

**For discussion on
12 October 2021**

**LEGISLATIVE COUNCIL
PANEL ON ENVIRONMENTAL AFFAIRS**

**2021 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 2021 Policy Address.

KEY INITIATIVES

Combating Climate Change

2. Combating climate change is an important issue across the globe. Hong Kong has been responding positively to the goal of the Paris Agreement to limit the increase in the global average temperature, and published in January 2017 “Hong Kong’s Climate Action Plan 2030+” to set out the target to reduce Hong Kong’s carbon intensity by 65% to 70% by 2030 from the 2005 levels. With the implementation of various decarbonisation measures, we are moving steadily towards the 2030 carbon reduction target. The total carbon emissions have shown a downward trend after reaching its peak in 2014. The carbon intensity in 2019 was about 35% lower than that in 2005. Preliminary estimation shows that the per capita carbon emissions would be reduced from the peak level of 6.2 tonnes in 2014 to the target of about 4.5 tonnes in 2020.

3. To align with China’s commitment to achieve carbon neutrality before 2060, the Chief Executive announced in her 2020 Policy Address that Hong Kong would strive to achieve carbon neutrality before 2050. She also chairs a new inter-departmental “Steering Committee on Climate Change and Carbon Neutrality” to formulate the overall strategy and oversee work progress. To

achieve the target of carbon neutrality before 2050, the Chief Executive announced in her 2021 Policy Address the four major decarbonisation strategies, namely “net-zero electricity generation”, “energy saving and green buildings”, “green transport” and “waste reduction”, as well as the medium-term target to reduce Hong Kong’s total carbon emissions from the 2005 levels by half before 2035. ENB will announce the “Hong Kong’s Climate Action Plan 2050” this month to set out the above mitigation strategies and targets in details. In 2019, electricity generation was Hong Kong’s largest source of carbon emissions (66%), followed by transport (18%) and waste (7%). Therefore, our decarbonisation work should focus on these three key areas.

4. In order to achieve “net-zero electricity generation” before 2050, we must first change the fuel mix for electricity generation of local power plants. Our interim target is to cease using coal for daily electricity generation and replace it with other low-carbon and zero-carbon energy by 2035. The Government will also grapple with Hong Kong’s geographical and environmental constraints in driving the development of renewable energy (RE), and strive to increase its share in the fuel mix for electricity generation to 7.5% to 10% by 2035 and to 15% gradually thereafter through facilitating local public and private RE projects, developing more advanced waste-to-energy facilities and regional cooperation, etc. Meanwhile, with technological advancement, we will try out the use of new zero-carbon energy (e.g. hydrogen) for electricity generation, and explore investment and development opportunities for zero-carbon energy through closer regional cooperation with neighbouring areas.

5. Another strategy is the promotion of “energy saving and green buildings” to reduce energy demand. At present, buildings account for about 90% of the electricity consumption in Hong Kong. Promoting green buildings, improving energy efficiency of buildings and stepping up efforts to lead a low-carbon lifestyle will reduce the demand for power consumption and generation, and lessen the financial burden on the public due to the increased use of clean fuels for electricity generation. Our goal is to reduce the electricity consumption of commercial buildings by 30% to 40% and that of residential buildings by 20% to 30% from the 2015 level by 2050; and to achieve half of the above targets by 2035. To this end, we will consider expanding the scope of regulation regarding the energy efficiency standards of building services installations, requiring more frequent energy audits, and mandating the implementation of identified energy management opportunities. We will also strengthen the promotion of retro-commissioning. At the same

time, we will study the feasibility of incorporating district cooling system (DCS) in more new development areas, and make full use of green innovation and technology to optimise the operation of DCSs. We will also keep the Mandatory Energy Efficiency Labelling Scheme under review and consider setting a minimum energy efficiency requirement for regulated appliances, etc.

6. The development of “green transport” is essential to mitigating climate change. The Government published the “Hong Kong Roadmap on Popularisation of Electric Vehicles” earlier this year to put forward the strategies and targets to cease the new registration of fuel-propelled and hybrid private cars in 2035 or earlier. The Government will actively promote the development of various electric and other new energy public transport and commercial vehicles, with a view to setting a more concrete way forward and timetable for adoption of new energy vehicles in around 2025. Through electrifying vehicles and ferries, developing new energy transport and improving transport management measures, we hope to achieve the long-term target of attaining zero vehicular emissions and zero emissions in the transport sector before 2050. As regards “waste reduction”, we have set a medium-term target to gradually reduce the per capita municipal solid waste (MSW) disposal rate by 40% to 45% and raise the recovery rate to about 55%, with a view to achieving the long-term target of carbon neutrality in the waste management before 2050. The Government will also strive to develop adequate and advanced waste-to-energy facilities by 2035 with the aim of moving away from reliance on landfills for MSW disposal.

7. Our quest for carbon neutrality can generate new opportunities for Hong Kong and promote green recovery. In the next 15 to 20 years, the Government will devote about \$240 billion to take forward various measures to mitigate and adapt to climate change. The private sector will also need to invest a substantial amount of resources to achieve low-carbon transformation. Green economy transformation has become a world trend. As an international financial centre, Hong Kong is well placed to develop into a green finance hub in the region. In order to seize the opportunity for developing green finance, the Green and Sustainable Finance Cross-Agency Steering Group co-chaired by the Hong Kong Monetary Authority and the Securities and Futures Commission will co-ordinate the financial sector’s response climate and environmental risks, and accelerate the development of green and sustainable finance in Hong Kong.

8. Innovative technologies play a critical role in achieving carbon neutrality. The Government has set up the \$200 million Green Tech Fund (GTF) to provide better and more focused funding support to research and development projects which can help Hong Kong decarbonise and enhance environmental protection. As of early October 2021, the GTF has approved eight applications in the first round of applications, involving a total grant of about \$39 million. The GTF Secretariat will announce the vetting results of the remaining applications, and invite the second round of applications later this year.

9. Looking ahead, ENB will establish the new Office of Climate Change and Carbon Neutrality to strengthen coordination and promotion of decarbonisation work. To encourage different sectors in the community, including our young generation, to participate actively in climate actions, we will also explore the establishment of a dedicated advisory committee for tackling combating climate change through the integration of the existing advisory platforms.

