

Chapter 18

Environment and Ecology

The government's environmental priorities include improving air quality, implementing a waste-to-resources and waste-to-energy management strategy, improving harbour water quality, promoting energy efficiency, and combating climate change. To enhance food safety, food security and environmental hygiene, it tackles hygiene black spots, updates food safety standards, maintains public markets, facilitates the supply of fresh produce, and promotes the sustainable development of local agricultural and fisheries industries.

The Environment and Ecology Bureau oversees policies on environmental protection, conservation of natural ecology, climate actions, environmental hygiene, food safety, agriculture and fisheries, and animal welfare. It is supported by the Environmental Protection Department (EPD), Hong Kong Observatory (HKO), Food and Environmental Hygiene Department (FEHD), and Agriculture, Fisheries and Conservation Department (AFCD) in executing these policies. The Government Laboratory provides analytical and advisory services to support the enforcement of environmental protection and food safety legislation, implementation of the EPD's environmental programmes and routine food surveillance by the FEHD's Centre for Food Safety.

Environmental Protection

Improving air quality and harbour water quality, managing municipal solid waste better through resources circulation and promoting energy efficiency are important for improving the quality of life.

Government spending on the environment in 2023-24 was budgeted at \$29 billion, or about 3.6 per cent of total public expenditure.

The bureau and the EPD work with the government-appointed Environmental Campaign Committee to encourage the public to contribute to a better environment through publicity campaigns and community programmes. With the theme of carbon neutrality, the 'kNow Carbon House', under the committee, aims to raise public awareness through interactive experiences and educational activities. Environmental resource and education centres provide the public with easy access to environmental information.

The government's Environment and Conservation Fund promotes behavioural changes and green lifestyle changes by providing funding to organisations undertaking educational, research and other projects on environmental protection and conservation.

The government's \$400-million Green Tech Fund provides funding support to research and development projects that help Hong Kong decarbonise and enhance environmental protection. Since its launch in 2020, 33 projects from local universities, public research institutes and private companies have been approved, involving total grants of about \$147 million.

Regulation and Environmental Auditing

The EPD works with the construction, catering, vehicle repair and property management sectors and other trades to promote environmentally friendly practices and compliance with environmental regulations. Its Customer Service Centre responds to enquiries from businesses on environmental compliance, pollution prevention and environmental management. Departmental inspectors conduct site visits to enforce controls on air, noise, waste and water pollution and deal with complaints about pollution, resulting in 417 convictions and \$2.38 million in fines in 2024.

Major development projects undergo environmental monitoring and auditing to validate assumptions made during the planning stage and to monitor the effectiveness of mitigation measures, so as to ensure the project meets the performance promised in its environmental

impact assessment. These projects are required under their environmental permits to publish the monitoring data and auditing results on dedicated websites or the Environmental Impact Assessment Ordinance website. In 2024, the department handled 111 environmental monitoring and auditing programmes.

Environmental Assessment and Planning

The EPD assesses and monitors the environmental impact from projects and proposals, and provides technical advice to various planning and land applications to ensure new planning proposals and development projects meet relevant environmental performance requirements, or bring improvements to the existing environment. In 2024, the department handled 47 applications and provided professional advice to 1,696 planning and land applications.

Following a review of the Environmental Impact Assessment Ordinance, which concluded in 2023, optimisation measures which include simplifying the technical assessment requirements, facilitating direct application for environmental permits, establishing the Hong Kong Environmental Database and updating the list of designated projects, have enhanced the efficiency of ordinance operations. The time required for overall Environmental Impact Assessment projects has been halved to approximately 15-24 months.

The Hong Kong Environmental Database integrates diverse environmental data and cutting-edge technologies, such as geographic information systems and 3D visualisation, for efficient environmental planning.

Sustainable Development

The bureau promotes sustainable development in the government and community. All government bureaus and departments are required to conduct sustainability assessments for the major new initiatives and present the implications in their submissions to the Policy Committee and Executive Council.

The Sustainable Development Fund provides grants for projects that enhance public awareness of sustainable development and encourage sustainable practices. Since 2003, 82 projects have been approved, involving grants totalling about \$85 million.

The government's Sustainable Development School Outreach Programme and Sustainable Development School Award Programme offer interactive dramas, seminars, workshops and field trips to secondary and primary school students and attendees of the Elder Academy. Schools are also encouraged to promote and implement the concept of sustainable development on campus and in the community. The latest programmes themed 'Food Waste Reduction and Recycling' have engaged about 190,000 participants.

Cross-boundary Cooperation

Hong Kong collaborates with Guangdong and Macao on environmental matters. The Hong Kong Special Administrative Region and Guangdong governments work together to improve regional air quality, combat regional ozone problems and forecast air quality.

The Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network comprises 23 air monitoring stations. Results have shown substantial reductions in most pollutants in recent years. From 2013 to 2023, the average annual concentrations of sulphur dioxide (SO₂), nitrogen dioxide (NO₂) and respirable suspended particulates (RSP) decreased by 65, 38 and 41 per cent respectively. The concentration of fine suspended particulates (FSP) has decreased by 34 per cent since the pollutant was first monitored in 2015. The ozone level had increased by 20 per cent over the past 10 years, indicating regional photochemical pollution must be reduced.

The Cleaner Production Partnership Programme helps Hong Kong-owned factories in Hong Kong and Guangdong adopt cleaner production technologies and practices to reduce air pollutant emissions, solid waste generation, effluent discharge and carbon dioxide emissions while saving energy and production costs. Since the programme began in 2008 to end-2024, more than 4,200 projects had been approved. It was announced in the 2024 Policy Address that \$100 million would be injected to launch a new round of the programme to expedite the green transformation and upgrading of Hong Kong-owned factories.

Hong Kong and Shenzhen work together to protect the quality of adjoining waters. Cooperation in marine pollution prevention and control has been strengthened through a mechanism to share data on marine and river water quality, discharge flow and effluent quality of sewage treatment plants, as well as evaluate land-based pollutants entering Deep Bay. Over the past two decades, the compliance rate with water quality objectives and long-term water quality of Deep Bay have shown significant improvement, while the water quality of Mirs Bay has remained consistently good and largely complied with all applicable objectives.

To protect the water quality of the Pearl River Estuary, alert systems operated by the Hong Kong-Guangdong Marine Environmental Management Special Panel and the Hong Kong-Shenzhen Task Force issue notifications in response to heavy rainfall, a potential surge of marine refuse or other environmental incidents, enabling government departments to react quickly. As at end-2024, it had been activated 56 times since its launch in 2017.

Physical Characteristics, Flora and Fauna

Topography, Geology and Landforms

Hong Kong's natural terrain is characterised by rugged uplands flanked by steep slopes. The highest point is Tai Mo Shan (957 metres above Principal Datum) in the central New Territories, and the lowest point (66 metres below Principal Datum) is in Lo Chau Mun (the Beaufort Channel) to the north of Po Toi Island. The mountains are predominantly formed of volcanic rocks, whereas the lower hills and low-lying areas are generally underlain by granite or sedimentary rocks. A layer of soft, weathered rock covers the bedrock in most places, slope debris mantles the natural hillsides, and alluvium fills many of the valleys. Offshore, the seabed is covered with marine mud, with sand sheets occurring near the coast and in channels.

Despite its small size, Hong Kong has a great variety of coastal landforms, including sea cliffs, sea caves, sea arches, geos, tombolos, wave-cut platforms, sea stacks, notches and blowholes.

Flora

Hong Kong, situated near the northern boundary of the distribution of tropical southeast Asian flora, has a rich flora with about 3,300 species of vascular plants, of which 2,100 are native to the city. The major types of vegetation cover comprise woodland, shrubland and grassland. Remnants of the original forest cover can still be found in steep ravines or behind traditional villages in rural areas. They have survived as a result of their location in precipitous topography and the moist micro-climate, or because they are protected for cultural reasons.

The government has made continual afforestation efforts with conservation measures. Besides greening and beautifying the countryside, woodlands are important habitats for wildlife and are essential to protect water catchments from soil erosion.

Fauna

Terrestrial

The climate and physical environment provide habitats and support for fauna that includes over 580 species of birds, 55 species of terrestrial mammals, 25 species of amphibians, 90 species of reptiles, 200 species of freshwater fish, 245 species of butterflies and 133 species of dragonflies.

Some species, such as the Bogadek's burrowing lizard, have been recorded only in Hong Kong. The territory is also home to a number of globally threatened species, such as the big-headed turtle, yellow-breasted bunting, short-legged toad, Chinese pangolin and Chinese tiger dragonfly.

