



33/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong  
香港灣仔告士打道5號稅務大樓33樓

## **ACE Paper 13/2019**

*For discussion on 11 November 2019*

### **2019 Policy Address Policy Initiatives of Environment Bureau: Environmental Protection**

#### **PURPOSE**

This paper sets out the major policy initiatives of the Environment Bureau (ENB) and the Environmental Protection Department (EPD) in relation to environmental protection and relevant issues in the 2019 Policy Address.

#### **KEY INITIATIVES**

##### **Improving Air Quality**

##### Improving Roadside Air Quality

2. Improving air quality at the roadside to better protect public health has always been a key environment policy of the Government. The Government has implemented a series of vehicle emission control measures in recent years, including phasing out pre-Euro IV diesel commercial vehicles, strengthening emissions control on liquefied petroleum gas and petrol vehicles, retrofitting old franchised buses with emission reduction device, etc. As a result, the concentrations of key air pollutants at the roadside, including respirable suspended particulates (RSP), fine suspended particulates (FSP) and nitrogen dioxide (NO<sub>2</sub>), have reduced by around 30% between 2013 and 2018. To further lower levels of air pollutants at the roadside, we will continue to introduce other new control measures.

##### *Installation of Electric Vehicle Charging-enabling Infrastructure in Car Parks of Existing Private Residential Buildings*

3. Electric vehicles (EVs) have no tailpipe emissions. Therefore, replacing conventional vehicles with EVs can help improve roadside air quality. In view of the general improvement in driving range of common electric private cars (e-PCs)

available in the market recently<sup>1</sup>, the Government's policy direction is that e-PC owners should charge their cars at home, workplaces or other suitable places on a routine basis; and public charging network serves to provide top-up charging in the case of occasional needs while on the road. Accordingly, to facilitate a gradual popularisation of e-PCs, it is crucial to promote installation of EV charging facilities in new and existing private residential buildings.

4. To encourage installation of EV charging facilities in private premises, the Government has required since April 2011 that only underground car parks in new private buildings with EV charging-enabling infrastructure covering each parking space can be fully exempted from the gross floor area calculation. Regarding the existing private residential buildings, the Government recognises that some owners of car parks may encounter difficulties in installation of EV charging facilities, including limitations on power supply for the buildings concerned in carparks, space constraints in retrofitting cabling and conduits, and difficulties in reaching a consensus among the building owners on the sharing of the cost of works and other relevant costs. In this regard, the Government will formulate a two billion pilot subsidy scheme to subsidise car park owners of existing private residential buildings meeting prescribed criteria to install EV charging-enabling infrastructure. We are devising the details of the scheme and will brief the Panel on Environmental Affairs (EA Panel) on the scheme and seek funding approval.

#### *Formulating a Trial Scheme on Electric Public Light Bus (e-PLB)*

5. Application of e-PLBs in Hong Kong has proven to be challenging due to hilly terrains, long daily mileage, the need to provide air-conditioning in all seasons, long duration of charging, space and power constraints for installation of charging facilities, etc. Currently, after full charging of four hours, electric light bus models available in the Hong Kong market still come short of meeting the general daily mileage of PLBs, thus are not able to match the daily operational requirement of the trade for the time being.

6. To promote the development of e-PLBs and overcome the above constraints, the Government engaged a consultant in March 2019 to formulate the basic technical requirements and specifications of e-PLBs and associated charging facilities that suit Hong Kong's operating conditions, and is making preparations for the implementation of a trial scheme on e-PLBs. According to the preliminary assessment, PLBs in Hong Kong which run on fixed routes will have greater potential to first switch to e-PLBs. This is because the routes of these PLBs are not too long; charging facilities can also be installed at its fixed PLB termini, public transport interchanges or other designated places to facilitate their daily operation.

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<sup>1</sup> With ongoing technology development in e-PCs, more affordable e-PC models are available in the market. Most of the models' laboratory-tested driving range are more than 300 km, thus fairly meeting most Hong Kong drivers' general needs of daily mileage of only a few tens of km.

## *Tightening the Emission Requirements of Franchised Bus Low Emission Zones*

7. Franchised buses could account for up to 40% of the overall traffic flow along busy road sections. Since 31 December 2015, the Government has set up Franchised Bus Low Emission Zones at three busy road sections<sup>2</sup>, allowing only low emission franchised buses (i.e. buses meeting Euro IV or above emission standards, or Euro II and III buses retrofitted with selective catalytic reduction devices and diesel particulate filters) to run through the zones<sup>3</sup>, so as to improve roadside air quality within the zones.

8. To further improve the roadside air quality within these zones, the Government plans to require franchised bus companies to deploy low emission buses meeting Euro V or above emission standards to routes running through the zones from 31 December 2019. The EPD and the Transport Department will continue to closely monitor the implementation of the policy.

## *Review of the Pilot Green Transport Fund (PGTF)*

9. The Government has put in place the \$300 million PGTF in March 2011 to encourage the transport sector to test out green innovative transport technologies. The public transport sector (including taxis, public light buses, buses and ferries), goods vehicle (including special purpose vehicles) operators, as well as charitable/non-profit making organisations providing transport services are eligible to apply. As at end-August 2019, 168 trial applications were approved, including 102 on EVs, 58 on hybrid vehicles and 8 applicable to buses and ferries. About \$147 million of subsidies are involved.

10. To further promote wider use of new energy transport technologies by the transport sector, and to encourage further use of technologies that the PGTF proved suitable for local adoption, the Government is conducting a review on the current scope of the fund. We aim to complete the review in 2019 and thereafter consult the Legislative Council (LegCo) about the results of the review and apply for additional funding as necessary.

