Green Building Labelling Development for Hong Kong
Invitation & Response Document
October 2010

We look forward to your ideas!
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1 Introduction

Buildings and the associated activities for their construction and operation account for about 40% of global carbon emissions, 40% of natural resources consumed and 40% of waste generated worldwide. According to the Intergovernmental Panel on Climate Change (IPCC) building-related greenhouse gas emissions are expected to almost double by 2030.

In the Hong Kong context, buildings are the main contributors, with 90% of electricity consumed by buildings, accounting for 60% of Hong Kong’s carbon emissions at source. Buildings are also major consumers of other resources including materials, waste and water, and they can have other significant impacts on their neighbourhoods, and on users due to indoor environment. Hence, green building labelling schemes and their potential application to Hong Kong are key to significant carbon reduction initiatives.

As of the end of 2009, there were about 41,000 buildings in Hong Kong, the majority of which are 10 years or older. Demolition and re-development are not always the most sustainable solution in terms of environmental performance or financial viability. Focusing instead on improvements that can be done on existing buildings can result in significant carbon reductions, neighbourhood enhancement and occupant benefits in Hong Kong. This is where green labelling schemes like BEAM Plus for New and Existing Buildings can have a significant contribution.

The Hong Kong Green Building Council (HKGBC), which represents the green building interests in Hong Kong, would therefore like to formulate a short term and long term roadmap and strategy for the development of green building labelling systems in Hong Kong. The HKGBC has adopted BEAM Plus as Hong Kong’s labelling scheme to rate and certify green buildings. There are over 270 buildings in Hong Kong that have been certified through the former BEAM scheme under new and existing building categories. BEAM Plus building assessments are entrusted to the BEAM Society, one of the founding members of HKGBC. In addition to the launch of BEAM Plus in 2010, HKGBC also initiated the BEAM Professionals initiative, under which more than 300 industry practitioners have so far been trained and accredited.

The aim of HKGBC’s initiative is to review BEAM Plus with reference to other relevant local initiatives and overseas systems, and identify opportunities for its more widespread application to different kinds of developments, including both new buildings and existing buildings, so as to achieve a more sustainable built environment for the future.

In particular, the HKGBC would like to invite the views of stakeholders regarding the aspirations of the community towards green building labelling to help chart the way forward. Great emphasis is put on the comments received from this engagement as it is of crucial importance that the strategy and roadmap are based on consensus of opinions from the industry, so that any update of BEAM Plus reflects the current needs of the Hong Kong market.
1.1 Purpose of I&R Document

The purpose of this Invitation and Response (I&R) Document is to serve as the main platform to bring the key issues identified through HKGBC's research and from the views of key experts to a wider stakeholder group for deliberation.

HKGBC’s overall initiative focuses on two key parts:
• Desktop research of the existing situation in Hong Kong and of similar systems used around the world; and
• Stakeholders’ engagement, through various means of communication; namely, focus group sessions, workshops and comments received from this I&R document.

The process is shown below:

1.2 Outline of Document

This I&R document is organized as follows to facilitate stakeholders’ response to HKGBC’s initiative.
• Background to green building labelling
• Hong Kong’s situation
• Key stakeholder issues
• Next steps

We invite stakeholders to respond by post, fax e-mail or to post their comments on the HKGBC website (www.hkgbc.org.hk) by 3rd Nov 2010.
2 Background

2.1 History of Green Labelling

The principles of green buildings and sustainable design have been in existence for a while; until the early 1990s however there was no way to assess the overall impact of a building in terms of its environmental performance or to benchmark it against other buildings of its type. The BRE Environmental Assessment Method (BREEAM) was the first scheme launched to address this issue, introducing an assessment method that covered a wide range of sustainability principles, instead of focusing only on certain aspects, like energy or pollution.

Since then there have been numerous similar green building labelling schemes developed and adopted in countries around the world; in the US LEED was launched in 1998 and has been adapted for use in India, Italy and Canada, Japan launched CASBEE in 2002, while Australia introduced NABERS in 1998 and later Green Star in 2003. Green Mark was launched in Singapore in 2005, while one of the most recent schemes, the China Green Building Label (CGBL) system was initiated in 2006.

The Hong Kong Building Environmental Assessment Method (HK-BEAM) was one of the early schemes to be developed and launched in 1996, to guide the design and assess the overall performance of new and existing buildings in Hong Kong. It has since then gone through various updates to reflect the changes in the industry, with the latest version, BEAM Plus (v1.1) launched in 2010. As of March 2010, up to 270 green building developments encompassing over 13 million m² of space and including over 73,000 residential units have applied for voluntary, third-party BEAM certification since its launch in 1996.

The impact of green building labelling schemes on improving the environmental performance of buildings has been significant; the World Green Building Council reports that buildings certified by green building councils can have significant savings on energy and potable water consumption, and reduce waste destined for landfill. Yet, as the industry develops, learns and evolves, and as planning regulations and policies become more and more stringent, it is important for green building labelling schemes to keep at the forefront by setting higher standards and act as the driving force pushing for better performing buildings. Hence, green building labelling schemes are key to ensuring significant carbon reduction initiatives, beyond the minimum requirements as set in each country.

