

HONG
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2050
IS NOW



DECARBONISING HONG KONG BUILDINGS

POLICY RECOMMENDATIONS AND NEXT STEPS

November 2020

EXECUTIVE SUMMARY

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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 mobilize 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 ARUP

Sustainability is at the heart of Arup's work. The firm has made a commitment to be a net zero organisation by 2030 and will achieve this by pursuing an ambitious 1.5 degrees Celsius-aligned science-based target for our full value chain emissions and compensating residual hard-to-decarbonise emissions with certified greenhouse gas removal. Arup is experienced in delivering sustainability exemplar projects worldwide. Arup's influence can be felt throughout Hong Kong's world-class infrastructure. It has always aimed to deliver innovative, feasible and comprehensive sustainable design strategies and solutions to achieve environmental integrity, economic viability, social welfare and efficient resource utilisation. With vast project experience in integrating environmental, economic and social factors, Arup's multidisciplinary team provides innovative, data-driven and sustainable solutions to clients, continue making meaningful contribution to the United Nations Sustainable Development Goals.

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EXECUTIVE SUMMARY

Background

China pledged to become carbon neutral by 2060 at the United Nations General Assembly in September 2020. Given Hong Kong has an economy with little manufacturing or agriculture, the Hong Kong Government's current commitment to decarbonise by 80% by 2050 must be revised to net zero to realign with China's latest commitment.

In Hong Kong's unique, high-density built environment, activities in buildings account for more than 90% of electricity consumption and 60% of greenhouse gas emissions, which means reducing energy consumption in buildings is critical. Civic Exchange therefore commissioned this report on decarbonising the building sector as part of a wider effort to decarbonise Hong Kong under the banner 'Hong Kong 2050 is Now', in collaboration with the Greater Bay Area Green Finance Alliance (GBA-GFA). Through an analysis of the current policy environment including building energy codes, incentives and subsidies and an evaluation of the approach taken in other jurisdictions – Singapore, mainland China, the United Kingdom, Australia and the European Union – we identified steps that Hong Kong's buildings sector must take.

To live up to the title of Asia's World City, Hong Kong needs to take the lead in this area and show what is possible with effective collaboration and ambition. Our recommendations are structured around establishing a policy priority and introducing a range of effective policy instruments through a new institutional arrangement.

Policy Priority: Decarbonisation Roadmap

A building-sector specific roadmap must be developed which outlines the steps that will be required to achieve net zero by 2050. This must cover both operational and embodied carbon emissions from new and existing buildings. A detailed study, using a recognised framework such as Science Based Targets, will be required to establish the necessary timelines and mechanisms for ensuring progress, but this should be completed with urgency. This process will require cross-government collaboration, as well as advice from industry, in line with the Paris Agreement to net zero by 2050.

Policy Instruments

STEP 1: IMPROVE REGULATORY TOOLS

Upgrade the Building Energy Code (BEC) and the Mandatory Energy Efficiency Labelling Scheme (MEELS)

The review of international building energy codes in this report has shown that there is significant potential, outlined in the steps below, to raise the regulatory floor and tighten regulations. Aligning Hong Kong with global best practice and adopting timelines for the introduction of new technologies, allowing the market time to adapt, will ensure that the minimum standard for Hong Kong's buildings remains high enough to close the gap to net zero carbon in time. There are several areas that can be implemented immediately:

1	Improve Lighting Power Density requirements to the minimum international value for each space type.
2	Implement a timeline for the introduction of International Efficiency Class 4 for motors, in line with the EU's approach.
3	Expand the MEELS appliance rating scheme, ban the import of inefficient equipment, and introduce regular reviews of the grading standards.
4	Implement VDI ¹ or ISO ² international testing and classification standard for lifts to more effectively assess energy consumption, and then mandate a minimum efficiency standard.
5	Update Coefficient of Performance requirements for air conditioning equipment in line with global best practice.
6	Add sections to the BEC to cover external lighting and medium- and large-scale water heating systems.
7	Add more detailed sub-metering requirements to improve data quality on actual energy use within buildings.

Upgrade the Energy Audit Code (EAC)

Expand the scope of the EAC to include all buildings under Schedule 1 of the Hong Kong Building Energy Efficiency Ordinance (BEEO), the same as the BEC. Reduce the current 10-year period between audits to drive progress and address deficiencies in each building's performance – for example, Singapore Energy Audits for cooling systems are conducted on a three-year cycle. It is essential that existing buildings are regularly reviewed.

1. VDI: Verein Deutscher Ingenieure (Association of German Engineers)
2. ISO: International Organisation for Standardisation

Regulate and incentivise the implementation of Energy Management Opportunities (EMOs) – with a reasonable carbon payback period and positive cost-benefit analysis – identified during the Energy Audit process. Currently, there are no requirements for the implementation of any EMOs – even Category 1 EMOs, which require little to no cost. A full and effective policy should be established to ensure that the EAC effectively addresses operational emissions of existing buildings and that building owners are supported during implementation.

Evaluate Building Envelope Requirements

Consistently review the Overall Thermal Transfer Value (OTTV) code to ensure that the requirements are in line with the decarbonisation strategy. This should include evaluating the regulations around external shading.

