A Green Campus
The Chinese University of Hong Kong (CUHK)

ABSTRACT

Found in 1963, The Chinese University of Hong Kong (CUHK) has developed from a student population of about 3,000 to 21,000 in 2019. The campus looks like a small town / community where about 30,000 staff / students work, study and live. In the course of development, the Campus Master Plan (CMP) has provided an exemplary sustainable framework to balance the growth of the University in achieving teaching and research excellence under her unique college system and campus environment. The CMP consists of six key planning precepts:

i) Making a Sustainable Campus
ii) Places for Education and Research Activities
iii) Enhancing College Life
iv) A Pedestrian Friendly Campus
v) Conserving Places of Value
vi) A Landscape of Vital Importance

Keywords: Green Campus; Master Plan; Sustainable Neighbourhood
1. INTRODUCTION

The mission and vision of CUHK:-

➢ To assist in the preservation, creation, application and dissemination of knowledge by teaching, research and public service in a comprehensive range of disciplines, thereby serving the needs and enhancing the well-being of the citizens of Hong Kong, China as a whole, and the wider world community; and

➢ To be acknowledged locally, nationally and internationally as a first-class comprehensive research university whose bilingual and multicultural dimensions of student education, scholarly output and contribution to the community consistently meet standards of excellence.

Found in 1963, CUHK with a suburban campus of about 137 hectares has developed from a student population of some 3,000 to a population of about 21,000 in 2019. Following the initial development plan by W. Szeto & Partners, a master planning process is being carried out in response to the strategic objectives to address the increased student population and the changing requirements of the academic disciplines.

The CUHK Campus Master Plan (CMP) is an exemplary framework to balance the growth of the University in achieving teaching excellence and research achievements via CUHK’s unique college system and campus environment. In the process, consultations and engagements are conducted with the stakeholders to gather their aspirations and feedbacks.
1. CUHK CAMPUS MASTER PLAN

The vision of the Campus Master Plan (CMP) is to enable the University to be an exemplar of sustainable development by balancing the enhancement of its campus environment with the conservation of its natural heritage. The CMP is conceived as a living and continually developing document and it consists of six key planning precepts as detailed in the following sections:

2.1. Making a Sustainable Campus

The University pledges its commitment to continuously improve the environmental quality of the campus, putting the principles of sustainable design at the heart of campus development, and has been acclaimed for her innovations and efforts, e.g. Green Building design excellence, measures for recycling, uses of renewable energy, energy conservation, wastes management, tree and ecology preservation, and carbon audit on existing buildings, etc.

Reporting to the Campus Planning Committee chaired by the Vice-Chancellor, the University’s dedicated offices such as the Campus Development Office, Campus Planning and Sustainability Office, and Estates Management Office collaborate to carry out the campus planning, building and infrastructure construction, sustainability education and operations including energy audit and incentive schemes, etc. Green Building design principles are implemented to ensure that the built environments are friendly, inclusive and sustainable.

With the concerted effort and the implementation of the Energy Saving and Conservation Plans, the University has reduced energy and general waste progressively in the past years.
The University has adopted many initiatives in reducing the overall carbon emission. Weiyuan Lake, a genius Loci for Chung Chi College at the foothill, is used as a storage tank of natural rainfall. It helps to regulate the micro-climatic of the surrounding built environment and reduce the energy used for cooling. It is also home to over 200 plant species including over a third of all tree species in Hong Kong. After purification and sedimentation, the grey water from this alternate source is used for irrigation, street cleaning, A/C cooling and contributes about 27% of the daily water consumption of the University. In the reduction of energy and water consumption, other initiatives such as installation of daylight/motion sensors to control lighting & AC, energy efficient LED lighting fittings, roof gardens, electric vehicles & charging points, wind turbines for street lighting, district cooling/water-cooled chiller system, solar water panel & photo-voltaic panels in student hostels, water-saving fixtures and reuse of used water collected are also adopted.

2.2. Places for Education and Research Activities

The CMP develops the concept of clustered and zoned development for disciplinary teaching and research activities with a view to strengthening connectivity between the existing and new facilities. While the academic facilities are zoned in proximity clusters to encourage social interaction and academic collaboration, dedicated landscape features, open spaces and vertical transportation devices were planned in parallel to enrich the Walking Campus experience. This enables the efficient use of resources, convenience of access and optimizes the land use.

In designing these facilities consideration such as natural day lighting, visual comfort, indoor environment quality, thermal comfort, acoustics, natural ventilation are implemented such as window wall/skylight to maximise natural day lighting, roof greening for enjoyment, acoustic windows, etc.
2.3. Enhancing College Life

Of all Hong Kong universities, CUHK is the only one that offers a college experience. College programmes and activities complement the formal curricula by delivering whole-person education and pastoral care. The college system also encourages intimate interaction among teachers, students and alumni.

CUHK was established in 1963 as a University with a federal constitution. To the constituent colleges of Chung Chi, New Asia, United and Shaw, Morningside, S.H.Ho, C.W.Chu, Wu Yee Sun and Lee Woo Sing have recently been added, bringing up the total number of colleges to nine. The spatial organization of the University and the colleges is expressed in terms of their facilities as well as the clustering and scale of buildings in association with the planning of open space and circulation spines.

