

Hong Kong Observatory

Sustainability Report for Fiscal Year 2016/17





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1 Director's Message

The year has been a fruitful one for the Hong Kong Observatory (HKO). Amidst increasing challenges arising from changing climate, advancing technology and evolving society, HKO was also able to implement various measures to meet the challenges. This report details the performance and efforts of HKO in respect of sustainability in the fiscal year 2016/17.



Thanks to the dedicated effort of staff members, HKO's services are sustained at a high standard. During the year, a number of notable achievement were attained, including the successful ISO accreditation of weather forecasting and warning services and the number of visitors to the HKO website and the "My Observatory" mobile application exceeding the 100 billion mark, with the HKO website recognized as the "Most Liked .hk Website Award". All these not only serve as recognition of our services to the public, but also encourage us to continue to strive for a better and brighter future.

Apart from excellence in service development, HKO also attaches great importance to green causes. We strive to foster a green culture within our offices and also cultivate an environmentally responsible attitude among stakeholders. We achieved significant reduction in paper consumption in 2016/17 by 11.1% and that of envelopes by 9.2% when compared with that of 2013/14. The indoor air quality of buildings at HKO Headquarters (HQ) was again categorized as "Good Class" under the Indoor Air Quality Certification Scheme, while the Terminal Doppler Weather Radar Station at Brothers Point, with its state-of-the-art greenery design, was rated as "Excellent Class".

During the year, HKO continued to engage the public through different ways and means, including the annual Open Day, exhibitions, talks and lectures, to enhance interaction with the community we serve. We also put great emphasis on staff development and welfare by providing training and through activities such as those organized under the "Happy Business" programme. The efforts were duly recognized by the Employee Retraining Board, for which HKO was presented with the "Manpower Developer Award".



Building a better society through innovation in science and dedication in services has always been a core vision of HKO, and we shall make every effort to enhance our performance and boost sustainability in the years ahead. Readers are welcome to provide comments and feedbacks to help us identify ways for further improvement.

C M SHUN
Director of the Hong Kong Observatory



2 About the Department

HKO, established in 1883, is a government department responsible for monitoring and forecasting weather, as well as issuing warnings on weather-related hazards. HKO also monitors and assesses radiation levels in Hong Kong, and provides other climate and geophysical services to meet the needs of the public and the shipping, aviation, industrial and engineering sectors. Its governance is of international standard and is one of the leading meteorological organizations in the world.

HKO has four manned offices, with their locations as follows:-

- (a) HKO Headquarters at 134A, Nathan Road, Tsim Sha Tsui;
- (b) Miramar Tower Office at Units 2304-09, 23/F, Miramar Tower at Tsim Sha Tsui;
- (c) King's Park Meteorological Station at Yau Ma Tei; and
- (d) Airport Meteorological Office at Chek Lap Kok.

Besides, five radar stations are operated at Tai Mo Shan, Tate's Cairn, Brothers' Point, Tai Lam Chung and Siu Ho Wan. As at 31 March 2017, HKO operated a total of 84 weather stations including automatic weather stations, rain-gauges, anemometers and tide stations.

The revised estimate of HKO in 2016/17 was \$255.2 million, which was wholly deployed for operational expenses in the financial year.

2.1 Staff Establishment

HKO had an approved establishment of 312 as at 31 March 2017, with details as shown below:

Grade	Establishment
Directorate	5
Scientific Officer Grade	57
Experimental Officer Grade	51
Radar Specialist Mechanic Grade	25
Scientific Assistant Grade	96
General Grades	54
Common Grades	24
Total	312



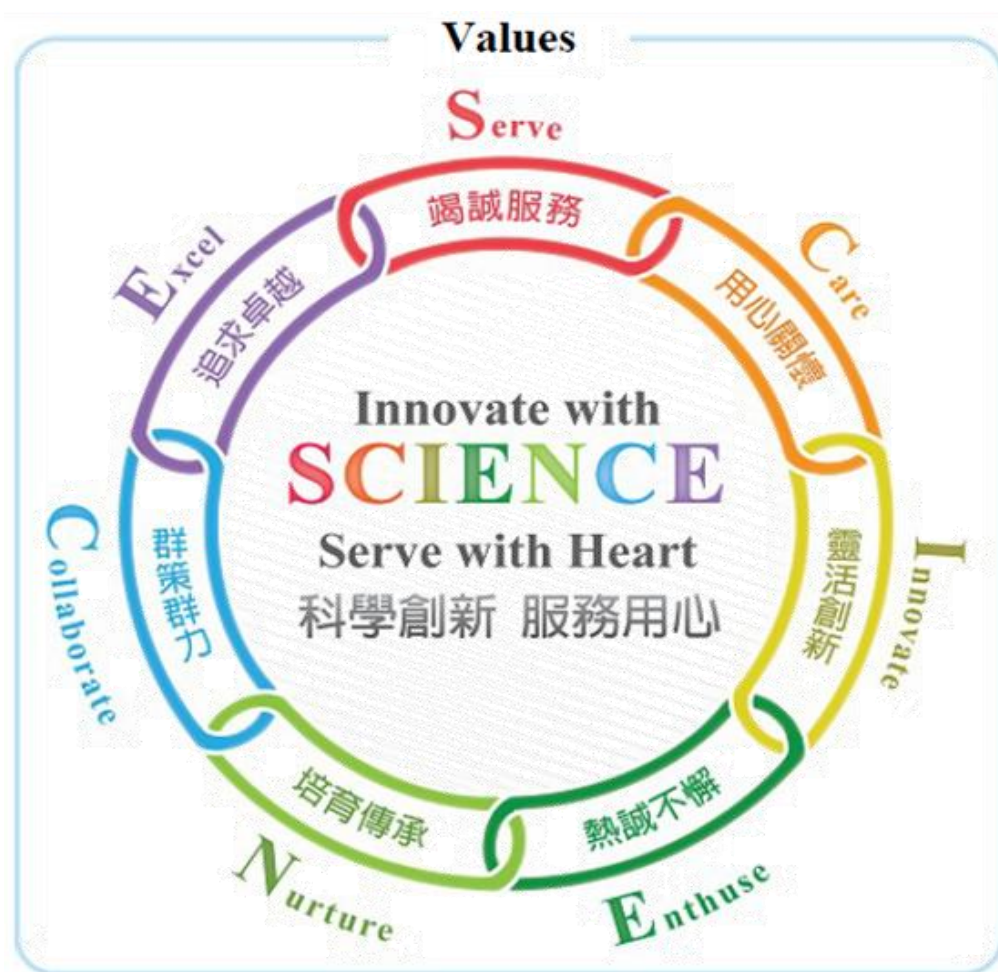
2.2 Vision, Mission and Values

Vision

Be a model of excellence in protecting lives and building together a better society through science.