Require Public Disclosure

At the building level, mandate the public disclosure and rating of energy consumption and emissions data to enable benchmarking and comparisons between properties. The public disclosure of data submitted to the Hong Kong's Electrical and Mechanical Services Department (EMSD), through a grading system similar to Hong Kong Green Building Council's BEST tool or the NABERS system in Australia, will help to ensure that building owners are held accountable for the carbon emissions of their properties, incentivising energy-efficiency.

STEP 2: INCENTIVISE THE MARKET

Update the Gross Floor Area Concession Scheme

Realign this incentive to focus purely on energy efficiency requirements to make a more significant contribution to decarbonisation. Linking GFA concessions with verified post-occupancy improvements in performance is essential because GFA concessions are currently granted to buildings achieving an 'unclassified' rating, indicating they have met only the minimum standards for BEAM Plus certification. There are several options to improve this scheme, including linking BEAM Plus with IFC EDGE (a performance based green building certification), with the existing BEAM Plus Energy Use credits or the approach used by the Super Low Energy Building programme in Singapore.

Introduce Public-Private Partnerships for Existing Buildings

Implement public-private partnerships to improve the energy efficiency of existing buildings to help address some of the current issues. These include a lack of capacity to undertake widespread retrocommissioning and the regular implementation of the proposed EAC as well as the long payback periods associated with large retrofits. Public-private partnerships allow the government to utilise external expertise, capital and manpower while attracting private companies to participate with incentives and mitigated risks. Requirements for the regular retrocommissioning of all buildings should be introduced once these partnerships are established.

Participate in Emissions Trading

Creating an urban cap-and-trade system for Hong Kong would be a major incentive towards capturing the price of excessive carbon emissions in the building sector; however, there are significant challenges for the city to develop its own emissions trading scheme (ETS). Alternatively, there is an opportunity for Hong Kong to tap into China's national ETS after its launch.

Another opportunity will be through the Carbon Connect initiative launched by the Greater Bay Area Green Finance Alliance, which aims to establish a cross-border carbon trading market. A regional ETS that covers the commercial sector would be highly beneficial to Hong Kong's building industry

Mandate Corporate Disclosures

Incorporating climate risk standards such as the Task Force on Climate-related Financial Disclosures (TCFD) and emissions reporting such as the Carbon Disclosure Project (CDP) into disclosure regimes can greatly incentivise a company to properly prepare for and contribute to decarbonisation. Instead of the current 'comply-or-explain' requirements for environmental aspects under the ESG Guide, the operator of Hong Kong's stock and futures markets (HKEX) can explore opportunities for the incorporation of ESG strategy and reporting into the Corporate Governance Code and consider making emissions disclosures mandatory for the building sector.

HKEX has aligned the environmental disclosures with the TCFD to cover the physical risks of climate change and the transition risk of decarbonisation. This could be made mandatory, to be in line with the objective of Mark Carney, the United Nations Special Envoy for Climate Action and Finance. To facilitate TCFD disclosures, the government should consider developing scenarios for companies to use in their TCFD reporting. This makes the task of reporting against TCFD much easier and makes the report more valuable, as they are done on a common basis and thus provide more valid comparisons.

STEP 3: INFLUENCING BEHAVIOUR CHANGE

Increase Renewable Energy Generation

The introduction of the Feed-in Tariff (FiT) Scheme has certainly incentivised investment into renewable energy generation. However, revision of the FiT rates and structure is needed to refocus investment for the city's next stage of renewable energy development. For example, large-scale renewable installations should be explored through public-private partnerships, such as utilising public housing rooftops or along public infrastructure. These pilot installations could be supported by subsidies on the capital cost or new FiT rates for large capacity systems in order to demonstrate not only the technical feasibility but also financial feasibility.

Implement Carbon Tax and Tariffs

A direct tax on fossil fuels could also be explored. This tax would be levied on fossil fuel suppliers or processors upstream, but the cost would likely be passed along to consumers. This would give consumers a monetary incentive to reduce emissions. Tiered subsidies could be established to keep electricity costs stable for small households or companies. Alternative electricity tariff rate structures should be explored to influence behavioural change on the way consumers use electricity.

STEP 4: PUBLIC SECTOR PROCUREMENT

Capacity and expertise should be built by first implementing potential decarbonisation strategies on public projects. Once the practise has been established and is suitable for widespread adoption, they can be introduced to the private sector through regulations or incentives, similar to the approach taken to introduce BEAM Plus. This approach can be applied to:

1	Undertake widespread retro-commissioning and retrofit on existing government buildings	4	Improve the design standards of government offices and public housing
2	Require a Life Cycle Assessment for all new projects	5	Set energy-efficiency requirements, in line with the proposed building rating system, for government leases.
3	Follow the Construction Industry Council (CIC) carbon labelling scheme for construction materials		

Institutional Arrangement: Dedicated Cross-Agency Body

To implement this decarbonisation roadmap, a dedicated cross-agency body should be formed with members from relevant bureaus including, but not limited to, the Environment Bureau, the Development Bureau, the Transport and Housing Bureau, and the Financial Services and the Treasury Bureau. This body should be responsible for coordinating all incentives and regulations necessary for the buildings sector to achieve net zero by 2050. This body is essential to ensure that any steps taken are not siloed and that effective decarbonisation across the whole sector is the sole priority.

Conclusion

It is important to emphasise that these policies will not immediately decarbonise Hong Kong’s building industry, but instead be a positive step to advancing net zero. All stakeholders within the building industry will need to contribute a significant amount of effort and resources to achieve net zero by 2050. Steps must be taken now to keep this target within reach.