Supporting Organisations

Government Departments

環境局 Environment Bureau

機電工程署 EMSD

香港房屋委員會 Hong Kong Housing Authority

水務署 Water Supplies Department

International Organisation

Kingdom of the Netherlands

Local Commercial and Industrial Organisations

香港中華總商會 CGCC

香港中華廠商聯合會 The Chinese Manufacturers' Association of Hong Kong

香港工業總會 FHKI

香港中小企業聯合會 SME

HKGCC Hong Kong General Chamber of Commerce 香港總商會 1861

HKTDC 香港貿發局

International Commercial Organisations

AmCham

The British Chamber of Commerce in Hong Kong 英商會

The Canadian Chamber of Commerce in Hong Kong

Danish Chamber of Commerce · Hong Kong ·

European Chamber of Commerce in Hong Kong 香港歐洲商務協會

New Zealand Chamber of Commerce in Hong Kong

Professional Organisations

CIWEM Chartered Institution of Water and Environmental Management

Construction Industry Council 建造業議會

氣候組織 The Climate Group

香港建造商會 HKCA 95th Anniversary

HKGBC 香港綠色建築議會

HK IE The Hong Kong Institution of Engineers Environmental Division

Hong Kong Logistics Association 香港物流協會

HKPPA

HKPC

The Institute of Purchasing & Supply of Hong Kong 香港物管與供應學會

ISM Institute for Supply Management Hong Kong 香港供應管理協會

Academic Organisations

香港中文大學 The Chinese University of Hong Kong

CityU 香港城市大學 City University of Hong Kong

香港浸會大學 Hong Kong Baptist University

The Hong Kong Institute of Education 香港教育學院

IVE Member of VTC Group VTC 機構成員

The Hong Kong Polytechnic University 香港理工大學

香港公開大學 The Open University of Hong Kong

For more information, please visit: www.acfnc2015.org

Organised by : GREEN COUNCIL 環保促進會

Collaboration with : UNITED NATIONS ESCAP Economic and Social Commission for Asia and the Pacific

KEITI Korea Environmental Industry & Technology Institute

Asia Carbon Footprint Network Conference 2015

Carbon Footprint and Labelling Schemes: Recent Developments and the Way Forward

26-28 October 2015, Hong Kong China

Sponsored by:

Environment and Conservation Fund

Environmental Campaign Committee 環境運動委員會

Asia Carbon Footprint Network Conference 2015
"Carbon Footprint and Labelling Schemes: Recent Developments and the Way Forward"

26-28 October 2015, Hong Kong
Grand Ballroom, Sheraton Hotel, TST, Hong Kong China

DAY 1
Monday
26 Oct, 2015

08:30-09:00 Registration

Opening Session

Welcoming and Opening Remarks

09:00-09:10 
- Ms Linda W P Ho
  Chief Executive Office, Green Council, Hong Kong

09:10-09:25 
- Dr. Sangmin Nam
  Deputy Head, United Nations ESCAP East and North-East Asia Office (ACFN Secretariat)

09:25-09:40 
- Ms Jung-joo Kim
  Executive Director, Environmental Technology Division, Korea Environmental Industry & Technology Institute (KEITI) ACFN Secretariat

Keynote Address

09:40-10:00 
- Mr. Wong Kam-sing, JP
  Secretary for the Environment, Environment Bureau, the Government of HKSAR

10:00-10:10 **Group Photo**

10:10-10:30 **Coffee Break**

Session I Carbon Footprint at a Glance

Presentations

10:30-11:10 
- Climate Change, Corporate Response and Carbon Footprint
  Mr. Mark Didden, Manager, Redefining Value, World Business Council for Sustainable Development (WBCSD)

11:10-11:50 
- International Processes on Carbon Footprint Methodologies
  Professor Atsushi Inaba, Professor, Kogakuin University, Japan

11:50-12:30 
- Introduce the Development of Environmental Footprint
  Mr. Jan Christian Polanía Giese, Programme Director, PEF World Forum

12:30-13:30 **Lunch**

Session II Carbon Labelling in Practices

Presentations

13.30 -14:00 
- The Introduction of Low-carbon Product Certification Scheme in China and the Way Forward
  Mr. Zhou Caihua, Deputy Director, CDM Department, China Environmental United Certification Center, MEP (CEC), China

14:00-14:30 
- CFP Communication Programme and the Way Forward
  Mr. Akira Kataoka, General Manager, Eco Design Office, Japan Environmental Management Association for Industry

14:30-15:00 
- Recent Development of Carbon Footprint and Labelling Scheme,
  Ms Gaia Lu, Senior Researcher, Industrial Technology Research Institute, Chinese Taipei

15:00-15:30 
- Utilizing CFP Labelling for Business Benefits for Korea
  Ms Bang, Hye Won, Director, Environmental Declaration Office, KEITI

15:30-16:00 
- CF Calculator and CF Scanner: Innovation in Promoting Consumer's Awareness and Participation in Reducing Greenhouse Gas
  Ms Phakamon Supappunt, Senior Researcher, Thailand Greenhouse Gas Management Organization (TGO)