The Mai Po Inner Deep Bay forms one of the most important wildlife conservation sites in Hong Kong. It is listed as a Wetland of International Importance under the Ramsar Convention. About 1,500 hectares of inter-tidal mudflats, fish ponds, tidal shrimp ponds, marshes, reed beds and mangroves provide a rich habitat for migratory and water birds. Around 440 species of birds have been observed in this area. About 50 species are considered globally threatened or near threatened, including the black-faced spoonbill, Baer's pochard, Nordmann's greenshank and spoon-billed sandpiper. The AFCD implements a wetland conservation and management plan to conserve the ecological value of the area.

Traditional *fung shui* woods near old villages and temples and secondary forests provide important habitats for many woodland birds. Warblers, flycatchers, robins, thrushes, bulbuls and tits are among the birds that have been sighted.

Areas around the Kowloon reservoirs are inhabited by monkeys descended from rhesus macaque and long-tailed macaque released there in the early 20th century. Some have migrated to the forested areas of Shing Mun Reservoir and Tai Po Kau. The feeding of monkeys and other wild animals is prohibited to make them forage for natural food in the countryside.

Other mammals that are common in the countryside include the red muntjac and East Asian porcupine, while the leopard cat, small-toothed ferret badger and small Indian civet are less commonly seen. Cave-dwelling bats such as the greater bent-winged bat and Chinese horseshoe bat are found in caves and water tunnels, while the short-nosed fruit bat roosts

under the Chinese fan palm. Sightings of rare species, such as the Eurasian otter and crab-eating mongoose, are reported occasionally.

The territory is home to 115 species of amphibians and reptiles, of which the Hong Kong cascade frog, Hong Kong newt, Romer's tree frog and Burmese python are protected under the Wild Animals Protection Ordinance. Most of the 53 species of snakes are non-venomous, and reports of people being bitten by highly venomous snakes are rare. Among the five species of sea turtles recorded in Hong Kong waters, only the green turtle is known to be breeding locally.

Marine

Hong Kong's subtropical marine environment supports species found in both tropical and temperate climates. Situated on the eastern bank of the Pearl River Estuary, Hong Kong receives fresh water from the river, especially in its western waters. The waters on the eastern side, on the other hand, are little influenced by the Pearl River outflow and are predominantly oceanic in nature. This unusual hydrography contributes to the high diversity of marine life.

Despite being close to the northern geographic limit for their growth, Hong Kong supports 84 species of hard corals. This diversity is quite rich by international standards. A variety of marine fish also breeds in local waters, with the red pargo typical in the eastern waters.

Two marine mammal species can be found throughout the year. The Indo-Pacific humpback dolphin, also known as the Chinese white dolphin, prefers an estuarine environment and inhabits the western waters, while the Indo-Pacific finless porpoise lives in the eastern and southern parts, where the waters are predominantly oceanic.

The government's Marine Parks programme is important for protecting and conserving sites of special ecological and conservation value. In addition, resources enhancement measures such as deploying artificial reefs and conducting restocking at suitable waters improve inshore marine and fisheries resources, as well as biodiversity.

Conservation and Biodiversity

The Director of Agriculture, Fisheries and Conservation, chairing the Country and Marine Parks Authority, oversees the conservation of terrestrial and marine ecological resources and the enforcement of legislation on nature conservation issues.

United Nations Convention on Biological Diversity

The United Nations Convention on Biological Diversity, which covers Hong Kong, aims to conserve biodiversity, ensure the sustainable use of its components, and ensure the fair and equitable sharing of benefits deriving from the use of genetic resources.

The Cartagena Protocol on Biosafety, adopted under the convention, seeks to ensure the safe transfer, handling and use of genetically modified organisms that may affect biodiversity adversely. Hong Kong implements the protocol through the Genetically Modified Organisms (Control of Release) Ordinance.

The government is updating Hong Kong's Biodiversity Strategy and Action Plan taking into account the Kunming-Montreal Global Biodiversity Framework, endorsed at the 15th meeting of the Conference of the Parties to the convention in 2022.

Protected Areas

The AFCD manages country parks, special areas including Hong Kong Wetland Park, marine parks, the marine reserve and Hong Kong Unesco Global Geopark.

About 40 per cent of Hong Kong's total land area is designated as country parks and special areas for conservation and recreation. There are 25 country parks and 22 special areas covering 44,842 hectares of scenic hills, woodlands, reservoirs, islands, indented coastlines, marshes and uplands. They are carefully protected and managed for nature conservation, education and scientific studies.

There are eight marine parks covering about 8,500 hectares of scenic coastal waters, seascapes and important biological habitats. The marine reserve is about 20 hectares, dedicated to conservation, education and scientific studies.

Besides designating protected areas, the government identifies and conserves sites of special scientific interest (SSSI), by exercising strict land use planning and development controls. Sixty-seven sites are listed on the SSSI Register.

Hong Kong Wetland Park

The 61-hectare Hong Kong Wetland Park stretches from the northern part of Tin Shui Wai to the southern tip of the Mai Po Inner Deep Bay Ramsar Site. It is a special area designated under the Country Parks Ordinance. The park promotes wetland conservation, education and nature-based tourism, and gives visitors the opportunity to appreciate wetlands and local wildlife in an open and natural setting.

Hong Kong Unesco Global Geopark

The Hong Kong Unesco Global Geopark extends from Sai Kung to the northeastern New Territories. The spectacular hexagonal volcanic rock columns in the Sai Kung region are rarely found elsewhere in the world in terms of size and composition. The rock formation was selected as one of the first 100 International Union of Geological Sciences Geological Heritage Sites. There are also sedimentary rocks in the northeastern New Territories region that are 400 million years old and of great geological and educational interest.

Countryside Conservation

The Countryside Conservation Funding Scheme provides funding to non-profit-making organisations for implementing conservation and revitalisation projects in countryside areas. Since its launch in 2019, the scheme has approved 50 projects with total funding of about \$274 million.

To support eco-tourism, better serve visitors and help revitalise desolate villages, the Countryside Conservation Office works with relevant bureaus and departments to streamline

licence applications for guesthouses and food businesses in countryside areas, taking into account their specific circumstances and constraints.

The Lai Chi Wo Eco-smart Public Toilet, completed in 2023, is the first green building in Hong Kong to satisfy the Advancing Net Zero carbon emission standards defined by the World Green Building Council.

Climate

Hong Kong has a subtropical climate. January and February are cloudier with cold spells, while March and April are milder and humid with fog. From May to August, it is hot and humid with occasional heavy rain and thunderstorms. Tropical cyclones usually occur between June and October, bringing high winds, heavy rain and sometimes storm surges. November and December are generally fine and dry with pleasantly cool weather, and may on occasion be relatively cold at night and in the early morning.

The Year's Weather

It was the warmest year in Hong Kong since records began in 1884, with an annual mean temperature of 24.8 degrees Celsius, 1.3 degrees above average. The autumn mean temperature of 26.5 degrees for September to November was also the warmest on record. The total annual rainfall of 2,309.7 mm was about 5 per cent below average.

Seven tropical cyclones affected Hong Kong in 2024. Tropical cyclones Yagi and Toraji required the issuance of No 8 Gale or Storm Signal by the Hong Kong Observatory. The successive tropical cyclones Yinxing, Toraji and Man-yi required three tropical cyclone warning signals to be issued in November – the first time since 1946.

Climate Change

Carbon Neutrality

Hong Kong's Climate Action Plan 2050 sets out four major strategies and targets – net-zero electricity generation, energy saving and green buildings, green transport and waste reduction – to reduce carbon emissions by half before 2035 compared with the 2005 level, and to achieve carbon neutrality before 2050.

The Office of Climate Change and Carbon Neutrality coordinates the implementation of decarbonisation strategies, while the Council for Carbon Neutrality and Sustainable Development advises the government on decarbonisation strategies and promotes deep decarbonisation in different sectors of the community.

Meteorological and Geophysical Services

Weather Forecasting and Information Services

The Hong Kong Observatory provides weather forecasts, warnings and information through a variety of channels, including the media, social media, its website, mobile application MyObservatory, Dr Tin chatbot service – which had a voice function added in 2024 – and the

Dial-a-Weather telephone service. It also produces regular weather television programmes and an educational series, *Cool Met Stuff*.

