

More Than Just a Green Building – Developing Green Strategies at the Chinese University of Hong Kong Library

Application for the IFLA Green Library Award 2017
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Abstract

The slogan “Go Green” has been embraced by a range of organizations including businesses and universities in recent decades. Within higher education academic libraries, as a key service unit in their parent institution, have an important role to play in supporting this mission. We have seen many academic libraries strive to “Go green” by designing a green library, whether a new build or renovation. However, there are very few academic libraries in the United States that are Leadership in Energy & Environmental Design (LEED) certified. We argue that pursuing a green building may not be the strategic focus for many academic libraries. In taking a more holistic approach to sustainability through practical measures, academic libraries need to formulate and develop wider green strategies beyond a green building. “Go Green” impacts not only our attitudes towards the environment but also changes the way academic libraries serve their users and community.

This paper discusses how the Chinese University of Hong Kong (CUHK) Library formulates, develops and implements its green strategy and how the strategy has gradually reshaped its services. First we consider how the concept of sustainability has affected services provided by academic libraries, and why green strategies are a practical and feasible approach. We then use CUHK Library as a case study, siting the development of its green strategies in the context of the University’s approach to sustainability the wider CUHK community, and ultimately the Library’s overall strategic plan. The third section describes how the Library implements its green strategies in different areas, from the daily operation of library offices and services offered to users, to the planning of a library extension and broader sustainability initiatives. Issues of evaluation are discussed and we conclude the paper with future plans.

Introduction

The slogan “Go Green” has been embraced by a range of organizations including business enterprises and universities in recent decades. Within higher education, academic libraries, as a key service unit in their parent institution, have an important role to play in supporting this mission. We have seen many academic libraries strive to go green by designing a “green library”, whether a new build or renovation. The gold standard is to achieve accreditation with one of the major green building standards around the world, be it Building Research Establishment Environmental Assessment Method (BREEAM) in the United Kingdom, Leadership in Energy and Environmental Design (LEED) in the United States and much of Asia (Edwards, 2011), or Hong Kong’s Building Environmental Assessment Method (BEAM).

However, it has been pointed out that even in the United States there are very few academic libraries that are LEED certified (Aulisio, 2013). We argue that due to various limitations, either financial or in terms of space, it may not be easy for an academic library to fund a new build or a major overhaul of their existing building. In this case, pursuing a green building cannot be the focus of a sustainability approach for many academic libraries. Embracing an holistic approach to sustainability practices may be a way forward.

GREEN STRATEGY AND SUSTAINABILITY

A frequently used definition of sustainability, from the United Nations' World Commission on Environment and Development, is "to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations, 1987). For the United States Environmental Protection Agency (EPA), to be sustainable is "to create and maintain conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations" (EPA, 2016). From these definitions, three forms of sustainability are defined: economic sustainability, social sustainability and environmental sustainability (Chowdhury, 2014). There is some debate about the need for a fourth dimension of cultural sustainability, particularly in urban settings such as Hong Kong, however we have chosen to subsume this within social sustainability.

Another definitional aspect that we believe is important to libraries is that "[t]he heart of sustainability is not data on CO2 emissions, but a spirit of action, a state of mind" (Clark, 2013). Le Ber and Gregory (2004) write that greening "is a process, as well as a state of mind, and it calls for taking action". This is reflected in library literature with Jankowska and Marcum (2010) commenting that since the 1990s the trend has been to move from terms such as "green librarian" or "green librarianship," to more action oriented terminology such as "go green," and "green library movement". Aulisio (2013) proposed not to restrict the term "green library" to the very few LEED certified libraries but to include "any library that promotes sustainability" and that "a true green library is one that promotes sustainability by leading by example and attempts to incorporate sustainability into all aspects of academic librarianship".

Embracing a holistic and action-oriented approach to sustainability will have significant impact on the development of a sustainability strategy. Jankowska and Marcum (2010) suggest sustainability strategies should be integrated into library operations, saying

"Sustainable strategies need to be integrated into a platform for guiding future decisions about collections, library buildings, and the scale of preservation, digitalization, equipment, products, and library networking service efforts. Such decisions need to take into account not only the cost of collection, equipment, and labor but also the cost of generated waste measured by the size of 'ecological footprint' resulting from library operations and services."