Improving Air Quality

10. The Government has been actively taking forward and implementing various measures to continue to improve air quality, thus safeguarding public health. From 2018 to 2020, the ambient concentration of the four major air pollutants (including respirable suspended particulates, fine suspended particulates, nitrogen dioxide and sulphur dioxide) have dropped by 15 to 25%, indicating the effectiveness brought by the further enhancement in air quality in recent years.

A new round of Air Quality Objectives (AQOs) review

11. In accordance with the requirement stipulated in the Air Pollution Control Ordinance (Cap. 311), the ENB is about to embark on a new round of AQOs review. The Government will fully take into account the policies and measures set out in the “*Hong Kong Roadmap on Popularisation of Electric Vehicles*”, “*Clean Air Plan for Hong Kong 2035*”, and “*Hong Kong’s Climate Action Plan 2050*” published this year, and evaluate the air quality improvement as of 2030 brought by the implementation of the concerned measures in order to assess the scope for further tightening the AQOs. The review is anticipated to complete in 2023.

Progressively phasing down the local consumption of hydrofluorocarbons (HFCs)

12. HFCs are greenhouse gases that lead to climate change. They are mainly used as refrigerants in air-conditioning and refrigeration equipment. The Kigali Amendment to the “*Montreal Protocol on Substances that Deplete the Ozone Layer*” (the Montreal Protocol) was passed in October 2016 to progressively phase down the manufacture and consumption of HFCs for mitigating global climate change.

13. The Mainland has officially ratified the Kigali Amendment in this June. We will consult the trade about the progressive reduction in HFCs consumption and prepare for the necessary work on legislative amendments in order to fulfil international obligations of the Hong Kong Special Administrative Region under the Montreal Protocol.

Developing a smart air quality monitoring system

14. To provide the public with more detailed district-based air quality information, the EPD will develop a smart air quality monitoring system in the coming few years. Integrating the Internet of Things, artificial intelligence, existing air quality monitoring stations, sensors installed at specific locations (such as lampposts) and numerical models, the system is expected to extend the spatial coverage of monitoring stations, provide more detailed district air quality information, identify distribution of pollution, automate air quality forecast, and generate air pollution contour maps for display on webpages.

Promoting electric and new energy vehicles (including public transport and commercial vehicles)

15. The Government will spare no effort to implement measures in the Hong Kong Roadmap on Popularisation of Electric Vehicles which was announced in early 2021. They include cessation of new registration of fuel-propelled and hybrid private cars in 2035 or earlier, promotion of trials for electric public transport and commercial vehicles, expansion of the electric vehicle (EV) charging network, provision of training for technicians and mechanics on maintenance, and facilitation of recycling and second-life applications of retired EV batteries.

16. In addition, the Government will give impetus to the development of other forms of new energy public transport and commercial vehicles, including working with franchised bus companies to use hydrogen fuel cell buses on a pilot basis, with a view to formulating a detailed roadmap and timetable for the use of new energy public transport in around 2025.

Trial of electric taxi

17. In view of the rapid development of EV technologies in recent years, a number of vehicle suppliers have introduced EV models that have longer driving range and support quick charging. Apart from the pilot scheme for electric public light buses and the trial of double-deck electric buses under the New Energy Transport Fund announced earlier, we are exploring with the taxi trade to launch a trial in which the Government will provide subsidies to test the operation and business mode of electric taxis. The Government will make reference to the outcome of the trial so as to formulate policies to further promote the adoption of electric taxis.

Developing a mobile application on EV public chargers

18. The Government has engaged a system contractor to develop a mobile application to disseminate real-time electronic information of public chargers, in order to facilitate electric vehicle drivers to locate available public chargers when needed. The mobile application is expected to be launched in 2022.

19. When the mobile application is ready, we will explore inviting other private organisations to also provide availability information of their chargers, so as to widen the coverage of the mobile application.

Waste Reduction and Recycling

Municipal Solid Waste Charging

20. The Waste Disposal (Charging for Municipal Solid Waste) (Amendment) Bill 2018 was passed by the Legislative Council (LegCo) in August 2021. The preparatory period of 18 months as a basic arrangement has begun to enable the Government, various stakeholders and the general public to prepare for the implementation of the MSW charging. Meanwhile, for enhanced synergy, EPD will prepare to take over the management of refuse

collection points and household waste collection from the Food and Environmental Hygiene Department, bringing the collection, recycling, delivery and treatment of waste under the same umbrella.

Plastic beverage containers

21. The Government conducted a public consultation on the Producer Responsibility Scheme on Plastic Beverage Containers (PPRS) from 22 February to 21 May 2021 to solicit views from the public and relevant stakeholders. We received over 4 600 submissions and exchanged views with relevant sectors during the consultation period. We will map out the regulatory framework and way forward for the PPRS taking into account the views collected and the synergy with overall development on waste management. We will prepare the legislation for amending the relevant Ordinances.

22. EPD launched a one-year Reverse Vending Machine (RVM) Pilot Scheme in the first quarter of 2021, installing 60 RVMs at different locations across the territory with provision of rebate of \$0.1 for each container instantly through e-payment platform, to assess their application and performance at different venues and allow the public to get hands-on experience on their operation. Positive responses have been received from the public so far. As at 30 September 2021, the pilot scheme has recovered over 10 million plastic beverage containers for recycling locally. We are now preparing for Stage 2 of the pilot scheme to increase the number of RVMs to 120 in 2022 to enhance the assistance in the recovery of suitable beverage containers.

Extension of pilot schemes on central collection services for food waste and waste plastics

23. To strengthen recycling and resource circulation, the Government has been taking the lead and rolled out central collection services for food waste and waste plastics on a pilot basis, and our efforts have begun to bear fruit. We will soon expand the two pilot schemes to extend their territorial coverage and service targets.