The purpose of green labelling schemes should include:
• Means of improving environmental and carbon performance of buildings;
• Encouragement of both public and private sector to take ownership of green measures for buildings;
• Alignment with government policy and incensement of public awareness of green building measures;
• Promotion of green life style for the general public; and
• Global (where applicable to suit local conditions) as well as neighbourhood benefits.

1 www.breeam.org
2 www.usgbc.org/LEED
3 www.ibec.or.jp/CASBEE/english/index.htm
4 www.nabers.com.au
5 www.gbca.org.au/green-star
7 https://docs.google.com/Doc?id=ddfqxmx9_29hs74dhgv
8 BEAM Society (www.hk-beam.org.hk/general/home.php)
9 “Six Continents, One Mission”, WGBC, November 2009
2.2 Overseas Experience

The desktop research carried out by the HKGBC has looked at a selection of some of the more established schemes around the world; namely, LEED (US), BREEAM (UK), Green Star (Australia), NABERS (Australia), Green Mark (Singapore), CGBL (China) and CASBEE (Japan), as well as the Hong Kong specific schemes, BEAM Plus and CEPAS, in order to review the current situation, identify where the challenges lie preventing wider uptake in the Hong Kong context and to review and document best practices and experiences from overseas that could potentially be implemented successfully in Hong Kong.

The table below summarizes the status of these overseas systems.

<table>
<thead>
<tr>
<th>Scheme Characteristics</th>
<th>LEED</th>
<th>BREEAM</th>
<th>Green Star</th>
<th>NABERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheme Characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Origin</td>
<td>United States</td>
<td>United Kingdom</td>
<td>Australia</td>
<td>Australia</td>
</tr>
<tr>
<td>Ownership</td>
<td>USGBC</td>
<td>BRE</td>
<td>GBCA</td>
<td>NSW DECCW</td>
</tr>
<tr>
<td>Latest version</td>
<td>LEED v3 2009</td>
<td>V4.0 Offices 2008</td>
<td>Green Star Office v3 2008</td>
<td>V7 for Offices</td>
</tr>
<tr>
<td></td>
<td>• New Construction and Major Renovations</td>
<td>• New Build, Refurbishment and Fit Out options for:</td>
<td>• Office (covers Design and As-built)</td>
<td>Commitment Agreement: Commitment to design, build and commission premises to a 4, 4.5 or 5 star level</td>
</tr>
<tr>
<td></td>
<td>• Commercial Interiors</td>
<td>• Offices</td>
<td>• Office Interiors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Core &amp; Shell</td>
<td>• Retail</td>
<td>• Education</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Schools</td>
<td>• Industrial</td>
<td>• Health Care</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Retail New Construction (in pilot)</td>
<td>• Bespoke</td>
<td>• Healthcare</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Retail Commercial Interiors (in pilot)</td>
<td>• Courts</td>
<td>• Healthcare</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Healthcare (in pilot)</td>
<td>• Prisons</td>
<td>• Fire Stations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Homes</td>
<td>• Education</td>
<td>• Visitor Commission</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Neighbourhood Development</td>
<td>• Multi Residential</td>
<td>Visitor Centres</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Olympics</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Health Care</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Multi Unit Residential</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Industrial</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existing Buildings</td>
<td>Existing Buildings</td>
<td>Existing Buildings</td>
<td>Existing Buildings</td>
</tr>
<tr>
<td></td>
<td>• Existing Buildings: Operations &amp; Maintenance</td>
<td>• In Use</td>
<td></td>
<td>• Office</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Home</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Hotel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Retail</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Data Centres (under development)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Commuter Trasnport (under development)</td>
</tr>
</tbody>
</table>

[1] Category shares the highest weighting is bold.
<table>
<thead>
<tr>
<th>CASBEE</th>
<th>BCA Green Mark</th>
<th>China GBL</th>
<th>CEPAS</th>
<th>BEAM Plus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>Singapore</td>
<td>China</td>
<td>Hong Kong</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>BCJ</td>
<td>BCA</td>
<td>MOHURD</td>
<td>HK Buildings</td>
<td>HK-Beam Society</td>
</tr>
<tr>
<td>2002</td>
<td>2005</td>
<td>2006</td>
<td>Not launched</td>
<td>1996</td>
</tr>
<tr>
<td>CASBEE-NC 2008</td>
<td>Non-Residential New Buildings (V 4)</td>
<td>GBL-Residential Buildings GBL-Public Buildings</td>
<td>CEPAS 2006</td>
<td>BEAM Plus NB (V1.1) BEAM Plus EB (V1.1)</td>
</tr>
</tbody>
</table>

**New Buildings:**

- New Construction
- Temporary Construction
- Renovation
- Heat Island
- Urban Development
- Home

- Non-Residential New Buildings
- Residential New Buildings
- Landed Houses
- New Parks
- Office Interior
- Infrastructures
- District

- New Residential Buildings
- New Public Buildings

- Pre-Design, Design and Construction Stages for:
  - Residential buildings
  - Non-residential buildings

