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Panel on Environmental Affairs

Meeting on 26 June 2017

Updated background brief on combating climate change prepared by the Legislative Council Secretariat

Purpose

This paper provides background information on combating climate change in Hong Kong. It also gives a brief account of the major views and concerns expressed by Members when related issues were discussed by the relevant committees of the Legislative Council ("LegCo").

Background

The problem of climate change

2. The United Nation's Intergovernmental Panel on Climate Change has found that the earth's atmospheric carbon dioxide ("CO₂") concentration, the main driver of global climate change in the last century, has increased by over 40% since pre-industrial times, which is the highest in the last 800 000 years. It also confirmed that human influence has been detected for warming of atmosphere and ocean, changes in the global water cycle, reduction in snow and ice, rise of global mean sea level and more frequent extreme climate. In Hong Kong, the effects of climate change have already emerged with the city experiencing raised temperatures, more frequent extreme rainfall, and rising sea-level.

International efforts to combat climate change

3. The United Nations Framework Convention on Climate Change ("UNFCCC") entered into force in 1994 with the objective to stabilize greenhouse gas ("GHG") concentrations in the atmosphere at a level that will

prevent dangerous anthropogenic interference with the climate system.¹ UNFCCC outlines how specific international treaties may be negotiated to set binding limits on GHGs. In 1997, the Kyoto Protocol was concluded by the parties to UNFCCC, which established legally binding obligations for developed countries to reduce their GHG emissions in the period 2008-2012. The Kyoto Protocol was amended in 2012 to encompass the period 2013-2020 in the Doha Amendment. After extension of UNFCCC and the Kyoto Protocol to Hong Kong in May 2003, Hong Kong was obliged to play a part to fulfil the relevant obligations imposed upon China under the Convention/Protocol.

4. In December 2015, the parties to UNFCCC adopted the Paris Agreement at the United Nations Climate Change Conference in Paris, which aimed at limiting global warming to less than 2°C (with the pre-industrial levels as the baseline), and striving for limiting the temperature rise to 1.5°C (collectively known as the temperature goals).

Hong Kong's strategies and measures to combat climate change

Hong Kong's Climate Change Strategy and Action Agenda

5. The Environmental Protection Department commissioned a consultancy study in 2008 to assess the impacts of climate change on Hong Kong, and to recommend long-term strategies and measures to reduce GHG emissions as well as to adapt to the unavoidable effects of climate change. In 2010, the Environment Bureau ("ENB") published the "Hong Kong's Climate Change Strategy and Action Agenda" ("the Action Agenda") for public consultation. Based on the Action Agenda, bureaux and departments concerned have been implementing various measures with a view to achieving by 2020 a target of reducing carbon intensity by 50% to 60% from the 2005 level.² In November 2015, ENB further released the "Hong Kong Climate Change Report 2015" which outlined the efforts of the Government and the private sector in response to climate change.

¹ GHGs are gases in the atmosphere that absorb and trap heat. UNFCCC requires national reporting on six key GHGs: CO₂, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. CO₂ is the most common GHG emitted by human activities, in terms of the quantity released and the total impact of global warming through the combustion of fossil fuels.

² Carbon intensity is calculated by dividing Hong Kong's total carbon emission by Gross Domestic Product.

Steering Committee on Climate Change

6. Recognizing the need to step up climate actions and to draw up long-term policies, the Chief Executive announced in the 2016 Policy Address the establishment of an interdepartmental committee under the chairmanship of the Chief Secretary of Administration to steer and coordinate the climate actions of various bureaux and departments. The Steering Committee on Climate Change has thus been formed with membership from 13 policy bureaux and three departments. Other bureaux and departments may attend its meetings on an ad hoc basis.

Hong Kong's Climate Action Plan 2030+

7. On 20 January 2017, ENB published the "Hong Kong's Climate Action Plan 2030+" ("the Action Plan") outlining the longer-term actions in combating climate change, and setting out the target to reduce Hong Kong's carbon intensity by 65% to 70% by 2030 compared with the 2005 level. As committed in the Action Plan, the Government will continue to phase down coal in local electricity generation, optimize the implementation of renewable energy, and make Hong Kong's buildings and infrastructure more energy efficient. The Government will also take measures to improve public transport and promote walking as a mobility means, strengthen the climate-readiness of the city as a whole, "cool" the city through landscaping, and partner with stakeholders to enhance resilience of the community to climate change.

Existing measures to combat climate change

8. In line with international practices, the Government's efforts to combat climate change have been focusing on three major aspects as follows:

- (a) mitigation – efforts to reduce or prevent emission of GHG;
- (b) adaptation – efforts to anticipate the adverse effects of climate change and take appropriate actions to prevent or minimize the damage; and
- (c) resilience – efforts to cope with and absorb climate change-related stresses and maintain the functional operation of public services, and economic and social activities.

Key actions in the above respects are set out in **Appendix I**.