The new Tai Mo Shan weather radar commenced operation in March to provide essential observation data for monitoring inclement weather including thunderstorms, rainstorms and tropical cyclones. The reconstruction of Tai Po Kau Tide Gauge Station was also completed and commenced operation in September to monitor the tide levels in Tolo Harbour.

To cope with more extreme weather, the Observatory strengthened its warning services in 2024, including push notifications on MyObservatory about when a Tropical Cyclone Warning Signal No 9 might be issued, and introducing 'Exceptionally Severe Rainstorm' weather tips.

A new Special Landslip Advisory was also issued jointly with the Geotechnical Engineering Office and the notification messages related to Tropical Cyclone Warning Signals No 9 and No 10 on MyObservatory were displayed in a more eye-catching manner. The Earth Weather function on the website and app was also enhanced with more forecasts using artificial intelligence prediction models.

The Observatory also offers professional advice to government departments and other sectors. For instance, it provides aviation weather services to the airport and the Hong Kong Flight Information Region; offers flight crew the latest inflight weather information through its mobile application MyFlightWx; and issues forecasts of wind, weather, waves and swells for the marine community and container terminals.

In 2024, the Observatory completed the installation of relevant meteorological facilities to support the commissioning of the airport's Three-runway System at the end of November.

As the Backup Centre of the Asian Aviation Meteorological Centre, the Observatory takes over from the main centre in Beijing for one week every quarter to issue hazardous weather forecasts and warnings to aviation users in the Asian region.

Climate Services and Studies

The Observatory provides government departments and those involved in disaster prevention and risk reduction with climatological information and predictions. It researches past trends and projections of temperature, rainfall, sea level and extreme weather in Hong Kong and provides the latest climate change information and scientific input to support initiatives to combat climate change. The Observatory also enhanced its climate prediction services by launching a monthly forecast in December.

Radiation Monitoring and Assessment

The Observatory monitors ambient radiation levels and measures the amount of radioactivity in environmental samples. It enhances its monitoring and assessment capabilities through collaboration with Mainland and international counterparts. In the unlikely event of a nuclear incident, the Observatory would step up radiation monitoring, provide decision makers with assessments of radiological consequences and advice on actions to take, and provide information on radiation levels and developments to the public.

Geophysical Services

The Observatory monitors earthquakes and tsunamis in the vicinity of Hong Kong and around the world. In 2024, the Observatory recorded four locally felt earth tremors and a new network of earthquake intensity meters was set up and being optimised in collaboration with the Guangdong Earthquake Agency.

The Backup South China Sea Tsunami Advisory Centre (Hong Kong), designated by the National Marine Environmental Forecasting Centre, conducted scheduled activation for two weeks in December to provide tsunami advisory service to nine countries around the South China Sea.

Time Services

As Hong Kong's official timekeeper, the Observatory maintains a time standard accurate to within one-hundred-millionth of a second per day and contributes to the determination of Coordinated Universal Time by the International Bureau of Weights and Measures. The public can check the time through the Observatory's online time service, web clock, Dial-a-Weather and radio stations. The Observatory's internet time service recorded about 152 billion visits in 2024.

Cooperation with Other Meteorological Services

In 2024, the Observatory participated in the third session of the Commission for Observation, Infrastructure and Information Systems and the third session of the Commission for Weather, Climate, Hydrological, Marine and Related Environmental Services and Applications under the World Meteorological Organization (WMO) to discuss the direction and the strategy of meteorological work worldwide and provide advice on relevant technical documents.

The Observatory, as members of the Chinese delegation, attended the 29th Conference of the Parties to the United Nations Framework Convention on Climate Change. During the conference, the Environment and Ecology Bureau and Observatory organised a side event titled 'Climate Action: From Climate Science to New Energy Development Opportunities' at the China Pavilion, sharing insights on climate science and action and exploring opportunities including the development of new energy.

During the year, the Observatory updated its memorandum of understanding with the WMO and the Solomon Islands Meteorological Service, and signed an agreement with the Fiji Meteorological Service to enhance collaboration. The Observatory also coordinated the establishment of the Meteorological Training Centre for Belt and Road Countries which provides training for meteorological personnel over the Belt and Road Initiative regions, enhancing their capabilities to respond to hazardous and extreme weather. The first training workshop was held in December with the theme of aviation meteorological science and service development.

Public Education and Engagement

The Observatory held open days in March and November, showcasing its various services and giving an overview of the collaboration with Mainland and global meteorological authorities.

The Observatory promotes awareness of climate change and its impact through school talks, online quizzes, educational videos and publishing articles and the latest international research findings on its website. In 2024, the Observatory participated in Eco Expo Asia, and organised activities through the Science in the Public Service campaign, Community Weather Observing Scheme, Community Weather Information Network and Gamma-Go, which included scientific talks and guided tours of the Observatory's facilities.

Energy

The government's energy policy is to provide a reliable supply of energy at reasonable prices and promote its economical and safe use, while minimising the environmental impact of its production and usage.

Electricity

The Hongkong Electric Company Limited (HK Electric) supplies electricity to Hong Kong Island and the neighbouring islands of Ap Lei Chau and Lamma. CLP Power Hong Kong Limited (CLP Power) supplies Kowloon and the New Territories, including Lantau and several other outlying islands. The electricity supply to consumers is 50 hertz alternating current, while the voltage is 220 volts single-phase and 380 volts three-phase.

Both power companies are investor-owned and regulated by the Scheme of Control Agreements as agreed with the government. The companies are required to seek the government's approval for certain aspects of their development plans, including projected basic tariff levels, to ensure the continued supply of reliable, safe and efficient electricity at reasonable prices. These agreements do not give the companies any exclusive rights or franchises to supply electricity, nor do they define supply areas for either company, nor exclude newcomers to the market. The companies receive a return on their average net fixed assets at the permitted rate of return specified in the agreements.

HK Electric has a total installed capacity of 3,082 megawatts at its Lamma Power Station. CLP Power receives its electricity supply from the Castle Peak Power Company Limited's power stations at Black Point (3,850MW), Castle Peak (3,058MW), Penny's Bay (300MW) and West New Territories Landfill (14MW).

Each company owns its respective transmission and distribution systems. The two transmission systems are connected by a cross-harbour link, which provides emergency backup and some sharing of generating capacity reserves. The link has an installed capacity of 720 megavoltamperes.

CLP Power's transmission system is also connected to the Guangdong electricity network which allows electricity exports and imports to and from the province. The company imports about 70 per cent of the power generated by the Daya Bay nuclear power station, which has two 984MW pressurised water reactors. In addition, it will import another 10 per cent of Daya Bay's electricity until 2028.

CLP Power also has the right to use up to half of the 1,200MW capacity of the Guangzhou Pumped Storage Power Station phase 1 at Conghua. It stores off-peak electricity from Castle

Peak Power's stations and the Daya Bay station in the Conghua plant, which generates hydroelectricity to meet Hong Kong's demand during peak periods.

Electricity generation is the largest contributor to carbon emissions in Hong Kong. Coal currently makes up about one-fifth of Hong Kong's fuel mix for electricity generation, down from about half in 2015. Under Hong Kong's Climate Action Plan 2050, the government has pledged to cease using coal for daily electricity generation by 2035 and the target is to achieve net-zero electricity generation.

Other Fuels

Town gas and liquefied petroleum gas (LPG) are the main types of fuel gas used for domestic, commercial and industrial purposes. Hong Kong has 2.3 million gas customers in the domestic, commercial and industrial sectors, and town gas and LPG respectively accounted for 89 and 11 per cent of the total fuel gas sold in these sectors in terms of heating values in 2024.

Town gas is manufactured at plants in Tai Po and Ma Tau Kok, which have daily throughput capacities of about 10 million and 2.6 million cubic metres respectively. It is channelled to customers via a pipe network of about 3,700km.

LPG is imported into Hong Kong mainly by sea and stored at five terminals in Tsing Yi before being distributed to customers, including 70 auto-LPG filling stations.

CLP Power and HK Electric import natural gas from the Mainland through submarine pipelines to Black Point Power Station and Lamma Power Station respectively for power generation.

Meanwhile, to provide a long-term alternative gas supply source and enhance the security of gas supply, the power companies jointly maintain an offshore LNG terminal to the east of the Soko Islands. The terminal can receive, store and regasify LNG before it is piped to Black Point Power Station and Lamma Power Station.

Natural gas is also sent to the Tai Po gas production plant, and onward from Tai Po to the Ma Tau Kok plant via underground pipelines, for the production of town gas.