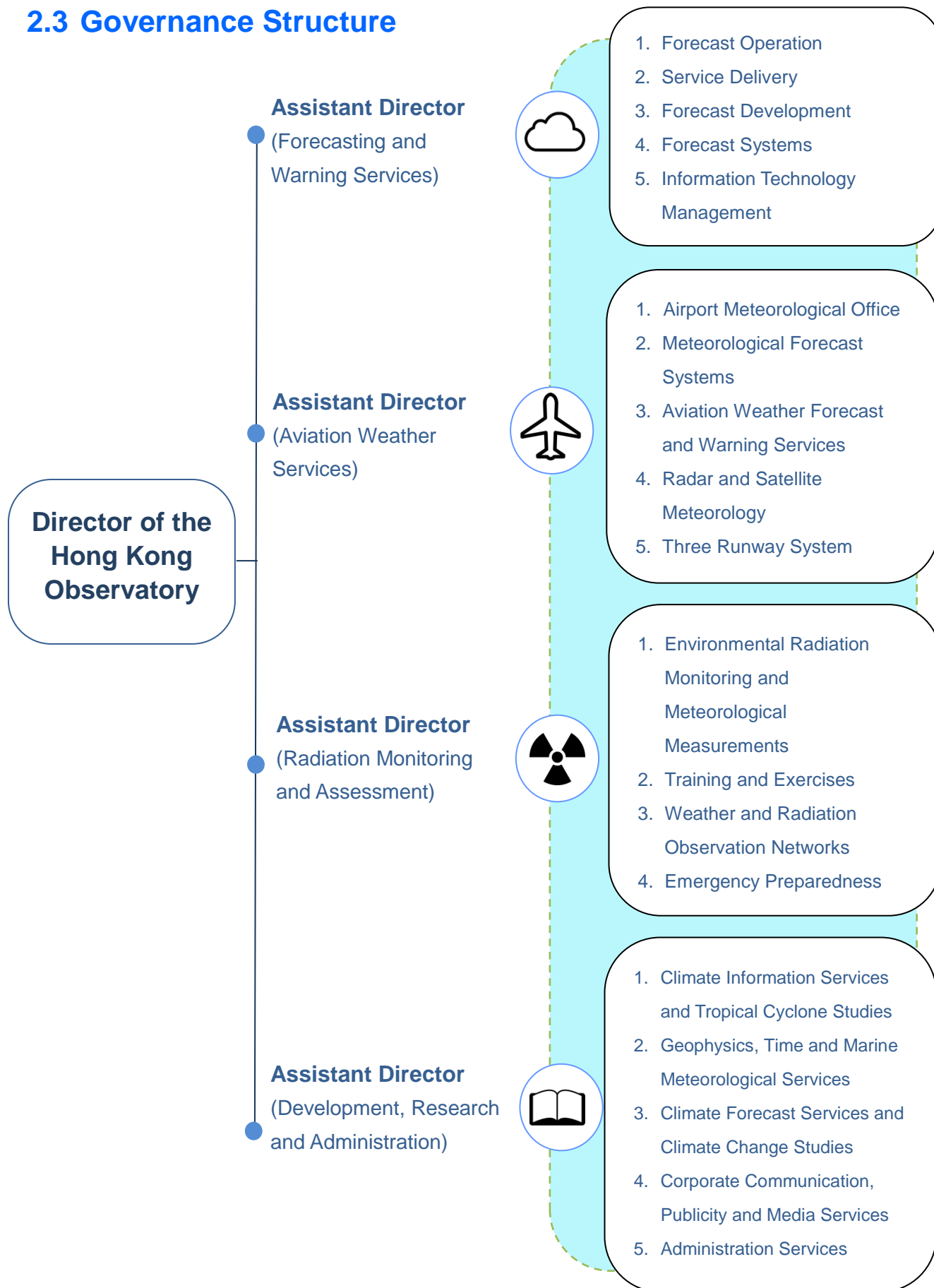
Mission

To provide people-oriented quality services in meteorology and related fields, and to enhance the society's capability in natural disaster prevention and response, through science, innovation and partnership.





2.3 Governance Structure












3 About the Report

When compiling the report, reference is made to internationally and locally recognized reporting guidelines, namely Global Reporting Initiative (GRI) G4 Guidelines and Hong Kong Exchanges and Clearing Limited's Environmental, Social and Governance Reporting Guide.

This report is prepared annually to meet the needs of:-

-  the general public receiving HKO information via the media, telephone, mobile devices or by browsing HKO website;
-  all Government Bureaux and Departments;
-  visitors to HKO; and
-  other users of HKO services including those from the aviation, shipping, business, industry, education, engineering, public utility and tourism sectors.

This report is divided into three main parts as follows:-

-  the first part (section 4) highlights the activities and initiatives of the Department during the year;
-  the second part (section 5) introduces the environmental policies adopted by the Department and its achievement in support of sustainable development during the year; and
-  the third part (section 6) presents the work done by HKO in the community, such as in public education and communication.



4 Activities and Initiatives

4.1 5-year Strategic Plan

To keep pace with a fast-changing society and an increasingly challenging environment, HKO has formulated a 5-year Strategic Plan that sets out directions for development thrusts for the period 2017 - 2021, with working priorities outlined as follows:-

- Public weather services — to provide impact and risk-based public weather services with the Multi-Hazard Early Warning System;
- Aviation weather services — to provide excellent aviation weather services at the regional and global levels;
- Diversified climate services — to develop innovative climate services with the concept of "MET+" and support the climate change strategy of Adaptation, Resilience and Mitigation (ARM);
- Public education and communication — to enhance public engagement through new media and channels;
- Big Data — to mainstream Big Data for service development;
- Research and development — to continue research and innovation in a multitude of areas, including new instruments, high impact weather, service provision, and emergency response; and
- Resource management and training — to strengthen resource management of the department and promote diversified training.

4.2 ISO Accreditation

In the pursuit of quality management as advocated by the World Meteorological Organization (WMO), HKO has successfully acquired the ISO 9001:2015 certification in 2016/17 for its weather forecasting and warning services, making it among the first batch of meteorological centres in the region to receive such recognition.



Fig 1: Mr Shun Chi-ming, Director of the Hong Kong Observatory (left), receiving the ISO 9001:2015 certificate from Mr Ben Tsang, Certification & Business Enhancement Senior Director of SGS Hong Kong, at the presentation ceremony on 23 February 2017.

4.3 Staff Training and Development

Training and development are crucial to the assurance of professional, technical and core competency in support of the long-term sustainable development of HKO towards the vision of being a model of excellence in protecting lives and building a better society through science. To this end, HKO draws up its Departmental Training and Development Plan every year and promulgates to all staff the objectives, policies, specific training and development plans and opportunities for the year ahead.

Courses organized in 2016/17 included: -



Date	Training
20/25 July 2016	Quality Management System in Central Forecasting Office (CFO)
30 Aug 2016	Big Data Analytics for Smart City
31 Oct / 4 Nov 2016	ISO 9001:2015 Internal Quality Management Auditor Training for CFO QMS Implementation
28 – 30 Nov 2016	Workshop on Nuclear Accident Consequence Assessment
15 Dec 2016	Team Building Workshop
19 Jan 2017	Training on Public Communication (Media and Social Media)
20 Jan 2017	Training Workshop on Handling of Telephone Enquiries and Complaints
17 Mar 2017	Image Building and TV Presentation Training

In 2016/17, the total number of training man-days was 2,785, and the average number of training man-days per post was 8.5.

