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Clean Air Plan for Hong Kong 2035

PURPOSE

This paper briefs Members on the vision, targets, strategies and key measures of the Clean Air Plan for Hong Kong 2035.

VISION

2.   The Government published the first *Clean Air Plan for Hong Kong* in March 2013, introducing various policies and measures up to 2020, to tackle the challenges faced by Hong Kong in improving its air quality.   The Government published a progress report in June 2017 and updated the major targets in the *Clean Air Plan for Hong Kong.*

3.   To continuously improve air quality, the Government announced the *Clean Air Plan for Hong Kong 2035* on 29 June 2021, which sets out the vision of **"Healthy Living • Low-carbon Transformation • World Class"**.   Our targets are to lead Hong Kong to be a more liveable city with air quality on par with major international cities by 2035, and advance towards the ultimate goal of having our air quality that fully meets the ultimate targets under the Air Quality Guidelines (AQGs) of the World Health Organization (WHO).

4.   The ultimate targets of the AQGs under the WHO are very stringent.   At present, no country has fully adopted WHO's AQGs published in 2005 as its statutory air quality standards.   We will review the Air Quality Objectives every five years in accordance with the statutory requirements and, where practicable, gradually tighten them according to the WHO's AQGs[1] with a view to progressively enhancing our air quality to meet the ultimate targets of the WHO AQGs.

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[1] WHO recently updated the AQGs on 22 September 2021 and various interim and ultimate targets of air pollutants were added and further tightened.

PROGRESS MADE

5.   After the release of the first *Clean Air Plan for Hong Kong*, the Government has implemented a series of measures to reduce air pollutant emissions from local electricity generation, vehicles, vessels, etc., and at the same time collaborated with Mainland authorities in reducing regional air pollutant emissions. Apart from improving air quality and reducing carbon emissions, the relevant work has also generated a number of green opportunities and created green employment for Hong Kong. Our past efforts on emission reduction included the following directions:

Vehicular Emissions

6.   To reduce vehicular emissions, the Government continuously tightened emission standards for first registered vehicles and provided first registration tax (FRT) concessions to environmentally friendly commercial vehicles. For in-use vehicles, the Government implemented an ex-gratia payment scheme to phase out about 80 000 pre-Euro IV diesel commercial vehicles (DCVs) between 2014 and 2020 and implemented a new ex-gratia payment scheme to phase out about 40 000 Euro IV DCVs. Apart from continuously controlling vehicular emissions, we also subsidised installation of emission reduction devices for franchised buses, liquefied petroleum gas (LPG) taxis and LPG light buses, and set up franchised bus low emission zones in 3 busy corridors in Causeway Bay, Central and Mong Kok to improve roadside air quality.

New Energy Vehicles

7.   New energy vehicles do not emit air pollutants. The Government announced the first *Hong Kong Roadmap on Popularisation of Electric Vehicles* in March 2021 to set out the long-term policy objectives and plans to promote adoption of electric vehicles (EVs), in order to achieve the goal of zero vehicular emissions before 2050. To continuously encourage the public to switch to EVs, the Government provided FRT concessions to EVs. Private car owner who replaces his old car with an electric private car can enjoy a higher tax concession under the "One-for-One Replacement" Scheme. The proportion of new electric private cars participating in the "One-for-One Replacement" Scheme exceeded 90% and the tax concessions offered since 2015 were over $8.4 billion. To enhance charging network, we launched "EV-Charging at Home Subsidy Scheme" in October 2020 to subsidise installation of EV charging infrastructure in over 60 000 parking spaces of existing private residential buildings. Since the implementation of the scheme, we received over 500 applications, covering over 108 000 parking spaces. We also subsidised trial and application of various green innovative commercial transport technologies by New Energy Transport Fund (formerly named Pilot Green Transport Fund). Around 230 trials were approved since the inception of the Fund.

