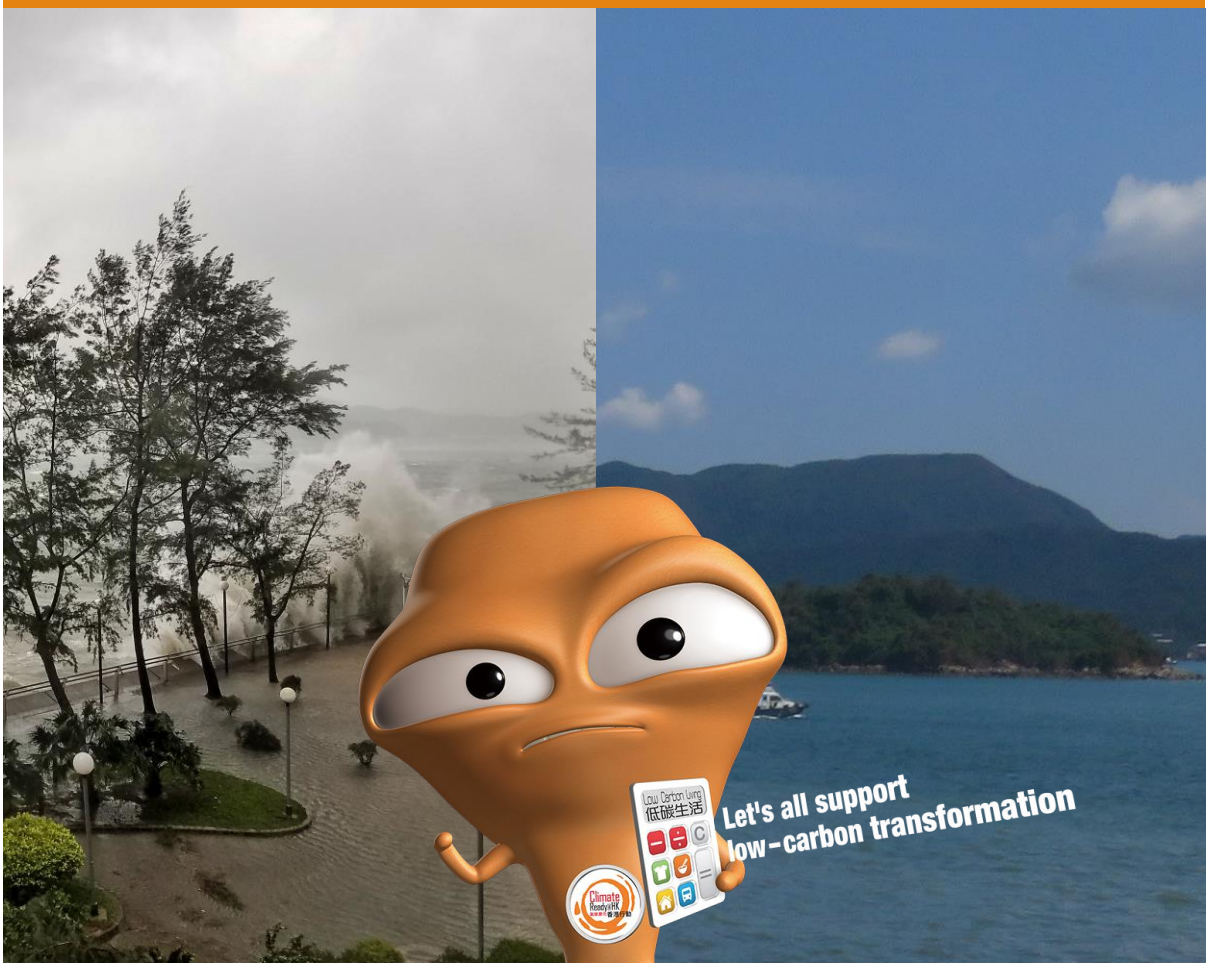
COUNCIL FOR SUSTAINABLE DEVELOPMENT

Report on Public Engagement on Long-term Decarbonisation Strategy



可持續發展委員會
Council for
Sustainable Development

November 2020

TABLE OF CONTENTS

Executive Summary **2-3**

1. Introduction & Background **4-6**

2. Report on Public Engagement Process **7-10**

3. Recommendations **11-30**

A. Target
B. Lifestyles
C. Education, Training and Research
D. Built Environment
E. Energy
F. Transport
G. City Planning and Management
H. Finance

4. Closing Remarks **31**

Annex I *Membership List of the Support Group on Long-term Decarbonisation Strategy*
Annex II *List of Public Interaction Activities*
Annex III *List of Supporting Organisations*
Annex IV *List of Roving Exhibitions*
Annex V *List of Abbreviations*

Executive Summary

Under the Paris Agreement, all signatories should strive to formulate and communicate long-term low greenhouse gas (GHG) emission development strategies with a view to limiting the increase in global average temperature to well below 2°C above pre-industrial levels, while pursuing efforts to limit it to 1.5°C. On 22 September 2020, President Xi Jinping noted that the Paris Agreement on climate change charts the course for the world to transition to green and low-carbon development and announced that China aims to have CO2 emissions peak before 2030 and achieve carbon neutrality before 2060. As a leading international city of China and a responsible member of the global community, Hong Kong should also seek to draw up our own mid-century long-term low GHG emission strategy in good time.

Invited by the Government, the Council for Sustainable Development (SDC) has launched a territory-wide public engagement (PE) exercise adopting a bottom-up and stakeholder-oriented approach. The PE aims to enhance public awareness of the impact of carbon emissions, and gauge the views of the community in developing feasible long-term strategies for carbon reduction. The PE is conducted in two stages: Stage 1 - Setting Directions for Public Discussion on Climate Mitigation Actions; and Stage 2 - Building Awareness of Climate Change Impacts and Nurturing Consensus for the Transition Towards a Low-carbon Society.

In Stage 1, a Support Group (SG) comprising experts from various background was formed in May 2018 to provide advice to the SDC on setting a definitive scope of the PE. Towards this end, the SG organised six Focus Group Meetings (FGMs) from July to August 2018 to exchange views with more than 100 stakeholders from professional organisations, academics, green groups, youth organisations, business-related organisations, transport operators, property management companies and relevant government advisory bodies and committees etc. Stakeholders were invited to give their initial views on the key issues concerning climate change mitigation in Hong Kong, suggestions on the overall direction of the PE and ways to encourage public participation. Opinions raised at the FGMs, together with the SG's advice as well as the findings from background research, formed a solid basis and useful references for the SDC in preparing the PE Document, which sets out four key areas for wider public discussion –

1. Setting Carbon Reduction Target for 2050
2. Transition Towards a Low-carbon Society
3. Reducing Energy Use and Further Decarbonising Electricity Generation
4. Low-carbon Transport in a Smart City

The Policy for Sustainability Lab of the Centre for Civil Society and Governance at The University of Hong Kong was commissioned as the Programme Director for this PE process to assist the SDC to develop and introduce the PE Document to the wider community and stakeholders through a variety of public interaction activities. During the public interaction phase (14 June – 20 September 2019), a total of 65 engagement events—briefing sessions, regional forums, consultation meetings, school outreach activities, etc. were held. In addition, 132 Supporting Organisations (SOs) were enlisted by the SDC to provide assistance in disseminating information about the PE through their networks. To further publicise the PE and encourage

wider public participation at all ages and backgrounds, the SDC also made use of Announcements in the Public Interest on television and radio, promotional posters and pamphlets, dedicated website, and roving exhibitions, etc..

During the PE process, the SDC has collected more than 71,000 Views Collection Forms (VCFs), over 600 written submissions from organisations/companies/individuals, and various feedbacks expressed at the engagement events and on different media platforms. The Social Sciences Research Centre of The University of Hong Kong was commissioned by the SDC as the Independent Analysis and Reporting Agency (IRA) to collect, compile, analyse and report views of various stakeholder groups, including those of the general public, expressed during the PE.

Having considered the views collected and analysis conducted by the IRA, the SDC has set out a long-term vision and six overarching objectives for guiding the development of the long-term decarbonisation strategy for Hong Kong. A total of 55 recommendations covering eight key areas are presented in Chapter 3.

1 Introduction and Background

1.1 Climate change is an imminent global challenge that has no border. Floods, heatwaves, storms and other extreme weather phenomena are increasing in frequency and intensity. For instance, Hong Kong has just been through the warmest year on record; there was only one day in 2019 with a temperature below 12°C recorded by the Hong Kong Observatory. Not long ago, Super Typhoons Hato and Mangkhut have smashed through the city in 2017 and 2018 respectively causing widespread disruptions. Climate scientists have warned that we have some 10 years left to thwart climate change before the damages become irreversible. Mitigating climate change is not just for ourselves, but also our responsibility to safeguard the well-being of present and future generations.

1.2 The climate change crisis can only be effectively dealt with if the Government, private sector and civil society join hands for swift and decisive actions. The adoption of the Paris Agreement in 2015 was a remarkable step forward for international cooperation in managing climate change issues. On 22 September 2020, President Xi Jinping noted that the Paris Agreement on climate change charts the course for the world to transition to green and low-carbon development and announced that China aims to have CO2 emissions peak before 2030 and achieve carbon neutrality before 2060. As this historic climate agreement is applicable to Hong Kong, we are expected to draw up our own mid-century long-term decarbonisation strategy, with a view to holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

1.3 In 2018, the Council for Sustainable Development (SDC) accepted the Government's invitation to launch a territory-wide public engagement (PE) on "Long-term Decarbonisation Strategy". The SDC has adopted a bottom-up and stakeholder oriented approach to identify the potential action areas and key issues for further public discussion and deliberation. In line with its previous PE exercises, the SDC has formed a Support Group (SG) comprising representatives from relevant sectors and government representatives to provide advice to the SDC on the planning and implementation of the PE. A full list of SG members can be found in **Annex I**. The SG held two meetings in June 2018 and May 2019 respectively to deliberate how to implement the PE.