24. On food waste recycling, the first phase of the pilot scheme on food waste collection was launched in 2018. The second phase with a larger scale has been rolled out in 2021 and will be taken forward progressively through the implementation of four food waste collection service contracts. The first

contract, covering Hong Kong Island & Islands District, was already awarded in August this year with collection service commenced in end September. The second contract covers the entire Kowloon District, Kwai Tsing, Tsuen Wan and Tseung Kwan O, and is expected to be implemented in the first quarter of 2022 for food waste collection. These two contracts mainly serve premises that generate food waste of larger quantities, including public premises (e.g. shopping centres of public housing estates, public markets and cooked food venues, catering facilities of community service organisations, canteens in tertiary institutions and hospitals, etc.) and commercial and industrial premises (e.g. food factories, hotels, large shopping malls and aircraft caterers, etc.). The remaining two contracts are under preparation, with a view to issuing tender invitation in the first quarter of next year.

25. On waste plastics recycling, since January 2020, we have commenced progressively a two-year pilot scheme on waste plastics collection and recycling in Eastern District, Kwun Tong and Sha Tin collecting all types of waste plastics from non-commercial and non-industrial sources for proper handling and recycling. As of August 2021, about 440 housing estates, buildings and other premises have registered the service, covering about half of the population in the three districts, with a total of about 1 900 tonnes of waste plastics collected. We will further extend the pilot scheme to nine districts from the end of 2021, covering about half of the population in Hong Kong. The Government will review the operational experience and effectiveness of the pilot scheme, and further optimize the service to cover the entire territory progressively.

Phased regulation of disposable plastic tableware

26. The EPD completed a two-month public consultation from July to September 2021 on the Scheme on Regulation of Disposable Plastic Tableware (the Regulation Scheme), with more than 8 000 submissions received during the period. The proposal was generally well received by the community. We are examining and considering the views collected in order to map out the way forward. We expect that the legislative procedure will be initiated next year, and taking into account the need to provide members of the public with an adaptation period, the first phase of the Regulation Scheme is expected to be implemented in around 2025.

Strengthen recycling support at district level

27. To strengthen recycling support at district level and to nurture green living habits, we have been expanding the community recycling network (CRN), GREEN@COMMUNITY, which now consists of 11 Recycling Stations, 22 Recycling Stores and more than 100 Recycling Spots. The CRN receives at least eight types of recyclables, including plastics, paper, metal, glass containers, electrical and electronic appliances, rechargeable batteries, fluorescent lamps / tubes, etc.), which helps mobilize the community to practise source separation of waste and clean recycling and provide reliable outlets for lower-value recyclables (such as plastics and glass containers).

28. Since the rebranding of the CRN in 2020, it has attracted tens of thousands of members of the public to practise clean recycling every month. It also creates green economic and employment opportunities. In light of the positive public response, we will set up 10 more Recycling Stores in the territory, which are expected to be put into service progressively starting from late 2021 / early 2022.

29. In line with the overall smart city development strategy, we have rolled out a Pilot Programme on Smart Recycling Systems in the fourth quarter of 2020 to test in phases at four locations the local application of smart recycling facilities. The Pilot Programme will be extended to cover 80-100 application points in 2022.

Green Schools 2.0

30. To facilitate schools in developing a group of Green Prefects (GPs) with leadership skills and deeper understanding of environmental issues, we have introduced a GP Programme to all primary and secondary schools since the 2020/21 school year. The programme attracted 112 schools to nominate around 4 100 students as GPs last year. We continue to organise the programme in this school year with a view to nurturing more GPs to help enhance their peers' environmental awareness, uplift their schools' overall environmental performance, strengthen energy saving and waste reduction, and promote carbon reduction to combat climate change.

Nature Conservation

31. The Government will enhance the Public Private Partnership (PPP) Scheme under the New Nature Conservation Policy (NNCP). In 2004, the Government promulgated the NNCP which identified 12 priority sites of ecological importance for enhanced conservation (priority sites)¹. For land owned by private land owners in these priority sites, in order to incentivise private land owners to conserve the ecologically important portion through the development potential of such land, under the original PPP Scheme, the Government will allow certain development in the ecologically less sensitive portion, provided that land owners of the private land undertake to (a) retain and conserve the ecologically important portion of the site (the Conservation Portion); (b) provide a lump sum contribution to the Environment and Conservation Fund (ECF) that is sufficient to generate recurrent income to support the long-term conservation work; and (c) appoint a conservation agent to apply for funding from the ECF regularly to carry out the required conservation work.

32. An additional option will be provided under the enhanced PPP. Land owners may opt to follow the existing mechanism to retain the Conservation Portion, or surrender the Conservation Portion to the Government for proactive conservation and management by the Government. Under this option, land owners are still required to provide to the Government a lump sum contribution that is sufficient to generate recurrent income to support the long-term conservation work. Full market value premium will continue to be charged in accordance with the established mechanism for the portion of the site that is ecologically less sensitive and in which certain development is allowed.

33. The enhanced PPP Scheme will not only facilitate conservation of more sites with ecological importance but also unleash the development potential of some sites, thereby achieving a better balance of conservation and development. In this regard, the Government can take part in the conservation and management of these ecologically important sites more proactively, which is conducive to creating environmental capacity and the sustainable development of the whole society.

¹ The 12 priority sites are: Ramsar Site, Sha Lo Tung, Tai Ho, Fung Yuen, Luk Keng Marsh, Mui Tsz Lam and Mau Ping, Wu Kau Tang, Long Valley and Ho Sheung Heung, Deep Bay Wetland outside Ramsar Site, Cheung Sheung, Yung Shue O, and Sham Chung.

34. With regard to the Countryside Conservation Office (CCO) under the EPD, in addition to expanding the funding scope² of the Countryside Conservation Funding Scheme (CCFS)³ last year, the CCO also introduced a number of enhancement measures this year, including increasing the number of rounds of application invitation each year and the maximum funding amount for specific types of projects from two million to three million. Since the launch of the CCFS, a total of 27 projects have been approved involving a total funding support of about \$140 million. Moreover, in order to support eco-tourism, better serve visitors and help revitalise remote villages, the CCO has set up an interdepartmental taskforce to review the existing licensing requirements and procedures for relevant guesthouses and catering business in countryside areas with reference to the special nature of rural settings and traditional architecture.