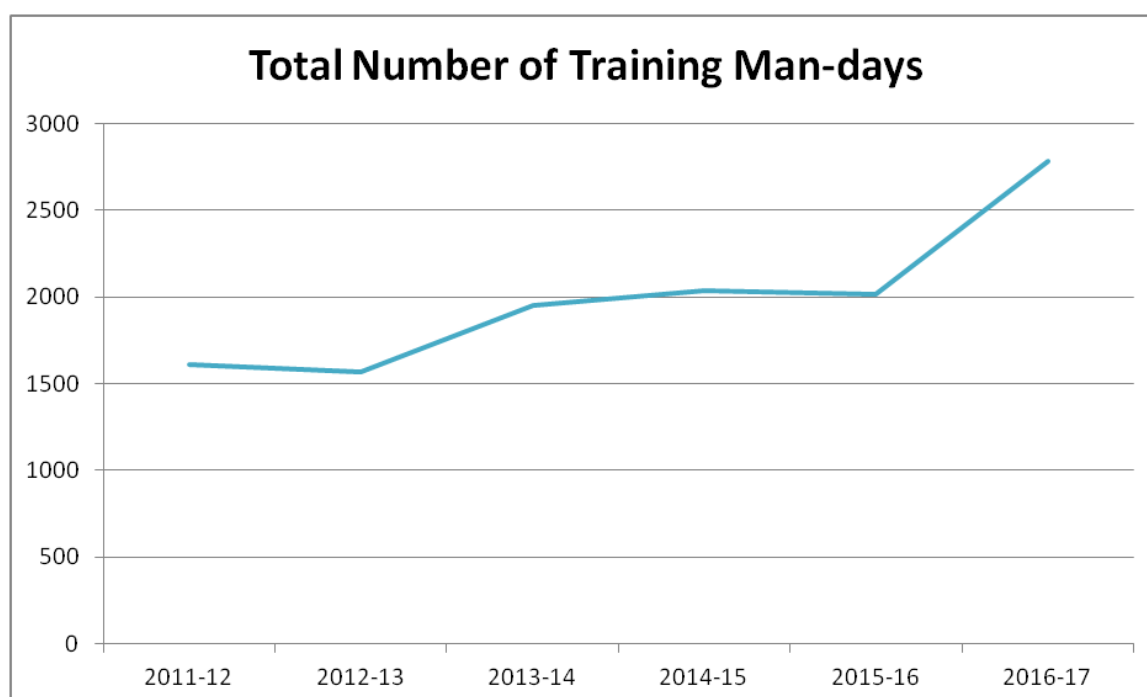


Fig 2: Total Number of Training Man-days from 2011/12 to 2016/17

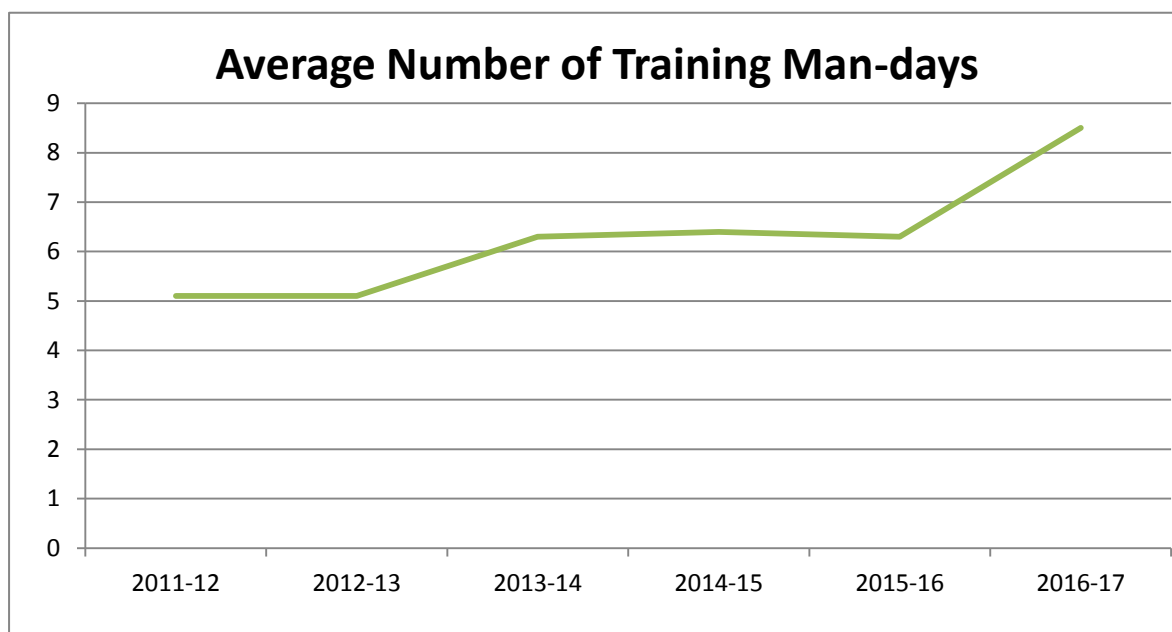


Fig 3: Average Number of Training Man-days from 2011/12 to 2016/17

A voluntary mentorship programme has also been implemented since 2014 to facilitate the transfer of skills and knowledge and to nurture a learning culture within the Department, which currently covers three technical areas, namely: (i) weather observation, (ii) information technology, and (iii) instrumentation. Staff are encouraged to join the programme as mentors or mentees according to their needs and interests.

To preserve and manage the vast amount of knowledge acquired, a number of knowledge management measures have been put in place, which include:-

- (a) a Sharing Databank to facilitate the gathering and sharing of resources and materials under different subject areas;
- (b) a revamped Cyber Learning Centre to facilitate the management of continuous self-learning by colleagues, including in-house training course materials as well as online training modules from other meteorological centres or training institutions; and
- (c) regular Technical Forum and Management Forum to facilitate the sharing of knowledge among colleagues.

HKO's effort in staff training and development was recognized by the Employee Retraining Board with the presentation of a "Manpower Developer Award" in May 2016.



Fig 4: Mr Tsui Kit-chi, Assistant Director of HKO, receiving Manpower Developer Award from Miss Annie Tam Kam-lan, Permanent Secretary for Labour and Welfare, at the presentation ceremony on 9 May 2016.

4.4 Occupational Safety and Health

HKO attaches great importance to the assurance of Occupational Safety and Health (OSH) for its staff. HKO regularly nominates staff to attend OSH courses organized by relevant Government Bureaux and Departments, such as the "General Training Course on OSH" organized by the Civil Service Bureau (CSB).

HKO also contributes to the promotion of OSH among civil servants by organizing training courses on radiation protection. We also support the OSH Seminars organized by CSB to promote the use of general weather information as an important reference for undertaking outdoor works.

In 2016/17, HKO updated and promulgated the internal guidelines on OSH to all staff for reference. Materials on precautions against OSH concerns such as working under extreme hot and cold weather and working at height were substantially enhanced. HKO also stepped up its effort to encourage staff to attend courses organized by CSB and the Labour Department, e.g. "Manual Handling Operations and Prevention of Back Injuries". Circulation of online materials on OSH was strengthened to raise staff awareness as well.



4.5 Highlights of Key Initiatives 2016/17

HKO is responsible for three main programme areas, namely weather services, radiation monitoring and assessment, and time standard and geophysical services.

(a) Weather Services

HKO provides weather services to deliver in a timely manner short to medium range weather forecasts and warnings. In support of such services, it operates a range of weather monitoring equipment, including a territory-wide network of automatic weather stations for measuring wind, pressure, temperature, humidity and rainfall, a network of cameras and visibility meters for providing real-time weather photos and visibility reading, a lightning location network for detecting lightning, two Doppler weather radars for detecting the intensity and movement of rain areas, as well as a network of sensors and equipment in the vicinity of the Hong Kong International Airport, including Terminal Doppler weather radars and lidars, for monitoring wind shear and turbulence in support of airport operation. HKO also exchanges real-time data with other meteorological centres worldwide and receives cloud pictures from a variety of weather satellites.

In 2016–17, HKO fulfilled its performance pledge of issuing at least one bulletin every hour of the day, disseminating 99 % of the bulletins within ten minutes after each hour, and attained a forecast accuracy (as verified by objective means) of 89%.