Vessel Emissions

8. To control vessel emissions, the Government imposed a statutory cap of 0.05% on the sulphur content of locally supplied marine light diesel under the Air Pollution Control (Marine Light Diesel) Regulation (Cap. 311Y) in 2014. The Governments of Hong Kong and the Guangdong Province then jointly established a Domestic Emission Control Area in the waters of the Pearl River Delta Region in 2019, and further tightened requirements for all vessels to use compliant fuel (i.e. low sulphur fuel with sulphur content not exceeding 0.5% or liquefied natural gas (LNG)), both in sailing or at berth. Since 2020, we have made use of drones to monitor vessel emissions in real time. Together with computer analysis of sulphur content of vessel fuel, enforcement officers can take effective actions against vessels that are suspected of breaching relevant regulation.

Public Electricity Generation

9. For emissions from electricity generation, the proportion of coal in the fuel mix decreased from about half in 2015 to less than a quarter in 2020. The Government also regularly issued a technical memorandum to progressively tighten the emission caps of sulphur dioxide, nitrogen oxides and respirable suspended particulates for power plants since 2008. An offshore LNG terminal is being constructed jointly by the two power companies to supply natural gas to the power plants in Lung Kwu Tan and Lamma Island, enhancing diversity and security of gas supply.

Other Measures

10. To control emissions of volatile organic compounds (VOCs), the Government has been regulating the VOC content of 172 products in phases since 2007. The Government also supported a local university to develop a system to analyse and forecast air quality in Hong Kong to street level, as well as provide personalised real-time air quality information to the public by mobile app. For indoor air quality, the Government updated the Indoor Air Quality Objectives under the "Indoor Air Quality Certification Scheme for Offices and Public Places" in 2019 to further enhance indoor air quality standards. In addition, we set up the first super air quality monitoring station (the "Supersite") in Cape D'Aguilar in 2017. Apart from monitoring key air pollutants like other general monitoring stations, the Supersite is equipped with more advanced instruments to measure and collect real-time data of VOCs, particles less than one micron (i.e. PM_1), black carbon, etc. for scientific studies under regional collaboration.

Regional Emission Reduction

11. As regards regional collaboration, Hong Kong and the Guangdong Province established in 2000 the Hong Kong-Guangdong Joint Working Group on Sustainable Development and Environmental Protection, co-chaired by Hong Kong's Secretary for the Environment and the Guangdong Province's Director-General of the

Department of Environmental Protection.   There has been cooperation on multiple fronts to improve air quality.   The Hong Kong and Guangdong Governments have been jointly setting a number of 5-year targets for air pollutant reduction and have generally met all the targets.   The Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network came into operation in end-2005.   The network currently consists of 23 air quality monitoring stations that collect regional air quality data, as well as monitor and assess the effectiveness of air quality improvement measures.

12.   With the smooth implementation of the abovementioned emission reduction measures, by 2020, Hong Kong has attained the major goals set out in the progress report in 2017.   Compared with 2012, air pollutant concentrations at roadside have reduced by more than 40%, and emissions from vessels have substantially dropped by about 50% to 90%.   The proportion of coal in electricity fuel sources also decreased from 54% in 2012 to 24% in 2020.   Coupled with the increased proportion of natural gas, nuclear and renewable energy in the electricity fuel sources, fuel mix in Hong Kong for electricity generation has become cleaner.

		Goals set for 2020 in the Progress Report in 2017	Actual performance in 2020
Roadside concentrations (2012 as base year)	**Nitrogen dioxide**	↓40%	↓ 41%
	Respirable suspended particulates	↓40%	↓ 42%
Vessel emissions (2012 as base year)	**Sulphur dioxide**	↓69%	↓86% (2019)
	Respirable suspended particulates	↓49%	↓57% (2019)
Energy: Electricity fuel sources	**Coal**	~25%	24%
	Natural gas	~50%	48%
	Nuclear and renewable energy	~25%	28%

13.   Compared with 2010, the ambient and roadside concentrations of major air pollutants in 2020 have substantially improved by about 40% to 60%.   The details are as follows:

Concentrations of major air pollutants at general monitoring stations (μg/m³)

	2010	2015	2020	Drop between 2010 and 2020
Respirable suspended particulates	45	39	27	40%
Fine suspended particulates	29	25	15	48%
Nitrogen dioxide	52	49	33	37%
Sulphur dioxide	12	10	5	58%

Concentrations of major air pollutants at roadside monitoring stations (μg/m³)

	2010	2015	2020	Drop between 2010 and 2020
Respirable suspended particulates	60	45	31	48%
Fine suspended particulates	36	30	19	47%
Nitrogen dioxide	117	99	70	40%
Sulphur dioxide	10	8	5	50%

14.   With steady improvement of air quality, the number of hours of reduced visibility recorded in Hong Kong has dropped from over 1 500 hours in 2004 to less than 350 hours in 2020, showing a reduction of nearly 80%.

