CONSTRUCTION INDUSTRY COUNCIL
建造業議會

Moving Towards Low Carbon Building Design and Construction – From Rhetoric to Reality

Ir Julian LEE
Manager - Research, Construction Industry Council

5 February 2015

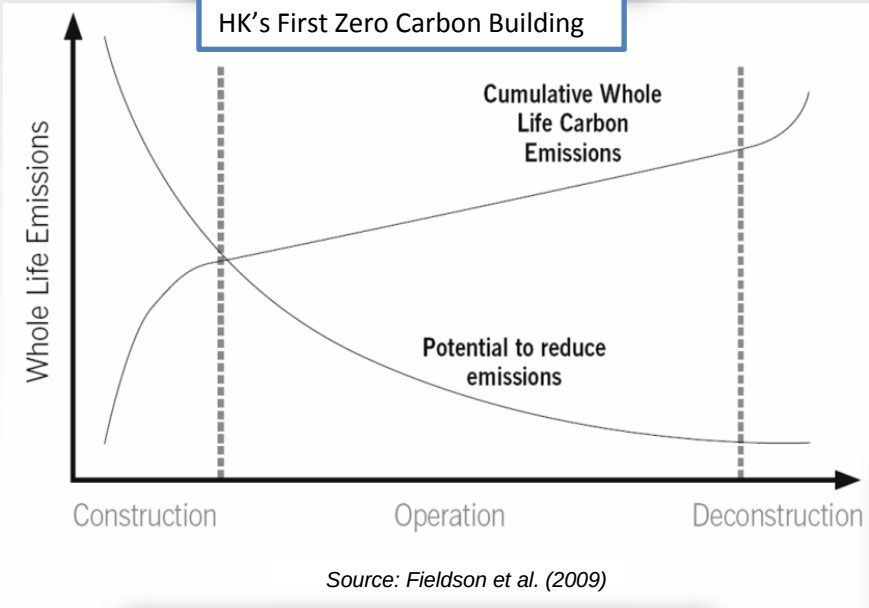
Key Green Actions in the HK Building & Construction Industry

Government Statutory Requirement:
Building Energy Efficiency Ordinance

HK's First Zero Carbon Building

HK 3030 By HKGBC

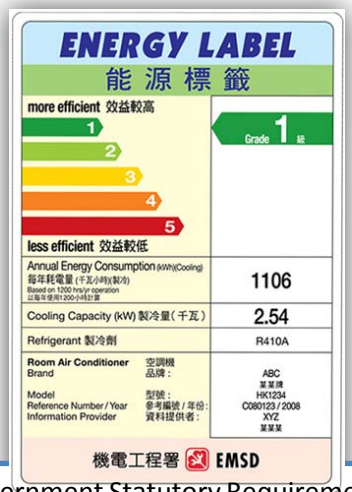
A vision for a low carbon sustainable built environment: HK 3030 Campaign



Source: Fieldson et al. (2009)

HKGBC BEAM Plus 綠建環評

HK's Green Building Assessment



Government Statutory Requirement:
Energy Efficiency Labelling Scheme

Government Statutory Requirement:
Construction Waste Disposal Charging Scheme

Government Promotion:
Renewable Energy Website: HK RE Net

CIC Carbon Labelling Scheme
for Construction Products

- **Aim**: Provide verifiable and accurate information on the carbon footprint of construction materials for users to make informed decision thereby to combat the climate change.

- **Material Coverage**

Cement

Rebar

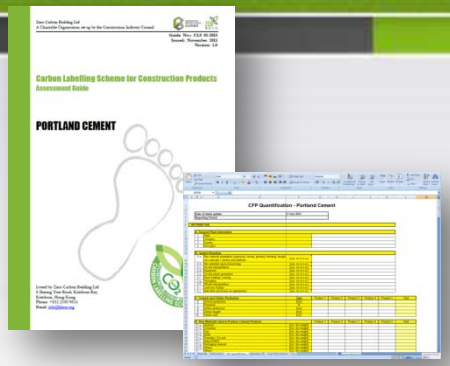
Structural Steel

Ready-mixed Concrete

Aim & Scope (cont.)

- A voluntary eco-labelling programme with independent third-party verification .
- Focuses on a single impact category: Climate Change.
- System boundary: cradle to site
- Normative references:
  - **ISO/TS 14067:2013**, Greenhouse Gases – Carbon Footprint of Products – Requirements and Guidelines for Quantification and Communication
  - **ISO 14025:2006**, Environmental Labels and Declarations – Type III Environmental Declarations – Principles and Procedures

Certification Process



Make recommendation to **ZCBL** for award

CFP certified

Engage a Certified Carbon Auditor (CCA) → **Carbon Auditing** → *CFP Report* → **Verification by Accredited V/VB** → *Verification Report* → **Award certificate & issue letter**