Water Quality

35. To enhance the water quality in Victoria Harbour and mitigate its nearshore odour problems, plans are in place to install newly designed dry weather flow interception facilities near the stormwater outfalls of Hung Hom, Causeway Bay Typhoon Shelter, Wanchai East, Tsuen Wan Bay and Shau Kei Wan Typhoon Shelter. The respective works projects have been included in the Public Works Programme, and the investigation and design work is underway. Subject to support from local districts and funding approval by the LegCo, these projects are expected to be completed gradually between 2026 and 2028. Besides, the Government has also applied odour-control hydrogel at stormwater outfall locations and their vicinity along the coastal areas of Victoria Harbour that have potential odour problems to be mitigated. Odour-control hydrogel is a new technology collaboratively developed by the Drainage Services Department and the Hong Kong University of Science and Technology, and is proven through on-site tests to be effective in reducing odour in drainage systems.

² The funding scope was expanded to cover conservation and revitalisation projects in the remote countryside, including natural environment/habitats, non-graded built heritage, cultural and historic assets, etc.

³ Funding support for conservation activities or projects in Lantau are covered by the Lantau Conservation Fund under the Sustainable Lantau Office, and thus Lantau is not covered under the CCFS.

36. In addition, a total of 6 projects⁴ will commence construction this year to support regional development and improve living environment in rural areas. We are also planning to consult the Panel on Environmental Affairs of the LegCo for two projects covering village sewerage schemes for the North, Tsuen Wan and Kwai Tsing districts.

Review of Environmental Impact Assessment Process

37. The Environmental Impact Assessment Ordinance (EIAO) provides a statutory framework for designated projects to identify and address environmental issues associated with the projects through environmental impact assessment studies and consultation procedures during project planning stage. It provides an important platform to balance the needs for environmental protection and development. Based on the experience gained from more than 20-year operation of the EIAO, EPD will comprehensively review the current process with a view to streamlining and improving the efficiency and effectiveness of the EIAO mechanism.

OTHER ON-GOING INITIATIVES

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

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⁴These projects include village sewerage schemes for the Islands district; construction and rehabilitation of sewage rising main in Yuen Long, Tai Po and Yau Tong; and sewerage system upgrade for North East New Territories.

2021 Policy Address
Policy Initiatives of Environment Bureau:
Environmental Protection

On-going Initiatives

Area	Progress
Improving Air Quality	
Improve Air Quality Continuously	<ul style="list-style-type: none"> ● Amended the Air Pollution Control Ordinance in April 2021 to tighten three Air Quality Objectives (AQOs), including the 24-hour AQO of sulphur dioxide (SO₂), as well as the annual and 24-hour AQOs of fine suspended particulates (PM_{2.5}). The new AQOs will be effective on 1 January 2022. ● Announced the “<i>Clean Air Plan for Hong Kong 2035</i>” in June 2021, setting out long-term goals and specific policies to continuously improve air quality until 2035.
Green Transport	<ul style="list-style-type: none"> ● Announced the “<i>Hong Kong Roadmap on Popularisation of Electric Vehicles</i>” in March 2021, with a view to achieving zero vehicular emissions before 2050. ● Subsequent to the completion of the programme for phasing out about 80 000 pre-Euro IV diesel commercial vehicles (DCVs) in end June 2020, the Government has mandated the retirement deadlines of Euro IV DCVs and launched an \$7.1 billion ex-gratia payment scheme, to progressively phase out about 40 000 Euro IV DCVs by end 2027. Application for ex-gratia payment started on 19 October 2020. As of August 2021, about 7 000 applications were received.

Area	Progress
	<ul style="list-style-type: none"> <li data-bbox="651 208 1382 864">● The Government has also launched the \$2 billion EV-charging at Home Subsidy Scheme, to subsidise eligible car parks of existing private residential buildings to install EV charging-enabling infrastructure, with a view to facilitating EV owners to install chargers to charge their EVs at home. The subsidy scheme is expected to run for about 3 years, and was open for application on 21 October 2020. By September 2021, we have received more than 490 applications, covering more than 105 000 parking spaces. This is 75% higher than the original target. <li data-bbox="651 925 1382 1245">● The Government has expanded the scope of the New Energy Transport Fund to cover commercial motorcycles, non-road vehicles and vessels in addition to goods vehicles, taxis, light buses, buses and ferries. As at the end of September 2021, the Fund has approved about 230 trials. <li data-bbox="651 1305 1382 1912">● The Government also plans to launch a pilot scheme for electric public light buses (e-PLBs) to subsidise a trial for about 40 e-PLBs running on different routes for 12 months. The Government has developed the basic requirements and specifications for the e-PLBs and their charging facilities that suit Hong Kong's environment, and issued technical guidelines for e-PLBs and their associated charging facilities. We are now preparing for the launch of the pilot scheme in mid-2023. <li data-bbox="651 1973 1382 2047">● The Government is preparing to launch a pilot scheme for electric ferries to test their

Area	Progress
	<p>operation in 4 in-harbour ferry routes. As time is required to construct electric ferries and their associated charging facilities, we anticipate that the pilot scheme would commence in 2023 tentatively.</p>
Emissions of Power Plants	<ul style="list-style-type: none"> ● The Government has completed a review of the emissions caps of power plants and issued the Ninth Technical Memorandum (TM) on 9 June 2021 pursuant to the Air Pollution Control Ordinance, to tighten the emission caps of power plants from 2026 onwards. As compared with the Eighth TM, the Ninth TM will further tighten the emissions of SO₂, nitrogen oxides (NO_x) and respirable suspended particulates (PM₁₀) by 6% to 10%.
Emissions of Marine Vessels	<ul style="list-style-type: none"> ● 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. ● The Government will consider imposing air pollutant emission standards for new petrol-powered outboard engines, which are commonly used on sampans and pleasure vessels, in the next few years. ● The Government will examine measures to take forward the adoption of Liquefied Natural Gas (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