15.   To inform the public of the short-term health risk and information associated with the concentrations of major air pollutants, the Government launched the Air Quality Health Index (AQHI) in December 2013.   The AQHI is divided into 5 health risk categories: low, moderate, high, very high, and serious.   Compared with the data in 2014 when the AQHI was first launched, the number of days with low health risk recorded at general air quality monitoring stations has nearly doubled in 2020, while such number of days recorded at roadside monitoring stations has also significantly increased from 1 to 85 days.   It is evident that health risk brought by air pollution to the public are being mitigated significantly.

16.   Local experts estimate that the number of premature deaths and hospital admissions associated with long-term exposure to air pollutants in 2025 will be reduced by about 1 900 and 1 500 cases respectively compared with 2015.   About 260 000 clinical visits will also be saved.   This will sustainably reduce Hong Kong's medical expenditure and indirectly contribute to the enhancement of productivity.

CHALLENGES

17.   Although air quality in Hong Kong has improved significantly, continuous improvement of air quality and strengthening the protection of public health are still the priority work of the Government.   In order to enhance our air quality to a level

comparable to major international cities by 2035, we have to tackle the following 3 key challenges in addition to air pollutant emission sources.

(a) Roadside Air Pollution

18. The increase in the number of registered vehicles and vehicle annual mileage, traffic congestions and ageing of vehicles are the major causes of roadside air pollution. Although the annual average concentration of nitrogen dioxide at roadside has substantially reduced from 118 $\mu g/m^3$ in 2012 to 70 $\mu g/m^3$ in 2020 under the various measures, we will continuously implement measures on green transport and air pollutant emission reduction with a view to meeting the air quality objectives of nitrogen dioxide (i.e. 40 $\mu g/m^3$).

(b) Vessel Emissions

19. With the significant reduction in total emissions from electricity generation and vehicles, vessel emissions are becoming the major local emission source. In 2019, vessel emissions accounted for 28%, 35% and 28% of the total local emissions of sulphur dioxide, nitrogen oxides, and respirable suspended particulates respectively. Hence, we have to explore and implement various measures relentlessly and act in concert with the national authorities on the marine control measures implemented in the Greater Bay Area waters.

(c) Managing Ozone Level

20. Ozone is not directly emitted from pollution sources. It is formed by photochemical reactions between nitrogen oxides and VOCs under sunlight. Ozone is a regional air pollution problem. To effectively reduce the formation of ozone in the region, we need to conduct in-depth studies with other cities in the Greater Bay Area on the photochemical smog problem so as to identify the major compounds for ozone formation and their sources. In this connection, we are fostering more proactive regional collaboration and bringing in line with the policy directions and targets of curbing ozone concentration under the National 14th Five-Year Plan.

STRATEGIES AND ACTIONS

21. In order to further improve air quality thus achieving the target of being on par with major international cities by 2035, we should not only continue to sustain our efforts to reduce emissions of different air pollutants from existing air polluting sources, but also think creatively and act boldly for greater accomplishments, and attain zero carbon emissions in the long run. This will help realise Hong Kong's target of achieving carbon neutrality before 2050. Against the above, we have devised our strategies of air quality improvements along the following three major directions.

(a) <u>Adopt Green Technologies</u>

22. The rapid development of green technologies is creating new modes of living, commuting, doing business, engineering and electricity generation, etc. In fact, all corners of the world are actively promoting research and utilisation of different green technologies such as new energy vehicles and vessels, renewable energies, hydrogen energy. These green technologies could also cope with the application and development of information technologies including artificial intelligence, big data and Internet of Things. To further improve air quality and move towards carbon neutrality, Hong Kong has to be in line with the global trend and switch to adopt new green technologies on multiple fronts in a bold and decisive manner, with a view to expediting low-carbon transformation.