Identify missing information

Collate missing information and implement amendments

Identify missing information

Address CFP findings e.g. non-conformities and gaps in data

* Application fee

* Licence fee

Eligible for using Carbon Label

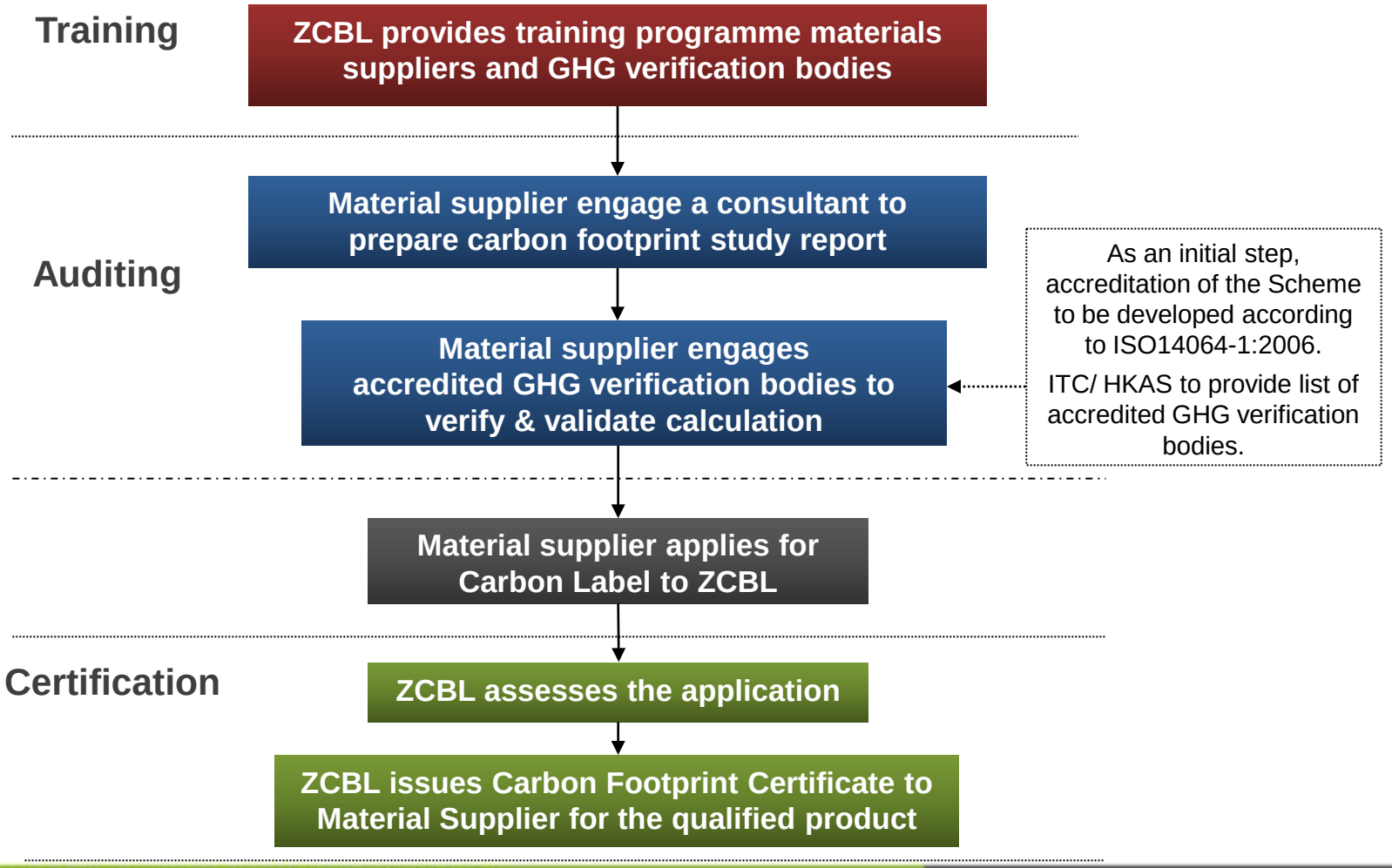
Manufacturer

Certified Carbon Auditor (CCA)

GHG Validation / Verification Body (VVB)

ZCBL

Implementation Framework



The Carbon Label

- Based on the carbon footprint of the assessed product, ZCBL shall issue the carbon label with corresponding class for a validity period of one year.

