

Environmental Protection

The Secretary for the Environment, who has overall policy responsibility for environmental protection, receives assistance on the formulation of new policies as well as management of environmental issues from the Permanent Secretary for the Environment, who is also the Director of Environmental Protection. The Advisory Council on the Environment advises the Government on measures for the prevention and abatement of pollution.

The Environment and Conservation Fund (ECF) provides funding support to local non-profit making organisations for educational, community waste recovery, energy efficiency, research, technology demonstration and other projects in relation to environmental and conservation matters. The Environmental Campaign Committee (ECC) set up in 1990 promotes public awareness of environmental matters and encourages the public to contribute actively towards a better environment. The EPD's Environmental Resource Centres provide easy access of resource materials, and organise regular workshops to the public.

Planning Against Pollution: Considerable emphasis is placed on preventing environmental problems by applying environmental impact assessment (EIA) procedures to ensure that environmental factors are considered at all stages of project planning and development.

At strategic level, key environmental information relating to major proposals has to be provided in submissions to the Executive Council and Policy Committee to facilitate decision-making. For some major proposals or plans, strategic environmental assessment might be conducted.

At local level, the environment is safeguarded through the application of the guidance provided in the Hong Kong Planning Standards and Guidelines.

The Environmental Impact Assessment Ordinance provides the legal framework for applying the EIA process to designated projects and implementation of agreed environmental measures through Environmental Permits.

To lead by example, all government bureaux and departments are required to publish annual environmental reports starting 2000. Private and government owned public corporations are encouraged to do likewise.

The EPD has been actively promoting environmental audit, environmental management system and environmental reporting to improve corporate environmental performance in both private and public sectors. To assist organisations in pursuing environmental management, useful guidelines are available at the EPD's website at <http://www.epd.gov.hk>.

Legislation and Pollution Control: The EPD is responsible for the enforcement of most of the measures contained in the 10 pollution control legislation.

Air: The control on air pollution is effected under the Air Pollution Control Ordinance. Major emitters, such as power plants and cement plants, are categorised as Specified Processes and subject to stringent licensing control. Emission caps have been imposed on all power stations through licence conditions since 2005. Amendments to the Ordinance have enabled the stipulation of emission caps for the power sector by a Technical Memorandum (TM). Five TMs were issued in 2008, 2010, 2012, 2014 and 2015 to progressively tighten the emission caps in 2010-2014, 2015-2016, 2017-2018, 2019 and from 2020 onwards. For other processes, the installation and alteration of fuel burning equipment need prior approval from the EPD. To reduce air pollutants, limits are imposed on the sulphur content of fuels sold in Hong Kong. All commercial and industrial processes

are required to use ultra low sulphur diesel under an amendment regulation that became effective in October 2008. Subsidiary regulations control smoke from furnaces, open burning, construction dust, volatile vapour from petrol filling stations, dry-cleaning machines and products containing volatile organic compounds. A new regulation for controlling emissions from non-road mobile machineries has taken effect since 1 June 2015.

Specific control on asbestos work requires registration of asbestos consultants, laboratories, contractors and supervisors. The use, supply, import or transshipment of all types of asbestos has been totally banned from 4 April 2014. To promote good indoor air quality (IAQ), an IAQ Management Programme has been introduced. An important part of the programme is the IAQ Certification Scheme for Offices and Public Places. Certified premises can display their IAQ certificates and labels for public information, thereby demonstrating their efforts in maintaining good indoor air quality to the general public. This serves to motivate more premises to join the Scheme.

