

環保工作報告

ENVIRONMENTAL
PERFORMANCE REPORT

2022



環境及生態局 (環境科)
Environment Branch
Environment and Ecology Bureau



環境保護署
Environmental Protection Department

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ENB / EPD Offices and Facilities



In 2021, with the COVID-19 pandemic situation gradually subsiding, the Environmental Protection Department (EPD)'s offices and services progressively resumed normal operations and the then Environment Bureau (ENB) and EPD were able to press on with fulfilling our mission to protect Hong Kong's environment.

Green management systems were in place to maintain and continually improve the ENB/EPD's environmental performance, including regular checks and audits on the implementation of energy-saving measures and targets, and ongoing communications with staff about reducing waste and energy use. For example, we are progressively delamping and installing programmable timers in our offices, and continue to work on reducing mileage and emissions and shifting to greater use of electric vehicles (EVs).

Our waste facilities continued to operate under strict environmental conditions amid

FOREWORD

their expansion. Over the past five years, Hong Kong have developed facilities for treating different types of wastes, including the O-PARK1 for food waste, the T-PARK for sewage sludge and the WEEE-PARK for regulated waste electrical and electronic equipment. A new yard waste recycling centre, Y-PARK, was also commissioned in mid-2021. We are also developing the second phase of O-PARK (O-PARK2) and the Integrated Waste Management Facilities Phase 1 (I-PARK1), which would treat up to 3 000 tonnes of municipal solid waste (MSW) each day. However, Hong Kong still needs limited extension of the existing three strategic landfills to handle MSW until sufficient waste-to-energy facilities are available. The South East New Territories Landfill Extension started receiving construction waste in November 2021, and the tendering exercise for the North East New Territories Landfill Extension project was also completed in 2021. We strive to turn waste into useful resources, such as electricity and compost, and install solar panels in waste

management facilities. We reported the output of these measures in this year's Environmental Performance Report.

Our community recycling network GREEN@COMMUNITY continued to expand to collect recyclable so as to boost Hong Kong's waste recovery rate. By the end of 2021, we have opened 11 Recycling Stations, 22 Recycling Stores and more than 100 Recycling Spots throughout Hong Kong.

The ENB/EPD never ceased to care for our staff. An extensive array of in-house and external training programmes have been arranged to develop the abilities of the staff in many aspects. The positive work attitude of our staff was evident by the fact that individual staff won the Secretary for the Civil Service's Commendation Award in 2021 and the Ombudsman's Awards 2021; and the Environmental Compliance Division was honoured at the Hong Kong Information and Communication Technology Awards

2021. I also take great pride in the EPD as a department receiving the Ombudsman's Award 2021 for Public Organisations for our dedication and diligence in solving problems and addressing complaints from the public as soon and as fully as possible.

As we work towards developing a greener future for Hong Kong, we will continue to be diligent in serving the public and ensure our operations also minimise environmental harm and meet our aspiration for sustainability.



Miss TSE Siu-wa, Janice, JP

Permanent Secretary for Environment
and Ecology (Environment) /
Director of Environmental Protection

SCOPE OF THE REPORT

This Environmental Performance Report covers 1 January - 31 December 2021 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 2022](#), which covers our activities and achievements in these areas in the 2021 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

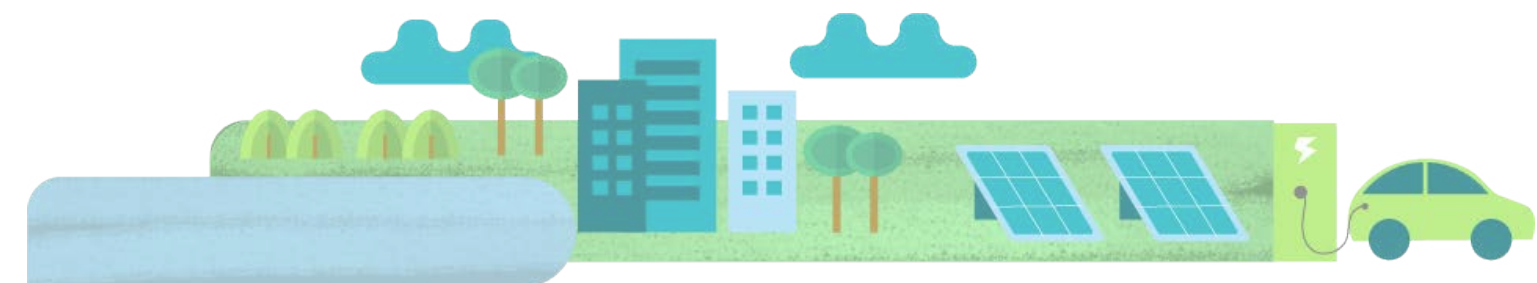
Is to contribute towards realising this vision by applying our professional knowledge and judgment and drawing on international experience

- 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 co-operation;
- 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.

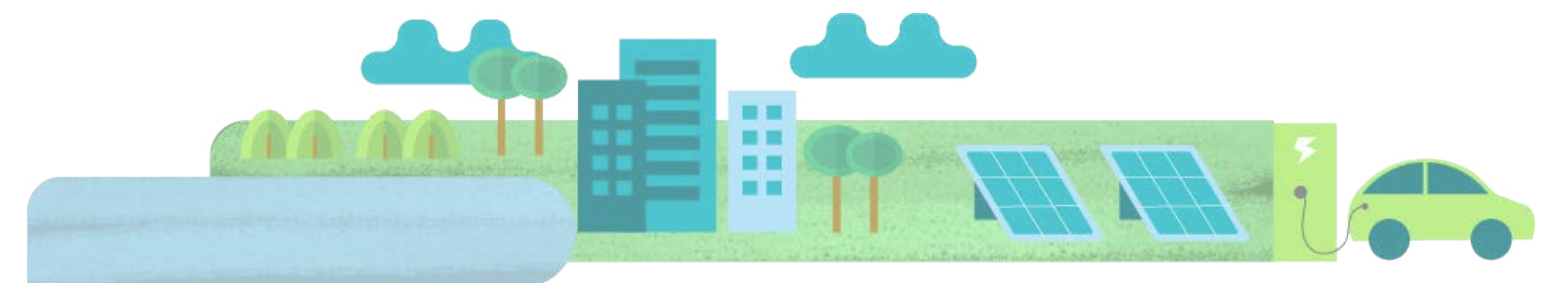


OUR ORGANISATION AND PRIORITIES

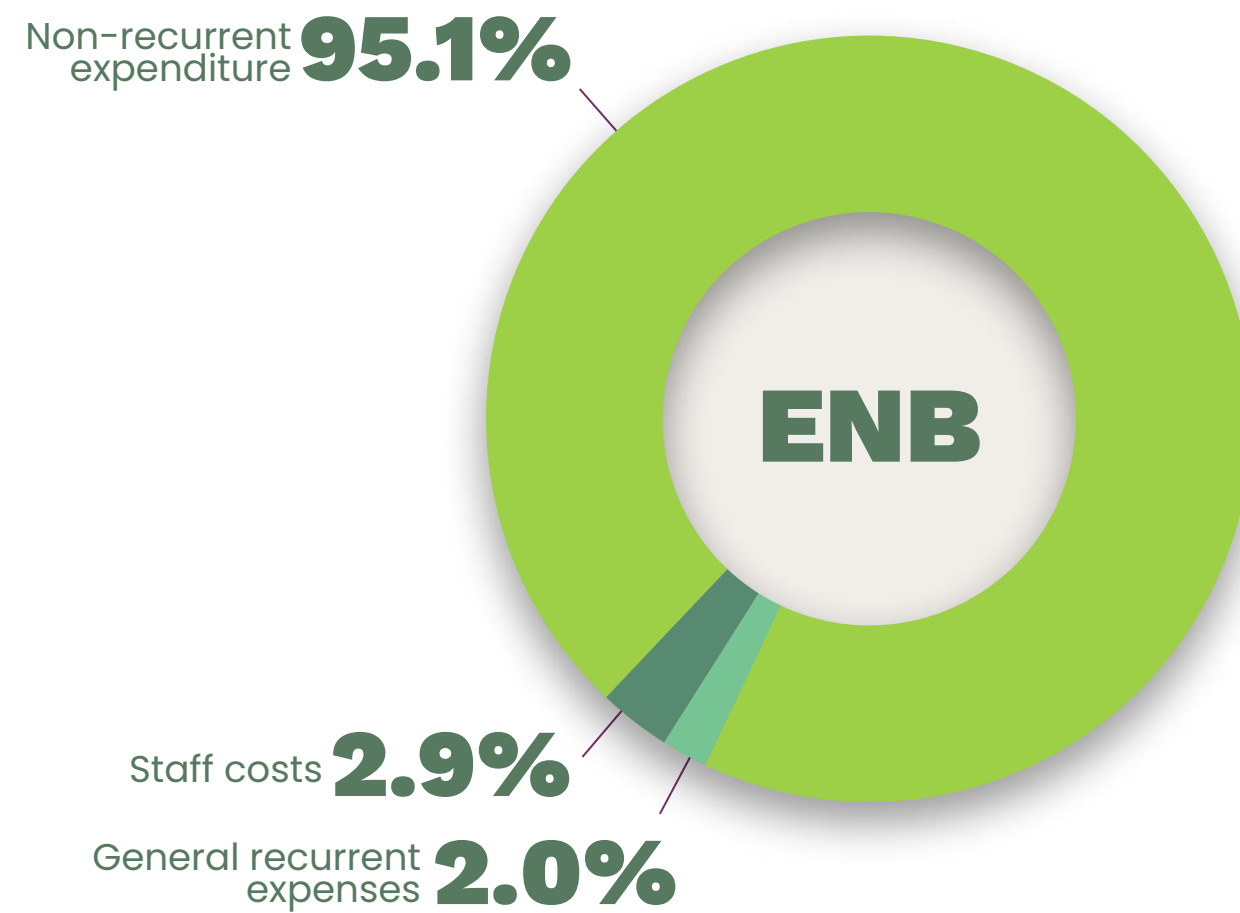
The ENB and EPD are responsible for developing Government policies and programmes to protect Hong Kong's environment. The Secretary for the Environment reports directly to the Chief Executive and Executive Council.