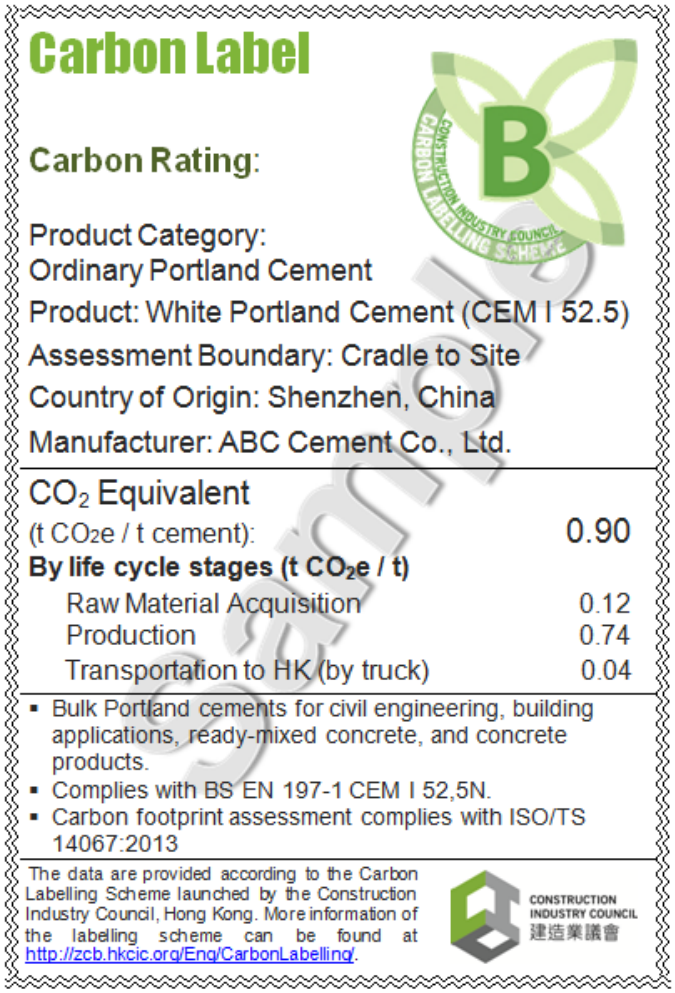
Outstanding

Very Good

Good

Fair

Improvement Needed



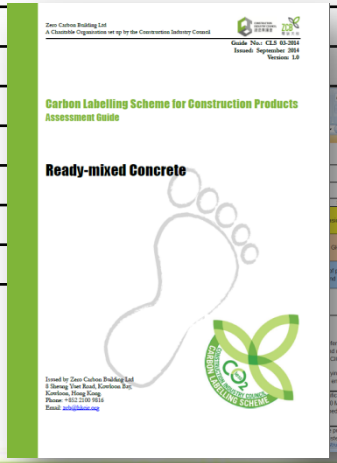
Summary of Work Done

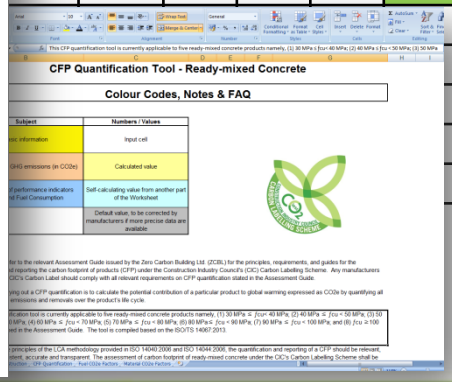
- Research (Phase II) commenced in Mar 2014
  - Frameworks of additional 10 materials are being developed
- Launched the CLS framework on Ready-mixed Concrete (Oct 2014)
- Processing applications
- Lobbying relevant stakeholders:
  - Material Suppliers
  - Verification Bodies and HKAS
  - Client Bodies: DevB, MTRC, HA, etc.
  - Contractors
  - Others: HKGBC, Academia
- Training programmes
- Publicity
  - International conferences / seminars
  - Journals (CIC, ZCB, HKIE, etc.)
  - Websites
  - Blog / Byline articles

Phase II Research - Launch of Ready-mixed Concrete Framework

Tasks	2014									2015					
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Devise the carbon assessment guides and tools for 10 materials / products															
– Determine the product category – Establish process map and assessment boundary – Identify sources of emissions – Compile carbon footprint assessment tools – Develop guide booklets – Verify the guides and tools (2nd round interview)															
Ready-mixed concrete															
Timber and timber products / composite wood															
Aggregate															
Stainless steel															
Precast concrete															
Brick and block															
Galvanized steel															
Cast iron															
Gypsum board															
Asphalt															

Ready-mixed Concrete Framework launched and open for application





30 Sep 2014

Lobbying Stakeholders / Involved Organisations

Development Bureau
The Government of the Hong Kong Special Administrative Region

HONG KONG HOUSING AUTHORITY

Alliance 友盟

Siam Yamato Steel Co.,Ltd.

DNV·GL

MTR

香港 國際機場 | HONG KONG INTERNATIONAL AIRPORT

HKGBC
香港綠色建築議會

BUSINESS ENVIRONMENT COUNCIL
商界環保協會

HKPC

有利集團有限公司
Yau Lee Holdings Limited

K. WAH CONSTRUCTION MATERIALS
嘉華建材

Green Island Cement Company Limited
青洲英坭有限公司

財團法人
台灣綠色生產力基金會
Taiwan Green Productivity Foundation

حديد الإمارات
emirates steel
a SENAAT company إحدى شركات صناعات

HKQAA
HONG KONG QUALITY ASSURANCE AGENCY
香港品質保證局

中龍鋼鐵
DRAGON STEEL

bsi.

Gammon

VSC万順昌

Van Shung Chong Holdings Limited
Stock Code:1001

和利鋼鐵有限公司
Wo Lee Steel Co. Ltd.

SGS

俊和發展集團
CHUN WO DEVELOPMENT HOLDINGS LIMITED

SW STEEL

紹業鋼鐵有限公司
SHIU WING STEEL LIMITED

環科工程顧問股份有限公司
Environmental Science Technology

Training Programme – Awareness Courses

Date	Instructors	No. of registration
11 Nov 2013	Prof. Thomas NG, HKU	66
05 Dec 2013	Prof. Irene LO & Dr. Jack CHENG, HKUST	69
10 Jan 2014	Prof. Thomas NG, HKU	49
10 Mar 2014	Prof. Irene LO & Dr. Jack CHENG, HKUST	19
18 Aug 2014	Prof. Irene LO & Dr. Jack CHENG, HKUST	33
4 Dec 2014	Prof. Irene LO & Dr. Jack CHENG, HKUST	30
	Total	**266**

Training Programme – Auditor Courses

Instructors:

Prof. Irene LO &

Dr. Jack CHENG, HKUST

Product Category	Date	No. of registration
Portland Cement	16 Dec 2013	35
	24 Mar 2014	12
Rebar & Structural Steel	16 Jan 2014	36
	19 Aug 2014	17
Ready-mixed Concrete	5 Dec 2014	29
	Total	**129**

Publicity
-Website/Blog/Byline Article/Seminar


行業新知

建造業議會推出碳標籤
計畫建造綠色未來

為什麼要標籤建材?