- New Buildings

**Existing Buildings**

- Non-Residential Existing Buildings
- Existing Parks

- Operation Stage for:
  - Residential buildings
  - Non-residential buildings

- Existing Buildings
<table>
<thead>
<tr>
<th>LEED</th>
<th>BREEAM</th>
<th>Green Star</th>
<th>NABERS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Used overseas</strong></td>
<td>LEED India LEED Canada LEED Italy</td>
<td>BREEAM Europe BREEAM Gulf BREEAM Bespoke International</td>
<td>Green Star New Zealand Green Star South Africa</td>
</tr>
<tr>
<td><strong>Credit Categories</strong>&lt;sup&gt;[2][3]&lt;/sup&gt;</td>
<td>• IEQ • Energy and Atmosphere • Water Efficiency • Materials and Resources • Sustainable Sites • Location and Planning • Innovation in Design Process • Regional Priority</td>
<td>• Management • Health and Wellbeing • Energy • Transport • Water • Materials • Land Use and Ecology • Pollution • Waste • Innovation</td>
<td>• Management • IEQ • Energy • Transport • Water • Materials • Land Use and Ecology • Emissions • Innovation</td>
</tr>
</tbody>
</table>

### Division of award levels

<table>
<thead>
<tr>
<th>Best level</th>
<th>Platinum</th>
<th>Outstanding</th>
<th>6-Star World Leadership</th>
<th>5 Stars – Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; best level</td>
<td>Gold</td>
<td>Excellent</td>
<td>5-Star Australian Excellence</td>
<td>4 Stars – Very good</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; best level</td>
<td>Silver</td>
<td>Very good</td>
<td>4-Star Best Practice</td>
<td>3 Stars – Good</td>
</tr>
<tr>
<td>Passing level</td>
<td>Bronze</td>
<td>Pass</td>
<td>4-Star Best Practice</td>
<td>2 Stars – Below Average</td>
</tr>
<tr>
<td>Lowest level</td>
<td>Uncertified</td>
<td>Unclassified</td>
<td>1 Star</td>
<td>0 Star</td>
</tr>
</tbody>
</table>

### Certification Stage for new buildings

- **Design and Construction stages or combined at end of construction**
- **Design and Post-Construction stage or combined at end of construction**
- Not specified. Certification is one-off. Appeal possible.
- Following operation of 12 months

<sup>[2]</sup> Category shares the highest weighting is bold.

<sup>[3]</sup> NABERS is not credit based. The items listed here are areas of assessment and can be assessed separately.

<sup>[4]</sup> CASBEE do not have ‘pass’ or ‘fail’ so B cannot be considered as a ‘passing level’.
<table>
<thead>
<tr>
<th>CASBEE</th>
<th>BCA Green Mark</th>
<th>China GBL</th>
<th>CEPAS</th>
<th>BEAM Plus</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Malaysia, China, Middle East, India</td>
<td>No</td>
<td>No</td>
<td>China</td>
</tr>
<tr>
<td>• Indoor Environment</td>
<td>• Energy Efficiency</td>
<td>• Land savings and outdoor environment</td>
<td>• IEQ</td>
<td>• IEQ</td>
</tr>
<tr>
<td>• Quality of Service</td>
<td>• Water Efficiency</td>
<td>• Energy savings</td>
<td>• Building Amenities</td>
<td>• Water Use</td>
</tr>
<tr>
<td>• Outdoor Environment on Site</td>
<td>• Environmental Protection</td>
<td>• Water savings</td>
<td>• Resources Use</td>
<td>• Energy Use</td>
</tr>
<tr>
<td>• Energy</td>
<td>• IEQ</td>
<td>• Materials savings</td>
<td>• Loadings</td>
<td>• Material Aspects</td>
</tr>
<tr>
<td>• Resources &amp; Materials</td>
<td>• Other Green Features*</td>
<td>• IEQ</td>
<td>• Site Amenities</td>
<td>• Site Aspects</td>
</tr>
<tr>
<td>• Offsite Environment*</td>
<td></td>
<td>• Operations and management*</td>
<td>• Neighborhood Amenities</td>
<td></td>
</tr>
</tbody>
</table>

| S – Excellent | Platinum | 3 Stars | Platinum | Platinum |
| A – Very Good | GoldPlus | 2 Stars | Gold | Gold |
| B+ – Good | Gold | 1 Star | Silver | Silver |
| B – Fairly Poor(1) | Certified | N/A | Bronze | Bronze |
| C – Poor | N/A | Uncertified | Uncertified | Uncertified |