Areas of Responsibility

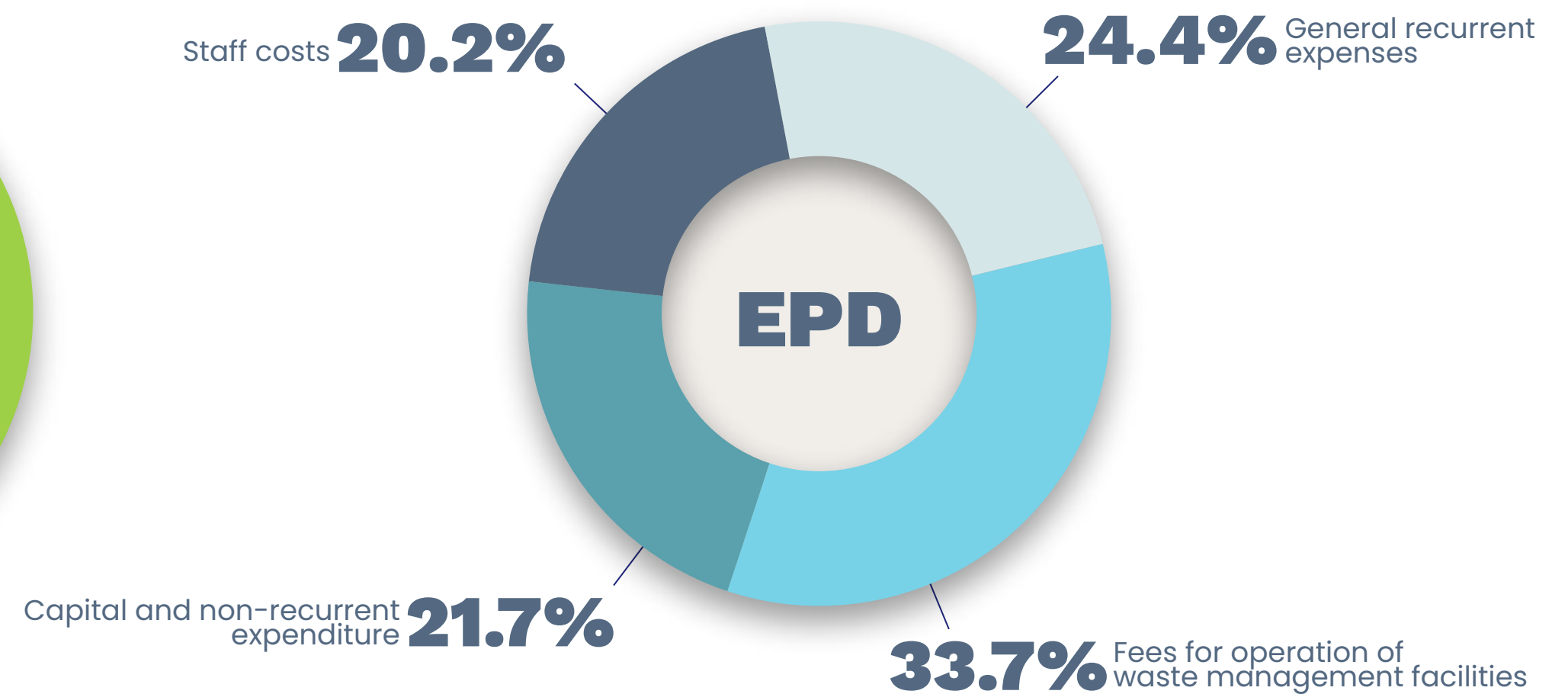
- **Environmental protection.** The ENB is responsible for overall policy on the environment. The EPD, which comes under ENB, develops and implements policies and programmes on Air, Environmental Assessment and Planning, Noise, Waste and Water. The EPD also develops policy on nature conservation, which 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.