Olson (2008) though targeted at business enterprises, provided a model for a green strategy that can be applied to academic libraries who endeavour to establish a sustainability strategy. He argued a green strategy complements other strategies implemented by an enterprise and helps an enterprise make business decisions that “have a positive impact on the environment” and the decisions are based on “solid business logic”. Three principles in a green strategy were highlighted:

- It “fosters a common culture of awareness and action”;
- It “facilitates decisions and transformation initiatives that improve the environment”;
- It should “have attractive value propositions that are cost effective”.

Olson’s view is that a green strategy should aim to cultivate a green culture that can reinforce people’s behaviour, plus provide appropriate tools and training in order to encourage change. Current and best practices to cultivate a common culture may include: lead by example, provide training, install appropriate tools, measure and report performance, make it everyone’s responsibility and create a communication and change management plan. A green strategy should thus affect decisions made across the whole enterprise. Olson also offered a model for assessing the maturity level of a green strategy which we will apply to CUHK Library.

CUHK LIBRARY GREEN STRATEGY IN CONTEXT

Hong Kong is a highly urbanized, high density, high consumption, business-oriented city and a society that is facing tensions around the sustainability of its language and culture. It is also highly vulnerable to the consequences of climate change (Francesch-Huidobro, 2014), and according to the same author Hong Kong’s solutions are ‘by and large limping behind developments elsewhere’.

Against this background socially responsible universities must play a leadership role, and CUHK is committed to “being a leader in the research, teaching and institutional practice of environmental sustainability”. CUHK has a history of support for sustainability dating back to the 1990s (http://www.cuhk.edu.hk/sustainability/en/our_work/strategic/milestones.html). Its 2012 sustainability policy states it is “committed to adopting sustainable development in education, research and knowledge transfer, to building a sustainable campus by integrating sustainability in its planning, decision-making and day-to-day operations, and to providing leadership in sustainability for the enhancement of the well-being of all peoples.” (http://www.cuhk.edu.hk/cpsd/documents/sustainability_policy_2012.pdf).

CUHK is blessed with the largest and greenest campus in Hong Kong, 137.3-hectares overlooking Tolo Harbour. Given our beautiful site a key goal for the university is ‘To conserve, protect and enhance places of high ecological, landscape and cultural heritage value on campus’ (CUHK Sustainability Policy 2012). The Campus Master Plan for campus development until 2021 (<http://www.cuhk.edu.hk/cmp/en/index.htm>) is based on the principle of sustainable development and pledges to reduce energy consumption and greenhouse gas emission.

Green Governance. A Committee on Campus Sustainability formulates policies and guidelines for action plans, and oversees implementation (see Fig.1)

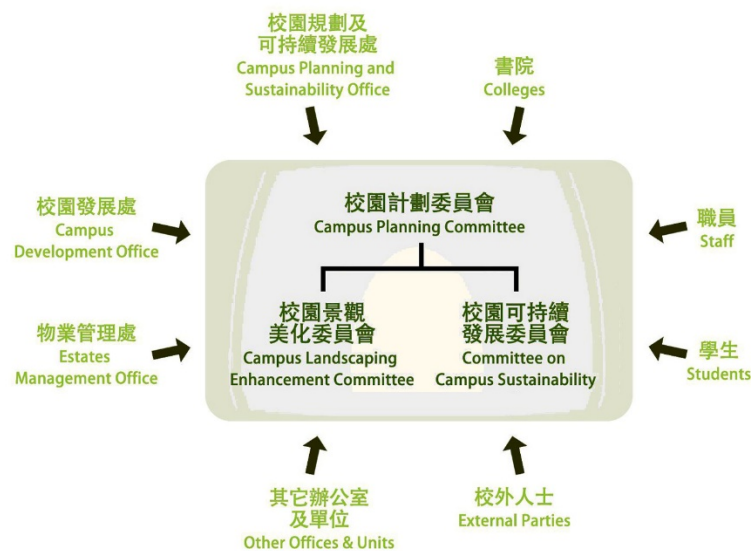


Fig. 1 CUHK's green governance framework

http://www.cuhk.edu.hk/sustainability/en/our_work/strategic/governance.html

The committee is supported by a green team comprising the Campus Planning and Sustainability Office (CPSO), the Estates Management Office (EMO) and the Campus Development Office (CDO). Our nine colleges and various student organizations also play an important role in building the sustainable campus. At a departmental level each office is required to nominate at least one staff member to serve as Energy Warden to facilitate the implementation of energy conservation measures and encourage colleagues to achieve targets on energy consumption and greenhouse gas emission. Five CUHK Library staff serve as energy wardens.