1.4 Six Focus Group Meetings (FGMs) with key stakeholders were held during July and August 2018. More than 100 participants from about 90 organisations attended the FGMs to give their initial views on the overall direction of the PE and suggestions on possible areas for public discussion. Participants came from different sectors, including professional organisations, academics, green groups, youth organisations, business organisations, transport operators, property management companies, representatives from relevant government advisory bodies and committees, etc. Views and suggestions raised at the FGMs, together with the SG's advice as well as the findings from background research, formed the basis and useful references for the SDC in preparing the PE Document. To enhance SDC and SG Members' understanding of different aspects of decarbonisation, a technical seminar on decarbonisation opportunities was organised in November 2018 with speakers from relevant sectors and the Government.

Focus Group Meeting

PE Document and Pamphlet

1.5 The PE Document identifies and sets out the following key areas to facilitate in-depth and structured discussion by the general public and stakeholders –

(i) Setting Carbon Reduction Target for 2050

- Towards basic level of carbon emissions reduction
- Pursuing efforts to achieve more audacious carbon reduction targets

(ii) Transition Towards a Low-carbon Society

- Are you aware of the relationship between your daily activities and carbon emissions? How can we facilitate you to have a better grasp of the related information?
- What can help you switch to a low-carbon lifestyle? How can goods and services providers facilitate your behavioural change?
- What are the obstacles for you to switch to a low-carbon lifestyle?
- What kinds of education and publicity activities should be put forward in promoting low-carbon lifestyle?

(iii) Reducing Energy Use and Further Decarbonising Electricity Generation

- Building is one of the main sources of carbon emissions in Hong Kong. What can we do further to promote energy saving and reduce building-related carbon emissions?
- What measures may be considered to encourage or regulate building owners and tenants to raise energy efficiency of the whole buildings (i.e. including non-communal units/areas)?
- What measures may be considered to encourage building owners to develop more on-site renewable energy installations?
- What passive energy-saving design elements (e.g. natural ventilation) may be considered to enhance building energy efficiency in the long run? What incentives should be provided to further encourage developers and owners to adopt passive energy-saving design elements?
- Fossil or non-fossil fuels, what will you choose? For the benefits of both the current and future generations, what are your considerations in deciding the future fuel mix for Hong Kong?
- What can we do to further enhance the development of renewable energy locally?
- Further enhancement of regional cooperation for increasing the proportion of zero carbon energy in our fuel mix is an inevitable step towards achieving higher carbon reduction targets in 2030 and 2050. What are your views on this in the face of the threat of climate change?
- How would you rank the importance of different considerations (including reliability, security and availability, affordability, and environmental performance and response to climate change, etc.) when considering the long-term strategy to decarbonise the electricity generating sector towards 2050 for Hong Kong?

(iv) Low-carbon Transport in a Smart City

- How to promote wider use of green and innovative transport technologies?
- What other measures would you suggest to further reduce our transport-related carbon emissions? For example, would you walk for short-distance commuting instead of travelling by vehicle and replace face-to-face meetings with video conferencing?

1.6 Through the PE process, the SDC aimed to deepen public understanding of the negative impact of human-induced carbon emissions, and gauge the community views in formulating our long-term decarbonisation strategy, so as to develop feasible climate actions and facilitate Hong Kong's transition towards a low carbon society.

2 Report on Public Engagement Process

2.1 The PE on "Long-term Decarbonisation Strategy" is the eighth round of PE process undertaken by the SDC. Following discussion at the SG and the SDC , a press conference was held on 14 June 2019 to formally release the PE Document and mark the launch of the public interaction phase, which lasted for around three months until 20 September 2019. The Policy for Sustainability Lab of the Centre for Civil Society and Governance at The University of Hong Kong was commissioned as the Programme Director for the design and implementation of this PE process.

Press briefing hosted by SDC Chairman (centre), SG Convenor (left) and Programme Director (right)

2.2 During the public interaction phase, a total of 65 engagement events including regional forums, youth forum, school outreach and a series of briefing sessions were held with key stakeholders, comprising advisory and statutory bodies, relevant business and trade associations, professional institutes, etc. A full list of engagement events held during the public interaction phase is appended in **Annex II**. Nearly 4,500 members of the public and stakeholders participated in these engagement events. These events provided an important platform for gauging public and stakeholders' views on the issues set out in the PE Document. Some of the members of the SDC and SG attended the public interaction activities and listened to the views of the public and stakeholders.

2.3 The aim of this PE is to arouse public awareness of the impact of carbon emissions, and gauge the views of the public and stakeholder on Hong Kong's long-term decarbonisation strategy. Some of the results will only be achieved in decades from now. Therefore, it is vital

to gauge views from youngsters who are the future pillars of society. Visits to a total of 14 secondary schools were conducted, combined with interactive drama performances, PowerPoint presentations, and Q&A sessions on decarbonisation. The success of these school visits was proven by students' rapturous response as they offered lively and educational engagement events for the youth. This successfully aroused students' interest in low-carbon living style and provided them with an in-depth understanding of decarbonisation, so that they would be in a position to offer well-informed views on the subject.

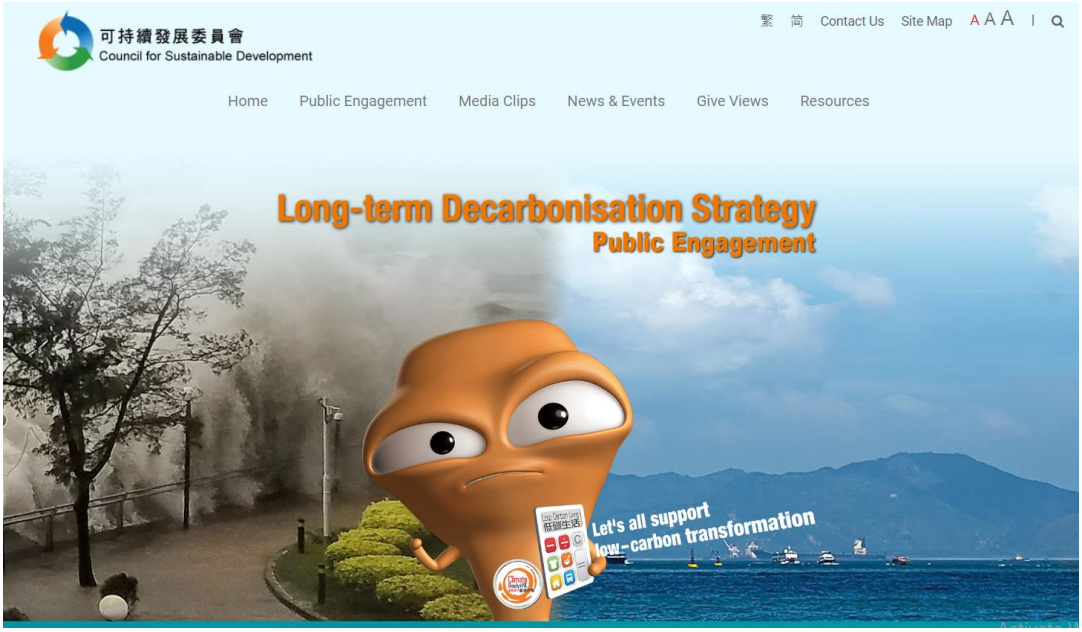
Regional Forum

Briefing Session

School Activity

2.4 In order to reach out to the wider community, the SDC invited organisations from a range of sectors to be Supporting Organisations (SOs) for this PE. The 132 SOs covered organisations from the education sector, relevant businesses and trade, public bodies, non-governmental organisations (NGOs), green groups and professional organisations (the full list of SOs is at **Annex III**). They helped disseminate information about the PE through email, websites, social media platforms (e.g. Facebook); promoted the PE in their activities and programmes; and encouraged their members and stakeholders to provide views on the issues set out in the PE Document.

2.5 The SDC also launched a dedicated website (https://www.susdev.org.hk/en/index.php) to provide updated information on the PE activities, as well as facilitate convenient access to the PE Document and expression of views through the online Views Collection Forms (VCFs).



Dedicated Website

2.6 Furthermore, the SDC carried out a number of promotional events and released different kinds of publicity materials to help disseminate the message of the engagement, and to further raise public awareness of the PE exercise.

2.7 Promotional posters were also displayed at different locations, including schools, higher education institutions, public housing estates, government premises, hospitals and designated venues through the network of SOs, etc. The SDC also promoted the PE through an Announcement in the Public Interest broadcast on television and radio, and through online platforms. In addition to traditional promotion channels, the SDC made use of social media (e.g. Big Waster's Facebook) to promote the PE. Roving exhibitions at 30 locations across Hong Kong were conducted to enhance community outreach and facilitate information dissemination (details of the roving exhibitions are at **Annex IV**).

2.8 Moreover, a street interview series comprising in-person interviews of the public by a Key Opinion Leader and video clips including the interviewees' pledge to support decarbonisation on online platforms were conducted, and advertisements in newspapers and at online and mobile platforms were placed to enhance people's awareness of the PE and participation in the engagement events.

2.9 During the public interaction phase, different types of feedback were received via various channels. There were 53 articles from newspapers, 137 online articles from websites, 176 topics on social media, and over 20 discussion forums/blogs.

2.10 Through the above-mentioned means and other channels, the SDC collected over 71,000 VCFs and over 600 written submissions from individuals and companies/organisations in addition to views and comments expressed at the public interaction activities.

2.11 The Social Sciences Research Centre of The University of Hong Kong was commissioned by the SDC as the Independent Analysis and Reporting Agency (IRA) for this PE exercise. The role of the IRA was to independently collect, compile, analyse and report public views collected during the public interaction stage, including comments and suggestions received in the engagement events, VCFs, written submissions, as well as through other relevant channels (e.g. social media). Upon completion of the PE, the IRA submitted an Independent Analysis Report to the SDC. Their report is available at the SDC's website: https://www.susdev.org.hk/en/report.php.

2.12 SG held two meetings and prepared a draft report with the assistance of the Programme Director. Taking into account the views collected and the deliberations of its Strategy Sub-Committee members, the SDC has prepared this report with a list of recommendations for consideration by the Government.

3 Recommendations

The Context

3.1 The SDC undertook a PE on "Long-term Decarbonisation Strategy". The PE is a bottom-up and interactive process as multiple stakeholders and members of the public have provided their views through various engagement channels, e.g. FGMs, briefing sessions, public consultation platforms, regional fora, VCFs, written submissions etc. All feedbacks collected during the PE have been recorded and analysed by the Social Sciences Research Centre of The University of Hong Kong. They have provided a solid basis for SDC to formulate the recommendation report, which set out main directions for Hong Kong's long-term decarbonisation strategy.