(b) <u>Relentless Efforts in Emission Reduction</u>

23. While promoting low-carbon transformation, we will keep controlling and reducing emissions from existing air polluting sources to continuously improve air quality. Road transport, vessels, electricity generation and products containing VOCs (e.g. air fresheners, hair sprays, insecticides, printing inks, paints, etc.) are all the primary local sources of air pollutants. Although the various measures implemented have significantly reduced their emissions, we have to spare no effort to explore further measures to reduce air pollutant emissions including respirable suspended particulates, fine suspended particulates, sulphur dioxide, nitrogen oxides, VOCs, etc.

(c) <u>Regional Collaboration</u>

24. Apart from local air pollutant emissions, air quality is also affected by regional emissions. The accumulation and transmission of air pollutants are not subject to regional restrictions. Therefore, while we are strengthening control of local air pollutant emissions, we must join hands with Guangdong Province to promulgate targets of air pollutant emission with a view to cutting down the emissions and accumulation of air pollutants. The entire Greater Bay Area will also strengthen the monitoring and research on the causes, characteristics and transportation of ozone problem. This will lay a more in-depth scientific foundation for jointly tackling the regional ozone problem. We will also continue to collaborate with other cities in the Greater Bay Area to devise suitable measures to address and manage the ozone problem with a view to improving air quality in the region.

SIX MAJOR AREAS OF ACTION

25. Against the above strategies, we have formulated the following six major areas of action to be carried out by government departments. The timetable for implementation of relevant measures is at **Annex**.

Green Transport

(a)   Take Forward the Roadmap on Popularisation of Electric Vehicles

26.   The Government published the first *Hong Kong Roadmap on Popularisation of Electric Vehicles* (Roadmap) in March 2021, and the feedbacks from the community are positive.   Among others, franchised bus companies have indicated their plans on the procurement of electric buses and installation of charging facilities in new bus depots, or are actively assessing the feasibility of using hydrogen fuel cell buses in Hong Kong.   We have also learned that a number of vehicle suppliers have devised detailed plans to introduce more EVs of different models and prices to Hong Kong.   The Government's various policies and measures to promote the expansion of charging network are also welcomed by stakeholders.   In particular, the response to the "EV-Charging at Home Subsidy Scheme" is overwhelming.   The number of parking spaces involved has reached over 100 000, exceeding the anticipated number of 60 000 by more than 60%.

27.   The Roadmap has set the overall policy direction of the Government to promote the use of EVs in the future.   The Government will implement the measures under the Roadmap with every effort, especially expansion of charging network and preparation for wider application of electric public transport and commercial vehicles. EV technologies will continue to rapidly evolve in the future.   Apart from reviewing the strategies and goals set in the Roadmap every five years, we will also keep pace with the times by flexibly formulating and implementing various measures, having regard to the technological development.

(b)   Develop Green Transport Network

28.   To cope with the additional traffic demand arising from the land-use development in a longer term beyond 2031, the Government launched the *Strategic Study on Railways beyond 2030* in December 2020, with a view to ensuring that the planning of railway infrastructures can satisfy Hong Kong's overall long term development needs.   Besides, the Government is preparing to gradually implement a free-flow tolling system at government tolled tunnels and the Tsing Sha Control Area from late 2022 onwards, and continue facilitating the trial and usage of autonomous vehicles at suitable locations.   We have also embarked on a study on "Congestion Charging" to comprehensively review the hierarchy and level of tolls of all Government tolled tunnels and Control Areas.   "Congestion Charging" will suitably adjust the tolls based on traffic management needs, with a view to regulating traffic flows and alleviating traffic congestion.

(c)   Adopt Green Features in New Development Areas

29.   The railways will remain as the backbone of the public transport network, complemented by the various public transport modes, walking, cycling and other low-carbon transportation to reduce carbon emissions as well as improve air quality. When planning new development areas and strategic growth areas (e.g. New

Territories North Development), the Government will encourage green mobility, such as introducing green elements in the built environment designs and proactively installing EV charging facilities.