<table>
<thead>
<tr>
<th>Design stage</th>
<th>At end of construction stage</th>
<th>• Green Building Design Label (GBDL)</th>
<th>Pre-design stage Design stage Construction stage Operation Stage Demolition stage</th>
<th>Design and construction stages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LEED</td>
<td>BREEAM</td>
<td>Green Star</td>
<td>NABERS</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------</td>
<td>--------------------------------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Valid for</strong></td>
<td>Permanent</td>
<td>Permanent, except for ‘Outstanding’ rate</td>
<td>Permanent</td>
<td>12 months</td>
</tr>
<tr>
<td><strong>Assessor</strong></td>
<td>GBCI</td>
<td>Independent Assessors</td>
<td>3rd party Assessors</td>
<td>NABERS Accredited Assessor</td>
</tr>
<tr>
<td><strong>Certification body</strong></td>
<td>USGBC</td>
<td>BRE</td>
<td>GBCA</td>
<td>NSW DECCW</td>
</tr>
<tr>
<td><strong>Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certification cost[^5]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Policies &amp; Incentives</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td><em>Yes for NABERS Energy in Offices (November 2010)</em></td>
</tr>
<tr>
<td>Government financial incentives</td>
<td></td>
<td>Tax Credits and Abatements</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fee Reductions or Waivers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grants</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Revolving Loan Funds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local/Regional planning requirement</td>
<td>No</td>
<td>Yes for some local governments</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Government Buildings</td>
<td>29% of all LEED projects but not a national policy</td>
<td>All government buildings to achieve ‘excellent’</td>
<td>Many government buildings are certified but not mandatory</td>
<td>All Federal and State government buildings require a NABERS rating</td>
</tr>
</tbody>
</table>

[^5]: For New commercial buildings with area ≥ 10,000m²
[^6]: Non-USGBC member fee for registration, combined design and construction review.
[^7]: Certification fee
[^8]: Non-GBCA member fee for certification.
[^9]: There is no information on certification fee. There is only a cost for Energy commitment agreement which is AUD$4,400 in this case.
[^10]: Application fee.
[^11]: Minimum assessment fee of BEAM Plus
<table>
<thead>
<tr>
<th>CASBEE</th>
<th>BCA Green Mark</th>
<th>China GBL</th>
<th>CEPAS</th>
<th>BEAM Plus</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 years</td>
<td>3 years</td>
<td>GBDL 2 years</td>
<td>Permanent for Design, Construction and</td>
<td>5 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GBL 3 years</td>
<td>Demolition. 5 years for Operation</td>
<td></td>
</tr>
<tr>
<td>CASBEE-AP</td>
<td>BCA</td>
<td>Independent assessors</td>
<td>CEPAS administrators</td>
<td>BEAM Assessors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(academics)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CASBEE-AO</td>
<td>BCA</td>
<td>MOHURD</td>
<td>CEPAS administrators</td>
<td>HKGBC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Costs</th>
<th>Registration / Certification cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[5] US $17,120</td>
</tr>
<tr>
<td></td>
<td>[6] £1,230</td>
</tr>
<tr>
<td></td>
<td>[7] “US $1,931”</td>
</tr>
<tr>
<td></td>
<td>[8] AUD $27,500</td>
</tr>
<tr>
<td></td>
<td>[9] N/A</td>
</tr>
<tr>
<td></td>
<td>[10] 630,000 Yen (US $7,500)</td>
</tr>
<tr>
<td></td>
<td>[11] S $9,975 (US $7,480)</td>
</tr>
<tr>
<td></td>
<td>RMB 6,000 - 13,000 (US $900 - 2,000)</td>
</tr>
<tr>
<td></td>
<td>HKD $150,000 (US $19,315)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policies &amp; Incentives</th>
<th>Mandatory</th>
<th>No</th>
<th>No</th>
<th>No</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>For some cities, CASBEE results waive limits on floor area ratios</td>
<td>Yes for self-assessment in several cities</td>
<td>Yes for most buildings</td>
<td>No</td>
<td>Not implemented</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>For some cities, CASBEE results waive limits on floor area ratios</td>
<td>Green Mark Incentive Scheme</td>
<td>No</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td>Yes (self assessment)</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
<td>As design reference</td>
<td></td>
</tr>
<tr>
<td>Not mandatory for government projects</td>
<td>Mandatory for Government project</td>
<td>Most being assessed but still not mandatory</td>
<td>N/A</td>
<td>New government buildings (above 10,000m²) to achieve at least 2nd best rating on BEAM or similar scheme</td>
<td></td>
</tr>
</tbody>
</table>
The following are some of the key issues identified relating to the different green building labelling systems reviewed as part of this study.

**Scheme Characteristics**

One of the first noticeable differences is the fact that most of the schemes use a number of categories to cover different types of buildings. LEED and BREEAM offer by far the greatest differentiation of categories, while BREEAM also uses a bespoke approach for mixed use buildings or other complex buildings that do not necessarily fall under an existing category. All schemes have similar credit categories, with weightings following a comparable scale; most schemes put more emphasis on the Energy / Resources sections, as well as the Indoor Environmental Quality (IEQ). NABERS cannot be considered in similar terms however, as it is not a credit based scheme and considers energy, water, waste and IEQ under separate certificates and using a wholly performance-based approach.

**Assessment Method**

The assessment method for all schemes is based on similar principles as well, requiring the collection and submission of supporting documentation as evidence of compliance with the scheme’s requirements. BREEAM, NABERS and CASBEE use independent trained and licensed assessors, while for the remaining schemes the assessment and certification is done by the organization operating the scheme. CASBEE is the only scheme however, for which independent organizations can obtain accreditation in order to review and approve assessments, as well as issue final certificates.