To tackle air pollution caused by vehicle emissions, the Government is implementing a number of programmes. These include introducing stringent vehicle fuel and emission standards that are practical and commercially viable, exploring clean alternatives to diesel vehicles, strengthening vehicle emissions inspection and tightening the control on smoky vehicles. In July 2010, the Government tightened the statutory specifications of motor vehicle diesel and unleaded petrol to Euro V standards and implemented statutory control on the quality of motor vehicle biodiesel. From June 2012, newly registered vehicles must meet Euro V emission standards. To reduce emission from diesel vehicles, all newly registered taxis must use liquefied petroleum gas (LPG) or unleaded petrol. Almost all taxis are now fuelled by LPG. The incentive scheme to encourage diesel public light buses to switch to LPG or electric light buses was completed in end 2005; around 69 per cent of the public light buses now run on LPG. Apart from using advanced smoke test by chassis dynamometer to test all smoky vehicles spotted under the Smoky Vehicle Control Programme, the Government started in September 2014 strengthened control of emissions from petrol and LPG vehicles using roadside remote sensing equipment and chassis dynamometers for emission testing. A scheme to incentivise early replacement of pre-Euro and Euro I diesel commercial vehicles with new vehicles meeting the emission standard of newly registered vehicles ended in March 2010; about 17 000 eligible vehicles were replaced by new vehicles with the aid of the grant. Another incentive scheme for replacement of Euro II diesel commercial vehicles ended in June 2013, about 7 400 eligible vehicles were replaced by new vehicles with the aid of the grant. To further improve roadside air quality, the Government launched an ex-gratia payment scheme in March 2014 to phase out some 82 000 pre-Euro IV diesel commercial vehicles through an incentive-cum-regulatory approach. In addition, to help timely replacement of diesel commercial vehicles in the long run, the Government also limits the service life of diesel commercial vehicles first registered after 31 January 2014 to 15 years. From April 2008, buyers of environment-friendly commercial vehicles enjoy concessions for their first registration taxes. In March 2011, the Government set up a \$300 million Pilot Green Transport Fund to incentivise trials of green and innovative technologies applicable to the public transport sector and goods vehicles. Moreover, The Motor Vehicle Idling (Fixed Penalty) Ordinance which introduced a statutory prohibition

against idling vehicles with running engines came into operation in December 2011. In addition, the Government has been promoting a wider use of electric vehicles. To encourage the use of cleaner buses, the Government is subsidising the franchised bus companies to try out hybrid buses and electric buses.

Joining the global effort to protect the ozone layer, Hong Kong has honoured the full obligations of the Montreal Protocol and its subsequent amendments through the enforcement of the Ozone Layer Protection Ordinance. To comply with the latest requirement under the Protocol, Hong Kong has banned the import of products using HCFCs into Hong Kong by phases from January 2010 and will ban the import of all such products by 2020.

The Government has implemented a series of measures to control marine emissions. These include implementing MARPOL Annex VI requirements, controlling vessel smoke emissions by legislation, upgrading the quality of local marine diesel in April 2014 and mandating ocean going vessels to switch to cleaner fuel while berthing in July 2015 by legislation. Hong Kong is the first port in Asia to introduce the fuel switch requirement. Meanwhile, Hong Kong is collaborating with the Ministry of Transport and the Guangdong authorities on setting up a marine emission control area in the Pearl River Delta waters.

To further improve the air quality for better protection of public health, the Government tightened Air Quality Objectives (AQOs) starting from 1 January 2014. In parallel, the Government will continue to expedite the implementation of various air quality improvement measures outlined in "A Clean Air Plan for Hong Kong" released in March 2013 with a view to bringing improvement to the air quality and broadly achieving the AQOs by 2020. A review of the AQOs will commence in 2016.

Waste: The Waste Disposal Ordinance (WDO) provides a framework for control on the collection, treatment and disposal of all waste types. Livestock waste disposal is regulated. "Cradle to grave" controls apply to the collection, treatment and disposal of chemical and clinical waste. Moreover, the ordinance enables permit control on import and export of waste in line with the requirements under the Basel Convention. Furthermore, with effect from April 2006, import of hazardous waste from developed countries is banned.

Under the principle of "polluter pays", waste producers are required to contribute to waste treatment cost. Charging schemes have been introduced under the respective Ordinances to charge for the treatment of chemical, clinical and MARPOL waste at the Chemical Waste Treatment Centre. In addition, private sector users of refuse transfer stations are required to pay for the service. The same principle is also applied to the disposal of construction waste to maximise the resources recovery and re-use of inert materials and minimise their disposal at landfills.

The Dumping At Sea Ordinance controls marine dumping activities in line with the requirements under the London Convention.