While CUHK’s administration and academic facilities are mostly located in the Central Campus along the axis of the University Mall, the colleges are planned in a satellite pattern, maintaining their identities with different culture, architectural expressions and building clusters. Scale of the colleges ranges from 300 to over 3,000 students. Apart from the hostel blocks, the college complexes provide a variety of indoor and outdoor amenities, activities and gathering spaces. In the design and operation of these facilities, Green Building and ‘Eco-Habitat’ design principles are adopted to encourage whole-person development and interactions outside the classrooms.
College life is a vital part of student wellbeing and education in CUHK; dedicated programmes are conducted in Colleges to cultivate environmental awareness of the students and to achieve a green and energy conscious living style. In some new hostel blocks, ‘Smart meter on Progressive rate Scale for Top-up’ are installed for students to keep track of their electricity consumption for bedroom A/C, fridge, fan or heater, etc.

Campaigns in Colleges such as ‘Love Food Hate Waste @ CUHK’ guided students to reduce their Leftover Meal 剩宴 to more than 20% per year and trained more than 50 student ambassadors (有衣食達人) in the practice of ‘Green Living’. ‘Green Student Societies’ are organized and ‘Year-End Hostel Check-out Scheme’ also recycles more than 10,000kg of clothes, paper glass, household ware, etc. from 34 hostels.

2.4. A Pedestrian Friendly Campus

The CUHK campus was found on a hilly terrain with a level difference measuring over 150m from the Mass Transit Railway along Tolo Harbour to the mountain top where two founding colleges and their iconic water towers are located. While vertical circulation poses a major challenge on campus, the CMP plans to reinforce the major pedestrian spines and connect the various campus terrains by creating a complete and desirable network through link bridges, covered walkways, grand steps and communal gathering spaces. This walkway infrastructure is further assisted by lifts and escalators in new buildings built along the major circulation routes.
2.5. Conserving Places of Value

The CMP recommends the establishment of a methodology for identifying places with unique values that should be conserved; and assess the implication of any intervention to a ‘Place with Culture Significance’. This helps to enhance and extend the identity of the University while maintaining coherence in the campus environment.

Preserving WeiYuan Lake 未園湖
Genius Loci for Chung Chi College

The luxuriant campus is home to over 200 plant species including over a third of all tree species in Hong Kong

Preserving Habitats
CUHK is home to variety fauna 131 bird species are recorded on campus, representing about 30% of the 448 species in HK

Minimising TreeRemoval
The Jubilee Garden had its design modified in 2013 to preserve existing trees in situ

2.6. A Landscape of Vital Importance

The CMP promotes a green and humanistic framework to promote the enjoyment of the landscape and visual amenity of the surroundings by creating a comprehensive open space network within the campus. The Landscape Strategy Plan recommends the treatment of different types of landscape zones, identifies new nature trails within the campus to enhance the greenery and to supplement hard landscape works.

Under the steering of the Campus Development Office and Campus Landscaping Enhancement Committee, a new round of Campus Landscape Master Plan studies is being carried out with consultants to review the landscape opportunities and constraints, and to refine the strategy and plan for sustainable development.
3. SUSTAINABILITY ACHIEVEMENTS AND AWARDS

ACOEHMIVIS
- Energy Saving Championship Scheme 2016
  (Hanson Supreme Grand Award, Hanson Grand Award - Top award in the post-secondary education institution category & Most Innovative Energy Saving Measures Award)
- Green Building Award 2016 - HKGCC
  (Merit Award - Green Building Leadership)
- FuturArc Green Leadership Award 2016
  (Merit Award - Institutional for Library Extension)
- Recognised as Hong Kong Green Organization. HK4EE
- Green Building Awards 2014 for 4 CUHK projects
- U Green Awards 2014-15 from UMagazine
- 2014 & 2013 Gold Awards for (Sectional Award - Public Organization and Utilities), HK4EE
  (CUHK is the 1st public organization that has won the gold award, and won it twice)
- U Green Awards 2013-14 from U Magazine
- FuturArc Green Leadership Award 2013
  (The WINNER - Institutional for An Integrated Teaching Building)
- Merit Award of the Commendation Scheme on Source Separation of Commercial and Industrial Waste from EPD

Various years of Class of Excellence, Wastewise Label & EnergyWise Label, HK4EE

Platinum / Gold Rating for 11 new building projects

- Library Extension Building
  - FuturArc Green Leadership Award 2016 - Merit Award
  - Green Building Award 2014 - Merit Award
  - HK-Beam 2014 - Platinum
  - Indoor Air Quality Certification 2014 - Excellent
- An Integrated Teaching Building
  - FuturArc Green Leadership Award 2014 - Merit Award
  - HK-Beam Plus - Provisional Gold
- WUCH Man Yuen Building & Tsingmuo International Academic Park
  - HK-Beam 2015 - Platinum
  - MP&M Asia Gold Award - BEST Urban Regeneration
- Student Hostel for Women & Men College
  - Green Building Award 2014 - Finalist
  - HK-Beam 2014 - Platinum
  - Indoor Air Quality Certification 2014 - Excellent
- Student Hostels Block A & B in Area 59
  - Green Building Award 2014 - Finalist
  - BEAM Plus v1.1 for New Buildings - Provisional Platinum
- Student Hostel for C.W. Chu College
  - HK-Beam 2015 - Platinum
- Student Hostel for Lee Woo Sing College
  - HK-Beam 2013 - Platinum
- Lo Kwee-see Ning Integrated Biomedical Sciences Building
  - HK-Beam 2013 - Platinum
  - Indoor Air Quality Certification 2013 - Excellent
- Pomerenek's Student Centre
  - HK-Beam 2013 - Gold
  - Indoor Air Quality Certification 2014 - Excellent