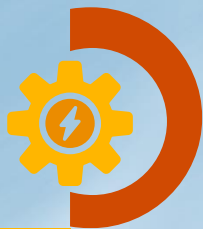


Pathways towards sustainable cities:

The progress of Hong Kong SAR & Shanghai





Introduction

Addressing climate change is the most significant global challenge for the coming decades. Cities play a crucial role in achieving dual carbon goals. PwC's recent article - Building sustainable cities: How urban infrastructure can address energy challenges and shocks ¹ – explores how cities of all sizes and needs can create new clean-energy pathways that will mitigate both global climate change impacts and specific climate threats to their own infrastructure.

As one of the largest growing economies in the world, China has also committed to reaching a carbon peak by 2030 and achieving carbon neutrality by 2060 (collectively known as the dual carbon goals). Two of its most dynamic cities in China, Hong Kong SAR (Hong Kong as follows) and Shanghai, have also committed to energy-saving and carbon reduction targets.

Hong Kong has been taking significant steps towards becoming a sustainable low-carbon city, and the government has been actively promoting policies and initiatives in

this direction. Under the auspices of the Climate Action Plan 2050, the territory aims to reduce carbon emissions by 50% before 2035 (from the 2005 level) and to achieve the goal of carbon neutrality before 2050 ².

Shanghai has also rolled out its action plans for 'dual carbon' strategy. In 2022, Shanghai announced it would peak its carbon emissions during the 14th Five-Year Plan period (2021–25). Under the 'Shanghai carbon peak implementation plan', Shanghai needs to reduce its carbon emissions per unit of GDP by 70% (from the 2005 level), to ensure that carbon peaks will be achieved before 2030; and to become carbon neutral by 2060 ³.

Top-performing cities come in all shapes and sizes. But broadly, all cities will need to follow four broad pathways, to fuel an urban future that is sustainable, reliable and cost-effective. In this article, we examine how Hong Kong and Shanghai are on these pathways.

¹ <https://www.pwc.com/gx/en/issues/esg/the-energy-transition/sustainable-cities-tackling-climate-change-through-urban-energy-transition.html>

² <https://www.info.gov.hk/gia/general/202110/08/P2021100800588.htm?fontSize=1>

³ https://www.ndrc.gov.cn/fggz/hjzy/tdftzh/202208/t20220808_1332758_ext.html

The four pathways to building sustainable cities

Pathway 1

Modernise regulation

The first step for any city is to conduct a thorough evaluation of net-zero goals so that it can work backwards to formulate its policy and regulations timetable to accelerate the energy transition pace. After setting the carbon goals, the government will need to identify major areas of carbon emission such as buildings, transportation, etc. and address sectors specific measures to tackle the problems accordingly. For example, in cities, most citizens' daily activities occur in skyscrapers - which results in air-conditioners, lifts, lighting and various electrical appliances consuming much energy. Therefore, the regulatory framework will need to be modernised to encourage buildings to be energy efficient.

Hong Kong: Updating plans and institutions to be fit for purpose

- The Hong Kong government launched the Smart City Blueprint in 2017 and an updated Smart City Blueprint 2.0 in 2020, which includes measures to promote the use of smart technologies to digitise and enhance mobility, infrastructure, the energy system and the broader environment⁴. In addition, the government has reorganised the Council for Sustainable Development to form the new Council for Carbon Neutrality and Sustainable
- Development to offer advice on decarbonisation strategies.
- Hong Kong is implementing a smart grid system that integrates renewable energy sources and improves the efficiency of the energy distribution system. The smart grid system includes smart meters, sensors, and IoT devices to monitor energy consumption and optimise energy usage for commercial and residential consumers.

Shanghai: Evolving standards on buildings

- Shanghai is one of the first cities in China to have a city-level building energy consumption monitoring platform. Since the project was launched in 2010, more than 2,100 public buildings with 100 million square meters of floor space have been connected to the platform⁵, laying an essential foundation for the government in energy management, usage analysis and decision-making.
- For example, Shanghai has issued guidelines on energy use in public buildings, covering office, large commercial, hotel, and school buildings. These local standards are expected to provide a practical starting point for the central government to implement building energy efficiency supervision and renovation across the country.