Water: The Water Pollution Control Ordinance provides for declaration of 10 Water Control Zones and four supplementary Water Control Zones to cover the whole area of Hong Kong. All discharges into these zones have been subject to licensing control. A Technical Memorandum of Effluent Standards provides transparency in setting licence limits. They are designed to enable achievement of the Water Quality Objectives.

Noise: The Noise Control Ordinance provides for the control on noise from construction sites, domestic premises and public places, industrial and commercial premises, motor vehicles, intruder alarm systems as well as specified noisy equipment. Noise from general construction works at night and on public holidays is controlled through a permit system which has essentially banned non-essential noisy construction works in built-up areas. All percussive piling works require a permit and are prohibited at night and on public holidays. Noisy diesel, steam and pneumatic piling

hammers have been phased out in built-up areas. Hand-held breakers and air compressors must comply with stringent noise emission standards and be fitted with noise emission labels. The management of bodies corporate is held personally liable for repeated noise offences.

Noise from domestic premises and public places is controlled by the police on a reasonableness approach, whereas noise from industrial or commercial premises is controlled by the EPD through noise abatement notices. To minimise traffic noise, newly registered vehicles including motor cycles are required to comply with stringent noise emission standards.

Enforcement of the above pollution control ordinances is undertaken by the EPD through investigation of pollution complaints, inspection and licensing of pollution sources, issuing pollution abatement notices and prosecution of offenders. The Regional Offices have proved to be very effective in tackling local pollution concerns and strengthening communication with the local communities on the government's environmental protection work. In parallel, the EPD also operates a Compliance Assistance Centre and develops partnership with the trade and industry to assist in law compliance and pollution prevention, promote corporate environmental management as well as raising environmental awareness of the general public.

Sewage and Waste Collection, Treatment and Disposal:

A sewage disposal strategy has been adopted by the Government and 16 sewerage master plans (SMPs) devised to cover the whole territory. Most of these SMPs have been reviewed in the light of the changing population projections and associated project developments proposed for the HKSAR.

The Harbour Area Treatment Scheme (HATS), which comprises a major deep tunnel collector system and treatment works, has been implemented by stages for handling sewage generated from all districts around Victoria Harbour Area. HATS Stage 1 was commissioned in late 2001 to collect sewage from the urban areas of Kowloon, Tsuen Wan, Kwai Tsing, Tseung Kwan O and the north-eastern part of Hong Kong Island and transport it through a network of deep tunnels to the Stonecutters Island Sewage Treatment Works (SCISTW) for treatment. HATS Stage 2A involves extending the deep tunnel system to convey the untreated sewage from the remaining parts of Hong Kong Island to the expanded SCISTW. With full commissioning of Stage 2A in December 2015, all sewage from both sides of Victoria Harbour has been intercepted and diverted to the SCISTW for centralised treatment and disinfection before discharge, resulting in further improvement in water quality. Meanwhile, to tackle residual discharge to the harbour, the government will commission in early 2016 a consultancy study on further enhancing the quality of coastal waters of Victoria Harbour.

The sewerage system is also being extended to serve more rural village areas. As of September 2015, a population of about 130 700 in the rural areas has been connected to public sewers.

The EPD is the waste disposal authority responsible for planning and development of waste treatment and disposal facilities.

In 2014, the three large modern landfills in the New Territories received and disposed of a daily total of about 9 780 tonnes of municipal solid waste including domestic, commercial, and industrial waste, in which 6 530 tonnes were containerized waste transported to the landfills in bulk from six refuse transfer stations in urban areas and seven refuse transfer facilities at outlying islands. Construction waste disposed of at landfills amounted to a further 3 940 tonnes per day.

The Chemical Waste Treatment Centre on Tsing Yi Island has treated more than one million tonnes of chemical waste since the plant commissioned in 1993. Moreover, it also incinerated more than 8 240 tonnes of clinical waste since its first reception of the waste in August 2011. A storage facility for low level radioactive waste on Siu A Chau was

commissioned in 2005. Livestock waste collected from local farms is delivered to landfills for disposal, while some horse stable waste is treated at the Ngau Tam Mei Animal Waste Composting Plant. A sewage sludge incineration facility at Tsang Tsui, Tuen Mun has commenced its operation since April 2015 with daily throughput reaching approximately 1 200 tonnes per day. The heat generated from the incineration process is converted to electricity for internal operation use while surplus electricity is exported to the public grid.