16:00-16:20 **Coffee Break**

Session III Carbon Footprint and Labelling Schemes: Opportunities and Challenges

16:20-17:00 
Panel Discussion
Session Moderator: Dr. Sangmin Nam, Deputy Head, United Nations ESCAP East and North-East Asia Office (ACFN Secretariat)
- Panel members will be composed of the presenters from Sessions I and II

17:00 **Closing of Day 1 Programme**

DAY 2
Tuesday
27 Oct, 2015

Session IV Lessons from Ecolabelling for Carbon Footprint and Labelling

Presentations

09:00-09:30 
- Overview of Labelling in Hong Kong
  Mr. Steven Choi, Project Manager, Green Council, Hong Kong

09:30-10:00 
- How can (and should) Carbon Footprint Labelling and Type I Ecolabelling Co-exist and Succeed in National and International Market
  Mr. Bjorn-Erik Lonn, General Manager, Nordic Ecolabelling, Denmark, Norway & Sweden

10:00-10:30 
- Integration of Product Carbon Footprint (PCF) into the existing Blue Angel Programme
  Ms Susanne Heutling, The Blue Angel, Germany

10:30-11:00 
- Promotion Cooperation and Mutual Recognition between National Eco-labelling Programmes: Lessons Learnt from Type! Ecolabelling and others
  Dr. Ning Yu, Environment and Development Foundation, Chinese Taipei

11:00-11:15 **Coffee Break**

Presentations

11:15-11:45 
- Carbon Footprint and Eco-labels: Experience from Thailand
  Dr. Lunchakorn Prathumratana, German International Cooperation (GIZ)

11:45-12:15 
- Ecolabelling and Product Carbon Footprint in the EU's Environmental Policies
  Dr. Stefanos Fotiou, Head of Unit, Cities and Lifestyle, UNEP, Division of Technology Industry and Industry Branch

12:15-12:45 
Panel Discussion
Session Moderator: Ir Prof C F LAM, Member of Environmental Discipline Advisory Panel, the Hong Kong Institution of Engineers
Based on the identified challenges in carbon footprint/labelling and the lessons learned from ecolabelling, this session will come up with suggestions and recommendations for carbon footprint and labelling for its future implications. Panel members will be composed of practitioners from both labelling schemes, representatives from international organisations and experts.

12:45-14:00 **Lunch**

Session V Recent Developments of Carbon Footprint Management and Project in Hong Kong

Presentations

14:00-14:25 
- Topic (TBC)
  Ms Ada Fung, Deputy Director of Housing (Development & Construction), Hong Kong Housing Authority, the Government of HKSAR

14:25-14:50 
- Topic (TBC)
  Mr. Victor Kwong, Chairman of the Towngas Environmental Working Committee and Head of Corporate Health, Safety & Environment, Hong Kong and China Gas Co. Ltd

14:50-15:15 
- Carbon Footprint Management and Reporting in MTR Corporation
  Ms Janice Isabelle Lao, Sustainability Manager, MTR Corporation Limited, Hong Kong

15:15-15:30 **Coffee Break**

15:30-15:55 
- The Making of a Low Carbon Community
  Mr. August Tiu, General Manager, New Projects, Agile Property Holdings Limited

15:55-16:20 
PwC's Low Carbon Economy Index
Ms Hannah Routh, Director, Sustainability and Climate Change, PwC China and Hong Kong

Session VI Recommendations and Way Forward for Carbon Footprint and Labelling in Hong Kong

16:20-16:45 
Panel Discussion
Session Moderator: Ir Cary Chan, General Manager, Technical Services and Sustainability, Swire Properties Limited
Based on Hong Kong's public and private sectors experience in the development and operation management in carbon footprint and labeling in their respective sectors. Panel members will be composed of presenters from Session V.

Closing Remarks

16:45-16:50 
- Hon Dr. Priscilla Leung Mei-fun, SBS, JP, Legislative Councilor, HKSAR and Chairlady of Green Council

16:50-17:00 
- Dr. Sangmin Nam, Deputy Head, ESCAP East and North-East Asia Office (ACFN Secretariat)

17:00 **Closing of Day 2 Programme**

DAY 3*
Wednesday
28 Oct, 2015

08:30-12:30 Eco Expo Asia (Optional)
12:30-14:00 **Lunch**
14:00-17:30 Technical Visit (ACFN and GEN member only)

Recent Development of Carbon Footprint and Labeling Scheme

Jet Wu & Gaia Lu
2015/10/26

Development of Taiwan Carbon Footprint Labelling

2010
- Announced the "Guidelines on Calculating Carbon Footprint For Products and Services"
- Set up the web site for Carbon Footprint Labeling
- Started accepting the application for Carbon Footprint Labeling

2009
- Initiated the Taiwan Product Carbon Footprint Labeling

2012
- Attended the 7th and 8th PCF World Forum

2013
- Attended the first Asia Carbon Footprint Network (ACFN) Meeting

2014
- Revised the Operation Directions of Carbon Footprint Labeling for Products and Services
- Implemented the program of Product Carbon Footprint Reducing Labeling