釋放過量溫室氣體(或「碳足跡」)會造成全球暖化。由於樓宇的碳排放佔全港溫室氣體排放超過60%,故建造業界必須採取行動。目前有關減碳的研究和建築設計側重於降低樓宇中空調、照明等的能源消耗。然而佔整個樓宇生命周期碳足跡高達15%的建築材料卻缺乏監控措施。因此,業界亟需一套透明、實用和有系統的機制識別低碳建材。

建造業議會(議會)將於本年10月推出「建材碳標籤計劃」,以履行推動綠色建築及可持續發展的使命。

計劃概覽

該計劃首次以產品比對的方法區分市面上的材,方便各界比較選用。計劃現針對水泥、結構鋼產品三種碳排放較高的建材,並另有十種建材的碳計框架正在研究當中。

計劃的碳足跡審計框架符合產品碳標籤國際標TS 14067),按「從開採至目的地」原則,由開採產品製造至運送到港邊境所產生的溫室氣體排放量審計及報告。報告由已受訓的碳審計師提交,並由可處認可的獨立機構驗證。議會將效法能源效益據產品的碳排放量分五級頒予碳標籤(A至E級)*。

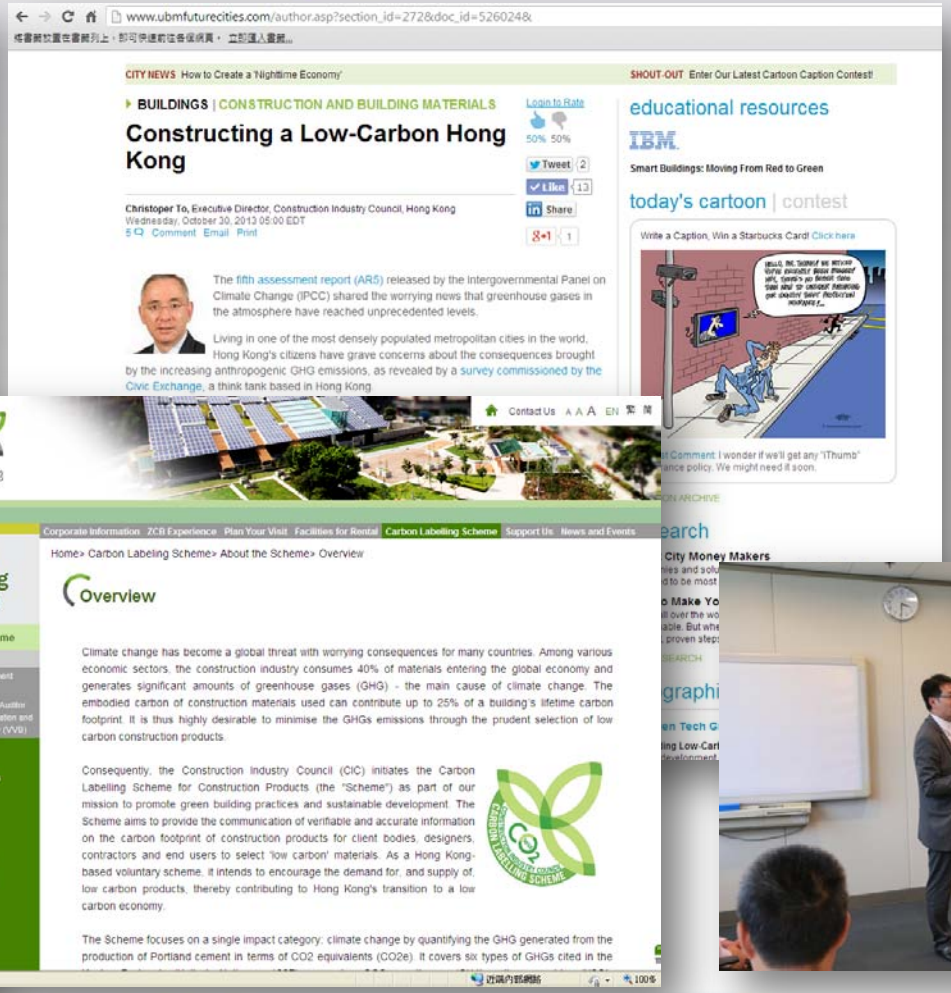
建造綠色未來

低碳建設是大勢所趨。議會期望建築設計師在選用建材時,除考慮成本與品質外,亦參考碳保護環境而作出更全面的選擇。供應商亦會因市成本下降及市場佔有率上升等誘因而增加使用再並減少其供應鏈的碳排放。

如有任何查詢,請電郵至corpcomm@hkcic.or

*下載建材碳標籤圖示

資料由建造業議


www.ubmfuturecities.com/author.asp?section_id=272&doc_id=5260248&

CITY NEWS How to Create a 'Nighttime Economy'

SHOUT-OUT Enter Our Latest Cartoon Caption Contest!

BUILDINGS | CONSTRUCTION AND BUILDING MATERIALS

Constructing a Low-Carbon Hong Kong

Christoper To, Executive Director, Construction Industry Council, Hong Kong
Wednesday, October 30, 2013 05:00 EDT

The fifth assessment report (AR5) released by the Intergovernmental Panel on Climate Change (IPCC) shared the worrying news that greenhouse gases in the atmosphere have reached unprecedented levels.

