HKUST Environmental Report
2010 Update

HKUST continues its effort to foster a green and sustainable campus. This report summarizes our efforts in the year of 2010.

1 Wastewi$e Award
HKUST successfully fulfilled the requirements of the Hong Kong Awards for Environmental Excellence and was once again awarded the 'Class of Excellence Wastewi$e Label' in the year of 2010. The multiple waste reduction efforts on campus continued throughout the year and the additional focuses were on printer cartridges and used cake boxes. The University collected totally 1,747 printer cartridges, 63 used moon cake boxes and other cake boxes (177 kg in weight).

2 Award for Co-operative Partnership
The Environmental Protection Department presented an ‘Award for Co-operative Partnership’ to HKUST to recognize our efforts on source separation of waste.

3 Waste Recycling and Minimization
3.1 In comparison with 2009, there was a significant increase in the number of used CDs collected in 2010. A total of 7,706 used CDs were collected in 2010, representing a 70% increase.

3.2 Unwanted chemical reagents were given to chemical users of HKUST or users of other local tertiary institutions free of charge. A total of 52 items (32.5L and 11kg) were given out in the year of 2010, representing an increase of 33%.
3.3 The quantity of fluorescent tubes collected for recycling increased 21% from 8,600kg in 2009 to 10,400kg in 2010 while the quantity of used lamps collected for recycling increased 29% from 7,600kg in 2009 to 9,800kg in 2010.

3.4 There was a 13% increase for the amount of waste paper collected for recycling, i.e. from 131,440kg in 2009 to 148,770kg in 2010.

3.5 We continued to collect aluminum/iron cans and plastic bottles for recycling. The total quantities collected were:
- Aluminum/iron can: 361kg
- Plastic bottle: 1,827kg

3.6 About 12,200kg food waste was collected and converted to fertilizer / soil conditioner in 2010.

3.7 Facilities Management Office (FMO) continued to organize Garage Sale in May and November 2010.

3.8 ‘Bring Your Own Food Container’ Program was introduced to encourage the use of reusable meal box for takeaway meal.

3.9 The Campus Services Office and the Greeners Action jointly organized the ‘Save Food Day’ Program on every Wednesday in November and December 2010. The main purpose of the event was to encourage people to minimize food waste through careful food ordering and consumption.

3.10 All catering outlets had stopped using paper tray mat.

3.11 Used glass bottles in Uni-Bar were collected and delivered to the Hong Chi Association for recycling.

3.12 There was an overall 50% reduction in the use of plastic bags by the bookstore and a 25% reduction in the use of plastic bags during textbook selling period.

3.13 The use of plastic bags in the Souvenir Centre also reduced by 30%.

3.14 About 100 used books were sold by student groups for reuse purpose.

4  Resource Conservation

4.1 Installation of a 1000-tonnes high-efficiency chiller as lead chiller in the main air-conditioning plant for the Library extension project saves $636K per annum in electricity.

4.2 Addition of 27 sets modular designed instantaneous gas water heaters to replace 8 conventional gas-fired calorifiers at 4 student halls and swimming pool saves $47K per annum.

4.3 Adoption of energy efficient lamps to replace 464 sets aged, less energy efficient units in campus areas continued. This replacement, plus ongoing lighting optimization by fine-tuning of lighting operation hour and illumination levels, saves $30K per annum.

4.4 228 LED lamps were adopted to replace step / flood lights in lecture theatres and Sundial area.

4.5 Historical FMO energy saving activity details were posted on departmental website to promote energy saving awareness.

4.6 LED lamps with solar panels and sensors were used for Library Extension project.

4.7 Service-on-demand controls were installed for two new escalators at LG5 catering area.

4.8 Energy saving bulbs, T5 tubes, LED strips and LED spot lights were used for the newly renovated rooms and public area of the North Block of UniLodge (university guest house).

4.9 Timer for lighting in the public area of the North Block of UniLodge was installed.

4.10 All the air-conditioners in the public area of the North Block of UniLodge were switched off after 23:00.

4.11 The air-conditioner of the campus supermarket was off in winter and was adjusted to only 60-70% of the maximum level even in the hottest season.

4.12 The light boxes of the campus supermarket and hair salon were off after business hours.

4.13 University car engines were switched off by the university chauffeurs while waiting within and outside the campus.
5 **Sustainable Practice**

5.1 The Solar Hot Water System, funded by the Environmental Campaign Committee (ECC) and the Environment and Conservation Fund (ECF), continues to produce hot water for UG Hall 7.

5.2 HKUST participated in the LightSavers Programme of the Climate Group (TCG) to accelerate the wider deployment of LED outdoor lighting.

5.3 The University also participated in the World Wide Fund for Nature Hong Kong’s Earth Hour 2010 to promote sustainable use of energy.

5.4 Biodegradable eating wares were used and mainly low-carbon food was served during the 3-day Congregation receptions.

5.5 HKUST continued to pursue green purchasing on commonly used items in supply contracts. For example, more recycled products for stationery items were ordered.

5.6 Prospective suppliers were required to provide information on energy efficient grade / certification of the products being offered.

5.7 More environmental goods such as bags, thermal cups, etc. were sold by the Souvenir Center.

5.8 Standard purchasing documents were provided on website instead of mailing a bundle of paper documents to prospective suppliers in quotation / tender invitations.

