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FOREWORD BY THE SECRETARY FOR THE ENVIRONMENT
Victoria Harbour is a precious resource of Hong Kong. We have commissioned Stage 2A of the Harbour Area Treatment Scheme to clean up the harbour's waters. This and other important achievements are described in this edition of Environment Hong Kong. But I hope you will also notice that the narrative on Hong Kong's environment is changing. Our focus has shifted from pollution prevention to a wider perspective of achieving the holistic vision of transforming Hong Kong into a low-carbon and more sustainable city.

Since 2012, we have produced policy blueprints almost annually on key topics. In 2013, we published the “Hong Kong Blueprint for Sustainable Use of Resources 2013–2022”, which outlined a comprehensive strategy for managing and reducing waste. In 2014, we published the “Food Waste & Yard Waste Plan for Hong Kong 2014-2022”. In 2015, we received funding approval for the Integrated Waste Management Facilities to significantly reduce the bulk of waste and turn waste into energy. We launched the $1 billion Recycling Fund to facilitate the upgrading of the operational capabilities and efficiency of the recycling industry. With those pieces falling into place, we are now ready to look further down the road by launching a new study of Hong Kong’s needs for waste facilities up to 2041.

In 2013, air quality also became our strategic focus. We released “A Clean Air Plan for Hong Kong” which provided an overview of the challenges we faced and our plans for tackling them. Our work in this area has been progressing steadily. We have progressively tightened controls on the emissions from vehicles and power plants, while phasing out older diesel commercial vehicles. We have also effected controls on other air pollution sources, specifically ocean-going vessels and non-road mobile machinery. Legislations were introduced in 2015 to control emissions from both of these sources in Hong Kong.

Electricity generation is one of the major sources of local air pollutant emissions. It also accounts for more than two-thirds of Hong Kong’s greenhouse gases. We endeavour to make more efficient use of electricity and use cleaner energy sources. The new “Energy Saving Plan for Hong Kong’s Built Environment 2015–2025+” published in 2015 announced our target to reduce energy intensity (i.e. the number of energy units consumed per unit of GDP) by 40 per cent by 2025. A public campaign, “Energy Saving for All”, has been launched to encourage all sectors of the community to use energy more efficiently, while a new fuel mix plan for 2020 was announced in 2015 to reduce coal usage and increase the percentage of natural gas. We also consulted the public on the future development of the electricity market. Together, these initiatives provide a strategic green focus to our energy policy.

Climate change is another area ranked high on the Government’s agenda. In November 2015, we published the Hong Kong Climate Change Report 2015, which outlined the work and joint efforts of the Government and the key private-sector stakeholders in responding to climate change. It also provided an account of Hong Kong’s climate change actions prior to the 2015 Paris Climate Change Conference (COP21), so that the public can have a more complete picture of Hong Kong’s contributions to concerted global actions.

Our next policy document will look at biodiversity and the sustainable consumption of biological resources. We not only want to protect Hong Kong’s natural resources, but also to reduce our consumption footprint in the world. In today’s globalised world where we source our food and products from forests, seas and open lands worldwide, we must be more mindful about the environmental impacts of our consumption behaviour.

Environmental protection work needs to keep pace with the times. Coming up with more far-sighted, long-term action plans, while continuing to address present-day environmental challenges, is our best hope for laying a strong foundation for environmental protection that will help Hong Kong gradually achieve a sustainable future. In the meantime, we earnestly hope to work side-by-side with the community in fostering a mindset change and cultivating a low-carbon and green living that upholds the waste-less, energy-saving and smart-use principles to avoid wastage.

Mr. Wong Kam-sing, GBS, JP
Secretary for the Environment
PERMANENT SECRETARY / DIRECTOR’S MESSAGE
The year 2015 is a harvest year as far as environmental protection is concerned because several important environmental initiatives that have been under development or awaiting approval for years have finally been completed or received the green light, particularly in waste management and water.

A highlight undoubtedly was the commissioning of the Stage 2A of the Harbour Area Treatment Scheme (HATS). HATS is the largest ever environmental infrastructure project in Hong Kong spanning ten district councils. The commissioning of Stage 2A means all sewage generated around the harbour is now collected and treated, resulting in significant improvements in the harbour’s water quality.

Water quality has been transformed from being Hong Kong’s most pressing environmental problem into a fine example of an environmental success story.

Another long-awaited development was in waste. Waste management is among Hong Kong’s most discussed environmental problems given the city’s high waste loads and limited landfill space. For years the Environmental Protection Department has been advocating the construction of Integrated Waste Management Facilities that can reduce up to 90 per cent of the bulk of waste using high-temperature incineration that turns waste to energy and has stringent emission controls. Following thorough discussion in the community, the Finance Committee of the Legislative Council approved funding for Phase 1 of this project. When commissioned, the facility will be a major contributor towards more efficient use of our landfill resources, alongside the T·PARK (a sludge treatment facility) that was commissioned in 2015.

Waste reduction also requires effort and commitment from the community. Measures to reduce municipal solid waste (MSW) loads at landfills have produced mixed results – domestic waste has dropped but commercial and industrial waste has increased. The polluter pays principle is a key goal in these measures and we are widening its application to provide the necessary economic incentives to reduce waste and recycle. In 2015, the Plastic Shopping Bag Charging Scheme was fully implemented at all retail outlets. Legislative proposals for the mandatory Product Responsibility Schemes for waste electrical and electronic equipment and glass beverage bottles were introduced. We also conducted pilot trials on MSW charging and set up an inter-departmental working group that is formulating plans for its implementation. Community awareness and enforcement work were also being harnessed to the waste reduction message.

Air pollution is another area where patience is paying off, albeit through multiple solutions that have been implemented over the past 10-15 years. Levels of most air pollutants have been steadily reduced by tightening vehicle and fuel emission standards, imposing stricter controls on power plant emissions, and promoting green buildings. Our co-operation with regional governments has also enabled the adoption of a cross-boundary approach to a problem that respects no boundaries. More of course needs to be done and we are continuing to tighten standards and phase out older and polluting vehicles. We have begun to focus on emissions from ocean-going vessels and non-road mobile machinery (NRMM). In 2015 legislation was introduced to require ocean-going vessels to use cleaner fuel when berthing in Hong Kong and to require NRMM to comply with the prescribed emission standards.

There is much more we can achieve to protect our environment, particularly in waste reduction. However, the outcomes of 2015 show that persistent effort pays off. We are now in a position to raise the bar for air quality (in fact a review of Air Quality Objectives is planned in 2016). I am confident that in the long term, we will be able to see similar progress in waste management and our other programmes and further improve Hong Kong’s environment.

Donald Tong
Permanent Secretary for the Environment / Director of Environmental Protection
Air

Breathing A Little Easier

Improving air quality is a long-term project. Many of the changes that would bring relief are time-consuming and sometimes costly to implement. But persistence pays off, as Hong Kong saw in 2015. Air quality improved for the most part at all three levels where it is measured – roadsides, general ambient air in Hong Kong, and regionally. However, some pollutants are still a concern. Policies and programmes are aimed at containing these problems and achieving further improvements so Hong Kong can attain even cleaner air and bluer skies in future.

Highlights

- Introduced regulations to control emissions from ocean-going vessels and non-road mobile machinery
- Announced tighter emission caps for power plants from 2020
- Continued to phase out pre-Euro IV diesel commercial vehicles through an ex-gratia payment scheme; by the end of 2015, about 38,600 had been phased out
- Supported trials of greener vehicles, including electric buses
- Set up zones in busy corridors where franchised bus operators can deploy only low-emission buses
Air Quality Update

**Local air quality**: Hong Kong’s air quality is continuing to improve, a testament to the effectiveness of programmes to reduce polluting emissions. The Report on Air Quality in Hong Kong in 2015, which was released in 2016, showed levels of all major pollutants, except ambient nitrogen dioxide (NO₂), measured at the 12 general and three roadside stations fell 3-14 per cent over 2014 levels. As for ambient NO₂, although it remained the same as the 2014 level, it has dropped by 14 per cent since 1999.

Both roadside NO₂ and ambient ozone are a major focus of the Environmental Protection Department’s (EPD) air quality programmes. Roadside NO₂ levels peaked in 2011 and by 2015 had been reduced by about 20 per cent. 2015 also saw the beginning of a decline in ambient ozone, which mainly originates from regional emission sources and is a major constituent of regional photochemical smog, following a long-term upward trend.

For other pollutants, the long-term trends have also been very encouraging. Levels of sulphur dioxide (SO₂), respirable suspended particulates (RSP) and fine suspended particulates (FSP) in both ambient and roadside air, as well as ambient NO₂, have fallen between 14 and 70 per cent since 1999.

**Regional air quality**: Impressive improvements have similarly been made at the regional level for most pollutants except ozone. The Regional Air Quality Monitoring Network is jointly run by the EPD and environment authorities in Guangdong and Macao. In 2015 it registered reductions in the levels of four pollutants – SO₂ decreased by 19 per cent, NO₂ by 11 per cent, RSP by 13 per cent and ozone by seven per cent as compared to the levels in 2014. For the long-term trends, SO₂, NO₂ and RSP levels have fallen 72 per cent, 28 per cent and 34 per cent respectively since 2006. However, ozone concentrations have been on the rise, increasing 10 per cent in the same period, though there are initial signs of a reversal of this upward trend. Hong Kong, Guangdong and Macao are all taking forward air quality improvement measures and are also co-operating on a joint regional study of PM₂.₅ (fine suspended particulates). These joint efforts should lead to better regional air quality.
### Long-term trends of ambient key pollutants in Hong Kong from 1999 to 2015

*Note: Measurement of ambient FSP started from 2011*

### Long-term trends of roadside key pollutants in Hong Kong from 1999 to 2015

*Note: Measurement of roadside FSP and ozone started from 2011*
Targeting Outliers: Ocean-going Vessels and Non-road Machines

Hong Kong has made important gains over the years in controlling two major sources of polluting emissions – vehicles and power plants (see below). But as their pollution levels have decreased, the remaining sources of pollution have become more apparent. Ocean-going vessels and non-road machines, in particular, are quite significant contributors to SO₂, nitrogen oxides (NOₓ) and RSP pollution. These contributions could be reduced with cleaner fuel and machines. In 2015 new regulations came into effect to achieve that.

Ocean-going vessels: Ocean-going vessels generally run on heavy fuel with an average sulphur content of 2.6 per cent and they accounted for about 40 per cent of total SO₂ emissions during their stay in Hong Kong in 2014. So in 2014, a new regulation came into effect that capped the sulphur content in locally-supplied marine light diesel at 0.05 per cent. This paved the way for a new regulation mandating that ocean-going vessels use low sulphur fuel (i.e., sulphur content not exceeding 0.5 per cent) or other approved fuels such as liquefied natural gas while at berth in Hong Kong. From July 2015, Hong Kong became the first Asian city to require ocean-going vessels to switch to cleaner fuel when at berth. Shipmasters are required to record the date and time of fuel switching and keep those records for three years. They face financial penalties and jail sentences if they fail to comply with both the fuel and record-keeping requirements.

The mandatory measures are expected to reduce overall SO₂ emissions by about 12 per cent and RSP by six per cent, which are clearly beneficial for Hong Kong. At the same time, the Government has recognised the need to ease the trade into the regulation and maintain Hong Kong’s port competitiveness. In 2012 a three-year incentive scheme was launched that reduces port facilities and light dues by half for ocean-going vessels that switch to cleaner fuel while at berth here. This has been extended to March 31, 2018.

Non-road mobile machinery: This source of air pollution is even less visible to the public, but accounted for seven per cent of Hong Kong’s NOₓ pollution and 10 per cent of RSP in 2014. Non-road mobile machinery is used for a variety of activities – as crawler cranes, excavators, air compressors and the like, and as non-road vehicles at construction sites, container terminals and back-up facilities, restricted areas of the airport, and waste disposal facilities. Until June 2015, the related emissions were not subject to control. That has now changed with a new regulation to contain the problem at source.