⁴ <https://www.info.gov.hk/gia/general/202012/10/P2020121000626.htm?fontSize=1>

⁵ <https://www.gdcic.net/ShowNews?KeyId=afe400eadca4476e9a20d9e267de2ac4>

Pathway 2

Invest in sustainable and resilient infrastructure

Cities need to prepare for sustainable energy resilience in the future by investing in infrastructure that reduces reliance on conventional energy sources. Agile planning is required to cover short-, medium-, and long-term infrastructure investment. Cities should shape infrastructure investment strategies that can scale and be flexible enough to accommodate technological breakthroughs but also incorporate the foresight of future developments.

Hong Kong: Integrated infrastructure planning

- Hong Kong has been promoting the Traffic Oriented Development Model (TOD) to centralise resident housing and other production and leisure activities, enabling people to fulfil diversified needs for daily activities within a relatively short travel distance and reduce carbon emissions caused by long-distance and repetitive travels. Commercial, office, residential and other buildings are set up around the stations so that citizens can complete various activities within walking distance and reduce unnecessary travel.
- Hong Kong is implementing intelligent transport systems (ITS) to optimise traffic flow and reduce congestion. ITS technologies include smart traffic lights, real-time traffic information systems, and advanced digital public transportation systems.

Shanghai: Investing in low carbon transport systems and sustainable urban drainage

- Shanghai Metro has ten solar photovoltaic power generation bases generating 23 million kWh of green electricity annually⁶. Shanghai Metro has been expanding photovoltaic projects to optimise its energy supply structure. In the future, distributed photovoltaic power stations will be built on the roofs of all subway stations where conditions allow. This project has significantly contributed to the green and low-carbon road of the Shanghai Metro.
- Shanghai is developing a 'sponge city' programme, which aims to reduce flooding and improve water quality by using green infrastructure such as permeable pavement, rain gardens, and bioswales.

⁶ <https://www.huawei.com/cn/sustainability/the-latest/stories/solar-metro-green-power-for-shanghai-metro>

Pathway 3

Invest in R&D

Substantial financial investments are needed to create sustainable cities. As global financial centres, Hong Kong and Shanghai actively promote low-carbon economic transformation with diversified financial instruments.

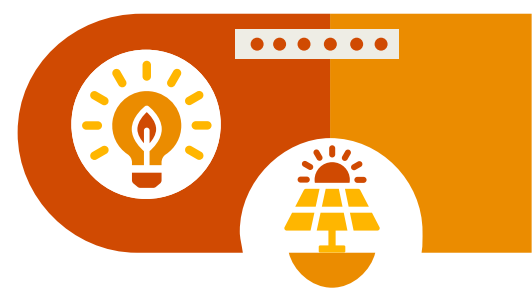
Hong Kong: Positioning as a sustainable financial and innovation hub of Asia

- In recent years, Hong Kong has been actively promoting green finance development, including issuing retail green bonds, promoting Hong Kong to become a green and sustainable financial hub in Asia, conducting feasibility studies to develop a regional carbon trading centre; helping to create a sustainable ecosystem of green investment products, and supporting companies in transitioning to low-carbon and more sustainable business models.
- Hong Kong is also building itself as a hub for innovation and technology, particularly as a key player within the Greater Bay Area. The city with its strong research and development sector, research institutions and incubation centres, are growing start-ups and tech companies, innovating in areas such as green fintech and other clean technologies.

Shanghai: Driving green bond development

- Take green bonds as an example; several 'first' green bond products in China have been launched in Shanghai, including the first green exchangeable corporate bond, the first green municipal special bond and the first 'carbon neutrality' green financial bond to global investors under the Bond Connect programme.
- In 2021, the Shanghai securities industry issued CNY60.6 billion worth of green bonds, with the transacted bonds valuing more than CNY70 billion and sold overseas green bonds amounting to more than USD11.3 billion ⁷.

⁷ https://www.cnfin.com/zs-lb/detail/20220222/3540782_1.html



Pathway 4

Promote public-private partnerships

One strategy is to leverage public-private partnerships (PPPs) to drive this multi-sectoral transformation to a low-carbon economy. These partnerships bring together the government, private sector, and civil society to collaborate on initiatives that promote energy efficiency and clean energy, reduce carbon emissions, and enhance overall sustainability in the territory.

