環保工作報告
ENVIRONMENTAL PERFORMANCE REPORT
2021

環境局
Environment Bureau

環境保護署
Environmental Protection Department

CONTENTS

FOREWORD

2020 was a challenging year for Environmental Protection Department (EPD)'s operations. The COVID-19 pandemic disrupted some of our efforts to protect the environment, for instance, reduced quantity of recyclables collected, increased usage of vehicles, etc. However, we believe most of these impacts are transitory. The department will continue to take effective measures to contain its environmental impacts and identify new areas of savings.

On energy aspect, our electricity consumption in offices fell by 3.3%. Our per capita consumption has also been falling over the past few years as we actively delamp and install programmable timers to make the most efficient use of energy. However, there was a slight increase in total greenhouse gas (GHG) emissions mainly due to additional anti-pandemic measures implemented. We will endeavour to address this issue and to meet the Government's new internal target of reducing electricity use by 6% from 2020 to 2025.

The Chief Executive announced in her 2020 Policy Address that Hong Kong would aim for carbon neutrality before 2050. The EPD is supporting that goal in its operations by turning waste into energy and developing renewable energy resources. Landfill gas generated in the three strategic landfills is used to generate electricity and energy for on-site use or as an alternative energy source for off-site use. A pilot solar farm was also approved by the Town Planning Board in 2020 for implementation in the Southeast New Territories Landfill, which will provide a model for development of large-scale solar farms at landfills in future. In addition, the introduction of waste-to-energy and waste-to-resources facilities which include the commissioned O·PARK1 and food waste/sewage sludge anaerobic co-digestion trial scheme at Tai Po Sewage Treatment Works, the Integrated Waste Management Facilities Phase 1 under construction and more similar facilities in the future, will help reduce waste disposal of at landfills, thus minimise carbon emissions.

EPD's internal waste management continues to focus on reducing and recycling. Recycling quantities were down in 2020 during the pandemic, but we will strive to continue to use only the minimal amount of paper, plastics and other office supplies required to reduce both consumption and waste.

Finally, our service quality and success in innovation over the past year were honoured and recognised. Two staff members received the Ombudsman's Award for their professional, fair and responsive approach in handling complaints from the public, while another one received the Secretary for the Civil Service's Commendation Award 2020. Our department also received a Special Achievement in Geographic Information System (GIS) Award from the Environmental Systems Research Institute, a world leader of the GIS industry. This global award recognised the efforts of colleagues in the Environmental Compliance Division to adopt new technology in their work to improve efficiency and effectiveness.

Dedication and outstanding achievements of our staff exemplify our commitment in improving Hong Kong's environment. As we encourage the society to work with us to green their businesses, schools and homes, we are striving to ensure that the EPD sets a good example on the path to a more sustainable future.

Mrs. NG KIANG Mei-nei, Millie, JP

Acting Permanent Secretary for the Environment /

Director of Environmental Protection

SCOPE OF THE REPORT

This Environmental Performance Report covers 1 January - 31 December 2020 unless otherwise stated. It provides an overview of the efforts of the Environment Bureau (ENB) and Environmental Protection Department (EPD) to reduce the impacts of our internal operations, including office operations and waste facilities, and contribute to sustainable development in Hong Kong. Readers who are interested in our policies and programmes may refer to Environment Hong Kong 2021, which covers our activities and achievements in these areas in the 2020 calendar year.

This report is published in English and Chinese on our website to reduce paper consumption. All monetary figures are in Hong Kong dollars.

OUR PROFILE

Our Vision, Mission and Policy

Our Vision

Is of a Hong Kong

- which enjoys an environment that is both healthy and pleasant;
- in which the community places a premium on sustaining such an environment for both themselves and future generations, and pursues sustainable development; and
- in which the community enjoys a reliable and safe energy supply at reasonable prices, while improving energy efficiency, promoting energy conservation and minimising the environmental impacts from the production and use of energy.

Our Mission

Is to contribute towards realising this vision by applying our professional knowledge and judgment and drawing on international experience

- to formulate policies and plans on environmental protection, energy, conservation and the promotion of sustainable development;
- to provide first-class physical infrastructure for the treatment and disposal of waste and wastewater;
- to raise community awareness of and promote public support for issues related to environmental protection, energy, nature conservation and sustainable development;
- to promote collaborative efforts through regional and international cooperation;
- to implement environmental protection and energy related legislation and plans; and
- to administer robust environmental impact assessment in the planning of new developments and major projects.

Environmental and Energy Policy

To realise our vision and mission, we have adopted an Environmental and Energy Policy that applies to our services, programmes and internal operations (see full text at Appendix I). The policy has adopted the following guiding principles: compliance with the letter and spirit of environmental laws; pre-emption of environmental problems through planning and prevention; preparedness for dealing with emergency environmental incidents; minimisation of consumption; communication of our goals to our staff and the public; and training and professional development of our staff.

Our Organisation and Priorities

The ENB and EPD are responsible for developing Government policies and programmes to protect Hong Kong's environment. The Secretary for the Environment reports directly to the Chief Executive and Executive Council.

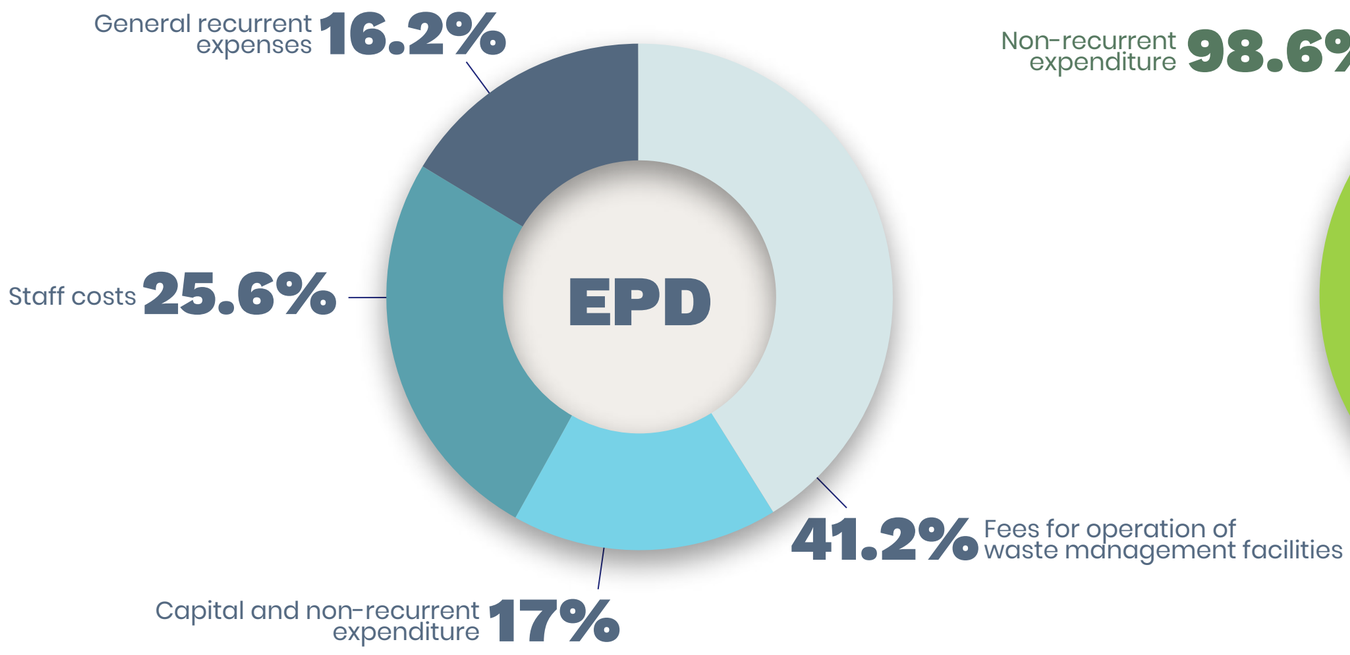
Areas of Responsibility

- **Environmental Protection**. The ENB is responsible for overall policy on the environment. The EPD, which comes under ENB, develops and implements policies and programmes on Air, Environmental Assessment and Planning, Noise, Waste and Water. The EPD also develops policy on nature conservation, which is implemented by the Agriculture, Fisheries and Conservation Department (AFCD).
- **Energy**. The ENB sets overall policy. Energy conservation matters are executed by the Electrical and Mechanical Services Department (EMSD).
- **Sustainable Development**. The ENB sets and implements policy.