All new mobile machines and equipment must comply with the emission standards of Stage IIIA of the European Union or equivalent, while non-road vehicles must comply with Euro V emission standards. Existing machines will be exempted only if they apply for and are granted an exemption label from the EPD. The penalty for failing to comply is a maximum $200,000 fine and six months imprisonment. Operators were given a six-month grace period, as of December 1, 2015, only approved or exempted and labelled machines were allowed to be used in the activities and locations described above.
On-going Emissions Control: Motor Vehicles and Power Plants

Our efforts to reduce emissions from vehicles and power plants are continuing to press ahead. These are still the main sources of pollutants and they have been the targets of progressively tighter controls for nearly two decades. The situation is complicated because the benefits of new controls can sometimes be offset by other developments such as increased usage (for instance, more vehicles or higher electricity demand) or poor vehicle maintenance. Nevertheless, in recent years there has been significant success in reducing air pollution. The EPD is now targeting persistent pollutants that have eluded earlier efforts.

Motor vehicles: Roadside levels of NO₂ have failed to improve over the years even though other pollutants are decreasing. The major source of the problem is diesel vehicles. In March 2014, an $11.4 billion ex-gratia payment scheme was announced to progressively phase out all 82,000 highly-polluting pre-Euro IV diesel commercial vehicles in Hong Kong by the end of 2019. By the end of 2015, some 38,000 of these vehicles were already off the roads. Once all pre-Euro IV diesel commercial vehicles are gone, total vehicle emissions of RSP will have been reduced by more than 60 per cent and NOX by about 30 per cent.

Emissions are also controlled by built-in pollution control devices such as catalytic converters and oxygen sensors. However, these wear out over time and become less effective. For instance, catalytic converters fitted to LPG taxis and LPG buses in the early to mid 2000s were worn out in 80 per cent of LPG taxis and 45 per cent of LPG buses by the early 2010s. To address this problem, the Government offered $150 million in subsidies to replace the catalytic convertors and oxygen sensors in 17,000 petrol and LPG taxis and light buses. The work was completed in April 2014 and since September that year roadside remote sensing equipment has been deployed to detect excessive emissions invisible to the eye. In the first full year of measurements in 2015, about 670,000 LPG and petrol vehicles were scanned; more than 99 per cent did not have excessive emissions.

Pollution control devices are also the focus of a $400 million on-going scheme to fully subsidise franchised bus companies in retrofitting older buses. Selective catalytic reduction devices are being retrofitted to Euro II and Euro III buses, which will upgrade their performance to Euro IV or above. The scheme will be completed by the end of 2017. This was complemented by the establishment of low-emission zones for franchised buses at three busy corridors in Causeway Bay, Central and Mong Kok from December 31, 2015, which will help reduce roadside air pollution.

Tax incentives are also used to encourage cleaner vehicle adoption. Heavy duty commercial vehicles had to meet more stringent environmental qualifying standards from April 1, 2015 to qualify for a concession on the first registration tax. At the same time, a tax incentive scheme for environmentally-friendly petrol private cars came to an end because the emission control technology of petrol private cars has advanced to such a mature stage that the potential for further emission reduction is limited. Instead, the Government is promoting wider use of electric vehicles. The first registration tax for electric cars is fully waived until 31 March, 2017.
**Power plants**: Power plants are huge contributors to air pollution. In 2014 they accounted for 53 per cent of SO$_2$ emissions, 33 per cent of NO$_x$ and 17 per cent of RSP. However, the actual quantities have fallen over the years through progressive tightening of chimney emissions and an encouragement to switch to cleaner fuel. In 2015 a Technical Memorandum was issued that, from 2020, will reduce emission caps for SO$_2$, NO$_x$ by 17 per cent each and RSP by 16 per cent, on top of previously mandated reductions. The new targets are considered achievable given the existing facilities and pollution-control practices of the power plants, their continued use of low-emission coal, their take-up of surplus electricity from renewable sources, and the possibilities for reducing reliance on coal in the fuel mix.

**A Way Forward: Cleaner Alternatives**

Fossil fuels are the major source of air pollution in Hong Kong and the region. Switching to cleaner fuels will offer an efficient and effective way to improve the air, without having to deal with the multitude of end-users (including consumers of electricity and motor vehicle operators). In 2015 the Government announced plans to significantly increase the use of natural gas in electricity generation. It also unveiled an energy-saving plan to reduce Hong Kong’s energy intensity by 40 per cent by 2025 (see Energy chapter for details). These goals should help to reduce polluting emissions from power plants.

For vehicles, the Government has focused on testing and promoting cleaner alternatives. The Pilot Green Transport Fund was launched in 2011 and by the end of 2015 had supported trials of six electric taxis, three electric light buses, 11 electric buses, 47 electric goods vehicles, 12 hybrid light buses, 49 hybrid goods vehicles, one bus using a solar air-conditioning system, four bus electric inverter air-conditioning systems, and a diesel-electric propulsion system and seawater scrubber on a ferry. Separately, the Government is also funding green trials by the franchised bus companies. Trials of six hybrid buses began in 2014 and trials of 36 electric buses began to get underway progressively in 2015. The expansion of electric vehicles is also being supported through the installation of medium chargers in Government car parks (100 installed in 2014 and another 100 announced in 2015) and the waiver of the first registration tax described above. A wider adoption of practicable green technologies over conventional ones will help improve Hong Kong’s roadside air quality.

**LOOKING AHEAD**

- Embark on a review of the Air Quality Objectives
- Continue to collaborate with Guangdong on the mid-term review of air pollutant emission reduction targets
- Review the Technical Memorandum for power plants issued in 2015 to further tighten emission caps from 2021
- Prepare to tighten vehicle emission standards to Euro VI for newly-registered vehicles
- Organise an international competition to explore ways of making good use of retired electric vehicle batteries
- Prepare to control volatile organic compounds in fountain solutions and printing machine cleansing agents
Noise

Progress in Quieting the Noise

Hong Kong has successfully reduced many of the most blatant and annoying sources of noise over the past three decades, from pile drivers to traffic noise from new roads. But noise concerns still persist, particularly in older urban districts that were developed before noise controls were introduced and in certain industries. The EPD therefore has been promoting novel solutions by developers, and the sharing of best practices. Recent examples include innovative window and canopy designs, and internet platforms for the construction trade and liquor-licensed establishments to communicate on improving the noise environment.

Highlights

- Launched new webpages targeted at the construction trade and liquor-licensed establishments to promote good practices on mitigating noise from their operations.
- Completed resurfacing 61 road sections with low-noise road surfacing materials by the end of 2015. About 120,000 people have benefited.
- Completed retrofitting 17 existing road sections with noise barriers by the end of 2015, benefiting about 56,000 people.
Deflecting the Problem

About 960,000 people in Hong Kong are exposed to excessive traffic noise, largely in older urban areas where dense development means there is little room to build separations or barriers between the noise and noise receivers. Instead, developers have had to look to building materials and design to reduce the noise and they recently came up with two innovative solutions that benefit end users. One is a canopy fitted with sound absorption materials at a new private development in Kowloon. The other is a window design for a student hostel of the Hong Kong Polytechnic University that minimises noise even when the windows are opened.

Canopy with noise reducer: At the Kowloon site, the developer faced a major hurdle. Some of the development’s 527 units overlooked busy roads such as Fat Kwong Street, and were exposed to excessive traffic noise of up to 77 dB(A) L10, 1 hour. In addition to the deployment of such conventional noise mitigation measures as adjusting the building layout so units were pointed away from the busy roads as far as possible and using architectural fins and acoustic balconies to block the noise, the developer has constructed a canopy which projects outside the site boundary to screen out noise. The canopy has also been fitted with a noise reducer at its tip, which reduces the noise before it reaches residents. The case shows how developers are contributing solutions to the problem of noise.

Window opened and noise reduced: The new PolyU student hostel offers another example of an innovative solution. The hostel is 27 storeys high and overlooks busy roads, and some of the 828 residential units are exposed to excess traffic noise of up to 80 dB(A) L10, 1 hour. In this case the developer adopted a baffle-type acoustic window which consists of two overlapping parts, one on top and the other on the bottom, and has sound absorption materials in its frame. These features mean noise is diffracted and absorbed, and can be reduced by an additional 8 dB(A) when compared with conventional window panes. Even better, the window can be opened to let in natural ventilation, thus reducing reliance on air-conditioning.
Sharing Good Practices

Noise from construction work and liquor-licensed establishments has been of concern over the years and the EPD has been working closely with both industries to improve the situation by means of introducing good practices. In this connection, we set up the Quiet Construction Working Group with the construction trade to explore and promote quieter and new technology, methods and mitigation measures. We also published a guidebook on good noise-control practices for liquor-licensed establishments. These initiatives have been taken a step further with the launch of new internet platforms to share good practices among the trade.

The construction noise website facilitates the trade to gain information on quieter technologies and practices for various construction works, while a website for liquor-licensed establishments provides information on good design and operational practices to minimise noise emanating from those premises. Practitioners in both industries can easily find ways in which they can contribute to a quieter environment.


LOOKING AHEAD

Continue retrofitting noise barriers on existing roads.

Continue resurfacing local roads with low-noise road surfacing material

Keep abreast of innovative noise mitigation measures and update the platforms accordingly
Water
A Milestone Year For Clean Waters

A decades-long effort to clean up the waters of Victoria Harbour reached a major milestone in 2015 when HATS Stage 2A opened. All sewage produced around the harbour is now collected and treated, resulting in further improvements in water quality. This achievement caps a whole range of programmes that have made all of Hong Kong's waters clean and healthy, not only in marine areas but also beaches. The efforts will not stop here. Water pollution control programmes will continue to be implemented to strive for even greater improvements, particularly along the harbour’s shorelines. The Government has also sharpened its focus on the problem of refuse in the water, which is both unsightly and harmful to marine life. The aim is to ensure Hong Kong's natural resources can be in their optimal state for all to enjoy, today and in the future.

Highlights

Commissioned the Harbour Area Treatment Scheme (HATS) Stage 2A

Achieved 100 per cent compliance with beach water quality objectives at all 41 gazetted beaches for the sixth year in a row

Launched activities to promote clean shorelines
Water Quality In 2015

Water quality in 2015 continued to be very good. For the sixth year in a row, all 41 gazetted beaches complied with their health-based Water Quality Objectives (WQOs). Close to 90 per cent of rivers and streams met WQOs, as did 84 per cent of measurements in marine waters (versus 78 per cent in 2014, which is within the bounds of natural fluctuations). The commissioning of HATS Stage 2A towards the end of the year brought a sharp drop in E. coli level by about 75% in the central harbour.

Cleaner waters have been achieved through a combination of measures that include sewerage programmes in urban and rural areas, controls on livestock and other wastes entering the waters, and HATS. About 93 per cent of the population is now properly connected to the sewerage system.
A Hat(S) Trick For Victoria Harbour

The “hat trick” denotes three successes in a row. In 2015 Hong Kong achieved that feat for Victoria Harbour with the culmination of the Harbour Area Treatment Scheme (HATS), the largest environmental infrastructure ever in the city.

HATS has been rolled out in phases to collect and treat sewage from around the harbour that was previously discharged without treatment. First, in 2001, Stage 1 was commissioned to collect and provide chemically-enhanced primary treatment to 75 per cent of the sewage generated around the harbour. This removed 70 per cent of organic pollutants, 80 per cent of suspended solids and 50 per cent of E. coli from the water and improved water quality significantly.

Next, in 2010, Advance Disinfection Facilities were commissioned at the Stonecutters Island Sewage Treatment Works (the main treatment facility for HATS). This nearly doubled the efficiency in removing E. coli, which brought major improvements to the harbour’s western waters where the treated sewage is discharged. As a result, seven previously closed beaches in that area were able to re-open because they could finally meet the beach Water Quality Objectives. Further afield, in the eastern waters, water quality improved enough that the cross-harbour swim has been resumed since 2011, more than three decades after the last one had been held. In 2015 there were 2,500 participants.

Finally, in December 2015, Stage 2A was commissioned. The remaining 25 per cent of sewage generated around the harbour – from the northern and southwestern parts of Hong Kong Island – is now collected and properly treated. Early results are very encouraging: soon after the commissioning of Stage 2A at the end of 2015, E. coli levels had decreased by 74 per cent.

The enormity of these achievements can be seen in the scale of the project. HATS was built over two decades at a total cost over $20 billion. Stage 2A alone involved building 21 kilometres of sewage tunnels at depths of up to 160 metres below sea level (the construction method adopted allowed for the excavated rock to be used as construction materials, thus significantly reducing waste). It also includes a new main sewage pumping station to bring the sewage to surface level for treatment, which can pump up the equivalent of a standard swimming pool in about one minute. Odour treatment facilities have also been installed throughout Stonecutters Island Sewage Treatment Works.