Area	Progress
	<p>regulations and requirements for offshore LNG bunkering in the next few years.</p>
<p>Emissions of Volatile Organic Compounds (VOC)</p>	<ul style="list-style-type: none"> ● The Government will soon conduct public consultation on the proposal of tightening VOC content limits of regulated architectural paints, and proceed with the necessary legislative amendments.
<p>Regional Collaboration</p>	<ul style="list-style-type: none"> ● The Government will continue to collaborate with the Guangdong Government to 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. ● The Guangdong and Hong Kong Governments are conducting a joint study on post-2020 regional air pollutants emission reduction targets and concentration levels, with a view to jointly formulating regional air pollutant emission reduction plans and targets for 2025 and 2030, so as to further improving regional air quality. ● The monitoring results of the Pearl River Delta (PRD) regional air quality monitoring network show that the concentrations of pollutants such as SO₂, nitrogen dioxide (NO₂) and PM₁₀ 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 routine monitoring of VOC in

Area	Progress
	<p>the PRD regional air quality monitoring network, and conduct a joint study “Characterisation of photochemical ozone formation, regional and super-regional transportation in the Greater Bay Area” that will last for 3 years (2021-2024), to better understand the causes of ozone pollution and help develop effective preventive control strategies. The VOC monitoring stations in Hong Kong will start operation by end 2021. In addition, the Guangdong and Hong Kong Governments have agreed to jointly establish a 3-dimensional (3-D) air pollution monitoring network for the Greater Bay Area. Light detection and ranging (LiDAR) technology will be used to monitor vertical and 3-D distribution of air pollutant concentrations and wind profile. The data will be shared among the two sides for tracking regional ozone and suspended particulates transport, enhancing the understanding of the pollution sources, formation and transport processes.</p> <ul style="list-style-type: none"> ● Targeting at the high air pollution days in the PRD region, the Guangdong and Hong Kong Governments have been conducting air quality forecasting meetings at the technical level so as to jointly study the development and causes of high air pollution days, with a view to formulating and adopting appropriate preventive measures in advance.
Cleaner Production Partnership Programme (the Programme)	<ul style="list-style-type: none"> ● Since its launch in 2008, the Programme had approved more than 3 500 projects and contributed to an annual reduction of over 38 000 tonnes of pollutant emissions, 19 million tonnes of effluent discharge and 1.74 million tonnes of carbon dioxide

Area	Progress
	<p>emission. An overall saving of over 18 000 tetra-joules of energy and over \$2 billion of production cost had been achieved.</p>
Waste Management	
<p>“Waste Blueprint for Hong Kong 2035”</p>	<ul style="list-style-type: none"> ● ENB promulgated the “Waste Blueprint for Hong Kong 2035” (the Waste Blueprint) in February 2021, with the vision of “Waste Reduction · Resources Circulation · Zero Landfill”. The Waste Blueprint outlines the strategies, goals and measures to tackle the challenge of waste management up to 2035. ● In pursuit of the goals and measures set out in the Waste Blueprint, we will adopt a multi-pronged approach to strengthen the efforts on waste reduction and recycling. We will also develop more waste-to-resources and waste-to-energy facilities to handle waste and generate renewable energy in the waste treatment process, with a view to progressively moving away from the reliance on landfills.
<p>Municipal Solid Waste (MSW) Charging</p>	<ul style="list-style-type: none"> ● The Waste Disposal (Charging for Municipal Solid Waste) (Amendment) Bill 2018 was passed by Legislative Council (LegCo) in August 2021. The preparatory period of 18 months as a basic arrangement has begun to enable the Government, various stakeholders and the general public to prepare for the implementation of the MSW charging. We will closely communicate with stakeholders and the LegCo on various preparatory work.
<p>The Plastic Shopping Bag (PSB) Charging Scheme</p>	<ul style="list-style-type: none"> ● Specific options for enhancing the PSB Charging Scheme has been included as a part of the Council for Sustainable

Area	Progress
	<p>Development's Public Engagement on Control of Single-use Plastics which was launched on 30 September 2021.</p>
<p>Producer Responsibility Scheme on Waste Electrical and Electronic Equipment (WPRS)</p>	<ul style="list-style-type: none"> ● 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 also commenced full operation since March 2018 and treated over 70 000 tonnes of regulated WEEE so far.
<p>Producer Responsibility Scheme on Glass Beverage Containers (GPRS)</p>	<ul style="list-style-type: none"> ● 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% as compared with the amount collected through relevant voluntary recycling programmes in 2017. In 2019, the contractors collected a total of about 21 000 tonnes of waste glass containers, which is a further increase by nearly 60% as compared with 2018. In 2020, under the COVID-19 pandemic, the collection tonnage had dropped to 14 000 tonnes. ● We have completed the drafting of the relevant subsidiary legislation to provide for the operation details of the GPRS and will submit it to the LegCo for scrutiny in due course.

<p>Producer Responsibility Scheme on Plastic Beverage Containers (PPRS) and Reverse Vending Machine (RVM) Pilot Scheme</p>	<ul style="list-style-type: none"> ● The Government conducted the public consultation on the PPRS from 22 February to 21 May 2021, for details, please defer to paragraph 21 of the main paper. ● The EPD rolled out a one-year RVM Pilot Scheme in the first quarter of 2021, for details, please defer to paragraph 22 of the main paper.
<p>Packaging Waste Reduction</p>	<ul style="list-style-type: none"> ● EPD will continue to liaise with the different industries and other key stakeholders to jointly explore and implement some practical measures to promote the reduction of plastic packaging materials.
<p>EcoPark Paper Pulping Facility</p>	<ul style="list-style-type: none"> ● EPD has invited open tender for the development of a modern pulping facility in EcoPark, Tuen Mun to turn waste paper into resources in a more efficient and cost effective manner and provide more diversified outlets for local waste paper. It is expected that the tender result will be announced in the fourth quarter of this year and the pulping facility will commence operation by 2024.
<p>Waste Paper Collection and Recycling Services</p>	<ul style="list-style-type: none"> ● EPD has launched the territory-wide waste paper collection and recycling services since September 2020. The waste paper collected would be screened, sorted and baled locally before delivering to various markets for recycling into paper products to turn waste into resources. ● After the launch of the collection service, the waste paper recycling market has been active and the trade's response has been positive. The quantity of waste paper collected is on the rise and the income of the

