers, also bear significant responsibility in driving sustainable practices within the construction sector.

By incorporating climate-friendly design principles, utilising energy-efficient technologies, and implementing green building materials, these professionals can contribute to reducing the sector's carbon footprint.

Moreover, adopting resilient construction methods and incorporating climate adaptation strategies into building designs can enhance the city's ability to withstand the impacts of climate change, such as extreme weather events and rising sea levels.

5.2 Industry Practitioners (Design Phase)

Promote Integrated Design

Organise a design charrette with the developer, architect and engineer at the beginning of a project **01**

To promote integrated design and ensure decarbonisation strategies are considered and adopted from the beginning of a project, it is recommended to organise a design charrette involving the developer, architect, and engineer. A design charrette is a collaborative session where stakeholders come together to brainstorm and develop design solutions for a project. By conducting a design charrette at the early stages of a project, all key parties can collectively explore and discuss various decarbonisation strategies. This collaborative approach fosters communication, encourages knowledge sharing, and ensures that sustainable design practices are integrated into the project from its inception.



Image credit: Flickr

During the design charrette, the developer, architect, and engineer can focus on identifying and incorporating decarbonisation strategies specific to the project. This includes considering the use of regional materials and address low embodied carbon strategies. Regional materials can include locally sourced construction materials, such as wood, stone, or recycled materials, that have a lower carbon footprint compared to materials transported from distant locations.

By bringing together the developer, architect, and engineer in a design charrette, the project team can align their goals and visions for sustainable design and decarbonisation. The charrette serves as a platform to exchange ideas, explore innovative solutions, and ensure that all parties are committed to adopting decarbonisation strategies throughout the project's lifecycle.



Image credit: Shutterstock

5.2 Industry Practitioners (Design Phase)

Strengthen Partnership & Promote Green Finance

Facilitate collaboration between industry stakeholders and the statutory body to nurture a culture of change and promote green finance 01

To achieve a decarbonised built environment, the academic, public, private and financial sectors must come together. It should also involve collaboration and coordination among stakeholders in the construction sector to ensure that sustainable building practices are adopted at all stages of the building lifecycle.



Image credit: ET BFSI

To fully leverage the potential of green finance in the construction sector, collaboration among various stakeholders is crucial. This includes engaging with financial institutions, regulators, investors, and industry associations to develop and implement sustainable financing mechanisms and frameworks. By working together, the construction industry can play a significant role in addressing global environmental challenges and creating a more sustainable future for generations to come.

Enhance Digital Transformation

01 Gather real time data with emerging digital technologies into a single platform

Construction projects generate vast amounts of data, which can be complex and disparate in nature. To address this challenge, the implementation of enhanced digital transformation is proposed. This solution involves gathering real-time data using emerging digital technologies and consolidating it into a single platform. By leveraging these technologies, the industry can improve project information management, gain a clear demonstration of a project's status, enable timely and accurate decisions, and ultimately reduce costs and schedules if used correctly.

Digital tools also play a crucial role in streamlining the collection and analysis of sustainability-related data in construction projects. By utilising these tools, the industry can track carbon emissions throughout the entire project life cycle with greater accuracy and comprehensiveness.

The use of Internet of Things (IoT) technology has been growing rapidly in recent years. IoT can enhance digital transformation in the construction sector in Hong Kong by addressing various challenges and improving efficiency, safety, and productivity. IoT devices equipped with sensors can collect and transmit data in real-time, allowing construction professionals to make informed decisions, optimise resource allocation, and meet project deadlines more effectively. Besides, IoT can facilitate better collaboration and communication among construction stakeholders by providing a centralised platform for accessing and sharing data. This can lead to more informed decision-making and improved project outcomes.



Image credit: freepik

5.3 Industry Practitioners (Construction and Operation Phase)

Capacity Building and Behavioural Change

01 Equip the workforce and induce a cultural shift through offer training programmes to understand the long-term benefits of decarbonisation (e.g. promote recycling, sorting and reduce waste generation)

Strengthening education is only the first step in the climate transition; the ultimate goal is to disrupt the day-to-day norm of the construction sector, and fully embed the ideology of sustainability into the social fabric of Hong Kong's communities and practitioners' core operation. Understanding the importance of integrating sustainability into construction activities will only help kickstart climate transition, but doing sustainability is the key to deep decarbonisation and continuous climate transition.

To address the lack of public awareness and understanding of sustainable building practices, Hong Kong can launch public education campaigns to promote the benefits of sustainable building practices and encourage people to adopt them. The campaigns can include workshops, seminars, and outreach events to educate the public about sustainable building practices and their benefits.



Image credit: Nektarina Non Profit

A continuous, supportive education strategy must be formulated to ensure a successful upskilling of the current workforce. Fundamental sustainability education should be implemented to help youths and children, the future leaders of society, build correct values, while a long-term education programme should also be set up to expose the current workforce to sustainable thinking and actions, and ultimately prompt them to practice sustainability at work.