HATS now has the capacity to serve more than five million people. Following the commissioning of Stage 2A, attention is turning to near-shore pollution in Victoria Harbour. Funding was approved in 2015 for a consultancy study to explore options for reducing this problem. The aim is to further enhance the quality of coastal waters of the harbour so that people can relax and enjoy themselves right in the heart of the city.
Progress On Cleaner Shores

With water quality now at healthy levels, more people have been drawn to Hong Kong's shorelines. The city has many beautiful beaches and coastlines, and yet some of them are plagued with large quantities of refuse that wash up from the sea. The Inter-departmental Working Group on Clean Shorelines was set up in late 2012 to focus attention and actions on this problem, and in 2015 it took several steps forward.

Top of the list was the release of the Marine Refuse Study completed by the EPD in early 2015. This study provides a better understanding of the source of marine rubbish so as to enable future policies to be more effective. The study found that more than 80 per cent of marine refuse by count originated from land-based sources, primarily shoreline and recreational activities. This indicated that marine refuse was largely the result of littering and poor awareness in the community. In addition, more than 70 per cent of waste by count (excluding natural debris such as seaweed) was plastic and foam plastic. Non-local refuse, identified by simplified Chinese character labels, accounted for less than five per cent of marine refuse by count. The report also showed that prevailing winds caused refuse to accumulate in certain areas, particularly in the Tuen Mun, Tsuen Wan, Southern and Islands Districts.

Following these findings, the Working Group, whose members come from eight Government departments, announced a three-pronged strategy to reduce marine refuse:

• reduce overall waste generation at source
• reduce the amount of refuse entering the marine environment
• remove marine refuse

The Working Group also announced a variety of measures to achieve these aims, including publicity campaigns, education activities, support measures and facilities to reduce refuse entering the marine environment, stepped-up removal of marine refuse, and engagement with the public to report marine littering and refuse problems. For example, public education campaigns will be launched to encourage people to avoid using disposable items and to recycle, and more water fountains will be installed at beaches so users would not need to bring bottled water. Some 27 sites that are prone to refuse accumulation were also prioritised for action.

Among the actions taken in 2015 was a roving exhibition to 18 districts to reinforce the message of protecting Hong Kong’s scenic shorelines and marine ecology. The community was also given the opportunity to take a more active role through the launch of monthly Shorelines Cleanup Days in which the EPD partnered with NGOs and community groups. The groups provided the manpower and the EPD provided on-site briefing on cleanup procedures and refuse data collection, as well as the necessary equipment.

These efforts help underscore the secret to achieving cleaner shorelines in Hong Kong: individuals and the community as a whole must all do their part to take responsibility for reducing, recycling and properly disposing of our waste, and protecting the natural environment.

Shoreline Cleanup Days 2015. The Shoreline Cleanup Days launched in 2015 had engaged primary and secondary schools, green groups and other organisations in collecting rubbish from coastal areas. The waste, which consisted mostly of single-use items such as plastic bottles, paper containers and foam lunchboxes, was weighed and recorded so the participants and the EPD could get an accurate perspective of the problem at each site.

A polluted shoreline at Lung Kwu Tan, Tuen Mun

A clean shoreline at Sok Kwu Wan, Lamma

LOOKING AHEAD

Continue to monitor the performance of HATS Stage 2A and assess the improvement in Victoria Harbour’s water quality

Commission a consultancy study on further enhancing the quality of coastal waters of Victoria Harbour in early 2016

Continue implementing improvement measures to enhance the cleanliness of shorelines, as identified by the Marine Refuse Study
Assessing environmental impacts is a big task. Not only do direct environmental impacts from projects need to be determined, so do the long-term effects of strategies and plans, too. Two on-going projects in 2015 illustrated the broad nature of this work. “Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030” is a study on Hong Kong’s territorial development strategy after 2030, in which a Strategic Environmental Assessment (SEA) has been embedded to evaluate the potential environmental impacts and improvements at the early planning stage. At the other end of the scale, an environmental impact assessment (EIA) of a project to move Sha Tin Sewage Treatment Works into a rock cavern and free land for development was making good progress. Large or small, environmental assessments help Hong Kong achieve more acceptable, sustainable development.
Hong Kong 2030+: Future Vision

Once every decade, the Government takes a good long look at the trends affecting Hong Kong and produces a territorial development strategy to meet new demands and fulfil new aspirations. In 2007, “Hong Kong 2030: Planning Vision and Strategy” pointed the way forward for the following two decades. The Government is now actively considering Hong Kong’s needs even further down the road, in Hong Kong 2030+. Environmental enhancements will be a key focus of the resulting strategy.

Hong Kong 2030+ has three major objectives: plan for a liveable high-density city, embrace new economic challenges and opportunities, and create the capacity for sustainable growth. Under the latter objective, the aim is to create development capacity while at the same time creating, enhancing and regenerating environmental capacity through the integration of biodiversity considerations into planning and decision making and improvements to the environment.

Hong Kong must also prepare for and even take a lead in embracing the urban challenges of the 21st century, notably climate change, as befits a global city committed to upholding environmental stewardship. This requires a city strategy based on smart, green and resilient (SGR) principles. The SGR city strategy under Hong Kong 2030+ focuses on minimising the demand for and use of resources, promoting a low-carbon smart economy and living, reducing carbon emissions, enhancing city efficiency, improving the quality of urban living, and enhancing climate resilience.

An ongoing SEA is evaluating the environmental impacts of Hong Kong 2030+ and identifying opportunities for environmental gains. The SEA is reviewing a wide band of environmental issues spanning global, regional and local levels, and assessing Hong Kong’s current capacity and planned improvements in the areas of air and water quality, noise, waste management, carbon emissions, cultural heritage, landscape and ecology. The goal is to provide guidance on how to enhance biodiversity and improve the environment, and hence to generate environmental capacity.

The effort to identify environmental concerns and opportunities early in the planning process will ensure that adverse impacts can be avoided and environmental gains will be grasped, whatever road of development we go down. Hong Kong 2030+ and its SEA will continue in 2016, when a public engagement will ask the community to give their input on the future of their city. The ultimate goal is to structure our future city into a green centre of living.
Win:Win Solution in Sha Tin

Hong Kong needs more land to accommodate its growing population and improve living standards. One solution is to move certain facilities underground into caverns to free up land above ground for development. In the 2011-12 Policy Address, the Chief Executive proposed just such a solution with the relocation of the existing Sha Tin Sewage Treatment Works (STSTW). The facility currently occupies 28 hectares of prime waterfront land in Sha Tin and the plan is to move it into a rock cavern at Nui Po Shan at A Kung Kok. A series of public engagement and consultation activities have been held on the proposal and in 2014 an EIA study was commissioned to assess the potential impacts. A substantial amount of that study was conducted in 2015 and pointed to significant environmental benefits from moving into a rock cavern.

Apart from making more land available, the rock cavern option offers an opportunity to distance the odour and visual impacts of the facility far away from sensitive receivers. It is also a chance to upgrade its technology since the current STSTW has been in operation for more than 30 years. The EIA has looked at all these benefits and also considered the potential impacts from works at the cavern site, such as construction of the treatment works, pipelines and above-ground ancillary facilities, as well as at the existing site, such as demolition works.

The early indications are that it will be possible to avoid or minimise impacts both during construction and operation of the facility, and the local environment will benefit overall. The EIA report will be ready for public examination in the summer of 2016. If all goes smoothly, it is hoped work on the project can start in 2018/19.

General view of current STSTW

Proposed relocation site of STSTW

LOOKING AHEAD

- Update technical guidelines to enhance the EIA and environmental monitoring & audit processes
- Strengthen exchange and co-operation on EIAs with the Appraisal Center for Environment and Engineering of the Ministry of Environmental Protection, PRC under the Co-operation Agreement
- Continue providing input to the strategic environmental assessments of Government policies, plans and programmes so that environmental considerations can be integrated
Enforcement

Keeping Watch

Enforcing environmental protection laws can be a challenge when the target is everyday or transient activities. But in 2015, the EPD launched efforts to do just that through programmes to support the Plastic Shopping Bag (PSB) Charging scheme and crack down on fly-tipping. “Mystery shoppers” were deployed to retail outlets to ensure PSB Charging was being implemented, while surveillance cameras were deployed to fly-tipping black spots. By the end of the year it was evident that enforcement actions, coupled with publicity campaigns, were helping to change behaviour and improve the environment.

Highlights

- Supported implementation of Plastic Shopping Bag Charging to all retail outlets through enforcement and outreach
- Conducted publicity and education activities on the proper disposal of construction waste at 26 locations
- Installed pilot surveillance cameras at 12 black spots for construction waste fly-tipping under the Keep Clean 2015@Hong Kong: Our Home campaign
- Installed surveillance cameras at Gin Drinkers Bay for a targeted campaign cracking down on the fly-tipping of commercial and construction waste
The PSB Charging covers plastic shopping bags provided to customers at all points of retail sales.

Plastic Shopping Bag Charging

Charging for plastic shopping bags is nothing new in Hong Kong – certain retail outlets have been required to do so since 2009. But on April 1, 2015, all retailers, estimated to number more than 100,000 outlets, were legally required to charge no less than 50 cents for each PSB provided to customers or be liable to a fixed penalty of $2,000 or even prosecution.

A major enforcement effort was launched to support this PSB Charging scheme. The first month, in April, was a grace period – non-complying retailers received only a verbal warning from EPD officers, who paid surprise visits and explained on-site the legislative requirements. More than 9,000 retail outlets were inspected and 75 warnings issued that month. From May 1, fixed penalties started to be issued for contraventions without prior warning. By the end of the year, EPD officers had inspected more than 34,000 retail outlets and issued 141 fixed penalty notices. In addition, more than 10,000 enquiries and complaints had been received through various channels including a dedicated hotline. The EPD also liaised closely with the retail trade and reached out to retailers to better educate them about the requirements.

By the end of 2015, there was a sharp tapering off of enquiries and complaints cases, which had decreased by more than 90 percent – evidence that the enforcement and publicity actions had had the desired effect of facilitating the trade and public to adapt to the new PSB Charging scheme.
Cracking Down on Fly-tipping

Fly-tipping, in which rubbish is dumped surreptitiously in a public place, has been a target of EPD enforcement for years. It is not an easy target because the perpetrators keep moving, making it difficult to detect offences. However, with preparations underway to introduce municipal solid waste (MSW) charging and increase charges for construction waste disposal, there is added impetus to detect and prevent this activity. In 2015, these efforts focused on the deployment of surveillance cameras at black spots.

The cameras were used in two actions. The first focused on Gin Drinkers Bay area, a dumping black spot for commercial and industrial waste. The area is adjacent to container terminals and near a cluster of industrial and logistics centres, and it has minimal pedestrian and vehicle flow, making it a seemingly easy target for fly-tipping. In 2015, that situation changed with the launch of a new enforcement plan. Surveillance cameras were deployed at two streets in early summer, and two more streets in late autumn. These enabled offenders to be detected round the clock by tracing them through their vehicles. By the end of the year some 390 incidents had been detected and the camera evidence was used to issue 68 summonses and secure seven convictions. More importantly, the number of cases detected fell sharply over the year.

A similar surveillance approach was adopted in the Keep Clean 2015@Hong Kong: Our Home Campaign launched in August, in which trial surveillance cameras were deployed at 12 fly-tipping black spots including 10 refuse collection points and two roadside locations. The characteristics of these black spots ranged from urban sites accessible by foot and cart, to remote rural areas where offenders unloaded their waste from vehicles seemingly out of sight. The surveillance cameras were installed on a trial basis of four to seven months depending on the location, and banners were erected at the sites to warn potential offenders. During the trial period, the EPD issued 124 summonses and 100 Fixed Penalty Notices. Overall, the surveillance cameras have been a positive addition to EPD’s enforcement work: they help deter fly-tipping by vehicles at the black spots and provide useful information for identifying fly-tippers.

With the continuous enforcement efforts in the past 10 months, illegal fly-tipping activities at the Gin Drinkers Bay area in Kwai Chung have been greatly reduced.