Living in one of the most densely populated metropolitan cities in the world, Hong Kong's citizens have grave concerns about the consequences brought by the increasing anthropogenic GHG emissions, as revealed by a survey commissioned by the Civic Exchange, a think tank based in Hong Kong

educational resources

IBM

Smart Buildings: Moving From Red to Green

today's cartoon | contest

Write a Caption, Win a Starbucks Card! Click here


ZCB 零碳天地

Carbon Labelling Scheme

Home> Carbon Labeling Scheme> About the Scheme> Overview

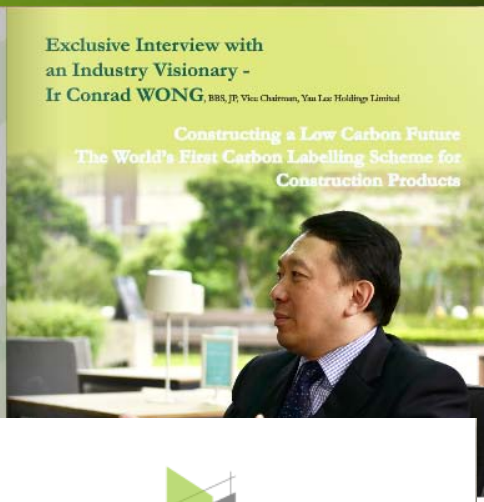
Overview

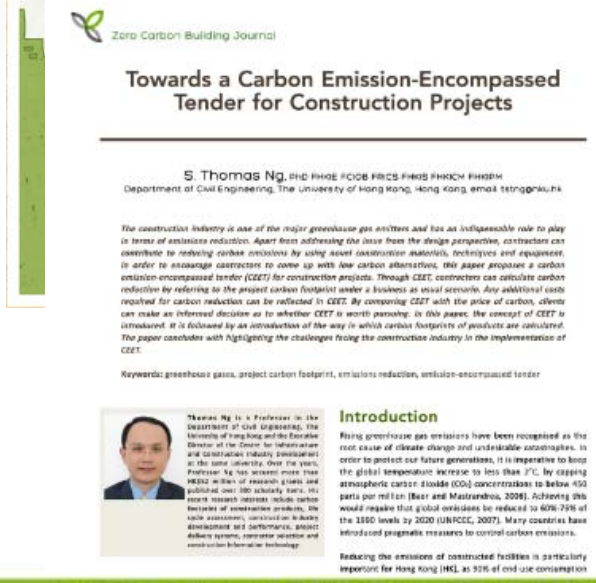
Climate change has become a global threat with worrying consequences for many countries. Among various economic sectors, the construction industry consumes 40% of materials entering the global economy and generates significant amounts of greenhouse gases (GHG) - the main cause of climate change. The embodied carbon of construction materials used can contribute up to 25% of a building's lifetime carbon footprint. It is thus highly desirable to minimise the GHGs emissions through the prudent selection of low carbon construction products.

Consequently, the Construction Industry Council (CIC) initiates the Carbon Labelling Scheme for Construction Products (the "Scheme") as part of our mission to promote green building practices and sustainable development. The Scheme aims to provide the communication of verifiable and accurate information on the carbon footprint of construction products for client bodies, designers, contractors and end users to select 'low carbon' materials. As a Hong Kong-based voluntary scheme, it intends to encourage the demand for, and supply of, low carbon products, thereby contributing to Hong Kong's transition to a low carbon economy.

The Scheme focuses on a single impact category: climate change by quantifying the GHG generated from the production of Portland cement in terms of CO2 equivalents (CO2e). It covers six types of GHGs cited in the

Publicity -Journals





Action Plan
- Information Confidentiality

Non-disclosure agreement

- CIC to sign a non-disclosure agreement with the applicant to promise not disclosing their submitted confidential information to any third party.

Simplify the data requirement

- Consult HKU/HKUST for technical advice to ease the data requirements of the calculation framework, ensuring the result accuracy and protecting applicants' confidentiality.
  - Annual production (plant total / individual product)
  - Raw material consumption (plant total / individual product)
  - Energy consumption (electricity / fuel)
  - Manufacturing process map

