Green Buildings in Hong Kong

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Business Environment Council

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Who we are:
• An independent, membership-based non-profit organization, established by the business sector in Hong Kong
• Since 1989, BEC has been at the forefront of promoting environmental excellence by
  • advocating the uptake of clean technologies and practices which reduce waste, conserve resources, prevent pollution and improve corporate environmental and social responsibility
• BEC offers sustainable solutions and professional services covering advisory, research, assessment, training and award programs for government, business and the community, thus enabling environmental protection and contributing to the transition to a low carbon economy

Our Vision:
The Hong Kong’s businesses will be recognised as leaders in practicing and enabling environmental protection, and in contributing to the transition to a low carbon economy
Areas of Focus and Expertise within BEC

**WHAT**
- Green Buildings
- Energy Efficiency
- Corporate Sustainability
- Environmental MS
- Indoor Air Quality
- Climate Change
- Waste Management
- Sustainable Tourism
- Harbour/Waterfront Development
- Membership
- Venue, Events and Trainings

**HOW**
- Research & Consulting
- Performance Verification & Recognition
- Business & Industry Support Programme
- Training & Seminars
- Green Buildings
Council Members

As of April 2013

Listed in Chronological Order of Joining BEC Membership
Corporate Members

Listed in Chronological Order of Joining BEC Membership

As of April 2013
Outline

• What is Green Building?
• Benefits of Green Building
  • Energy Saving
  • Water Saving
  • Waste Reduction
  • Indoor Air Quality Improvement
• Promoting Green Buildings – Government's Efforts
• Green Building Rating Standard
Sustainable Future?

- Hong Kong is committed to building a sustainable future
  - to ensuring that our future generations can continue to thrive in a clean and green environment
- But is it possible to incorporate the concept of sustainability into the building design and its management, hence reducing the environmental impacts to nature and improving our quality of life?
What is Green Building?

• Not a complicated or technical concept
• Designed, built, renovated, operated, and reused in an ecological and resource-efficient manner to meet certain objectives such as
  • Protecting occupant health
  • Improving employee productivity
  • Using energy, water, and other resources more efficiently
  • Reducing the overall impact to the environment.
Benefits of Green Building
Benefits of Green Building

Energy Saving

• Save energy through
  • incorporating green building features
  • use of energy efficiency technologies and products, thus achieving sustainability

• Many of the renewable energy sources are free and inexhaustible, offering greener resources and economically viable options
Benefits of Green Building

Energy Saving

• Since 1998, Electrical and Mechanical Services Department (EMSD) has implemented a voluntary Hong Kong Energy Efficiency Registration Scheme for Buildings
  • to promote energy efficiency in buildings
  • Note: Registration under this voluntary scheme is not regarded as having complied with the Buildings Energy Efficiency Ordinance. With effect from 21 September 2012, the Ordinance has come into full operation.
Benefits of Green Building

Energy Saving

- In 2005, the Government issued a technical circular setting out the guidelines
  - for all capital works projects and minor works projects on the adoption of energy efficient features and renewable energy technologies in Government Projects and Installations
- Legislation to make the implementation of building energy codes mandatory
Benefits of Green Building

Energy Saving

Building Energy Codes

http://www.beeo.emsd.gov.hk/
Benefits of Green Building

Energy Saving

• Use of natural ventilation and lighting
  • can reduce energy consumption for air-conditioning, ventilation and lighting in buildings
Benefits of Green Building

Water saving

- Green buildings save water with the following features:
  - Installation of flow restrictors at water taps
  - Installation of optimized timing self-closing taps or sensor taps in public lavatories and washing rooms
  - Reduction of water pressure of the plumbing systems to the lowest practical level
  - Installation of dual flush cisterns (a choice between "full flush" and "half flush")
  - Provision of reclaimed water systems for toilet flushing, cleaning and irrigation
Benefits of Green Building

Waste Reduction

- Installing waste separation facilities such as bins or racks in green buildings together with publicity and promotional activities directed to the occupants of the building
  - can help to recover more materials for recycling and reduce waste requiring disposal
Benefits of Green Building

Waste Reduction

- Cooking-oil and food waste recycling
  - Recycling of waste cooking-oil into bio-diesel
  - Recycling of food waste into compost or animals feed, or delivered to the future Organic Waste Treatment Facilities
  - Installation of small-scaled waste treatment machines to treat their source separated food waste on site
Benefits of Green Building

Waste Reduction


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Benefits of Green Building
Indoor Air Quality Improvement

People spent 96% of their time indoors !!!