Renewable Energy

As pledged in the climate action plan, the government will drive the development of renewable energy, seeking to increase its share in the fuel mix for electricity generation through facilitating local renewable energy projects, regional cooperation and joint ventures. The government also strives to increase the share of zero-carbon energy in the fuel mix for electricity generation to about 60 to 70 per cent before 2035.

For the public sector, the government has been developing renewable energy while requiring new government buildings to apply renewable energy technologies.

To assess the feasibility of utilising solar energy at restored landfills, a medium-scale pilot solar photovoltaic system with an energy-generating capacity of 150kW at Jordan Valley Landfill was

commissioned in 2023, while another pilot solar farm project with a capacity of 1MW is being implemented at the South East New Territories Landfill in Tseung Kwan O.

Alongside O • Park1 (Organic Resources Recovery Centre) – located in Siu Ho Wan, Lantau Island and operating since 2018 – O • Park2 in Sha Ling, North District commenced operation in March. Adopting biological treatment technology, O • Park1 and O • Park2 convert food waste into electricity and compost products and can respectively process about 200 tonnes and 300 tonnes of food waste per day. In addition to powering their own facilities, the parks can export up to 38 million kWh of surplus electricity to the grid every year, equivalent to the electricity consumption of about 8,000 households. The compost products can be used for agriculture and landscaping purposes. T • Park (Sludge Treatment Facility) in Tuen Mun also generates electricity.

Apart from large-scale renewable energy systems, the government has earmarked \$3 billion to install small-scale systems on government premises since 2017-18, with more than \$2.2 billion approved for about 260 projects which can generate about 26 million kWh of electricity per annum. In 2024, the Electrical and Mechanical Services Department launched the Pilot Scheme on Building-Integrated Photovoltaics at its headquarters to explore the application of the technology on building facades.

As for the private sector, the Feed-in Tariff scheme provides financial incentives for the installation of private renewable energy systems. Between 2018 and 2024, the two power companies approved over 26,000 applications. Systems already approved could generate nearly 420 million kWh of electricity each year.

More than 700 sets of 10-kilowatt solar energy generation systems have been installed at nearly 500 eligible non-government and non-profit-making schools and non-governmental welfare organisations under the government's support scheme, Solar Harvest. Upon conclusion of this support scheme in March, about half of the non-government and non-profit-making schools in the city had been installed with solar energy generation systems.

The government promulgated amendments to the Code of Practice for Fire Safety in Buildings in September to tie in with national and international non-combustibility requirements and standards for building-integrated photovoltaic systems, encouraging the private sector to initiate these projects.

Other measures to assist the development of renewable energy by the private sector include facilitating the installation of solar energy generation systems in open car parks, relaxing the requirements for the installation of solar energy generation systems on the rooftops of New Territories Exempted Houses and providing exemption from the requirements to apply for business registration and pay profits tax in respect of participation in and the payments received under the Feed-in Tariff scheme.

Both power companies use renewable energy. HK Electric operates an 800kW wind turbine on Lamma and a 1.4MW thin film solar energy generation system at Lamma Power Station, while CLP Power runs a 200kW renewable energy generation system of solar panels and wind

turbines on Town Island in Sai Kung and a 14MW landfill gas power generation system at the West New Territories Landfill.

Energy Saving

Energy consumption is closely related to greenhouse gas emissions. Improving energy efficiency helps combat global climate change. End-users consumed 268,897 terajoules in 2022, with the commercial, transport, residential and industrial sectors taking up 44, 28, 24 and 4 per cent respectively.

The Electrical and Mechanical Services Department promotes the efficient use of energy through public education. The Mandatory Energy Efficiency Labelling Scheme requires prescribed products to bear labels informing consumers of the products' energy efficiency performance. The scheme, now in its fourth phase, regulates 11 types of household electrical and gas appliances covering about 80 per cent of energy consumption in the residential sector.

The E&M InnoPortal promotes energy-related innovation and technology. It lists the service needs of various government departments, public organisations and the trade. Universities and start-ups can propose solutions to meet these needs. At end-2024, the portal had collected more than 530 service needs and over 1,390 suggested solutions. More than 220 field trials have started, including 47 items related to energy efficiency and renewable energy.

District cooling systems can save electricity by up to 35 per cent compared with traditional central air-conditioning systems in individual buildings. The government has completed the district cooling systems in the Kai Tak Development, which provides chilled water to non-domestic developments in the area – such as the Kai Tak Cruise Terminal, Trade and Industry Tower, Hong Kong Children's Hospital, schools and shopping centres – for air-conditioning. The government is also commissioning district cooling systems at Tung Chung New Town Extension (East) and Kwu Tung North New Development Area.

Energy-efficient Buildings

As buildings account for about 90 per cent of the electricity consumed, the efficient use of energy is essential for reducing carbon emissions. The Building Energy Code stipulates the minimum energy efficiency standards for four major types of building services installations, namely air conditioning, electrical installations, lifts and escalators, and lighting installations. Commercial buildings must also conduct energy audits at least once every 10 years in accordance with the Energy Audit Code. The codes are reviewed every three years and the latest editions were gazetted at end-2024, improving the energy efficiency standards by more than 20 per cent compared with 2015.

The government aims to improve the overall energy performance in government buildings and infrastructure by more than 6 per cent¹ by 2024-25.

¹ The government met its earlier target of reducing consumption in 2018-19, with a final saving of 7.8 per cent. This will be the baseline for the further reductions.

For private buildings, the capital cost of buying renewable-energy installations and building energy-efficient installations is tax deductible.

Retro-commissioning is a cost-effective and useful means of saving energy in existing buildings. The Electrical and Mechanical Services Department organises seminars to help building owners and relevant trades carry out retro-commissioning. Since 2019, \$215 million has been earmarked to retro-commission government buildings and about 280 had participated as at end-2024. Furthermore, under the current Scheme of Control Agreements, the power companies have set up their own energy efficiency fund to support the retrofitting and retro-commissioning of private buildings.

Pollution Prevention

Air Pollution

The government has been implementing measures to reduce air pollutant emissions from local electricity generation, vehicles and vessels. Between 2010 and 2022, emissions of SO₂, nitrogen oxides, RSP, FSP, carbon monoxide and volatile organic compounds dropped by between 34 and 88 per cent.

In 2022, new air quality objectives (AQOs) set tightened standards for SO₂ and FSP and, by 2023, most major air pollutants complied with these objectives. The government reviewed the AQOs again in late 2023 and introduced an amendment bill in November 2024 to tighten the five existing AQOs and set three new parameters introduced in the Global Air Quality Guidelines of the World Health Organization.

From 2013 to 2024, ambient concentrations of RSP, FSP, NO₂ and SO₂ dropped 49, 52, 41 and 77 per cent respectively, while roadside concentrations of the same fell 46, 46, 46 and 73 per cent respectively.

Land Transport

The Hong Kong Roadmap on Popularisation of EVs sets out long-term policy objectives and plans on the use of electric vehicles (EVs) and their associated supporting facilities, with the goal of achieving zero vehicular emissions and facilitating the attainment of carbon neutrality before 2050. The key measures include ceasing new registration of fuel-propelled and hybrid private cars by 2035, promoting trials for electric public transport and commercial vehicles, as well as expanding the EV charging network. The government also announced the Green Transformation Roadmap of Public Buses and Taxis in December to promote the electrification of public transport.

By end-2024, the number of EVs, including government and special-purpose vehicles, was about 110,000 – about a 40 per cent increase on 2023 – while about 10,400 public chargers were available, including approximately 1,750 quick and 6,500 medium chargers. To support the wider use of EVs, the EV-charging at Home Subsidy Scheme promotes the installation of charging infrastructure in car parks of existing private residential buildings, covering some 140,000 parking spaces. The government also encourages the installation of such infrastructure

in parking spaces of newly built private buildings through the provision of gross floor area concessions.

The trial and application of green commercial transport technologies is subsidised under the New Energy Transport Fund. Around 300 trials have been approved since the fund's inception, with subsidies totalling about \$243 million. It also launched the Funding Scheme to Trial of Hydrogen Fuel Cell Heavy Vehicles, which opened for applications in December.

The government also implements vehicle emission control measures. Nearly all taxis and about 80 per cent of public light buses run on LPG. Further to the phasing out of about 80,000 pre-Euro IV diesel commercial vehicles, an incentive-and-regulatory programme has been implemented to phase out some 40,000 Euro IV diesel commercial vehicles by 2027. About 27,700 Euro IV diesel commercial vehicles had been retired under the programme as at end-2024.