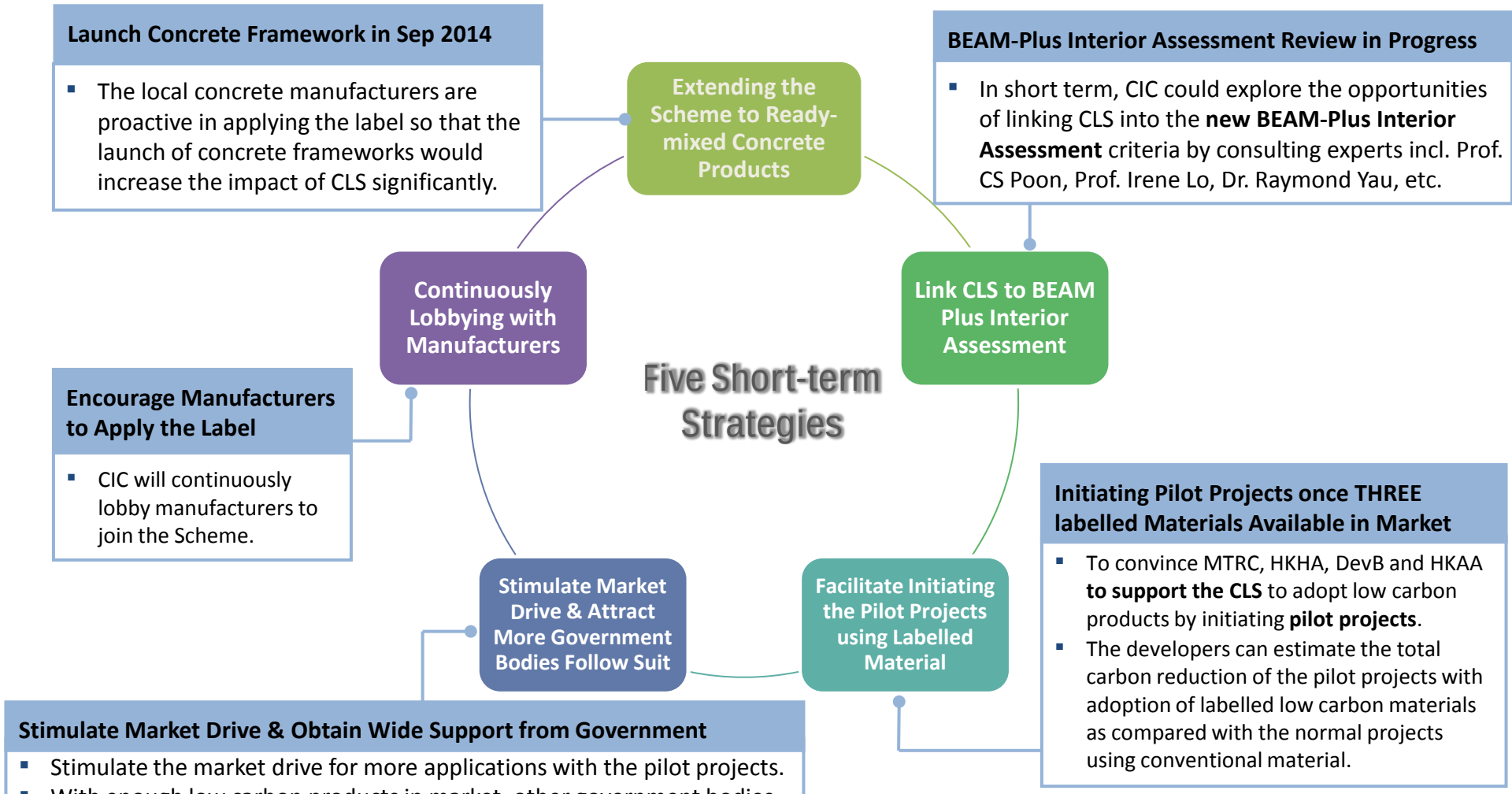
Data that does not affect the calculation of carbon footprint of the product could be exempted.

Streamline the documentary requirement

- Consult relevant organizations (HKAS, SGS, etc.) for expert advice to streamline the required documents in the certification procedure, making reference to the ISO 14001 and ISO 14064 certification system.
  - The VVB could conduct on-site checking in the plant on sensitive documents (e.g. electricity, fuel bills) but cannot take away the documents.
  - The Scheme Holder trusts the Verification Statement issued by the VVB and does not double check the confidential documents.

A responsible, reliable and trustable VVB is critical during the certification procedure.

Action Plan
- Inadequate Incentives



Launch Concrete Framework in Sep 2014

- The local concrete manufacturers are proactive in applying the label so that the launch of concrete frameworks would increase the impact of CLS significantly.

BEAM-Plus Interior Assessment Review in Progress

- In short term, CIC could explore the opportunities of linking CLS into the **new BEAM-Plus Interior Assessment** criteria by consulting experts incl. Prof. CS Poon, Prof. Irene Lo, Dr. Raymond Yau, etc.

Encourage Manufacturers to Apply the Label

- CIC will continuously lobby manufacturers to join the Scheme.

Initiating Pilot Projects once THREE labelled Materials Available in Market

- To convince MTRC, HKHA, DevB and HKAA **to support the CLS** to adopt low carbon products by initiating **pilot projects**.
- The developers can estimate the total carbon reduction of the pilot projects with adoption of labelled low carbon materials as compared with the normal projects using conventional material.

Stimulate Market Drive & Obtain Wide Support from Government

- Stimulate the market drive for more applications with the pilot projects.
- With enough low carbon products in market, other government bodies would follow suit to support CLS.

Roadmap for CLS
- Short / Medium / Long Term

Short Term

2014 Nov - Dec

- Enlarge the pool of applicants of the Scheme by promoting the frameworks of Portland Cement, Steel and Ready-mixed Concrete

2015 Jan - Jun

- Issue the first round of carbon label certificates
- Facilitate the launch of pilot MTRC / HKHA / other public projects
- Publicity events with the pioneer applicants

Medium Term

2015 Jul - Dec

- Push the inclusion of CLS into the revised BEAM-Plus New Building Assessment as a pre-requisite in the assessment criteria
- Commence listing services

2016

- Specifying the used of labelled materials in the public works projects.
- Launch additional five product categories
- Get patent for the CLS
- Transform the Scheme to internationally recognized standard