The Secretary for the Environment (SEN) was briefed by representatives of the EPD on its enforcement work against the fly-tipping of construction waste during his visit to Tai Shui Hang Refuse Collection Point, Ma On Shan to inspect the newly installed video camera surveillance system there.

Illegal fly-tipping activity recorded by the surveillance camera system during the day time (above) and at night (below)

Illegal fly-tipping of renovation waste (above) and bagged construction waste (below) as recorded by surveillance camera
Other Enforcement Work

Livestock farms: Livestock waste has been a long-term target of control for the EPD. While the problem has been successfully tackled in most areas through livestock waste disposal requirements, there are some persistent offenders. The Kam Tin River is of particular concern and in 2014 it was graded bad-to-fair in the River Water Quality Index. In April 2015, the EPD launched a multi-pronged strategy taken against the problem that involved stepped-up inspections, collaboration with the Agriculture, Fisheries and Conservation Department to notify farmers to take early action, the preparation of a leaflet on good practices, and enforcement action. Prosecutions were taken against four farms for illegal discharge, including one convicted three times in 2015. The actions had some positive effect in terms of increasing use of the EPD’s free service to collect solid livestock waste. For instance, in Tai Kong Po the usage increased from 35,200 bins collected in 2013 to 41,200 in 2015. The increase represented an additional 2,000 tonnes of livestock waste that was collected for disposal, rather than illegally discharged into the Kam Tin River.

Took water samples in the vicinity of waste recycling sites

Outdoor waste recycling sites: Recycling is an environmental benefit, but it needs to be conducted under proper conditions to ensure it does not create pollution of its own. In January 2015, outdoor waste recycling sites were the target of a joint operation, “Operation Bang Raid”, that involved the EPD, Fire Services Department, Food and Environmental Hygiene Department, Planning Department and Lands Department. The operation investigated possible breaches of laws in relation to pollution, fire safety, environmental hygiene, planning and land use at sites in North District and Yuen Long that mainly recycle electronic and plastic waste. Some 20 suspected violations were detected for failure to comply with relevant legislation and land lease conditions. These cases were followed up with warnings and prosecution actions where warranted. Enforcement officers also gave advice and leaflets to site operators and workers on how to improve the operation of their sites.

Took soil samples in the vicinity of waste recycling sites

EPD and the FSD officers distributed leaflets

LOOKING AHEAD

Tackle growing concern about the illegal collection and export of waste lead acid batteries, which are generated in various industrial and commercial settings, through trade engagement and enforcement operations

Carry out an overall review of the trial surveillance camera system for fly-tipping control at selected black spots
RESOURCE MANAGEMENT
Waste Reduction

Ready To Accelerate

Waste reduction in Hong Kong has not been easy and continues to pose a major challenge to the Government. For example, while domestic waste disposed of at landfills fell by three per cent between 2006 and 2015, commercial and industrial waste increased by 40 per cent. Campaigns were carried out to promote more effective waste separation and reduction by businesses and residents. Legislative backing for targeted programmes aimed at reducing generation and promoting the recycling and proper disposal of specific types of waste, including plastic shopping bags, waste electrical and electronic equipment (WEEE), and glass beverage containers were introduced. These actions all form part of the “Blueprint for Sustainable Use of Resources 2013-2022” that aims to reduce MSW disposed of at landfills by 40 per cent by 2022 as compared to the base year of 2011.

Highlights

- Earmarked $50 million through the Environment and Conservation Fund for community involvement projects on MSW charging
- Introduced a legislative proposal for a Product Responsibility Scheme (PRS) on WEEE and awarded a contract to build a WEEE treatment and recycling facility
- Introduced a legislative proposal for a PRS on glass beverage containers and expanded the glass container collection network to serve about 70 per cent of the population
- Opened the first two Community Green Stations in Sha Tin and Eastern districts
- Fully implemented the Plastic Shopping Bag Charging Scheme
- Reviewed the Construction Waste Disposal Charging Scheme with a view to adjusting the charges
- Launched the Food Wise Eateries Scheme to encourage outlets to reduce food waste
Implementing quantity-based waste charging can create financial incentives to drive behavioural change in waste generation and encourage resource recovery. In Hong Kong, we have seen that effect with construction waste charging, which was introduced in 2006. By the end of 2014, this had helped reduce construction waste disposed of at landfills by some 60 per cent and diverted fill materials from landfills for gainful reuse in other construction projects. In 2015, the Government completed a review of the scheme and was making preparation to adjust the charges based on the polluter pays principle.

Governments around the world have adopted quantity-based MSW charging. Implementation of MSW charging in Hong Kong will not be a straightforward task as it requires a cultural change. The Council for Sustainable Development (SDC) conducted an extensive public engagement exercise and submitted the implementation framework for quantity-based MSW charging to the Government in 2014. We consulted the Legislative Council Panel on Environmental Affairs on the above implementation framework at its meeting on 25 February 2015 and the meeting generally found the proposals agreeable. Based on the framework, we have been developing the implementation arrangements in consultation with the concerned bureaux and departments and relevant stakeholders.

**Tests and trials:** The SDC recommended that for MSW disposal through Food and Environmental Hygiene Department (FEHD)’s direct collection service, the ultimate goal is to implement charging “by household using pre-paid designated garbage bags”. To allow more time for residents to reach a consensus on the implementation arrangements for using designated garbage bags, a transitional period would be provided whereby residents can choose to pay MSW charges based on the total number of bin-tipping recorded for individual buildings. EPD conducted a trial project in 2015 to test out the technical feasibility of the bin-counting system. Refuse collection vehicles of FEHD were fitted with an automated system to count and record the number of bin tipping. Pilot trials were also conducted in a residential building and rural village.

With a specially designed radio-frequency identification system installed on retrofitted refuse collection vehicles and tags installed on waste collection bins, the number of bin tipping can be recorded automatically.

**Engaging stakeholders:** In 2015, briefing sessions were organised for various stakeholders to update them on the latest development of MSW charging and to enhance their understanding on key issues, including how to avoid waste generation, the polluter-pays principle, and how to reduce waste disposal by clean recycling. EPD also established liaison platforms to engage different stakeholders on an on-going basis. The Environment and Conservation Fund has earmarked $50 million for funding community involvement projects to prepare different sectors and stakeholders for the implementation of MSW charging.

An inter-departmental working group that includes EPD, FEHD, the Housing Department and the Home Affairs Department was established in 2015 to steer and co-ordinate the preparatory work of implementing MSW charging.

Each bin tipping is recorded and will be used as the basis of charging.
Household Items on the Waste Reduction Target List

By the end of 2015, more than 80 per cent of the Hong Kong population had access to waste recovery and recycling facilities near their homes, including 2,098 housing estates, more than 700 villages, 984 commercial and industrial buildings and 53 collection points in older urban districts. Even so, there are still items routinely sent to landfills that have good potential for reuse and recycling but no outlets, or have greener, readily-available alternatives. Programmes are therefore being rolled out to target several types of this waste, as well as reduce food waste.

**WEEE:** A legislative proposal was put forward to implement a mandatory Producer Responsibility Scheme (PRS) on WEEE, covering eight types of common household electrical appliances and computer products, namely washing machines, refrigerators, air-conditioners, televisions, computers, printers, scanners and monitors. In line with the polluter-pays principle, suppliers distributing these products will need to be registered and pay a recycling levy for the product to the Government, which will fund the operation of the PRS. Sellers of new products will have to arrange to take away consumers’ old products for proper downstream recycling and treatment. All treatment and recycling facilities will need to be licensed. The import and export of regulated WEEE will also require a permit and their disposal at landfills will be prohibited. To underpin the PRS, a WEEE treatment and recycling facility (WEEETRF) received funding approval in 2015 from the Legislative Council and is being developed at the EcoPark in Tuen Mun. It will have an annual handling capacity of 30,000 tonnes.

The EPD provides logistics services for housing estates participating in the Chinese New Year WEEE (waste electrical and electronic equipment) Recycling Collection Services Programme. Collected items are sent to supporting organisations for repair and recycling. Under the St James’ Settlement WEEE Go Green project, collected items are repaired and donated to those in need. All WEEE items collected and repaired under the project are verified as complying with all safety rules before delivery to beneficiary households.

**Glass containers:** About 230 tonnes of waste glass containers were generated every day in Hong Kong in 2014, two-thirds of which were beverage containers. Given the ease of recycling glass for use as construction material, a legislative framework for a mandatory PRS has been proposed for glass beverage containers similar to that of WEEE. To prepare for this, the glass container collection network has been expanding and by the end of 2015, encompassed more than 1,200 collection points in residential estates, serving about 70 per cent of the Hong Kong population. A “Clink, Drink then Recycle” campaign was also launched in 2015 to extend the recycling network to restaurants and food premises in major shopping malls. Fourteen major shopping malls and commercial buildings have joined the campaign so far and agreed to separate waste glass bottles at source and store them centrally for pick-up by an EPD contractor, who will deliver the bottles to recyclers to turn them into glass sand for gainful use.
The EPD’s personnel has been paying district visits to foster better understanding of PSB charging among local retailers. Apart from distributing publicity materials, EPD’s personnel reminded them of the need to comply with the new requirements from April 1.

**Plastic Shopping Bag Charging Scheme:** In 2009, an environmental levy on plastic shopping bags was made mandatory in certain retail outlets, mostly supermarkets, convenience stores and medicare and cosmetics stores. On April 1, 2015, this was extended to the entire retail sector, irrespective of scale or business nature. Shopkeepers must charge customers no less than 50 cents for each plastic shopping bag provided in connection with the retail sale, except for certain exemptions such as bags used for food hygiene reasons. Extensive promotional activities were carried out in collaboration with different stakeholders to ensure the general public was aware of the new rules and the need to “BYOB” – bring your own bag. The scheme was implemented smoothly, with a low rate of non-compliance observed by year’s end (141 cases detected in 34,000 inspections – see details in the Enforcement chapter).

**Food waste:** Food waste comprised 37 per cent of MSW waste in 2014 and there is scope to reduce this source. The Food Wise Hong Kong Campaign, launched in 2013, may help Hong Kong to avoid about 5% to 10% of food waste by 2017/18. Related activities in 2015 included training workshops, district-level programmes such as roving exhibitions, community events and food donation programmes. More organisations were also signed up to the Food Wise Charter, in which they pledge to reduce waste in their daily operations (more than 460 had signed up by the end of 2015). To take the message closer to the catering sector which is major producer of food, the Food Wise Eateries Scheme was launched in November in which restaurants and other eateries agreed to convey the “food wise” message to their customers, offer food portioning options, and carry out other food waste reduction measures. About 400 outlets were signed up by the end of the year.
Other Waste Reduction Efforts

Community Green Stations (CGS): A green "presence" is being established in Hong Kong's neighbourhoods through the CGSs. The first two CGSs were opened in 2015 in Sha Tin and Eastern districts to promote environmental awareness and support the recycling of recyclables with low economic value. The CGSs are both aesthetically pleasing and practical and they have beautified otherwise unsightly spaces (at a temporary parking area and under a flyover, respectively). Their designs are highly acclaimed, with the Sha Tin CGS granted the Hong Kong Institute of Architects Annual Awards President’s Prize 2014 and the Eastern CGS a Merit Award in the Green Building Award 2014. The CGSs are run by non-profit organisations that are well-experienced in reaching out to the local communities. The Government aims to have a CGS in each of the 18 districts and multiple CGS projects are at various planning and development stages.

Waste Check Charter: The private and public sectors are the target of the Waste Check Charter, in which signatories agree to regularly measure the quantities of waste they dispose of and recycle, formulate plans to achieve waste reduction goals, and disseminate their plans and progress to staff, clients, or teachers and students. The exercise will also help prepare them for quantity-based MSW charging. The Charter is being promoted to shopping malls, hotels, universities and colleges, and Government and related institutions, and nearly 70 units have signed up.