Green Policies and Targets. CUHK has a number of green policies ranging from energy conservation, green purchasing, to a 'no shark's fin' policy. Implementation of the policies is increasing target driven with clear performance indicators. Overall targets such as a 25% reduction in total energy consumption per capita by 2025 are ambitious, with this target higher than that of Hong Kong government's. Medium-term sustainability targets to 2017 are stretching:

- To achieve a further 8% reduction in energy consumption per capita and 10% per capita reduction in greenhouse gas emissions.
- To reduce waste to landfill further by 12% per capita.
- To reduce water usage further by 15% per capita.
- To reduce the use of paper by 50%, with particular reference to committee papers.

http://www.cuhk.edu.hk/cpso/documents/sustainability_targets_2012.pdf

Initiatives to promote behavioural change within the staff and student body abound. The Green Office Programme ‘GO!’ impacts daily operations in all University offices. Its core mechanism is the ‘GO! Checklist’ where 32 action items are listed (<http://www.cuhk.edu.hk/cpsso/go!/gop.html#checklist>). Participating offices pledge to undertake at least half of the action items annually. The programme was launched in 2012 on a voluntary basis and became compulsory in 2014. Other activities to raise environmental awareness and promote sustainable lifestyle among students and staff include for examples, a farmers’ market on campus, and a campaign to encourage walking. Many of these are student-led such as the latest campaign to ditch the graduation bouquet and soft toy, or at least donate the soft toy to charity.

These soft approaches are used alongside much harder edged tactics including financial incentives to achieve targets. Aimed initially at the top twenty buildings with the highest energy consumption, the 2014 Energy Conservation Incentive Scheme aims to achieve a 4% reduction in baseline electricity consumption in each of the first two years, and 8% in the third and fourth years. To encourage participating offices, 80% of the electricity cost saved will be given to the building users and there will be no penalty for those who cannot reach the target reduction in the first two years. However, if the building users fail to achieve the target reduction in the third and fourth years, they will have to share half of the cost with a cap set at 4% of the baseline consumption. This scheme gives some indication of the seriousness with which the university approaches sustainability.

Ultimately central to any university’s sustainability approach is teaching and research. CUHK currently has over 150 sustainability-related research projects and has incorporated sustainability principles into its curriculum. Education in environment, energy and sustainability spreads across almost all faculties, colleges and general education programmes, from highly targeted degrees such as a Master of Social Science in Sustainable Tourism to the common General Education programme for all undergraduates that examines aspects of fundamental human concerns, including human’s relationship with nature, through reading of classic texts.

CUHK Library and Sustainability

CUHK Library Strategic Plan. When CUHK Library came to develop a new strategic plan in 2013 it conducted an environmental scan, including at an institutional level, to inform the planning process. Given CUHK’s strong commitment to sustainability, the Library felt it needed to explicitly embrace sustainability for the first time in its own strategy, to support and complement the University’s approach. The Library’s strategy ‘*Partnering for Success 2013 – 2016*’ includes a vision statement that says the Library wishes to be recognized for

“engaging with our students, faculty and the wider university community to design and deliver user-centred, sustainable services and spaces”.

In addition the plan is structured around five strategic themes with objectives underlying each theme. Sustainability is one of the five strategic themes, under which are four objectives:

- Progress towards environmental sustainability wherever possible
 - Deliver and demonstrate value and fiscal responsibility
 - Optimise collection space, storage and preservation
 - Secure the organizational structure and staff skills needed to deliver the CUHK Library mission and vision
- (<http://www.lib.cuhk.edu.hk/sites/cuhk/files/page/about/people/inside-the-library-strategic-plan.pdf>)

The strategy not only includes environmental and economic sustainability but also social sustainability with a vision statement highlighting the Library's enduring commitment to reflect the University's bilingual and bicultural environment in its collections, services and collaborations. The objectives also include issues specific to the Library that need to addressing, specifically collections and services.