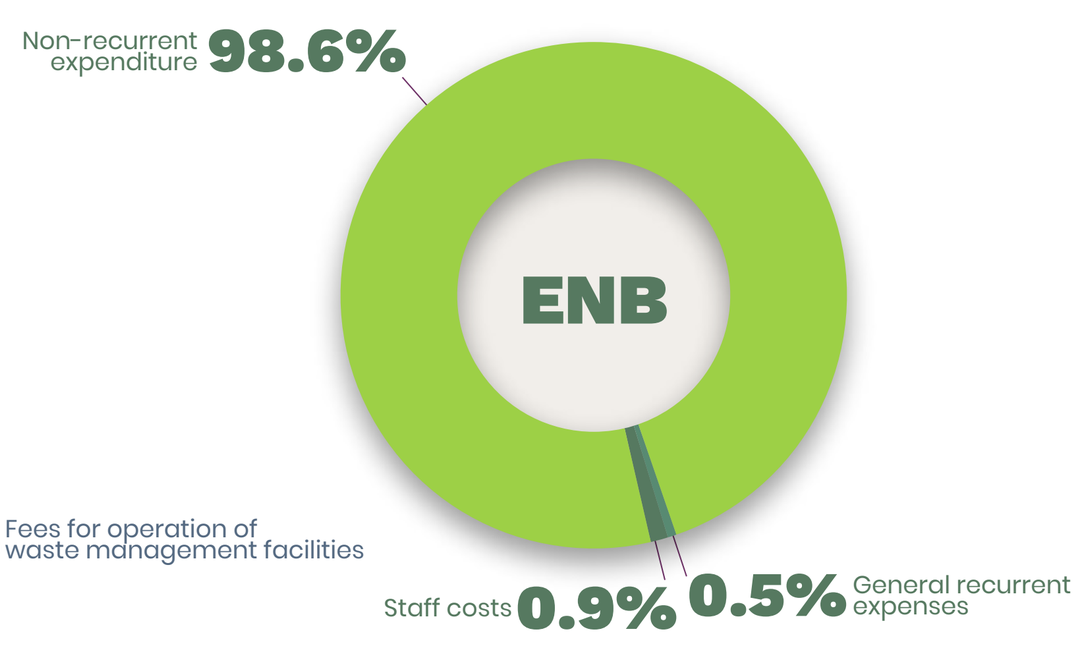
2020 Expenditure

$5.883 billion

Excluding spending under the Capital Works Reserve Fund



$5.861 billion



SEE DATA

Organisational Structure

Secretary for the Environment

Under Secretary for the Environment

Political Assistant to Secretary for the Environment

Permanent Secretary for the Environment / Director of Environmental Protection

Environment Bureau

DETAIL

Environmental Protection Department

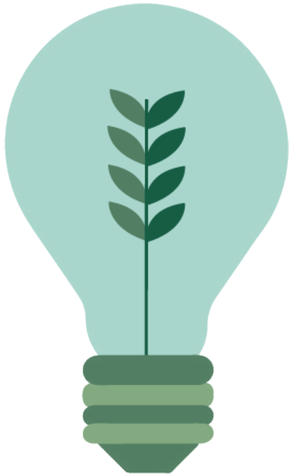
DETAIL

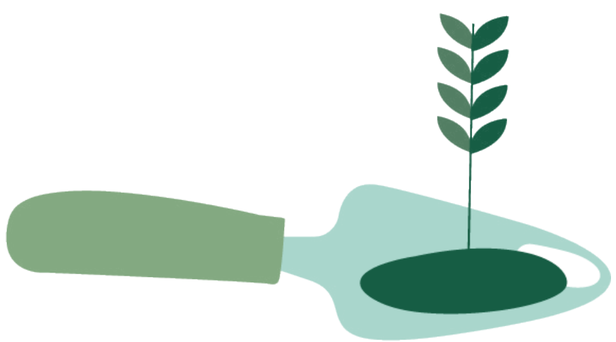
Environment Bureau

Permanent Secretary for the Environment / Director of Environmental Protection

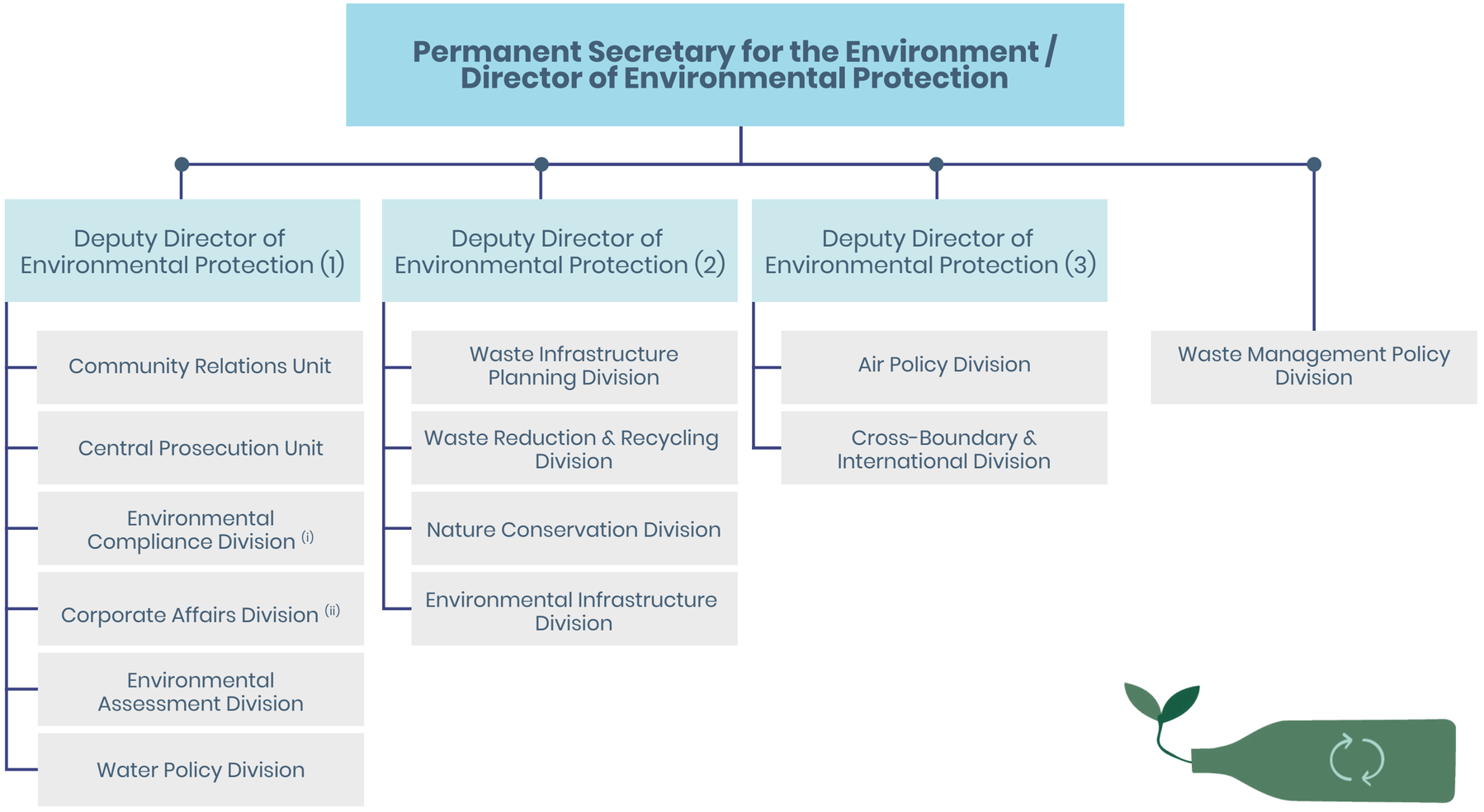
Deputy Secretary for the Environment

- Sustainable Development Division
- Energy Division
- Financial Monitoring Division
- Electricity Team





Environmental Protection Department



Remarks: (i) Major enforcement duties under Air, Environment and Planning, Noise, Waste & Water Programmes are carried out by Environmental Compliance Division.
(ii) Covers Corporate Environmental Management, Knowledge Management, Staff Safety & Health, Human Resources Management & Information Technology.