The SEN (second left) and the Secretary for Development, Mr Paul Chan (second right) exchanged views with a recycler in Fanling on the Government’s initiatives to support the development of the local recycling industry

The SEN, and the Executive Director of the Hong Kong Productivity Council, Mrs Agnes Mak, jointly officiated at the launch ceremony of the Waste Check Charter alongside the programme ambassador Big Waster

The SEN (front row, third left) and Mrs Mak (front row, fourth left) were joined by more than 100 representatives of Waste Check Charter signees in a group photo
Support to the Recycling Industry: In 2013, the Steering Committee to Promote Sustainable Development of the Recycling Industry was established under the chairmanship of the Chief Secretary for Administration to help the industry develop. Its work in 2015 included commissioning a consultancy study to review the land requirements of the recycling trade and launching the $1 billion Recycling Fund. The Fund consists of two parts: an Enterprise Support Programme to provide matching funds for individual enterprises to upgrade and expand their waste recycling operations, and for SMEs to launch small-scale projects such as efficiency enhancement and manpower training; and an Industry Support Programme to fund non-profit distributing organisations (such as professional, trade, industry and related bodies) to enhance the technical know-how and other capabilities of the local recycling industry.

2015 was a year when all the layers of waste reduction got a boost in anticipation of much more progress to come.

Green Procurement

The Government has continued to promote green products through its green procurement list. In 2015 this was expanded from 103 products and services to 150 and the green specifications were updated. A one-stop information portal on green procurement was also revamped and the green procurement list and related information were posted there for Government officers and the public to access. The EPD has also worked closely with the Development Bureau to encourage wider use of recycled and other green materials in public works projects – such as about 150,000 square meters of eco-pavers used for public road applications in 2015. The most effective green action starts at home, including within Government.

LOOKING AHEAD

Continue to engage stakeholders and prepare the public for the implementation of MSW charging

Prepare the enabling legislation for MSW charging

Open tenders for CGS operation contracts in Kwun Tong, Sham Shui Po and Yuen Long

Submit a legislative proposal to increase construction waste disposal charges

Continue to facilitate the scrutiny of amendment bills by LegCo for implementing the PRSs on WEEE and glass beverage containers, and make related preparations
Waste Facilities
Advancing Towards Greener, Sustainable Solutions

The waste reduction efforts described before are essential to reduce Hong Kong’s waste loads, but they will not eliminate them. Like most of the rest of the developed world, the city is still some way from achieving a zero-waste culture and will continue to need outlets to deal with the remaining waste. In 2015 there was significant progress on that front: funding support was granted to the Integrated Waste Management Facilities (IWMF) Phase 1 to incinerate waste; proposed landfill extension projects were making progress at different stages; preparations were being made to channel more waste through the refuse transfer network to replace direct haulage of waste to landfills; and applications were opened for proposals to revitalise restored landfills. With this progress, attention can now turn to the longer term and in 2015 a study was launched to identify the additional waste management and transfer facilities that Hong Kong will need up to 2041.

Highlights

- Received funding approval for the Integrated Waste Management Facilities Phase 1
- Opened the T-PARK (a sludge treatment facility)
- Began a pilot trial on food waste-sewage sludge anaerobic co-digestion
- Implemented the Waste Diversion Plan to prepare the Southeast New Territories Landfill for receiving only construction waste
- Continued to make progress on the landfill extension projects
- Began a study to identify the additional waste management and transfer facilities that Hong Kong will need up to 2041
- Introduced statutory requirements to ensure refuse collection vehicles are equipped with proper environmental control equipment
- Launched the Restored Landfill Revitalisation Funding Scheme
Good News for Waste Treatment

Waste treatment reduces the bulk of waste and offers significant environmental benefits, including saving landfill space and producing useful by-products such as energy. In 2015 the EPD made good progress on not one but three facilities that will reduce the bulk of sewage sludge, food waste and MSW.

T·PARK: The major event of the year was the commissioning of Phase 1 of the T·PARK, a sludge treatment facility, in April. This state-of-the-art waste-to-energy facility reduces the volume of sewage sludge by up to 90 per cent by incineration. Its treatment capacity of 2,000 tonnes per day means sludge from regional sewage treatment works, including Stage 2A of the Harbour Area Treatment Scheme which also opened in 2015, can be treated in a more environmentally-friendly way.

The T·PARK, has been designed to show that environmental facilities can in themselves be beneficial to the environment and the community. Heat energy from incineration is recovered for electricity generation to support various uses onsite, and the surplus is exported to the public power grid. There is zero effluent discharge because wastewater generated onsite is treated and reused onsite for cleaning, flushing and irrigation. A seawater desalination plant provides potable water while rainwater is collected for non-potable uses. And the design of the plant, located at Tsang Tsui ash lagoon near Nim Wan, includes a wetland garden providing a habitat for water birds, as well as an environmental education centre that will open in 2016, when Phase 2 of the T·PARK will also open.

Members of the Legislative Council visit the central control room

Food Waste: Progress was made towards carrying out a pilot trial of food waste-sewage sludge anaerobic co-digestion, including the construction of a co-digestion facility at the Tai Po Sewage Treatment Works. The food waste will be pre-treated and supplied to an anaerobic digestion tank at the Tai Po plant where it will be combined with sewage sludge for co-digestion. An investigation-design-construction consultancy began in October 2015 on the food waste pre-treatment facilities. The trial will then be conducted by EPD and the Drainage Services Department to confirm the feasibility of this kind of treatment and determine the technical requirements.

Integrated Waste Management Facilities (IWMF) Phase 1: Funding approval was received from the Finance Committee of the Legislative Council in January 2015 to build the IWMF Phase 1 facility on an artificial island off Shek Kwu Chau. This followed detailed environmental impact assessment studies to ensure it would meet strict standards, and efforts to allay community concerns. The facility will handle about 3,000 tonnes of MSW per day when it is commissioned in 2023/24. It will recover energy from waste and is expected to generate about 480 million kilowatt-hours of renewable electricity for export to the power grid each year – equivalent to the power consumption of about 100,000 Hong Kong households. A prequalification exercise for IWMF Phase 1 was completed in December.

Longer Lives for Landfills

Hong Kong has three strategic landfills that, one by one, will run out of space in the coming years. But it is not only a lack of space that is an issue. The environmental nuisance of refuse collection vehicles, and the after-life of landfills after they are full, must also be managed. The EPD made progress across all these fronts to ensure Hong Kong has sufficient capacity to meet its waste disposal needs in an environmentally sound and sustainable way.

Landfill Extensions: The shortage of landfill space for ultimate waste disposal is being addressed in the medium term by extending the capacities of the three strategic landfills – the Southeast New Territories (SENT), Northeast New Territories (NENT) and West New Territories (WENT) landfills. With the funding approval of the LegCo for SENT Landfill Extension and NENT Landfill Extension in December 2014, it is anticipated that there will be sufficient landfill capacity to cope with Hong Kong’s ultimate waste disposal needs up to the late 2020s. Local communities understandably are concerned about the landfill extension projects. The EPD has been holding regular meetings with local communities in the Sai Kung, North and Tuen Mun and Yuen Long districts to address their needs.

Waste Diversion Plan: The EPD strives to ensure landfills are operated in a manner that protects both the environment and nearby residents from undue impacts. Concerns about odours arising from MSW and other wastes from the SENT Landfill have resulted in a change of the use of the landfill to receive only construction waste. To support this measure, the Waste Diversion Plan was formulated to divert MSW and other wastes away from the landfill and channel the MSW to the refuse transfer network in an orderly manner. In 2015 preparations were made to enable the change to take effect in January 2016.
These included opening the Shatin Transfer Station to receive waste from private collectors, in addition to six other transfer stations which had been doing so; aligning the charges at four refuse transfer stations in urban areas at $30 per tonne; and establishing a working group as a platform where waste collectors, property managers and Government departments could effectively communicate on the diversion issues. The collection service of the Food and Environmental Hygiene Department has also been re-routed to provide handling capacity in the refuse transfer network to cope with the diverted MSW.

Refuse Collection Vehicles (RCVs): RCVs can be a source of environmental nuisance due to odour and waste water leakage. So, from April 1, 2015, it became mandatory for all RCVs entering landfills and refuse transfer stations to be equipped with a metal tailgate and waste water sump tank to control the impacts. This followed months of preparation, including one-off financial assistance to help private RCV owners install the equipment on their vehicles under the RCV Retrofitting Subsidy Scheme. Some 332 applications were received covering more than 95 per cent of eligible vehicle owners. To promote proper operation of RCVs and a clean waste collection culture, a Charter on Proper Operation of Refuse Collection Vehicles was launched in September 2015 by members of the trade; by the end of the year it had been signed by 43 companies covering 162 private RCVs and representing about half of all vehicles of this type in Hong Kong. These efforts are paying off. As revealed by regular checks conducted by the EPD in 2015, RCVs entering landfills or refuse transfer stations were mostly found to be compliant with the statutory requirements and no prosecution for violation was initiated.

Restored Landfills: Old landfills that were closed years ago are also part of the EPD’s waste management focus. These landfills have been restored such that their environmental impacts are contained, and thus they represent a useful land resource. The Government has earmarked $1 billion to set up a Restored Landfill Revitalisation Funding Scheme, which will fund non-profit-making organisations or National Sports Associations to develop recreational facilities or other innovative proposals at restored landfills. Thirteen landfills have been restored and six are already managed for public use, so the funding scheme will apply to the remaining seven restored landfills. In 2015 applications were invited for the first batch of landfills at flat areas of the Ma Yau Tong Central Landfill (in Kwun Tong), the Pillar Point Valley Landfill (in Tuen Mun), and the Tseung Kwan O Stage 1 Landfill (in Sai Kung).
Forward Planning

The current waste management efforts will help address Hong Kong’s short- and medium-term needs. But given the years it can take to gain approval for and build new facilities, a longer-term perspective is needed to ensure the city has sufficient waste treatment and disposal outlets in future. In 2015, the Government commissioned a study to identify additional strategic and regional facilities for the bulk transfer and treatment of solid waste.

The study will take into account the impact of Hong Kong’s population and economic growth on landfill disposal. The additional waste facilities identified shall meet four broad objectives: maximising resources recovery from waste; optimising synergy of waste management technologies and land use; minimising disposal of untreated or unsorted solid waste at landfills; and minimising the need of vehicular traffic for transporting waste. Recommendations from the consultant will be submitted in 2017/18 – well in time to get cracking on the next stage of Hong Kong’s waste management regime.

LOOKING AHEAD

- Designate the SENT Landfill to receive only construction waste
- Open Phase 2 of the T·PARK, bringing treatment capacity to 2,000 tonnes of sewage sludge per day
- Invite tenders for prequalified tenderers for Phase 1 of the IWMF
- Prepare tenders for the design, construction and operation of food waste pre-treatment facilities
- Continue working on the implementation of landfill extension projects
- Process and assess applications for the first batch of restored landfill projects under the Restored Landfill Revitalisation Funding Scheme
Energy
Let’s Switch Off

The biggest challenge facing the planet today is the effect of our energy consumption on climate change. In 2015 the Government set the stage to make Hong Kong’s energy use greener and more efficient. The new Energy Saving Plan for Hong Kong’s Built Environment 2015-2025+ will aim to reduce energy intensity (the number of energy units consumed per unit of GDP) by 40 per cent by 2025 compared with 2005, and a new campaign will get the whole community involved in energy saving. The Government also announced in 2015 a new fuel mix plan for 2020 that will cut down on coal usage and increase the percentage of natural gas, and consulted the public on the future development of the electricity market. These measures all build on past achievements and will help put Hong Kong on a path towards greener energy consumption.

Highlighted

- Launched the Energy Saving Plan for Hong Kong’s Built Environment and a target to reduce energy intensity by 40 per cent by 2025 compared with 2005
- Launched the Energy Saving for All campaign to promote energy saving and efficiency in the community
- Consulted the public on the future development of the electricity market
- Announced the 2020 fuel mix for electricity generation, which will help Hong Kong achieve the target of reducing carbon intensity (the amount of greenhouse gases per unit of GDP) by 50-60 per cent by 2020 compared to 2005
- Received recommendations from the Task Force on External Lighting on ways to reduce light nuisance and energy wastage from external lighting, and began to implement various measures
2015 was a year of consolidation for Hong Kong’s energy-saving efforts. In May the Energy Saving Plan for Hong Kong’s Built Environment 2015~2025+ gave an overarching direction for our efforts. At the same time, the “Energy Saving for All” campaign was launched to promote energy saving and energy efficiency to all sectors of the community and provide tips and guidance.