3.2 The Paris Agreement, signed in 2015, requires signatory countries to collectively limit global warming to 2°C by 2100, and to pursue efforts to limit the temperature increase even further to 1.5°C above pre-industrial levels. However, the latest alarming data[1] has shown that the world is on course heading towards a 3°C - 4°C rise, with potentially more destructive consequences including sea-level rise and fiercer storms for many places. Growing evidence suggests that global carbon emissions have to be close to net zero if we hope to keep risks associated with climate change at bay.

3.3 As an advanced economy with well-developed infrastructure, talents and financial resources, Hong Kong should set out a progressive long-term vision for advancing to net zero carbon emissions by 2050. This is undoubtedly an ambitious goal, but it appears to be a responsible and appropriate option for avoiding climate catastrophe and threats to the long-term human survival. In this regard, Hong Kong should proactively embark on a cleaner energy and low-carbon development path based on collaborative efforts across the Government, business, non-profit sector and individuals.

3.4 To drastically reduce our carbon footprint, it requires extensive and concerted efforts across all segments of the community and economy. Given the fact that electricity generation makes up the largest single source of carbon emissions (67%) in Hong Kong, the path to attaining deep decarbonisation necessitates a transformative change in how energy is provided. To progressively decarbonise the electricity generation sector, our energy mix has to increasingly come from cleaner and zero carbon fuel sources, while ensuring the provision is reliable, safe affordable, and environmental-friendly.

3.5 Constrained by the existing technology and limited natural resources, Hong Kong does not have favourable conditions for large-scale commercialised renewable energy (RE) generation, in order to produce sufficient zero carbon energy locally for meeting our energy demand. Despite these constraints, technological advancement in recent years have given us great aspirations for further decarbonising our electricity generation sector through accelerating the shift to zero carbon energy. For instance, when this PE was initiated in 2018, the transmission

[1] UNEP. Emission Gap Report 2019. https://news.un.org/en/story/2019/11/1052171

of clean energy over very long distances was still an idea out of reach. Rapid world-wide developments in the last two years have opened up new opportunities of using 'green hydrogen'[2] as energy carriers which might turn clean energy more accessible, and its usage more affordable. In this light, it is an opportune time for Hong Kong to explore the feasibility of sourcing different types of zero-carbon energy globally, with special attention to the developments and opportunities in nearby regions. Moreover, it is of vital importance to enhance our global sourcing capacity through innovative investment models, closer partnerships, and collaborative research; and to step up our efforts to get our infrastructure ready for both existing and emerging technologies which can deliver viable, safe and low-carbon energy options.

3.6 On an equally important note, promoting a sustainable built environment, gradually phasing out fossil fuel powered vehicles, and turning waste to energy are also global trends in mitigating climate change impacts. Some key strategies include, but are not limited to, encouraging the uptake of energy-saving building design, more widespread implementation of retrofitting and retro-commissioning, raising energy efficiency standards of buildings and electrical appliances, and accelerating the adoption of new energy vehicles (e.g. electric vehicles (EVs) and fuel-cell vehicles).

3.7 All the aforementioned areas are most crucial in driving low-carbon development in Hong Kong, but they remain insufficient to tackle climate change. Only if every one of us adopts a low-carbon lifestyle, with the Government and the business sector giving more assertive effort in promoting low-carbon goods and services to facilitate the transition to, and growth of, a low-carbon economy, can we strive towards a net zero target. It is encouraging to see most respondents from the PE showing their willingness and readiness to facilitate climate innovation and practise low-carbon lifestyle, such as taking up measures related to clothing, waste reduction and dietary patterns. In order to further promote a healthy, sustainable lifestyle, and make it possible for a wider cross-sector of society to engage in responsible consumption, there has to be an integrated awareness-raising, information dissemination and social marketing strategy to drive mind-set and behavioural changes.

Vision and Objectives

3.8 Having considered the above factors, the SDC believes that Hong Kong should formulate its decarbonisation strategy based on **a long-term vision constitutive of six overarching objectives**.

[2] The two most common methods for producing hydrogen are steam reforming and water-electrolysis. 'Green hydrogen' refers to hydrogen generated from RE resources through electrolysis.

Long-term Vision
To progressively advance to net zero carbon emissions by 2050, as part of the global effort to limit global average temperature increase to well below 1.5°C above pre-industrial levels.
Overarching Objectives
1. **Driving transformative societal change towards low-carbon lifestyles** • Strengthening education, publicity and training to disseminate climate change knowledge. • Promoting waste reduction and recycling, and the adoption of low-carbon diets. • Driving demand for low-carbon products and services. • Promoting both public and private sectors to adopt low-carbon procurement practices.
2. **Accelerating the shift to zero carbon energy** • Investing in climate-friendly power generation: - Promotion of research & development (R&D) and adoption of RE technologies (generation and storage). - Ramping up local RE production and storage to the greatest extent practicable. • Sourcing zero-carbon energy globally: - Enhancing global sourcing capacity through investment, cooperation, importation, etc., with special attention to developments and opportunities (e.g. green hydrogen) in nearby regions. - A blend of both RE and nuclear energy as a viable option, at least in the short to medium term, to help stabilise or reduce carbon emissions. • Securing interim low-carbon energy option (e.g. Liquefied Natural Gas (LNG)) while exploring long-term zero-carbon solutions. • Having due regard to the four objectives of Hong Kong's energy policy, namely, safety, reliability, affordability and environmental (including climate change) considerations.
3. **Promoting a sustainable built environment** • Devising an effective mix of economic incentives and penalties that would encourage a sustainable built environment, and intensify energy saving efforts in buildings. • Raising energy efficiency standards and low-carbon emission requirements to reduce energy wastage and building-related emissions as far as practicable.
4. **Governing transitions toward low-carbon transport systems** • Advocating low-carbon urban design and planning. • Continuing to develop a passenger transportation system centred on public transport. • Investing in non-motorised transport infrastructure (e.g. walking and cycling paths). • Accelerating the replacement of conventional fuel-driven vehicles with low-carbon vehicles.
5. **Unlocking green and sustainable finance potential for low-carbon transition** • Developing green and sustainable finance market in Hong Kong to facilitate low-carbon transition.
6. **Steering innovations in climate change mitigation, adaptation and resilience** • Supporting R&D in climate change mitigation, and advancing low-carbon technologies for enhancing climate adaptation and climate resilience. • Encouraging investments in new carbon abatement and removal technologies and initiatives for reducing carbon emissions that cannot be entirely eliminated by other means.

Recommendations

3.9 Against the above-mentioned vision and objectives, the SDC has put forth 55 recommendations across eight key areas:

A. Target
B. Lifestyles
C. Education, Training and Research
D. Built Environment
E. Energy
F. Transport
G. City Planning and Management
H. Finance

The recommendations are a series of short-term (1-5 years), medium-term (5-10 years) and long-term (>10 years) initiatives, ranging from systemic and financial support, to education and awareness raising, and to the technology and infrastructure development required for further action.

A. Target

3.10 Target setting is an important step on the decarbonisation journey, which enables the Government, business, non-profit sectors and other action parties to contribute their part within a specified timeline. As climate change impact becomes more visible and extreme, the call for bold action to drastically reduce carbon emissions has grown louder than ever. It is also increasingly accepted that by setting clear targets, and having a transparent system for progress tracking, cities could align their carbon reduction goals consistent with the emissions reductions required to limit global warming to below 2°C, and preferably 1.5°C.

3.11 As of 2019, nearly 80 countries and more than 100 cities across the world have committed to achieving net zero carbon emissions by 2050[3]. Like many advanced economies, Hong Kong should join the global climate effort to foster an accelerated transition towards a low-carbon economy, leveraging on its wealth of talents, efficient infrastructure and robust financial system. Indeed, having gauged the views gathered in the PE, it is worthy of note that most respondents supported carbon reduction, and that some went further to suggest specific reduction targets such as 'net zero emissions by 2050'. A few additional comments suggested that the Government should set faster targets, while some showed support for reducing

[3] IISD. 77 Countries, 100+ Cities Commit to Net Zero Carbon Emissions by 2050 at Climate Summit. https://sdg.iisd.org/news/77-countries-100-cities-commit-to-net-zero-carbon-emissions-by-2050-at-climate-summit/

'consumption-based carbon emissions'[4], and some focused on the carbon reduction efforts by different industries or sectors.

3.12 In view of the above trends and observations, the SDC recommends the following as the basis to chart and monitor the pathways to decarbonisation in Hong Kong:

Short-term (1-5 years)

A1) To chart a **roadmap with critical milestones** supported by **action plans** to progressively advance to net zero carbon emissions by 2050 in order to limit the global average temperature increase to 1.5°C. Regular reviews should be carried out to keep track of the progress against the target.

A2) To **assess the carbon reduction potential and performance** of key climate mitigation measures of different sectors, and **make relevant information publicly available.**

A3) To set specific and **science-based carbon reduction targets** for key sectors (e.g. energy, buildings, transport and waste), in order to provide a roadmap for decarbonisation for the whole society and facilitate the commercial sector in particular in making investment decisions.

A4) To scale up **cross-departmental coordination and stakeholder collaboration** for climate-related actions in relevant policy areas. With the engagement of talents across a broad spectrum of professions, such as climate science and green finance, as well as stakeholders from the industry, business, and non-profit sector, their knowledge and expertise would advise the Government on necessary actions needed to adjust the decarbonisation strategy along the way to keep the city on track.

3.13 Drawing a low-carbon city roadmap and setting specific sectoral targets are crucial for building momentum on long-term carbon emissions reduction. Yet, due consideration should be given to a host of factors in determining the decarbonisation trajectory, such as how new technologies could be used to facilitate further emissions reduction, the degree of community-buy-in, and readiness of the society to implement the low-carbon measures—including transformative changes in lifestyles and business operations, building energy efficiency upgrades, using zero carbon energy as the major fuel sources for electricity generation, and

[4] All GHG emissions, within and outside Hong Kong, associated with the production, transportation, use and disposal of products and services consumed by a particular community or entity in a given time period (typically a year).

advancing sustainable low-carbon transport. In light of the above, it is essential to put in place mechanisms and oversight bodies to measure and keep track of Hong Kong's carbon emissions reduction. In this regard, the SDC recommends the Government and relevant action parties from the business and NGO sectors:

Long-term (>10 years)

A5) To **monitor carbon emissions reduction progress against sectoral targets** and respond to evolving development in technology and the modality of global economy.