Certification happens in most schemes at the end of construction stage, when considering new buildings. NABERS is a performance based assessment and hence certification can only be achieved following a period of operation. Similarly certification for CGBL can only be achieved following a year of occupation of the building being assessed. CASBEE is the only scheme that assesses only the design intent of a project and not the actual end result, while CGBL also offers a separate design label that can be obtained at the end of the design stage. Most schemes also offer the option to submit documentation for review at different stages. However, only LEED-CS offers an option of Pre-Certification at the end of the design stage, recognising the score achieved by that point. CEPAS recommends a similar approach, with different certificates at different stages of the design and construction process. It should be noted that the CEPAS documents are available for voluntary adoption, although a formalised certification process for the scheme has not been introduced.

The awarding certificates are also very similar with all schemes issuing certificates that present the score achieved either in labels of “Good”, “Very Good” etc., “Platinum”, “Gold”, “Silver” etc. or in the form of stars.

**Costs and Savings**

There are various fees and costs that come into play when attempting a certification under any green building labelling scheme. For comparison, using the costs for certification of a new commercial building of area 10,000m², LEED, Green Star and BEAM Plus are at the top of the range, while systems that use independent assessor, such as BREEAM have the lowest fees.

There are, in general, little data on the incremental cost and potential savings from implementing green building labelling schemes; this is a common criticism of schemes around the world. Various international studies, have attempted to report on the potential savings and benefits that green buildings can offer. For example a study from the Australian Green Building Council reports 60% reduction in water and energy consumption, occupant productivity increase of 1-25%, higher relative investment returns (minimum 14% ROI) and 10% increase market value for asset, as well as 5-10% increase in rent value.

**Incentives and Policies**

Available incentives and supporting policies vary between countries. In the US, state governments offer strong financial and planning incentives for adopting LEED. BREEAM in the UK and CASBEE in Japan have been implemented in the planning policies of various local authorities; there is however no national policy requiring assessments for new or existing building. Singapore is the only country that has made green building certification mandatory for all new buildings and still provides financial incentives to developers, building owners and project consultants (i.e. architects and mechanical & electrical engineers) to achieve Gold rating or higher for new projects. NABERS Energy will also be compulsory for all office spaces of 2,000m² or more that are to be sold or leased as of November 2010.

While the assessment and certification process, costs, drivers and incentives vary between the schemes, this research has found that for the successful implementation and wider market uptake of a green building labelling scheme, a number of factors play a significant part. These are discussed in the context of Hong Kong in the next section.
2.3 Lessons for Hong Kong

In general, the overseas schemes follow a similar principle of assessing the design and construction of new buildings or the operation of existing buildings, under a set of credit categories according to local building regulations and standards. Most of the systems offer a range of building type categories for certification unlike BEAM Plus which provides only two categories - one for New and one for Existing Buildings - with no differentiation between residential, commercial or other types of premises.

Most schemes are voluntary, except for the BCA Green Mark (Singapore), which is mandatory for buildings above a certain gross floor area, and NABERS Energy, which will be compulsory for all office spaces of 2,000m2 or more that are to be sold or leased as of November 2010.

Apparent success factors identified from the research so far for market uptake of a green building labelling scheme are listed below.

**Strong government and industry support**
- Financial or other planning incentives are present
- Schemes are linked to planning process and specifications
- The government takes the lead by setting an example
- Funding from private industry organizations is available
- The scheme is mandatory as part of planning application (required for selling or renting of existing buildings)

**User – friendliness**
- Tools and supporting documents are available that can assist in the assessment
- Online submission of documentation is widely applicable
- There is a transparent method of assessment and of score estimation
- Availability of building specific schemes that can be applied in various situations
- Clearly stated requirements and standards

**Market appeal**
- Schemes closely follow overall trends in the green building industry
- Certification levels act as a benchmarking tool
- A local market demand for green buildings acts as the primary driver
- Certified buildings have a proven market advantage
- High marketability value (certificates, publication of achievements, plaques etc.)

**Clear process and costs**
- Easy to use calculation tools for pre-assessment
- Transparent scoring methodology
- Clear and simple application of credits and requirements
- Staged review of submission or certification (design, post construction)
- Documented savings and costs, including hidden costs
- Clear and simple calculation methods and supporting tools (calculations spreadsheets)
Green building labelling schemes come under criticism as well. Commonly, some critics claim that these schemes are just a “Tick-the-box exercise” that actually detracts designers from creating truly green buildings in the quest for points. In the same sense, schemes are criticised for not ensuring that an integrated design approach is achieved, as design teams pick and choose credits not on the basis of their actual impact on the design but on the weighting and points they carry.

The lack of supporting data on the incremental cost of assessments and the potential savings is another common criticism for schemes around the world. Furthermore, the sometimes bureaucratic process that is required for the collection and submission of the required documentation is a recurring complaint amongst schemes.