Controls are in place to curb excessive smoke from diesel vehicles and excessive emissions from petrol and LPG vehicles due to poor maintenance. In 2024, 627 diesel vehicles with excessive smoke were reported and 2,739 petrol and LPG vehicles with excessive emissions were identified by roadside remote sensors. Such vehicles must pass a chassis dynamometer emission test within 12 days to prove the problem has been rectified.

To promote mass transit systems that are pollution-free at the street level, the government gives priority to rail over road and encourages innovation.

Marine Transport

Marine vessels are a major air pollutant emission source. The government caps the sulphur content in locally supplied marine light diesel at 0.05 per cent. All vessels in Hong Kong waters are required to use compliant fuel, such as fuel with sulphur content not exceeding 0.5 per cent and LNG.

During the year, the government launched a pilot scheme to trial electric ferries operating routes across Victoria Harbour. The trial of the first ferry began in December.

Power Generation

The government tightens statutory emission caps on the power sector progressively and encourages the power companies to further develop and utilise more zero-carbon energy to reduce air pollutant and emissions.

Indoor Air Quality

The government's voluntary Indoor Air Quality Certification Scheme for Offices and Public Places encourages property owners and management companies to enhance indoor air quality at their premises.

Ozone Layer Protection

The Montreal Protocol for controlling substances that deplete the ozone layer applies to Hong Kong. The Ozone Layer Protection Ordinance prohibits the manufacture of these

substances and their import for local consumption. The import of hydrochlorofluorocarbons for local consumption has been banned since 2020, with only a small amount permitted to service refrigeration and air-conditioning equipment until 2029. The government introduced a bill in December to amend the ordinance, so as to implement relevant requirements of the Kigali Amendment to the Montreal Protocol, phasing down the production and consumption of hydrofluorocarbons to combat climate change.

Non-road Mobile Machinery

Non-road mobile machinery newly supplied for use in Hong Kong is required to meet statutory emission requirements, namely the Euro Stage IIIA emission standard for machines such as crawler cranes, air compressors and excavators. The statutory emission standards for newly approved non-road vehicles have been tightened in phases since 2019 to Euro VI, which is in line with the emission standards for newly registered road vehicles. All machinery to be used in specified activities or locations, such as Hong Kong International Airport, container terminals and construction sites, must bear EPD-issued labels.

Noise Pollution

In 2023 and 2024, the government completed two separate public consultations for proposals to control the use of loudspeakers on the street and domestic renovation noise. The government is now reviewing and enhancing measures to more effectively tackle these noise sources.

Construction Noise

The department controls noise from general construction works between 7pm and 7am and at all times on public holidays through construction noise permits. These permits restrict the use of equipment and the conduct of noisy manual activities in built-up areas. Percussive piling is prohibited at night and on public holidays, and requires a permit during the day on non-public holidays. The use of noisy diesel, steam and pneumatic piling hammers is generally banned, while hand-held percussive breakers and air compressors used in construction must meet noise standards and be issued with noise emission labels. In 2023, newly developed populated built-up areas were included as designated areas, and in 2024, the noise emission standards for air compressors and hand-held percussive breakers were tightened by 2 to 3 decibels, thus improving the local noise environment. Apart from these legal controls, the department also promotes quieter construction equipment and techniques to the construction industry.

Quiet Renovation

The EPD's Quiet Renovation Pilot Scheme provides administrative and technical support through property management companies to help them formulate quiet renovation house rules and provide free rental of quiet renovation equipment to renovation companies or qualified workers. As of end-2024, the scheme had been introduced to more than 3,000 trade practitioners.

Road Traffic Noise

To mitigate the impact of traffic noise on residents, proponents of development projects are required to assess traffic noise impact when planning new roads and residential developments,

provide direct mitigation measures such as noise barriers and low-noise road surfacing for new roads, and adopt innovative noise mitigation designs such as acoustic balconies and windows. To promote the use of new energy vehicles, starting in 2024, all newly registered new energy vehicles (including battery electric vehicles and hydrogen fuel cell vehicles, which do not have internal combustion engines or exhaust emission systems) are exempt from noise emission requirements. All other newly registered vehicles must comply with internationally recognised noise standards. As regards existing roads, the government installs noise barriers and lays low-noise road surfacing materials, with 142 road sections enhanced through these efforts as at end-2024. About 190 new residential development projects, involving 60,000 units, had adopted innovative noise mitigation designs by the end of the year.

Noise from Industrial or Commercial Activities

The EPD serves noise abatement notices requiring the owners or occupants of premises causing excessive noise from industrial or commercial activities to tone down within a given period.

Railway Noise

In planning new railway projects, MTR Corporation Limited must comply with a statutory environmental impact assessment. The department will request the company to make improvements if noise emitted from existing railways exceeds the relevant standards.

Aircraft Noise

The Hong Kong Planning Standards and Guidelines restricts new residential developments from being built in areas with aircraft noise levels exceeding the planning standard. The impact of aircraft noise on residents in the vicinity of flight paths at the airport should also be within the planning standards.

Waste Management

Waste Statistics

Over the past five years, the municipal solid waste dumped at landfills has decreased by 2.8 per cent, while the mid-year population has grown by 0.6 per cent. In 2024, the amount of municipal solid waste dumped at landfills dropped to 3.85 million tonnes from 3.97 million tonnes in 2023, and the daily per capita disposal rate also dropped to 1.4 kilograms from 1.44kg. About 60 per cent of the municipal solid waste dumped at landfills was domestic waste, and the remainder was commercial and industrial waste. Food waste accounted for about 30 per cent of the total municipal solid waste.

Waste Reduction

The Waste Blueprint for Hong Kong 2035 outlines the strategies, goals and measures for waste management up to 2035, so as to move away from the reliance on landfills for direct waste disposal by reducing the per capita disposal rate, raising the recovery rate, and developing adequate waste-to-energy facilities. The government has promoted six major areas of action: waste reduction, waste separation, resources circulation, industry support, innovation and cooperation, and education and publicity.

Various producer responsibility schemes have been introduced to reduce waste at source and facilitate the development of a circular economy. Such schemes include the Plastic Shopping Bag Charging Scheme, a scheme for waste electrical and electronic equipment (WEEE), and another for glass beverage containers. In 2024, more than 22,000 tonnes of regulated WEEE and around 23,000 tonnes of waste glass containers were collected and treated. The government will establish a common legislative framework for producer responsibility schemes with a view to progressively extending the schemes to more products in the light of the prevailing circumstances.

New legislation for the regulation of disposable plastic tableware and other plastic products came into effect on 22 April, and the six-month adaptation period concluded on 21 October.

Waste Recycling

The government supports the recycling industry and educates the public to reduce and separate waste at source, so as to improve the quality of the recyclables collected and streamline the treatment process.

The Programme on Source Separation of Waste covers about 2,800 housing estates and buildings and 1,400 commercial buildings, enabling citizens to deposit paper, plastic and metal in recycling bins close to their homes and workplaces.

The Green@Community recycling network collects nine common types of recyclables. It consists of 12 recycling stations that provide both recycling and education services, 82 recycling stores that provide recycling support specifically to single-block buildings and public rental housing estates, and over 350 recycling spots that operate on a regular schedule at fixed locations. There are also 100 sets of smart recycling bins across the territory providing recycling services to the public. Green Outreach, under the EPD, provides on-site assistance and support, as well as organising educational activities, to promote waste reduction and recycling to property management companies and residents.

A pilot scheme on waste plastics collection and recycling was implemented in nine districts, covering about half of the population with a total recycling quantity exceeding 7,000 tonnes in 2024. Upon the conclusion of the scheme in January 2025, the related services will be provided by the Green@Community recycling network.

Food waste collection services cover the whole territory, mainly providing point-to-point collection services for public and private premises with larger quantities of food waste. There are currently about 1,470 food waste collection points, covering food processing factories, wet markets, cooked food centres, hospitals, government facilities, tertiary institutions, hotels, shopping malls, restaurants and residential estates.

For domestic food waste recycling, smart food waste recycling bins had been installed in over 200 public rental housing estates by end-June and more will be installed in estates where the use of such bins is high.

The government has also been subsidising the installation of smart food waste recycling bins in private residential buildings. As at end-December, the number of bins or food waste collection facilities in residential premises across the territory had increased to around 1,250.