2021 EXPENDITURE

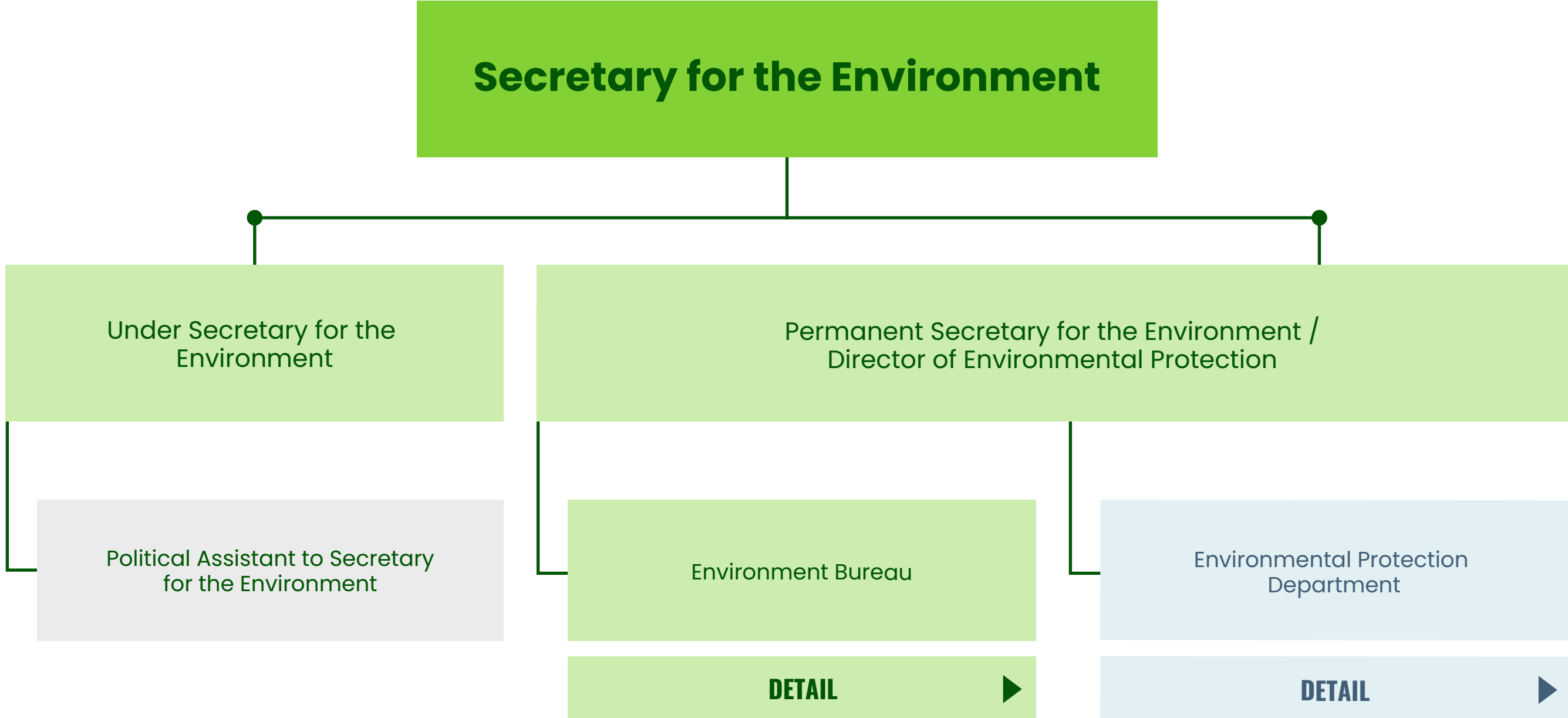
\$1.740 billion**\$7.324 billion**

Excluding spending under the Capital Works Reserve Fund

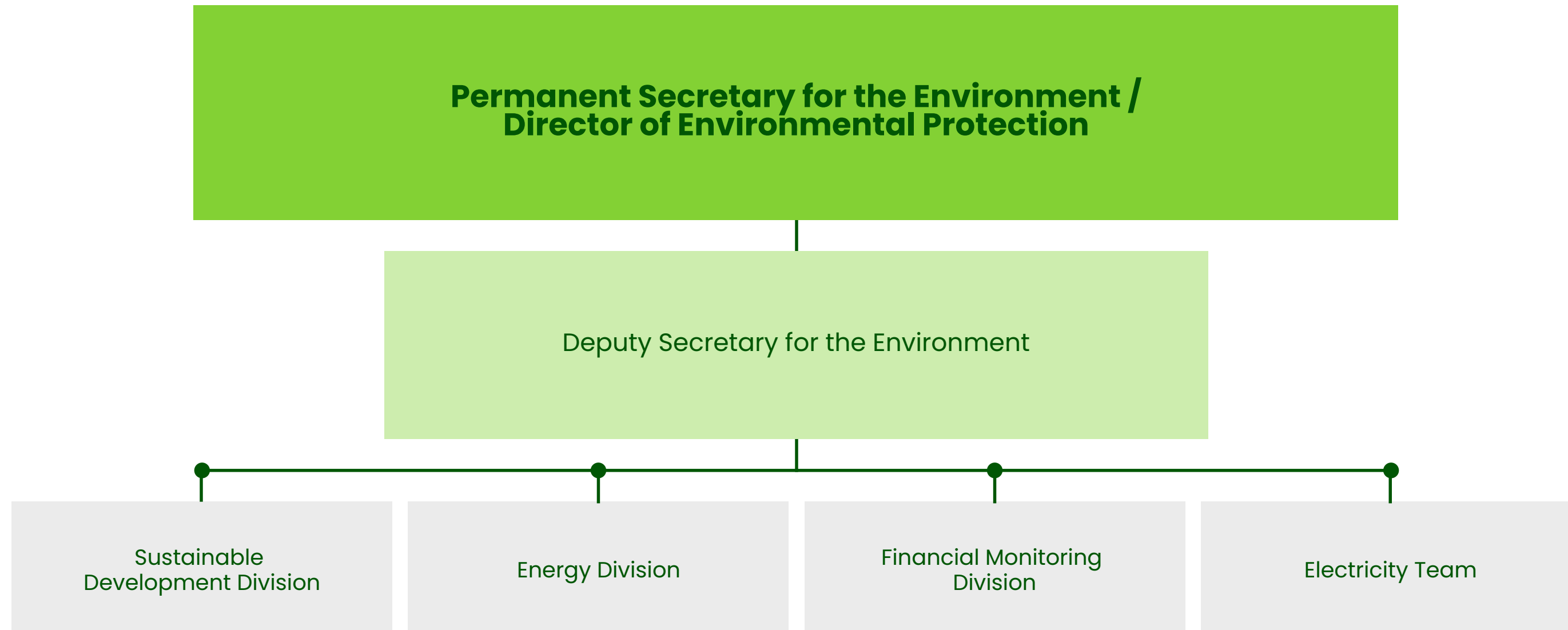


SEE DATA

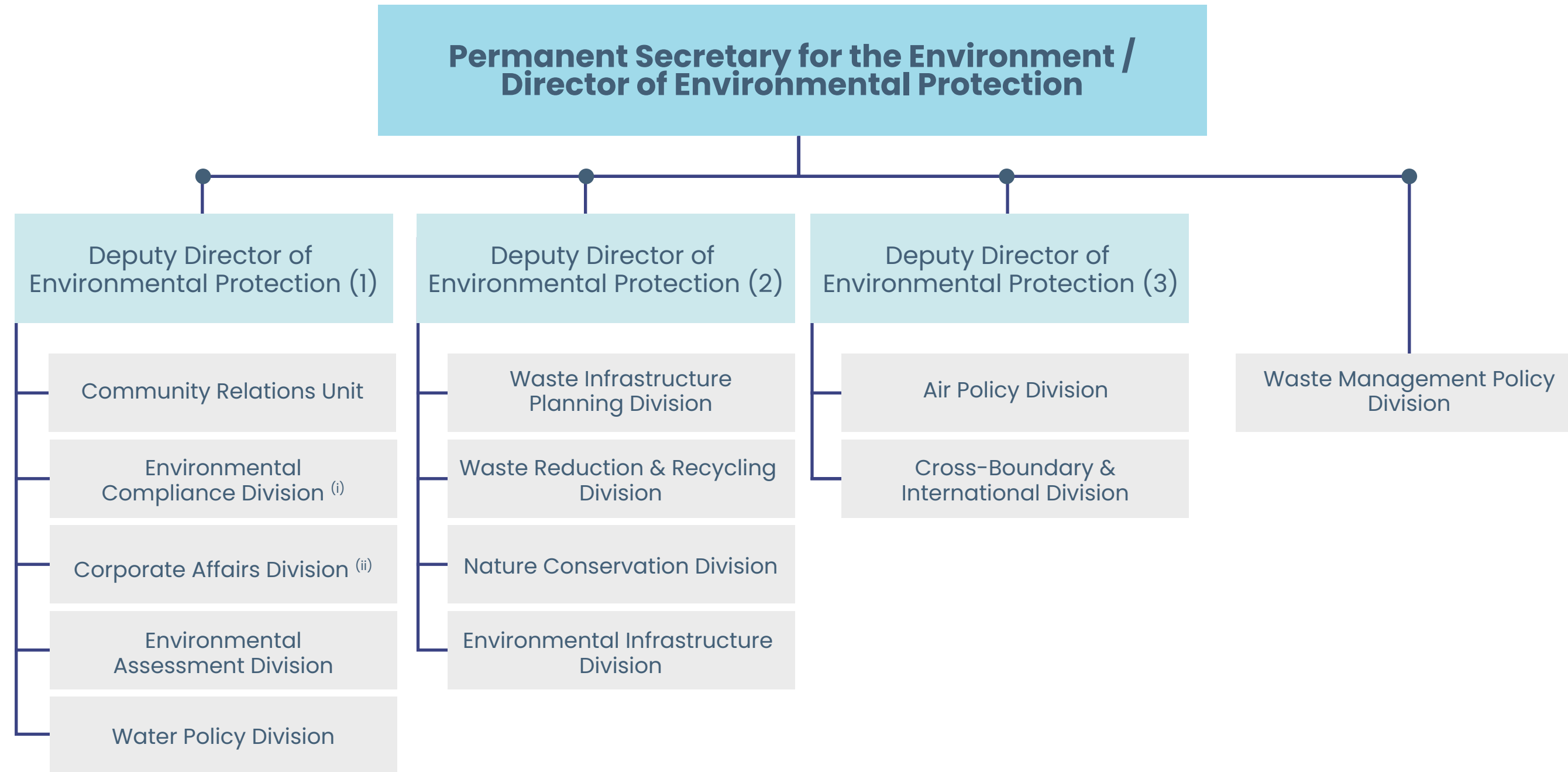
ORGANISATIONAL STRUCTURE



ENVIRONMENT BUREAU



ENVIRONMENTAL PROTECTION DEPARTMENT



Remarks: ⁽ⁱ⁾ Major enforcement duties under Air, Environment and Planning, Noise, Waste & Water Programmes are carried out by the Environmental Compliance Division.

⁽ⁱⁱ⁾ Covers Corporate Environmental Management, Knowledge Management, Staff Safety & Health, Human Resources Management, Information Technology and Central Prosecution.