B. Lifestyles

3.14 Tackling climate change requires deep cuts in carbon emissions. It necessitates the need for radical changes in our lifestyles and consumption practices. In view of the scale of transformation required to achieve the net zero target, some argued that personal behaviour changes alone are not enough to lead the critical shift toward a low-carbon future. Yet, individual action is still urgently needed because it leads to collective action, which helps build the momentum for systemic change.

3.15 Individual behavioural changes, such as using less air-conditioning, travelling car-free, adopting a low-carbon diet and minimising purchases of unnecessary new products, especially resource-intensive and heavily packaged products, are not only righteous but essential. Collectively, they would reduce our total carbon footprint. To make it possible for a wide cross-sector of society to engage in low-carbon living, an integrated strategy of awareness-raising and knowledge sharing on climate change and its effects, as well as providing consumers with adequate information about the embedded carbon footprint of goods and services, are key to driving behavioural change and facilitating customers to make low-carbon choices. With respect to the above, the SDC makes the following recommendations:

Short-term (1-5 years)

B1) To **actively promote low-carbon lifestyles to the general public,** with a view to instigating behavioural changes. Possible approaches include: (i) developing community outreach initiatives for knowledge transfer on the impacts of climate change, and showcasing new energy-saving solutions etc.; (ii) establishing a learning platform for measuring and benchmarking the carbon reduction performance at individual citizen level; (iii) developing learning programmes that suit different age groups and sectors; (iv) promoting knowledge of carbon labels where available; (v) encouraging NGOs to collaborate in using their networks to induce behavioural change in the community for adopting a low-carbon lifestyle.

B2) To **facilitate better understanding on the embedded carbon footprint** of various types of consumer products and services, and **provide financial incentives or**

support to facilitate informed consumer choices (e.g. consumption of local and regional products).

3.16 Driving stronger collective action on climate change requires the Government to lead by example. Since public procurement is a powerful force that can influence market trends and provision for low-carbon products, services and infrastructures, it has been generally accepted that the Government, being the single largest purchaser in Hong Kong, should take the lead to set out low-carbon criteria in government tenders and service contracts with a view to encouraging low-carbon innovations and practices. From this perspective, the SDC therefore recommends the Government:

B3) To incorporate **green procurement concepts**, such as low-carbon requirements and life-cycle assessment, as part of **government procurement process**.

3.17 Advocating low-carbon lifestyle means rethinking every aspect of our current ways of living. Not only does it involve what we purchase (e.g. food) and how we consume energy, it also relates to our choices and actions on the use of water and waste management, as well as the way we travel and interact with others. The SDC therefore recommends the following to further reduce our carbon footprint:

B4) To promote **zero-waste design** for **minimising waste at source, enhance waste-related infrastructure**, and encourage **materials reuse and recycling**.

B5) To step up promotion of **water conservation** in Hong Kong that has the potential to reduce water-related energy consumption and carbon emissions.

B6) To **leverage digital technologies** (e.g. on-line education/training, video conferencing, digitalised public services, etc.) and further develop local tourism so that the carbon emissions associated with travel can be reduced.

3.18 Hong Kong economy is externally oriented and highly dependent on trade. We rely heavily on imports, with over 90% of food and beverages sourced from other places. Learning about the carbon emissions associated with our consumption, including food, water as well as other products such as clothing, electronic goods, etc. provides new insights into the challenges and opportunities for driving the shift towards a low-carbon society. This issue has been raised in several engagement sessions, such as briefing sessions and regional fora, where some green groups and think tanks have suggested that Hong Kong may take a 'consumption-based accounting' approach to audit the carbon embodied in international trade. Taking into consideration of the above contexts and views, the SDC therefore sets forth the following recommendations:

Medium-term (5-10 years)

B7) To consider adopting a **consumption-based accounting** approach to measuring carbon emissions embodied in both local and imported goods and services.

B8) To encourage and facilitate the **business sector** in developing and delivering a wide range of **low-carbon goods and services** to the public.

3.19 Achieving the Paris Agreement goals requires a rapid and deep decarbonisation of the economy. With the climate crisis upon us, all actions add up. While personal behavioural change is important, it is noteworthy that the Government, business and non-profit sector also play a prominent role to facilitate lifestyle transformation by providing necessary infrastructure, driving the market demand for green technologies and low-carbon products and services, and raising public awareness that enable each and every one of us to live more sustainably. Last but not least, a successful transition to a low-carbon economy—an economy based on low energy consumption, low GHG emissions and low pollution—will require consistent policy support, cross-sectoral collaborations and significant technology and capital input. In this regard, the SDC opines that the Government should take the lead:

Long-term (>10years)

B9) To actively promote, guide and facilitate the growth of **low-carbon economy** in Hong Kong.

C. Education, Training and Research

3.20 Education and training are essential elements of the global response to climate change, which are widely recognised by the public and stakeholders across sectors. While communicating climate data and projections to the public is important, raising awareness and educating young people about climate change impacts is particularly vital if our future generations are to continue the fight against climate change. On the other hand, skilled workforce is a valuable asset in the transition towards a low-carbon economy and climate-resilient society. To leave no one behind, it underlines the need for greater investment in gearing up professional and vocational education and training across occupations and industries. In light of this, the SDC therefore makes the following recommendations:

Short-term (1-5 years)

C1) To invite tertiary institutions/professional organisations to provide **specialised training**, particularly for policy-makers and civil servants in the public sector and decision-makers in the wider society, on the urgency of decarbonisation; and offer **vocational training and certification programmes** which teach technical and managerial skills to meet the needs arising from low-carbon transformation.

C2) To enrich the learning elements and teaching methods related to **sustainable development** and **climate change** (e.g. international climate change related agreements) in **school curricula** and **life-wide learning**. It is important for schools to promote positive values, such as caring and responsibility, from young, gradually foster students' understanding of sustainable development and climate change, and encourage creativity and youth participation in search for innovative solutions to climate change.

Long-term (>10years)

C3) To continue investing in education, training and research to nurture **talent pool and workforce to catch up with the evolving requirements** of the low-carbon economy.

D. Built Environment

3.21 The building sector, which is responsible for nearly 40% of global carbon emissions[5], presents a key opportunity to make an impactful reduction in global GHG emissions as part of the concerted efforts to address climate crisis. Globally, buildings contribute to carbon emissions in two ways: the carbon embodied in the building materials and construction process throughout the whole life cycle of a building, and the carbon emissions associated with the energy used to operate a building. Being a service economy without major energy-intensive industries, the operating energy of Hong Kong's built environment is by far the largest source of carbon emissions, accounting for over 60% of the total carbon emissions in Hong Kong. In terms of actual energy use, around 90% of electricity and close to 70% of gas (including Liquefied Petroleum Gas)[6] are consumed in buildings.

3.22 Since most building-related carbon emissions come from operational energy use, enhancing energy efficiency consumed in buildings can achieve major carbon emissions reduction. One of the most effective means to address these emissions is reducing consumption through demand side management, which comprises the adoption of energy efficiency design and promotion of energy conservation practices in both new and existing buildings.

3.23 During the PE process, different stakeholders such as professional bodies, think tanks and business-related organisations have commented or provided suggestions on the government policies and measures for (i) encouraging and incentivising low-carbon building designs; ii) reducing energy consumption in buildings through low-carbon lifestyle choices; (iii) enhancing energy data disclosure and benchmarking; (iv) stepping up efforts to support energy efficiency improvement etc. The suggestions can be summarised as two broad approaches: (i) regulatory measures, which include enforcing higher standards for addressing every aspect of the design, construction and operation of buildings; (ii) economic instruments, which focus more on the provision of a mix portfolio of incentives to stimulate energy efficiency investments, and encouraging more energy efficiency enhancement measures and operations in existing buildings. Having considered the above, the SDC opines that the Government shall adopt both approaches where appropriate. Key recommendations are as follows:

[5] IEA. (2019). Global Status Report for Buildings and Construction 2019. https://www.iea.org/reports/global-status-report-for-buildings-and-construction-2019

[6] Based on EMSD energy end-use statistics.

Short-term (1-5 years)

Existing building stock

D1) To **scale up existing financial and technical support** for energy efficiency improvement works and carbon reduction measures in existing buildings. Some possible approaches include: i) providing funding and technical support for **schools and NGOs** to obtain green building certification or achieve comparable standards, and carry out retrofitting and/or retro-commissioning works in their buildings/premises; ii) providing financial incentives to **small and medium-sized enterprises (SMEs)** for encouraging the adoption and uptake of energy-saving and carbon reduction measures; and (iii) providing **further incentives for retrofitting existing buildings** with green features.

New buildings/developments

D2) To **raise the requirement for obtaining the 10% Gross Floor Area (GFA) concessions** for green and amenity features in new development projects, and put in place an **assessment scheme with a compliance mechanism** for monitoring the **operational performance** of the development projects.

D3) To **develop guidelines and/or requirements** on incorporating **low-carbon and passive design measures, such as better utilisation of natural ventilation** into building design as well as the built environment in general, for enhancing comfort level and decreasing air-conditioning loading in buildings, and to **support R&D on energy efficiency technologies and standards** suitable for introducing to new buildings.

3.24 The existing built environment poses great challenges for reducing building related carbon footprint in Hong Kong. While more may need to be done in terms of retrofitting and retro-commissioning, international experience suggested that tightening of energy efficiency codes and regulations in accordance to the technological development, and improving data transparency with energy benchmarking and rating systems could encourage more sustainable building design and practices. The adoption of green and energy efficiency features, such as (i) low-carbon building materials and construction techniques; (ii) natural ventilation and passive energy saving design elements; (iii) enhanced thermal performance of building envelope, including walls and glazing for new buildings and building renovations; (iv) buildings integrated RE installations; and (v) building energy management systems would help reduce carbon emissions in new buildings and optimise the operating energy efficiency of the existing building stock. In the light of the above, the SDC therefore makes the following recommendations:

Medium-term (5-10 years)

D4) To continue to **raise existing standards relating to energy consumption**, e.g. Building Energy Code, Buildings Energy Efficiency Ordinance, Overall Thermal Transfer Value (OTTV) and Residential Thermal Transfer Value (RTTV).