In addition, the EPD has set up about 200 food waste recycling points at public refuse collection points, public markets, recycling stations under Green@Community, outlying islands transfer facilities and food waste recycling spots – in the form of kerbside booths with fixed locations and time schedule – to facilitate the public and restaurants in participating in food waste recycling. As at end-2024, the average daily quantity of food waste collected is about 310 tonnes.

The Waste Reduction and Recycling Charter was launched in June to encourage property management companies, owners' corporations and residents' organisations of private residential premises to pledge to set up waste separation and recycling facilities accessible to residents and pass the collected recyclables to recyclers for proper processing to improve the management of recyclables. As at end-December, about 700 private residential premises had joined the charter, covering about 580,000 households.

Between 2019 and 2023, an average of 78 per cent of solid waste, including municipal solid waste and construction waste, was recovered each year, amounting to an annual average of 19 million tonnes. Among the municipal solid waste, the annual average recovery rates of paper, metal and plastics were 39, 91 and 11 per cent respectively.

EcoPark

Though gradually declining, an annual average of about 80 per cent of recyclable municipal solid waste has been delivered outside Hong Kong for recycling over the past five years, with plastics, paper and metals contributing 90 per cent of the recovered waste. The 20-hectare EcoPark in Tuen Mun promotes development of the recycling industry by providing long-term land at affordable rents to encourage investment in advanced technologies and value-added recycling processes. Private recyclers in EcoPark recycle waste including cooking oil, metals, wood, WEEE, plastics, construction materials, glass, rubber tyres, lead-acid batteries, EV batteries and paper.

Recycling Fund

The \$2 billion Recycling Fund supports the recycling industry to enhance operational capabilities and efficiency, and the application of technology. As of end-2024, about \$810 million had been approved.

Waste Treatment and Disposal

Refuse Transfer Stations

Municipal solid waste is mainly collected by refuse collection vehicles and delivered to refuse transfer stations for compression, then packed into specially designed containers and taken to strategic landfills by sea or land. In 2024, the network handled 3.14 million tonnes of such waste, which translates to 82 per cent of Hong Kong's total.

Landfills

There are three strategic landfills, which serve as the final disposal sites for most of the city's solid waste. The design and operation of these landfills adopt different measures to reduce the impact on the environment. With the South East New Territories Landfill Extension accepting only construction waste, all municipal solid waste is disposed of at the North East New Territories Landfill and West New Territories Landfill, both of which need to be extended to ensure an uninterrupted disposal service. Site formation and construction work is under way at the extensions of both landfills.

Hong Kong has 13 restored landfills and the government promotes their development into recreational or nature conservation facilities.

Planned Infrastructure

To reduce reliance on landfills for municipal solid waste disposal by around 2035, the government will develop a network of advanced modern waste-to-energy incinerators. The first such incinerator, I • Park1, on an artificial island near Shek Kwu Chau, is expected to begin operation in 2025. The tendering exercise for the second, I • Park2, in Tuen Mun, started in December.

The 'Food Waste/Sewage Sludge Anaerobic Co-digestion' trial schemes at Tai Po and Sha Tin sewage treatment works can treat up to 100 tonnes of food waste a day in total.

Another recycling centre, Y • Park in Tuen Mun, can turn suitable yard waste into products such as wood chips and wooden boards. A pilot biochar production plant in EcoPark commenced its production stage in October as a trial project to explore the technical feasibility of yard waste recycling by converting woody waste into biochar.

Chemical, Clinical and Special Waste

All chemical and clinical waste producers are required to pack, label and store their waste properly before disposal at licensed treatment facilities. A trip ticket system tracks the waste movement from its origin to the final disposal point. The Chemical Waste Treatment Centre in Tsing Yi collected a daily average of 15.6 tonnes of chemical waste and 8.3 tonnes of clinical waste for treatment in 2024. Waste producers using its services pay part of the treatment cost.

The government's policy is to return radioactive waste to the original suppliers as much as possible, hence only some low-level radioactive waste needs to be transferred to a dedicated facility on Siu A Chau, an uninhabited island southwest of Lantau, for long-term storage. The facility is purpose-built to meet stringent international standards for the safe storage of low-level radioactive waste.

T • Park, the sludge treatment facility in Tuen Mun, uses an advanced incineration technology to treat up to 2,000 tonnes per day of sludge. Incineration heat is converted to electricity sufficient to power the entire facility and export the surplus to the power grid. The facility treated about 391,500 tonnes of sewage sludge and exported 13.5 million kWh of electricity in 2024. Its environmental education centre has attracted over 390,000 visitors since opening in 2016.

Construction Waste

The Construction Waste Disposal Charging Scheme provides economic incentives to reduce construction waste, recover and reuse inert materials, and reduce their disposal at landfills. An annual average of 19 million tonnes of overall construction waste was generated from 2019 to 2023 and the average reuse rate was 92 per cent, having remained above 90 per cent in recent years. In 2023, the amount of construction waste disposed of at landfills was 1.62 million tonnes.

Marine and Shoreline Refuse

Marine refuse in Hong Kong waters is cleared by the Marine Department, which deploys about 42 vessels to scavenge for floating refuse and collect domestic refuse from vessels in the anchorages and typhoon shelters. In 2024, the department collected about 2,281 tonnes of such refuse.

Shoreline refuse is cleared by the AFCD, FEHD, Leisure and Cultural Services Department and other government bodies. The Inter-departmental Working Group on Marine Environmental Management coordinates the efforts of different departments in handling marine refuse and marine environmental incidents.

The government also leverages community efforts to protect the marine environment through the Clean Shorelines Liaison Platform. Since 2015, over 4,500 participants from schools, non-profit-making organisations and commercial companies have been engaged in the Shorelines Cleanup Day programme through the platform. There have also been more than 4,000 coastal clean-up activities carried out by voluntary groups and activists in the past eight years.

Livestock Waste

The Waste Disposal Ordinance bans the keeping of livestock in new towns and environmentally sensitive areas. Where they are allowed, livestock farms must have proper waste treatment systems. The government provides a free livestock waste collection service, which collected about 23,500 tonnes of waste in 2024.

Sewage Treatment and Disposal

The public sewerage system covers the entire urban area and serves over 93 per cent of the population. It collects about 2.85 million cubic metres of sewage daily, over 99 per cent of which receives chemical or higher levels of treatment before discharge.

Harbour Area Treatment Scheme and Improving Near-shore Environment of Victoria Harbour

The government has implemented the Harbour Area Treatment Scheme by constructing deep tunnels to collect and convey sewage generated from both sides of Victoria Harbour to the Stonecutters Island Sewage Treatment Works for centralised treatment and disinfection before discharge into the sea.

The government has taken several steps to improve the near-shore environment of Victoria Harbour. These include identifying and rectifying major pollution sources in the stormwater

drainage system, intercepting pollutants, rehabilitating sewers and dredging drainage culverts and outfalls to address sediment build-up and odour problems.

To tackle the harbour's near-shore odour problems, the department conducted surveys to locate major sewer misconnections in priority areas. Following rectification works, pollution load at relevant stormwater outfalls was reduced by about 87 per cent as at the end of 2024, exceeding the 2022 Policy Address targets of a 50 per cent reduction at the identified polluted outfalls including those in Tsuen Wan, Sham Shui Po and Kowloon City.

Sewage Disposal in Rural Areas

As at end-2024, more than 18,000 village houses had been connected to public sewers. Eligible households can apply for loans and grants to help them connect their buildings to public sewers.

Sewage Charges

All water users who discharge sewage into a communal drain or sewer pay a charge of \$2.92 per cubic metre of water supplied, with each domestic account exempt from paying for the first 12 cubic metres per four-month consumption period. Twenty-seven trades whose effluent strength is higher than that of domestic sewage pay a surcharge. These charges are used to recover the operating and maintenance costs of sewage collection, treatment and disposal facilities, whose construction is government-funded.

Water Quality

The water quality of Victoria Harbour has improved markedly under the Harbour Area Treatment Scheme. In 2024, the harbour's overall compliance with the statutory water quality objectives was 97 per cent.

By controlling pollution at source, river water quality remains good. During the year, 77 per cent of the river monitoring stations were categorised as 'good' or 'excellent', while only 5 per cent belonged to the 'bad' or 'very bad' category.