(d) Promote the Use of New Energy Ferries

30. The Government has earmarked 350 million to provide subsidies for the construction and trials for electric ferries and associated charging facilities for 4 in-harbour routes. The trials, which aim at testing the technical and commercial viability of applying electric ferries in Hong Kong, are expected to commence in 2023. On the other hand, the Government will fully subsidise ferry operators of several major outlying island ferry routes to construct new hybrid ferries in the first phase of the new Vessel Subsidy Scheme for outlying island ferry routes, and carry out a 16-month trial. The Government will evaluate the performance of these new energy ferries. Subject to the trial results and relevant technological development, the Government will explore with the ferry operators the possibility of progressively replacing traditional ferries with new energy ferries before 2035.

Liveable Environment

(a) Pedestrian-friendly and Bicycle-friendly Policies

31. The Government is taking forward the walkability enhancement measures for territory-wide applications. Suitable new development areas and built-up areas will be selected for the implementation of a comprehensive pedestrian planning framework. In addition, the Government will develop a set of design standards for a pedestrian wayfinding signage system. The new wayfinding signage will be installed at suitable locations in the Central and Western District, Sham Shui Po and Tsim Sha Tsui in phases from end-2022. In addition, cycle track design will be incorporated into 13 major harbourfront development projects, which will be completed in phases before 2030 to facilitate cycling.

(b) Enhance Air Quality at Public Transport Interchanges

32. The Government is updating the *Practice Note for Professional Persons – Control of Air Pollution in Semi-Confined Public Transport Interchanges*, and will consult the trade, relevant stakeholders and the Professional Persons Environmental Consultative Committee. The Government plans to release the new practice note in 2022 in order to further enhance air quality at public transport interchanges.

(c) Update the Air Quality Health Index (AQHI)

33. The Government will embark on a study within this year to analyse the relationship between air quality and health statistics in recent years, in order to update the methodology for the compilation of the AQHI. This can provide more precise health risk forecast. Our target is to launch the updated AQHI in 2024.

(d)   Embark on a Cohort Study

34.   The Government will commence the *Pilot Cohort Study to Assess the Long-term Health Outcomes from Exposure to Air Pollution for the General Population of Hong Kong* this year.   The study will track about 6 000 residents of different age groups, with a view to understanding how exposure to different air pollution levels may affect their health and evaluating the risk of premature deaths for adults under long-term exposure to air pollutants.   The study will facilitate an in-depth examination of the impact of air pollutions on human health.

Comprehensive Emissions Reduction

(a)   Phase Out Old DCVs

35.   Further to the phasing out of about 80 000 pre-Euro IV (i.e. Pre-Euro, Euro I, Euro II and Euro III) DCVs, the Government is progressively phasing out about 40 000 Euro IV DCVs before end-2027.   After the completion of the programmes, DCVs with high air pollutant emissions will be retired on the whole.   Newer DCVs are set with a service life limit of 15 years and hence will be retired in due course.

(b)   Conduct Trials for Emission Reduction Devices for Franchised Buses

36.   The Government will subsidise franchised bus companies for a trial in 2022 to retrofit Euro V double-deck diesel buses with enhanced selective catalytic reduction systems.   The trial will ascertain the technical feasibility of deploying this type of air pollutant emission reduction device and its performances in local operating conditions.   Subject to the outcome and resources required, we will discuss with the franchised bus companies the arrangements for retrofitting the systems onto other suitable bus models.

(c)   Tighten the Sulphur Content Limit of Locally Supplied Marine Fuels, and Impose Emission Standards for New Petrol-Powered Outboard Engines

37.   In order to encourage vessels to use cleaner fuels, the Government will explore further tightening the sulphur content limit of locally supplied marine light diesel from 0.05% to 0.001% in the coming few years.   For petrol-powered outboard engines commonly used on sampans and pleasure vessels, the Government will also consider imposing air pollutant emission standards for the new engines in the next few years.

(d)   Extend the Control of Products containing VOCs

38.   The Government will further tighten the VOC content limits of architectural paints, and extend the control to cleaning products.   We have consulted the relevant

trade and will consult the public later this year, with a view to implementing the new requirements before 2024.