Energy Saving Plan: The first blueprint on energy saving targets electricity use, which accounts for more than half of Hong Kong’s total annual energy use and is used almost entirely (90 per cent) by buildings. The Government has made considerable progress promoting green buildings and energy efficiency in buildings – for example, implementing legislation on energy use in buildings; investing in energy-saving systems in major public infrastructure such as district cooling in the Kai Tak Development; providing $450 million for implementing building energy efficiency measures which has benefited one in seven private sector buildings in Hong Kong; and reducing its own energy consumption by six per cent between 2003 and 2007 and five per cent between 2009 and 2014. But we can still do better. The Energy Saving Plan sets the goal of a 40 per cent reduction in energy intensity by 2025. Actions will be taken along four paths:

- **Economic:** promote energy saving and green building development for Government buildings, public housing and public sector developments.
- **Regulatory:** reviews will be conducted of energy-related standards under the Buildings Energy Efficiency Ordinance, the Building (Energy Efficiency) Regulation and the Energy Efficiency (Labelling of Products) Ordinance to see if they can be expanded and/or tightened. Already in 2015, codes of practice on building energy audits and building services installation tightened energy efficiency requirements by 10 per cent.
- **Education:** schools and public education programmes will be updated and the Government will strengthen efforts to encourage the public sector to save energy.
- **Social:** Government funding schemes will be used to support community energy-saving campaigns. The Government will also collaborate with key energy consumers in the commercial sector on sector-specific campaigns.

Energy Saving for All: A key phrase underpinning these efforts is that people need to be more “Energy Aware” so they can become “Energy Wise”. The Energy Saving for All campaign will take that message to the community. The campaign comprises five parts:

- **Energy Saving Charter on Indoor Temperature** to maintain indoor summer temperatures at 24-26 degrees Celsius. The idea was first mooted in 2012 when 100 shopping malls signed on and efforts have focused on signing up more participants. By the end of 2015 there were about 2,800 signatories, including shopping malls, shops, office premises, offices, housing estates, residential buildings and non-government organisations.
- **Energy Saving for All website.** This offers energy-saving tips, teaching kits, data, competitions, hyperlinks to related local and overseas organisations, and other information. More than 50 public organisations, academic institutions, professional groups, public utilities, chambers of commerce, think tanks and green groups have contributed to the website.
- **New Energy New Generation Solar Car Competition.** This event attracted 11 teams of undergraduate and secondary school students.
• Youth Energy Saving Award. This competition sought to educate the younger generation about the importance of energy saving and enhance their understanding and practice of reducing carbon emissions in their daily lives.
• A television announcement in the public interest with the slogan “Save Energy with the Push of a Button”. This aims to encourage people to turn off electrical appliances when not in use.

All of these efforts combined will help Hong Kong achieve its energy reduction target. The expected energy savings from new buildings alone will, by 2025, amount to five billion kilowatt hours, enough to provide a year’s worth of electricity consumption to about one million households. Hong Kong has made some progress towards energy efficiency over the years, but there is so much more that we will achieve.

Focus on Fuel

Electricity generation is a key contributor to local air pollution. It also accounts for more than two-thirds of Hong Kong’s greenhouse gas emissions. Using cleaner fuels would therefore offer very broad benefits. The Government has been working with the power companies to reduce reliance on polluting coal and in 2015 made progress towards that goal through announcing its fuel mix plan for 2020. The SEN and “Hanson”, a character disguised by the Big Waster to symbolise energy saving, officiated at the launching ceremony for the “Energy Saving for All” Campaign. The slogan for the campaign was “Save Energy with the Push of a Button”.

The fifth-generation solar-powered electric car, SOPHIE V, developed by the Hong Kong Institute of Vocational Education.

The SEN (eighth left) and “Hanson” pictured with Sophie IV solar powered car invented by the Hong Kong Institute of Vocational Education.

The SEN and “Hanson”, a character disguised by the Big Waster to symbolise energy saving, officiated at the launching ceremony for the “Energy Saving for All” Campaign. The slogan for the campaign was “Save Energy with the Push of a Button”.

Future fuel mix:

In 2013, coal accounted for about 57 per cent of the overall fuel mix. The Government wants to reduce this reliance on coal, but there are also other factors to take into consideration, such as tariff impact and public acceptance. To gauge the community’s views, a public consultation was held in 2014 on the future fuel mix for electricity generation that received more than 86,000 submissions. Most respondents supported using more natural gas for local generation. Having regard to these views, a new fuel mix plan for 2020 was announced in 2015.

The SEN and “Hanson”, a character disguised by the Big Waster to symbolise energy saving, officiated at the launching ceremony for the “Energy Saving for All” Campaign. The slogan for the campaign was “Save Energy with the Push of a Button”.

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Future development of the electricity market:

The regulation of the two existing power companies in Hong Kong has been exercised through the Scheme of Control Agreements (SCAs). The current SCAs signed between the Government and the two power companies will expire in 2018. To gauge the public’s views on the future development of the electricity market, the Government conducted a three-month public consultation in 2015. About 16,000 submissions were received. Most reflected that the current SCAs had generally worked well, but there was a consensus that they needed some improvements, including reducing the permitted rate of return and enhancing the mechanisms to promote energy saving and the development of renewable energy. The Government will take into account these views when negotiating the new SCAs with the power companies.
The Government launched the three-month public consultation on the future development of the electricity market.

Softening the Night Lights

Excessive external lighting is both a nuisance and a waste of energy. The Government set up a Task Force on External Lighting in 2011 to advise it on the appropriate strategy and measures for tackling these nuisance and energy wastage problems, having regard to international experience and practices. The Task Force organised a public engagement exercise in 2013 and submitted its report and recommendations to the Government in April 2015.

The responses collected during the engagement exercise reflected a wide spectrum of opinions across various sectors of the community, ranging from calls for immediate legislation to control external lighting to fundamental objection to any form of regulation, including voluntary measures. The divergent views seem to suggest that the community is not yet ready for rigorous regulation of external lighting, such as legislative control. The report recommended taking a multi-pronged approach, with a charter, award schemes, public education and publicity, and the re-launch of guidelines on best practices. The Government welcomed the recommendations and began implementing them in 2015.

The Government has also taken the lead to switch off external lighting with decorative, promotional and advertising purposes at 11pm, and to observe the guidelines. Further actions are planned for 2016, including the launch of a Charter on External Lighting.

Advice and tips on greener design, installation and operation of external lighting are contained in the “Guidelines on Industry Best Practices for External Lighting Installations” which were produced several years ago and re-launched in 2015. Public education and publicity campaigns will help raise public awareness of the issue. The Government has also taken the lead to switch off external lighting with decorative, promotional and advertising purposes at 11pm, and to observe the guidelines. Further actions are planned for 2016, including the launch of a Charter on External Lighting.

Looking Ahead

Negotiation with the two power companies on a new set of SCAs with improved terms to take effect after the current SCAs expire in 2018.

Launch the Charter on External Lighting in 2016
Nature Conservation

Cherishing Our Natural Resources

For a place synonymous with urban living, Hong Kong has a surprisingly rich variety of biodiversity and natural resources. The challenge is to make people aware of the need to protect and conserve these resources. In 2015, the Government engaged the public in appreciating and taking responsibility for Hong Kong’s natural environment. The first Hong Kong Biodiversity Festival was held over three months to raise awareness in advance of a planned public consultation in 2016 on a Biodiversity Strategy and Action Plan (BSAP) for Hong Kong. In addition, the status of UNESCO Global Geopark was formalised and Hong Kong Geopark was renamed as the Hong Kong UNESCO Global Geopark. People were also encouraged to “Take Your Litter Home” from country parks through a public education programme. Separately, the Government acted on its international obligations and strengthened measures to control the trade in ivory.

Highlights

Co-organised the first Hong Kong Biodiversity Festival to raise awareness of biodiversity conservation and sustainability

Adopted the new UNESCO Global Geopark label

Launched the “Take Your Litter Home” public education programme in country parks

Strengthened control of the ivory trade

Consulted stakeholders on the boundary and management plan of the proposed Brothers Marine Park and prepared a draft map
The Chief Executive announced in his 2015 Policy Address that the Government was developing a BSAP for Hong Kong to help conserve biodiversity locally and support sustainable development. A key component of this effort has been community involvement. It is crucial that people are sufficiently aware of the importance of biodiversity so they can offer meaningful comment on the BSAP. Different stakeholders have been engaged through meetings and other exchanges over the past two years.

In 2015, that engagement was broadened to the entire community through the first Hong Kong Biodiversity Festival. The three-month festival, co-organised by the Environment Bureau, the Agriculture, Fisheries and Conservation Department (AFCD) and 20 organisations including universities and non-governmental organisations, featured more than 120 programmes targeting families and youths. People were encouraged to treasure the natural environment and develop a better understanding of local biodiversity through activities such as eco-tours, workshops, exhibitions and seminars. More than 160,000 people participated in the programmes, including more than 3,000 visitors to the Hong Kong Biodiversity Carnival in November, which capped the festival with a day of fun-filled and nature-related activities at Kowloon Park, including tree walks, drama shows and games booths. Now, with awareness raised, it is hoped more people will be prepared to participate in the public consultation on BSAP in 2016 and help Hong Kong reach a sustainable, achievable approach to biodiversity conservation.

Parks and Recreation
One of the most spectacular things about Hong Kong is the large amount of untouched land surrounding the urban areas. Country and marine parks are protected through legislation, and they are used extensively by the public. The Government has been enhancing this provision and also encouraging people to take a more active role in protecting their parks.

Hong Kong UNESCO Global Geopark: The creation of the UNESCO Global Geopark label was endorsed in November 2015, making Hong Kong Geopark part of the 120-strong UNESCO Global Geoparks network. Together with World Heritage Sites and Biosphere Reserves, the UNESCO Global Geoparks are part of a comprehensive framework that supports conservation and sustainable development in both local and global contexts.

Alongside that development, the Government has also continued efforts to make the Hong Kong UNESCO Global Geopark more accessible and visible. Preparations were underway in 2015 to provide new visitor services, including a kaito ferry service between Ma Liu Shui and Lai Chi Wo and coach tours between Sai Kung Town and High Island, that will be launched in 2016 to make it easier to reach some of the Geo-sites.
"Take Your Litter Home" campaign: Community engagement of a different kind was the focus of this public education programme launched in September 2015, which encouraged people to develop the good habit of taking their litter away after visiting country parks. The message was conveyed through publicity and education events such as a waste reduction day, photo exhibitions and public lectures, and the deployment of more than 100 nature ambassadors and volunteer hikers who cleaned up hiking trails and promoted the take-home message to visitors. Most pertinently, litter bins were removed on five selected trial sites (Tai Po Kau Nature Reserve, Ma On Shan Country Trail, Tai Lam Chung Country Trail, the Dragon's Back on Hong Kong Island, and the Lantau Trail Section 3). The initial results were encouraging: general cleanliness and hygiene were maintained on these sites, and the amount of collected litter decreased.

The Brothers Marine Park: Marine parks help protect the underwater community and in 2015, the Government proposed The Brothers Marine Park in the western waters to protect this important habitat for the Chinese white dolphin as far as possible. The 970-hectare park is one of the conditions listed in the Environmental Permit for the Hong Kong-Zhuhai-Macao Bridge – Hong Kong Boundary Crossing Facilities Project. Consultations have been held with the fisheries sector, marine users, relevant District Councils, green groups, academics and AFCD advisory committees, and the proposed draft map of The Brothers Marine Park will be released for public inspection in early 2016. The park is anticipated to be formally designated before the end of that year.

Ivory Trade Actions

The ivory trade is a subject of growing global and local concern, centred on illegal smuggling and trade. In 2014, Hong Kong began destroying its stockpile of 28 tonnes of seized ivory and this set off deeper reflection about how we regulate the trade. In 2015 the Government announced a suite of new or enhanced measures to improve enforcement against smuggling and strengthen control of the local trade.

The measures included stepping up joint operations and intelligence exchange with the Customs and Excise Department and overseas law enforcement agencies such as Interpol, deploying sniffer dogs to detect ivory at import and export control points, enhancing interdepartmental collaboration, conducting a comprehensive check of all local ivory stocks, using tamper-proof holograms to mark ivory and hi-tech radiocarbon dating analysis to determine the age and hence legality of ivory, and stepping up control on the import and export of ivory that pre-dates international control of the trade. The Government also promoted protection of elephants and the ivory trade controls to the general public.