## Pilot Scheme on New Energy Ferries

11. To reduce emissions from ferries, the Government plans to launch a pilot scheme on electric ferries serving in-harbour routes of the Victoria Harbour. We will formulate the details of a pilot scheme on new energy ferries in the coming year and consult the LegCo for seeking necessary resources to take the scheme forward.

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<sup>2</sup> The three Franchised Bus Low Emission Zones are located at Yee Wo Street in Causeway Bay, the junction of Des Voeux Road Central and Pedder Street in Central, and the junction of Nathan Road and Lai Chi Kok Road in Mong Kok.

<sup>3</sup> In the case of traffic congestion, vehicle breakdowns, traffic accidents and ad-hoc trips, etc., the franchised bus companies may need to deploy non-low emission buses to the zones in order to maintain normal bus services.

## Exploring the Tightening of Sulphur Content of the Locally Supplied Marine Light Diesel

12. To encourage vessels using cleaner fuels, the Government plans to explore further tightening of the maximum sulphur content of the locally supplied marine light diesel from the prevailing limit of 0.05% to 0.001%, and will consult relevant stakeholders.

## Tightening the Content Limits of Volatile Organic Compounds (VOC) for Architectural Paints

13. VOC and nitrogen oxides will undergo photochemical reaction under sunlight to form ozone and suspended particulates. The accumulation of ozone, suspended particulates and other pollutants will result in smog. To reduce VOC emissions, the Government plans to further tighten the content limits of VOC in architectural paints. We will complete a trade consultation in the coming year.

## Cleaner Production

14. The Government proposes to allocate a funding of \$300 million to extend the Cleaner Production Partnership Programme<sup>4</sup> to March 2025. The programme encourages Hong Kong-owned factories to adopt cleaner production technologies, thereby continually improving the regional environmental quality. After consulting the industries, we will report the details of the extension of the programme to the EA Panel.

## **Promoting a “Plastic-free” Culture, Waste Reduction and Recycling**

### “Plastic-free” Culture

15. Environmental pollution by plastic products and marine pollution by microplastics have become a topic of concern in recent years. To alleviate the impact on ecology and environment, the Government will endeavour to promote a “plastic-free” culture, thereby reducing the use of single-use plastics and create a circular economy for these materials. To this end, we will launch a series of initiatives:

- (a) As regards plastic product containers, the Government has indicated earlier to press ahead with the introduction of a producer responsibility scheme on plastic beverage containers first. We will consider introducing similar arrangement for the “deposit-refund system” implemented in other jurisdictions by providing an economic incentive to encourage the public to return used plastic beverage

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<sup>4</sup> The EPD launched the Cleaner Production Partnership Programme in April 2008 in collaboration with the then Economic and Information Commission of Guangdong Province (currently known as the Department of Industry and Information Technology of Guangdong Province). Through funding support and technology promotion activities, the programme encourages and facilitates Hong Kong-owned factories to adopt cleaner production technologies and practices, thereby improving the regional environment, in particular air quality.

containers for recycling, and to explore the application of Reverse Vending Machines (RVMs) to enhance recovery efficiency of used plastic beverage containers. To examine the feasibility and cost-effectiveness of using RVMs in Hong Kong where space is a constraint, and to ascertain the appropriate incentive and its level, we will launch a pilot scheme by installing 50 to 60 RVMs at different locations. To this end, we have kick-started relevant preparatory work which includes conducting technical trial on RVMs at seven Community Green Stations in order to work out specific details of the pilot scheme. On relevant feasibility study, our consultant has engaged relevant stakeholders on their initial recommendations regarding the study and will submit their detailed proposal to the Government after consolidating relevant information. Meanwhile, we have been maintaining close liaison with stakeholders on their views towards the future regulatory regime and related issues. After taking into account the consultant's recommendation and the views of stakeholders, we will map out the way forward and consult the public thereafter.

- (b) On Plastic Shopping Bag (PSB) Charging Scheme, the current minimum charge of 50 cents has not been adjusted since the voluntary scheme introduced before 2009, we will explore whether the charge is to be adjusted. Besides, there are also views that the current exemption over PSB used for food hygiene purposes, especially the use of PSB to carry frozen or chilled foodstuff, may need to be tightened to further encourage reducing the use of PSB. We will review the operation of the scheme along these directions, and consider the room for further improvement.
- (c) Packaging reduction is a global trend. This subject has always been a concern of the public and green groups in Hong Kong. We plan to collaborate with the retail trade to explore practical measures to promote and encourage reducing the use of plastic packaging materials.
- (d) With a view to minimising the potential impact of microbeads on the ecological environment, the Government will launch a Voluntary Phase-out Scheme to encourage manufacturers, importers, retailers and related organisations to progressively stop manufacturing, importing or selling Personal Care and Cosmetic Products containing microbeads in Hong Kong and provide information to help consumers make choice of microbead-free products, as well as to supplement the scheme with publicity and education to enhance the public's understanding of microbead-related subjects.
- (e) Given that developing environmental awareness is best started at an early age, we will step up our efforts in promoting a "plastic-free" culture in campuses. The EPD will work with the Education Bureau to implement a "Plastic-free" School Lunch Pilot Scheme to encourage primary and secondary schools to use reusable lunch boxes in serving school lunch for students, and to cultivate students' green habit of bringing along their own reusable cutlery with a view to minimising the use of single-use plastics.