GREEN STRATEGY IN ACTION AT THE CUHK LIBRARY

We believe that greening “is a process, as well as a state of mind, and it calls for taking action” (Le Ber and Gregory, 2004). In this section we outline some of the actions taken by the Library as a result its own strategic plan, and in response to both the CUHK institutional environment and the wider Hong Kong situation.

Social: Raising Awareness of Sustainability Issues

Levels of awareness and commitment to sustainability issues in Hong Kong society are relatively low. There is no functioning green political party, and a recent survey by CUHK journalism students found many people unwilling or unable to turn environmental issues into action. A Hong Kong-wide ‘Food Wise’ campaign to reduce food waste was cited as an example with 90% of respondents aware of the campaign, but less than half were motivated to reduce food waste (Ho, 2016).

Given this background we believe it is important to work on raising awareness of sustainability issues among library staff. Sustainability is a standing agenda item on the Library's management team meetings with notes circulated to all staff. Monthly statistics from EMO on electricity and water consumption by library are shared with all our library managers. Our sustainability work is also a section in the Library's annual report. Co-organising the ‘Academic Libraries 4’ Conference with its theme of the sustainable academic library is another opportunity to engage a group of staff with the issues.

One of the most success awareness raising initiatives has been the rooftop organic vegetable garden set up on the new Library Extension roof in 2014. A green roof was part of the design of our extension but became a neglected lawn that was not used. With a generous donation

from the CC Wu Cultural and Education Foundation, with assistance from EMO and advice from two organic farming organizations in Hong Kong, O-Farm and the Permaculture Institute, the idea to create an organic rooftop garden became reality. Food is very central to Chinese culture and food quality is a concern to all. The Library offered training and support to over 40 library staff volunteers who have become organic gardeners. Several hands-on training sessions were run to help library staff who were interested in gardening, as many had never gardened before, and they garden together in teams of three with their own section of the garden. A wide range of herbs as well as vegetables such as gourd, bush bean, cucumber, radish, lettuce and tomato are grown. Vegetable growing is a great opportunity for staff to learn more about sustainability and work together for a healthier lifestyle. More than that, the organic roof-top garden is a catalyst for team building, skills development and fostering staff morale with harvest celebrations.

An evaluation of the rooftop garden was conducted in January 2016 (see Table 1) when a survey was sent to all gardeners. The response rate was 82%.

	Strongly Agree	Agree	No comment	Disagree	Strongly disagree
Participation in rooftop gardening raises my awareness of the importance of a Green Life	39%	61%	0%	0%	0%
Participation in rooftop gardening increases my knowledge of fresh and healthy local produce	58%	42%	0%	0%	0%
Participation in rooftop gardening enhances team work building among library colleagues	52%	39%	10%	0%	0%
Participation in rooftop gardening helps me to learn organic farming	26%	48%	16%	6%	3%
Participation in rooftop gardening increases my support for a green and healthier living style	71%	29%	0%	0%	0%
Participation in rooftop gardening increases my support for a green and healthier living style	45%	48%	7%	0%	0%
The rooftop garden transforms a vacant space into a beautiful and productive space	81%	19%	0%	0%	0%

Table 1. Rooftop gardening survey 2016

The most encouraging sign of the impact of the garden is that it is still being very well tender after 18 months, and when staff leave we have no problem filling vacancies with new gardeners.

Social: The CUHK and beyond

CUHK Library is not alone in implementing its green strategy on sustainability. The successful implementation of its green strategy is through close partnership working. These partners come from the CUHK community and beyond.

The Library works closely with the University's green team, namely CDO, EMO and CPSO. Other units, especially students' green organizations, also provide recommendations to the Library for promoting awareness on sustainability. The Library listens to their suggestions and do our best to integrate their recommendations into our daily operation and services if possible.

Beyond CUHK

The Library believes that partnership with organizations beyond CUHK community will expand and enrich library staff's experience and practice on sustainability. Our work with O-Farm training our gardeners is an example of how we cannot work in isolation.

If you accept, as the ALA Sustainability Round Table, does that there is a relationship between culture and sustainable development, and that libraries have a role to play in cultural sustainability and cultural diversity this has implications for what we collect and how we make it accessible. CUHK Library has always collected material to support Hong Kong studies and has a particularly strong Hong Kong literature collection. Public exhibitions and related talks, such as our recent 'Fun with Cantonese' exhibition, or the 2016 exhibition highlighting art therapy and the talents of autistic children, have not explicitly formed part of our sustainability strategy, but can be viewed as helping to fostering a resilient community.