MANAGING THE ENVIRONMENTAL IMPACTS OF OUR OPERATIONS

Greening Our Offices

Green Management System

Aims: The ENB and EPD's work in 2020 focused on improving the environmental impacts of our office operations by the following means:

- Energy saving and efficient electricity consumption
- Reduction of fossil fuel consumption by vehicles
- Reduction of resources consumption and recycling
- Maintaining our recycling of waste paper and plastics

Lines of Responsibility: At the **departmental** level, the Departmental Environment, Safety and Health Committee (DESHC) steers our green management, while the Energy Efficiency Management Team (EEMT) is in charge of reducing energy and emissions, monitoring trends and identifying new areas of saving. The Corporate Development Unit (CDU) also monitors the ENB's and EPD's overall energy consumption trends and environmental impacts, and audits portions of the green audits that each group/unit must conduct each year.

Each **group/unit** of the ENB and EPD has a Group Environmental Representative who helps implement green management measures, train others in implementing these measures, communicate with colleagues, and carry out the green audit. Groups/units are also encouraged to invite other groups to cross-audit them every two years. Every office also has an Energy Warden to monitor and coordinate energy-saving measures.

Communicating Green Goals to Staff: The ENB and EPD have produced a comprehensive circular that outlines how staff can support and implement green management practices in their offices. Staff are also regularly reminded to reduce their environmental impacts through the Green Tip of the Day distributed via our intranet, the Green Management circular distributed several times a year, and staff training and human resources activities (see Training and Development).

Electricity Consumption

Performance in 2020: The ENB and EPD constantly monitor energy consumption and seek potential areas of saving, particularly in electricity consumption. A large portion of Hong Kong's electricity is generated by non-renewable fossil fuels, so any savings will have knock-on effects on local and regional air quality and our contribution to climate change.

In 2020, the total electricity consumption in all ENB and EPD Offices decreased by 3.3% compared to 2019. This happened during a year when there were periods that staff worked from home due to the COVID-19 pandemic. The annual electricity consumption per employee also decreased from 1 777 kWh in 2019 to 1 592 kWh in 2020.

Table 1: Electricity consumption in offices 2019-2020 *

	2019	2020
Electricity Consumption in all ENB and EPD Offices (million kWh)	3.694	3.573

* Includes electricity consumption from air conditioners installed in ENB/EPD offices that are managed by ENB/EPD staff. Note that most of our offices are in buildings shared with other users, with central air-conditioning systems. Since it is not possible to measure individual air-conditioning and related energy use in these buildings, such figures are excluded from the calculations.

Table 2: Breakdown of total electricity consumption and emissions 2019-2020

	2019	2020
Electricity consumption		
Office Electricity Consumption (million kWh)	3.694	3.573
EV Electricity Consumption (million kWh)	0.011390	0.008836
Total Electricity Consumption (million kWh)	3.705	3.582
Emissions from electricity consumption		
CO_2-equivalent (tonnes) #	2 353	2 267
SO_2 (kg)	7 781	7 522
NOx (kg)	4 817	4 657
RSP (kg)	371	358

The latest emission factor was used for the calculation of 2019 CO_2-e emissions from electricity consumption.

Green energy measures: The DESHC has implemented measures for saving energy, including annual self-inspections of all offices and laboratories to identify areas of improvement; regular monitoring in each office by Energy Wardens, who also coordinate the implementation of energy-saving measures; and reporting of annual energy consumption by each office.

Annual Green Audits in offices identified the following energy-saving measures in 2020:

- **Delamping**: After noticing that light intensity in some offices was higher than the recommended values, we delamped 31 T5 fluorescent tubes (28W). The estimated saving was 2 604 kWh/annum (28W x 31 x 12 hours x 250 days /1 000).
- **Programmable timers**: These are installed in shared-use electrical and electronic equipment to switch off these items outside office hours. In 2020, 10 new timers were installed.

Reducing Transport Impacts

Green transport is promoted by procuring environment-friendly vehicles as new or replacement vehicles as far as practicable; encouraging staff to walk or use public transport where possible and to carpool when using Government vehicles; and promoting green driving practices.

Performance in 2020: The EPD is gradually replacing its fleet with low-emission vehicles. Emissions and mileage of vehicles increased during 2020 due to additional duties related to special work arrangements for COVID-19 (see also Other Green Measures). Emissions from our water quality monitoring vessel, the "Dr. Catherine Lam", decreased in 2020 due to fluctuating operational needs.

The *Dr. Catherine Lam*

One of the EPD's electric vehicles (EVs)

Table 3: Annual fuel consumption and direct pollutant emissions[1] by vehicles 2019-2020

	2019	2020
Vehicle Fleet	50 vehicles[2]	50 vehicles[3]
Diesel (Litres)	11 483	18 473
Petrol (Litres)	78 685	102 095
LPG (Litres)	406	85
Electricity (kWh) [4]	11 390	8 836
Mileage (km)	661 796	850 715
NOx (kg) [5]	835	1 118
RSP (kg) [5]	123	167

Notes:
[1] Only tailpipe emissions are presented. Indirect emissions from the consumption of electricity by EVs are included in our office electricity consumption shown in Table 1.
[2] 9 diesel with AdBlue (urea solutions), 36 petrol, three electric, one electric/petrol, one LPG.
[3] 10 diesel with AdBlue (urea solutions), 35 petrol, three electric, one electric/petrol, one LPG.
[4] Only charging activities in Government owned carparks were captured.
[5] Vehicle emissions are estimated based on the equations given in The Clean Air Charter – A Business Guide Book.

Table 4: Annual fuel consumption and direct pollutant emissions by the "Dr. Catherine Lam" marine monitoring vessel 2019-2020

	2019	2020
ULSD [1] (Litres)	74 600	13 300
SO_2 (kg)	6.2	1.1
NO_2 (kg)	3 761	671
RSP (kg)	148	56

Notes:
[1] The Dr. Catherine Lam uses ultra low sulphur diesel (ULSD).
[2] Reference: AP 42 Compilation of Air Pollutant Emission Factors USEPA.

Reducing Waste

The ENB and EPD collected more than 47 000 kg of waste paper and plastics for recycling in 2020. This was substantially below levels in 2019, in part due to the special work-from-home arrangements for staff during the COVID-19 pandemic. We also continued to encourage our staff to reduce waste in the first place and use electronic and other alternatives, e.g. to use tablet computers instead of hardcopies for meetings. Our e-fax system also reduced the usage by 81 511 sheets of paper in 2020.

Ongoing initiatives to reduce office waste at source include a Consumables and Inventory Recycling Scheme, a programme to refurbish old computers and donate them to the needy, and food waste de-composters that are installed in two offices on a trial basis to minimise food waste. Staff have also been issued with guidelines on reducing waste.

Performance in 2020: The following wastes were collected for recycling:

- 47 729 kg of waste paper, down 21% from 2019.
- 206 kg of plastic waste, down 2%.
- 1 174 printer cartridge units, down 39%.
- 242 photocopier toner bottles, down 15%.