By the end of 2015, 22 tonnes of confiscated ivory had been destroyed by incineration and the remainder will be destroyed in 2016. This should help send the clear signals against the illegal trade in ivory.

LOOKING AHEAD

Launch a public consultation on the BSAP and finalise the draft
Launch the second phase of the “Take Your Litter Home” public education programme in country parks and remove more litter containers and recycle bins from hiking trails in the parks
Seek to complete designation of The Brothers Marine Park by the end of 2016
Continue to promote and enhance the accessibility and visibility of the Hong Kong UNESCO Global Geopark
Closely monitor the ivory trade and update measures for combating the illegal trade in ivory
STAKEHOLDER ENGAGEMENT
Building Partnerships
The Gentle Approach To Compliance

Environmental laws generally put the onus on polluters to redress the damage from their operations. But laws backed with fines and other penalties cannot fix the problems on their own. Polluters also need support, assistance and a good understanding of the issues involved. The EPD has therefore established partnerships with key groups of polluters to help them comply with both the letter and the spirit of the law.

Highlights

Collaborated with the Hong Kong Construction Association and operators in the private and public sectors to promote and recognise best practices

Collaborated with Kwun Tong, Wong Tai Sin, Kwai Tsing and Sham Shui Po District Councils on environmental building audits and green property management initiatives

Conducted workshops on the application of water-based vehicle refinishing paints for vehicle repair workshops

Held a seminar for restaurants on air pollution control equipment (APCE) to remove cooking fumes

Commissioned the Hong Kong Productivity Council to promote “Green Yu Lan” and demonstrate APCE for burning joss papers
Partnership Progress

The EPD has had formal partnerships since the 1990s with four trades that have been a main focus of complaints, as well as pollution legislation: the construction trade, vehicle repair workshops, property management and restaurants. These partnerships have fostered mutual understanding and helped promote compliance. The success of this approach has also led to the establishment of the Compliance Assistance Centre to help businesses not covered under the formal partnerships. The 2015 highlights of this engagement are described below.

Construction trade: Activities in 2015 focused on engaging with operators to improve their knowledge and understanding, and recognising good practice. The 10th Joint Safety, Health and Environment Seminar was held in October with keynote speeches on such topics as the EPD’s Clean Air Plan for Hong Kong. This event has grown substantially over the years. The first seminar was organised by EPD and CLP Power Hong Kong Ltd and over the years it has been joined by the Civil Engineering and Development Department, Highways Department, Mass Transit Railway Corporation (MTRC) and, in 2015, the Hong Kong Institute of Engineers (HKIE). The event also developed to be co-organised by the Development Bureau and the Institute of Vocational Education (IVE). The 2015 seminar was attended by about 600 people, including contractors and subcontractors, consultants, engineers, and IVE students. The CLP and HKIE recognise participation as continuing professional development.

Another opportunity to exchange information and views is the MTRC-EPD Joint Environmental Forum, which was first organised in 2014. The themes in 2015 were air and noise issues associated with major railway development works, such as the upcoming control of non-road mobile machinery (see Air chapter for details). As part of the forum, EPD staff made a site visit to the Hin Kang Shatin-Central Link site and were given a plant tour of tunnelling operations, and they received a detailed briefing of the MTRC’s comprehensive construction waste reduction plan to reuse excavated materials.

Recognition of good practice was offered at two events. The Hong Kong Construction Association (HKCA) Environmental Experience Sharing Forum and Environmental Awards Presentation 2015 – co-organised by the HKCA and EPD – attracted more than 100 participants and included talks by major construction award winners on their successful environmental management experiences. The EPD also continued to support the annual Considerate Contractors Site Award Scheme, organised by the Development Bureau, which included a category of Outstanding Environmental Management and Performance Award.
Property management: EPD continued to support District Councils in their efforts to promote quality building management. It delivered talks for building management certificate courses organised by the Kwai Tsing and Sham Shui Po District Councils, and collaborated with the Kwun Tong and Wong Tai Sin District Councils to conduct 69 environmental building audits of residential, commercial and industrial buildings for their Quality Building Management Competitions. With the latter, it was encouraging to see general improvements in the standard of building management and the adoption of green technologies and practices, such as green roofing, renewable energy, food waste composting, green ritual burning, and electric vehicle charging stations.

Vehicle repair workshops: The EPD commissioned the Pro-Act Training and Development Centre (Automobile) to organise workshops on water-based vehicle refinishing paints to enhance the trade’s understanding of the practical requirements involved. The workshops included demonstrations by instructors and hands-on spraying practice by participants. In addition, the Hong Kong Productivity Council (HKPC) was commissioned to organise seminars on environmental legislation for assessors of the Recognition of Prior Learning for the automotive trade, which were attended by more than 100 participants.

Restaurants: On request from restaurant operators in Yau Ma Tei, the EPD organised a seminar on the use of suitable air pollution control equipment for removing cooking fumes and odour from restaurants.

Other: The EPD continued to encourage businesses to adopt environmental management tools such as the ISO 14001 Environmental Management System, environmental audits and environmental reporting. It also organised five seminars and training workshops for various organisations to promote environmental management tools.
Green Burning

The EPD has been encouraging greener burning of paper offerings at temples, crematoria and similar places in recent years. In 2015 it targeted the Yu Lan (Hungry Ghosts) festival, whose rituals include burning joss paper and artefacts, by commissioning the HKPC to test furnaces that control emissions.

The HKPC provided appropriate furnaces at three locations during the festival to demonstrate to Yu Lan organisers how these could be operated to reduce air pollution. In advance of the festival, a meeting was held with the EPD, HKPC and Federation of Hong Kong Chiu Chow Community Organisations to select the sites – Carpenter’s Road Park in Kowloon City, King George V Memorial Park in Jordan Road and Moreton Terrace playground in Causeway Bay. The furnaces were deployed at each site for three days, and Yu Lan organisers, staff of the Leisure and Cultural Services Department and other stakeholders were invited to demonstration sessions.

The outcomes were generally satisfactory. At Kowloon City the quantity of offerings was larger than the furnace could handle but in any case a considerable amount was diverted away from the existing primitive furnace. At Jordan Road the situation was reversed as there were fewer than expected offerings. At all three places, however, the operation of the furnaces was successful.

The EPD also conducted a trial of off-site burning of collected joss paper at the Kowloon Funeral Parlour, where there is better air pollution control. The Federation initially resisted this idea but in the end there was enough joss paper to fill a small van. The EPD will explore the feasibility of off-site burning in future and hold discussions with private owners on suitable furnaces for burning joss papers during festive events.

Looking Ahead

Further explore off-site burning options for the Yu Lan festival with Yu Lan organisers

Continue to foster the partnership with the vehicle repair trade through talks and promotion work that facilitate the trade to comply with the relevant environmental legislation

Collaborate with the Hong Kong Construction Association to compile and publicise an environmental best practice guide to promote environmental compliance in the construction industry

Stakeholder engagement
Community Awareness

Staying On Message

Waste reduction and other environmental programmes cannot succeed without community participation. But harnessing that participation is not a simple task. Persistent and consistent messaging and programmes are needed to remind people that even in the busy-ness of daily life, we all need to do our share to protect our environment for the long term. In 2015, there were several initiatives to provide that reminder, and also reward key stakeholders. The focus was largely on waste reduction – an area where every individual has the capability of making a difference.

Highlights

- Launched the Clean Recycling Campaign on World Environment Day to encourage people to embrace clean recycling practices in daily life.
- Launched the Pilot Scheme on Shopping Bags Sharing in the Community to explore ways of sharing and re-using shopping bags.
- Organised the high-level Go Green Waste Less Summit for the 18 District Councils and community stakeholders.
- Collected 8,000 items of used computers and electronic appliances under the Schools Recycle WEEE Programme.
- Received 1,210 entries from companies to compete for the 2015 Hong Kong Awards for Environmental Excellence (HKAEE), and honoured 175 winners of the 2014 awards.
- Received more than 87,000 visitors to the Fanling, Tsuen Wan, Wan Chai and Mobile Environmental Centres, and the Lung Fu Shan Environmental Education Centre.
- Enrolled more than 11,700 students in the Student Environmental Ambassador Scheme and awarded 52 schools with the Hong Kong Green School Award (HKGSA).
**Community Action**

Waste reduction is a high priority for the Government, and community awareness programmes support that aim by raising awareness and encouraging good habits.

**Clean Recycling Campaign:** Contaminated items are often not recyclable and therefore end up in landfills. This campaign, launched on World Environment Day on June 5, urged people to separate waste at source and clean their recyclables so as to increase their quality, quantity and value and turn more waste into a resource. The campaign highlights included a publicity event that featured drama and singing performances about clean recycling, a presentation by a young artist of his new design for waste separation bins, a “Clean Recycling for Green Hong Kong” Old Song New Lyrics Competition, an e-card Design Competition and Photography Contest, and the launch of a roving exhibition on clean recycling.

Young artist Kenny Lau shared his design concept for new waste separation bins.

**Plastic Shopping Bag Charging:** The new Plastic Shopping Bag Charging scheme is another programme that directly impacts everyone in Hong Kong. All retail outlets must now charge at least 50 cents for plastic bags, with few exceptions (see also Waste Reduction chapter). To support the scheme, a three-month Pilot Scheme on Shopping Bags Sharing in the Community to explore ways to share shopping bags was launched in April 2015. Specially designed stands were set up at 15 locations, including housing estates, tertiary institutions, shopping malls and community centres, where people could “drop-take-share” shopping bags. The participants were also briefed on the benefits of the proper cleaning, reusing and recycling of their shopping bags.

**Community Waste Less Action – Waste Not, Re-Use More, Recycle Properly:** The 18 District Councils partnered with more than 60 organisations to organise activities related to waste reduction that attracted more than 140,000 participants. The campaign culminated in the Go Green Waste Less Summit where the District Councils and community stakeholders gathered to share their experiences and showcase their achievements in mobilising the community to reduce waste. More than 200 guests from the District Councils, corporations, green groups, non-government organisations, schools, Government departments and other stakeholders attended the 2015 Summit, which was officiated by the Acting Chief Executive, Mrs Carrie Lam Cheng Yuet-ngor.

**Go Green Waste Less Summit opening ceremony**

**Environment and Conservation Fund:** Funding for community-initiated action is provided through the Environment and Conservation Fund (ECF), which since its founding in 1994 has granted $2.3 billion for more than 4,900 educational, research and other projects and activities in relation to environmental and conservation matters. In 2015, $50 million was earmarked to support projects by non-government organisations related to MSW charging.

**Business Incentives**

Companies that make the extra effort to reduce their impacts on the environment are recognised each year in Hong Kong, both as a reward for their effort and as an example to other firms that are coming to grips with the growing focus on greening business.

**Hong Kong Awards for Environmental Excellence:** Launched in 2008, this award scheme has seen participation more than triple, indicating the growing interest of the business sector to show green credentials. The 2015 round of applications attracted a record 1,146 entries, divided into Small and Medium Enterprises (SME) and non-SME categories. The entries were assessed based on their green leadership, programme and performance, and partner synergy. A total of 64 applications were also received for Hong Kong Green Innovations Awards (HKGIA). A ceremony was also organised to honour the 2014 winners, which included 170 winners of gold, silver, bronze and certificate of merit awards, and five winners under the category of HKGIA.

**Hong Kong Green Organisation Certification:** This scheme recognises firms that have made efforts to demonstrate achievements in different environmental aspects, such as waste reduction, energy saving, carbon reduction, improving indoor air quality and enhancing environmental attributes in products, and offers a clear indication of a firm’s green commitment. More than 650 companies have obtained Hong Kong Green Organisation recognition, while more than 8,000 certificates have been issued since 2008 to companies that demonstrate environmental achievements in various areas. Participants of these schemes have recycled nearly 263,000 tonnes of waste paper, metal and plastics, saved 97 million kilowatt hours of energy, and reduced carbon dioxide emissions by nearly 200,000 tonnes.
Hong Kong Green Organisation Certification commended organisations and companies for going green. School Work: Environmental programmes for schools have two aims: to improve the environmental performance of the schools, and to foster green habits and a caring attitude towards nature among young people that they hopefully will continue throughout their lives.