- (f) To encourage the youth to inculcate a “bring your own bottle” culture from childhood, we will also recruit about 80 primary and secondary schools for a two-year pilot programme under which smart water dispensers with their exteriors designed by students will be provided to participating schools, and support the schools to carry out relevant education and experiential activities, such as signing a charter on ceased sale of bottled water, for conveying green messages such as waste reduction and clean recycling to students in an interactive manner.

### Yard Waste

16. Every day, 166 tonnes of yard waste are received by local landfills, accounting for 1.5% of the total municipal solid waste. To facilitate onward recycling and reuse of resources, the EPD is conducting trials for various feasible treatment methods such as shredding collected yard waste with wood shredder into wood chips for various uses, including solid fuel, bulking agent in composting process, mulch for planting purposes, and soil cover at landfills, etc. In the long run, we need to develop diverse proposals to handle yard waste in an even more effective manner. To this end, we are planning the development of centralised yard waste treatment facilities and exploring the introduction of advanced technologies such as production of biochar, with a view to turning yard waste into energy and useful products. The Government will also conduct trials to implement on-site shredding in major public works programmes to handle the yard waste generated from those public works.

### New Energy Vehicle Batteries

17. With growing popularity of new energy vehicles (NEV), EPD will study the recycling and proper disposal of waste NEV batteries. We will also explore practical proposals in consultation with the trade and NEV suppliers, taking into account the experience of other jurisdictions in the promotion of waste NEV batteries recycling.

### **Combating Climate Change**

18. The Paris Agreement came into force in November 2016 and applies to the Hong Kong Special Administrative Region (HKSAR). In order to formulate the long-term decarbonisation strategy in line with the goal of the Paris Agreement, the Government had invited the Council for Sustainable Development (SDC) to conduct a public engagement process. Through a bottom-up approach with active participation by stakeholders, the public engagement helped illustrate the negative impact of excessive human induced carbon emissions to the general public and encourage the public to provide views on Hong Kong’s long-term decarbonisation strategy.

19. The SDC has just concluded the three-month public interaction phase, which included five regional forums, visits to schools, consultations with relevant advisory bodies, meetings with different stakeholders such as youth groups, NGOs, green groups, chambers of commerce and relevant trades. Views collected during this phase have been passed to an independent analysis and reporting agency (i.e. The Social Sciences Research Centre of The University of Hong Kong) for analysis which will be taken into account by the SDC with the assistance of a Programme Director (i.e. Policy for Sustainability Lab, Centre for Civil Society and Governance, The University of Hong Kong) in preparing a report with recommendations to the Government.

### **Renewable Energy (RE)**

20. Promoting the development of RE is an important part of mitigating climate change. The Government has been taking the lead in developing RE where technically and financially feasible and has been creating conditions that are conducive to community participation.

21. Given the successful experience of the two pilot floating solar photovoltaic systems at the Shek Pik and Plover Cove Reservoirs by the Water Supplies Department, we will study in detail the technical feasibility and project specifications of installing a larger system at the Plover Cove Reservoir.

### **Energy Efficiency and Emission Reduction**

22. The vision set out in the Energy Saving Plan for Hong Kong's Built Environment 2015~2025+ is to reduce energy intensity by 40% by 2025, using 2005 as the base. At present, the energy intensity has been reduced by more than 30%. The Government has taken the lead to make contribution, by setting a target to reduce electricity consumption in government buildings by 5% in five years (2015-16 to 2019-20). We have completed energy audits for about 340 government buildings and spent some \$900 million to implement energy saving projects. Over the past three years, we have achieved about 4.9% saving in electricity consumption.

23. For the coming five years, the Government has set a more progressive "Green Energy Target" with a view to further improving the use of energy within the whole Government by 6% by 2024-25. The "Green Energy Target" not only covers government buildings and infrastructure, but also for the first time expressly requires saving in the consumption of electricity and other forms of energy, while the energy contribution of RE projects will also be taken into account.

### **Green Schools 2.0**

24. The Government will take forward various new initiatives under "Green Schools 2.0". Major work includes:

- (a) promoting the provision of glass container recycling bins on school campuses and providing relevant free collection services;

- (b) publicising and promoting the concept of low-carbon lifestyle among the youth through the “Student Environmental Protection Ambassador Scheme” run by the Environmental Campaign Committee;
- (c) installing inverter air-conditioners, light emitting diode lighting and real-time energy monitoring systems at the premises of primary and secondary schools; and
- (d) promoting retro-commissioning in higher education institutions.

## **Nature Conservation**

25. As regards nature conservation, the Agriculture, Fisheries and Conservation Department (AFCD) will study and introduce enhancement measures, with a view to enhancing the recreation and education potential of country parks and special areas. AFCD is also making preparatory work to expand the Sham Wan Restricted Area on Lamma Island to cover green turtles’ breeding ground in the waters off the beach as well as to extend the restriction period, so as to strengthen the protection of endangered green turtles.

## **Countryside Conservation**

26. Since its establishment in July 2018, the Countryside Conservation Office (CCO) has been co-ordinating with relevant Government departments to implement minor improvement works in two pilot areas in Lai Chi Wo and Sha Lo Tung, including planning for repair works on damaged footpaths or river embankments, slope enhancement, face-lifting of public toilet and upgrading of its treatment level. The CCO will continue to collaborate with relevant Government departments to conduct necessary surveys and studies to identify innovative solutions to promote conservation and revitalisation efforts in the remote countryside.

27. The Countryside Conservation Funding Scheme (CCFS) was launched on 18 October 2019 to provide funding support to non-profit-making organisations for implementing conservation activities or projects in the remote countryside<sup>5</sup>. The CCO will consult the Advisory Committee on Countryside Conservation, which was established on 1 July 2019, on the priorities for the conservation and revitalisation works proposals as and when appropriate.