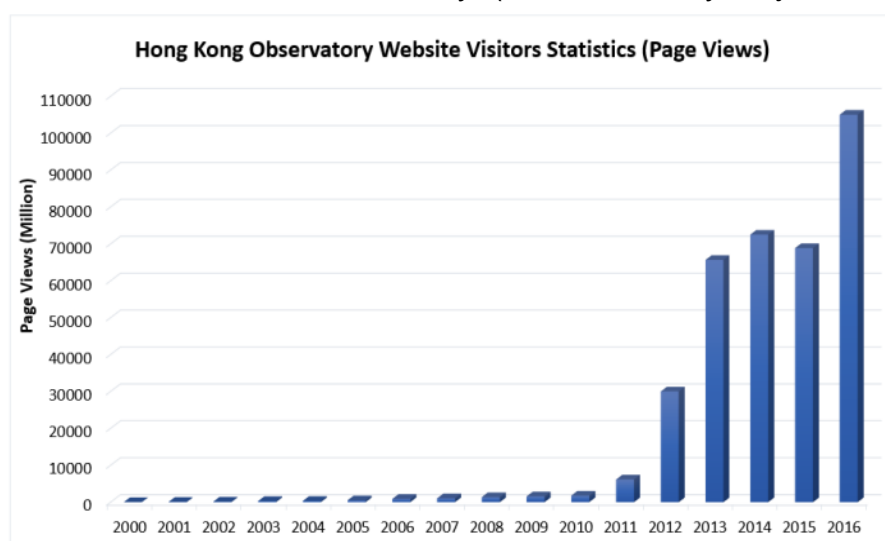


Fig 5: The total number of page views of HKO website and mobile weather application “MyObservatory” exceeded the 100 billion mark in 2016.

In terms of the quality of online service delivery, HKO's official website was unanimously acclaimed by the Panel of Judges of the Best .hk Website Awards 2015 organized by the Hong Kong Internet Registration Corporation Limited (HKIRC), for the continuous improvement and introduction of new services and products in meeting the diversified needs of users in the local community.



Fig 6: Ir Stephen Lau (right), the Secretary General (Hon) of Hong Kong Computer Society, presenting the trophies to Dr Cheng Cho-ming (middle), Assistant Director of HKO and Mr Tong Yu-fai (left), Scientific Officer of HKO.

In 2016–17, with the commissioning of the Civil Aviation Department (CAD)'s new Air Traffic Control Centre, all the associated new/upgraded meteorological facilities were operational with effect from the same date. Meanwhile, HKO started to provide a suite of significant convection forecast products to CAD during day time to facilitate runway and airspace capacity estimation. The briefing service to the Airport Authority Hong Kong and the aviation community was enhanced to cover tropical cyclones affecting other regional airports for early handling of diverted flights. A cooperation agreement has been struck with the Civil Aviation Administration of China (CAAC) and the China Meteorological Administration (CMA) on the establishment of the Asian Aviation Meteorological Centre (AAMC), of which HKO would serve as the back-up centre.

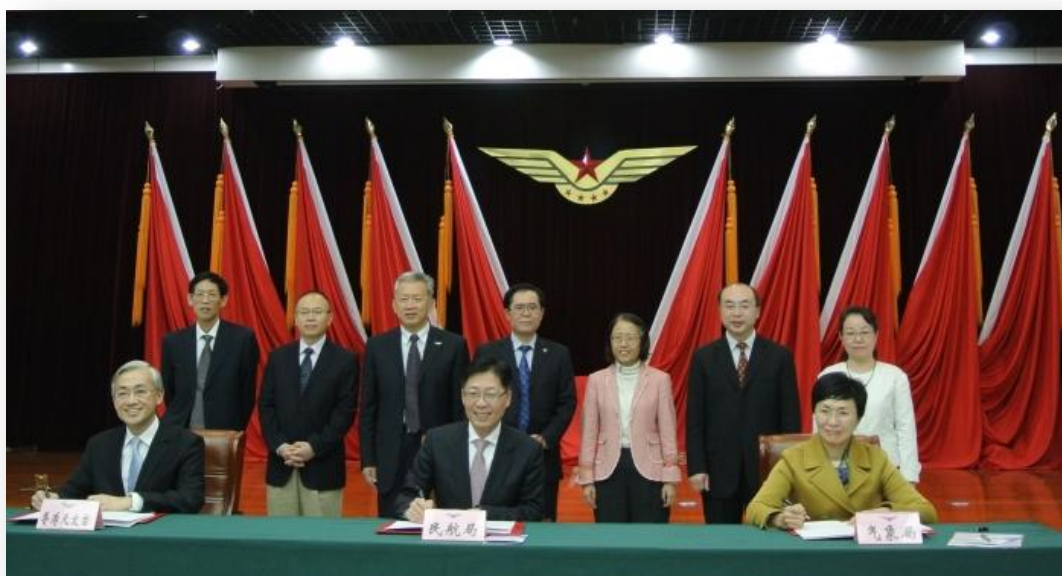


Fig 7: Mr Shun Chi-ming (seated left) signing the AAMC agreement in Beijing on 28 October 2016.

HKO developed for WMO an online version of the updated “International Cloud Atlas (ICA)” for reference by the general public and the media worldwide. A number of captivating images selected for inclusion by the International ICA panel were contributed by photographers from Hong Kong.

Fig 8: The ICA front page.

(b) Radiation Monitoring and Assessment

HKO provides information on local environmental radiation levels and effects and advises the Government on counter-measures that may be necessary during nuclear emergencies.

In the unlikely event of a nuclear emergency at the nuclear power stations in Guangdong, HKO will immediately step up radiation monitoring, assess the radiological consequences and provide technical advice to the Government regarding the appropriate protective actions to take.

In 2016–17, all radiation monitoring and assessment work in this programme was carried out satisfactorily. All equipment was maintained in a state of readiness, highlighted by the successful annual surveillance audits under ISO 9001:2008 for the radiation laboratory and the ambient gamma radiation level measurement service.

Exercises, drills and training on radiation monitoring and assessment were conducted. New radiation monitoring equipment, enhanced communication facilities and a new computer system for nuclear accident consequence assessment were implemented for enhancing emergency preparedness and response capability.



Fig 9: Radiological Protection Officers' Course organized by HKO in late 2016.

(c) Time Standard, Climate and Geophysical Services

HKO maintains the Hong Kong time standard, provides time signals for the public and contributes to the International Bureau of Weights and Measures for the determination of the universal standard time. It monitors earthquakes and the sea level and releases related information to the public, including the operation of the tsunami warning system. It provides geophysical, oceanographic, astronomical and climatological information to meet the requirements for town planning, engineering design and environmental impact assessments. It also keeps abreast of research and development on international issues such as global climate change and advises the public and government departments on the likely implications.

HKO produced several educational videos with infographics during the year to visually present the causes, trends and consequences caused by climate change. A climate change pamphlet “Hong Kong In A Warming World” was first published by HKO in early 2015 and a second edition was published in July 2016. The new edition updated the likely future climate scenarios for the world and Hong Kong, with new projections of extreme weather events for Hong Kong in various scenarios. It also highlighted possible actions that could be taken to make Hong Kong more capable of adapting to climate change and the associated extreme weather in order to enable Hong Kong to become a more resilient city.

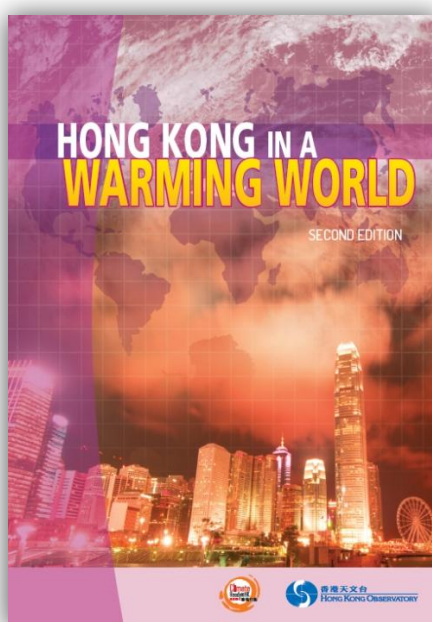


Fig 10: Front cover of the pamphlet “Hong Kong in a Warming World” (2nd Edition).