Fig. 1. Percentage of time spent in major activities of Hong Kong people

Chau et al. 2002
http://www.youtube.com/watch?v=ZhrzA_AMNCI
Benefits of Green Building

Indoor Air Quality Improvement

• The quality of indoor air should not be overlooked
• Good indoor air quality (IAQ) safeguards
  • health of the building occupants
  • contributes to their comfort and well-being
• Better IAQ can be achieved by two major approaches
  • providing adequate ventilation
  • controlling the source of indoor air pollutants such as using low emission furnishing product
Promoting Green Buildings – Government's Efforts
Green Building

145. Buildings account for as much as 90% of Hong Kong’s total electricity consumption. Apart from our plan to develop Kowloon East into a low-carbon community, I have asked the Secretary for the Environment to lead an inter-departmental steering committee to promote green building. The committee will strengthen the co-ordination among departments to formulate implementation strategies and action plans, while maintaining close dialogue and co-operation with the relevant sectors and stakeholders.
Promoting Green Buildings

Government's Efforts

• To premise on the recommendations of the Council for Sustainable Development subsequent to its public engagement exercise

• Government has reviewed the policy of allowing private buildings to increase floor areas to include green and amenity features for enhancing the living environment
  • tighten the policy including doing away with concessions for certain features
  • lowering the level of concessions for carparks, balconies, utility platforms and residents’ recreational facilities
  • imposing an overall cap of 10% for a number of features which still qualify for concessions
Promoting Green Buildings

Government's Efforts

- Incorporation of sustainable design elements for building separation or enhancement of building permeability, setback and greenery in new buildings
- Together with provision of environmental and energy consumption information in new buildings are pre-requisites for obtaining concessions.

- A proper balance between fulfilling environment performance and comfort requirements of buildings on the one hand, and minimising the impact on the surrounding environment as far as possible on the other
- Ensure room for creativity in Hong Kong's building designs
Promoting Green Buildings
Government's Efforts

• Considerate Contractor Site Award Scheme and the Green Contractor Award Scheme

• Encourage and give recognition to the private sector to practise sustainable design and construction.


Promoting Green Buildings
Government's Efforts

- To improve the IAQ and promote public awareness of the importance of IAQ
  - IAQ Management Programme
  - Voluntary IAQ Certification Scheme for Offices and Public Places. Premises have their IAQ meeting the two-level IAQ objectives (Good or Excellent) are awarded with "Good Class" or "Excellent Class" IAQ certificate
  - IAQ labels are also issued to these premises for posting at prominent locations to make known to the public of such achievement
### Benefits of Green Building

**Government's Efforts**

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Benefits of Green Building
Government's Efforts
Green Building Rating Standard
Green Building Rating Standard
BEAM Plus - Evolution

BEAM = Building Environmental Assessment Method

A renowned green building labelling tool in HK to evaluate the environmental performance of buildings
Green Building Rating Standard

BEAM Plus - Evolution

• First standards launched in 1996
• BEAM Plus is the 5th generation of BEAM
‘Whole-Life’ Approach

- Planning
- Design
- Construction
- Commissioning
- Completion
- Operation
- Maintenance
- Management

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**Site**
- Site location, site planning and design, emissions from site

**Energy**
- Energy use, energy efficient systems, equipments & management

**IEQ**
- Hygiene, ventilation, thermal comfort, acoustics…etc.

**Materials**
- Efficient use & selection of materials, waste management

**Water**
- Water conservation, effluent reduction
Green Building Rating Standard
BEAM Plus – Government Support

- Green Government Building (Development Bureau TC 5/2009)

DEVELOPMENT BUREAU TECHNICAL CIRCULAR
NO. 5/2009
ENVIRONMENT BUREAU CIRCULAR MEMORANDUM
NO. 2/2009

From: Secretary for Development Secretary for the Environment
To: Permanent Secretaries, Heads of Departments

Ref.: DEVB(W)517/94/09
ENB 7/2061/08
Tel. No.: 2810 3961
2594 6700
Fax No.: 2845 3489
2147 3287
Date: 23 April 2009

Green Government Buildings

INTRODUCTION

This circular sets out a comprehensive target-based green performance framework (the Framework) for new and existing government buildings with a view to promoting green buildings in Hong Kong.
• **Clause 7a)**