**Hong Kong Green School Award:** Fifty-two schools were honoured in the 13th HKGSA Presentation Ceremony held in September, including 21 primary schools, 23 secondary schools and eight pre-schools. The primary and secondary school winners received gold, silver or bronze Hong Kong Green School awards based on assessments of four aspects: environmental policy and campus environment; environmental management measures; environmental education plan and implementation; and environmental education effectiveness. They were also referred to compete in the 2015 HKAEE under the Schools Sector. The pre-schools were assessed on environmental infrastructure, environmental management, environmental education and parents’ participation, and they received cash prizes ranging from $5,000 to $10,000.

In addition, 11 schools received the newly launched Waste Less School Award for their commitment to taking positive action to reduce waste on their campuses. The award provided timely encouragement to reduce waste prior to the implementation of MSW charging.

Schools Recycle WEEE Programme: This programme, which has been running for three years, is particularly pertinent because it helps prepare participating schools for the implementation of the mandatory product responsibility scheme on WEEE (see also Waste Reduction chapter). In 2015, 8,000 items (75 tonnes) of used computer equipment, electrical appliances and other electronic products were collected from 175 primary and secondary schools, including some schools that took the opportunity to recycle entire batches of electronic equipment for school teaching such as desktop computers, monitors, overhead projectors and printers. Functional items were delivered to the “WEEE Go Green” project operated by St James Settlement for donation to those in need after checking and repairing. The rest is being properly stored by the contractor until the commissioning of the WEEE treatment and recycling facility, where it will be properly treated and dismantled.

The EPD invited all primary and secondary schools to sign up to the new round of the Schools Recycle WEEE programme to help protect the environment. To facilitate the proper recycling of waste electrical and electronic equipment generated by schools, the EPD provided participating schools with collection and transportation services.

**Prevention First Before Reuse and Recycling Campaign:** This new pilot programme aims to instil waste reduction habits in the very young – among pre-school children. Fifty-three nursery schools and kindergartens have been provided with educational materials on the Use Less, Waste Less message and recycling bins designed for young children. The programme is co-organised by the EPD and the Child Education Centre for Teaching and Learning of the Department of Childcare, Elderly and Community Services under the Hong Kong Institute of Vocational Education.

**LOOKING AHEAD**

Continue to organise environmental commendation schemes, events and activities for different sectors of the community.

Continue to collaborate with stakeholders to promote environmental awareness and behavioural change.

Encourage and facilitate the promotion of the Government’s new environmental initiatives through campaigns and funding support.
Most people in Hong Kong are aware of the need to be responsible for their waste and reduce, reuse and recycle. But what about earlier in the process, when they are deciding what to buy and consume? These decisions are just as important to environmental sustainability, if not more so, yet awareness of this is generally low in Hong Kong. The Council for Sustainable Development (SDC) therefore will carry out a territory-wide public engagement on the “promotion of sustainable consumption of biological resources”. The aim is to arouse public awareness and participation as an essential step towards achieving greater sustainability in Hong Kong.
Consumption to Protect the Planet

Over-exploitation of biological resources has become one of the main threats to global and regional biodiversity. More than 70 per cent of the world’s fish species are either fully exploited or depleted, according to the UN’s Food and Agriculture Organisation. On land, some wild animals and plants are under pressure of over-harvesting and forest habitats are under threat because of the demand for such things as wood products. If harvesting and consumption continue to outstrip reproduction of these biological resources, then we will soon run out of them. But consumers may not be aware of the impacts on the environment brought by their consumption behaviour. In Hong Kong, the notion of sustainable consumption and procurement is generally low on the public radar screen. Many stakeholders along the entire supply and consumption chain make decisions every day that have sustainability implications, from producers, suppliers, importers and retailers, to restaurants, caterers and the general public. If they were made more aware of the impacts and acted together accordingly, they could make important contributions towards more sustainable consumption of biological resources.

Preparations were underway for the public engagement to be launched in 2016. Forums and briefings will be held with stakeholders to facilitate discussion, and public education and publicity campaigns will be launched. People’s views will be collected over several months and the results will be analysed by an independent agency and incorporated into recommendations by the SDC to the Government.

Community Work

Sustainable development can only be achieved if all sectors of the community are aware of its importance and supportive of actions to achieve it. The Government supports community initiatives through the Sustainable Development Fund, which was established in 2003 with $100 million. By the end of 2015, 11 rounds of applications had been processed and $64 million granted to 63 projects. The 12th round launched in November 2015 will give priority to projects that promote the sustainable use of biological resources, the building of a sustainable community, sustainable lifestyles and practices in daily life, and sustainable reporting by industry and other sectors.

To raise awareness and encourage action on these issues, the SDC decided in 2015 that it would launch a public engagement on “promotion of sustainable consumption of biological resources”. There are three objectives:

- First, raise Hong Kong people’s awareness of the importance of biological resources to humans and the consequences of over-exploitation and unsustainable consumption.
- Second, identify the roles of different stakeholders and foster collaboration between them so as to encourage and facilitate sustainable consumption of biological resources.
- Third, seek public views on the strategies and priority measures that can be taken to induce behavioural change so people practise more sustainable consumption of biological resources.

Preparations were underway for the public engagement to be launched in 2016. Forums and briefings will be held with stakeholders to facilitate discussion, and public education and publicity campaigns will be launched. People’s views will be collected over several months and the results will be analysed by an independent agency and incorporated into recommendations by the SDC to the Government.
Sustainability Assessment

Sustainability considerations are integrated into the Government’s decision-making through the Sustainability Assessment (SA) system. All bureaus and departments must conduct SAs of major initiatives and programmes and explain the implications in their submissions to the Policy Committee and the Executive Council. The system was introduced in 2001 and is overseen by the Environment Bureau. To date, more than 2,000 SAs have been conducted. In 2015 these included proposals in a wide range of fields, as these few examples illustrate: outline zoning plans and amendments to plans, investment of fiscal reserves, road works and noise barriers, resumption of land, amendments to legislation relating to use of drugs, and applications related to television programme service licenses. Sustainability considerations thus can be seen to be relevant to all areas of Government policy.

LOOKING AHEAD

Support the SDC in the new round of public engagement on “promotion of sustainable consumption of biological resources”

Process the 12th round of applications under the Sustainable Development Fund

Invite participation in new rounds of the Sustainable Development School Outreach Programme and Sustainable Development School Award Programme
CROSS-BOUNDARY AND INTERNATIONAL CO-OPERATION
Cross-boundary
And International
Co-operation
Pillars Of Progress

Hong Kong has been working closely with its neighbours to address the environmental problems that affect our shared environment, including the air, water and land. The Hong Kong-Guangdong Joint Working Group on Sustainable Development and Environmental Protection (JWGSDEP), which meets annually, has been the starting point for discussing issues and putting in place collaborative frameworks to address them. Other joint working groups, some also involving Macao and Shenzhen, have ensued on such issues as regional air pollution, climate change and cleaner production. In 2015, we made good progress towards meeting our shared goals in all these areas.

Highlights

- Embarked on a joint mid-term review with Guangdong to determine the air pollutant emission reduction results for 2015 and finalise the targets for 2020
- Signed the Guangdong-Hong Kong Co-operation Agreement on Cleaner Production and held the first meeting of the Hong Kong-Guangdong Joint Working Group on Cleaner Production
- Held the 14th and 15th meetings of the Hong Kong-Guangdong Joint Working Group on Sustainable Development and Environmental Protection
- Held the 4th meeting of the Hong Kong-Guangdong Joint Liaison Group on Combating Climate Change
- Held the 20th meeting of the Hong Kong-Shenzhen Environmental Co-operation Forum
Joint Actions on Air Quality

Air pollution is the most visible environmental problem affecting the region. The smog arises from the mixing of locally-generated emissions within our collective airshed. Improvement therefore requires joint action.

Hong Kong and Guangdong have been co-operating on air quality since the start of the century, and it is a high priority of the JWGSDEP. We have set emission reduction targets and plans, established a regional air quality monitoring network, and expanded our network to include Macao. Each administration has conducted programmes to achieve the targets and Hong Kong’s are described in the Air and Energy chapters of this report. The results have been mostly very good. Since 2006, levels of sulphur dioxide in the Pearl River Delta have decreased by 72 per cent, nitrogen dioxide by 28 per cent and respirable suspended particulates by 34 per cent. Ozone has increased by 10 per cent, however, and will require further action.

In 2015, we continued to set our sights on the horizon. A joint mid-term review of emission reduction targets was started to determine the achievements of both places in 2015 and finalise targets for 2020. Hong Kong, Guangdong and Macao also proceeded with a joint regional study of PM$_{2.5}$ (fine particulates), which has recently been added to the list of pollutants monitored under the expanded regional air quality monitoring network (carbon monoxide is another new addition). Continued close collaboration will ensure we have the same goals of a clean air environment for the region, and a shared determination in achieving them.

Cleaner Production

Promoting cleaner production is a Government priority for improving the regional environment and it is proving to have positive impacts. The Cleaner Production Partnership Programme, which facilitates Hong Kong-owned factories operating in Guangdong and Hong Kong to adopt cleaner production technologies and practices, has achieved significant environmental and economic benefits since its launch in 2008. Levels of volatile organic compounds have been reduced by 11,300 tonnes per year, SO$_2$ by 5,100 tonnes, NO$_x$ by 11,700 tonnes and effluent discharges by 17.8 million tonnes. Moreover, there have been annual savings of about 10,700 tera-joules of energy and $1.7 billion in production costs.

Given these benefits, the Government decided to extend its support for the programme. From 2008 to the end of 2014, it provided $143 million to support factories that carried out on-site improvement assessments, demonstration projects and clean technology promotional activities. In 2015, a further $150 million was committed.
including funding for promotional activities by trade and industry associations. From 2008 to the end of 2015, more than 2,500 funding applications had been approved under the programme, and 410 awareness and technology promotion activities had been organised for more than 36,000 participants.

The Guangdong authorities also joined in the effort with the signing of the “Hong Kong-Guangdong Co-operation Agreement on Cleaner Production” in November 2014 with the Guangdong Economic and Information Commission. This led to the establishment in February 2015 of the Hong Kong Guangdong Joint Working Group on Cleaner Production, whose work plan includes joint promotions of cleaner technologies and the sharing and dissemination of relevant information.

There is also a Hong Kong-Guangdong Cleaner Production Partners Recognition Scheme to commend industry partners. A ceremony in October 2015 honoured 147 Hong Kong-owned manufacturing enterprises, three sourcing enterprises and 13 environmental technology service providers as “Hong Kong-Guangdong Cleaner Production Partners”.

Climate Change

Climate change is a topic of vital importance to the planet, with broad socio-economic impacts beyond environmental protection. The Hong Kong SAR Government is taking the lead to enhance energy saving and efficiency, promote green buildings, and turn waste into energy so as to develop Hong Kong as a low-carbon liveable city. A comprehensive summary of these efforts, under the title “Hong Kong Climate Change Report 2015”, was released in advance of the 21st session of the Conference of the Parties to the UN Framework Convention on Climate Change in December 2015.

The Government’s work to reduce local greenhouse gas emissions from power plants and motor vehicles has also been extended to co-operation with Guangdong. In 2011 the Hong Kong-Guangdong Joint Liaison Group on Combating Climate Change was formed. In 2014-15, its work included a joint comparison of different climate change projection methods; exchanges on the progress of climate change adaptation work; a seminar on energy conservation and building efficiency held in Hong Kong; a study on a mutual Guangdong-Hong Kong recognition scheme for carbon labelling; and exchanges on slope safety management and urban drainage design. These activities involved Government experts from different departments as well as industry stakeholders.

The work plan for 2015-16 includes a workshop on greenhouse gas measurement, reporting and verification; exchanges on short-term climate forecast and the potential risks and other impacts of climate change on influenza; and continued collaboration on urban drainage, slope safety and low-carbon product certification. These will help Hong Kong and the region be better prepared for dealing with the local impacts of global climate change.

Continue to collaborate with Guangdong on the mid-term review of air pollutant emission reduction targets

Continue work on the Guangdong-Hong Kong-Macao Joint Regional PM2.5 study

Collaborate with the Development and Reform Commission of Guangdong to implement the initiatives agreed by the Hong Kong-Guangdong Development and Reform Commission, Mr Wu Daowen (left)