Other Green Measures

Carbon Audit:

Since January 2017, all Government bureaux and departments have been required to conduct annual carbon audits of their buildings that have annual electricity consumption of more than 500 000 kWh. The results for the ENB and EPD in 2020 are below (see table). Emissions of carbon dioxide equivalent (CO_2 -e) increased by about 2.36% due to the following reasons:

- Because of the COVID-19 pandemic, we have acquired numerous air purifiers to protect colleagues, which require additional power usage.
- Our government vehicle was in greater use in 2020 because during the work-from-home arrangements due to the pandemic, we helped the Business Services Unit deliver CHIT tickets to different officers every two days. Hence, more fuel was consumed.

	2019	2020
1. Scope of Reporting		
Total Scope 1/ Direct Greenhouse Gas (GHG) Emissions:	9.31 tonnes of CO_2 -e	6.84 tonnes of CO_2 -e
Total Scope 2/ Indirect GHG Emissions:	503.22 tonnes of CO_2 -e	515.24 tonnes of CO_2 -e
Total Scope 3/ Other GHG Emissions:	1.65 tonnes of CO_2 -e	4.23 tonnes of CO_2 -e
Total GHG Emissions:	514.18 tonnes of CO_2 -e	526.31 tonnes of CO_2 -e
2. GHG Performance in Ratio Indicators		
GHG Emissions per Floor Area (Total GHG Emissions/ Floor Area):	0.14 tonnes of CO_2 -e / m^2	0.14 tonnes of CO_2 -e / m^2
GHG Emissions per Employee (Total GHG Emissions/ No. of Employee):	2.34 tonnes of CO_2 -e / employee	2.39 tonnes of CO_2 -e / employee

Green Government Procurement:

The EPD compiles a list of green products and services commonly purchased by the Government, including specifications and other relevant information, to guide bureaux and departments to practise green procurement. In 2020, the ENB and EPD together purchased about $25.66 million in products and services from the list, up from $12.15 million in 2019. To further boost green procurement in the Government, the EPD will expand its green procurement list from 150 items to 183 items and update the relevant green specifications and easy tips in 2021.

Green Recognition:

The environmental improvement efforts of the ENB and EPD have earned an Energywi$e Label, Wastewi$e Label, and Green Organisation Label under the Hong Kong Awards for Environmental Excellence (HKAEE). The EPD also continued to qualify as a "Companion" under two categories of the Hong Kong Quality Assurance Agency (HKQAA) Registration Scheme – Recycling Services and Eco-friendly Series.

In addition, our 21 offices, visitor centres and facilities attained "Good Class" or "Excellent Class" in 2020 under the Indoor Air Quality (IAQ) Certification Scheme.

Hong Kong Green Organisation Certificate

Targets for 2021

Long Term Objectives	Programme Area	2021 Targets
Demonstrate efficiency and commitment to environmental conservation by reducing expenditure and resources consumption	Electricity Consumption	Reduce electricity consumption at our offices by 0.5% per employee when compared with 2020
	Fuel Consumption	Minimise fuel consumption by improving fuel consumption efficiency
	Waste Reduction	Continue to reduce and recycle wastes generated in our offices as much as possible
Pursue continual improvement in the environmental performance of our internal operations by implementing an effective management system	Green Recognition	Maintain the Energywi$e, Wastewi$e and Green Organisation Labels under the HKAEE
		Continue as a "Companion" under the HKQAA Registration Scheme – Recycling Services
		Continue as a "Companion" under the HKQAA Registration Scheme – Eco-friendly Series

Waste Management Facilities

Safe and Environmentally Effective

The EPD oversees Hong Kong's waste management, including managing existing waste treatment facilities, developing new ones, and managing programmes to reduce, recycle, treat and dispose of waste. Waste facility operators are contractually obliged to contain and minimise environmental impacts and ensure facilities operate efficiently. In 2020, work continued on developing new waste treatment facilities and extending the capacities of Hong Kong's landfills.

Waste Treatment Facilities

Food Waste:

In 2018, the EPD commissioned Phase 1 of the Organic Resources Recovery Centre (O·PARK1) in Siu Ho Wan. It has the capacity to turn up to 200 tonnes of food waste into renewable energy and compost each day and up to 2020, it has recycled more than 82 000 tonnes of food waste into 17.3 million kilowatt hours of electricity and 2 300 tonnes of compost. A visitor centre is being developed at O·PARK1 that will open in 2021. Meanwhile, work continued during the year on O·PARK2 at Sha Ling, which will be able to recycle 300 tonnes of food waste per day into biogas and fertiliser once it is commissioned in 2023.

O·PARK1

Photomontage of O·PARK2

Another food waste-related project, the Food Waste Pre-treatment Facilities for Food Waste/Sewage Sludge Anaerobic Co-digestion Trial Scheme, is a joint project with the Drainage Services Department (DSD) that was launched in 2019. Food waste is pre-treated to reduce its mass and remove impurities at the Shuen Wan Leachate Pre-treatment Works. It is then pulverised into slurry for anaerobic co-digestion with sewage sludge at Tai Po Sewage Treatment Works (TPSTW). Biogas from the co-digestion process is used to generate electricity for use at TPSTW. The Trial Scheme will be extended to Sha Tin Sewage Treatment Works in 2023.

Food Waste Pre-treatment Facilities for food waste/sewage sludge anaerobic co-digestion trial scheme at TPSTW

WEEE·PARK:

The WEEE·PARK officially opened in March 2018 to dismantle, detoxify and recycle regulated waste electrical and electronic equipment (WEEE) to support the Producer Responsibility Scheme on WEEE. In 2020, it processed around 23 380 tonnes of regulated WEEE.

WEEE processing line

WEEE·PARK

Photomontage of Y·PARK

Yard Waste:

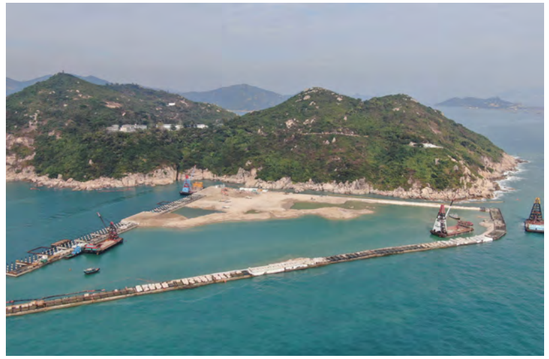
A temporary yard waste recycling site at EcoPark continued to be used for recycling yard waste, mainly from Government departments, and fallen trees generated in typhoon season. In 2020, about 700 tonnes of these materials were recycled into mulch for gardening and planting, compost, a bulking agent for composting, substrate for mushroom cultivation, etc. Members of the public and interested parties also took away some trees and branches that were suitable for reuse or upcycling. Apart from general yard waste, the recycling site was also used to recycle Christmas trees and peach blossom trees collected during the holiday season.

To further promote yard waste recycling, a contract was awarded in November 2020 to develop a yard waste recycling centre, the Y·PARK, at Tsang Tsui, Tuen Mun. Y·PARK is expected to commence operation in the second quarter of 2021. Its scope of services will include screening, sorting and processing of the collected yard waste to produce various useful materials. Large tree trunks and branches will be processed to produce wood boards or beams, providing a steady supply of wood materials for related industries, such as furniture manufacturing, decoration and wood art, etc. The handling capacity of Y·PARK will be about 11 000 tonnes in the first year and will gradually increase to an annual average of around 22 000 tonnes.

Integrated Waste Management Facilities (I·PARK):

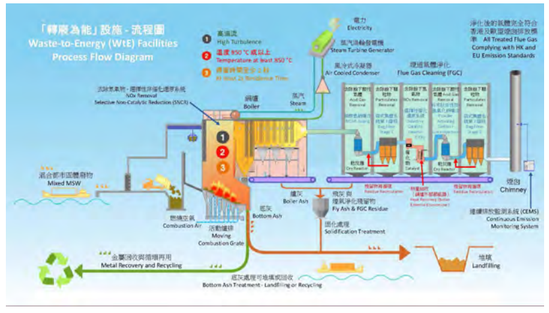
I·PARK is under construction on an artificial island off Shek Kwu Chau, with an aim of commissioning the facility in 2025. The facility will use advanced moving grate incineration technology to treat up to 3 000 tonnes of municipal solid waste (MSW) per day. Once I·PARK is in full operation, energy recovered from the waste will generate surplus electricity of 480 million kWh and reduce GHG gas emissions by 440 000 tonnes per year.