5 Environmental Performance

5.1 Environmental Policy

HKO has a departmental environmental policy that meets the guidelines issued by the Environmental Protection Department and other government departments, such as the Electrical and Mechanical Services Department and the Architectural Services Department. Moreover, we are committed to the Clean Air Charter, which aims at making sustained improvement to the air quality by introducing clean and energy-efficient measures in daily operation; and the Green Bottle Charter, which seeks to minimize the use of plastic bottles within the department. We strive to improve the environment by:

- conserving bio-diversity and preserving natural habitat within HKO Headquarters (HKO HQ) and its outstations;
- developing a culture of environmental conservation among staff;
- adopting the best practices in green housekeeping;
- complying with the requirements of relevant environmental protection ordinances; and
- promoting public awareness of environmental issues.



Fig 11: HKO joined the “Green Bottle Charter” launched by the Green Earth in 2016 to minimize the use of plastic bottle.



5.2 Green Management System

HKO has set up the following committee/working group to formulate, monitor and implement environmental policy at HKO:

(a) Working Group on Energy and Environment

The Working Group on Energy and Environment, established in 2006, aims to collect and implement green ideas from staff and promote green awareness among all levels in HKO. It is chaired by the Assistant Director (Development, Research and Administration), with staff from different grades/ranks as members.

Several new measures and staff suggestions were implemented during 2016/17:-

- installing motion sensors to conserve electricity in washrooms and pantries in the Centenary Building;
- replacing the traditional light bulbs with energy-saving LED light bulbs;
- replacing the obsolete air-conditioning systems with eco-friendly ones and collaborating with EMSD to seek further ways to improve the efficiency of existing air-conditioners; and
- adopting re-usable tableware at departmental events in place of disposable ones.

(b) Buildings, Grounds and Accommodation Committee

The Buildings, Grounds and Accommodation Committee, chaired by the Assistant Director (Development, Research and Administration), evaluates the utilization of space and all major civil and building services works carried out at HKO premises and grounds to minimize the impact on the environment. Members include the Departmental Secretary, who is also the Green Manager of HKO, and four Senior Scientific Officers from the four branches.

5.3 Environmental Measures

HKO has adopted multi-pronged environmental measures to support and implement the government's green initiatives and to promote low carbon living style and energy conservation awareness among staff.

(a) [Car Free Day 2016](#)

To reduce carbon emission from vehicles, staff are encouraged to use environmental-friendly means to travel to work. In this regard, a Car Free Policy has been in place at HKO to encourage colleagues to designate at least one working day per week as a Car Free Day.

In 2016/17, we also supported the initiative by Friends of the Earth and designated 22 September 2016 as our departmental "Car Free Day 2016".

(b) [No Air Con Night 2016](#)

The increasing use of air-conditioners is widely regarded as one of the culprits behind global warming and climate change. To help alleviate global warming and promote energy conservation, HKO participated in the "No Air Con Night 2016" organized by Green Sense and suspended the use of air-conditioners for one night on 7 October 2016, without compromising normal operation.



Fig 12: Appreciation certificate awarded to HKO for its participation in "No Air Con Night 2016".

(c) “Planting Day”

HKO organized a Planting Day on 23 April 2016. Around 30 HKO colleagues and their family members joined the event and assisted in the planting of seedlings of new trees.



Fig 13: HKO Planting Day 2016

(d) **Preservation of bio-diversity**



Fig 14: Lawn outside 1883 Building of HKO HQ



Fig 15: Mini-forest at HKO HQ

Apart from its historical and operational values, the woodland at HKO HQ also serves as a natural shelter for local birds. It is one of the few remaining semi-natural woodlands in Kowloon. Avian species like Spotted Dove, Chinese Bulbul, Crested Bulbul, Magpie Robin, Black-necked Starling and White-eye are inhabitants of the HKO woodland. The woodland is also of paramount importance as it serves as a stopover for migrating birds. Some birds, including Brown Flycatcher, Blackbird and Grey-backed Thrush, even stay for the whole winter.



Fig 16: Black-necked Starling resting on the lawn of HKO HQ.

HKO cherishes the bio-diversity of its site and works hard to preserve the natural habitat of the trees and vegetation at HKO HQ. Expert consultants/contractors are commissioned to help monitor and upkeep the healthy condition of the plants. Some 500-strong trees of different species can be found within the HKO compound with details as shown below (see next page):-



	English Name	Chinese Name	Scientific Name
1	Lebbek Tree	大葉合歡	<i>Albizia lebbek</i> (L.) Benth.
2	Alexandra Palm	假檳榔	<i>Archontophoenix alexandrae</i> (F. Muell.)
3	Hong Kong Orchid Tree	洋紫荊	<i>Bauhinia x blakeana</i> Dunn
4	Camel Foot Tree	宮粉羊蹄甲	<i>Bauhinia variegata</i> L.
5	Tall Bottle-brush	串錢柳	<i>Callistemon viminalis</i> G. Don
6	Horsetail Tree	木麻黃	<i>Casuarina equisetifolia</i> L.
7	Yellow Cow Wood	黃牛木	<i>Cratoxylum cochinchinense</i> (Lour.) Blume
8	Flame Tree	鳳凰木	<i>Delonix regia</i> (Boj. ex Hook.) Raf.
9	Longan	龍眼	<i>Dimocarpus longan</i> Lour.
10	Lemon-scented Gum	檸檬桉	<i>Eucalyptus citriodora</i> Hook. f.
11	Chinese Banyan	細葉榕	<i>Ficus microcarpa</i> L. f.
12	Common Red-stem	青果榕	<i>Ficus variegata</i> var. <i>chlorocarpa</i> (Benth.) King
13	Big-leaved Fig	大葉榕	<i>Ficus virens</i> var. <i>sublanceolata</i> (Miq.) Corner
14	Pond Spice	潺槁	<i>Litsea glutinosa</i>
15	White Champak	白蘭	<i>Michelia alba</i>
16	Chinese Red Pine	馬尾松(山松)	<i>Pinus massoniana</i> Lamb.
17	Frangipani	雞蛋花	<i>Plumeria rubra</i> L.
18	Buddhist Pine , Kusamaki	羅漢松	<i>Podocarpus macrophyllus</i> (Thunb.) D. Don
19	Wood-oil Tree	木油樹	<i>Vernicia montana</i> Lour.
20	Candlenut	石栗	<i>Aleurites molucana</i>
21	Indonesian cinnamon	陰香	<i>Cinnamomum burmannii</i>

(e) Summary of Other Green Measures

(i) Paper Consumption

- ✓ Adopting duplex printing practices, minimizing photocopying, and uploading the “Guidelines on Reducing Photocopying Paper Use” onto the intranet for reference.
- ✓ Using blank side of used papers for drafting, printing, photocopy and fax documents.
- ✓ Encouraging staff to re-use envelopes and file jackets whenever possible.
- ✓ Replacing printing of newsletters and circulars by electronic means and uploading publications on HKO website.
- ✓ Establishing a policy of 10% cut in the stock supply of A3 and A4 papers and reducing the consumption of A3 paper for printing weather charts.
- ✓ Encouraging the use of electronic means, such as email and e-Memo, for external and internal communication.
- ✓ Encouraging paperless meetings.

(ii) Waste Reduction and Recovery

- ✓ Recycling as the preferred option for disposal.
- ✓ Setting up shared printers to reduce the purchases of printers and toner cartridges.
- ✓ Collecting empty toners and inkjet cartridges of computer printers for recycling.
- ✓ Encouraging staff to use re-usable stationery such as refillable ball pens.
- ✓ Paper wastes, plastic bottles and aluminum cans to be collected separately at source by recycle bins.