	frontline collectors has been stabilised.
Promoting “Bring Your Own Bottle”	<ul style="list-style-type: none"> ● The Government has installed in government venues some 300 water dispensers for public use, with another 200 units to be completed by mid-2022. Besides, EPD is working on a pilot scheme to provide smart water dispensers with their exteriors designed by students to about 100 primary and secondary school premises through a contractor, at the same time of supporting schools to carry out educational and experiential activities to convey green messages such as waste reduction at source and clean recycling to students, encouraging students to inculcate a “bring your own bottle” living habit. The installation works of smart water dispensers have commenced gradually in August this year and will be put into service progressively by the end of this year.
Reducing Disposable Plastic Tableware	<ul style="list-style-type: none"> ● Since 2019, we have progressively ceased the provision of plastic straws and expanded polystyrene food containers in most government premises and canteens, and we have also stipulated the relevant requirement on the avoidance of using disposable tableware when awarding new contracts or renewing existing contracts. We expect that 90% of the restaurants at government venues will cease using all disposable plastic tableware completely by the end of this year.
Food Wise Hong Kong Campaign	<ul style="list-style-type: none"> ● We will continue to promote the “Food Wise and Waste Less” culture and appeal to the community to adopt behavioural change to reduce food waste through various publicity and educational programmes. We will also

	<p>promote good practices on food waste reduction, source separation and recycling for commercial and industrial (C&I) sectors, and facilitate their surplus food donation to charitable organisations.</p> <ul style="list-style-type: none"> ● About 1 040 organisations have signed the “Food Wise Charter” and over 1 120 eateries have enrolled in the “Food Wise Eateries Scheme” so far. ● We have rolled out phases one and two of the “Pilot Programme on Provision of Small Food Waste Composters at School” successively to assist 150 schools to cultivate the “Food Wise” culture among teachers and students, and demonstrate the recycling of food waste into compost for use in planting in campus. ● We have launched the “Pilot Scheme for Provision of Necessary Equipment for ‘Plastic-free’ School Lunch” to provide the “Four Treasures” (refrigerators, steam cabinets, dishwashers and disinfectors) to about 50 schools, encouraging students to bring their own lunches using reusable food containers.
Installing Food Waste Grinders	<ul style="list-style-type: none"> ● We have collaborated with BEAM Society to promote the installation of food waste grinders in new housing projects to provide an additional management option for treating household food waste through its green building assessment platform, BEAM Plus. We have also been exploring and evaluating the feasibility of introducing food waste grinders for household use during the planning and study stage of new

	development areas.
O · PARKs	<ul style="list-style-type: none"> ● O · PARK1 located in Siu Ho Wan, Lantau commenced operation in July 2018, with a treatment capacity of 200 tonnes of food waste per day. O · PARK1 has treated over 100 000 tonnes of food waste so far. The visitor center of O · PARK1 was officially opened for public in March 2021, allowing visitors to experience and understand the food waste problem in Hong Kong and the process of converting food waste into renewable energy and compost. ● O · PARK2 located in Sha Ling, North District is under construction and is expected to be commissioned in 2023, with a treatment capacity of 300 tonnes of food waste per day. We will make some technical amendments to the Waste Disposal (Designated Waste Disposal Facility) Regulation in 2022 to include this facility in the appropriate schedule of the Regulation.
“Food Waste/Sewage Sludge Anaerobic Co-digestion” Trial Scheme	<ul style="list-style-type: none"> ● The Food Waste Pretreatment Facility at the Tai Po Sewage Treatment Works commenced operation in May 2019. Currently, the facility handles about 15 to 20 tonnes of food waste per day. Depending on the progress of the trial, we would gradually increase the treatment capacity to a maximum of 50 tonnes per day. ● We are also extending the trial to Sha Tin Sewage Treatment Works for commissioning in 2022, with a daily treatment capacity of about 50 tonnes.

	<ul style="list-style-type: none"> ● In the longer term, we are examining with the Drainage Services Department to expand the treatment capacity in the Tai Po Sewage Treatment Works, and continue to extend the technology to other suitable sewage treatment works.
<p>Management of Yard Waste</p>	<ul style="list-style-type: none"> ● The temporary yard waste recycling centre Y · PARK commenced operation in June 2021 to turn yard waste into recyclable materials such as wood chips and wood boards for using in gardening and planting, making biochar, manufacturing wooden furniture/ decoration/ artworks, etc. The handling capacity of Y · PARK in the first year is about 11 000 tonnes, which will be gradually increased. ● We have drawn up a plan to build a pilot plant to convert yard waste into biochar. Design of pilot plant and relevant tender invitation have been completed. It is expected to select the contractor by end 2021 to start the construction works with a target to commence operation in end 2022. Upon full operation, it is estimated capable of handling about 15 tonnes of yard waste daily for production of not less than 3 tonnes of biochar.
<p>Integrated Waste Management Facilities (IWMF)</p>	<ul style="list-style-type: none"> ● The Design-Build-Operate contract of the first IWMF was awarded in November 2017, and the facility under construction is expected to commence operation in 2025. ● We are planning for the development of more large-scale waste-to-energy facilities by 2035, including facility adopting advanced incineration technology etc.

Green Procurement	<ul style="list-style-type: none"> ● In July this year, EPD further expanded the Government green procurement list by increasing the number of products and services from 150 to 183 items. We will also continue to encourage wider adoption of green procurement both within the Government and in the private sector.
Restored Landfill Revitalisation Funding Scheme	<ul style="list-style-type: none"> ● The Tung Wah Group of Hospitals will develop the “E-Co Village”, an eco-friendly camp site at Tseung Kwan O Stage I Landfill. It is expected to commence the construction works in the first quarter of 2022 with a view to commissioning the facilities in 2023 tentatively.
Landfill Extensions	<ul style="list-style-type: none"> ● It is expected that the extended portion of the South East New Territories Landfill will be in operation and start receiving construction waste by late 2021. ● Contract procurement for the extension of the North East New Territories Landfill (NENTX) is underway and it is expected that the extension works will commence in 2022. To tie in with the commissioning of NENTX, ENB/EPD will make some technical amendments to both the Waste Disposal (Designated Waste Disposal Facility) Regulation and the Waste Disposal (Charges for Disposal of Construction Waste) Regulation in 2022, in order to update the landfill boundary drawing at suitable time. ● Funding approval from the Finance Committee of the Legislative Council for the West New Territories Landfill extension project was obtained in September 2021. We expect to tender the project in 2022.