I·PARK is being built using large scale off–site precasting and prefabrication, which offers both greater efficiency and greener construction. Its seawall and breakwater are made up of 74 concrete caisson units and 358 blockwork units precast in Dongguan and transported to Shek Kwu Chau for installation. Its six trains of incineration and boiler units are being prefabricated in Zhuhai and will be shipped to the plant room on the artificial island for assemblage with other electrical and mechanical components. Thanks to this new construction method, disturbance to the nearby tranquil marine environment can be kept to a minimum level.



Reclamation of artificial island for I·PARK in progress (December 2020)

Welding and erection of a steel frame for prefabricated electrical and mechanical units at I·PARK's Prefabrication Yard in Zhuhai (December 2020)



The planned MSW incineration and flue gas treatment processes of I·PARK

T·PARK:

T·PARK is one of the world's most technologically advanced sludge incineration facilities. It treated daily average of 1 034 tonnes of sewage sludge in 2020 using high-temperature incineration. Energy recovered from the treatment process was converted into electricity for internal consumption and power export, while the incineration process reduced the bulk of sludge being landfilled by some 90%. T·PARK also features public amenities, such as an environmental education centre, recreational pools, spa and café, which in 2020 attracted more than 11 000 visitors despite operating at reduced scale including some temporary closures due to the COVID-19 pandemic.

Online workshops to celebrate T·PARK's 5th Anniversary

T·PARK's 5th Anniversary: Continuing to engage the community in the goal of zero landfilling

Other Waste Treatment Facilities:

- ***Chemical Waste Treatment Centre (CWTC)***: Provides integrated treatment and disposal services for almost all chemical waste and all clinical waste generated in Hong Kong. CWTC treated an average 33.8 tonnes of chemical waste and 11 tonnes of clinical waste each day in 2020. The centre's environmental performance is closely monitored, including air emissions, stabilised residues and wastewater discharges.

The CWTC in Tsing Yi

- ***Animal Waste Composting Plant (AWCP)***: Treated about 26.4 tonnes of horse stable waste and 0.6 tonnes of yard waste each day in 2020. The compost produced meets the standards of the Hong Kong Organic Resources Centre and is suitable for landscaping, horticultural and agricultural uses.

Animal waste composter at AWCP

- ***EcoPark***: As of December 2020, long-term leases for 12 lots of land with a total area of about 10 hectares had been issued to private recyclers at an affordable price.

EcoPark

- ***Low-level Radioactive Waste Storage Facility***: Continued to provide a very long-term (100 years) storage solution for such wastes as radioactive components of calibration instruments, lightning conductors, smoke detectors and luminous watch dials and hands from medical, industrial and academic institutions. The facility is located on the remote island of Siu A Chau and meets international design standards. Radiation levels are continuously monitored both inside and outside the facility to ensure they are safe for the public and the environment.

Aerial view of the Low-level Radioactive Waste Storage Facility at Siu A Chau

Waste Collection and Disposal

The EPD manages three strategic landfills, namely Southeast New Territories (SENT) Landfill, Northeast New Territories (NENT) Landfill and West New Territories (WENT) Landfill. They are operated to international environmental standards and their environmental impacts are contained through a multi-layered and impermeable liner system, and comprehensive leachate and landfill gas management systems. Monitoring systems have been set up for landfill gas, leachate, air quality (relating to dust and odour), water quality (surface water and groundwater) and noise. Sampling and measurements are carried out by the EPD and landfill contractors. Independent consultants conduct audits of the monitoring results.

Landfill extensions:

To meet Hong Kong's future landfill needs, the capacities of all three strategic landfills are being extended. In 2020, construction work continued on the SENT Landfill extension, an open tendering exercise was initiated for the NENT Landfill extension, and design and other preparatory work continued on the WENT Landfill extension. The EPD has worked closely with District Liaison Groups in North, Tuen Mun, Yuen Long and Sai Kung Districts to address residents' needs and concerns as well as to enhance communication.

Construction of the SENT Landfill extension in progress

NENT Landfill

WENT Landfill

Landfill gas utilisation and solar farm development:

Landfill gas is used to generate electricity and energy for on-site use or as an alternative energy source for off-site use. At the WENT Landfill, a landfill gas utilisation facility was in partial operation to utilise surplus landfill gas to generate electricity, which was connected to CLP Power Hong Kong Limited's power grid for off-site use. The NENT Landfill continued to use landfill gas to generate power for on-site use, as well as export for production of town gas and steam/hot water supply at Alice Ho Miu Ling Nethersole Hospital. The SENT Landfill also continued to convey its surplus landfill gas to the Hong Kong and China Gas Company Ltd's on-site reprocessing facilities for conversion into synthetic natural gas before injection to the latter's off-take station at Tseng Lan Shu.

In addition, the application for planning permission to develop a pilot solar farm with a capacity of 1 MW at the SENT Landfill was approved by the Town Planning Board in November 2020. This pilot project will help establish technical requirements and suitable models for developing large-scale solar farms at landfills in future.

Landfill Gas Utilisation Plant at the NENT Landfill

WENT Landfill Gas Power Generation Project

Landfill Gas Utilisation Plant at the SENT Landfill

Restored Landfills:

Hong Kong has 13 closed landfills, which ceased operation between 1975 and 1996. The EPD has restored all sites and continues to conduct after-care works such as leachate and landfill gas management and landscaping. The majority of these closed landfills have been converted into recreational and conservation uses, such as parks, sports facilities, multi-purpose grass pitches and butterfly conservation area.

To further develop after-use activities in the other closed landfills, the Government has earmarked $1 billion to the Restored Landfill Revitalisation Funding Scheme. In 2020, the EPD and the Tung Wah Group of Hospitals consulted the Legislative Council Panel on Environmental Affairs (EA Panel) on the E-Co Village project, a camping and green education ground proposed at the restored Tseung Kwan O Stage I Landfill. The EA Panel supported submitting this project to the Public Works Subcommittee for consideration, and then to the Finance Committee for funding approval.

Artistic Impression of the planned E-Co Village

Refuse Transfer Stations (RTSs):

Most collected MSW is delivered to RTSs, where it is compacted into purpose-built containers for bulk transport to the strategic landfills, thus reducing transport costs and traffic and environmental impacts. There are six RTSs serving the urban areas and new towns and seven smaller facilities serving the outlying islands. The RTS network handles about 76% of all MSW generated in Hong Kong in an efficient and environmentally friendly manner.

Island West Transfer Station

Operational Performance in 2020

Waste facilities contractors are closely supervised by the EPD. They are expected to achieve full compliance with legal and contractual environmental requirements. In 2020, 440 312 monitoring measurements were conducted at RTSs, strategic landfills, restored landfills, the CWTC, T·PARK, O·PARK1 and WEEE·PARK, and 99.04% complied with contractual requirements. For the small number of exceptions, corrective and remedial actions were taken immediately to the satisfaction of independent consultants and/or the EPD. Contract payments were deducted for non-compliance in accordance with contract provisions as appropriate.