MANAGING THE ENVIRONMENTAL IMPACTS OF OUR OPERATIONS

GREENING OUR OFFICES



Green Management System

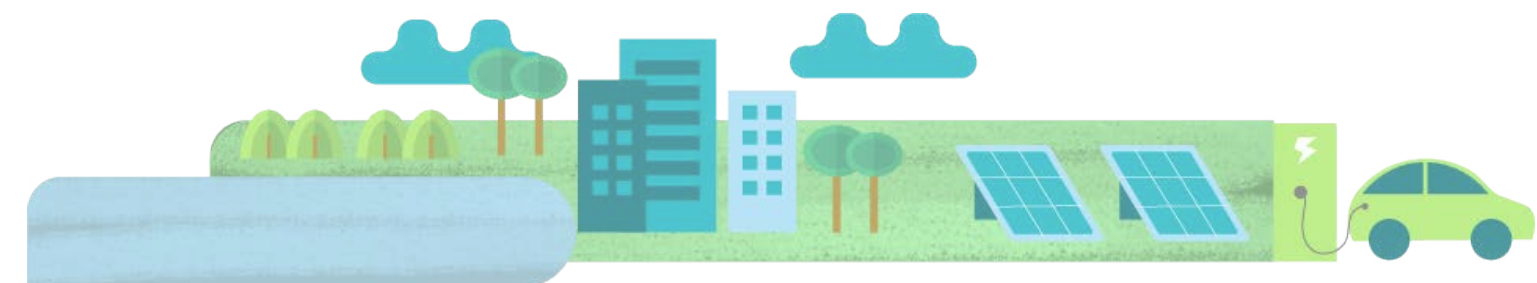
Aims: The ENB and EPD's work in 2021 focused on improving the environmental impacts of our office operations by the following means:

- 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. 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 co-ordinate 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 2021: 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 2021, the total electricity consumption in all ENB and EPD Offices increased by 13.6% compared to 2020. This is mainly due to the addition of more offices and the full resumption of normal public services when compared to 2020. However, the annual electricity consumption per employee has slightly decreased from 1 777 kilowatt hours (kWh) in 2019, when offices operated normally for the year, to 1 746 kWh in 2021.

Table 1: Electricity consumption in offices 2020-2021*

	2020	2021
Electricity Consumption in all ENB and EPD Offices (million kWh)	3.573	4.059

* 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 2020-2021

	2020	2021
Electricity consumption		
Office Electricity Consumption (million kWh)	3.573	4.059
EV Electricity Consumption (million kWh)	0.008836	0.010990
Total Electricity Consumption (million kWh)	3.582	4.070
Emissions from electricity consumption		
Carbon Dioxide equivalent (CO ₂ -e) (tonnes) #	2 267	2 564
Sulphur Dioxide (SO ₂) (kg)	7 522	8 546
Nitrogen Oxides (NO _x) (kg)	4 657	5 291
Respirable Suspended Particulates (RSP) (kg)	358	407

The latest emission factor was used for the calculation of 2020 CO₂-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 co-ordinate 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 2021:

- **Delamping:** After noticing that light intensity in some offices was higher than the recommended values, we delamped 28 T5 fluorescent tubes (28W). The estimated saving was 2 352 kWh/annum (28W x 28 x 12 hours x 250 days /1000).
- **Programmable timers:** These are installed in shared-use electrical and electronic equipment to switch off these items outside office hours. In 2021, 31 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 2021: The EPD is gradually replacing its fleet with low-emission vehicles. Emissions and mileage of vehicles decreased when compared to 2020, when there was heavier use due to the pandemic control situation. The *Dr. Catherine Lam* marine vessel was out of service for routine operation throughout 2021 so it is not included in this year's emissions report.



One of the EPD's electric vehicles (EVs)

Table 3: Annual fuel consumption and direct pollutant emissions^[1] by vehicles 2020-2021

	2020	2021
Vehicle Fleet	50 vehicles ^[2]	54 vehicles ^[3]
Diesel (Litres)	18 473	11 763
Petrol (Litres)	102 095	67 218
Liquefied petroleum gas (LPG) (Litres)	85	127
Electricity (kWh) ^[4]	8 836	10 990
Mileage (km)	850 715	582 933
NOx (kg) ^[5]	1 118	700
RSP (kg) ^[5]	167	96

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] 10 diesel vehicles with AdBlue (urea solutions), 35 petrol, three electric, one electric/petrol, one LPG.

^[3] 10 diesel vehicles with AdBlue (urea solutions), 39 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*.

Reducing Waste

The ENB and EPD collected more than 56 000 kg of waste paper and plastics for recycling in 2021. Collection of all wastes for recycling increased in 2021 following a drop in 2020 when normal operations were disrupted. 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 use of 84 702 sheets of paper in 2021.

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 2021: The following wastes were collected for recycling:

- 54 850 kg of waste paper, up 15% from 2020.
- 414 kg of plastic waste, up 100%.
- 1 373 printer cartridge units, up 17%.
- 312 photocopier toner bottles, up 29%.

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. In 2021, emissions of carbon dioxide equivalent (CO₂-e) in Island West Transfer Station, the only ENB/EPD owned office that falls within this category, increased by about 11.38%. This was mainly due to higher electricity and paper consumption, with some of this impacted by window and other minor repair works that were carried out during the year.

	2020	2021
1. Scope of Reporting		
Total Scope 1/ Direct Greenhouse Gas (GHG) Emissions:	6.84 tonnes of CO ₂ -e	5.91 tonnes of CO ₂ -e
Total Scope 2/ Indirect GHG Emissions:	515.24 tonnes of CO ₂ -e	575.49 tonnes of CO ₂ -e
Total Scope 3/ Other GHG Emissions:	4.23 tonnes of CO ₂ -e	4.83 tonnes of CO ₂ -e
Total GHG Emissions:	526.31 tonnes of CO ₂ -e	586.22 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	0.16 tonnes of CO ₂ -e/ m ²
GHG Emissions per Employee (Total GHG Emissions/ No. of Employee):	2.39 tonnes of CO ₂ -e/ employee	2.66 tonnes of CO ₂ -e/ employee

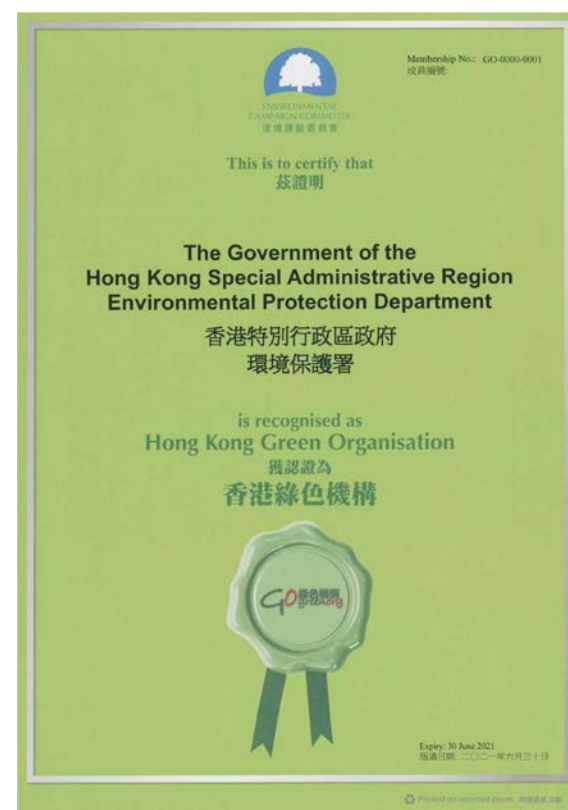
Green Government Procurement

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 2021, the ENB and EPD together purchased about \$29.37 million in products and services from the list, up from \$25.66 million in 2020. To further boost green procurement in the Government, the EPD expanded its green procurement list from 150 items to 183 items and updated the relevant green specifications and easy tips in July 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 23 offices, visitor centres and facilities attained “Good Class” or “Excellent Class” in 2021 under the Indoor Air Quality (IAQ) Certification Scheme.



| Hong Kong Green Organisation Certificate

Targets for 2022

Long Term Objectives	Programme Area	2022 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 2021
	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 that the facilities operate efficiently. In 2021, 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, which has the capacity to turn up to 200 tonnes of food waste into renewable energy and compost each day. In 2021, it recycled about 45 000 tonnes of food waste into 10.9 million kWh of electricity; this was used to support its needs with the surplus exported to the grid. It also generated 2 626 tonnes of compost. O-PARK1 also opened a visitor centre in March 2021. Meanwhile, work is continuing 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 2024.

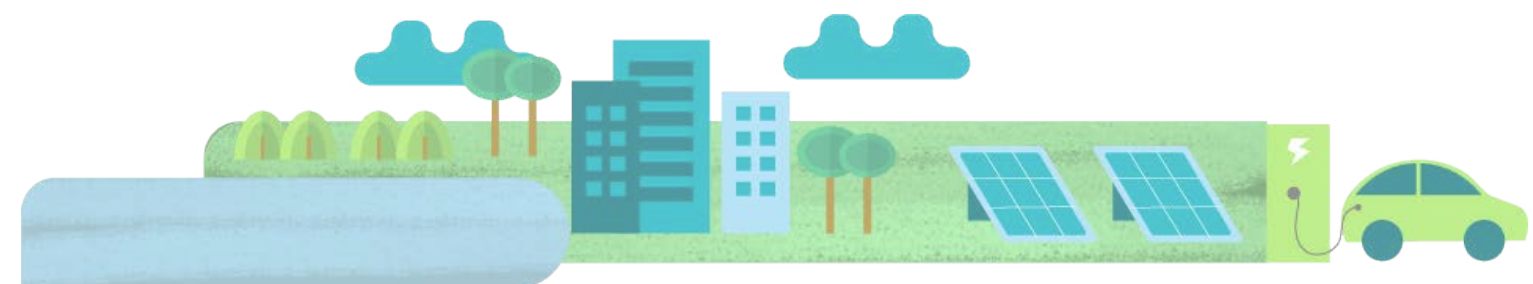


| O-PARK1



| 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 at the Tai Po Sewage Treatment Works (TPSTW), 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, and turned into a semi-liquid product at the Food Waste Pre-treatment Facilities. This is then delivered to TPSTW for anaerobic co-digestion with sewage sludge. 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.