Based on various sources, for example reports, newsletter articles and feedback to past studies, it appears that the issues that usually arise as criticism for green building labelling schemes are as follows:

**Point ‘Mongering’**
- Designers chasing credits even if there is little added environmental value
- Buildings can achieve certification without designers actually doing anything above the norm or being really green

**Suggested Solutions:**
- Ensure design integrated approach and an overall design strategy that works for the specific building
- Ensure credit weighting reflects the required effort and costs associated with the design feature
- Increase number of prerequisites

**Undocumented Costs & Savings**
- There can be different claims but not much documented data on incremental costs of assessment and certification or of potential savings
- Costs always increase due to hidden costs within assessment (commissioning, energy modelling etc.)

**Suggested Solutions:**
- Provide clear and well documented data on case studies for costs and savings
- Provide clear indication of areas where additional costs are required for an assessment

**Onerous and bureaucratic process**
- The collection and submission of documentation can be an onerous and time consuming exercise
- The review process can be bureaucratic and pedantic

**Suggested Solutions:**
- Simplify process and reduce amount of paperwork required
- Provide an easy to use method of submitting information (templates, online system etc.)
- Review submissions based on whether they achieve the intent of the credit, not just for “ticking the boxes”

Details of the Hong Kong schemes – BEAM Plus and CEPAS – are given in the next section together with the expert views on what is needed for Hong Kong.
3 Hong Kong’s Situation

Two schemes specific to Hong Kong have been developed for green building certification: BEAM Plus and CEPAS. BEAM was first introduced in 1996 as a private sector initiative and has been widely used in the industry to assess various types of new and existing buildings. CEPAS was developed by the Buildings Department in 2002, although a formalised certification process for the scheme has not been introduced. The HKGBC has adopted BEAM Plus as the green labelling scheme for Hong Kong and is committed to the continual evolution of the system with reference to CEPAS and other international systems.

3.1 BEAM Plus

BEAM Plus assesses residential, commercial, institutional and industrial buildings, under two schemes; one for new buildings and one for existing buildings. The latest versions of BEAM Plus are BEAM Plus New Buildings (version 1.1) and BEAM Plus Existing Buildings (version 1.1). Both were launched in April 2010.

BEAM Plus is a credit-based voluntary assessment scheme. There are over 110 credits per scheme and these credits are divided into three types:
- Pre-requisite;
- Normal credits (can be excluded if not applicable); and
- Bonus credits.

Great focus is put on issues under site aspect, energy use and indoor environmental quality; in fact, it is necessary to obtain a minimum percentage of credits for the three categories in order to achieve a certain overall grade. In addition for the highest levels of certification, a minimum number of credits have to be achieved under the Innovation and Addition (IA) category. The award classifications are:

<table>
<thead>
<tr>
<th>Overall</th>
<th>SA</th>
<th>EU</th>
<th>IEQ</th>
<th>IA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platinum</td>
<td>75%</td>
<td>70%</td>
<td>70%</td>
<td>3 credits (Excellent)</td>
</tr>
<tr>
<td>Gold</td>
<td>65%</td>
<td>60%</td>
<td>60%</td>
<td>2 credits (Very Good)</td>
</tr>
<tr>
<td>Silver</td>
<td>55%</td>
<td>50%</td>
<td>50%</td>
<td>1 credit (Good)</td>
</tr>
<tr>
<td>Bronze</td>
<td>40%</td>
<td>40%</td>
<td>40%</td>
<td>- (Above Average)</td>
</tr>
</tbody>
</table>

Assessment criteria and their respective ratings are tabulated as shown in Table 1. The Energy Use category weighs the highest. The overall assessment grade is determined by the percentage of the applicable credits gained under each performance category and the corresponding weighting factor.

<table>
<thead>
<tr>
<th>Category</th>
<th>Weighting (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Aspects (SA)</td>
<td>25</td>
</tr>
<tr>
<td>Material Aspects (MA)</td>
<td>8</td>
</tr>
<tr>
<td>Energy Use (EU)</td>
<td>35</td>
</tr>
<tr>
<td>Water Use (WU)</td>
<td>12</td>
</tr>
<tr>
<td>Indoor Environmental Quality (IEQ)</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1: BEAM Plus Categories and Weighings
Uptake of BEAM Plus

The HK-SAR Government has been a frequent user of previous versions of BEAM and is now embracing BEAM Plus. In 2009, the Development Bureau announced that all new government buildings with construction floor area of more than 10,000m² should aim to obtain the second highest grade or above under an internationally or locally recognized building environmental assessment system such as LEED or BEAM Plus. Furthermore, the scheme has been used as one of the major references for local planning requirements.

The credit requirements of BEAM Plus are in-line with the local code of practice issued by the government departments (such as the building energy code). The Buildings Department has also recently included BEAM Plus on the new and revised Practice Notes on the wholesale conversion of industrial buildings, in essence permitting the exemption of certain regulatory provisions that may be impractical, on the condition that those buildings comply with associated provisions within BEAM Plus.

So far, about 270 green building developments encompassing over 13 million m² of space and including over 73,000 residential units (as of March 2010) have applied for the former BEAM certification. As such BEAM is the most commonly used green building labelling scheme for Hong Kong and some projects in mainland China have also applied for certification under the former BEAM versions.