Major views and concerns expressed by Members

9. The Panel on Environmental Affairs ("EA Panel") was briefed on the Administration's measures to combat climate change at its meetings on 28 April 2014, 22 June 2015, 25 January 2016 and 23 May 2016. EA Panel and the Panel on Economic Development held a joint meeting on 29 April 2017 to discuss the new Scheme of Control Agreements ("SCAs") with power companies. Members also raised related questions during examination of the Estimates of Expenditures 2014-2015, 2015-2016, 2016-2017 and 2017-2018, and at various Council meetings in the Fifth LegCo. The major views and concerns expressed by Members are summarized in the ensuing paragraphs.

Carbon intensity reduction target

10. Members expressed concerns as to whether Hong Kong could achieve the target of reducing 50% to 60% carbon intensity by 2020 compared to the 2005 level, and urged the Administration to expedite compilation of the data to facilitate timely assessment of the effectiveness of measures to reduce carbon intensity.

11. The Administration responded that under the new fuel mix for power generation for 2020, the proportion of natural gas would be increased to around 50%. Several coal-fired generation units would either retire or be replaced by gas-fired units to meet the additional gas requirement. As power generation accounted for a major part of local carbon emission, it was expected that with the new fuel mix in place, the carbon intensity reduction target could be met by 2020. The Administration also explained that due to the large amount of emission data from a wide spectrum of emission sources, the lead time for compiling GHG emission inventories and updating the carbon intensity of a specific calendar year was normally two to three years. Such a timeframe was in line with international norms.

Reducing carbon emissions from electricity generation

12. Members suggested that the two power companies should shoulder more responsibilities in reducing GHG emissions. They also urged the Administration to closely monitor the total energy consumption in Hong Kong. The Administration advised that the new SCAs with the power companies, which were signed in April 2017, incorporated incentive schemes in relation to promotion of energy efficiency and conservation. Power companies must achieve at least 4% energy saving on the basis of the average annual sales within a five-year period in order to earn the incentives. The new SCAs also included various initiatives (including feed-in tariff) to promote the development of renewable energy. The Administration also advised that the two power companies provided information in the electricity bills for

consumers' reference of their electricity consumption habits and setting of energy reduction targets by individual households.

Low-carbon development in the Pearl River Delta region

13. Members were concerned about how the Administration would take forward regional cooperation in the Pearl River Delta ("PRD") region to promote low-carbon development. Some Members enquired whether the Government would review the common policy objectives, measures and modes of cooperation drawn up with the PRD region in respect of GHG mitigation and climate change adaption.

14. The Administration advised that the Hong Kong/Guangdong Joint Liaison Group on Combating Climate Change ("the Joint Liaison Group") set up under the Hong Kong/Guangdong Co-operation Joint Conference in 2011 would coordinate regional measures and activities on combating climate change, as well as promote related scientific research and technology development. The Government would continue to strengthen cooperation between the two sides on combating climate change through the work of the Joint Liaison Group.

Latest development

15. At the meeting on 26 June 2017, the Administration will brief EA Panel on the Action Plan, including promotion of energy conservation and renewable energy.

Relevant papers

16. A list of relevant papers is set out in **Appendix II**.

Key actions to combat climate change

Mitigation

Fuel mix

- (a) The proportion of natural gas for power generation will be increased to around 50% in 2020, and the current interim measure of importing 80% of the nuclear output from the Daya Bay Nuclear Power Station will be maintained.

Energy saving and buildings energy efficiency

- (a) The Buildings Energy Efficiency Ordinance (Cap. 610) was implemented to require central building services installations to meet energy efficiency standards.
- (b) Energy audits are conducted in major government buildings. Bureaux and departments are encouraged to implement electricity saving projects.
- (c) Energy saving practices will be promoted with a view to achieving the energy intensity reduction target of 40% by 2025, using 2005 as the base year, promulgated in the "Energy Saving Plan for Hong Kong's Built Environment 2015~2025+".

Transportation

- (a) In line with the policy of using railway as the backbone of passenger transport system, the Government is taking forward railway expansion projects to reduce road-based transport.
- (b) The Government will continue to manage the private car fleet size. A bicycle-friendly environment will be promoted in new development areas to facilitate public use of bicycles for short-distance commute.
- (c) Adoption of electric vehicles ("EVs") by private car owners and transport trades are encouraged through measures such as first registration tax waiver, profits tax deduction for capital expenditure on purchases of EVs, and the Pilot Green Transport Fund.

Waste

- (a) A number of waste-to-energy facilities (e.g. sludge treatment facilities, integrated waste management facilities, and organic waste treatment facilities) will be developed to recover energy from unavoidable waste and minimize the amount of waste that requires end-of-pipe treatment.

Adaptation

Built environment and infrastructure

- (a) A Climate Change Working Group on Infrastructure was formed to oversee the revision of design standards, and examine the scope of enhancement works needed for strengthening the resilience of existing infrastructure.
- (b) The Government has conducted a study on sea level rise caused by climate change and its implications on design of coastal structures, and will update the findings with the aid of recent scientific development in the areas of thermal expansion of water and glacier melting. The study results will be adopted for updating design standards and guidelines in the Port Works Design Manual.
- (c) The study titled "Hong Kong 2030+: Towards A Planning Vision and Strategy Transcending 2030" will update the territorial spatial development strategy and facilitate the formulation of measures to help tackle issues arising from climate change.
- (d) Drainage improvement works will be initiated to adapt to the increasing flood risk.

Resilience

Emergency preparedness

- (a) The Hong Kong Observatory is managing a weather warning and alert system through which the public is informed about the onslaught of severe weather events. Early storm surge alert systems were developed for low-lying areas prone to sea flooding.

- (b) The Contingency Plan for Natural Disasters was updated in November 2015. An Interdepartmental Task Force on Emergency Preparedness was set up to facilitate effective and efficient central monitoring and management of incidents.

[Source: Adapted from Annex A to the Administration's paper (LC Paper No. [CB\(1\)928/15-16\(03\)](#)) for the meeting of the Panel on Environmental Affairs on 23 May 2016, and the Administration's written reply (Reply Serial No. [ENB123](#)) to a question raised by a Member during examination of the Estimates of Expenditure 2017-2018.]

Combating climate change

List of relevant papers

Date	Event	Paper
1 April 2014	Special meeting of Finance Committee for examination of Estimates of Expenditure 2014-2015	Written questions raised by Members and Administration's replies (Reply serial numbers: ENB121, 231, 263 and 313)
28 April 2014	Meeting of the Panel on Environmental Affairs	Administration's paper on "Report of public consultation on Hong Kong's Climate Change Strategy and Action Agenda" (LC Paper No. CB(1)1292/13-14(06)) Minutes of meeting (LC Paper No. CB(1)1812/13-14)
30 March 2015	Special meeting of Finance Committee for examination of Estimates of Expenditure 2015-2016	Written questions raised by Members and Administration's replies (Reply serial numbers: ENB136, 137, 139, 254, 255, 256 and 281)
22 June 2015	Meeting of the Panel on Environmental Affairs	Administration's paper on "Energy Saving Plan for the Built Environment 2015~2025+" (LC Paper No. CB(1)995/14-15(03)) Minutes of meeting (LC Paper No. CB(1)1267/14-15)
25 January 2016	Meeting of the Panel on Environmental Affairs	Administration's paper on "2016 Policy Address – Policy initiatives of Environment Bureau: Environmental protection" (LC Paper No. CB(1)459/15-16(03)) Minutes of meeting (LC Paper No. CB(1)739/15-16)

Date	Event	Paper
6 April 2016	Special meeting of Finance Committee for examination of Estimates of Expenditure 2016-2017	Written questions raised by Members and Administration's replies (Reply serial numbers: ENB102, 114 and 169)
23 May 2016	Meeting of the Panel on Environmental Affairs	Administration's paper on "Latest Development on the Work on Combating Climate Change" (LC Paper No. CB(1)928/15-16(03)) Background brief on "Combating climate change" prepared by the Legislative Council Secretariat (LC Paper No. CB(1)928/15-16(04)) Minutes of meeting (LC Paper No. CB(1)1150/15-16)
5 April 2017	Special meeting of Finance Committee for examination of Estimates of Expenditure 2017-2018	Written question raised by a Member and Administration's reply (Reply serial number: ENB123)
29 April 2017	Joint meeting of the Panel on Economic Development and Panel on Environmental Affairs	Administration's information paper on new Scheme of Control Agreements with the two power companies (LC Paper No. CB(4)925/16-17(01))

Hyperlinks to relevant documents:

Government bureau/department	Document
Environment Bureau ("ENB")	Public Consultation on Hong Kong's Climate Change Strategy and Action Agenda Consultation document Report of the public consultation
Environmental Protection Department	A Study of Climate Change in Hong Kong - Feasibility Study Consultancy report

Government bureau/department	Document
ENB	Public Consultation on the Future Development of the Electricity Market Consultation document Report of the public consultation
ENB in collaboration with Development Bureau ("DEVB"), and Transport and Housing Bureau ("THB")	Energy Saving Plan for Hong Kong's Built Environment 2015~2025+
ENB in collaboration with DEVB, THB, Commerce and Economic Development Bureau, Food and Health Bureau, and Security Bureau	Hong Kong Climate Change Report 2015
ENB in collaboration with members of the Steering Committee on Climate Change	Hong Kong's Climate Action Plan 2030+

Hyperlinks to relevant Council Questions:

Date	Council Question
17 July 2013	Press release on Council question (written) raised by Mr Frederick FUNG
25 June 2014	Press release on Council question (written) raised by Mr Frederick FUNG
3 December 2014	Press release on Council question (written) raised by Mr Kenneth LEUNG
25 November 2015	Press release on Council question (oral) raised by Ms Emily LAU
6 January 2016	Press release on Council question (oral) raised by Mr Martin LIAO
2 March 2016	Press release on Council question (oral) raised by Mr Andrew LEUNG