<p>Setting Up Green Outreach (Waste Reduction and Recycling Outreaching Teams)</p>	<ul style="list-style-type: none"> ● The EPD launched a pilot outreaching service in three districts (i.e. Eastern District, Kwun Tong and Sha Tin) in end 2018 to educate the public about the importance of waste reduction at source, and to provide on-site support for recycling programmes. We have extended the service to all 18 districts by mid-2021. The Green Outreach collaborates with district stakeholders and organizes promotional events and activities to encourage and support the public to practise clean recycling.
<p>Climate Change and Energy</p>	
<p>Renewable Energy (RE)</p>	<ul style="list-style-type: none"> ● Earmarked \$3 billion for the installation of small-scale RE systems at government premises, with more than \$1.5 billion approved for about 130 projects which can generate about 21 million kWh of electricity per annum. The pilot floating photovoltaic (PV) project at Tai Lam Chung Reservoir and a pilot PV project at the South East New Territories Landfill will be commissioned by end-2021. ● Supported the private sector in developing RE, including introducing the Feed-in Tariff (FiT) Scheme, relaxing the restrictions on installing solar energy generation systems in New Territories Exempted Houses, installing solar energy generation systems at 220 premises of schools and non-governmental organisations for free through Solar Harvest, introducing legislative amendments relevant to FiT payments, etc. Systems already approved under the FiT Scheme could generate about 220 million kWh of electricity each year, equivalent to the demand of all households in Mong Kok,

	Yau Ma Tei and Jordan.
Energy Saving and Carbon Reduction	<ul style="list-style-type: none"> ● The Energy Saving Plan for Hong Kong's Built Environment 2015~2025+, promulgated by the Government in 2015, sets a target of reducing energy intensity by 40% by 2025. Various measures have been implemented in accordance with the Plan to enhance the energy efficiency of buildings in Hong Kong. So far, the energy intensity of Hong Kong has decreased by over 30%. ● Achieved the target of reducing electricity consumption in government buildings by 5% in five years (i.e. from 2015-16 to 2019-20) in 2018-19, one year ahead of schedule, with a final saving of 7.8%, which is equivalent to a reduction in carbon emissions by about 77 000 tonnes. The 2019 Policy Address announced the "Green Energy Target" that aims to further improve the Government's energy performance by 6% in the five years ending 2024-25. The "Green Energy Target" not only covers government buildings and infrastructure, but also requires savings in electricity and other forms of energy and will take into account the energy contribution from renewable energy projects. ● Implemented various energy saving measures, such as raising statutory building energy efficiency standards, expanding the Mandatory Energy Efficiency Labelling Scheme, promoting retro-commissioning, and developing district cooling systems at the Kai Tak Development, Kwu Tung North New Development Area and Tung Chung New Town Extension (East).

	<ul style="list-style-type: none"> ● Provided further tax incentive for energy-efficient and RE installations in buildings from 2018-19 onwards, and established the E&M InnoPortal in June 2018 to promote the use of innovation and technology in enhancing energy efficiency and developing RE. More than 130 projects matched through the E&M InnoPortal, with 31 on energy saving and RE, are under trial. ● Rolled out the “Green Schools 2.0 – Energy Smart” from 2020-21 onwards to install more energy-efficient variable frequency air-conditioners and light emitting diode (LED) lighting as well as real-time energy monitoring systems free of charge for non-government and non-profit making secondary and primary schools to promote energy saving. Currently, about 300 schools have applied under the programme. Besides, \$150 million has been earmarked to implement the “Green Welfare NGOs” for a period of five years starting 2022-23. We will conduct energy audits and install energy-efficient devices (including variable frequency air-conditioners and LED lighting) for eligible welfare organisations free of charge to enhance the energy performance of the premises concerned and to promote energy saving and decarbonisation.
Carbon Audit	<ul style="list-style-type: none"> ● Bureaux and departments have started to conduct regular carbon audits on major government buildings since 2017-18, and disclose the results after completing the audits. The carbon auditing work involves over 300 major government buildings of

	different sizes and uses.
External Lighting	
Measures to Manage External Lighting	<ul style="list-style-type: none"> ● The Government continues to implement the Charter on External Lighting with about 4 800 participants, and appointed a Working Group on External Lighting to review the effectiveness of the Charter and related measures. The Government will consider the next step having regard to the studies and recommendations of the Working Group.
Nature and Countryside Conservation	
Biodiversity Strategy and Action Plan	<ul style="list-style-type: none"> ● We will continue to take forward on-going and long-term programmes under the Biodiversity Strategy and Action Plan, including the relevant research and promotion. The Government will take into account latest development of the global biodiversity framework under the Convention on Biological Diversity and factors such as local contemporary conditions and resources allocation etc., when considering the way forward.
Enhancement of Country Park Facilities	<ul style="list-style-type: none"> ● The Agriculture, Fisheries and Conservation Department (AFCD) has initially identified suitable sites for enhancement of facilities, including improvement and construction of three public toilets (at Bride's Pool, Tai Tam Tuk and Pak Kung Au), and will set up a new viewing platform overlooking Po Pin Chau in the Sai Kung East Country Park. The AFCD will also conduct feasibility studies for enhancement projects of larger scale. The new facilities are expected to be rolled out gradually in the next two to three years for public enjoyment.