The Hong Kong market currently perceives the benefits of green buildings in the form of savings on future operational energy, increasing the marketing appeal of the building and a good way to demonstrate strong commitment to corporate social responsibility (CSR) targets. The private sector is also applying BEAM Plus as a response to support the government’s intention to build green buildings and reduce resource consumption as well as to achieve the HK-SAR 50-60% carbon intensity reduction target by 2020, based on 2005 levels.

In addition the Secretary for Development introduced a new package of measures to promote a quality and sustainable built environment on 13th October. Among the wide range of measures unveiled, three are specific to HKGBC and BEAM Plus, with effect from 1st April 2011:

1. BEAM Plus certification will be required as a prerequisite for gross floor area (GFA) concessions for certain green and amenity features in new building developments;
2. The BEAM Plus rating of those developments, after their completion, will be published on the Buildings Department’s website as a means to communicate their performance to the public; and
3. The provisional BEAM Plus rating of uncompleted new private residential developments (that have been granted the associated GFA concessions and obtained pre-sale consent) will be required to be included in their sales brochures, for the reference of potential buyers.

In general BEAM Plus is perceived to be more stringent and difficult for buildings to achieve platinum score, compared to the previous versions of BEAM, in particular for credits in the energy use category and especially for high-rise residential developments. There have also been some concerns on credit requirements being unclear, especially when it comes to deciding if credits are applicable or not for a specific development.

3.2 CEPAS

In 2002, the Buildings Department commissioned a research to develop a new green building labelling scheme in Hong Kong. The study was completed in 2006 and the Comprehensive Environmental Performance Assessment Scheme (CEPAS) was issued. The assessment criteria and methodology are available on the Buildings Department website, although a formalised certification process for the scheme has not been introduced.

CEPAS has two assessment schemes; one for residential and one for non-residential buildings. For mixed use buildings, separate assessments can be undertaken but the scores would eventually have to be added up. Under CEPAS, a building could obtain separate certification at different life stages – pre-design, design, construction and operation stages - allowing involved parties to focus on and obtain a score for the particular aspects of the assessment directly associated with their work.

Assessment consists of ‘self-assessment’ and ‘assessment by CEPAS Administrators’. Self-assessment is crucial at the early stage of each stage. CEPAS Administrators would then review the self-assessment and collect necessary documents at the later period of each life stages. Labels will be issued upon passing. CEPAS administrators would be responsible for reviewing the documents submitted by the applicant, assess the documents and the site, and issue the label at the end of each life stage.

Uptake of CEPAS

As CEPAS has not actually been implemented it is difficult to assess its uptake much less its benefits and disadvantages as a green building labelling scheme. However, some features on the structure of CEPAS provide a useful reference that could be incorporated into a green labelling scheme for Hong Kong including:

• Staged certification (separate awards at different stages);
• Greater consideration of issues during demolition stage;
• Moe emphasis on socio-economic impacts and impacts to neighbourhood by the building;
• Different schemes for residential and non-residential projects.

3.3 Expert’s Views

A series of focus groups were held on 21st and 22nd September 2010. Views were provided by independent experts from design, construction, government, finance and developer sectors as follows:

Incentives & Drivers

• Green building labelling schemes need the right incentives to operate. Forms of financial incentives like preferential loans and tax rebates would encourage the wider uptake by private developers and buyers.
• From a marketing perspective, BEAM Plus must be promoted to smaller players so that the achievement of awards other than Platinum are made appealing, for example increased property value compared to non certified buildings.
• Smaller players will adopt BEAM Plus if the right regulatory framework and well defined and achievable standards and financial incentives are in place.
• Government must take the lead in getting their buildings labelled as they have the resources as well as the institutional support to do so.

Branding

• Private companies may see green labelling as a form of corporate social responsibility. In this way, the green label becomes a ‘brand’ signifying responsible behaviour, as well as environmental performance.
• BEAM Plus should be associated with the overall concept of green lifestyle and its benefits made clear to the wider public.
• Key industry players should be brought on-board first to set the example and benchmark for other developments to meet for example by embedding green labelling in their requirements.
• Disclosure of performance data could also assist in strengthening the BEAM Plus brand, as it would persuade buyers and occupiers to choose buildings with green labels.
• Simple representation of the green building label would assist in making BEAM Plus more widespread similar, for example, to energy labels on electrical appliances.
• BEAM Plus should be positioned as a viable green building labelling scheme for local projects, compared to other oversees systems.

Scope of Certification

• Ultimately, it is not just about acquiring the label. The latter is a form of recognition for design effort, but this must be backed up by demonstration of environmental performance. Existing buildings hence, are the best but more challenging group to tackle compared to new buildings.
• BEAM Plus thus could be sub-divided to reward different categories other than energy e.g. water, building materials, waste management, human comfort etc.; these awards should be simple and easy to recognise.
• Suggested additional and wider BEAM Plus schemes (other than just new and existing buildings) could include: passive design, revitalisation of industrial buildings, renovations, existing residential, retail offices, neighbourhood/urban design and commercial interiors (e.g. restaurants).
• BEAM Plus could also be strengthened by introducing more credits with a focus on social and economic benefits to the community, as well as environmental benefits.