Bathing Beaches

Beach water quality is assessed through an established system which ranks a beach according to the level of the *Escherichia coli* bacteria in its water, to reflect the health risks of swimming there. As of 2024, all 42 gazetted beaches had complied with the statutory bacteriological water quality objective for bathing waters for 15 consecutive years, among which 23 beaches were ranked as 'good' and the remaining 19 were ranked as 'fair'. No beaches fell into the 'poor' or 'very poor' categories.

Licensing of Food Premises and Other Trades

The FEHD issues licences for food businesses and permits for the sale of restricted foods. It also issues permits for karaoke establishments in licensed restaurants and licences for places of public entertainment, private swimming pools, commercial bathhouses, funeral parlours, undertakers of burials and offensive trades. It also provides executive and secretarial support to

the Liquor Licensing Board, an independent statutory body that issues liquor licences, including those for clubs.

During 2024, the department issued 7,776 full, provisional and temporary food business licences; 1,432 permits for the sale of restricted foods, including 253 online restricted food permits; 3,273 licences for places of public entertainment; 26 licences for other trades; and two permits for karaoke establishments in licensed restaurants. The Liquor Licensing Board issued 917 liquor and club liquor licences.

The FEHD continued to implement measures to enhance the food business licensing regime, including the 'licence first, inspection later' Professional Certification System, which was extended to cover general restaurants in February. The department also started issuing electronic food business and other trade licences/permits as part of its electronic licensing service; and amended the law to introduce the composite permit which covers multiple restricted food items, eliminating the need for separate seller applications.

Food Safety and Facilitation of Food Trading

The Centre for Food Safety (CFS) ensures that food sold in Hong Kong is safe and fit for consumption. It tested about 66,900 samples of food at import, wholesale and retail levels for chemical and microbiological examination in 2024. The overall satisfaction rate of these tests was 99.8 per cent.

During the year, the Man Kam To Animal Inspection Station inspected 27,622 vehicles carrying live food animals including pigs, cattle and goats, and examined 1,050,116 live food animals. Since 1 July, the daily operating hours for importing fresh produce via the Hong Kong-Zhuhai-Macao Bridge has been extended from eight hours to 16.

The bureau and the CFS, referring to the food safety standards of the Codex Alimentarius Commission and other economies, and taking into account local dietary practices and risk assessment results, regularly review and update Hong Kong's food safety standards and regulatory arrangements. This year, the Preservatives in Food (Amendment) Regulation 2024 came into effect and the review of the Food Adulteration (Metallic Contamination) Regulations began.

The bureau and the General Administration of Customs of the People's Republic of China launched the Advance Release Arrangement in May, to facilitate the export of certain Hong Kong food products to the Mainland. Three categories of Hong Kong-manufactured food products, covering beverages, pastries, candies and chocolates, which are subject to sampling tests by Mainland customs, can be released once the sample has been taken without having to wait for the results.

Public Markets and Cooked Food Markets

The FEHD operates 96 public markets, with some 13,500 stalls, mainly selling fresh provisions, cooked food, light refreshments and household items. As at end-2024, the overall occupancy rate at these markets was 82.4 per cent.

A number of new public market projects, including those in Tin Shui Wai, Tseung Kwan O, and Kwu Tung North New Development Area, are under construction.

The ongoing Market Modernisation Programme renovates existing markets. Lai Wan Market in Mei Foo reopened in March after an overhaul while Queen Street Cooked Food Market in Sheung Wan reopened in September after stall enhancement works. As of end-2024, minor refurbishment or improvement works had also been completed in 14 markets.

Hawkers

Hawking is regulated and, as at end-2024, there were 4,848 licensed fixed-pitch hawkers and 233 licensed itinerant hawkers.

Slaughterhouses

The FEHD oversees the hygiene standards of licensed slaughterhouses in Sheung Shui and Tsuen Wan. Meat supplied by the slaughterhouses has to pass inspection before delivery to markets.

During the year, a total of 1,124,302 pigs, 9,193 head of cattle and 756 goats were slaughtered in the two slaughterhouses; 29,068 samples were taken from food animals for testing of veterinary drug residues.

Public Cleansing Services

Enforcement action is taken against littering, spitting and other unhygienic practices in public places. In 2024, some 35,900 fixed penalty notices were issued. To support enforcement against fly-tippers, internet protocol cameras have been installed at 470 illegal refuse dumping black spots.

All streets are swept one to eight times a day and are washed regularly, from daily to fortnightly or whenever the need arises, depending on the conditions of individual locations. Mechanical sweepers are deployed to sweep flyovers and highways.

In 2024, about 5,800 tonnes of household waste were collected daily by the FEHD. As well as managing public refuse collection points, the department has been enhancing the hardware of refuse collection facilities in rural areas. By end-2024, 284 fully enclosed refuse collection facilities with new designs, such as solar-powered mobile refuse compactors and aluminium refuse collection points, had been installed.

The FEHD manages some 800 public toilets and toilet attendant services are provided at the heavily used ones. The department is implementing the Enhanced Public Toilet Refurbishment Programme. In 2024, 27 public toilets were refurbished.

Pest Control

To help prevent vector-borne diseases anti-mosquito teams conducted 788,991 inspections of potential mosquito breeding spots and eliminated 73,861 breeding places during the year.

In addition to regular operations to tackle rodent infestation, targeted measures have also been implemented, which include forming overnight rodent control roving teams, applying new anti-rodent tools and strategies, and extending a scheme that allows food businesses to use large bins to store refuse temporarily in rear lanes. Thermal imaging cameras with artificial intelligence technology are used to conduct the Rodent Activity Survey, which monitors the rodent infestation situation in each district. The FEHD caught 89,629 live rodents in 2024, about 41 per cent more than in 2023.

Legislative Amendments to Tackle Environmental Hygiene Problems

Legislative amendments in 2023, which raised the \$1,500 fixed penalties for littering and illegal shopfront extension to \$3,000 and \$6,000 respectively, brought notable changes. In the subsequent 12 months, only 1,190 fixed penalty notices were issued against shopfront extension, a drop of about 90 per cent year on year. In December 2024, the government introduced a further amendment bill that will empower the FEHD to tackle shopfront extension and other environmental hygiene problems, such as water seepage in buildings more effectively.

Cemeteries, Crematoria and Columbaria

The FEHD manages six government crematoria, 10 public cemeteries, 12 public columbaria, 13 gardens of remembrance, two facilities for keeping abortuses and one abortuses cremation facility, and monitors the management of 27 private cemeteries. The department promotes green burial and seeks to provide a steady supply of public niches, allocating about 19,000 in 2024.

Private columbaria are regulated by the Private Columbaria Ordinance. By the end of 2024, the Private Columbaria Licensing Board had approved 13 licence and five exemption applications; given approvals in principle to applications from 77 private columbaria; and refused applications from 33 private columbaria. During the year, the FEHD carried out about 480 inspections of private columbaria and investigated 41 cases of suspected contravention of the ordinance. An amendment bill was also introduced to enhance the regulatory regime.

Guarding against African Swine Fever

In 2024, African swine fever virus was detected in pig samples from four licensed local pig farms resulting in the culling of pigs. Biosecurity was enhanced at pig farms, boundary checkpoints and slaughterhouses.

The AFCD collects samples from captured wild pigs for testing under the surveillance programme for African swine fever. The virus was detected in one wild pig sample in the year.

Measures against Avian Influenza

Government measures to keep avian influenza at bay include stringent monitoring of the poultry supply chain from farm to retail levels, compulsory vaccination of chickens against the H5 and H7 avian influenza viruses and the close surveillance of imported and local birds.

Other preventive measures include checking avian influenza control measures at live poultry retail outlets and cleaning public places where wild birds gather. Stringent enforcement action is also taken against the feeding of wild birds in public places.

The measures are effective in preventing human infection of avian influenza, as evidenced by the total absence of locally infected human case of the H5 or H7 viruses since the first avian influenza outbreak in Hong Kong in 1997.

Antimicrobial Resistance

The government implements the Hong Kong Strategy and Action Plan on Antimicrobial Resistance through the joint efforts of different government agencies and non-government organisations, to alleviate the development of antimicrobial resistance and safeguard animal and public health.

As part of the plan, the AFCD inspects food animal farms to collect data and samples to evaluate antimicrobial usage, as well as biological samples for bacterial culture and antimicrobial sensitivity testing on a regular basis. The CFS conducts regular antimicrobial resistance surveillance on raw meat and ready-to-eat foods and educates the public and the trade about the additional risks associated with consuming raw or undercooked ingredients in ready-to-eat foods. The centre also promotes the Five Keys to Food Safety to address the issue of foodborne antimicrobial resistance.