  • Government Buildings CFA>10,000m² →
    Obtain 2nd highest grade or above under internationally (e.g. LEED) or locally recognized (BEAM Plus) building environmental assessment system
Green Building Rating Standard
BEAM Plus – Government Support

- Wholesale Conversion of Industrial Building (Buildings Department PNAP APP-150)

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Wholesale Conversion of Industrial Buildings

The Government has implemented a package of measures to encourage the revitalisation of existing industrial buildings through wholesale conversion of vacant or under-utilised industrial buildings. Details of the measures are promulgated in the Practice Note Issue No.1/2010 issued by the Lands Administration Office of the Lands Department. The measures are only valid for three years from 1 April 2010, and the conversion works related to revitalisation are to be completed within three years after issue of the waivers by the Lands Department.
Green Building Rating Standard
BEAM Plus – Government Support

• Clause 3 ii)
  • Granting exemptions if 40% in the categories of Energy Use (EU) and Indoor Environmental Quality (IEQ) under BEAM Plus provisional certification can be achieved
Building Design to Foster a Quality and Sustainable Built Environment

There has been rising public concern over the quality and sustainability of the built environment, including issues regarding building bulk and height, air ventilation, greening and energy efficiency in buildings. In 2009, the Council for Sustainable Development (SDC) launched a public engagement process entitled “Building Design to Foster a Quality and Sustainable Built Environment” in collaboration with the Government. The exercise has pointed to a need for putting in place a package of new measures to foster a quality and sustainable built environment. This practice note sets out a package of measures, covering the following major elements, to promote a quality and sustainable built environment:

(a) sustainable building design guidelines (SBD Guidelines) on building separation, building set back and site coverage of greenery,
(b) gross floor area (GFA) concessions, and
(c) energy efficiency of buildings.
• Clause 6)
  • Pre-requisites for Granting GFA Concessions -
  • Incorporate 3 elements of Sustainable Building Design Guidelines in new developments: building separation, building setback and site coverage of greenery
Green Building Rating Standard
BEAM Plus – Government Support

- Submission of the official letter issued by HKGBC acknowledging the satisfactory completion of project registration application for BEAM Plus certification.
- Compliance with overall cap at 10% GFA concessions on Green Features, Amenity Features and Non-Mandatory Building Features
- An undertaking letter from developer or owner regarding -
  - Submit the result of provisional **BEAM Plus** assessment regardless of the grade obtained prior to the application for consent to commence the building works.
  - Submit the *estimated energy consumption* for the common areas for domestic developments and for the entire building for non-domestic developments.
    - Update at the time of submitting application for OP
  - Result of final **BEAM Plus** Assessment result
Green Building Rating Standard
BEAM Plus – Government Support

• Sustainable Building Design Guidelines (Buildings Department PNAP APP-152)

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<th>Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers</th>
<th>APP - 152</th>
</tr>
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Sustainable Building Design Guidelines

This practice note promulgates guidelines on building design which will enhance the quality and sustainability of the built environment in Hong Kong. These guidelines are the Sustainable Building Design Guidelines (SBD Guidelines) referred to in Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) APP-151, the compliance with which the Building Authority (BA) will take into account, where applicable, as a pre-requisite in exempting or disregarding green and amenity features and non-mandatory / non-essential plant rooms and services from gross floor area and/or site coverage calculations (GFA concessions) for new building developments. Terminology and definitions of terms used in the SBD Guidelines are listed in Appendix A.
Clause 11a)

For buildings with special functional requirement in building length and/or bulk (e.g. infrastructural facilities, transport terminus, sports and civic facilities), which are not complied with the building separation requirements should meet with the following criteria:

Optimal design option should be assessed by the one of the following approaches:

Microclimate Around Buildings (SA8) of **BEAM Plus** Certification; an Air Ventilation Assessment by Wind Tunnel; or Computational Fluid Dynamics.
Fulfill either one of the following requirements under Section SA8 of BEAM Plus -

- On wind amplification / stagnant air: demonstrating that no pedestrian areas will be subject to excessive wind speeds and there are no stagnant not flushed by breezes;
- On elevated temperatures: providing shade; or
- On elevated temperatures: providing high emissivity roofing material or vegetation roof
Green Building Rating Standard

Current Status

- 341 BEAM Plus Projects (updated: April 2013)
  - 339 Hong Kong projects
Q & A

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