Green Library Services

CUHK Library endeavours to implement green practices in its services and daily operations, especially the effort to reduce the consumption of paper, another University target by converting services to online. However, this has been gradual and indeed ongoing as some of our users, preferred paper format or non-electronic communication.

The Library had to implement the change in various ways and give faculty and staff sufficient time to adopt these changes. Table 2 is a timeline of services that have moved online:

Sept 1999	Online request for Electronic Reserve Service
Jan 2000	Online request for Inter-library Loan Service
Sept 2002	Personalized Electronic Services - Bi-weekly New Additions List; Publishers / Vendors Alert Services CUHK ILLiad - Web-based inter-library loan service
Nov 2005	Online Application for Alumni Library Services - Library Card and Digital Library Service
Jan 2008	Online Library Room Booking System
Mar 2009	Self Check-out Station - Users can decide whether to print the receipt
Apr 2009	Online form for requesting inter-Branch Book Delivery
Aug 2009	Online Registration/Update of Email Address Service - to receive all important notifications from the Library, including Coming Due Alert, Hold Pickup, Recall or Overdue notices
June 2010	Discontinue the use of 'Date Due' slips

Jan 2011	All library notices sent out by email only
Jan 2012	Alumni Library Card online renewal introduced
Mar 2014	Online booking System for Faculty Study Rooms
May 2014	Online registration for a JULAC card, allowing reciprocal access to other university libraries in Hong Kong.

Table 2. Timeline for moving to green services

Printing service

In order to reduce paper consumption duplex printing option was made available as early as 2002. Eventually, double-sided printing was set as a default mechanism for all printing in September 2011. To encourage recycling of unwanted paper produced from photocopiers and printers, rubbish recycling bins are placed near photocopiers and printers. Moreover, library staff will collect unwanted paper with printing on one-side for public reuse as drafting paper.

Scanning Service

The Library also reviewed the provision of multi-function photocopiers (MFPs), and significantly increased scanning provision in 2013-14. The charge of scanning service is cheaper than for printing and the Library hopes that this will attract users to use scanning more than printing so as to reduce paper consumption.

The consumption of paper has reduced 1% in 2015 as compared to 2014.

Sustainable Collection Services

Space is at premium in Hong Kong, and in its 2015 Collection Development Policy the Library implemented an “electronic preferred policy (e-preferred policy)” for both journals and books so as to provide a greater access to library resources and reduce the need for storage space. The policy states: “Web based electronic format will be preferred for all types of information resources for advantages such as convenient 24x7 access, multiple usage, options to use on mobile devices, and easy integration into course management system or e-learning platforms”. Electronic books and journal do not need a controlled environment; Hong Kong’s tropical climate where humidity quickly damages print books means air conditioning is the major source of the Library’s electricity consumption.

The Library has also been working through JULAC with its sister seven university libraries in Hong Kong to take a sustainable approach to our print collections. JULAC has for over eleven years now been working with our funders and the Hong Kong administration to build a shared remote storage facility for low use print material. The land has been allocated and the design, including an Automated Storage Retrieval System, has been completed but unfortunately funding to build is not yet forthcoming. As an interim measure in 2014 the eight JULAC libraries committed to a distributed print journal storage scheme whereby a single copy of a

print journal is kept by one library for all to use when an electronic version is available. JSTOR titles were the first to be included in the scheme, STEM titles came next and we are now working on business studies titles.

Green Operations

Green Office Programme

The Library joined the Green Office Programme in its first phase (2012) and since after. The Library has fulfilled the requirements of 'GO!' and is acknowledged as a "Competent Green Office" from 2012 (<http://www.cuhk.edu.hk/cpsgo/go!/cgo.html>). We display the Green Office badge on our website as a means of publicizing the scheme and our commitment.