6 **Indoor Air Quality**

Indoor Air Quality (IAQ) Certificate (Excellent Class) for S H Ho Sports Hall as well as IAQ Certificates (Good Class) for Library extension, lecture theatres and computer barns were renewed.

7 **Green Construction Projects**

7.1 General Project Management

- Paperless Electronic Data Management System was used
- HKBEAM Gold Standard as the basic minimum requirement for all new capital projects was adopted.
- All capital projects’ contractors were required to submit waste management plan and hire Environmental Officer to monitor the contractor’s performance.
- The contractors were required to reuse inert construction waste (e.g. using excavated materials for filling) on site or in other suitable construction sites as far as possible in order to minimize the disposal of inert construction waste at public fill reception facilities.

7.2 Extension to Existing Academic Building

- Low emission glass window wall at The Hong Kong Jockey Club Atrium area to reduce solar gain
- Solar energy powered bollard lights and street lamps
- Terraces with sky planters at all floors
- Roof garden
- External decking area using recycled material-reconstituted plastic timber

7.3 New Academic Building and Institute for Advanced Study Project

- Joining CLP’s tree-recycling initiatives on the felled tress by the main contractor
- Water cooled chillers
- Heat recovery fresh air pre-conditioning
- Light-emitting diode (LED) type exit signs
- Occupancy and daylight sensors for lighting control
- Automatic lighting and ventilation control for lifts
- Solar lightings in landscape area
- Greening for rooftops and open space
- Used cooling tower water for flushing
- Interlink between office window and the air-conditioning system to avoid unnecessary use of air-conditioning in case the windows are opened

7.4 Student Halls 8 and 9

- Occupancy and daylight sensors for lighting control
- Light-emitting diode (LED) type exit signs
- Automatic on/off switching of lighting and ventilation fan inside lifts
- Solar park lighting in landscape area
- Solar hot water system

7.5 Research and Academic Building (New Laboratory Block)

- Water cooled chillers (evaporative cooling tower using fresh water)
- Automatic demand control of chilled water circulation system
- Automatic condenser tube cleaning equipment
- Automatic demand control of supply air
- Demand control of fresh air supply with carbon dioxide sensors
- Heat wheels for heat energy reclaim of exhaust air
- T5 energy efficient fluorescent tubes with electronic ballast and lighting control by occupancy sensors and daylight sensors
- Light-emitting diode (LED) type exit signs
- Service-on-demand control for escalators (on-off control)
- Automatic on/off switching of lighting and ventilation fan inside lifts
- Building energy management system for large installations
- Low emission coating on glazing to reduce heat gain
9 Promotion of Environmental Awareness

An Environment Week was organized from 18 to 22 April 2010. The theme of the Week was ‘What can you do for a Green Planet?’ The Environment Week included electric vehicle showcase and demonstration, low carbon food cooking demonstration, HKUST green fashion and product design show, HKUST Sustainability Challenge contest, Green Ambassador Award Ceremony, book talk, Eco Olympics, Recycled and Garbage Art exhibition, green buildings workshop on ‘Architecture and Sustainability’, seminar on ‘Endangered: The Irawaddy dolphins of India and whale sharks of China’ and annual coastline cleanup.

8 Student-Related “Green” Activities

A number of student-related green activities were organized, including Green Internship Opportunities – preparation workshop, trip to Kadoorie Farm and Botanic Garden, information session of Amway Organic Farming Internship Program, green project proposal presentation and team challenge, photo-taking workshop (to prepare for green activities), photo-editing workshop (to prepare for green activities), sustainability talk, HKUST-Hang Seng Bank Green Ambassador Program Appointment Award Ceremony 2010, collection of used moon cake tins/boxes, carbon trading game, guided Eco-tour, Zero-Waste workshop, Carbon Neutral Congregation, food waste recycling tour in HKUST, press conference for Carbon Neutral Congregation, EcoPark visit, recycling activity during check-out period and HKUST-Hang Seng Bank Green Ambassador Program learning trip to Australia, etc.

10 Environmental Research Projects

10.1 HKUST conducted a number of environmental research projects on different environmental issues including renewable biofuels, sustainable energy production, sustainable sewage management, pyrolysis of mixed wastes, wastes reuse, removal of NOx from motor vehicle emissions, environmental pollutants, air quality, marine vessels smoke emission, water treatment, aquatic environment, toxicity of nanomaterials in aquatic organisms, green slope engineering, etc.

10.2 Units engaging in environmental studies include:
- Department of Chemical and Biomolecular Engineering
- Department of Chemistry
- Department of Civil and Environmental Engineering
- Department of Industrial Engineering and Logistics Management
- Department of Mechanical Engineering
- Division of Environment
- Division of Life Science
- Division of Social Science
- HKUST Fok Ying Tung Graduate School
- Institute for the Environment

10.3 A comprehensive list of environmental research projects conducted in 2010 is accessible at: http://www.ab.ust.hk/hseo/EnvRep/env10.pdf

11 Organic Farming

Staff and students continued to participate in organic farming activity.

12 Water Quality Control

12.1 Used cooking oil was collected from catering outlets for recycling. The total quantity collected in 2010 was 7,620kg.

12.2 HSEO continued to collect water samples from potable water outlets, University’s swimming pools and Dental Clinic to ensure proper provision of good quality water for the campus community.

13 Environmental Compliance

HKUST continues to comply with all environmental regulatory requirements applicable to University’s operations. These include monitoring of waste water and sea water discharges, hazardous waste management, air emission and environmental noise, etc.