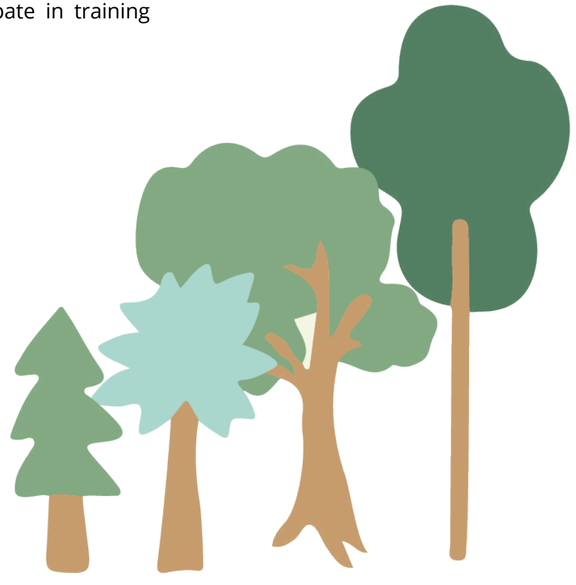
Targets for 2021

Long Term Objectives	Programme Area	2021 Targets
Ensure that the treatment and disposal of waste at our facilities are managed in the most environmentally acceptable manner	Waste Facilities	Maintain close supervision of our waste facility contractors, aiming at full compliance with both statutory and contractual requirements
		Continue the pilot solar farm at the SENT Landfill
		Complete testing work and start full operation of the landfill gas utilisation plant at the WENT Landfill
		Commission the Yard Waste Recycling Centre Y·PARK at Tuen Mun, Tsang Tsui

HUMAN RESOURCES DEVELOPMENT AND TRAINING

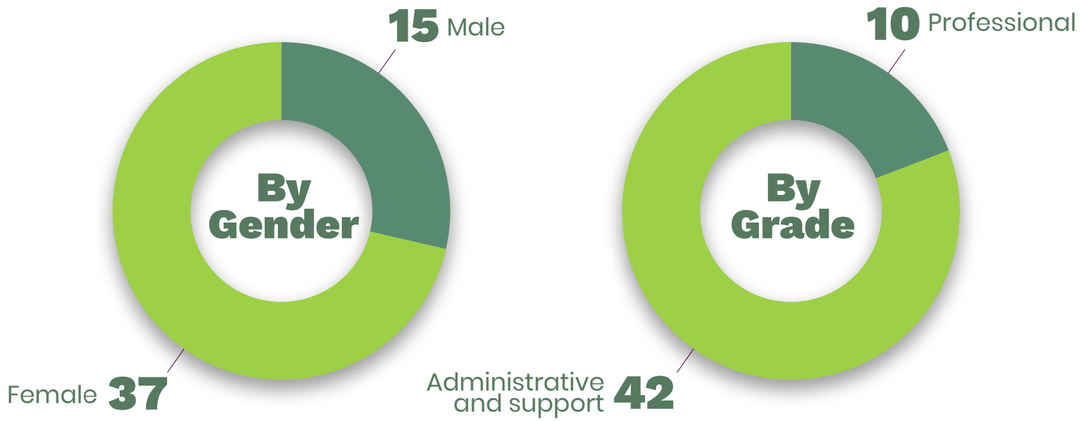
Human Resources and Development

The ENB and EPD have been investing in the training and development of staff so they can fulfil their responsibilities and address new challenges. Lifelong learning is being promoted and opportunities are regularly provided for staff to participate in training activities.

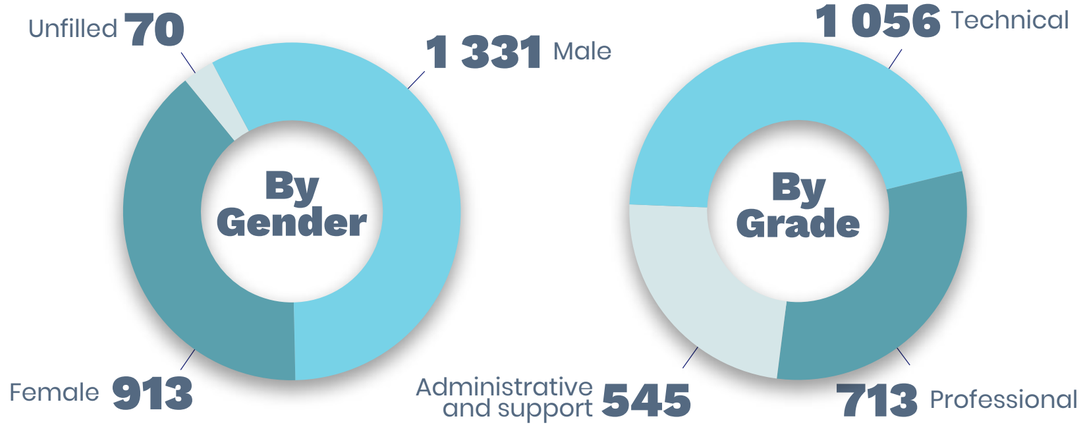


Staff Profile

ENB ESTABLISHMENT: 52



EPD ESTABLISHMENT: 2 314



SEE DATA

Training and Development

The ENB and EPD organise training programmes for new recruits, mid-career staff, and staff with high potential to help them advance their skills so they can support our operations and develop their careers. In 2020, training programmes were greatly affected by the COVID-19 pandemic. For instance, training on Mainland China's administrative, legal and civil service systems and national planning was meant to take place at universities in the Mainland for our professional and administrative officer grade staff, but had to be put on hold during the year.

Every effort was still made to ensure staff could receive training during the special work-from-home arrangements, with some success: our staff attended 488 training programmes for a total 2 543 training days and received an average 0.90 days of training per staff member (see Table 1). Highlights included:

- 10 structured modules, 11 refresher training sessions and 1 sharing session, provided through the Environmental Academy (EnA) for about 700 newly recruited Assistant Environmental Protection Officers (AEPOs) and Environmental Protection Inspectors (EPIs), and more than 200 senior/ experienced professional staff. Most of these sessions were conducted in the form of live-training webinars.
- Training in investigation skills, provided for 12 staff through the Civil Service Bureau.

The EnA, which was established by the EPD to enhance training so our staff can better implement various environmental blueprints and meet upcoming challenges, has been upgraded with new facilities to meet growing training needs and offer a more systematic approach to training. The Environmental Academy@ Smart Venue was officially opened in November 2020, marking a new milestone for human resources development in the Department. The Venue is well equipped with a variety of training facilities, including the immersive Cave Automatic Virtual Environment — a technological innovation providing staff with immersive 2D and 3D training experiences. Through the 3D geographic information presented in the virtual tour, trainees can quickly grasp the current state of the environment.

A refresher session on Fire Service Installation Acceptance, jointly organised with the Fire Services Department in January 2020

Experts and EPD management discuss microplastic pollution with local academics and staff from the EPD and other Government departments in January 2020

Graduation Ceremony for AEPOs and EPIs, held in September 2020

The Environmental Academy @ Smart Venue Opening Ceremony, held in November 2020

A leadership development training workshop for EPI Grade staff (Module 2)

Common Core Module CC-G1(a) held in November 2020

Table 1: Staff Training in 2020

Grade of Staff	Average No. of Training Days
Senior Management	0.02
Professional	1.61
Inspectorate	0.69
Other	0.51
Average per staff member	**0.90**

Achievements

Ombudsman's Award Winners

Two EPD staff were honoured in the Ombudsman's Awards 2020 in recognition of their professionalism and efforts in delivering quality public service.

Ms. Wong Ka-lai, a Chief Environmental Protection Inspector of the Regional Office (South), was honoured for her remarkable efforts and contributions to improving efficiency and effectiveness in handling pollution complaints in Eastern District. Her work is particularly notable for making innovative use of new technology. For instance, when the online geographic information system ArcGIS was introduced in the EPD in 2019, she developed a tailor-made application for mobile devices that gave her inspection teams instant access to such information as potential water pollution sources, drainage systems, land-use maps, past inspection records, etc., in Eastern District. Ms. Wong and her team are now expanding the capabilities and uses of the application with a view to deploying it to other teams.