Energy Saving

With the University energy saving targets explicitly in mind, the Library has undertaken action to try and reduce electricity consumption. This is a particular challenge, not just because of the Library's long service hours, but also because of the need for air conditioning. Working EMO, lux levels, a measure of the intensity of light, were measured throughout the University Library and as a result substantial de-lamping took place. Additional motion sensors were installed not just between the stacks but in all group study rooms. The time the lights stay on after a user has moved away was reduced. Shutting off computers, photocopiers and printers when libraries close has been a long-standing practice. Now library staff no longer turn computers on every morning when libraries open; the first user is expected to turn the machine on. Our changes are paying off. The annual electricity consumption of the University Library Complex for 2014 has reduced by over 8% as compared with the baseline.

Waste Management

In order to collect waste paper more effectively and avoid contamination of high-quality of office paper waste, the University invited two waste recycling companies to tender to offer a collection service for general paper waste and confidential paper waste to the University offices and departments (<http://www.cuhk.edu.hk/cpsgo/go!/paper.html>). CUHK Library joined this service in 2014. The company provides a green bag for general paper waste and red bag for confidential paper waste. They collect the bags directly from library offices and provide a monthly report on the number of bags and weight of paper waste collected, as well as the carbon reduction through paper recycling. The Library also uses recycling waste separation bins for offices and public areas in the libraries. In 2015, the weight of non-confidential paper recycled was 12,792.1kg which accounts for a reduction of 61,508 kg greenhouse gas.

Furthermore the Library also disposes of its redundant IT equipment and furniture with care. All print cartridges are recycled by arrangement with EMO. Obsolete IT equipment is reused in other departments or distribution to charities. A list of unwanted furniture is compiled and sent to all university offices via mass mailing to seek new owners before sending to recycling sites.

Green Building

At the start of this paper we said we do not believe a green building is a prerequisite for becoming a green library. However at CUHK we completed a major building project which created an opportunity to integrate sustainable design. To accommodate an additional 3,000 students resulting from Hong Kong's tertiary education move from a three to a four year undergraduate degree in 2012, it was decided to extend the existing University Library, the main library on campus. In 2005 funding was approved for an extra 6,100 sq. m. of library space, and a new wing and extended basement beneath University Square at the front of the Library opened in September 2012. Also in 2012 an internal spatial reorganization of the original 1970s main library and its 1980s annex was undertaken to try and create one coherent whole, seamlessly merging all three buildings with the new extension.

Integral to the project was sustainable design and the challenge of preservation concerns. The original library sits at one end of the iconic University Mall and Square, which includes 'The Beacon' a significant sculpture by a world renowned Taiwanese sculptor. The Square is an important venue for major campus events, and has become an iconic symbol for student movements, and the memories of CUHK alumni. The University Library is also home to the largest house swift colony in Hong Kong, housing around 30% of Hong Kong's house swifts. Over 150 nests could be found under the concrete eaves along the eastern and south walls of the University Library, and these needed protection during and after construction.

The design outcome was a minimalist, glass façade 5-storey extension, two large atria and a learning commons basement with two skylights from ponds to maximize daylight penetration in a building with a deep floor plate. One of the skylights, which has become a key architectural feature of the Library, re-instated an existing skylight that had been blocked for many years. In the extension extensive use was made of environmental sensors to monitor lighting and air conditioning. Green roof design for the new extension roof was included to reduce heat gain. The glass façade used low emissivity, or low-E double glazing to help reduce heat gain, and a dot-pattern to stop the swifts flying into the glass. To better protect them, the University commissioned a 17-month study of the swifts from June 2007 and undertook ongoing monthly monitoring. In 2009 CUHK-designed artificial nest boxes were installed on the Library's southern eaves to encourage the swifts to move from the Library's north façade which was being incorporated into the extension as an internal feature wall. A review after the completion of the project at the end of 2012 proved the house swift preservation effort has been a great success

(<http://www.cuhk.edu.hk/libraryextension/en/swift.html>).

Since completion the Library extension has received environmental awards attesting to CDO's and the Library's commitment to sustainable design. The awards are:

- Hong Kong BEAM Platinum Award, it highest rating. The assessment showed a 32% saving on A/C electricity consumption, and 19.8% saving of maximum electricity demand due to sustainable design.