D5) To further promote **lean construction practices** and **adoption of new construction technologies** among this industry, and develop a **labelling scheme with suitable benchmarking standard to encourage wider use of low embodied carbon building materials** for further carbon reduction in the built environment.

D6) To **promote energy and carbon audits**, and the **benchmarking of energy performance data**. Possible approaches may include: (i) encouraging building owners to conduct energy audits, disclose their energy performance data for benchmarking, with a view to developing a comprehensive reporting system for all existing buildings; (ii) encouraging commercial buildings to conduct carbon audits and disclose their carbon emissions; and (iii) developing an open database of energy consumption and/or carbon emissions of buildings, with a view to encouraging competition among building owners of estates/neighbourhood to decarbonise.

D7) To **enhance and align** local green rating and/or certification system for **buildings and neighbourhoods** with international standards, and to develop a **green rating and/or certification system for infrastructure and perhaps also the entire built environment (comprising buildings, infrastructure and open space)**.

3.25 To pave way for a climate-resilient built environment, the SDC recommends the following principles and measures to revolutionise the building and construction sector towards a net zero future:

Long-term (>10years)

D8) To maximise **in-situ RE generation** in the built environment.

D9) To consider ways to **limit the energy consumption** of buildings. Any cap or quota on the energy use or emissions, if to be introduced, will have to cater for the different features of different building types, and give due regard to practicability, technical feasibility and cost implications.

E. Energy

3.26 To progressively decarbonise the energy sector, our energy has to increasingly come from zero carbon fuel sources, while at the same time, delivered to end-users in a safe, reliable, affordable, and also environmental-friendly manner. In deciding the long-term fuel mix for Hong Kong, there has been a clear support from the public and stakeholders that fossil fuels—particularly coal use in electricity generation—should be phased out as soon as the opportunities

arise, and with a clear timetable. Understandably, natural gas will be needed as a 'transition' or 'bridging' fuel in the conversion to a fully decarbonised future. The coal-to-gas transition in the coming decade will be a key step in substantially reducing Hong Kong's carbon emissions.

3.27 In the quest for zero-carbon fuel sources, there was considerable discussion among the public and stakeholders, particularly think tanks and green groups, on the need to harvest and maximise the potential from local RE and waste-to-energy projects. There were also calls for enhancing R&D in RE technologies and leveraging emerging alternative fuels to decarbonise the energy sector. Of particular note, the rapid developments in green hydrogen—used as a fuel or energy carrier and storage—has been taken place in other parts of the world such as Europe and Australia in the last two years. In light of the above, the SDC opines that efforts should be stepped up in the following areas.

Short-term (1-5 years)

E1) To support local academia, industries and startups conducting **R&D (e.g. basic research, applied research and experimental development) on, and assess the potential of adopting transformational low-carbon energy solutions (e.g. green hydrogen)**. The R&D for new energy technologies could focus on various areas including, but not limited to, energy generation, transmission and storage.

E2) To spur the public and private sectors to apply more ambitious strategies and technologies for **further developing local RE (e.g. solar, wind, hydro, tidal, etc.) and waste-to-energy projects**. Set out below are some possible directions:

- Expediting the installation of distributed RE generation in government and/or government-funded premises;
- Maximising the use of underutilized space for RE applications;
- Encouraging more widespread deployment of floating system of solar panels on water surfaces such as reservoirs and the sea, with due consideration to minimising the potential impacts on biodiversity and ecosystem;
- Accelerating the development of waste-to-energy infrastructure and technologies;
- Revisiting the potential of onshore and offshore wind farms, while giving due consideration to the impact of the projects on migratory birds and marine life;
- Encouraging exploration of different types of RE, such as tidal and wave energy at outlying islands, given limited land and natural resources in the urban areas.

E3) To **review local RE target** based on the progress of Feed-in Tariff (FiT) Scheme and availability of new technologies.

3.28 Nevertheless, given current technologies and land-use constraints, the sole reliance on local RE may not be able to contribute meaningfully to meeting the energy demand of Hong Kong in the short to medium term. In view of the fact that currently around 25% of our energy comes from non-fossil fuels (including RE and imported nuclear energy), energy import plays a

part in achieving our decarbonisation target at this juncture, but energy security and safety would be the key considerations. To ensure a safe and reliable electricity supply for the public and businesses in Hong Kong, the SDC recommends that the Government, in collaboration with the two power companies, shall consider the following approach:

E4) To leverage on **LNG as an interim energy option** to help stabilise and reduce carbon emissions.

3.29 Of particular note, nuclear energy is often considered a transitional solution to climate change. It provides virtually no GHG emissions during generation, has been widely used for decades, and is arguably one of the most reliable, land-efficient energy choices for generating affordable electricity. As of August 2020, there were over 440 operable nuclear reactors in more than 30 countries, and a few hundred more reactors being planned or proposed[7]. This suggests considerable reliance in using nuclear energy, probably established through operating experience, improved technologies and international cooperation. Understandably, there are still safety and environmental concerns about nuclear power plants and disposal of nuclear waste. In this PE, the public and stakeholders that have been engaged held divergent views as to whether Hong Kong should continue to use nuclear energy, or even increase the import of non-fossil fuel energy (including both RE and nuclear). In this regard, the SDC makes the following recommendation:

E5) To conduct and participate in **further studies on the safe use of imported nuclear energy**, and to keep abreast of technological developments that can enhance its efficiency and safety.

3.30 In the medium to longer term, it is of vital importance that the hardware and other support mechanisms are put in place to enhance our global sourcing capacity for accelerating the shift to zero carbon energy. Nevertheless, given that the planning, design, financing and construction of energy infrastructure requires a long lead time of at least 10 years, the SDC opines that the Government should set forth plans:

Medium-term (5-10 years)

E6) To **step up cross-departmental coordination and formulate more proactive strategies** (including different collaboration and financing arrangements) in sourcing zero carbon energy resources globally.

E7) To further **address the economic costs of low-carbon energy transitions,** including possible impact on disadvantaged groups.

[7] World Nuclear Association. (2020). Nuclear Power in the World Today https://www.world-nuclear.org/information-library/current-and-future-generation/nuclear-power-in-the-world-today.aspx

Long-term (>10 years)

E8) To **examine the market viability, technical feasibility and supply security** of sourcing zero carbon energy globally.

E9) To **plan and build up the infrastructure** to receive and utilise imported zero carbon energy.

F. Transport

3.31 Transportation, which accounted for 18% of GHG emissions in 2018, is the second largest GHG emission sector[8] in Hong Kong. To slow down climate change by reducing transport-related carbon emissions and improving air quality, the Government has all along been committed to encouraging the public to use public transport as far as possible, and should they need to buy or replace private cars, they are encouraged to choose electric private vehicles (e-PVs). With these objectives, the Government has endeavoured to promote and mainstream e-PVs through offering financial incentives such as tax concession and lower annual vehicle license fee. For new energy commercial vehicles, measures taken include waiving the first-time registration tax (FRT); putting in place a Pilot Green Transport Fund (PGTF) and pilot schemes to support the transport sector to try out green innovative transport technologies (e.g. electric taxis and minibuses, and cross-harbour ferries); and subsidising franchised bus companies to test out electric buses.

3.32 To further decarbonise the transport sector, it is advisable that Hong Kong should chart a way forward with clear targets and implementation plans in order to drive transformational changes in transport demand and supply. There have been suggestions from the public and stakeholders engaged in the PE, for enhanced efforts based on the 'avoid-shift-improve' approach, including: reducing the frequency of unnecessary and short-distance journeys; switching private car trips to public transport (preferably rail-based), walking and cycling; increasing the availability and accelerating the shift to low-carbon and cleaner vehicles. In this light, the SDC recommends the following strategic directions—improved departmental coordination, enhanced incentives, well-defined phase-out strategy, long-term infrastructure planning, and R&D—for encouraging the shift to low-carbon transport system, as part of the concerted effort to tackle climate crisis. Setting out below is a broad outline of the short-, medium- and long-term recommendations:

Short-term (1-5 years)

F1) To maintain the role of **railway as the backbone** of public transport network and continue encouraging the public to use public transport.

[8] International shipping and aviation are not directly included in the Paris Agreement. The International Civil Aviation Organization (ICAO) and International Maritime Organization (IMO) are responsible for reducing global emissions from their respective sectors.

F2) To formulate **progressive targets** and devise **a holistic roadmap**[9] for increasing the **uptake of EVs, including both private and commercial vehicles**[10], while taking into consideration the change in fuel mix for electricity generation in Hong Kong. The roadmap should include incentives for car owners to switch to EV, development of charging infrastructure[11], management of EV battery recycling and disposal etc.

F3) To enhance **inter-departmental coordination** in facilitating EV and green ferry development.

F4) To further **encourage the freight sector, especially commercial vehicles, and the shipping industry to test out green and low-carbon transport technology,** and consider the merit and viability of applying other **new energy technologies** for vehicles and ferries in the local context, so as to reduce transport-related carbon emissions and improve air quality.

3.33 Transforming the transport industry to run on low-carbon energy is vital for a more sustainable society. While electrifying the transport system plays an integral part, some stakeholders (e.g. energy utility company and green groups) suggested that R&D for hydrogen/methanol fuel cell technologies and alternative fuels such as locally produced or sustainably sourced biofuel[12] should be explored further to help decarbonise the transport sector. In this light, the SDC makes the following recommendation:

[9] With reference to the European Union (EU), it has set a common target of 10% for the share of RE (including liquid biofuels, hydrogen, bio-methane, 'green' electricity, etc.) in the transport sector by 2020. See Renewable energy Statistics. https://ec.europa.eu/eurostat/statistics-explained/pdfscache/7177.pdf

[10] EVs account for about 2% of Hong Kong's 620,000 private cars. As of July 2020, there were 15,323 EVs in the city, up from 1,160 in 2014.