Long Term

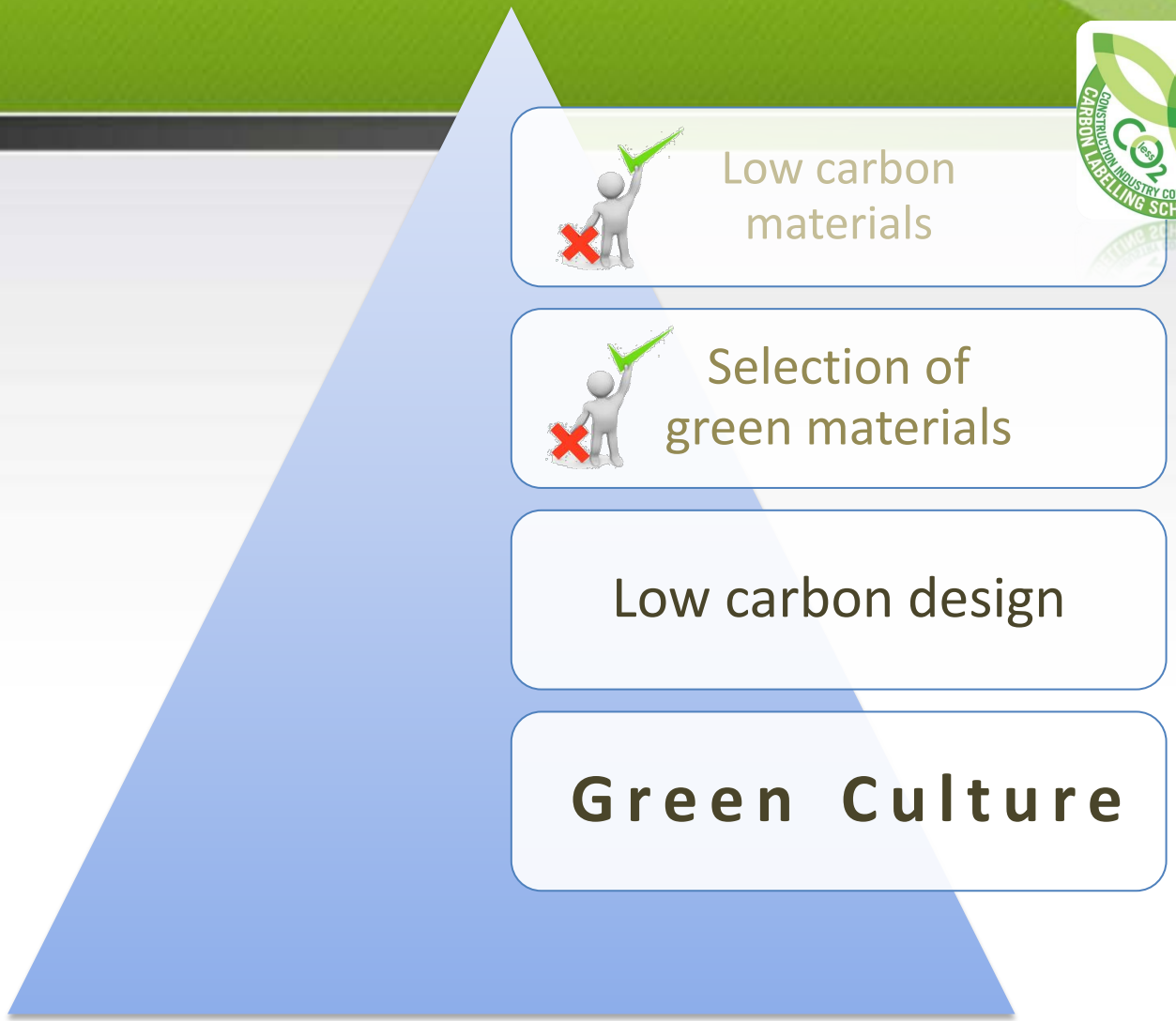
After 2016

- Collaboration with overseas partners and export the Scheme to overseas market
- Launch another five product categories
- Seek opportunities of collaborating with HKGBC to link CLS with GBC's Green Product Label
- Achieve low carbon construction by benchmarking the carbon emissions of the whole project