## **Enhancing Water Quality**

28. To enhance the water quality in Victoria Harbour and mitigate its nearshore odour problems, we are implementing sewerage infrastructure and pollution control projects in West Kowloon, Tsuen Wan and Lei Yue Mun, with some being included in items for seeking funding allocation from the LegCo this year. In the years ahead, we will take on board the findings of the “Further Enhancing Quality of Coastal Waters of Victoria Harbour” study to develop plans for installing compact and high-efficiency dry weather flow interceptors in the box culverts in Hung Hom, Causeway Bay Typhoon Shelter and Wanchai East, conduct trials on new technique

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<sup>5</sup> Conservation activities or projects located on the Lantau Island will be funded by the dedicated funding programme under the Sustainable Lantau Office.



for screening pollutant at sources of stormwater discharge, and collaborate with research institutions to develop new odour abatement method for testing inside stormwater system at different locations, with a view to reducing nuisance to the community.

29. In addition, we will commence the construction works for the Shek Wu Hui Effluent Polishing Plant this year, consult the EA Panel on village sewerage projects for the districts of North, Tuen Mun, Sai Kung and Islands, and submit funding applications to the Public Works Subcommittee and the Finance Committee for projects<sup>6</sup> that have already been supported by the EA Panel for project commencement.

### **Taking Forward the Ecological Civilisation Construction in the Greater Bay Area (GBA)**

30. The Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area (the Outline Development Plan) was promulgated on 18 February 2019. Chapter seven of the Outline Development Plan sets out the key strategy to take forward the ecological civilisation construction in the GBA. It advocates establishing ecological protection barriers, strengthening regional cooperation on environmental protection, ecological restoration, improving water and air quality, promoting green and low-carbon production methods and life styles, etc. To this end, we will continue to work closely with the Ministry of Ecology and Environment and the Department of Ecology and Environment of Guangdong Province, to press ahead with the ecological civilisation construction in the GBA in accordance with the strategic policy of the Outline Development Plan.

### **OTHER ON-GOING INITIATIVES**

31. We will also continue to take forward a wide range of other on-going initiatives. A summary is at **Annex**.

**Environment Bureau**  
**November 2019**

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<sup>6</sup> These projects include the Yuen Long Effluent Polishing Plant, San Shek Wan and Cheung Chau sewage treatment works, dry weather flow interceptors at Tsuen Wan and Kwai Chung, upgrading of West Kowloon and Tsuen Wan sewerage, Phase 2 rehabilitation of sewer and stormwater drain in collaboration with Development Bureau and village sewerage projects in Sai Kung, Tolo Harbour and Lantau Island.

**2019 Policy Address**  
**Policy Initiatives of Environment Bureau:**  
**Environmental Protection**

**On-going Initiatives**

Area	Progress
<b>Improving Air Quality</b>	
Review of the Air Quality Objectives (AQOs)	<ul style="list-style-type: none"> <li>● The prevailing AQOs took effect from 1 January 2014. The Air Pollution Control Ordinance requires the Government to conduct a review of the AQOs at least once every five years, and submit the review report to the Advisory Council on the Environment (ACE). Assessment and review of the improvement in air quality in 2025, and the scope for tightening the AQOs were completed in December 2018. The Environment Bureau (ENB) consulted the ACE and the EA Panel on the review results in March 2019. A public consultation was then launched from July to October 2019 to solicit views on the review findings. We are analysing the views received from different parties and preparing the final recommendations for consulting the ACE and the EA Panel again. If the AQOs are to be tightened, we shall submit an amendment bill to the LegCo with a view to implementing the new AQOs as soon as possible.</li> <li>● The Government plans to prepare for the next AQOs review in 2020, with a view to identifying further air quality improvement measures and assessing the scope for further tightening the AQOs in 2030.</li> </ul>
Green Road Transport	<ul style="list-style-type: none"> <li>● Since the launch of an incentive-cum-regulatory scheme in March 2014, about 74 000 (i.e. about 90%) pre-Euro IV diesel commercial vehicles (DCVs) have been scrapped under the scheme as at end-August 2019. The Government has stopped the renewal of vehicle licences for pre-Euro DCVs from 1 January 2016, Euro I DCVs from 1 January 2017 and Euro II DCVs from 1 January 2018, and will stop the renewal of vehicle licences for Euro III DCVs from 1 January 2020.</li> <li>● To further improve the roadside air quality, the Government is sparing no efforts to explore the implementation details to progressively phase out</li> </ul>

Area	Progress
	<p>about 40 000 Euro IV DCVs. We will consult the trade in due course.</p> <ul style="list-style-type: none"> <li>● The Government has fully subsidised franchised bus companies (FBCs) to procure 36 single-deck electric buses (28 battery-electric buses and eight supercapacitor buses) for trial. 26 battery-electric buses and six supercapacitor buses have commenced a two-year trial. The remaining electric buses are expected to be put into service progressively between the second half of 2019 and early 2020.</li> <li>● The Government will fully subsidise FBCs to conduct a trial of retrofitting around 60 Euro IV and V diesel double-deck buses of major bus models with enhanced selective catalytic reduction (SCR) systems, so as to test the technical feasibility of the retrofitting work, and to confirm the emission reduction performance of the enhanced SCR systems of different suppliers under the local driving and operational conditions. We have set up a task force comprising the FBCs, the Environmental Protection Department (EPD), the Transport Department (TD) and local experts. The EPD is now working with the TD and the FBCs in drafting the specifications and detailed arrangements of the trial.</li> <li>● The Government has been actively promoting wider use of electric vehicles (EVs) by offering first registration tax concessions for EVs, allowing 100% profits tax deduction for acquiring EVs, providing subsidy for trials of EVs under the Pilot Green Transport Fund, granting concessions on gross floor area for EV charging-enabling car parks in new buildings, enhancing the public EV charging network, and establishing a dedicated team and hotline to provide relevant information and technical support in setting up chargers.</li> <li>● The number of EVs in Hong Kong has grown from 184 in 2010 to 12 299 by end-August 2019 (including special purpose vehicles and Government vehicles).</li> <li>● The Government would continue to enhance the charging network for EVs. Apart from the standard chargers located at the TD car parks which will be</li> </ul>

Area	Progress
	<p>demolished, and some 100 chargers which have both standard and medium charging functions, standard chargers at the car parks of the TD and the Government Property Agency (GPA) that are open for public use have all been upgraded to medium chargers. The Government will allocate \$120 million to extend the public EV charging networks at government car parks in the coming three years, including installation of additional medium chargers at car parks managed by the TD, the GPA, the Leisure and Cultural Services Department, and the Tourism Commission which are open to the public. The number of public chargers in government car parks is expected to be increased to around 1 700 by 2022.</p> <ul style="list-style-type: none"> <li>● The Government has tightened the vehicle emission standards for first registered vehicles (except for diesel private cars, buses with a design weight of not more than nine tonnes, light buses with a design weight of more than 3.5 tonnes, motorcycles and tricycles) from Euro V to Euro VI in phases according to vehicle classes from 1 July 2017; the emission standards for first registered diesel private cars were also tightened from California LEV II to LEV III from 1 October 2017. We are making preparation to tighten the vehicle emission standards of first registered motorcycles to Euro IV and the vehicle emission standards of first registered light buses (design weight of more than 3.5 tonnes) and buses (design weight of not more than nine tonnes) to Euro VI in phases starting from the second half of 2020.</li> <li>● Since 1 September 2014, we have been deploying remote sensing equipment to identify petrol and liquefied petroleum gas vehicles with excessive emissions. The owners of vehicles emitting excessively are required to repair their vehicles within a prescribed period to rectify the excessive emission. As at end-August 2019, about 3.75 million vehicle counts were monitored under this programme. The Government issued about 20 000 emission testing notices and cancelled about 700 vehicles licences.</li> <li>● The Government will continue to closely monitor international and local development trend of new energy vehicles for considering the next step.</li> </ul>

Area	Progress
Review of the Seventh Technical Memorandum (TM) for Power Plants and Tabling the Eighth TM	<ul style="list-style-type: none"> <li>● The Government issued the Seventh TM on 15 November 2017 under the Air Pollution Control Ordinance. The Seventh TM specified the emission caps of power plants from 2022 onwards. The Government completed the review of the Seventh TM and plans to table a new TM (the Eighth TM) at the LegCo within this year for negative vetting. As compared with the emission caps set under the Seventh TM, the Eighth TM will further tighten the emissions of sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) and respirable suspended particulates (RSP) for the electricity sector from 2024 onwards.</li> </ul>
Emission Control of Marine Vessels	<ul style="list-style-type: none"> <li>● The Air Pollution Control (Fuel for Vessels) Regulation came into effect on 1 January 2019, requiring vessels to use compliant fuel (including fuel with sulphur content not exceeding 0.5%) within the waters of Hong Kong.</li> </ul>
Emission Control of Non-Road Mobile Machinery	<ul style="list-style-type: none"> <li>● Starting from 1 January 2019, the Government has tightened the statutory emission standards of newly approved non-road vehicles in phases to Euro VI, in line with the latest emission standards for newly registered road vehicles.</li> </ul>
Regional Collaboration	<ul style="list-style-type: none"> <li>● The Government will continue to collaborate with the Guangdong Government to conduct scientific air quality studies, as well as introduce air quality improvement measures under the Regional Air Quality Management Plan. The focus of the measures will be on reducing emissions from power plants, vehicles, vessels and heavily polluting industrial processes.</li> <li>● The Guangdong and Hong Kong Governments are conducting a joint study on post-2020 regional air pollutant emission reduction targets and concentration levels, with a view to formulating emission reduction targets beyond 2020.</li> <li>● The monitoring results of the Pearl River Delta (PRD) regional air quality monitoring network show that the concentrations of pollutants such as SO<sub>2</sub>, nitrogen dioxide (NO<sub>2</sub>) and RSP have decreased significantly in recent years. However, the ozone problem still needs to be improved. We are working with the Governments of Guangdong and the Macao Special Administrative Region to gradually implement the</li> </ul>

Area	Progress
	<p>routine monitoring of Volatile Organic Compounds (VOC) in the PRD regional air quality monitoring network in order to better understand the causes of ozone pollution<sup>7</sup> and help develop effective preventive control strategies.</p> <ul style="list-style-type: none"> <li>● Targeting at the high air pollution days in the PRD region, the Guangdong and Hong Kong Governments will seek to hold air quality forecasting meetings at the technical level so as to jointly study the development and causes of high air pollution days and formulate and adopt appropriate preventive measures in advance.</li> </ul>
<b>Waste Management</b>	
Producer Responsibility Scheme on Waste Electrical and Electronic Equipment (WPRS)	<ul style="list-style-type: none"> <li>● The WPRS has been fully implemented since 2018. The Waste Electrical and Electronic Equipment (WEEE) Treatment and Recycling Facility (WEEE PARK), developed by the Government to underpin the WPRS, has treated over 21 500 tonnes of regulated WEEE from the commencement of WPRS in August 2018 till July 2019.</li> </ul>
Producer Responsibility Scheme on Glass Beverage Containers (GPRS)	<ul style="list-style-type: none"> <li>● EPD is implementing GPRS progressively. Following the commencement of regional waste glass containers collection and treatment services provided by the two contractors, over 13 000 tonnes of waste glass containers were collected in 2018, representing an increase of over 60% comparing with the amount collected through relevant voluntary recycling programmes in 2017. In the first six months of 2019, the contractors have recovered over 11 000 tonnes of waste glass containers altogether. We are also preparing relevant subsidiary legislation for submission to the LegCo.</li> </ul>
Municipal Solid Waste (MSW) Charging	<ul style="list-style-type: none"> <li>● The Waste Disposal (Charging for Municipal Solid Waste) (Amendment) Bill 2018 (the Bill) was introduced into the LegCo in November 2018, which proposed implementing MSW charging based on “polluter-pays” principle. We would continue to facilitate the LegCo to scrutinise the Bill.</li> </ul>

<sup>7</sup> Ozone is not directly emitted from pollution sources, but is formed by photochemical reaction of VOC and NO<sub>x</sub> under sunlight. NO<sub>x</sub> has been one of the monitoring parameters in the PRD regional air quality monitoring network.

Area	Progress
Pilot Scheme on Collection and Recycling Services of Waste Plastics	<ul style="list-style-type: none"> <li>● The EPD will roll out a two-year pilot scheme in three different districts (i.e. Eastern District, Kwun Tong and Sha Tin) to provide free collection service for waste plastics from non-commercial and non-industrial sources with a view to gaining practical experience before expanding the service to the whole territory. The contract for the waste plastics collection service in the Eastern District has been awarded in October 2019. It is expected that the contractor will commence the collection service before end 2019. Moreover, we have invited tender for the waste plastics collection service for Kwun Tong and Sha Tin districts in end August 2019, which is expected to commence in the second quarter of 2020.</li> </ul>
Setting Up Outreaching Teams	<ul style="list-style-type: none"> <li>● The EPD has launched outreaching services progressively to educate the public about the importance of waste reduction at source and provide on-site support in three districts (i.e. Eastern District, Kwun Tong and Sha Tin) since end 2018. The outreaching teams will continue to collaborate with different stakeholders in the districts to support the public to practise waste reduction and recycling. We are recruiting new outreaching staff and will provide training to them. It is expected that outreaching services will progressively be extended to all districts from early 2020 which will strengthen community support for waste reduction and recycling and be better prepared for the implementation of MSW charging in future.</li> </ul>
Food Waste Collection and Delivery to Organic Resources Recovery Centres (ORRCs)	<ul style="list-style-type: none"> <li>● We commenced a study in 2017 to examine and explore the collection and delivery of food waste from domestic, commercial and industrial (C&amp;I) premises, as well as academic and government institutions with a view to drawing up practical and effective modes of food waste collection and delivery for Hong Kong. We expect to complete the study by end 2019.</li> <li>● We are introducing a pilot trial in year 2019-20 to provide free food waste collection service for C&amp;I sectors, with a view to encouraging source separation of food waste. The first stage trial has commenced in April 2019 with lunch food waste collected through school lunch suppliers from all primary and secondary schools over the territory. We are also making preparations for providing free food waste collection</li> </ul>

Area	Progress
	<p>service for other C&amp;I institutions and housing estates with experience in food waste separation at source under the pilot trial.</p>
ORRCs	<ul style="list-style-type: none"> <li>● ORRC Phase 1 (O•PARK1) at Siu Ho Wan of Lantau has commenced operation since July 2018, with a treatment capacity of 200 tonnes of food waste per day.</li> <li>● We have also obtained funding approval from the LegCo Finance Committee for developing ORRC Phase 2 (O•PARK2) in Sha Ling of the North District, with a treatment capacity of 300 tonnes of food waste per day. We have awarded the contract in August 2019 and commenced design and construction works, with the facility expected to be commissioned in 2022.</li> <li>● As regards the ORRC Phase 3, we aim to have a treatment capacity of 300 tonnes of food waste per day and we are now conducting the study.</li> <li>● We will continue to identify land to develop the remaining phases of ORRCs.</li> </ul>
“Food Waste / Sewage Sludge Anaerobic Co-digestion” Pilot Trial	<ul style="list-style-type: none"> <li>● The Food Waste Pretreatment Facility at Tai Po Sewage Treatment Works, with a treatment capacity of 50 tonnes of food waste per day, has been commissioned and commenced operation since May 2019. We are also exploring to expand the pilot trial to the Sha Tin Sewage Treatment Works for commissioning in 2022, with a daily treatment capacity of about 50 tonnes.</li> </ul>
Food Waste Recycling Projects in Housing Estates	<ul style="list-style-type: none"> <li>● We will continue to implement food waste recycling projects in housing estates through funding support by the Environment and Conservation Fund (ECF), with a view to promoting food waste reduction at source and converting the unavoidable food waste into useful compost. Up to August 2019, a total of 36 housing estates have been supported by the ECF, with a total of \$39.6 million approved. The scheme has covered about 6 350 households registered for participation, and messages on food waste reduction have also reached some 83 500 households. Since the launch of the scheme in 2011, a total of about 2 180 tonnes of food waste have been recycled.</li> </ul>



Area	Progress
Provide Professional Support to Schools and Tertiary Institutions for On-site Treatment of Food Waste	<ul style="list-style-type: none"> <li>● We will continue to provide appropriate professional support to primary and secondary schools and tertiary institutions for practising on-site treatment of food waste at suitable venues, with a view to promoting and enhancing the “Food Wise” culture among teachers and students.</li> <li>● We rolled out the “Pilot Programme on Provision of Small Food Waste Composters at Schools” in 2018 to assist primary and secondary schools to cultivate the “Food Wise” culture among teachers and students, and demonstrate the recycling of food waste into compost for use in planting on campus. A total of 90 schools have participated in the programme since its launch in the fourth quarter of 2018. We are now planning to introduce the second phase programme in 2020 to continue to provide interested schools with small food waste composters for education and demonstration purposes.</li> </ul>
Food Wise Hong Kong Campaign	<ul style="list-style-type: none"> <li>● We will continue to promote the “Food Wise” culture and appeal to the community to adopt behavioural change to reduce food waste through various publicity and educational programmes. We will promote good practices on food waste reduction, source separation and recycling for C&amp;I sectors, and facilitate surplus food donation to charitable organisations. As of August 2019, around 840 organisations have signed the Food Wise Charter and another 820 eateries have enrolled in the Food Wise Eateries Scheme, 40% and 60% of the latter have been awarded with Gold class and Silver class respectively.</li> </ul>
Reducing Disposable Plastic Tableware	<ul style="list-style-type: none"> <li>● Starting from January 2019, the Government has taken the lead in ceasing to provide plastic straws and polyfoam food containers in canteens serving mainly government employees. Relevant Government departments, when inviting tenders for new contracts and renewing existing contracts for restaurants at government venues, will also require caterers to avoid using disposable plastic tableware.</li> <li>● We have been collaborating with the food and beverage industry to promote using less disposable plastic tableware. During the two phases of the “Plastic-Free Takeaway, Use Reusable Tableware”</li> </ul>

Area	Progress
	<p>campaign, a total of about 2.4 million sets of disposable tableware have been saved with the participation of some 700 eateries of various scales across the territory.</p> <ul style="list-style-type: none"> <li>● The EPD is conducting a study on the control of disposable plastic tableware to draw up proposals suitable for implementation in Hong Kong in the long run, including the necessity, scope and means of such control, and applicable substitutes, etc. The study is scheduled for completion by end 2020.</li> </ul>
Recycling Fund	<ul style="list-style-type: none"> <li>● We completed the mid-term review of the Recycling Fund at the end of 2018 and have introduced progressively since early 2019 a number of enhancement measures including expanding the scope of eligible applicants, increasing rental subsidy related to recycling operation, and simplifying reporting and payment procedures, etc.</li> </ul>
Enhancing Environmental Performance of Events	<ul style="list-style-type: none"> <li>● We will continue promoting the “Green Event Guidebook” and providing support to relevant organisations and parties to practise waste reduction and recycling in events of different kinds and scales. As of September 2019, over 200 organisations have joined the Green Event Pledge and committed to making reference to the Green Event Guidebook when organising, co-organising, sponsoring or providing services to events so as to enhance the environmental performance of the events.</li> </ul>
Community Green Stations (CGSs)	<ul style="list-style-type: none"> <li>● We are taking forward the CGSs projects across the territory to strengthen recycling support and environmental education at district level. Currently, there are seven CGSs in operation, including CGSs in Sha Tin, Eastern District, Kwun Tong, Yuen Long and Sham Shui Po which were commissioned between 2015 and 2017; and CGSs in Tuen Mun and Kwai Tsing which were commissioned in 2018. CGSs in Tai Po and Islands will commence operation by the fourth quarter of 2019 and the first quarter of 2020 respectively. Other CGSs projects are in different planning, construction or site selection stages.</li> </ul>
Green Procurement	<ul style="list-style-type: none"> <li>● We are reviewing the market development and will study expanding the products and services in the Government’s green procurement list and update the</li> </ul>

Area	Progress
	relevant green requirements. We will continue to encourage wider adoption of green procurement within the Government and in the private sector.
Integrated Waste Management Facilities Phase 1	<ul style="list-style-type: none"> <li>● We awarded the Design-Build-Operate contract in November 2017. We expect to commission the facilities in 2024.</li> </ul>
Planning of Future Waste Management and Transfer Facilities	<ul style="list-style-type: none"> <li>● We commenced the study in 2015 to identify additional bulk transfer and solid waste treatment facilities to meet Hong Kong's needs up to 2041. We expect to complete the study in end 2019.</li> </ul>
Restored Landfill Revitalisation Funding Scheme (the Scheme)	<ul style="list-style-type: none"> <li>● Under Batch One of the Scheme, the Tung Wah Group of Hospitals will develop an Eco Village campsite at Tseung Kwan O Stage I Landfill. The engineering design and ground investigation works for the project are in progress.</li> </ul>
Landfill Extensions	<ul style="list-style-type: none"> <li>● The extension works of the South East New Territories (SENT) Landfill commenced in late 2018 and it is expected that the extended portion (SENTX) will start receiving construction waste by mid-2021. To tie in with the commissioning of SENTX, both the Waste Disposal (Designated Waste Disposal Facility) Regulation and the Waste Disposal (Charges for Disposal of Construction Waste) Regulation will need some technical amendments in 2020, to update on the landfill boundary drawing.</li> <li>● In addition, we are taking forward the contract procurement for the extension of North East New Territories Landfill, as well as the consultancy study for the engineering design and site investigation for the extension of West New Territories Landfill.</li> </ul>
<b>Climate Change and Energy</b>	
Government Taking the Lead to Develop Renewable Energy (RE)	<ul style="list-style-type: none"> <li>● We have earmarked \$2 billion to support the development of small-scale RE projects by bureaux and departments. We will continue to follow up and explore with different Government departments the feasibility of installing RE systems at their premises.</li> <li>● We plan to conduct a solar energy pilot at the Southeast New Territories Landfill in Tseung Kwan O.</li> </ul>

Area	Progress
Encouraging the Private Sector to Develop RE	<ul style="list-style-type: none"> <li>● We have introduced the Feed-in Tariff to provide financial incentives to the public for developing RE. Response to the scheme has been very positive, with over 5 300 applications received by the two power companies as at end September 2019.</li> <li>● We launched Solar Harvest in March 2019 to install small-scale solar photovoltaic systems for schools (except government and profit-making schools) and non-governmental welfare organisations which are receiving recurrent subventions from the Social Welfare Department. Response to the scheme is very positive, with over 210 applications received within three months. The first batch of systems has been commissioned. We expect that works would be undertaken at about 50 schools and welfare organisations in this financial year.</li> </ul>
Energy Efficiency and Emission Reduction	<ul style="list-style-type: none"> <li>● The Government promulgated the Energy Saving Plan (ESP) for Hong Kong's Built Environment 2015~2025+ in 2015, which sets a target of reducing energy intensity by 40% by 2025, using 2005 as the base. The Government has taken a multi-pronged approach to this end. Measures include raising statutory building energy efficiency standards, developing green building, introducing tax concession, constructing district cooling systems, employing innovation and technology, and promoting retro-commissioning, etc.</li> <li>● Compared to 2005, Hong Kong's energy intensity has been reduced by more than 30%. Upon completion of all energy saving measures in the ESP, the estimated annual reduction in CO<sub>2</sub> emission will be about 1.7 million tonnes, equivalent to 4% reduction of carbon emission, using the emission level in 2016 as the base.</li> </ul>
Carbon Audit	<ul style="list-style-type: none"> <li>● Commencing 2017-18, bureaux or departments have started to conduct regular carbon audits on major government buildings and will disclose their audit results after completing the audits. The carbon auditing work involves over 300 major government buildings of varying sizes and different nature.</li> </ul>
<b>External Lighting</b>	
Measures to Manage External Lighting and	<ul style="list-style-type: none"> <li>● The Working Group on External Lighting appointed by the Government is assisting in the review of the</li> </ul>

Area	Progress
Future Developments	<p>effectiveness of the Charter on External Lighting and is conducting relevant studies.</p> <ul style="list-style-type: none"> <li>● The Working Group will complete the review in the first half of 2020. The Government will consider the next step having regard to the studies and recommendations of the Working Group, including whether legislation should be introduced to control nuisance caused by external lighting.</li> </ul>
<b>Nature and Countryside Conservation</b>	
Biodiversity Strategy and Action Plan	<ul style="list-style-type: none"> <li>● We will continue to implement the Biodiversity Strategy and Action Plan, and encourage non-governmental organisations and other stakeholders to work together to promote knowledge of biodiversity and foster a culture of nature appreciation.</li> </ul>
<b>Improve the Near-shore Water Quality</b>	
Improve the Near-shore Water Quality	<ul style="list-style-type: none"> <li>● We will continue to expand the sewerage network. The upgrading of Sha Tau Kok sewage treatment works and sewerage systems in Central, East Kowloon and Tai Po, as well as the village sewerage works at Sha Tau Kok, Lei Yue Mun and Peng Chau have commenced. These works will be completed during the period of 2022-2025.</li> </ul>
<b>Safe and Quality Living Environment</b>	
Rehabilitation of Aged Stormwater Drains and Sewers	<ul style="list-style-type: none"> <li>● We will continue to conduct comprehensive investigation in phases for timely identification of aged stormwater drains and sewers at high risk of structural failure and carry out the rehabilitation works.</li> <li>● The Government already obtained about \$3.6 billion from the LegCo to rehabilitate about 20 km of sewers throughout Hong Kong and conduct conditional surveys of another 75 km within the next five years.</li> </ul>
<b>Tackling Marine Refuse</b>	
Keep the Shorelines Clean	<ul style="list-style-type: none"> <li>● We will continue to take forward the three-pronged strategy including reducing waste generation at source, reducing the amount of refuse entering the marine environment, and removing refuse from the marine environment; and endeavor to leverage concerted effort in protecting the marine environment through the Clean Shorelines Liaison Platform established for sharing, communicating and interacting with members of the public and organisations to coordinate and</li> </ul>

Area	Progress
	<p>promote shorelines cleanup actions.</p> <ul style="list-style-type: none"> <li>● We will explore the application of advanced and smart technologies for comprehensive monitoring of the shoreline conditions, so as to achieve more effective utilisation of resources in expanding the coverage of cleanup operations. We will also enhance communication and co-operation with neighbouring cities to combat marine refuse pollution at regional level.</li> </ul>
<b>Environmental Noise</b>	
Further the Trial Application of Low Noise Road Surface	<ul style="list-style-type: none"> <li>● To alleviate traffic noise impact and promote sustainable resource management, thereby contributing to a liveable city, the EPD and Highway Department have short-listed suitable local road sections for further trial application of low noise road surfacing material. Re-surfacing works have progressively commenced and the trials will be continued in the next five years.</li> </ul>
Adopt Innovative Noise Mitigation Designs	<ul style="list-style-type: none"> <li>● To alleviate traffic noise impact, the EPD will compile professional practice notes and conduct a series of seminars to introduce and promote the innovative acoustic windows and enhanced acoustic balconies to the industry; and make use of the “4D Virtual Reality” technology first invented in Hong Kong to help architects, engineers, etc. apply the above-mentioned noise mitigation designs in planning residential developments and designing residential units.</li> </ul>

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