[11] Having considered the HK$2 billion pilot scheme introduced by the Government to subsidise installation of EV charging-enabling infrastructure in car parks of eligible existing private residential buildings. According to preliminary assessment, about 60,000 parking spaces in existing private residential buildings will be provided with EV charging-enabling infrastructure in about three years under the pilot scheme. Together with EV charging-enabled parking spaces in new private residential buildings granted with gross floor area concessions, it is expected that about one-fourth of all parking spaces in private residential buildings will be EV charging-enabled upon the completion of the pilot subsidy scheme. Source: HKSARG Press Release (2019). "ENB prepares pilot subsidy scheme for electric vehicle charging-enabling infrastructure in car parks of private residential buildings". https://www.info.gov.hk/gia/general/201910/15/P2019101500409.htm

[12] The Finnish parliament has passed a new legislation to increase the share of biofuels used in road traffic to 30% by 2029. Source: Finland sets new law to increase biofuel use in road traffic. https://www.businessfinland.fi/en/whats-new/news/2019/finland-sets-new-law-to-increase-biofuel-use-in-road-traffic/

Medium-term (5-10 years)

F5) To **accelerate the adoption and growth of new energy vehicles, including EVs and possibly hydrogen fuel-celled vehicles, as well as green ferries** for reducing carbon emissions and air pollution. Nevertheless, it is important to emphasise that, currently, there are uncertainties as to whether hydrogen is a viable alternative fuel, with regards to the challenges surrounding technical feasibility, infrastructure compatibility and cost effectiveness. In addition, it is noteworthy that hydrogen fuel cell vehicles are still at an early stage of development, which lack a mature standard for commercialisation in terms of production, transportation or refuelling.

3.34 To turn low-carbon transport goals into reality, it is crucial the vehicle fleet in Hong Kong gradually becomes fossil fuel-free. International experience shows that, phasing out diesel and petrol cars—through sales ban or specifying an end-date for the registration of new internal combustion engine (ICE) vehicles—has been gathering pace across the world in an effort to reduce carbon emissions and pollution. For example, diesel and gas vehicles sales in Norway have been forecasted to end in 2025. The UK planned to ban the sale of gas vehicles by 2040. In Asia, Singapore intended to phase out petrol and diesel vehicles by 2040[13]. Aligning with practices adopted in other developed economies, the SDC makes the following recommendations:

Long-term (>10 years)

F6) To **gradually phase out vehicles that use fossil fuel as its only source** based on clear targets and timelines. However, its success hinges on whether there is sufficient technology, adequate infrastructure support and incentives for EVs and other alternative fuel vehicles such as hydrogen vehicles. It is also noteworthy that clarity on the target date of the complete ICE vehicle ban, with a reasonable lead time for the transition, is essential to enable adequate planning with regard to the future infrastructure needs.

F7) To consider further **restraining automobile ownership**, and discouraging the use of private cars, while encouraging walking and cycling as well as maintaining an efficient and reliable public transport system.

3.35 International shipping and aviation are carbon intensive industries, which account for roughly 2-3% of all global carbon emissions respectively[14]. The responsibility for reducing the emissions of these two sectors is assigned to two UN agencies: the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO). As a major port and a civil aviation hub, it is crucial that Hong Kong's decarbonisation plans should take into account emissions connected to these two

[13] Singapore government's Budget Speech 2020. (February 18, 2020). https://www.singaporebudget.gov.sg/budget_2020/budget-speech/d-sustaining-singapores-success-for-our-future-generations#s1

[14] Air Transport Action Group. (2020). Facts and Figures. https://www.atag.org/facts-figures.html

sectors and their related activities. In this regard, the SDC makes the following recommendations:

F8) To **evaluate the trend and support the shipping and aviation industries in the implementation of green technologies and transition to low-carbon/zero carbon fuels**. Noting that IMO and ICAO are already taking the lead in addressing carbon emissions on the international front, Hong Kong should closely monitor the developments on those fronts and contribute to their efforts as appropriate, and in doing so give due consideration to the potential impact on the commercial viability and hence the competitiveness of the shipping companies, port operators and local airlines. Any new initiatives should be devised on the basis of adequate engagement with the industries and other relevant stakeholders.

F9) To **plan and build up the infrastructure required to supply low-carbon or zero-carbon fuel to international shipping and aviation industries**, to preserve and strengthen the status of Hong Kong as a key international port and aviation hub.

G. City Planning and Management

3.36 City planning, management and urban design have a critical role to play in the global and local response to climate change. In the transition towards a low-carbon city, the SDC opines that due consideration should be given **to integrating decarbonisation and climate actions into all development strategies, planning guidelines and building energy efficiency/carbon emissions standards of the Government**. In addition, periodic reviews should be carried out with a view to **progressively enhancing relevant policies and standards** based on Hong Kong's local conditions and progress. In summary, the key recommendations for short-, medium- and long-term are as follows:

Short-term (1-5 years)

G1) To continue to promote **walkability** and foster **a bicycle-friendly environment**, especially in new development areas and new towns, to reduce our reliance on mechanised transport. In this light, it is advisable that the Government should formulate walkability enhancement measures, and improve cycling facilities in new development areas and new towns, for enhancing the overall walking and cycling experiences in Hong Kong.

G2) To develop a more **coordinated and connected strategy** to take forward **greening and vegetation projects**, establish an **information database of the carbon reduction potentials of different species**, and facilitate the **restoration and protection of our natural 'carbon sinks'**, such as country and marine parks, and wetlands.

G3) To mainstream **smart, green and resilient considerations** in the planning and development process, and incorporate **climate-adaptive/resilient principles and**

protocols into the planning of our city and the design of buildings and infrastructure.

G4) To formulate an **integrated, long-term low-carbon development strategy** with an aim to **minimising long-distance commuting and carbon emissions in New Development Areas and renewal projects** of old urban areas.

Medium-term (5-10 years)

G5) To impose **carbon emissions requirements** with a focus on the operation phase of **large infrastructure and developments.** The Government should study the means and mechanism needed to achieve low carbon development for Hong Kong while balancing the socio-economic needs.

Long-term (>10 years)

G6) To **strengthen Hong Kong's position as a smart and low-carbon city** in the long term. Some possible approaches include:

- Designating 'low carbon emission zones' or 'zero carbon emission zones'.
- Piloting electronic road pricing (ERP) schemes to alleviate localised traffic congestion and the associated roadside vehicle emissions as appropriate.

H. Finance

3.37 Hong Kong's status as the world's premier international financial centre is well recognised. During the PE process, there were discussions and specific feedback from green financers and professional organisations etc. about the role of economy and finance in low-carbon transition. Some were in general supportive for providing economic opportunities and financing mechanisms, while some raised specific recommendations, mainly on taxation measures.

3.38 It is noteworthy that over 40 governments worldwide (e.g. the European Union, Canada, Australia, China etc.) have adopted some sort of carbon pricing mechanisms, such as introducing

a carbon tax[15], and developing an emissions trading scheme (or cap-and-trade[16]) where an emission cap is set on a scope of emitters and emissions allowances are allocated or auctioned to covered entities. No clear conclusions could be drawn from the PE on whether Hong Kong should adopt a similar pricing strategy for reducing and offsetting our carbon emissions. This implies the need to keep abreast of the development trends and climate mitigation potential of carbon pricing.

3.39 Hong Kong, as a leading financial hub, is well positioned to take the lead on green and sustainable finance with a view to orienting capital flows into projects and initiatives that can create positive social and environmental impact, and are conducive to the transition towards net zero carbon emissions. The launch of HK$100 billion (USD$12.75 billion) green bond programme[17] in 2018 and the signing of the Green Bond Pledge, as well as the establishment of the Green and Sustainable Finance Cross-Agency Steering Group[18] in 2020 are regarded as the critical steps forward for advancing Hong Kong's green and sustainable finance market in this respect. Moreover, the Government, as one of the largest asset owners, is advised to work closely with financial regulators (e.g. Hong Kong Monetary Authority, Mandatory Provident Fund Schemes Authority, Hong Kong Exchanges and Clearing Ltd. etc.) to facilitate the integration of Environmental, Social, Governance (ESG) factors and climate change risks into investment decisions and the monitoring process. With regards to the above considerations, the SDC recommends that the Government shall consider the following strategies:

Short-term (1-5 years)

H1) To further develop **green and sustainable finance** through the Green and Sustainable Finance Cross-Agency Steering Group.

[15] In Singapore, the Minister for Finance announced at Budget 2017 their plans to introduce a carbon tax from 2019. The tax will be applied on facilities that emit 25,000 tCO2e or more of GHG emissions annually and cover the six GHGs that currently reported to the UNFCCC as part of their national GHG inventory. To allow more time for the industry to adjust and implement energy efficiency projects, the tax will start at SG$5/tCO2e (US$3.7/tCO2e) in the first phase, from 2019 to 2023. The Government will then review the tax rate by 2023. Source: NCSS. Carbon Tax. https://www.nccs.gov.sg/singapores-climate-action/carbon-tax/

[16] Launched in 2010, the cap-and-trade program of the Tokyo Metropolitan Government is the first mandatory city-level emission trading scheme focused on buildings. Under this scheme, large offices and factories are required to reduce carbon emissions by 25% or 27% respectively in the third compliance period (FY2020-2024). Source: TMG finalizes the cap for Tokyo Cap-and-Trade Program after 2020. http://www.kankyo.metro.tokyo.jp/en/climate/cap_and_trade/index.files/TCaT_after2020.pdf

[17] Hong Kong Government Green Bond Programme. https://www.hkgb.gov.hk/en/greenbond/greenbondintroduction.html

[18] Hong Kong Monetary Authority. (2020). Joint statement on the establishment of the Green and Sustainable Finance Cross-Agency Steering Group. https://www.hkma.gov.hk/eng/news-and-media/press-releases/2020/05/20200505-8/

H2) To step up efforts in promoting issuance of and investment in **green bonds/climate-themed bonds, green loans and other financial products** to finance projects that deliver carbon reductions, including those of SMEs.

H3) To promote the development of **ESG reporting and disclosure** such that more corporations will take into account climate factors in making management and investment decisions.

Medium-term (5-10 years)

H4) The Government could also set a positive example by **promoting decarbonisation strategies for its investment funds** commensurate with their mandates.