Ms. Lee Pui-shan, a Senior Environmental Protection Inspector, was similarly honoured for her effectiveness in handling complaints and combating pollution. She proactively liaises with other Government departments to ensure all concerns raised by complainants are properly addressed. For instance, when numerous complaints were made against landfilling activities near fishponds in Lut Chau, Yuen Long in 2019, she and her team discovered that these were mostly related to pond bund maintenance work. They worked closely with the AFCD, Lands Department and DSD to develop proper pond bund maintenance work that met the needs of the fishpond owners, and organised eight joint departmental meetings and site visits. Ms. Lee also effectively explained the situation to various stakeholders including the media, a Yuen Long District Councillor and environmental groups. Similarly, in 2018, Ms. Lee led an interdepartmental team to tackle a difficult landfilling complaint at Tai Kong Po, Yuen Long and they were able to not only prevent landfilling, but also solve drainage and land use problems in the area.

Congratulations to both Ms. Wong and Ms. Lee, whose work illustrates the high standards that EPD aspires to when engaging with and responding to the community. They received their awards on 4 December 2020.

The Ombudsman's Award Winners Ms. Wong (second right) and Ms. Lee (second left) with the Ombudsman Ms. Winnie Chiu (centre) and the Group Heads of EPD's Regional Offices Dr. Vanessa Au and Mr. Francis Yeung

Secretary for the Civil Service's Commendation Award 2020

Ms. Cannis Cheung Shui-kuen, Senior Environmental Protection Inspector, was awarded the Secretary for the Civil Service's Commendation Award 2020, which recognises consistently outstanding performance by civil servants. Ms. Cheung joined the Government in 1992 and has devoted herself to protecting the environment, most recently through monitoring and enforcement work in the EPD's Regional Office (North). Over the past seven years, she has focused on protecting the water quality of the Shing Mun River, where she and her team investigate and follow-up pollution incidents such as the discharge of fluorescent coloured water into Fo Tan Nullah. She has also actively promoted use of the EPD's mobile geographic information system (GIS) among colleagues to improve their efficiency and access to information. Ms. Cheung and her team have seen their efforts pay off: water quality in the Shing Mun River has been rated "excellent" or "good" over the past five years. Congratulations to Ms. Cheung on her successes in improving the environment.

Ms. Cheung (right) with Secretary for the Civil Service, Mr. Patrick NIP, JP at the award presentation ceremony

GIS Award

The Environmental Systems Research Institute, a world-renowned leader in GIS, honours select organisations that have been outstanding in applying GIS technology. In 2020 they honoured the EPD's applications in law enforcement and environmental compliance with the Special Achievement in Geographical Information System (SAG) Award.

The EPD's Environmental Compliance Division (ECD) has developed several innovative applications, including a GIS-based Pollution Tracking Platform to conduct real-time spatial analysis to track pollution sources; a District Environment Dashboard and Environmental Management Geodatabase Platform to provide real-time visualised data of complaint and enforcement statistics to help identify pollution trends and blackspots, plan strategic operations and manage enforcement resources; a Flytipping Spotter App for field inspectors to report abandoned construction waste detected during their patrols and upload photos and locations for follow-up; and an Operation Deployment Platform to enhance real-time communications and case information-sharing.

Congratulations to ECD, which has demonstrated with excellence the Department's commitment to applying innovation and technology to environmental protection.

The EPD's Smart Technology Force, which helped develop the innovations leading to EPD's "Special Achievement in Geographical Information System Award 2020" by the Environmental System Research Institute (ESRI)

Deputy Director of Environmental Protection, Mr. Elvis Au (second right), Assistant Director of Environmental Protection (Environmental Compliance), Mr. Ken Wong (second left), and representatives of the project team receive their award from the Founder and Chairman of ESRI China (Hong Kong) Limited, Dr. Winnie Tang (centre)

The ESRI award and certificate

Staff Welfare

Regarding health and safety, 45 training classes were organised in 2020 for more than 197 participants. Safety tips and reminders were also sent to staff regularly through the intranet system.

The rate of occupational injuries was 1.8 per 1 000 staff during the year. Each case was followed up to identify the cause and, where appropriate, necessary measures were undertaken to prevent recurrence. Incidence summaries were also prepared for staff to heighten alertness and prevent further incidents.

At EPD's waste management facilities, the accident rate was 0.73 accidents per 100 000 man-hours worked. The facilities include the strategic landfills, CWTC, AWCP, Low-level Radioactive Waste Storage Facility, Restored Landfills, RTSs, Food Waste Pre-treatment Facilities for Food Waste/ Sewage Sludge Anaerobic Co-digestion Trial Scheme, T·PARK, O·PARK1, WEEE·PARK and Y·PARK.

In terms of community-building, staff of the ENB and EPD are encouraged to join community activities supporting environmental and social causes. Staff social events are also organised to build team spirit and encourage networking. In 2020, staff participated in three fund-raising events for the Community Chest, including Skip Lunch Day, Dress Casual Day and Love Teeth Day.

Targets for 2021

Long Term Objectives	Programme Area	2021 Targets
Promote a lifelong learning culture among ENB and EPD staff and encourage their participation in training activities	Human Resources	Organise at least 80 in-house training programmes
		Arrange at least 90 in-house and external safety and health courses

Appendix I Environmental and Energy Policy

Vision

Our vision is of a Hong Kong

- which enjoys an environment that is both healthy and pleasant;
- in which the community places a premium on sustaining such an environment for both themselves and future generations, and pursues sustainable development; and
- in which the community enjoys a reliable and safe energy supply at reasonable prices, while improving energy efficiency, promoting energy conservation and minimising the environmental impacts from the production and use of energy.

To realise our vision, we will continue to strengthen our ability to meet environmental sustainability goals. We will formulate policies and implement programmes to improve and safeguard the environment while contributing proactively to strategic decision-making in the Government that will have an impact on the environment. We are committed to ensuring that all policies, services and programmes offered by the ENB and the EPD, as well as our own internal operations, are developed and conducted in an environmentally responsible manner.

To realise our vision on energy side, we will continue to monitor the operations of the two power companies and the towngas supply company through the established monitoring arrangements. We will strive to achieve energy efficiency and conservation through public education, promotion, legislation and implementation of various programmes. We will also promote competition and transparency in the local fuel market.

In pursuance of these goals, the ENB and EPD have adopted the following principles:

Compliance

We aim to establish an effective legislative and an efficient control framework to safeguard the health and welfare of the community from any adverse environmental, conservation and energy-related issues. We will facilitate businesses to comply with environmental legislation through educational and promotional programmes, and encourage our business partners to further enhance their performance by adopting green practices with a view to going beyond compliance.

We will seek to provide moral leadership by not only complying with the letter of the law, but the spirit of all applicable legislation, standards and regulations, as well as our internal guidelines and procedures, in all our operations within the ENB and EPD. We will endeavour to surpass them whenever possible.

Pollution prevention

We aim to pre-empt environmental problems associated with development projects, plans and policies by applying environmental impact assessment in the planning process and seeking opportunities to improve the environmental quality of Hong Kong.

We will implement ISO14001 environmental management systems to improve continually the environmental performance of our major facilities. We will avoid, reduce and control environmental pollution arising from our day-to-day working practices. We will require our contractors to adopt and implement sound environmental management systems and pollution control measures, and actively encourage businesses and other organisations in Hong Kong to adopt similar systems and measures. We will help reduce air emissions by implementing plans and measures that are relevant to our operations to meet the commitments of the Clean Air Charter.

Adequate infrastructure for waste treatment

We will provide first-class physical infrastructure for the treatment and disposal of waste and wastewaters in line with international best practice.

Response to environmental incidents

We will implement an emergency response system for handling environmental incidents and we will work

closely with other Government departments in responding quickly to minimise the damage to the environment.

Minimisation of consumption

We aim to plan and provide convenient and cost-effective waste management facilities, as well as promote a sustainable approach to waste management in Hong Kong, in which we consume less, produce less waste, and reuse or recover value from waste.

We will exercise the principles of Reduce, Reuse, Recycle and Responsibility in the consumption of materials and seek continual improvement in the efficient use of natural resources and energy in all our operations.