There are 13 closed landfills in Hong Kong; their restoration works have been completed and the sites are safe for beneficial use by the public. A soccer-cum-baseball pitch at Sai Tso Wan Landfill was opened in 2004. A BMX Park, built on Gin Drinkers Bay Landfill, was opened in 2009 and used as the venue for the BMX event of the 2009 East Asian Games. Two recreation parks developed on Jordan Valley Landfill and Ngau Chi Wan Landfill were opened to public in 2010. Part of the Ma Yau Tong Central and Ma Yau Tong West Landfills were developed into two sitting-out-areas and opened to public in 2011. At Tseung Kwan O Stage I Landfill, the cycle track cum pedestrian footpath along the waterfront was opened to the public in 2012 while the Pet Garden was opened to the public in 2013.

To expedite the development of gainful facilities at restored landfills, the Government launched the Restored Landfill Revitalisation Funding Scheme in November 2015 to fund eligible organisations for the development of recreational facilities or other innovative uses at the restored landfills.

Municipal Solid Waste Management: Hong Kong's daily per capita domestic waste generation rate is still high in comparison to other Asian cities with similar economic development, which puts tremendous pressure on the entire waste management strategy. The Environment Bureau published "Hong Kong: Blueprint for the Sustainable Use of Resources 2013-2022" (The Blueprint) in May 2013 which maps out a comprehensive strategy, targets, policies and action plans for waste management for the coming 10 years with a view to tackling the waste crisis in Hong Kong. The Government aims to reduce the per capita disposal rate of municipal solid waste (MSW) from 1.27 kg per day to 1 kg or less by 2017, and to 0.8 kg or less by 2022. To achieve this goal, the Blueprint proposes policies and actions in three areas, including to undertake multiple and concurrent actions to drive behavioural change to reduce waste at source through policies and legislation, such as MSW charging and producer responsibility schemes (PRSs); to roll out targeted territory-wide waste reduction campaigns, such as those on food waste reduction and glass beverage bottle recycling; and to allocate resources to enhance waste-related infrastructure, including organic waste treatment facilities, waste-to-energy integrated waste management facilities and landfill extensions.

Enshrining the principle of "polluter pays", PRS will create economic incentive for waste reduction, recovery and recycling. The Product Eco-responsibility Ordinance (Cap. 603) was enacted in July 2008 to provide the legal basis for introducing PRS in Hong Kong. An environmental levy on plastic shopping bags was implemented in some chain stores starting from July 2009 as the first PRS introduced under the Ordinance. It later became a mandatory charge applicable to all retailers from 1 April 2015. The EPD also introduced into the Legislative Council in 2015 the relevant legislative proposals for the mandatory PRSs on waste electrical and electronic equipment (WEEE) and glass beverage containers. On the other hand, the public consultation in 2012 revealed that there is majority support to introduce quantity-based MSW charging in Hong Kong to promote waste reduction.

After completing a public engagement exercise, the Council for Sustainable Development (SDC) submitted a report to the Government in December 2014 setting out its recommendations on how to implement quantity-based MSW charging in Hong Kong. The EPD is following up the SDC's recommendations and preparing related work for the implementation of MSW charging. Food waste is a major constituent of MSW in Hong Kong, the EPD officially launched a

Food Wise Hong Kong Campaign in May 2013 to raise public awareness and promote reduction in food waste.

The EPD also launched the "Food Wise Eateries" Scheme in November 2015 in encouraging eateries to offer food portioning options to their customers in order to reduce food waste.

For unavoidable and non-recyclable waste, the department proposes to develop a number of waste treatment facilities. It includes state-of-the-art multi-technology integrated waste management facilities with advanced incineration as the core treatment technology to substantially reduce the volume of such waste before final disposal and to recover energy from the waste. The EPD completed the environmental impact assessment study in 2011 for the integrated waste management facilities (IWMF) for Hong Kong and plans to commission the IWMF phase 1 to be built at an artificial island site near Shek Kwu Chau (SKC) in 2023. In parallel the department is planning the organic waste treatment facilities for the recycling of food waste. The first phase of the organic waste treatment facilities would be located at Siu Ho Wan, North Lantau and it is anticipated to be commissioned in 2017 for recycling source separated food waste to useful compost and biogas products. The second phase of the organic waste treatment facilities is planned to be developed at Sha Ling of the North District, and the engineering feasibility study for this development has been completed in 2015.