H5) To explore opportunities of developing a **wider spectrum of green and sustainable financial products** by tracking international and regional trends on green and sustainable finance, with a view to **encouraging corporations and organisations to shift to cleaner energy sources.**

4 Closing Remarks

4.1 The three-month PE on Long-term Decarbonisation Strategy was completed on 20 September 2019. The SDC, with the support of its SSC and SG, has reviewed the IRA's Independent Analysis Report, and consolidated the views and comments expressed by the public and stakeholders. The submission of this recommendation report to the Government marks the final stage of the PE process.

4.2 Feedback solicited from the PE process has revealed that although public awareness for climate change is building up in Hong Kong, more efforts are required to communicate the urgency for change, and drive cross-sectoral actions for systemic low-carbon transformation and deep decarbonisation to get the economy ready for advancing to net zero emissions by 2050.

4.3 In the process of formulating practical and actionable strategies, the SDC has endeavoured to balance views from the public and different sectors of the society. In this light, the SDC has set out a long-term vision, six overarching objectives and 55 recommendations across eight key areas of target, lifestyles, education, training and research, built environment, energy, transport, city planning and management, as well as finance, with a view to progressively reducing our carbon emissions for climate change mitigation.

4.4 To adequately address the climate crisis, it requires strong government leadership, inter-departmental coordination and cross-sectoral actions. The SDC calls on the Government to make swift decisions and mobilise actions from the business sector and the community to set us on the road towards deep decarbonisation for Hong Kong.

Annex I Membership List of the Support Group on Long-term Decarbonisation Strategy*

Mr LAM Chiu-ying, SBS (Convenor) *(until 25 September 2020)*
Dr Bunny CHAN Chung-bun, GBS, JP
Ms Serena CHENG Hoi-yan
Mr CHEUNG Chi-wah
Mr CHEUNG Hau-wai, SBS
Mr Eric CHONG
Mr CHOW Lap-man
Professor CHU Hoi-shan
Professor FUNG Tung
Professor Laurence HO Hoi-ming
Professor HO Kin-chung, BBS, JP
Ms Betty HO Siu-fong, MH
Mr Tony IP Chung-man
Ms Samantha KONG Wing-man
Mr Prentice KOO Wai-muk
Mr KWOK Lit-tung, JP
Ms Melanie KWOK
Mr Wilson KWONG Wing-tsuen
Professor LEUNG Wing-mo
Dr LUK Bing-lam
Mrs Agnes MAK TANG Pik-yee, MH, JP
Mrs Sandra MAK WONG Siu-chun
The Late Dr NG Cho-nam, SBS, JP *(until 13 December 2019)*
Mr Simon NG Ka-wing
Ms Karen NGAI Oi-ling
Miss Samanta PONG Sum-yee
Ms Christina TANG Pik-han
Mr Cliff TANG Wing-chun
Ms Rosana WONG Wai-man
Ms WONG Shu-ming, MH
Ir Professor WONG Sze-chun, BBS, JP
Professor Jonathan WONG Woon-chung, MH, JP
Mr Eric YEUNG Chuen-sing
Representative from Development Bureau
Representatives from Environment Bureau / Environmental Protection Department
Representative from Hong Kong Observatory
Representative from Transport and Housing Bureau

*Listed in alphabetical order

Annex II ***List of Public Interaction Activities***

	Date	Activity
1.	20 Jun (Thu)	School activity - Sai Kung Sung Tsun Catholic School (Secondary Section)
2.	20 Jun (Thu)	Steering Committee on the Promotion of Electric Vehicles
3.	24 Jun (Mon)	The Chinese University of Hong Kong
4.	25 Jun (Tue)	School activity - POH Chan Kai Memorial College
5.	25 Jun (Tue)	Joint College Environmental Innovation Alliance
6.	26 Jun (Wed)	School activity – The Lutheran Church Hong Kong Synod MKMCF Ma Chan Duen Hey Memorial College
7.	26 Jun (Wed)	The Hong Kong Polytechnic University
8.	27 Jun (Thu)	Airport Authority Hong Kong
9.	27 Jun (Thu)	School activity - Bethel High School
10.	27 Jun (Thu)	Business Environment Council
11.	28 Jun (Fri)	School activity - Rhenish Church Pang Hok Ko Memorial College
12.	28 Jun (Fri)	School activity - Chong Gene Hang College
13.	28 Jun (Fri)	Civic Exchange
14.	2 Jul (Tue)	School activity - SKH Li Fook Hing Secondary School
15.	3 Jul (Wed)	School activity - Carmel Secondary School
16.	4 Jul (Thu)	Environmental Campaign Committee
17.	4 Jul (Thu)	School activity - Kau Yan College
18.	5 Jul (Fri)	School activity - Caritas St. Joseph Secondary School
19.	8 Jul (Mon)	School activity - South Tuen Mun Government Secondary School
20.	8 Jul (Mon)	Advisory Council on the Environment
21.	9 Jul (Tue)	School activity - Ling Liang Church E Wun Secondary School

	Date	Activity
22.	10 Jul (Wed)	School activity - Hong Kong & Kowloon Kaifong Women's Association Sun Fong Chung College
23.	11 Jul (Thu)	School activity - Buddhist Wong Fung Ling College
24.	12 Jul (Fri)	Steering Committee of Pilot Green Transport Fund
25.	16 Jul (Tue)	International Chamber of Commerce – Hong Kong
26.	18 Jul (Thu)	Chairmen and Vice-chairmen of 18 District Councils Monthly Meeting
27.	19 Jul (Fri)	City University of Hong Kong
28.	26 Jul (Fri)	Town Planning Board
29.	30 Jul (Tue)	Small and Medium Enterprises Committee
30.	30 Jul (Tue)	Hong Kong Institute of Acoustics, Hong Kong Institute of Environmental Impact Assessment, Hong Kong Institute of Environmental Protection Officers, Hong Kong Institute of Qualified Environmental Professionals, and The Environmental Management Association of Hong Kong
31.	1 Aug (Thu)	Chartered Institution of Water and Environmental Management Hong Kong
32.	9 Aug (Fri)	Regional Forum (Kowloon West)
33.	14 Aug (Wed)	Regional Forum (Kowloon East)
34.	15 Aug (Thu)	The Hong Kong Jockey Club
35.	15 Aug (Thu)	Regional Forum (New Territories East)
36.	16 Aug (Fri)	The Hong Kong Institution of Engineers Environmental Division
37.	19 Aug (Mon)	Hong Kong Green Building Council
38.	23 Aug (Fri)	Friends of the Earth (HK)
39.	26 Aug (Mon)	The Hong Kong Institute of Planners
40.	28 Aug (Wed)	English Schools Foundation
41.	28 Aug (Wed)	The Hong Kong Institute of Architects
42.	29 Aug (Thu)	Estate Management Advisory Committee (Yiu Tung Estate)

	Date	Activity
43.	2 Sep (Mon)	Hong Kong General Chamber of Commerce
44.	3 Sep (Tue)	The Green Earth
45.	5 Sep (Thu)	Campus Sustainability Office of The Hong Kong Polytechnic University
46.	6 Sep (Fri)	Asia Investor Group on Climate Change
47.	9 Sep (Mon)	Designing Hong Kong
48.	9 Sep (Mon)	Regional Forum (Hong Kong Island)
49.	10 Sep (Tue)	The Hong Kong University of Science & Technology - EcoChat
50.	11 Sep (Wed)	The University of Hong Kong
51.	11 Sep (Wed)	CarbonCare InnoLab & 350 HK
52.	12 Sep (Thu)	Family Council
53.	12 Sep (Thu)	Regional Forum (New Territories West)
54.	12 Sep (Thu)	Energy Advisory Committee
55.	13 Sep (Fri)	The Hong Kong University of Science & Technology
56.	16 Sep (Mon)	The Chinese Manufacturers' Association of Hong Kong
57.	17 Sep (Tue)	Institution of Gas Engineers and Managers
58.	17 Sep (Tue)	Education University of Hong Kong
59.	17 Sep (Tue)	World Wide Fund for Nature Hong Kong
60.	17 Sep (Tue)	Youth Forum
61.	18 Sep (Wed)	Royal Hong Kong Yacht Club
62.	19 Sep (Thu)	Hong Kong E-Vehicles Business General Association
63.	19 Sep (Thu)	Estate Management Advisory Committee of Tin Shui I & II Estates
64.	20 Sep (Fri)	Chu Hai College of Higher Education
65.	20 Sep (Fri)	Sustainable Development Workshop for Liberal Studies Teachers

Annex III ***List of Supporting Organisations****

Public Bodies
Airport Authority Hong Kong
Consumer Council
Hong Kong Housing Authority
Hong Kong Housing Society
Hong Kong Productivity Council
Urban Renewal Authority
Universities, Tertiary Institutions and Education Sector
Chu Hai College of Higher Education
City University of Hong Kong
Hong Kong Baptist University
Hong Kong Shue Yan University
Lingnan University
The Chinese University of Hong Kong
The Education University of Hong Kong
The Hang Seng University of Hong Kong
The Hong Kong Academy for Performing Arts
The Hong Kong Polytechnic University
The Hong Kong University of Science & Technology
The Open University of Hong Kong
The University of Hong Kong
Vocational Training Council
Research Institutions/Think Tanks
AD+RG Architecture Design and Research Group Ltd.
Civic Exchange
Vehicles-related Organisations
Environmental Vehicle Repairers Association
Federation of Automobile Services Industry Hong Kong
H.K.L.H.D. Motors Association Limited
Hong Kong Automobile Association
Hong Kong E-Vehicles Business General Association Limited
Hong Kong Taxi & PLB Association
Public Omnibus Operators Association
Right Hand Drive Motors Association (Hong Kong) Limited
The Motor Traders Association of Hong Kong
Professional Organisations
Asian Institute of Intelligent Buildings
BEAM Society
Building Services Operation and Maintenance Executives Society
Canadian Society for Civil Engineering Hong Kong Branch
Chartered Institute of Housing Asian Pacific Branch
Designing Hong Kong Limited
Engineers Australia Hong Kong Chapter
Environmental Management Association of Hong Kong
Hong Kong Association of Energy Engineers
Hong Kong Environmental Industry Association
Hong Kong Green Building Council
Hong Kong Institute of Environmental Impact Assessment
Hong Kong Institute of Qualified Environmental Professionals
Hong Kong Institute of Urban Design
International Facility Management Association Hong Kong Chapter
Professional Building Surveying Consultants Association of Hong Kong
Professional Green Building Council
The Association of Consulting Engineers of Hong Kong
The Chartered Institute of Building (Hong Kong)
The Chartered Institute of Logistics and Transport in Hong Kong
The Chartered Institution of Building Services Engineers Hong Kong Branch
The Chartered Institution of Water and Environmental Management Hong Kong
The Energy Institute Hong Kong (Branch)
The Hong Kong Association of Property Management Companies
The Hong Kong Institute of Architects
The Hong Kong Institute of Facility Management
The Hong Kong Institute of Housing
The Hong Kong Institute of Landscape Architects
The Hong Kong Institute of Planners
The Hong Kong Institute of Surveyors
The Hong Kong Institution of Engineers
The Society of Operations Engineers, Hong Kong Region
Business-related Organisations
Business Environment Council
Federation of Hong Kong Industries
Hong Kong Construction Association
Hong Kong General Chamber of Commerce