(iii) Energy Conservation

- ✓ Using clean energy, such as solar power or wind power, to support operation of automatic weather stations and radiation monitoring stations.



Fig 17: Automatic weather station at Sha Lo Wan using solar and wind power (see arrows).

- ✓ Using automatic circuit-break timers to switch off unnecessary electrical appliances after office hours.
- ✓ Using energy-saving T5 fluorescent tubes in all HKO premises to reduce energy consumption and mounting motion sensors to reduce energy wastage.
- ✓ Segregating hot and cold air flow by setting plastic screens in the high-performance computer room to enhance cooling efficiency of the air-conditioning system.
- ✓ Using auto-sensitized water taps in washrooms to reduce water consumption with flow controllers installed to reduce wastage.
- ✓ Minimizing the number of servicing lifts after normal office hours.
- ✓ Encouraging staff to use staircases instead of lifts for inter-floor traffic.
- ✓ Conducting regular inspection to ensure lights, computers and other electrical appliances in offices, conference rooms, corridors and common facilities are switched off during lunch breaks and after office hours.
- ✓ Switching off lights, air conditioners, photocopiers, computers and other electrical appliances when not in use.
- ✓ Using solar powered lighting devices.
- ✓ Setting the ambient office temperature to 25.5°C in the summer months and switching off air-conditioning system in winter wherever and whenever appropriate by using electronic control panel.
- ✓ Encouraging staff to dress more casually to reduce air-conditioning consumption where appropriate.



Fig 18: Bollard lamps at HKO HQ using solar power.

- ✓ Conducting regular checks and maintenance on the air-conditioning systems.
- ✓ Installing solar films in departmental vehicles and security guard room.



(iv) Air Quality Improvement

- ✓ Joining the IAQ Certification Scheme with “Good” class awarded in 2016 for the 1883 Building and Centenary Building at HKO HQ, and “Excellent” class awarded for Brothers Point Terminal Doppler Weather Radar Station.
- ✓ Conducting regular indoor air quality checks, and carrying out regular cleaning and repairing for air-conditioning systems.
- ✓ Maintaining a non-smoking environment in office premises and, designated area aside, prohibiting smoking at outdoor areas of HKO HQ.

(v) Procurement Practices

- ✓ Implementing e-Procurement system in phases to reduce the use of papers when conducting supplies and procurement activities.
- ✓ Complying with the government’s regulations and guidelines regarding green procurement.
- ✓ Encouraging suppliers to provide HKO with environmentally friendly products and stipulating green procurement specifications in tender documents, wherever appropriate.
- ✓ Utilizing environmentally friendly products, such as:
 - ✚ Photocopiers and printers capable of double-side and eco-printing
 - ✚ Automatic sensor installed in water dispensers
 - ✚ Water-saving type flush cisterns
 - ✚ High efficiency water purifiers
 - ✚ High pressure water gun for car-washing
 - ✚ High efficiency electrical appliances

(vi) Promoting Staff Awareness

- ✓ Promoting the principle of “Reduce, Reuse, Recycle and Replace” and encouraging staff to practise this 4-R principle in daily work where applicable.
- ✓ Promulgating resource saving tips regularly via emails, staff notices, circulars and posters.
- ✓ Organizing staff activities, such as Car-free Days and Light-off Days, to enhance environmental awareness.
- ✓ Operating an internal website “Green Corner” to enhance colleagues’ awareness on energy consumption, with guidelines on energy, paper and water conservation posted, as well as tips for energy saving at home and in office.
- ✓ Engaging staff in recycling programmes such as recycling of books, moon cake boxes and red packets.

5.4 Environmental Performance

(a) Envelope Consumption



Target 2.5% reduction achieved

Under the concerted effort of HKO staff, the annual cumulative envelope consumption for FY2016/17 was 3,493 pieces, reduced by 354 pcs (i.e. 9.2%), when compared with the figure in the base year FY2013/14. The target of reducing envelope consumption by 2.5% was therefore well achieved.

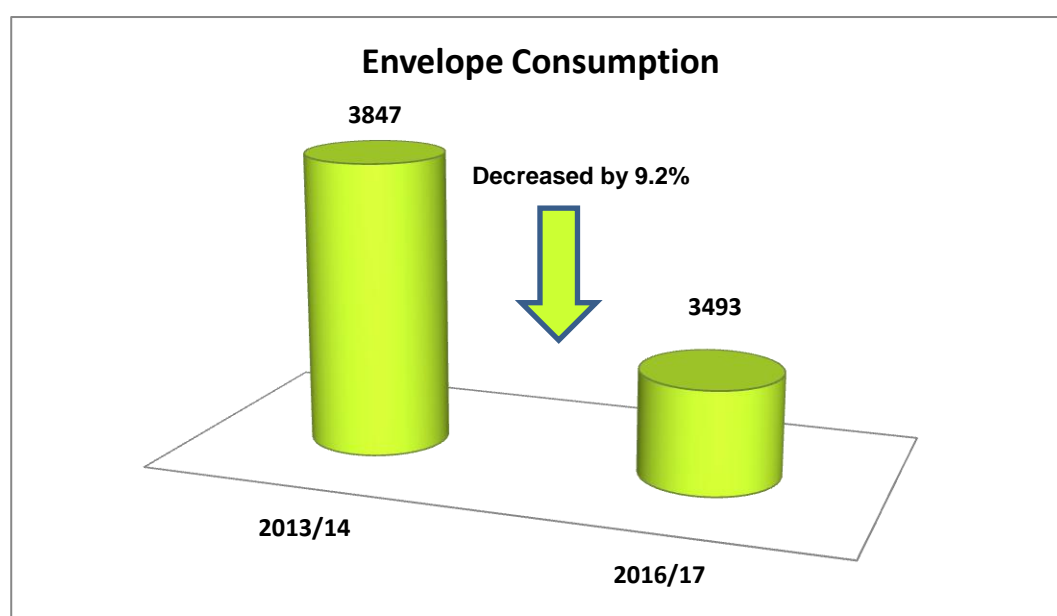


Fig 19: Envelop consumption in FY 2013/14 and 2016/17.

(b) Paper Consumption



Target 2.5% reduction achieved

As a result of various measures adopted, the annual cumulative paper consumption for FY2016/17 was 1,343 reams, reduced by 167 reams (i.e. 11.1%), as compared with the baseline figure in FY2013/14. The target of reducing paper consumption by 2.5% was therefore achieved as well.

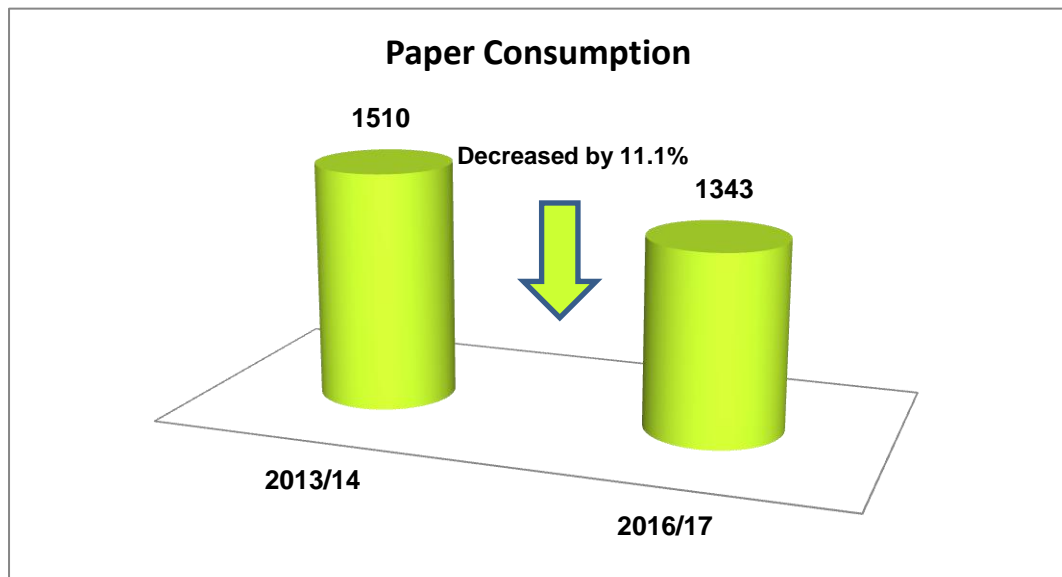


Fig 20: Paper consumption in FY 2013/14 and 2016/17.