Clean Energy

(a)   New Low-carbon Electricity Generation Strategy

39.   The Government is urging the power companies to phase out existing coal-fired units and replace coal with natural gas progressively from now to 2030.   To further reduce electricity generation emissions from burning fossil fuels, the Government and power companies are discussing means to further develop and utilise more zero-carbon energy.   The *Hong Kong's Climate Action Plan 2050* just released last week has established aggressive mid-term and long-term goals for the electricity generation sector, so as to formulate the overall strategy for the sector to achieve carbon neutrality before 2050.

(b)   Continue to Tighten Emission Limits of Power Plants

40.   The Government will review the Ninth Technical Memorandum that caps the air pollutant emissions from power plants by 2023.   In line with the new low-carbon electricity generation strategy and fuel mix under the updated *Hong Kong's Climate Action Plan*, the Government will consider further tightening the air pollutant emission caps from the power plants in the review.

(c)   Take Forward the Use of LNG in Ocean-Going Vessels

41.   The use of LNG in vessels helps improve air quality and reduce carbon emission.   The Government will examine measures to take forward the adoption of LNG in ocean-going vessels, including actively exploring the use of the offshore LNG terminal newly constructed by the two power companies as a bunkering facility for ocean-going vessels, planning for LNG bunkering areas, and formulating technical requirements and related safety regulations and requirements for offshore LNG bunkering in the next few years.

(d)   An Inter-Departmental Working Group to Handle Work Relating to The Application of Hydrogen Energy in Hong Kong

42.   As the development of hydrogen energy is gaining traction in the Mainland and other places in recent years, the Government has started preparing to set up an inter-departmental working group to handle a range of work relating to the application of hydrogen energy in Hong Kong, including technical discussions, safety considerations, legislation, etc.

Scientific Management

(a) <u>Monitor Compositions of VOCs and Fine Suspended Particulates (PM$_{2.5}$) in Real Time</u>

43.   Starting from 2022, advanced instruments will be progressively deployed in air quality monitoring stations to analyse the composition and concentration of VOCs and PM$_{2.5}$ in real-time.   The instruments will provide supplementary data that could not be collected by conventional monitoring stations, further assisting in policy formulation to improve air quality.

(b) <u>Conduct District-Based Air Quality Monitoring</u>

44.   Short-term air quality monitoring will be conducted at different districts in addition to the existing air quality monitoring network in the coming 2 to 3 years, so as to collect more comprehensive data and identify pollution distributions. Tentatively, the northwest New Territories and Kowloon urban areas will be among the first locations to be monitored.

(c) <u>Apply Micro-Sensors to Monitor Ambient and Indoor Air Quality</u>

45.   Micro-sensors will be installed at smart lampposts in new development areas, such as Tung Chung, to monitor air quality within a few years' time so as to collect real-time district-based data.   These sensors are also capable of monitoring indoor air quality and the data can be fed back into the air-conditioning management system of buildings so as to improve indoor air quality.

(d) <u>Develop a Smart Air Quality Monitoring System</u>

46.   To provide the public with more detailed district-based air quality information, the Government will develop a smart air quality monitoring system within the next few years with the integration of the Internet of Things, artificial intelligence, existing monitoring stations, sensors installed at specific locations such as lampposts, and numerical models.

Regional Collaboration

(a) <u>Formulate Regional Emission Reduction Targets</u>

47.   In line with the air quality targets set in the National 14th Five-Year Plan, the Hong Kong Special Administrative Region Government and the Guangdong Provincial Government will explore ways in the joint study on *Post-2020 Regional Air Pollutants Emission Reduction Targets and Concentration Levels* to control the annual average concentrations of PM$_{2.5}$ at the Greater Bay Area to below 25 μg/m^3,

and gradually lower the ozone level after reaching its peak. We will base on scientific information from researches, and work with the Guangdong Provincial Government in the coming year to formulate regional air pollutant emission reduction plans and targets for 2025 and 2030, with a view to further improving regional air quality.