- An Indoor Air Quality Certificate (Excellent Class) from Hong Kong Environmental Protection Department. The award covers the levels of carbon dioxide, carbon monoxide, respirable suspended particulates, ozone, formaldehyde, volatile organic compounds and various other substances in indoor air.
- A Merit Award from “Excellence in Sustainable Built Environment - Green Building Award 2014” organized by the Hong Kong Green Building Council
- A Silver Certificate from the “Quality Water Recognition Scheme for Buildings” in 2013 from the Hong Kong Water Supplies Department
- A FuturArc Green Leadership Award 2016 (Merit Award - Institutional) in 2016

CONCLUSION

If greening is a process and must be actionable we think it is fair to say that the Library is having some success as outlined above. Olsen (2008) posited a green strategy maturity model and assessment framework (see Fig.2)

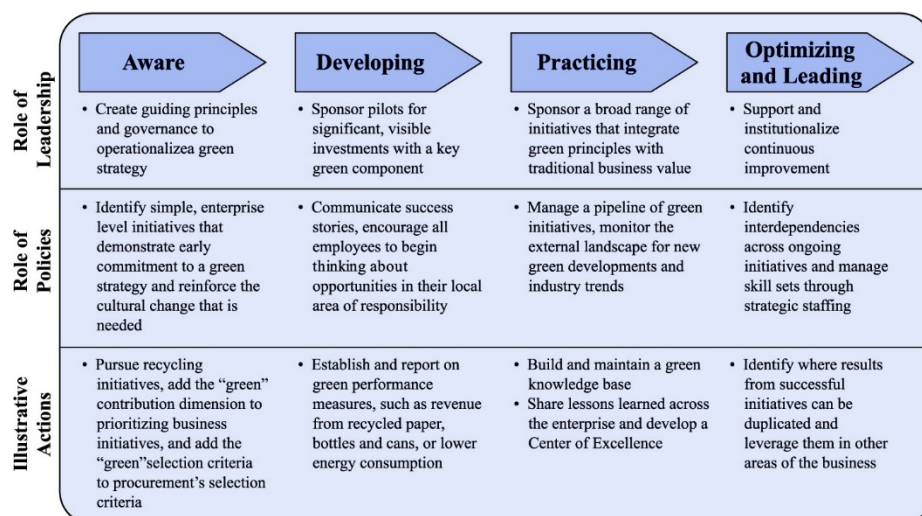


Fig. 2. Green Strategy Maturity Model and Assessment Framework (Olson, 2008)

Our analysis is that we are moving from the developing stage to the practicing stage, but have more to do on integrating green principles into our traditional business or service model, and have not started on building and maintaining a green knowledgebase. CUHK has laid down “Medium-term Sustainability Targets” as performance indicators for objective measurement of campus wide sustainability practices. EMO has started providing relevant data to the Library but we still need data covering a longer period to make any meaningful comparison. Moreover, we need to do more than that, as Jankowska (2010) points out libraries “need hard data on how much energy and money goes to making and storing their print collections versus how much goes to creating and storing their electronic resources”

Our traditional service model is changing as the digital library and green computing impact. However the financial cost, energy intensity and their carbon footprint have not yet been objectively evaluated. With the recent launch of a Digital Scholarship Lab at CUHK Library,

which is equipped with a large high-resolution digital display wall for research data visualization as well as PCs and iMacs, the Library needs to monitor the impact of such technology-rich spaces on energy consumption. Furthermore, in addition to the possible increasing energy costs, the rapid technology development can make this equipment obsolete at a fast pace. Alongside our e-preferred collection development policy the library is about to replace its library management system with a cloud-based system shared with our sister libraries. We are just beginning to move towards cloud-based IT on the assumption it is green but without the firm evidence. Becken (2015) is of the opinion that “more energy is spent per online user, if not per unit of online productivity -- even if one is working aloft in the ‘cloud’ of today’s expanding, robust, online apps”.

We are concerned that we may have already picked the low-hanging fruit with regard to energy savings and continued reduction in electricity consumption will be challenging. We are about to participate in a university trial project on waste charging and waste auditing to improve waste management efforts, and help us understand the impact of the ‘polluter pays’ model which the University is likely to adopt in the future. We will have firm indicators and will need to relay these indicators to staff and students, alerting them to the effectiveness and efficiency of waste management efforts. Given the vast majority of waste is created by our users it is an example where we will need to put all our effort into winning hearts and changing behaviours, working in partnership with our student organisations and CUHK colleagues. Bringing our users along with us will be critical.

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