(c) Electricity Consumption



Target 5% reduction yet to be achieved

The annual cumulative electricity consumption for FY2016/17, after normalized against activity changes in the intervening years, was 4,356,096 units, an increase of 3.8% as compared with the base year FY2013/14 due to the installation of a number of new equipments and essential instruments. Nonetheless, the increase has been reduced when compared with that of FY2015/16 against FY2013/14, i.e. an increase of 4.1%. HKO will continue to implement various measures to conserve energy to achieve the target of 5% by FY2019/20.

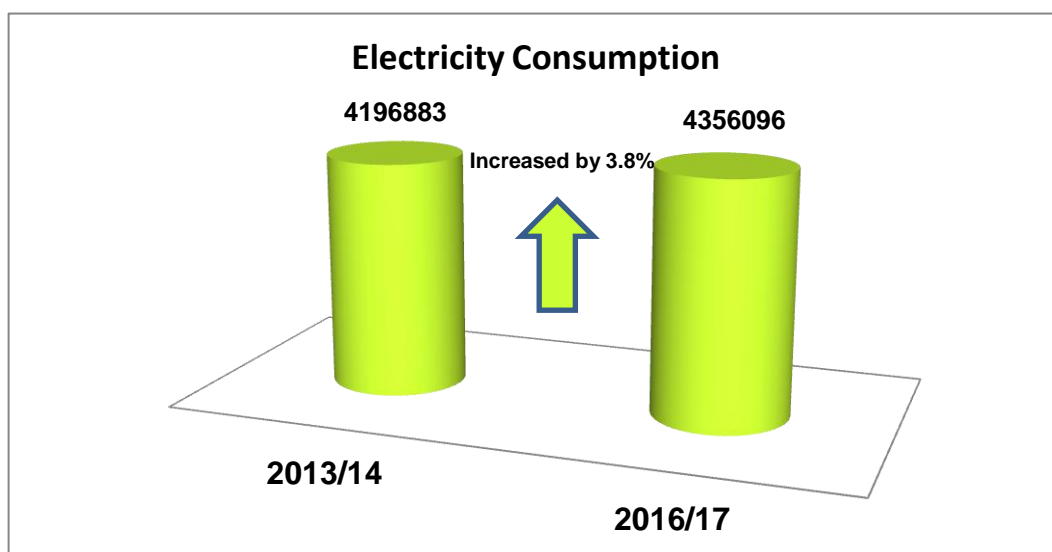









Fig 21: Electricity consumption in FY 2013/14 and 2016/17.



(d) Carbon Audit

In line with prevailing international and local practices, HKO starts to disclose its carbon audit results starting from FY 2016/17. The scope of carbon audit covers:

-  Fuel consumption by departmental vehicles
-  Electricity consumption at HKO HQ, King's Park Meteorological Station, Miramar Tower Office and outstations
-  Greenery at HKO HQ
-  Paper consumption
-  Freshwater processing
-  Sewage processing
-  Official duty travel by staff

The carbon emission of HKO in 2016/17 was 2,758 tonnes of CO₂-equivalent, a reduction by 2% when compared with that of 2015/16.

5.5 Targets for Fiscal Year 2017/18

HKO aims to achieve the following specific targets in FY2017/18:

- 2.5% reduction in envelope consumption compared to FY2013/14
- 2.5% reduction in paper consumption compared to FY2013/14
- To continue to reduce annual electricity consumption with a target to achieve 5% saving by FY 2019/20 when compared with FY 2013/14¹
- To continue implementing green initiatives and other measures for conservation of bio-diversity.

¹ The 2015 Policy Address has set a new target of 5% saving in the total electricity consumption of government buildings from FY 2015/16 to FY 2019/20 under comparable operating conditions, using FY 2013/14 as the baseline.

<u>Carbon Audit Report Table</u>						
Description (by source, areas, etc.)	GHG Emission by gas type (in tonnes of CO ₂ -equivalent)					
	Carbon Dioxide (CO ₂)	Methane (CH ₄)	Nitrous Oxide (N ₂ O)	Hydrofluoro-carbons (HFCs)	Perfluoro-Carbon (PFCs)	Total
Scope 1 Direct GHG Emissions						
Mobile Combustion Sources						
	43.46	0.0959	5.3001	N/A	N/A	48.66
Scope 1 GHG Emissions Total:						48.86
Scope 1 Direct GHG Removals						
Planting of additional trees						
	2.806	N/A	N/A	N/A	N/A	2.81
Total Scope 1 GHG Removals:						2.81
Scope 2 Energy Indirect GHG Emissions (without being classified into specific gas type)						
Electricity Purchased:						2644.85
Towngas Purchased:						N/A
Total Scope 2 GHG Emissions:						2644.85
Scope 3 Other Indirect GHG Emissions						
Methane Generation at Landfill due to Disposal of Paper Waste						
	15.8	N/A	N/A	N/A	N/A	15.8
Electricity for Processing Fresh Water (without being classified into specific gas type)						3.56
Electricity for Processing Sewage (without being classified into specific gas type)						1.68
Others (Business travel by employees)						45.7
Total Scope 3 GHG Emissions						66.74
Total GHG Emissions of 2016/17:						2757.64
Total GHG Emissions of Previous Year 2015/16:						2814.00
% Change in GHG Emissions compared with Previous Year						-2.0%

6 Engagement with the Community

6.1 Outreach Activities

(a) HKO Open Day

An Open Day event is organized at HKO HQ in Tsim Sha Tsui for the public annually, in which information on climate change and other meteorological knowledge is generated through various displays and exhibits.

HKO Open Day 2016 was held on 19 and 20 March with over 17,300 visitors attending the event. More than 80 volunteers from "Friends of the Observatory" served as goodwill ambassadors and offered enthusiastic support and assistance in receiving the visitors.



Fig 22: An Open Day seminar on “Hotter, Drier, Wetter • Face the Future” was organized on the morning of 19 March 2016.



Fig 23: Visitors were introduced to the knowledge of climate and weather through an interactive approach.

(b) Public Talks, Lectures and Exhibition

HKO continues to play an active role in promoting public awareness on various issues including weather forecasting and climate change. Talks, school visits, seminars and lectures are organized to achieve this goal.

(i) The "Climate Change - Our Response" exhibition

The “Science in Public Service (SIPS)” is a joint campaign led by HKO in collaboration with other government bureaux/departments and stakeholders to promote the application of science and technology in the provision of public services.

In 2016, the 10th Anniversary of SIPS, a roving exhibition with the theme “Climate Change - Our Response” was organized to promulgate climate change messages. Different sectors of the community were encouraged to “ARM (Adaptation, Resilience, Mitigation) and Act” by joining hands in creating a low carbon and sustainable society.