Hong Kong Hotels Association
Junior Chamber International Hong Kong
New Territories General Chamber of Commerce
New Zealand Chamber of Commerce in Hong Kong
The American Chamber of Commerce in Hong Kong
The Australian Chamber of Commerce in Hong Kong
The British Chamber of Commerce in Hong Kong
The Chinese General Chamber of Commerce
The Chinese Manufacturers' Association of Hong Kong
The French Chamber of Commerce & Industry in Hong Kong
The Hong Kong General Chamber of Small and Medium Business
The Real Estate Developers Association of Hong Kong
Non-governmental Organisations/School Sponsoring Bodies
Caritas Hong Kong
Chinese Young Men's Christian Association of Hong Kong
Christian Family Service Centre
English Schools Foundation
Hong Chi Association
Hong Kong Christian Council
Hong Kong Federation of Women
Hong Kong Sheng Kung Hui
Hong Kong Women Development Association Limited
Hong Kong Women Workers' Association
Hong Kong Young Women's Christian Association
New Life Psychiatric Rehabilitation Association
Royal Hong Kong Yacht Club
School of Everyday Life
Soap Cycling
St James' Settlement
The Boys' Brigade, Hong Kong

The Chinese Muslim Cultural and Fraternal Association
The Confucian Academy
The Hong Kong Buddhist Association
The Hong Kong Council of Social Service
The Hong Kong Federation of Youth Groups
The Hong Kong Girl Guides Association
The Hong Kong Jockey Club
The Hong Kong Taoist Association
The Salvation Army
Tung Wah Group of Hospitals
Women Service Association
Yan Chai Hospital
Yan Oi Tong
Young Men's Christian Association of Hong Kong
Concern Groups
350HK
Asia Investor Group on Climate Change
C40 Cities Climate Leadership Group, China Representative Office
CarbonCare InnoLab
Environmental Association
Friends of the Earth (HK)
Green Council
Green Power
Green Sense
Greeners Action
Hong Kong Bird Watching Society
Hong Kong Green Strategy Alliance
Kadoorie Farm & Botanic Garden
Smart City Consortium
Sustainable Development Solutions Network Hong Kong
The Conservancy Association
The Green Earth
The Jane Goodall Institute (Hong Kong) Limited
The Jockey Club Museum of Climate Change
V'air Hong Kong
World Green Organisation
World Wide Fund for Nature Hong Kong

*Listed in alphabetical order under each category.

Annex IV ***List of Roving Exhibitions***

Date	Venue
10.7.2019 – 12.7.2019	**Stanley Municipal Services Building** (G/F) 6 Stanley Market Road, Stanley, Hong Kong
10.7.2019 – 12.7.2019	**Revenue Tower** (G/F) 5 Gloucester Road, Wan Chai, Hong Kong
13.7.2019 – 15.7.2019	**The Open University of Hong Kong** (0/F, Kwok Tak Seng Building (Block C), Main Campus) 30 Good Shepherd Street, Ho Man Tin, Kowloon
16.7.2019 – 18.7.2019	**Queensway Government Offices** (Supreme Court Road Lobby) 66 Queensway, Hong Kong
16.7.2019 – 18.7.2019	**Harbour Building** (2/F) 38 Pier Road, Central, Hong Kong
19.7.2019 – 21.7.2019	**The Education University of Hong Kong, Tai Po** (Central Plaza) 10 Lo Ping Road, Tai Po, New Territories
19.7.2019 – 22.7.2019	**Hong Kong Baptist University** (3/F, Academic and Administration Building) Kowloon Tong, Kowloon
19.7.2019 – 22.7.2019	**Shun Lee Tsuen Sports Centre** (Near Entrance) 33 Shun Lee Tsuen Road, Kwun Tong, Kowloon
23.7.2019 – 25.7.2019	**Po Kong Village Road Sports Centre** (1/F) 120 Po Kong Village Road, Tsz Wan Shan, Wong Tai Sin, Kowloon
23.7.2019 – 25.7.2019	**Hang Hau Community Hall** (Near Hall Entrance) G/F, Sai Kung Tseung Kwan O Government Complex, 38 Pui Shing Road, Hang Hau, Tseung Kwan O, New Territories
26.7.2019 – 29.7.2019	**Mong Kok Community Hall** (Near Hall Entrance) L2, Mong Kok Complex, 557 Shanghai Street, Mong Kok, Kowloon
26.7.2019 – 29.7.2019	**Mei Foo Community Hall** (Near Hall Entrance) 1/F - 2/F, Mei Foo Government Complex, No. 33 Mei Lai Road, Sham Shui Po, Kowloon
2.8.2019 – 4.8.2019	**Kwai Hing Government Offices** (Near Entrance) 166-174 Hing Fong Road, Kwai Chung, New Territories
5.8.2019 – 8.8.2019	**Fanling Environmental Resource Centre** (2/F Corridor) 2/F, Government Accommodations, Grand Regentville, 9 Wo Mun Street, Luen Wo Hui, Fanling, New Territories
5.8.2019 – 8.8.2019	**Hong Kong Wetland Park** (The bridge in Visitor Center, near Wetland Challenge) Wetland Park Road, Tin Shui Wai, New Territories
13.8.2019 – 15.8.2019	**Sha Tin Community Green Station** (G/F Near Entrance) 10 On Ping Street, Shek Mun, Sha Tin, New Territories
13.8.2019 – 15.8.2019	**The Chinese University of Hong Kong** (Benjamin Franklin Centre Exhibition Hall 2&3) Shatin, New Territories
16.8.2019 – 19.8.2019	**Tai Po Community Centre** (G/F Near Hall Entrance) No. 2, Heung Sze Wui Street, Tai Po, New Territories

Date	Venue
17.8.2019	**Kwun Tong Community Green Station** 27 Sheung Yee Road, Kowloon Bay, Kowloon
20.8.2019 – 22.8.2019	**Princess Alexandra Community Centre** (G/F Near Hall Entrance) G/F, 60 Tai Ho Road, Tsuen Wan, New Territories
23.8.2019 – 26.8.2019	**Tuen Mun Town Centre Community Hall** (G/F Near Hall Entrance) Level 4, North Wing, Trend Plaza, Tuen Mun, New Territories
27.8.2019 – 30.8.2019	**North Point Government Offices** (Near G/F Lobby) 333 Java Road, North Point, Hong Kong
27.8.2019 – 30.8.2019	**Quarry Bay Community Hall** (G/F Near Hall Entrance) 1 Greig Road, Hong Kong
3.9.2019 – 5.9.2019	**The Hong Kong Polytechnic University** (Exhibition Gallery (S201), P/F, Communal Building) Hung Hom, Kowloon
3.9.2019 – 5.9.2019	**Lingnan University** (Under Skylight (Near Student Canteen)) 8 Castle Peak Road, Tuen Mun, New Territories
6.9.2019 – 8.9.2019	**Tsing Yi Southwest Sports Centre** (1/F Lobby) 70 Chung Mei Road, Tsing Yi, New Territories
12.9.2019 – 14.9.2019	**The Hong Kong University of Science and Technology** (Chia-Wei Woo Academic Concourse outside Lam Woo Lecture Theatre B) Clear Water Bay, Kowloon
15.9.2019 – 17.9.2019	**Tung Chung Municipal Services Building** (1/F Open Area) 39 Man Tung Road, Tung Chung, Lantau Island
18.9.2019 – 20.9.2019	**Cheung Sha Wan Government Offices** (G/F Lobby) 303 Cheung Sha Wan Road, Sham Shui Po, Kowloon
18.9.2019 – 20.9.2019	**Lei Yue Mun Sports Centre** (2/F Lobby) Lei Yue Mun Municipal Services Building, 6 Lei Yue Mun Path, Yau Tong, Kowloon

Annex V List of Abbreviations

Abbreviation	Stand for
DBNPS	Daya Bay Nuclear Power Plant
EMSD	Electrical and Mechanical Services Department
E-CVs	Electric Commercial Vehicles
E-PVs	Electric Private Vehicles
EVs	Electric Vehicles
ERP	Electronic Road Pricing
ESG	Environmental, Social and Governance
FiT	Feed-in-Tariff
FGM	Focus Group Meeting
FRT	First-time Registration Tax
GFA	Gross Floor Area
GHG	Greenhouse Gas
IRA	Independent Analysis and Reporting Agency
ICAO	International Civil Aviation Organisation
IMO	International Maritime Organization
ICE	Internal Combustion Engine
LNG	Liquefied Natural Gas
NGO	Non-governmental Organisation
OTTV	Overall Thermal Transfer Value
PE	Public Engagement
PGTF	Pilot Green Transport Fund
R&D	Research and Development
RE	Renewable Energy
RTTV	Residential Thermal Transfer Value
SDC	Council for Sustainable Development
SG	Support Group
SMEs	Small and Medium-sized Enterprises
SO	Supporting Organisation
SSC	Strategy Sub-Committee
TCFD	Task Force on Climate Related Financial Disclosures
UNFCCC	United Nations Framework Convention on Climate Change
VCF	Views Collection Form