<p>Installation of Artificial Intelligence (AI) Surveillance System for Hill Fires</p>	<ul style="list-style-type: none"> ● The AFCD is exploring the use of video analytic robotics and AI technology to enhance the accuracy of the existing hill fire detection system for hill fire detection in country parks to reduce hill fire damage to the environment. The existing surveillance system at the Tin Fu Tsai Fire Lookout was upgraded in July 2021 with an updated AI detection model based on data collected from the Pak Heung Fire Lookout. The system will continue to collect more data for performance analysis.
<p>Marine Conservation</p>	<ul style="list-style-type: none"> ● In addition to the Southwest Lantau Marine Park designated last year, the Government is undertaking the statutory procedures for the designation of the proposed South Lantau Marine Park and preparation work for the designation of the proposed North Lantau Marine Park, which are expected to be designated in 2022 and 2024 respectively. These three new marine parks will increase the total protected sea area from the original 3 400 hectares to about 8 500 hectares. ● The Government has expanded the Sham Wan Restricted Area from the sandy beach to the adjoining waters and extended the restricted period since 1 April 2021 for enhanced protection of the endangered Green Turtles.
<p>Improve the Near-shore Water Quality</p>	
<p>Improve the Near-shore Water Quality</p>	<ul style="list-style-type: none"> ● The 23 approved sewerage projects worth about \$32.1 billion have been rolled out in the period from 2017-2021. They include sewerage improvement schemes for Kwun Tong and Tai Po; village sewerage works at Lei Yue Mun, Peng Chau, Sai Kung, Tolo Harbour, Lantau Island, Outlying Islands,

	<p>North District and Tuen Mun; construction and expansion of Shek Wu Hui Effluent Polishing Plant; Yuen Long Effluent Polishing Plant; sewage treatment works at San Shek Wan, Sha Tau Kok, Cheung Chau and Kwun Tong; and dry weather flow interceptors at West Kowloon, Tsuen Wan and Kwai Chung. The project of Shek Wu Hui Effluent Polishing Plant will be completed in phases between 2025 and 2034 and other works will be completed during the period of 2022-2027.</p> <ul style="list-style-type: none"> ● The works projects for installation of newly designed dry weather flow interception facilities near the stormwater outfalls of Hung Hom, Causeway Bay Typhoon Shelter, Wanchai East, Tsuen Wan Bay and Shau Kei Wan Typhoon Shelter have been included in the Public Works Programme, and the investigation and design work is underway. Subject to support from local districts and funding approval by the LegCo, these projects are expected to be completed gradually between 2026 and 2028. Besides, the Government has also started in March 2021 the application of odour-control hydrogel at stormwater outfall locations and their vicinity along the coastal areas of Victoria Harbour that have potential odour problems to be mitigated.
Safe and Quality Living Environment	
Replacement and Rehabilitation of Aged Stormwater Drains and Sewers	<ul style="list-style-type: none"> ● We are conducting comprehensive investigation in phases to identify aged stormwater drains and sewers at high risk of structural failure and arrange for rehabilitation works.

	<ul style="list-style-type: none"> ● The Government has already got about \$9.5 billion approved by the Legislative Council to carry out replacement and rehabilitation of about 84 kilometres and condition surveys of about 153 kilometres of sewers throughout Hong Kong in the period from 2021-2027 including about \$7.5 billion approved in the period from 2017-2021 under 10 projects.
Tackling Marine Refuse	
Keep the Shorelines Clean	<ul style="list-style-type: none"> ● 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 promote shorelines cleanup actions. ● We commenced a project in 2020 to deploy aircraft system to monitor the cleanliness condition of remote coastal sites. We will continue to 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.

Phasing Out Products Containing Microbeads	<ul style="list-style-type: none"> ● We launched a two-year “Bye Bye Microbeads” Charter in September 2021 to encourage the trade to phase out personal care and cosmetic products containing microbeads and promulgate microbead-free brands on a thematic website to help consumers make informed choices. In the course of the Scheme, we will conduct surveys on the status of phasing out microbeads, examine the effectiveness of the Scheme and review the need for further tightening the control of these products.
Environmental Noise	
Further the Trial Application of Low Noise Road Surface	<ul style="list-style-type: none"> ● To alleviate traffic noise impact and to promote sustainable resource management, thereby contributing to a liveable city, EPD and Highways Department have preliminarily completed the further trial application of a new low noise road surface (“thin surfacing material”). The interim report issued in June 2021 already established the first batch of local road characteristics suitable for new low noise road surface application. Now, proponent of new town or development area may apply the new low noise road surface at suitable local roads as traffic noise mitigation measure. EPD and Highways Department will continue the further trial on more local road sections for concluding a final report.
Adopt Innovative Noise Mitigation Designs	<ul style="list-style-type: none"> ● To alleviate traffic noise impact on residential developments, after consultation with relevant professional institutions and government departments, EPD issued a professional practice note to facilitate professionals to understand and adopt innovative noise mitigation designs for residential developments in November

	<p>2020.</p> <ul style="list-style-type: none"> ● So far, EPD has conducted a series of seminars to a total of over 1 000 professionals to introduce and promote innovative noise mitigation designs to the industry. In these seminars, application of “4D Virtual Reality” technology were demonstrated to help architects, engineers, etc. to understand the application of noise mitigation designs in planning residential developments and designing residential units.
Taking Forward the Ecological Civilisation Construction in the Greater Bay Area (GBA)	
<p>Taking Forward the Ecological Civilisation Construction in the GBA</p>	<ul style="list-style-type: none"> ● The Government attaches great importance to regional cooperation in ecological and environmental protection, and has been striving to take forward the strategies stated in the “Outline Development Plan for the Guangdong-Hong Kong-Macao GBA” in collaboration with the Governments of the Guangdong Province and Macao. ● The Hong Kong, Guangdong and Macao sides have achieved good results in promoting energy saving in buildings, monitoring and improving air quality, and reducing vessel and vehicle emissions. To implement the “Outline Development Plan for the Guangdong-Hong Kong-Macao GBA”, we will maintain close liaison with the Ministry of Ecology and Environment, the Department of Ecology and Environment of the Guangdong Province and the Macao Environmental Protection Bureau to explore ways to deepen regional cooperation in ecological and environmental protection, and press ahead with the

	ecological civilisation construction in the GBA.
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