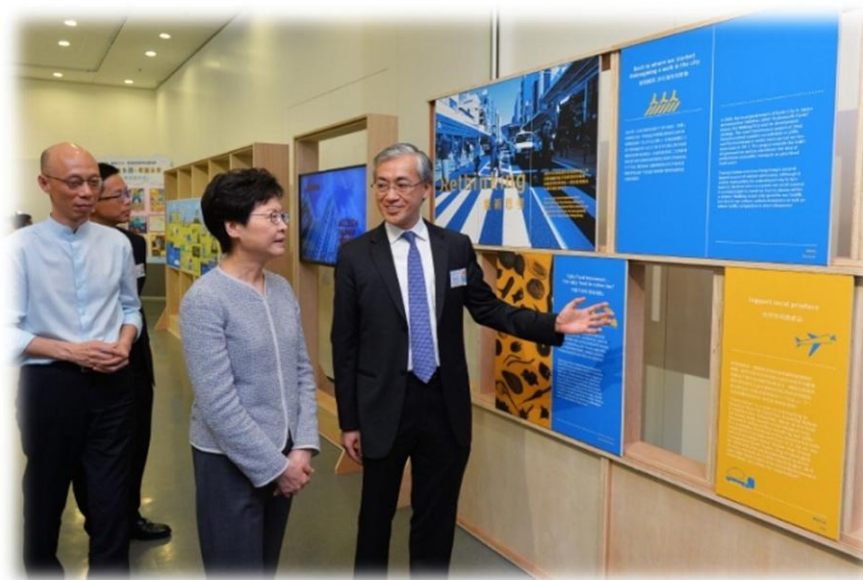


Fig 24: Mrs Carrie Lam, the then Chief Secretary for Administration, and Mr Wong Kam-sing (left), the Secretary for the Environment, touring the "Climate Change - Our Response" roving exhibition accompanied by Mr Shun Chi-ming, Director of the Hong Kong Observatory.

(ii) [The 11th Edition of Eco Expo Asia](#)

The 11th edition of Eco Expo Asia, organized by the Hong Kong Trade Development Council and the Environment Bureau, was held at AsiaWorld-Expo, Hong Kong from 26 to 29 October 2016 under the theme of "Green Solutions for a Changing Climate". HKO participated in the exhibition as one of the supporting organizations to present the scientific basis of climate change and the climate projections for Hong Kong.



Fig 25: Mr Sham Fu-cheung, Chief Experimental Officer of HKO, delivering a climate change talk at the Public Day Forum during the Eco-Expo Asia.

(iii) [Water Conservation Week 2016](#)

HKO took part in a carnival event organized by the Water Supplies Department at the Jockey Club Innovation Tower of the Hong Kong Polytechnic University on 20 November 2016, presenting the scientific basis of climate change for members of the public through an interactive game.



Fig 26: Students taking part in a HKO interactive game during the Water Conservation Week 2016.

(c) [Outreach Activities](#)

(i) [Guided Tours in HKO HQ](#)

Guided tours are held regularly through which members of the public can visit HKO HQ in Tsim Sha Tsui. Apart from understanding how weather forecasts are formulated and how technology is applied in the delivery of HKO services, participants can also learn more about the historical development of HKO and the ecological values of the woodland of HKO at the heart of the urban area.

(ii) [Public Course on Weather Observation](#)

The Public Course on Weather Observation, well received by the public since its launch in 2004, was successfully completed on 19 and 26 November 2016. Participants learnt about the basic knowledge of weather observation, including the classification of clouds, weather phenomena and hazards, and the coding of weather reports, etc.

(iii) [“Life Buddies” Mentoring Scheme](#)

HKO participated in the “Life Buddies” Mentoring Scheme organized by the Commission on Poverty. Seven local Form 5 students underwent job-shadowing at HKO in August 2016 under the guidance of their HKO mentors. The students had the opportunity to tour the various facilities of HKO and were shown the importance of scientific professionalism in the delivery of reliable weather services.



Fig 27: Students with their HKO mentors in the “Life Buddies” Mentoring Scheme.

(iv) [“Sky of Silver Age” Photo Competition](#)

The “Sky of Silver Age” Photo Competition was jointly organized by HKO and the Senior Citizen Home Safety Association in early 2016. The competition received enthusiastic responses from the elderly people with submissions of photo images that vividly captured the changing seasons and the evolving colours of the clouds in the sky.



Fig 28: The winning entry of the “Sky of Silver Age” Photo Competition.

(v) Voluntary and Charity Activities

A HKO Volunteer Team is established to support and participate in various voluntary and charity activities. HKO also won the “Highest Per Capita Contribution Award” for the 15th consecutive year under the ‘Civil Service’ category of the Community Chest Corporate & Employee Contribution Programme 2016/17, showing its continuing commitment in supporting charity causes and caring initiatives for the needy in the community.



Fig 29: The HKO Volunteer Team participating in a mooncake-making activity for the needy on 9 September 2016.



Fig 30: The "CARE Scheme 'Civil Service' Category Highest Per Capita Contribution Award" (left) and the "Corporate and Employee Contribution Programme Bronze Award" (right) presented to HKO under the Community Chest Corporate & Employee Contribution Programme 2016/17.

6.2 Staff Activities

Staff morale and well-being are indispensable keys to better governance and service provision. HKO continues to develop initiatives to maintain and enhance mutual understanding and support between the management and staff, including activities organized under the “Happy Business” programme.



Fig 31: Poster of "Happy Business"

A number of visits and activities were organized in 2016/17:-

- (i) a visit to the Hong Kong Herbarium managed by the Agriculture, Fisheries and Conservation Department on 24 May 2016;
- (ii) a visit to the “Eco Expo Asia 2016” on 28 October 2016; and
- (iii) a workshop on stress management on 24 February 2017 .



Fig 32: A visit to the Hong Kong Herbarium on 24 May 2016.

Apart from the “Happy Business” programme, HKO also works hard to enhance the wellness and cohesiveness of staff through various means, including:

- ✓ a Departmental Consultative Committee to serve as a platform to discuss staff related issues;
- ✓ the HKO Staff Association with activities fostering work relationships and a spirit of mutual help among members; and



Fig 33: Director's Trophy - Table Tennis Competition 2016.

- ✓ “Sky Dragon”, HKO’s dragon boat team formed in 2015 and expanded to more than 20 members in 2016, participating in various dragon boat races during the year.



Fig 34: “Sky Dragon” at the Cheung Chau Dragon Boat Festival in June 2016.



7 Verification Statement

I have verified the information and data of the Sustainability Report 2016/17. I confirm that the data presented in the Sustainability Report 2016/17 are authentic and the methodology for the collection and analysis of data is appropriate. The report represents an accurate account of HKO's sustainability actions and performance in the fiscal year of 2016/17.

Jerry Siu
Green Manager
Hong Kong Observatory

8 Contact Information and Feedback Form

This report is available on our homepage at the following link:

http://www.hko.gov.hk/environmental/Sustainability_Report_1617_eng.pdf and at our Resource Centre at the following address:

Units 2304-2309, 23rd floor, Miramar Tower,
132 Nathan Road, Tsim Sha Tsui, Kowloon
Tel.: 2926 8250

If you wish to obtain further information or raise any suggestions about this report, please contact our Green Manager at telephone 2926 8207 or email to dsec@hko.gov.hk. You can also make use of the following feedback form and send it back to the Green Manager, Hong Kong Observatory, 134A, Nathan Road, Tsim Sha Tsui, Kowloon, Hong Kong, or fax it to 2311 9448, or by email to dsec@hko.gov.hk.

To: Green Manager, Hong Kong Observatory

Feedback Form on HKO Sustainability Report 2016/17

1. Do you find the Report informative? Yes No

2. Do you find the content of the Report easy to understand? Yes No

3. What other sustainability issues you would like HKO to include in the Report?

4. Which aspects of the Report need to be improved?

5. What is your overall view of the Report?

Name:

Telephone:

Email:

