

For discussion on
23 May 2016

**LEGISLATIVE COUNCIL
PANEL ON ENVIRONMENTAL AFFAIRS**

Latest Development on the Work on Combating Climate Change

PURPOSE

This paper briefs Members on the latest development on the government's work on combating climate change, following the adoption of the Paris Agreement ("Paris Agreement") at the 21st session of the Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) on 12 December 2015.

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 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.

3. According to the analysis of the Hong Kong Observatory, the effects of climate change have already emerged with Hong Kong experiencing raised temperatures, more frequent extreme rainfall and rising sea-level. The changes in Hong Kong's climate in the 21st century may be summarised as follows:

- (a) the number of very hot days and hot nights is projected to increase;
- (b) the number of rain days is projected to decrease while the average rainfall intensity will increase;

- (c) there will be more extremely wet years but the risk of extremely dry years will remain;
- (d) global sea level rise will lead to coastal changes all over the world, including in Hong Kong;
- (e) the threat of storm surges associated with tropical cyclones will increase; and
- (f) the chance of extreme weather events occurring such as extreme heat, extreme rainfall and extreme sea level will increase.

Hong Kong's Greenhouse Gas Emissions

4. Hong Kong is a service economy without energy-intensive industries. Our greenhouse gas (GHG) emission was around 43.1 million tonnes in 2012 and our per capita GHG emission was around 6 tonnes. Electricity generation accounts for about 68%¹ of the total local GHG emissions, followed by the transport sector (17%). Other emission sources include waste treatment (5%), industrial processes and product use (4%) and agriculture, forestry and other land use (0.1%).

5. In late 2010, the Government published the “Hong Kong’s Climate Change Strategy and Action Agenda” Consultation Document. Having regard to the international and national developments as well as the local situation, we proposed to set a carbon intensity reduction target by 50-60% by 2020 against the 2005 level for Hong Kong.

6. The Government reported the results of the 2010 public consultation to the LegCo Environmental Affairs Panel on 28 April 2014 (vide Paper No. CB(1)1292/13-14(06)). There was broad-based public support to the proposed Hong Kong’s climate change strategy and action agenda for the coming decade, including the 2020 carbon intensity reduction target.

7. Prior to the convening of COP21, the Environment Bureau issued the “Hong Kong Climate Change Report 2015”², which outlines the work of the Government

¹ Including GHG emissions arising from Towngas production which accounts for about 0.67% of total GHG emissions in Hong Kong.

² The Report is available at: <http://www.enb.gov.hk/sites/default/files/pdf/ClimateChangeEng.pdf>

and key private sector stakeholders in responding to climate change. It also provides an account of Hong Kong's climate change actions so that the public can have a more complete picture of Hong Kong's contributions to concerted global action.

EXISTING PROGRAMMES ON COMBAT OF CLIMATE CHANGE

8. In line with international practice, our 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 minimise the damage; and
- (c) *resilience* – efforts to cope and absorb climate change related stresses and maintain the functional operation of public services, and economic and social activities.

9. Our key actions in combating climate change in the above respects are set out in **Annex A**.

PARIS AGREEMENT

10. Paris Agreement is a crucial step in forging global efforts in combating climate change. It is the world's first comprehensive climate agreement endorsed by 195 countries. The key points of Paris Agreement include –

- (a) holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels (Article 2(1));
- (b) starting from 2020, each Party shall prepare and communicate a nationally determined contribution (NDC) every five years. Each successive NDC will represent a progression beyond the last one and reflect the Party's highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances (Article 4(2)&(3));

- (c) on NDC, developed country Parties should continue taking the lead by undertaking economy-wide *absolute* emission reduction targets, while developing country Parties are encouraged to move over time towards economy-wide emission reduction or limitation targets (i.e. to commit to a peak year for carbon emissions) (Article 4(4));
- (d) starting from 2023, a global stock-take exercise shall be held every five years to assess the collective progress towards achieving the long-term goals. The outcome of the global stocktake shall inform Parties in updating and enhancing their NDCs as well as in enhancing international cooperation for climate action (Article 14);
- (e) building on the transparency arrangement under UNFCCC, an enhanced transparency framework for action and support shall be established to promote effective implementation of the Paris Agreement³. The purpose of the transparency framework is to provide a clear understanding of climate change action and track progress towards achieving a Party's NDC. Information submitted by each Party shall undergo a technical expert review (Article 13);
- (f) countries should strive to achieve carbon neutrality (i.e. no net carbon emission to the atmosphere) by the second half of this century. In this connection, all Parties should strive to formulate and communicate long-term low GHG emission development strategies by 2020 (Article 4(19)); and
- (g) developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation. Meanwhile, other Parties are encouraged to provide or continue to provide such support voluntarily (Article 9(1) & (2)).

11. The full text of Paris Agreement can be viewed at the UNFCCC website (http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf). The Agreement is open for signature in New York for one year from 22 April 2016, and shall enter into force on the 30th day after the date on which at least 55 Parties accounting in total for at least an estimated 55% of the total global GHG emissions have deposited their instruments of ratification, acceptance, approval or accession.

³ Among others, each Party shall be required to regularly provide a national inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases, prepared using good practice methodologies accepted by the Intergovernmental Panel on Climate Change.

12. In its Intended Nationally Determined Contributions submitted to the United Nations in June 2015, China has set a target to reduce its carbon intensity by 60-65% by 2030 against its 2005 level and to peak its carbon emissions by 2030 the latest⁴.

STEERING COMMITTEE ON CLIMATE CHANGE

13. With the positive outcome of Paris Agreement, Hong Kong must ready itself for making greater effort still and approach climate change more holistically, as it is an issue with broad socio-economic impacts beyond environmental protection.

14. Recognising 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 inter-departmental committee under the chairmanship of the Chief Secretary of Administration to steer and co-ordinate the climate actions of various bureaux and departments. The Steering Committee on Climate Change (SCCC) has thus been formed with membership from 10 policy bureaux and three departments. Other bureaux and departments may attend its meetings on an ad hoc basis. The membership and terms of reference of SCCC are set out in **Annex B**.

15. At SCCC's first meeting held on 7 April 2016, members reviewed the existing policy on combating climate change and noted that Hong Kong is on track to meet the carbon intensity reduction target in 2020. The meeting discussed the implications of the adoption of the Agreement for Hong Kong and overseas experience in combating climate change. A key task of the Steering Committee is to formulate long term climate strategies to meet a new carbon reduction target beyond 2020. In this connection, bureaux and departments were asked to review the scope for enhancing their mitigation, adaptation and resilience actions, with an aim of coming up with an enhanced climate change work plan, and a carbon reduction target for 2030 towards the end of this year.

16. The meeting recognised that enhancing publicity and public education, in particular among the younger generation, is crucial to motivating different sectors in the society to join hands in combating climate change. To this end, the Government will organise and take part in a series of publicity events to promulgate the climate change message to the community at large, with special focus on young people. The Education Bureau will actively promote environmental education, with an emphasis

⁴ China also pledged to increase non-fossil fuel sources in primary energy consumption to about 20% by 2030.

on climate change, both within and outside the kindergarten, primary and secondary curriculum. Schools will be encouraged to participate and organise life-wide learning activities on climate change and green lifestyle, enabling students to put what they learnt into practice.

17. Partnership with stakeholders in different sectors would be a key to success in our work on combating climate change. Engagement with stakeholders will be guided by “4Ts”, i.e. Timeline, Target, Transparency and Together. To gauge the views of stakeholders on combating climate change and to foster collaboration, a stakeholder engagement forum chaired by the Chief Secretary for Administration will be organised in summer. Details of the event will be announced in due course.

ADVICE SOUGHT

18. Members are invited to note the contents of this paper.

Environment Bureau
May 2016

Key Actions in Combating Climate Change

Mitigation

There are four major mitigation measures to combat climate change in Hong Kong.

(a) Fuel mix

2. As electricity generation accounts for around 68% of our carbon emission, we have hitherto focused our mitigation efforts in changing our fuel mix as the main vehicle for reducing carbon emission. In 2015, the Government promulgated the fuel mix for 2020, which is to increase the proportion of natural gas for power generation from around 20% at present to around 50% in 2020, to maintain the current interim measure of importing 80% of the nuclear output from the Daya Bay Nuclear Power Station (i.e. the nuclear power import will account for around 25% of the total fuel mix), and to meet the remaining demand for electricity by coal-fired generation and renewable energy. We have asked our power companies to install new gas generating units to meet the additional gas requirement. With the new fuel mix in place, we will be able to meet our carbon intensity reduction target by 2020 when compared with the 2005 level.

(b) Energy Saving and Buildings Energy Efficiency

3. As buildings account for about 90% of the total electricity consumption and 60% of the greenhouse gas (GHG) emissions in Hong Kong, improving buildings' energy efficiency can help reduce the city's GHG emissions. We have implemented the Buildings Energy Efficiency Ordinance (Cap. 610) which requires central building services installations in newly constructed buildings and buildings undergoing major renovation to meet the minimum energy efficiency standards stipulated in the Code of Practice for Energy Efficiency of Building Services Installation (commonly called "BEC"). The BEC standards are reviewed once every three years to reflect the development of international standards and latest technological advancement. The first review has been completed and the new standards take effect this year. With the new standards, it is expected to bring about an accumulative energy saving of 5 billion kilowatt hours by 2025, equivalent to a reduction in GHG emissions of about 3.5 million tonnes. Cap. 610 also requires owners of commercial buildings to carry out energy audit for central building services

installation in accordance with the Code of Practice for Building Energy Audit (commonly called “EAC”) once every 10 years. The EAC is also reviewed regularly.

4. The Government has been taking the lead to set specific electricity reduction targets for government buildings since 2003. We have already achieved an energy saving of over 15% over the past 12 years, and are now working towards the target of achieving an additional 5% saving in the electricity consumption of government buildings in the financial years from 2015-16 to 2019-20, under comparable operating conditions in 2013-14. To achieve the target, we are conducting energy audits in over 300 major government buildings, and will encourage the relevant bureaux and departments to strengthen energy saving efforts through appointing green managers and energy wardens, adopt better housekeeping measures and implement electricity saving projects in the light of the audit findings.

5. The Environment Bureau (ENB) published in May 2015 the first-ever “Energy Saving Plan for Hong Kong’s Built Environment 2015 ~ 2025+” (Energy Saving Plan) which set the new target of reducing Hong Kong’s energy intensity by 40% by 2025. To achieve this energy saving target, the community has to save about 6% energy by 2025. To this end, ENB will mobilise our stakeholders and the entire community to promote energy saving practices. An engagement session entitled “Post-COP21 Green Building Imaging” was held in April this year. More than 60 stakeholders from the built environment and the energy sectors as well as the relevant Government departments participated in the session to discuss how we might work together on further activities that can help Hong Kong achieve deeper energy saving. A dialogue with stakeholders in other sectors will be held in the next few months.

6. In 2015, ENB and the Electrical and Mechanical Services Department launched the “Energy Saving for All” Campaign to promote energy saving and enhance energy efficiency. It comprises the Energy Saving Charter on Indoor Temperature, the launch of the Energy Saving for All dedicated website, the New Energy New Generation Solar Car Competition, the Youth Energy Saving Award and the “Energy Saving for All” TV Announcement in the Public Interest. To sustain the momentum, we will launch a new Energy Saving Charter in June 2016 to further promote the message of energy saving. In addition to air-conditioning, the new Charter will cover different kinds of electrical appliances. Energy-saving activities will also be organised for different types of properties.

(c) Transportation

7. The transport sector accounts for about 17% of our total GHG emissions. The majority of the emissions come from fossil fuel usage in commercial diesel vehicles

and petrol private cars. We have been mitigating GHG emissions from transportation through various means, a key element of which is the expansion of the railway network.

8. Railway is arguably one of the most environmentally friendly and efficient mass transportation systems. It is the Government's policy to use railway as the backbone of our passenger transport system and to integrate transport and land use planning. The Transport and Housing Bureau (THB) is now taking forward four railway projects in full swing, including three domestic railway lines (viz. South Island Line (East), the Kwun Tong Line Extension and the Shatin to Central Link) and one cross-boundary express rail link. Upon their completion by 2021, our railway network will be expanded to over 270 km in length and cover areas inhabited by over 70% of the population in Hong Kong.

9. In 2014, THB announced the new blueprint for Hong Kong's railway development, the Railway Development Strategy 2014. In the Strategy, THB recommended that seven railway proposals (namely Northern Link and Kwu Tung Station, Tuen Mun South Extension, East Kowloon Line, Tung Chung West Extension, Hung Shui Kiu Station, South Island Line (West) and North Island Line) be implemented by 2026. When these railway proposals are completed, the total length of the railways in Hong Kong will increase to over 300 km, covering areas inhabited by 75% of the local population and 85% of job opportunities. With the implementation of the seven new railway proposals, the rail share in the public transport patronage would rise from 41% at present to some 45% to 50% of the total number of trips by 2031, and a reduction road-based transport is expected.

10. Meanwhile, the Government will continue to take appropriate measures to manage the private car fleet size, alleviate road traffic congestion and improve coordination of different modes of public transport to better match passenger demand. The Government has also been fostering a pedestrian-friendly environment, and shall continue to promote a "bicycle-friendly" environment in new towns and new development areas to facilitate the public to ride bicycles for short-distance commuting or leisure purpose.

11. Electric vehicles (EVs) have no tailpipe emissions. Replacing conventional vehicles with EVs can help improve roadside air quality and reduce GHG emissions. The Financial Secretary chairs a Steering Committee on the Promotion of EVs with members drawn from various sectors to recommend a strategy complementary with specific measures to promote the use of EVs in Hong Kong. The Government has been promoting the use of EV. Key measures include waiving the First Registration Tax for EVs (till end March 2017), allowing enterprises which procured EV to have

100% profits tax deduction for the capital expenditure on EV in the first year of procurement, establishing a \$300 million Pilot Green Transport Fund in March 2011 to encourage the transport sector and non-profit organisations to try out green and innovative transport technologies, and allocating \$180 million for franchised bus companies to purchase 36 single-deck electric buses for trial runs to assess their operational efficiency and performance under local conditions.