In the meantime, the EPD will carry out a full scale food waste/sewage sludge co-digestion pilot trial at Tai Po Sewage Treatment Works. The consultancy for the development of the pilot trial commenced in 2015.

The EPD is proceeding with work on the three landfill extension schemes for the final repository of waste that cannot be recycled or treated such as mixed construction waste and residues after treatment. In addition, the EPD has also commenced another detailed study to review the use and development direction of all waste disposal facilities in order to respond to the long-term waste disposal need in the territory.

Apart from the Government's efforts in waste management, local recycling operations are playing an important role. In 2014, 2.05 million tonnes of recyclable waste were recovered with an export value of \$5.5 billion. Under the steer of the Steering Committee to Promote the Sustainable Development of the Recycling Industry, the Government has formulated new supporting policies to upgrade the operational capabilities of the recycling industry. These include providing suitable infrastructure such as land sites and dedicated berths in Public Cargo Working Areas, training and development of the industry's workforce, encouraging research and investment in relevant technologies, and fostering community support for recycling and enhancing the collection network of recyclables.

The \$1 billion Recycling Fund was launched in October 2015 and is open for applications. The Recycling Fund promotes the recovery and recycling of waste into useful resources and products by facilitating the upgrading of operational capabilities and efficiency in the recycling industry to support its sustainable development.

Moreover, the EPD will continue to provide long-term land at affordable cost at the EcoPark in Tuen Mun for the recycling industry with a view to encouraging investment in more advanced technologies and value-added processes in Hong Kong. A total of 13 lots have been leased to the private recyclers and non-profit making organisations for recycling waste cooking oil, waste metals, waste wood, WEEE, waste plastics, waste batteries, waste construction materials/waste glass, waste rubber tyres and food waste.

Besides, the EPD launched a Clean Recycling Campaign in 2015 to promote waste source separation and cleaning of recyclables at the community level. To promote waste reduction and recycling, the Government has been taking the lead in adopting a green procurement policy, such as avoiding single-use disposable items and purchasing products with improved recyclability, higher recycled contents, less packaging and greater durability as far as practicable.

Environmental Monitoring and Investigations: The EPD has introduced environmental monitoring schemes and specific investigations to establish an objective basis for local action.

Water quality monitoring includes 82 routinely-sampled stations for inland waters, 94 for marine waters and 60 for bottom sediments. EPD monitors the water quality of 41 gazetted beaches closely during the bathing season and reports on the latest beach water quality weekly.

Air pollutant levels are measured continuously at 12 general and three roadside monitoring stations. EPD launched a health risk-based Air Quality Health Index (AQHI) on 30 December 2013. The new index informs the public of the short-term health risk of air pollution and helps them take precautionary measures to protect their health. Information of AQHI is released every hour via the internet, mobile app and telephone hotline.

Surveys of waste generation throughout Hong Kong have been conducted since 1981 to collect information needed for planning future waste disposal facilities.

Most major development projects are subject to environmental monitoring and audit. EPD oversees programmes to ensure that recommendations in the EIA are strictly implemented and appropriate mitigatory actions are promptly taken.

Regional and International Co-operation: To tackle regional environmental issues, Hong Kong has been co-operating with its Mainland and Macao partners through the Joint Working Group on Sustainable Development and Environmental Protection and the Joint Working Group on Cleaner Production between the HKSAR and Guangdong Province, and also the HK-Macao Environmental Protection Liaison Meeting accordingly.

The governments of Guangdong and Hong Kong signed an Environmental Co-operation Agreement in August 2009, including key co-operation areas in regional air and water quality; nature conservation and green business development etc.