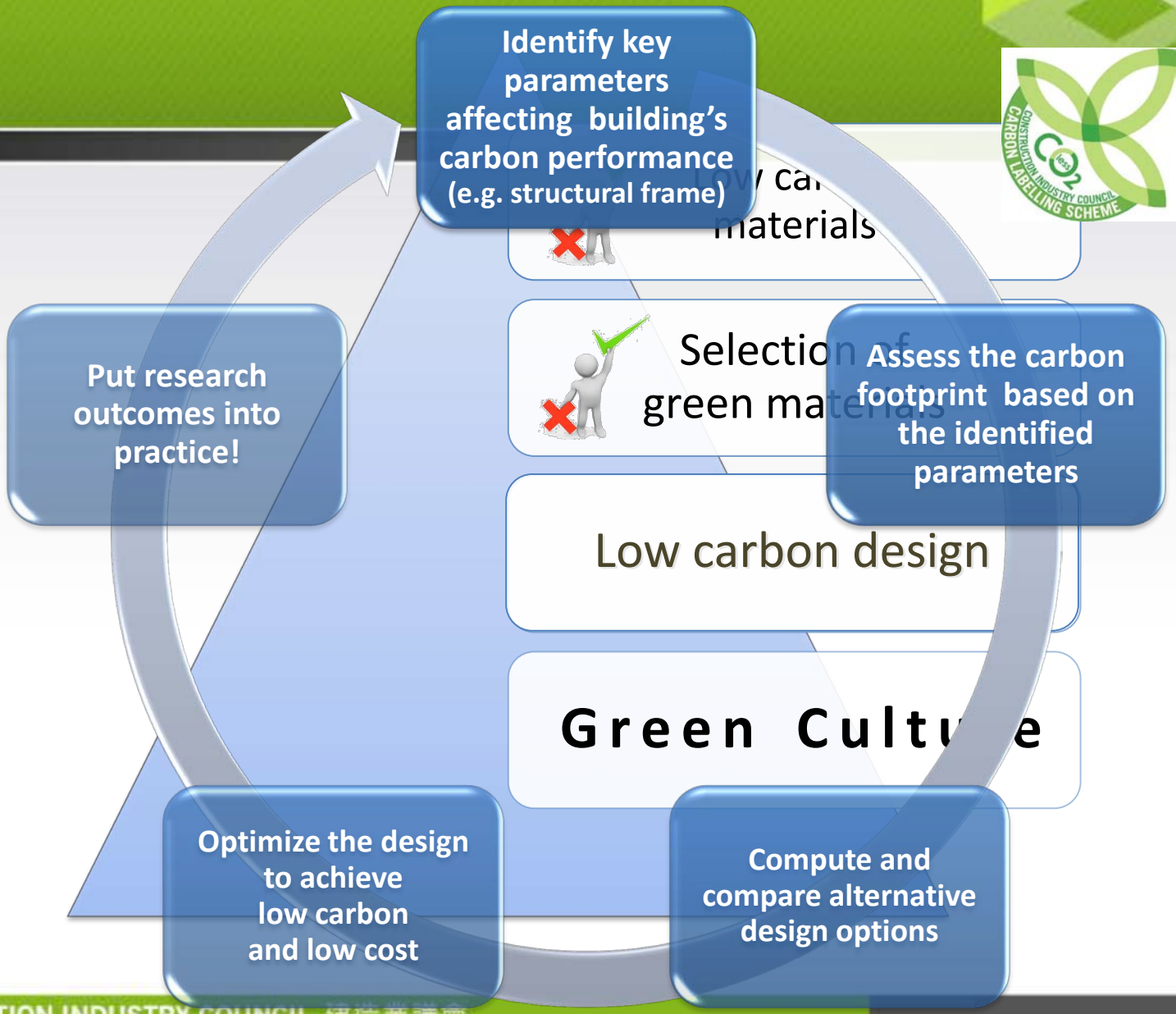
Increase the impact, build the image, expand the coverage of the Scheme; Explore HK & overseas market

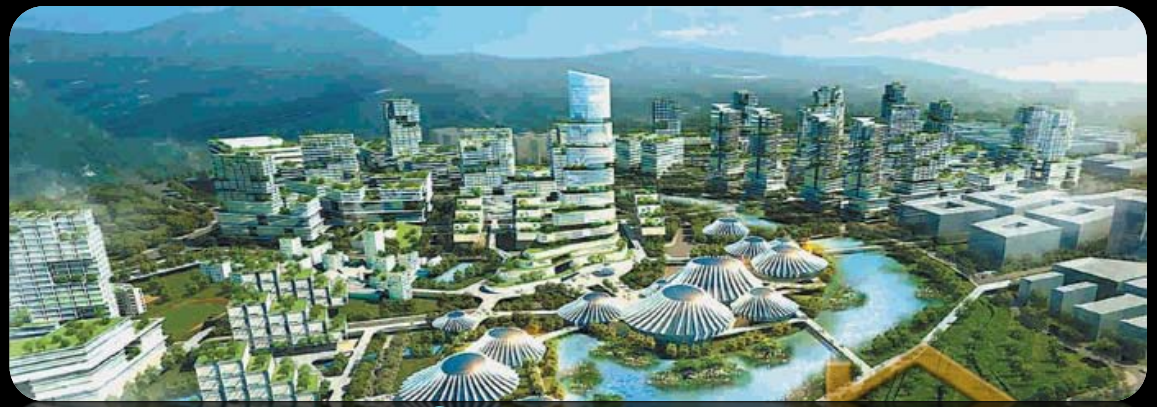
Formulate and establish a low carbon driven market for HK construction materials and products

Future Development: Think Low Carbon

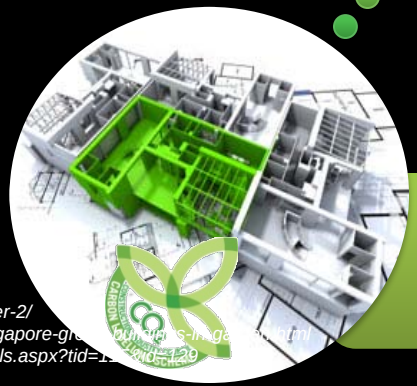


Future Development: Think Low Carbon





Green Building



Green Construction

sources of photos:
http://widedscreen.com/3d-architecture-wallpaper-2/
http://www.maximizingprogress.org/2008/11/singapore-gr[illegible]
http://www.globalmayorsforum.org/en/citiesdetails.aspx?tid=1[illegible]

CONSTRUCTION INDUSTRY COUNCIL
建造業議會

Thank You

Ir Julian LEE
Manager - Research, Construction Industry Council

5 February 2015