5.3 Industry Practitioners (Construction and Operation Phase)

ESG & Green Finance

01 Adopt more sustainable practices to meet the ESG regulations to enhance the role of green finance in the construction sector

In the construction sector, there is a growing emphasis on adopting more sustainable practices to meet the evolving Environmental, Social, and Governance (ESG) regulations. This shift towards sustainability is driven by the recognition of the sector's significant impact on the environment and the need to mitigate climate change. By embracing sustainable practices, construction companies can contribute to a more environmentally conscious and socially responsible future.

One key aspect of this transition is the enhanced role of green finance in the construction industry. Green finance refers to financial products and services that support environmentally friendly projects and initiatives. By aligning with ESG principles and incorporating green finance, construction companies can access funding for sustainable projects, such as energy-efficient building designs, renewable energy installations, and resource-efficient construction methods.

Integrating ESG practices and embracing green finance not only enables construction companies to meet regulatory requirements but also offers various benefits. These include reduced environmental impact, improved resource efficiency, enhanced brand reputation, and increased access to capital. Furthermore, by prioritising sustainability, construction firms can inspire innovation, drive industry-wide change, and contribute to the overall transition towards a greener and more sustainable built environment.



Image credit: freepik

5.3 Industry Practitioners (Construction and Operation Phase)

Strengthen Landlord-Tenant Partnership

01 Initiate educational workshops and certification support to involve tenants in reducing emissions can consider emissions as a whole life cycle approach

Apart from the construction phase, to address the challenge of reducing emissions and promoting sustainability along the supply chain of the construction sector, industry practitioners can strengthen landlord-tenant partnerships during the operation phase. This can be achieved through educational workshops and certification support to involve tenants in reducing emissions in buildings, considering emissions from a whole life cycle approach.

By initiating educational workshops, landlords and tenants can collaborate together to foster a harmonious living environment and benefit all parties involved. Educational workshops and training programmes can be conducted with the hopes of raising awareness and providing practical guidance to tenants on reducing emissions throughout the entire life cycle of a building. These workshops can cover topics such as energy efficiency, waste management, water conservation, and sustainable procurement options. By enhancing tenants' awareness and understanding of sustainable practices, they can actively contribute to emissions reduction efforts.

Assistance can be provided to tenants in navigating the certification process by offering resources, guidance and access to experts. Certification demonstrates a commitment to sustainability and can help tenants optimise their operations and reduce emissions. These initiatives aim to reduce the industry's impacts on environmental, social, and economic aspects caused by the construction process, contributing to a more sustainable and climate-friendly construction sector.

Locally speaking, there is also an urgent need for improving the climate resilience of new and existing buildings in Hong Kong. As climate change continues to worsen, Buildings in the near future will need to become less susceptible to flooding and ensure tenants are less affected by extreme heat and water shortage. The government can provide financial support for practitioners and property owners to implement climate-proof building features that decrease the adverse impacts of climate change.



6. Conclusion



Image credit: Freepik

The construction sector is a critical industry that plays a vital role in the city's climate resilience efforts. Evidence showed that there are sector guidelines and incentives in place. It is essential to further promote the collaborative efforts of statutory bodies and industry practitioners in creating a sustainable construction ecosystem, meeting the sector-wide targets. By fostering knowledge sharing, capacity building, and promoting best practices, these key players can ensure the adoption of sustainable construction standards across the sector. This collaborative approach also opens up opportunities for research and development, encouraging the creation of innovative solutions that address the unique challenges posed by Hong Kong's urban environment.

Furthermore, the drive towards climate readiness in the construction sector has spurred the growth of new markets. The demand for sustainable building materials, energy-efficient technologies, and green infrastructure solutions has experienced a significant upswing. This presents a valuable opportunity for industry practitioners to diversify their offerings and tap into emerging market segments. By embracing these market trends, businesses can position themselves as leaders in sustainable construction, contributing to both environmental preservation and economic growth.

In conclusion, the construction sector in Hong Kong holds immense potential to contribute to the city's climate change mitigation and adaptation efforts. The collaboration between statutory bodies and industry practitioners is crucial in driving sustainable practices throughout the entire construction lifecycle. By integrating climate-friendly design, adopting resilient construction methods, and embracing emerging market opportunities, the sector can play a pivotal role in shaping a sustainable and climate-ready future for Hong Kong.



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Business Environment Council Limited (“BEC”) is an independent, charitable membership organisation, established by the business sector in Hong Kong. Since its establishment in 1992, BEC has been at the forefront of promoting environmental excellence by advocating the uptake of clean technologies and practices which reduce waste, conserve resources, prevent pollution and improve corporate environmental and social responsibility. BEC offers sustainable solutions and professional services covering advisory, research, assessment, training and award programs for government, business and the community, thus enabling environmental protection and contributing to the transition to a low-carbon economy.

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