Energy supply and efficiency

We will continue to oversee the reliability of power supply and monitor the performance of the power companies. We will also actively promote energy efficiency and energy saving in the planning, design, production, use and maintenance of products, buildings and services. We aim to integrate energy conservation and efficiency considerations into policies, strategies, plans, programmes, implementation and operations in both the public and private sectors. We will actively promote partnership and community support, facilitate suitable research and development, and raise the awareness of the community on energy efficiency and conservation matters.

Sustainable development

We will actively promote and contribute to Government-wide policies and programmes that support sound environmental management and sustainable development. We will use and promote evolving scientific and technological systems, work with others and continue to build new partnerships in the pursuance of sustainable development objectives.

Communication and partnership

We aim to promote community awareness of the environment, energy and sustainable development through campaigns, publicity, education and action programmes. We strive to partner with all relevant stakeholders in promotion and public education activities, with a view to harnessing the community's support for, and contribution to, achieving our desired goals for the environment, energy efficiency and sustainable development.

We will also publicise to the community our policies on the environment, energy and sustainable development and report annually on our environmental performance. We will ensure that all our staff are aware of our policies and that they are able to provide detailed information about our policies and initiatives to stakeholders in their particular areas of concern.

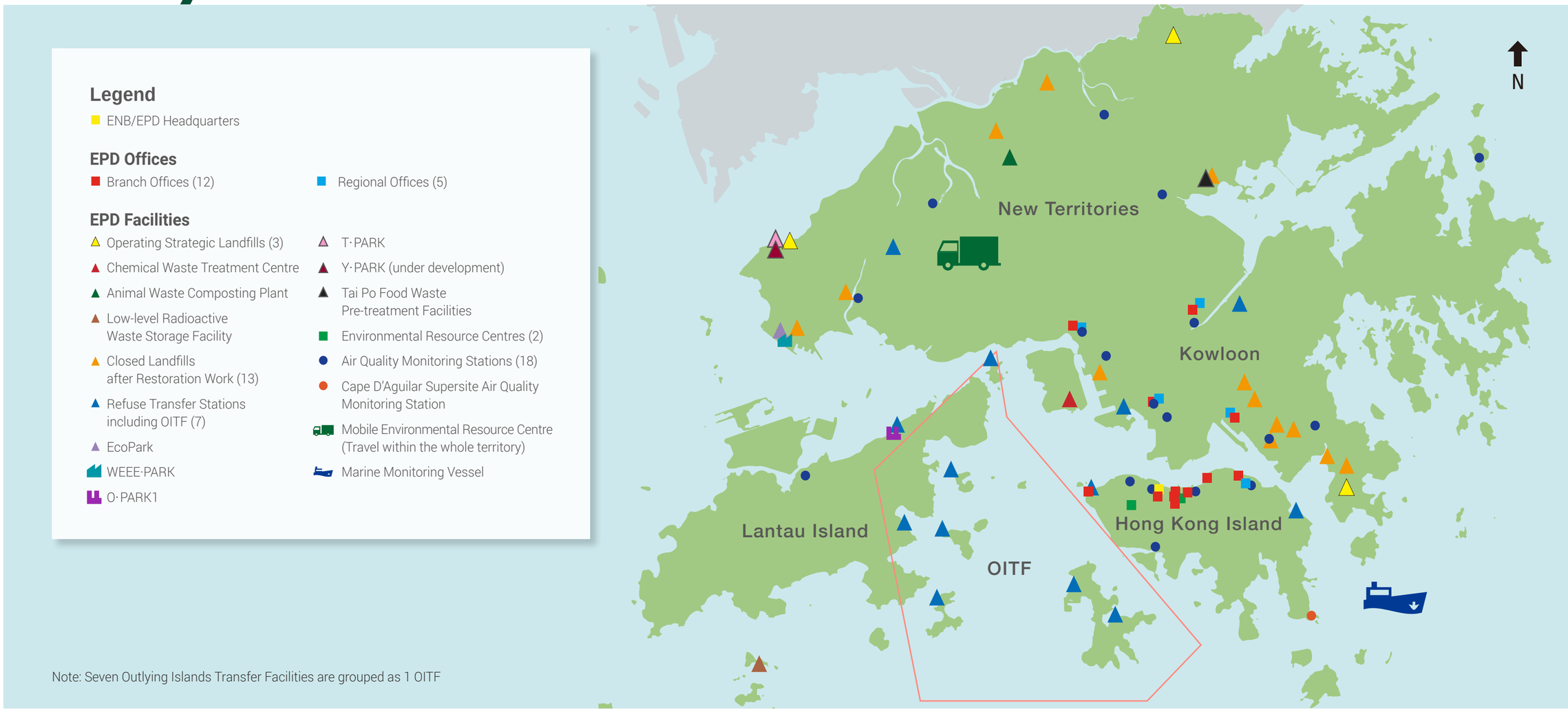
Training

We will ensure through appropriate training and professional development, that every member of our staff has the knowledge and competency to assume his/her responsibilities and to participate constructively in relevant activities.

Management review

The Management will review this policy as well as our objectives and targets on the environment, energy and sustainable development, with regard to changing internal and external factors, and seek continual improvement in our performance.

Appendix II
ENB / EPD Offices and Facilities



Note: Seven Outlying Islands Transfer Facilities are grouped as 1 OITF


GREEN@COMMUNITY - Recycling Stations
GREEN@KWUN TONG
GREEN@YUEN LONG
GREEN@SHAM SHUI PO
GREEN@SHATIN
GREEN@TAI PO
GREEN@EASTERN
GREEN@ISLANDS
GREEN@TUEN MUN
GREEN@KWAI TSING
GREEN@COMMUNITY - Recycling Stores
GREEN@QUARRY BAY
GREEN@TIN WAN
GREEN@TIN HAU
GREEN@SAI YING PUN
GREEN@SHEUNG WAN
GREEN@TO KWA WAN
GREEN@HUNG HOM
GREEN@WALLED CITY
GREEN@YUE MAN SQUARE
GREEN@TAI KOK TSUI
GREEN@TAI PO MARKET
GREEN@CHEUNG SHA WAN
GREEN@SAN PO KONG
GREEN@PO LAM
GREEN@KWAI CHUNG
GREEN@FANLING
GREEN@SHEK WU HUI
GREEN@TAI WAI
GREEN@LO TAK COURT
GREEN@SAN HUI
GREEN@YUEN LONG HUI
GREEN@MUI WO
N
New Territories
Kowloon
Lantau Island
Hong Kong Island

Photos of some Offices and Facilities

ENB / EPD headquarters offices at the Central Government Offices

Revenue Tower Office

Regional Office (North)

Customer Service Centre

Roadside Air Monitoring Station at Central

Mobile Environmental Resource Centre

O·PARK1

Chemical Waste Treatment Centre

T·PARK

WEEE·PARK

EcoPark

Animal Waste Composting Plant

GREEN@ISLAND

GREEN@ CHEUNG SHA WAN

Island West Transfer Station

WENT Landfill

NENT Landfill

SENT Landfill

2020 Expenditure

EPD Expenditure: $5.883 billion
(Excluding spending under the Capital Works Reserve Fund)

Expenditures	Percentage
Staff costs	25.6%
General recurrent expenses	16.2%
Fees for operation of waste management facilities	41.2%
Capital and non-recurrent expenditure	17.0%

ENB Expenditure: $5.861 billion

Expenditures	Percentage
Staff costs	0.9%
General recurrent expenses	0.5%
Non-recurrent expenditure	98.6%

SEE GRAPH

Staff Profile

EPD Establishment: 2 314

Employee Breakdown by Gender

Gender	People
Male	1 331
Female	913
Unfilled	70

Employee Breakdown by Grade

Grade	People
Professional	713
Administrative and support	545
Technical	1 056

ENB Establishment: 52

Employee Breakdown by Gender

Gender	People
Male	15
Female	37
Unfilled	0

Employee Breakdown by Grade

Grade	People
Professional	10
Administrative and support	42

SEE GRAPH