Technical Aspects

• To improve BEAM Plus, it is necessary to distinguish passive and active design, report more on performance case studies, provide easy access to performance benchmarking (e.g. online retrieval of information), and align the period of validity with market trends.
• BEAM Plus currently recognises active design measures; however, in some building types, especially public residential buildings, passive design measures should also be equally rewarded.
• More importantly, seeing the visible benefits of green labelling is extremely effective. Information on the actual performance of green labelled buildings against non-labelled buildings should highlight the environmental and economic benefits of the former. This information, in simple and consistent format, should be disclosed and publicised.
• Industry and government could further support BEAM Plus through R&D activity, particularly in the development of green building materials, for example eco-labelling of products.
• BEAM Plus would benefit from a robust Online Tool for benchmarking performance, which would maintain confidentiality as necessary.

Education & Outreach

• There is a broad need to educate purchasers and the public on the meaning and benefits of green building labels in a transparent manner and it should be made easy for the public to monitor.
• A “BEAM Plus Club” could be formed from industry champions to inspire other companies and provide case studies.
• Education packs could be developed for various users, such as owner corporations of clubhouse buildings that could help them not only improve environmental performance but also with winning political goodwill.

In the next section, the HKGBC poses some key questions for stakeholders to consider and prioritise for the engagement process.
4 Stakeholder Engagement

The preceding three Chapters have explained the background and importance of green building labelling schemes in Hong Kong. The purpose of this section is to pose key questions for stakeholders’ consideration:

4.1 Roles of Government and Private Sector

• In promoting a green building labelling scheme, what is the role of government?
• Should it be mandatory for all new and existing government buildings to be certified to BEAM Plus or equivalent?
• Should government make it mandatory for quasi-government buildings owned by institutions like URA, Hospital Authority, MTR, and Science Park etc. to be certified?
• Should government make it mandatory for buildings subsidised or funded by government funds, for example buildings reserved for NGO occupants, to be certified?
• Should it be mandatory for private sector buildings over a certain floor space to be certified? What should that area be, if so?
• Should the Government introduce stronger policies to encourage the certification of existing buildings?

4.2 New and Existing Buildings

• What would incentivise developers to certify new properties? (Examples: preferential loans, tax rebates, reduction in stamp duty)
• What is an optimum period for the certificate to be valid for a new building? 1, 3 or 5 years?
• For existing buildings, what would incentivise owners or tenants to pursue certification? Can owners’ corporations or property managers play a role?

4.3 BEAM Plus

• What additional schemes should BEAM Plus include other than just new and existing buildings?
  Should BEAM Plus cover:
  – Industrial buildings
  – Institutional buildings
  – Renovations
  – Residential buildings
  – Retail offices
  – Neighbourhood / Urban Design
  – Commercial Interiors (e.g. restaurants)
• Should there be separate BEAM awards for:
  – Site Aspects
  – Materials
  – Energy Use
  – Water Use
  – Indoor Environmental Quality
• Should BEAM Plus take an “assembly type” form with core and peripheral assessments?
• How can BEAM Plus reward buildings based on passive design (built form, building permeability, layout planning, natural ventilation, daylighting etc.) compared to active design?
• Should BEAM Plus award certification at different stages of a building’s life-cycle, for example design, construction, post-occupancy?
• Should BEAM Plus include socio-economic aspects under the credit categories and if so, what should these cover?
• How can BEAM Plus for Existing Buildings be improved?
• How can BEAM Plus encourage improvements in building management practices?
4.4 Reporting

- How can we encourage more reporting on the performance of green buildings? Should this be a requirement of the BEAM Plus certificate?
- Which body should be responsible for the collection and handling of this data to ensure confidentiality but also serve to disseminate best practice and cost data to the industry?
- Should this be done online and how?

4.5 Branding and Marketing

- What messages concerning green building labelling should be sent out to:
  - Industry
  - Civil society
  - General public
- What is the level of recognition or appreciation for companies using green labelling as a form of corporate social responsibility?
- How do we promote BEAM Plus as a premium brand equivalent to any global green building labelling system?
- How do we promote BEAM Plus to smaller and to a wider group of players so that the achievement of awards other than platinum are made appealing?

We would like to seek your views on the above questions.
5. Next Steps

5.1 How to Voice Your Opinion

We welcome feedback on the issues presented here, in particular on the specific questions posed in the previous section. We look forward to receiving further information, suggestions or questions that you might have relating to the consultation topics.

Your views will help HKGBC in the future to devise short term and long term roadmaps and strategies for the development of green building labelling systems in Hong Kong.

We invite stakeholders to respond by post, fax or e-mail by 3rd Nov 2010. A template document in Word format, which includes all the questions, can be downloaded from the HKGBC website (www.hkgbc.org.hk).

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5.2 Stakeholder Workshops

The HKGBC will be organizing two workshops on 27th and 28th October 2010 to facilitate round table discussions and gather more comments from stakeholders.

A Final Forum, to be held on 10th November 2010, will be used to present the conclusions.

Please contact HKGBC if you are interested in participating in any of these events.

We look forward to your ideas!