Since November 2005, a Pearl River Delta (PRD) regional air quality monitoring network set up by the governments of Guangdong and Hong Kong has been reporting daily air quality information to the public. The monitoring results of the network from 2006 to 2014 show a substantial reduction in the major air pollutant concentrations in the region. To further improve regional air quality, the two governments in November 2012 endorsed the emission reduction targets/ranges for the PRD region up to 2020 and have been making efforts to achieve the emission reduction targets. The two governments have been implementing emission reduction measures and embarked on a mid-term review in 2015 to conclude the emission reduction results of the two places in 2015 and finalise the emission reduction targets for 2020.

In September 2014, Hong Kong, Guangdong and Macao signed a "Cooperation Agreement on Regional Air Pollution Control and Prevention among Hong Kong, Guangdong and Macao" (Agreement) to foster regional co-operation and enhanced the regional air quality monitoring network by additional monitoring stations. The enhanced network has been releasing real-time hourly concentration air pollutant levels since then. To bring continuous improvement to the regional air quality, the three sides commenced in November 2014 a joint study on regional PM_{2.5}, which will provide a robust scientific basis for mapping out further air quality improvement strategies.

The Government, in collaboration with the Guangdong authorities and the major industry associations in Hong Kong, launched a Cleaner Production Partnership Programme in April 2008, which provides technical support to Hong Kong-owned factories in Guangdong and Hong Kong to facilitate adoption of cleaner production technologies and practices. As

at end 2015, more than 2 500 funding applications were approved and some 410 awareness and technology promotion activities were organised with over 36 000 participants.

To enhance the efforts in promoting cleaner production, the two governments jointly launched the Hong Kong - Guangdong Cleaner Production Partners Recognition Scheme in August 2009 to give recognition to the efforts of Hong Kong-owned factories and commercial enterprises in pursuing cleaner production. As at end 2015, there were 247 enterprises holding valid commendations. The two governments also signed the Hong Kong-Guangdong Cooperation Agreement on Cleaner Production in November 2014.

Hong Kong and its neighbour Shenzhen, meanwhile, are jointly implementing action programmes to protect the water quality of the adjoining water bodies, including Deep Bay and Mirs Bay. The EPD and the Shenzhen government also entered into agreements to strengthen co-operation on environmental protection and promotion of cleaner production in December 2007 and November 2008 respectively.

The Stockholm Convention on Persistent Organic Pollutants (POPs) became effective to the HKSAR in November 2004. The HKSAR Implementation Plan (HKSARIP) is included in China's National Implementation Plan. The Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade became effective to the HKSAR in August 2008. The Hazardous Chemicals Control Ordinance, came into operation in April 2008 to regulate non-pesticide hazardous chemicals regulated under the Stockholm Convention and the Rotterdam Convention. Five new non-pesticide POPs have been added to the Ordinance for regulation starting from January 2015, in accordance with the latest amendments to the Stockholm Convention. The HKSARIP was updated in January 2016 to include the latest progress and strategy in implementing the Convention.

To address the climate change challenge, the HKSAR, as part of the People's Republic of China, under the United Nations Framework Convention on Climate Change and its Kyoto Protocol. The HKSAR has also joined the C40 Cities Climate Leadership Group (C40) to enhance co-operation with participating cities to combat climate change. Hong Kong is also a member of the C40 Steering Committee, which is responsible for setting the direction of work of the C40. Furthermore, the "Cooperation Agreement between Hong Kong and Guangdong on Combating Climate Change" was signed between the two governments in August 2011, and a Hong Kong-Guangdong Joint Liaison Group on Combating Climate Change has been set up to coordinate measures and activities on combating climate change and promote related scientific research and technology development in the two places.

In November 2015, the Government launched the "Hong Kong Climate Change Report 2015", which outlines the efforts of the Government and the private sector in responding to climate change. With the positive outcome of the Paris Climate Conference held in December 2015, Hong Kong is prepared to make greater efforts to combat climate change.

Hong Kong is moving along the "low carbon" pathway to become an economy based on low energy consumption and low pollution. A host of actions are being pursued to enhance energy efficiency, use clean fuels, and rely less on fossil fuels. Among these, a Carbon Footprint Repository for Listed Companies was launched in December 2014 to encourage private sector companies to embark on carbon reduction actions. By implementing various mitigation measures and promoting of low carbon initiatives, Hong Kong is aspiring to be one of the greenest cities in China.