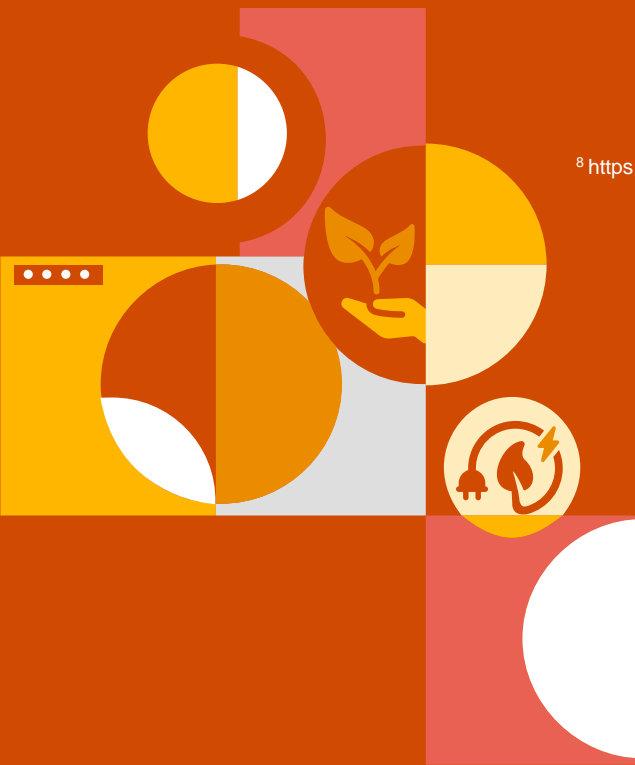
Hong Kong: Incentivising private action

- Key initiatives such as the Green Tech Fund have been instrumental in driving funding towards R&D projects and innovations that promote decarbonisation and environmental protection. The Hong Kong Energy Efficiency Registration Scheme for Buildings is another example of a voluntary programme that encourages building owners to improve energy efficiency in their buildings, bringing together private sector technical service providers and government agencies to deliver sustainable outcomes to Hong Kong's largest energy consuming sector – commercial buildings.

Shanghai: Promoting infrastructure partnership

- Shanghai has been actively promoting the PPP model in infrastructure and public services, which is a critical reform measure to stimulate market vitality and implement supply-side structural reforms in the field of public services. As of the end of July 2022, Shanghai has a total of 8 PPP projects included in the Ministry of Finance PPP project database, with a total investment of 3.693 billion yuan, covering various areas of people's livelihood, such as garbage treatment, sewage treatment, and elderly care ⁸.

⁸ <https://www.cpppc.org/shanghai/1001511.jhtml>



Working together for a sustainable future

Within cities, different parties interact in a large, expanding and interdependent ecosystem. Regulators and policymakers can create conditions to incentivise financing institutions to make long-term investments and promote cleaner and more resilient energy generation, transmission, and distribution. Energy service providers respond to the long-term targets set by regulators and policymakers, collaborate with R&D institutions to develop innovations and turn to financial institutions for the necessary capital. Financing institutions can provide the money that ensures incentive schemes for clean energy and energy-efficiency projects pencil out. Multilateral organisations provide convening

points for developing the necessary cross-border and cross-industry planning. End users play a crucial role – other stakeholders must help end users create a conscious approach to energy consumption through continuous monitoring and adopting new products and services to impact the wider community.

PwC attaches great importance to the development of this ecosystem and actively promotes the discussion and research of feasible solutions with major stakeholders and experts. We also encourage the application of digital tools for sustainable transformation. PwC has many advanced digital tools to empower enterprises in different industries to achieve sustainability transformation.

Value is created not by one actor but by various entities working together.

This article examines some of the actions Hong Kong and Shanghai have undertaken on these pathways. Hong Kong and Shanghai have made significant progress to improve the sustainability of their cities. Nevertheless, more needs to be done rapidly in these and other cities to address pressing global challenges such as climate change.

Cities are the laboratories for experimentation, implementation, solution and scaling. National and international actions matter, but many of the markers of success will appear in a country's most vibrant cities. The efforts of Hong Kong and Shanghai, and other cities in China, will continue to shed light on the future of sustainability in China.

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