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

WEEE-PARK

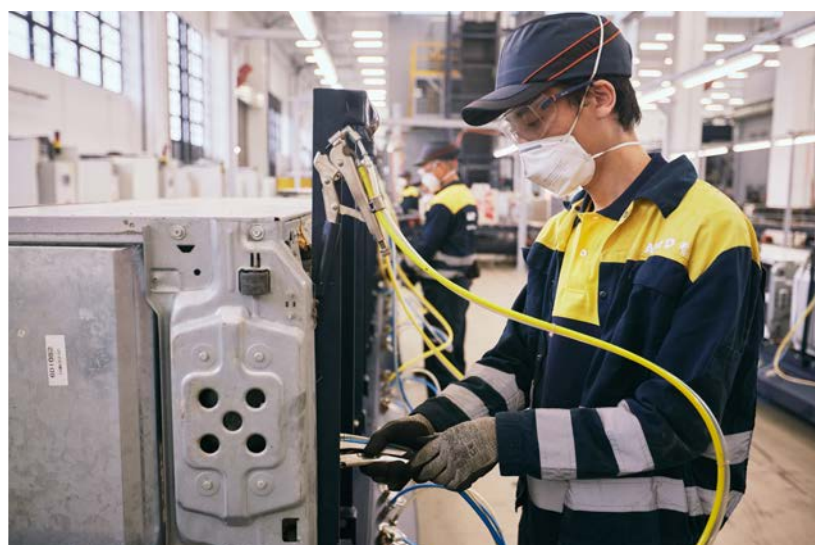
The WEEE-PARK officially opened in March 2018 to dismantle, detoxify and recycle regulated waste electrical and electronic equipment (WEEE) to support the Producer Responsibility Scheme on WEEE. In 2021, it processed around 23 970 tonnes of regulated WEEE.

In 2021, WEEE-PARK generated about 250 000 kWh of electricity through its solar panel system (about 8.6% of the total electricity consumption of the facility).

Y-PARK

The EPD commissioned the temporary yard waste recycling centre Y-PARK at the end of June 2021 to turn suitable yard waste into recyclable products such as wood boards, wood logs and wood chips for reuse, recycling and upcycling. In 2021, Y-PARK received about 6 000 tonnes of yard waste, mainly from site formation works and clearance works relating to routine vegetation maintenance. Its solar panels generated about 4 300 kWh of electricity (about 3.7% of the total electricity consumption of the facility).

Apart from general yard waste, Y-PARK recycles natural Christmas trees and peach blossom trees collected during the holiday season. It also has a resources centre that received about 800 visitors in 2021, including members of the public, teachers and students, wood artists, representatives from Government departments and wood-related industries. The resources centre introduces tree resources information, traditional skills and state-of-the-art wood upcycling technologies.



WEEE processing line



WEEE-PARK



Y-PARK

Integrated Waste Management Facilities Phase 1 (I-PARK1)

I-PARK1 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-PARK1 is in full operation, energy recovered from the waste will generate annual surplus electricity of 480 million kWh and reduce GHG emissions by 440 000 tonnes per year.

I-PARK1 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 furnace boiler units and flue gas cleaning units are being prefabricated in Zhuhai and will be shipped to the Process Building 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.



Site formation and piling works at the artificial island in progress at I-PARK1 (December 2021)



Steel structure erection for prefabricated electrical and mechanical units at I-PARK1's Prefabrication Yard in Zhuhai (December 2021)

T-PARK

T-PARK is one of the world's most technologically advanced sludge incineration facilities. In 2021, it treated a daily average of 1 123 tonnes of sewage sludge 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, spa pools and café, which in 2021 attracted more than 7 000 visitors despite operating at reduced scale, including some temporary closures due to the COVID-19 pandemic.



T-PARK combines advanced technologies including sludge incineration, power generation, seawater desalination, wastewater treatment, together with community amenities and an education centre

Other Waste Treatment Facilities

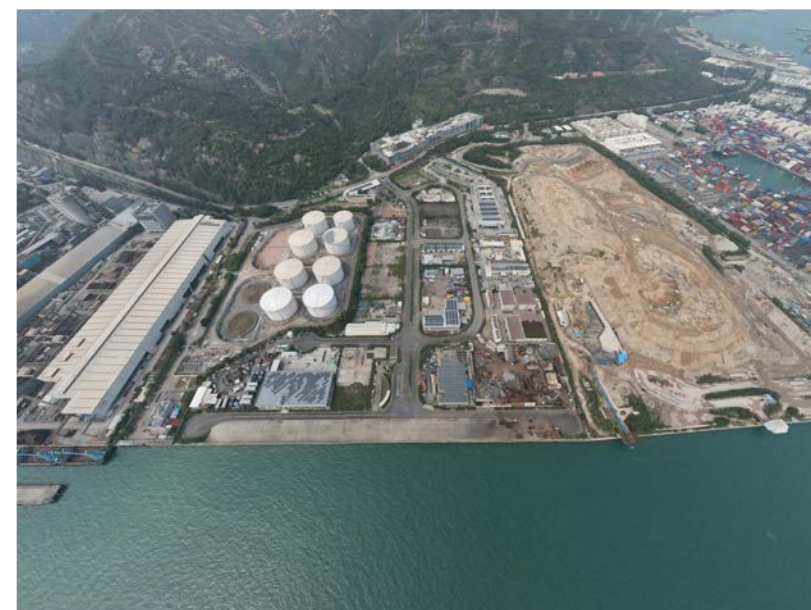
- Chemical Waste Treatment Centre (CWTC):** The CWTC provides integrated treatment and disposal services for almost all chemical waste and all clinical waste generated in Hong Kong. It treated an average 29.5 tonnes of chemical waste and 12.5 tonnes of clinical waste each day in 2021. The centre's environmental performance is closely monitored, including air emissions, stabilised residues and wastewater discharges. The CWTC also generated 13 920 kWh from its solar panels.
- Animal Waste Composting Plant (AWCP):** About 25.8 tonnes of horse stable waste and 0.4 tonnes of yard waste were treated here each day in 2021. The compost produced meets the standards of the Hong Kong Organic Resources Centre and is suitable for landscaping, horticultural and agricultural uses.
- EcoPark:** As of December 2021, long-term leases for nine lots of land with a total area of about six hectares had been issued to private recyclers at an affordable price. EcoPark also generated about 22 500 kWh of electricity through its solar panel system (4.6% of the total electricity consumption of the facility) and used 7.67 tonnes of mulch generated by Y-PARK.
- Low-level Radioactive Waste Storage Facility:** This facility continued to provide a very long-term (100 years) storage solution for low-level radioactive wastes such as 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.



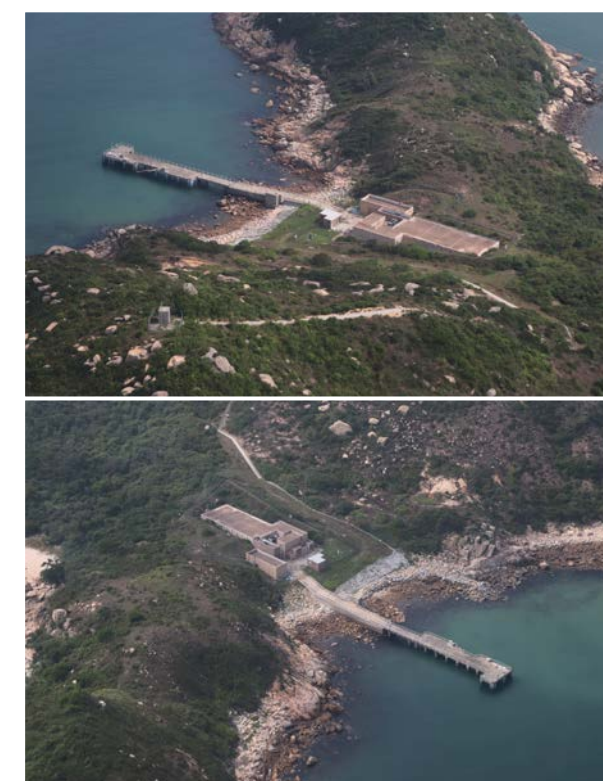
| The CWTC in Tsing Yi



| Animal waste composter at AWCP



| EcoPark



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

GREEN@COMMUNITY

This community recycling network (CRN), which by the end of 2021 included 11 Recycling Stations, 22 Recycling Stores and more than 100 Recycling Spots, has been developed to strengthen waste reduction and recycling support at district level. The CRN accepts at least eight common types of recyclables, including paper, metals, plastics, glass containers, regulated electrical equipment, small electrical appliances, fluorescent lamps and tubes, rechargeable batteries, etc. The recyclables collected are delivered to downstream recyclers for processing. To facilitate and encourage the public to use the facilities, a “GREEN\$ Electronic Participation Incentive Scheme” has been implemented under which the public can earn GREEN\$ when they deposit recyclables and use them to redeem gift items. In 2021, the CRN collected over 14 000 tonnes of recyclables and received nearly 3 700 000 visits.



Recycling Station – GREEN@WAN CHAI



Recycling Store – GREEN@KWAI CHUNG



SENT Landfill extension (1st operation day on 21 November 2021)

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 in accordance with 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 work and results.



NENT Landfill

Landfill extensions

To meet Hong Kong's future landfill needs, the capacities of all three strategic landfills are being extended. In November 2021, initial work on the SENT Landfill extension was completed and it began receiving construction waste. A tendering exercise for the NENT Landfill extension project was completed in 2021. Design and other preparatory work continued on the WENT Landfill extension. The EPD has worked closely with district counterparts to address residents' needs and concerns and enhance communication.



WENT Landfill

Landfill gas utilisation and solar farm development

Landfill gas is used to generate power for on-site use and as an alternative energy source for off-site use. The WENT Landfill uses surplus landfill gas to generate electricity for export to CLP Power Hong Kong Limited's power grid. The NENT Landfill uses surplus landfill gas to produce town gas and steam/hot water supply for Alice Ho Miu Ling Nethersole Hospital. The SENT Landfill conveys its surplus landfill gas to the Hong Kong and China Gas Company Limited's on-site reprocessing facilities for conversion into synthetic natural gas before it is injected to the latter's off-take station at Tseng Lan Shu.

In addition, a pilot solar farm with a capacity of 1 MW has been actively taken forward at the SENT Landfill with a view to commissioning it in 2022. This will help to establish the technical requirements and suitable models for developing large-scale solar farms at landfills in future.



| Landfill Gas Treatment Facility at the NENT Landfill



| Gas Power Generation Project at the WENT Landfill



| Landfill Gas Utilisation Plant at the SENT Landfill

Restored Landfills

Hong Kong has 13 closed landfills, which ceased to operate between 1975 and 1996. The EPD has restored all landfills and continues to carry out after-care works such as leachate and landfill gas management and landscaping. Most of these closed landfills have been converted into recreational and conservation uses, such as parks, sports facilities, multi-purpose grass pitches and a butterfly conservation area. In 2021, the Siu Lang Shui Restored Landfill used 2 500 kilogrammes of compost generated from O-PARK1.

The year also saw the EPD and the Tung Wah Group of Hospitals consult the Finance Committee (FC) of the Legislative Council on the E-Co Village project, a camping and green education ground proposed at the restored Tseung Kwan O Stage I Landfill. The FC supported the project and approved funding under the Restored Landfill Revitalisation Funding Scheme.



| 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 the MSW generated in Hong Kong in an efficient and environmentally friendly manner.



Island West Transfer Station

The existing RTSs have been in operation for over two decades. The EPD has been implementing refurbishment and upgrading works to these RTSs under follow-on contracts so as to maintain their reliable and safe waste transfer services, and enhance their operational efficiency and environmental performance. In 2021, EPD invited tenders for the follow-on contracts for the West Kowloon, Island West and Island East transfer stations.

Operational Performance in 2021

Waste facilities contractors are closely supervised by the EPD. They are expected to achieve full compliance with legal and contractual environmental requirements. In 2021, 435 087 monitoring measurements were conducted at RTSs, strategic landfills, restored landfills, the CWTC, T·PARK, O·PARK1 and WEEE·PARK, and 99.47% 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 2022

Long Term Objectives	Programme Area	2022 Targets
		Maintain close supervision of our waste facility contractors, aiming at full compliance with both statutory and contractual requirements
Ensure that the treatment and disposal of waste at our facilities are managed in the most environmentally acceptable manner	Waste Facilities	Continue to develop the pilot solar farm at the SENT Landfill for commissioning in 2022
		Start full operation of the landfill gas utilisation plant at the WENT Landfill



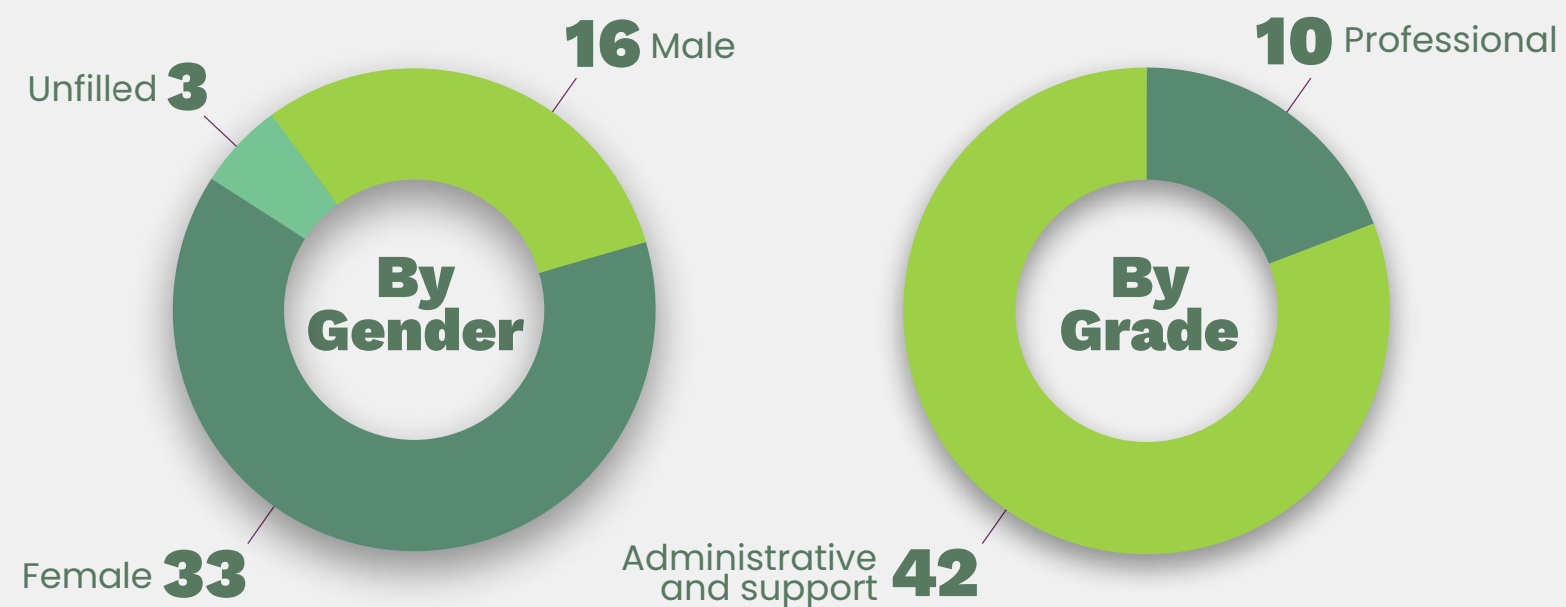
HUMAN RESOURCES DEVELOPMENT AND TRAINING

HUMAN RESOURCES AND DEVELOPMENT

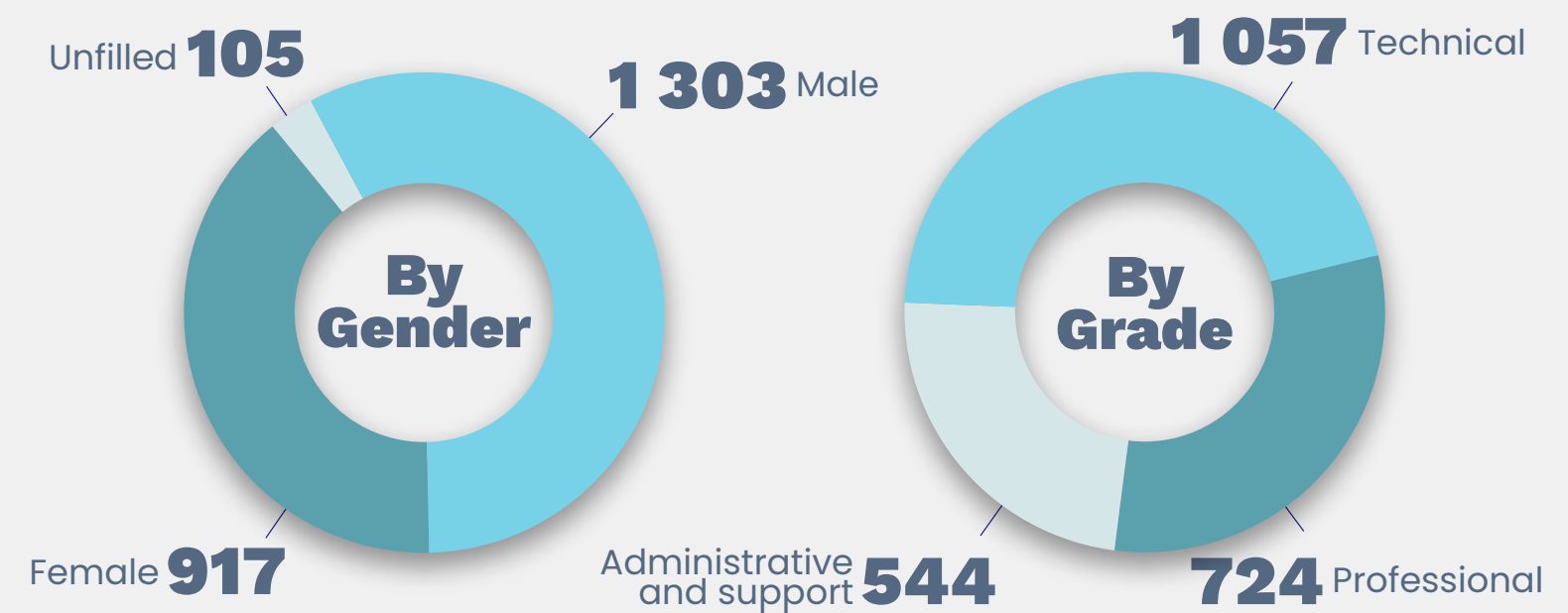
The ENB and EPD have been investing in the training and development of staff so they can fulfil their responsibilities and address new challenges. Lifelong learning is being promoted and opportunities are regularly provided for staff to participate in training activities.

STAFF PROFILE

ENB ESTABLISHMENT: 52



EPD ESTABLISHMENT: 2 325



[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 2021, training programmes continued to be affected by the COVID-19 pandemic and overseas training sessions 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 1 095 training programmes for a total 7 725 training days and received an average 2.84 days of training per staff member (see [Table 4](#)). Highlights included:

- 48 structured modules, nine refresher training sessions, one sharing session and a workshop on Unmanned Aircraft Systems (UAS) Pilot Training provided through the Environmental Academy (EnA) for about 700 newly recruited Assistant Environmental Protection Officers (AEPOs) and Environmental Protection Inspectors (EPIs), and around 300 senior/experienced professional staff.
- Training in investigation skills, provided for eight staff through the Civil Service Bureau.

Table 4: Staff Training in 2021

Grade of Staff	Average No. of Training Days
Senior Management	0.10
Professional	4.44
Inspectorate	2.59
Other	1.40
Average per staff member	2.84



| Experience sharing session with The Ombudsman held in June 2021

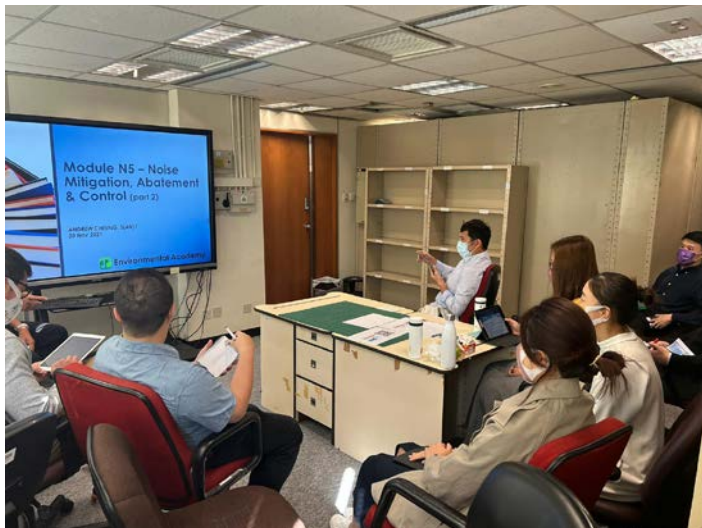


Site visit held in September 2021



Hong Kong Young Leaders, a briefing for summer internships, held in June 2021

Refresher training on efficient communication with the media held in October 2021



Session on noise mitigation, abatement and control held in November 2021



Refresher training on management of consultancy agreements under the jurisdiction of the Engineering & Associated Consultants Selection Board, held in September 2021



Refresher training on Noise Control Ordinance enforcement & special issues held in February 2021

To enhance our understanding of and knowledge about decarbonisation technologies and formulate policies and strategies to achieve carbon neutrality before 2050, Carbon Neutrality Task Force (CNTF) has been established in EPD in May 2021. The CNTF aims to provide training opportunities for staff of EPD and other relevant departments to get prepared for the imminent challenge. In 2021, 10 in-class training sessions covered the topics “Hydrogen as Fuel” and “Renewable Energy Development” and a site visit was arranged for 40 CNTF members.



| Inauguration of Carbon Neutrality Task Force on 28 May 2021



| Group Photo of Carbon Neutrality Task Force at Environmental Academy

Staff Welfare

Regarding health and safety, 37 training classes were organised in 2021 for more than 238 participants. Safety tips and reminders were also sent to staff regularly through the intranet system.

The rate of occupational injuries was 1.7 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 0.80 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 2021, staff participated in four fundraising events for the Community Chest, including Skip Lunch Day, Green Low Carbon Day, Dress Casual Day and Love Teeth Day.

Targets for 2022

Long Term Objectives	Programme Area	2022 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

RECOGNITION OF ACHIEVEMENTS

In 2021, the EPD and its staff received several awards for outstanding efforts in combatting pollution, serving the public and applying new technology to their work.

Secretary for the Civil Service's Commendation Award 2021

Ms. **CHIU Sau-man**, Senior Environmental Protection Inspector, was honoured for the consistent strong performance of her work. Over the past four years in particular, when she has been based at the Regional Office (East), she has been diligent in combating the growing problem of illegal dumping of construction and demolition waste.



Ms. CHIU Sau-man (left) received the award from the Secretary for the Civil Service

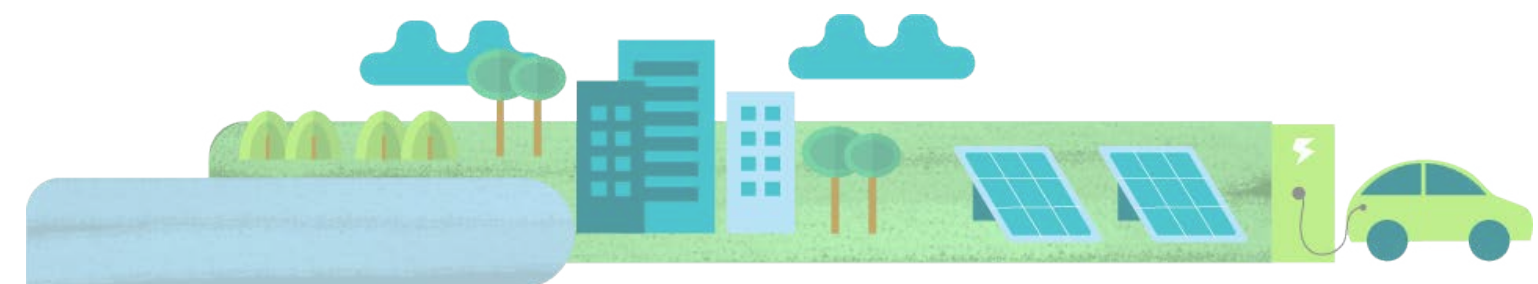
Ms. CHIU has been involved in planning and carrying out ambushes to catch offenders red-handed and initiating prosecutions when there is sufficient evidence. She also led a team that used a surveillance camera system installed around Hang Hau Village to identify potential offenders and take follow-up action. Over the past three years, this work has resulted in more than 70 successful prosecutions in the area and the illegal dumping situation has improved significantly. The Commendation Award recognises Ms. CHIU's valuable contributions in this regard.

Ombudsman's Awards 2021

The EPD itself was a recipient of the Ombudsman's Award 2021 for Public Organisations and had two of its staff receive individual awards for professionalism in delivering a quality public service.