(b)   Conduct 3D Air Quality Monitoring with Light Detection and Ranging (LIDAR) Technology

48.   Unlike conventional air quality monitoring that is close to the ground level, Hong Kong and Guangdong plan to make use of the LIDAR technology to measure real-time concentrations of air pollutants (such as ozone and particulate matters) up to several kilometres above ground as well as the vertical and 3D distribution of wind directions. The Government will set up 5 LIDAR monitoring sites in Hong Kong, which are anticipated to come into operation in 2023. The monitoring will be useful for tracking the transportation of air pollutants and their impact on Hong Kong's air quality, and at the same time enhancing the accuracy of air quality forecasts.

(c)   Study and Monitor Ozone Pollution

49.   To tackle the regional ozone problem, the governments of Guangdong, Hong Kong and Macao have launched a 3-year joint study on *Characterisation of Photochemical Ozone Formation, Regional and Super-Regional Transportation in the Greater Bay Area* in 2021 to monitor air quality at sea, land and air for an in-depth understanding on the formation and transportation characteristics of ozone in the Greater Bay Area. This study provides a scientific foundation for formulating policies to improve regional ozone pollution. In addition, the three governments will integrate regular monitoring of VOCs into their regional air quality monitoring network in phases so as to collect real-time data. Guangdong and Hong Kong have completed relevant preliminary monitoring. Hong Kong is actively preparing for the full-scale operation of three monitoring stations at Tung Chung, Tsuen Wan and Yuen Long in 2022.

(d)   Encourage Training and Technical Exchanges

50.   To further promote regional collaboration, the governments of the Hong Kong Special Administrative Region and other cities in the Greater Bay Area will hold seminars and workshops at appropriate times to gather scientists, technical personnel and government officials to exchange knowledge of monitoring technology developments and inspect advanced monitoring instruments, so as to enhance technical standards of air monitoring in the Greater Bay Area.

ADVICE SOUGHT

51.   Members are invited to note the key measures set out in the *Clean Air Plan for Hong Kong 2035*.   The Plan and its leaflet are available on the Environmental Protection Department website –
www.epd.gov.hk/epd/english/resources_pub/policy_documents/index.html

Environmental Protection Department
October 2021

Timetable for Implementation of Six Major Areas of Action under the Clean Air Plan for Hong Kong 2035

	Short-term (Until 2025)	Medium to long-term (Including continuous work)
Green Transport	● Conduct trials for electric and hybrid ferries ● Implement Free-flow Tolling System at government toll tunnels and Tsing Sha Control Area	● Take forward measures set forth in the *Hong Kong Roadmap on Popularisation of Electric Vehicles* to attain zero vehicular emissions before 2050 ● Continue to expand railway network ● Adopt environmentally friendly transport mode in new development areas
Liveable Environment	● Update the *Practice Note for Professional Persons–Control of Air Pollution in Semi-Confined Public Transport Interchanges* ● Update AQHI ● Embark on a research for the long term health impact of air pollution on the Hong Kong population	● Continue to implement pedestrian-friendly and bicycle-friendly policies
Comprehensive Emissions Reduction	● Subsidise franchised bus companies to conduct trials for emission reduction devices ● Tighten the VOC content limits of architectural paints and extend the control to cleaning products	● Continue to phase out old DCVs ● Explore to further tighten the sulphur content limit of locally supplied marine fuels to 0.001% ● Impose emission standards for new petrol-powered outboard engines

Clean Energy	- Renew low-carbon electricity generation strategy - Continue to tighten emission limits of power plants - Set up an inter-departmental working group to handle the work relating to the application of hydrogen energy in Hong Kong	Explore means to take forward the use of LNG in ocean-going vessels, and formulate technical requirements and related safety regulations and specifications for LNG bunkering
Scientific Management	- Adopt innovative instruments to monitor and analyse air pollutants in real time - Conduct district-based air quality monitoring to identify pollution distributions	- Apply mini-sensors to monitor ambient and indoor air quality - Develop a smart air quality monitoring system to provide more detailed district-based air quality information to the public
Regional Collaboration	- Formulate regional emissions reduction targets for 2025 and 2030 with the Guangdong Province - Set up 5 monitoring sites for 3D air quality monitoring with LIDAR technology - Integrate real-time VOC monitoring in the regional air monitoring network and conduct ozone pollution research	Continue to encourage exchanges among academics and talents in the Greater Bay Area