Control of Animal Diseases

The AFCD regulates cross-border animal movements to prevent animal diseases from entering Hong Kong and formulates quarantine measures to control the import of animals and animal products.

In 2024, about 6,000 lot-based permits were issued for animal imports, which included dogs, cats, horses, birds, zoo animals and live food animals such as pigs and cattle. At land boundary control points, Hong Kong International Airport and the airport's Air Mail Centre, trained dogs are deployed to detect live animals and animal products hidden in luggage. In 2024, more than 126,300 travellers, 400 vehicles and 18,900 parcels and pieces of luggage were screened.

Starting from 1 December, the AFCD also introduced new quarantine arrangements, whereby the quarantine period for cats and dogs imported from countries or places in a new category, Group IIIA, is shortened from 120 days to 30 days.

Animal Welfare and Management

The government's approach towards animal welfare and management includes strengthening public education, controlling animal trading, working with animal welfare organisations, managing stray animals, handling and preventing acts of animal cruelty and promoting responsible pet ownership and animal welfare.

The department partners with 17 animal welfare organisations to rehome dogs, cats, rabbits, birds and reptiles. It provides free desexing for the rehomed animals, and subsidises these organisations in carrying out animal welfare and management projects. There is also an established cooperation mechanism for the police to invite officers from the AFCD and Society for the Prevention of Cruelty to Animals to provide professional advice and assistance at the scene of an animal cruelty case.

Dog breeders and sellers are regulated under the Public Health (Animals and Birds) (Trading and Breeding) Regulations. Pet shops are required to obtain animals, such as dogs, cats and birds, for sale only from approved sources.

Sustainable Development of the Agricultural and Fisheries Industries

Hong Kong's agricultural and fisheries industries are relatively small in scale. They employed 17,759 people directly and produced \$3.448 billion of output during the year. Live poultry accounted for 100 per cent of local consumption; cut flowers, 44 per cent; seafood, 20 per cent; live pigs, 7.5 per cent; freshwater fish, 4 per cent; and vegetables, 1.8 per cent.

The Blueprint for the Sustainable Development of Agriculture and Fisheries sets out measures to raise the quantity, quality and value of local produce. They include developing deep sea mariculture at Wong Chuk Kok Hoi and Mirs Bay new fish culture zones; conducting preparatory work for the Agricultural Park phase 2 development; implementing an urban farming strategy in new development areas; facilitating the livestock sector to construct modernised and environmentally friendly multistorey livestock farms; and promoting leisure farming and fisheries.

Agricultural Industry

The agricultural industry focuses mainly on producing quality fresh food crops through intensive land use. Most farming is in the New Territories and for growing crops, comprising mainly vegetables and cut flowers, with a combined output in 2024 valued at about \$385 million. The principal food animals reared are pigs and poultry, which respectively yielded earnings of about \$279 million and about \$264 million, inclusive of eggs.

The AFCD encourages crop farmers to tap niche markets and sharpen their competitiveness by cultivating quality vegetables. The department provides organic farming support to 384 farms occupying 104 hectares of land and also promotes sustainable and advanced production technologies, including smart greenhouse technology, solar-powered automated irrigation systems and modernised agricultural machinery for intensive high-value crop production.

The Controlled Environment Hydroponic Research and Development Centre studies the application of state-of-the-art hydroponic cultivation techniques to enhance the output of local vegetable production and increase product variety, while the voluntary Accredited Farm Scheme ensures a stable supply of quality vegetables. A total of 305 farms in Hong Kong, Guangdong province and Ningxia autonomous region, occupying 2,439 hectares of land, are accredited under the scheme.

Following the launch of phase 1 of the Agricultural Park in Kwu Tung South in 2022, the AFCD has begun the preparatory work for the second phase, and the establishment of a modernised techno-agricultural park through public-private partnership model.

The government provides financial support to the industry through the \$1 billion Sustainable Agricultural Development Fund, which assists local farmers to adopt advanced technology and intensify production, and help them to seize the opportunities arising from the Guangdong-Hong Kong-Macao Greater Bay Area development.

To promote leisure farming, the government launched the Agri enJoy Scheme in June, which 64 farms engaged in commercial crop production had joined by the end of the year.

Fisheries Industry

Fresh fish is one of Hong Kong's most important primary products. In 2024, the amount of fish caught and fish reared in ponds and floating cages at sea totalled about 94,340 tonnes, with a value of \$2.52 billion.

As at the year end, some 6,125 vessels were licensed as fishing vessels under the Merchant Shipping (Local Vessels) (Certification and Licensing) Regulation. These included larger vessels operating mainly in the South China Sea and smaller vessels in local waters. There were about 10,180 local fishermen in the industry, with a quota of 4,110 Mainland deckhands. The total catch weighed about 92,250 tonnes, with an estimated wholesale value of \$2.4 billion, and provided some 35,000 tonnes of fish for local consumption.

At end-2024, 28 designated fish culture zones were in operation, which supplied consumers with some 630 tonnes of live marine fish valued at \$66 million during the year. They included newly designated zones at Wong Chuk Kok Hoi and Mirs Bay, which began operation in December 2023. Two other zones, Outer Tap Mun and Po Toi (Southeast), have also been designated.

Freshwater and brackish water fish are reared in fish ponds located mainly in the northwestern New Territories. In 2024, pond fish culture yielded some 1,350 tonnes of fish, valued at \$37 million.

The government provides credit facilities to fishermen, owners of fish-collecting vessels and fish farmers for sustainable development and general productive purposes, and offers training courses to fishermen. The \$1 billion Sustainable Fisheries Development Fund helps fishermen adopt sustainable and high value-added methods of operation, and subsidises programmes and research to enhance the industry's competitiveness.

A total of 175 farms participated in the voluntary Accredited Fish Farm Scheme, with their fish being tagged for easy recognition. More than 24,000kg of accredited fish were sold under the scheme in 2024.

To help the industry learn modern and sustainable aquaculture techniques, the AFCD has established a demonstration mariculture farm as a training centre at the Tung Lung Chau fish

culture zone. Deep-sea cages, equipped with modernised mariculture facilities, will be rented to fish farmers in the newly designated zones so as to reduce their start-up costs.

To meet public demand for recreational fishing and to help mariculturists diversify their business, 71 mariculturists in 11 fish culture zones have the department's approval to operate recreational fishing businesses on licensed fish culture rafts.

The AFCD monitors red tides and issues red tide alerts through support groups at the fish culture zones and via its website, press releases and text messages. Eleven red tides were recorded in Hong Kong waters in 2024.

Wholesale Markets

Fresh food produce is sold in wholesale markets managed by the AFCD, Vegetable Marketing Organization (VMO), Fish Marketing Organization (FMO) and private sector. In 2024, the government's four wholesale markets combined handled 213,960 tonnes of vegetables, 70,325 tonnes of fruits, 55,577 tonnes of eggs, 35,535 tonnes of freshwater fish and fishery products and 7,798 tonnes of poultry, with a total value of \$6.23 billion.

The VMO provides farmers and traders with wholesale marketing services, including trading facilities, accounting and transport services. In 2024, 45,741 tonnes of vegetables valued at \$372 million were sold through the VMO.

The FMO provides wholesale marketing services at its seven wholesale markets. In 2024, some 38,211 tonnes of marine fish valued at \$3.1 billion were sold through the FMO. The organisation also develops fishery products at its processing centre to enhance the quality of local products. The Local Fresh app and website enable customers to buy local agricultural and fishery products online.

Websites

Agriculture, Fisheries and Conservation Department: www.afcd.gov.hk

Carbon Neutrality and Sustainable Development: www.cnsd.gov.hk

Centre for Food Safety: www.cfs.gov.hk

Electrical and Mechanical Services Department: www.emsd.gov.hk

Environment and Ecology Bureau: www.eeb.gov.hk

Environmental Protection Department: www.epd.gov.hk

Food and Environmental Hygiene Department: www.fehd.gov.hk

Government Laboratory: www.govtlab.gov.hk

Hong Kong Environmental Database: hkcd.epd.gov.hk

Hong Kong Observatory: www.hko.gov.hk

Hong Kong Observatory Cool Met Stuff channel: url.hko.hk/cms

Internet Memorial Service: www.memorial.gov.hk

Low Carbon Living Calculator: www.carboncalculator.gov.hk

MyObservatory mobile application: www.hko.gov.hk/en/myobservatory.htm

Science in the Public Service campaign: www.science.gov.hk