The Ombudsman awards for Public Organisations and individual awards



The **EPD** was deeply honoured to receive the Ombudsman's Award for Public Organisations for providing comprehensive, clear and detailed information to inquiries from the Office of The Ombudsman, as well as explaining relevant legislation and procedures and furnishing data and records. The EPD is committed to creating a healthy, pleasant and sustainable environment for Hong Kong through developing policies, providing waste collection, transfer, treatment and disposal facilities, and enforcing pollution control ordinances, handling pollution incidents and responding to public complaints. The Award applauds EPD's professionalism in handling public complaints through a combination of

technology, such as Geographic Information System (GIS) and electronic platforms; regular professional training for frontline staff on communications and handling complaints; and following up complaints through multiple inspections to fully understand the situation on the ground. The Ombudsman's recognition is a great encouragement to EPD and the department will sustain the effort in securing a comfortable living environment for the community.



Deputy Director of Environmental Protection (1), Dr. CHUI Ho-kwong, Samuel (left) represented the Department to receive the Award for Public Organisations from The Ombudsman, Ms. Winnie CHIU, PDSM, PMSM

Two EPD staff were also honoured. Mr. **Ben HA Chun-ping**, Senior Environmental Protection Inspector of Regional Office (North), has had an outstanding performance in handling complicated and sensitive complaint cases. For example, he mobilised his team to step up action against loudspeaker noise from shops at Four Lanes, Tai Po, from early 2018, which has resulted in more than 40 prosecution cases; residents there no longer suffer from severe noise annoyance. He also led a team that investigated several water pollution complaints at Lam Tsuen River, identified expedient connections and worked with other departments to stop the polluting discharges.



Mr. Ben HA Chun-ping (right) received the award from The Ombudsman, Ms. Winnie CHIU, PDSM, PMSM

Mr. **TSANG Kai-ho**, Environmental Protection Officer of Regional Office (West), deployed a mobile surveillance system and successfully prosecuted more than 35 cases over a six-month period in Tuen Mun. He also worked with other departments to rectify problems. For example, he led his team to investigate complaints of an unusual white effluent in Tuen Mun River. They conducted dye-tracing tests from major dischargers in a nearby industrial area and detected sewage leaks in the public drainage system, which were then reported to relevant department for maintenance.



Mr. TSANG Kai-ho (right) received the award from The Ombudsman, Ms. Winnie CHIU, PDSM, PMSM

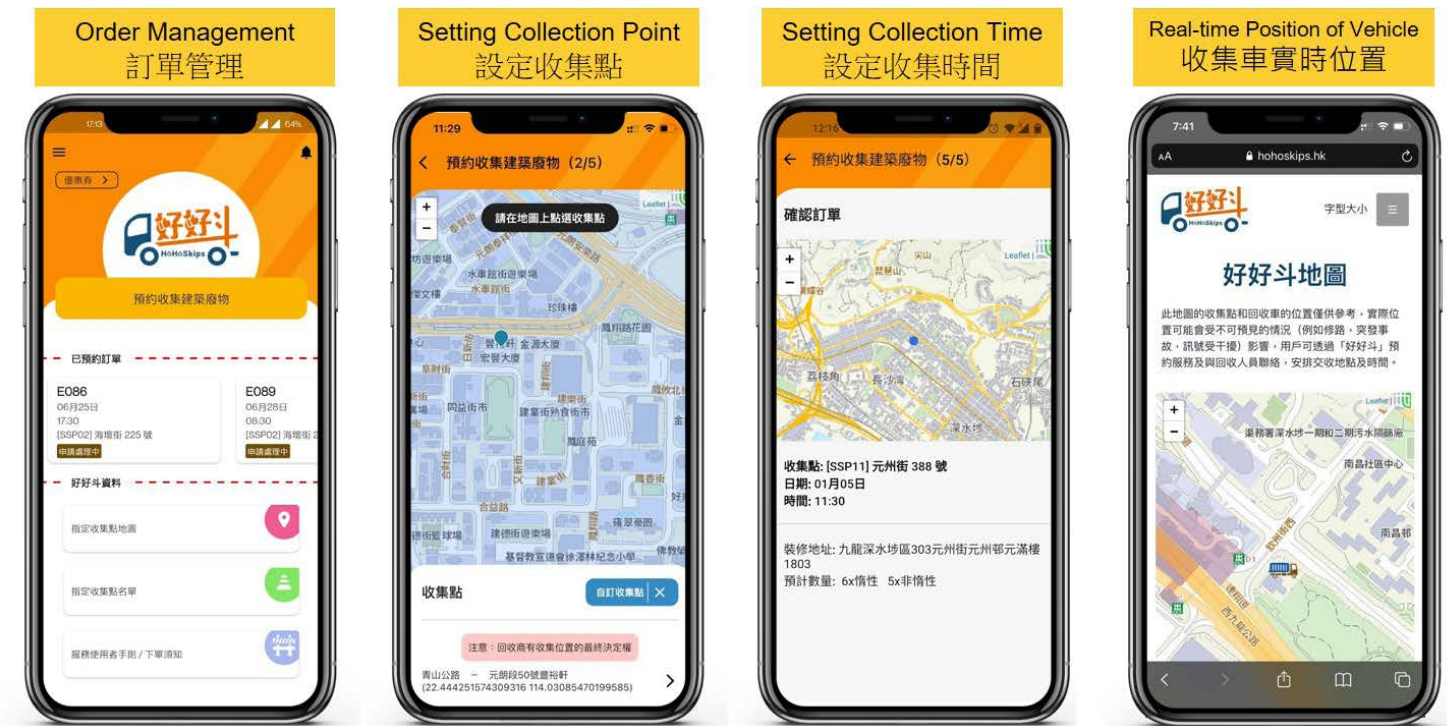


Group photo with Deputy Director of Environmental Protection (1), Dr. CHUI Ho-kwong, Samuel (sixth from the right) and Assistant Director (Environmental Compliance), Mr. HO Tak-yin, Dave (fourth from the right)

Hong Kong ICT Awards

The Hong Kong Information and Communication Technology Awards 2021 honoured EPD's **Environmental Compliance Division** (ECD) with the Smart Mobility (Smart Logistics) Silver Award.

The ECD launched a trade-led pilot scheme on construction waste collection and recycling services that uses smart technologies such as the mobile app, "HoHoSkips", for booking the collection services. The scheme facilitates the proper collection, treatment and disposal of small quantities of construction waste from small-scale renovation work. The judging panel recognised the scheme's innovation in consolidating the logistics flow of construction waste collection and raising the cost effectiveness of such a service.



Mobile Application "HoHoSkips"



Representatives of the project team received the award from the Organiser



The Trophy

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

Legend

■ ENB/EPD Headquarters

EPD Offices

■ Branch Offices (12)

■ Regional Offices (5)

EPD Facilities

▲ Operating Strategic Landfills (3)

▲ Chemical Waste Treatment Centre

▲ Animal Waste Composting Plant

▲ Low-level Radioactive Waste Storage Facility

▲ Closed Landfills after Restoration Work (13)

▲ Refuse Transfer Stations including OITF (7)

▲ EcoPark

▲ I-PARK1 (under development)

▲ O-PARK1

▲ O-PARK2 (under development)

■ WEEE-PARK

▲ T-PARK

▲ Y-PARK

▲ Tai Po Food Waste Pre-treatment Facilities

■ Environmental Resource Centres (2)

● Air Quality Monitoring Stations (18)

● Cape D'Aguilar Supersite Air Quality Monitoring Station

■ Mobile Environmental Resource Centre (Travel within the whole territory)

■ Marine Monitoring Vessel



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



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



Y-PARK



O-PARK1



T-PARK



GREEN@COMMUNITY Facility



Animal Waste Composting Plant



WEEE-PARK



Chemical Waste Treatment Centre



EcoPark



Island West Transfer Station



WENT Landfill



NENT Landfill



SENT Landfill Extension

2021 EXPENDITURE

ENB Expenditure: \$1.740 billion		EPD Expenditure: \$7.324 billion (Excluding spending under the Capital Works Reserve Fund)	
Expenditures	Percentage	Expenditures	Percentage
Staff costs	2.9%	Staff costs	20.2%
General recurrent expenses	2.0%	General recurrent expenses	24.4%
Non-recurrent expenditure	95.1%	Capital and non-recurrent expenditure	21.7%
		Fees for operation of waste management facilities	33.7%

 [SEE GRAPH](#)

STAFF PROFILE

ENB Establishment: 52		EPD Establishment: 2 325	
Employee Breakdown by Gender		Employee Breakdown by Gender	
Gender	People	Gender	People
Male	16	Male	1 303
Female	33	Female	917
Unfilled	3	Unfilled	105
Employee Breakdown by Grade		Employee Breakdown by Grade	
Grade	People	Grade	People
Professional	10	Professional	724
Administrative and support	42	Administrative and support	544
		Technical	1 057

 [SEE GRAPH](#)