(d) Waste

12. Local waste treatment accounts for about 5% of our carbon emissions. In the spirit of sustainable use of resources, it has been our strategy to accord priority to the promotion of waste reduction and recycling thus minimising the amount of waste that requires end-of-pipe treatment. At the same time, in the context of operation and development of new waste treatment facilities, we aim to maximise the potential to recover energy from unavoidable waste, which is a source of renewable energy (RE) and can help reduce carbon emissions. We have covered in the “Hong Kong: Blueprint for Sustainable Use of Resources 2013-2022” and “A Food Waste & Yard Waste Plan for Hong Kong 2014-2022” a number of waste-to-energy facilities including sludge treatment facilities, integrated waste management facilities, and a network of organic waste treatment facilities. With regard to the projects already completed and being planned, we estimate that the share of RE from waste will make up about 1% of total electricity demand by the early 2020s.

Adaptation

13. On adaptation, progress has been made in many areas, particularly in the built environment and infrastructure. For instance, the Civil Engineering and Development Department completed in 2013 a consultancy study on sea level rise caused by climate change and its implications on design of coastal structures, and has recently commissioned another review study to update the findings with the aid of recent rapid 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. It is also undertaking a Landslip Prevention and Mitigation Programme to deal with landslide risks arising from both man-made slopes and natural hillsides. Meanwhile, the Planning Department is undertaking a study titled “Hong Kong 2030+: Towards A Planning Vision and Strategy Transcending 2030” to update the territorial spatial development strategy with a planning horizon beyond 2030 that recognises the important role of strategic planning in facilitating the formulation of mitigation, adaptation and resilient measures to help tackle some issues arising from climate change. The Drainage Services Department (DSD) has been carrying out Drainage Master Plan Review

Studies (DMP Review Studies) in phases since 2008 to plan for the upgrading of the drainage system, taking into account, inter alia, climate change effect and new developments. Based on the study findings, drainage improvement works will be initiated to adapt to the increasing flood risk.

Resilience

14. As for resilience, as Hong Kong has a sub-tropical climate and is occasionally affected by tropical cyclones and heavy rain, we have longstanding and effective plans to deal with severe weather events that the community is used to facing. Nevertheless, the prediction for temperature rise, and also the possibility of very cold spells, should also be areas of future focus. A key component of emergency preparedness is to have a good communication system that can inform all sectors of society about the onslaught of a severe weather event. Hong Kong has a weather warning and alert system managed by Hong Kong Observatory (HKO). In addition, DSD, HKO and the Home Affairs Department (HAD) have jointly established early storm surge alert systems for low-lying areas prone to sea flooding.

15. The Emergency Support Unit of Security Bureau oversees the contingency planning for natural disasters, amongst others. The Unit last updated the Contingency Plan for Natural Disasters in November 2015, with a view to maintaining its effectiveness and relevance in countering the latest challenges, including those brought about by climate change. The Development Bureau has set up the Inter-departmental Task Force on Emergency Preparedness to co-ordinate the scenario-based assessment, enhance public awareness of potential natural hazards, and facilitate effective and efficient central monitoring and management of incident. Under the Government Emergency Response System, the Director of Home Affairs is the Disaster Relief Coordinator who is supported by the Headquarters Emergency Coordination Centre of HAD and the District Emergency Coordination Centres of the 18 District Offices. Meanwhile, various other contingency plans are in place under other departments to cater for different climate risks.

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Terms of Reference

To sustain and enhance the efforts of the Hong Kong Special Administrative Region (HKSAR) Government in combating climate change, the Steering Committee will –

- (a) steer the overall direction of the HKSAR Government in combating climate change, including the setting of post-2020 climate policies and targets as well as our long-term climate strategies, having regard to the United Nations Framework Convention on Climate Change and the Paris Agreement;
- (b) monitor, coordinate and enhance efforts of relevant Government bureaux and departments in formulating and carrying out relevant policies and measures for mitigation, adaptation and resilience to climate change; and
- (c) enhance public awareness and understanding of climate change, especially amongst the younger generation, as well as promote collaboration with the private sector on low-carbon practice and Hong Kong's climate readiness.

Membership

Chairman

Chief Secretary for Administration

Members*

Secretary for Commerce and Economic Development or representative

Secretary for Development or representative

Secretary for Education or representative

Secretary for the Environment or representative

Secretary for Financial Services and the Treasury or representative

Secretary for Food and Health or representative

Secretary for Home Affairs or representative

Secretary for Innovation and Technology or representative

Secretary for Security or representative

Secretary for Transport and Housing or representative

Director of Information Services or representative

Government Economist or representative

Director of Hong Kong Observatory or representative

Secretary

Assistant Director of Environmental Protection

*Note: Bureaux and departments not on the membership list may also be invited to join on an ad hoc basis when relevant issues are discussed.