Procedure of PCF Labeling Application

Applicants

Calculation of Product Carbon Footprint

- Guidelines on Establishing Measures of Product Category Rules
- Guidelines on Calculating Carbon Footprint For Products and Services

Verify by third-party certification bodies

- Administrative Measures on the GHG Certification Body
- Guidelines on the Verification of Product and Service CF

Apply online

- Operation Direction for Carbon Footprint Labels for Products and Services

EPA

Examine and ratify by the Checking Group

- Establishment Directions for the PCF Label Committee
- Operation Direction for Carbon Footprint Labels for Products and Services

Awarded PCF Labeling and reviewed nonscheduled

- Operation Directions for the Promotion of PCF Label Scheme

Taiwan's Carbon Footprint Label

The number stands for "carbon footprint": CO_2 emission equivalence calculated based on materials & energy consumed during product life cycle.

A heart that loves the nature; CO_2 reduction for a "cool" planet; and green consumption for low-carbon society

Green leaf stands for health and environmental friendliness

CO2
Carbon Footprint
Taiwan EPA

Issuing Authority

Taiwan' Carbon Labeling System (1/2)

Management

Entrust

Issue Labeling

Taiwan Accreditation Foundation

Council for Implementation of Product Carbon Footprint Labels

Technical Guide

Promotion

Review

Providing accreditation services for different organizations

Product Carbon Labeling Guidelines

SGS bsi. TÜV SÜD TÜVRheinland afnor GROUPE Intertek DNV BUREAU VERITAS LRQA Business Assurance

Verify

Taiwan' Carbon Labeling System (2/2)

- Establish PCR
- Calculate carbon footprint

- Top Manager Commitment
- Collect relevant data
- Verification statement issued by by third-party certification bodies

- Council
- Guidline
  - Product and service CFP calculation
  - CFP classification rules
  - Guidelines for PCR indicator
- Provide resources
  - Help manufacturers to obtain carbon labeling
  - Public education

Consultants

Manufac-turers

EPA

Verification

Accredita-tion

- Check calculate rationality
- Issue verification statement

- Supervision and inspection bureau verify the compliance of carbon footprint
- Grant the right to use the certification mark

First Step

Second Step

Carbon Labeling

Obtain raw materials | Manu-facture | Distri-bute/ Sell | Use | Recycle waste

Products





Obtain raw materials | Services | Recycle waste

Services



130g CO_2 Carbon Footprint Taiwan EPA

- Carbon labeling marks carbon footprint
- Carbon reduction labeling Marks the beginning year of carbon reduction
- Use carbon labeling as underlay, adding downward arrows in the CO_2 graphics.

Carbon Reduction Labeling

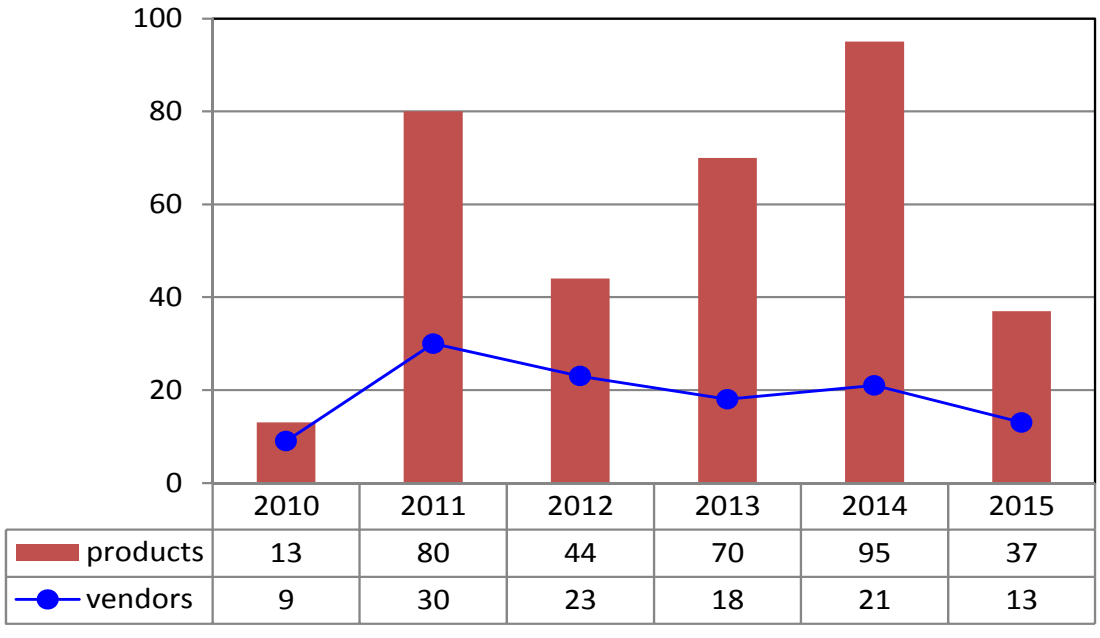
- In June 2014, EPA implemented the program of Product Carbon Footprint Reducing Labeling, urging companies to reduce carbon emission voluntarily..

Baseline application	Achieve commitments	Labeling products
Proposed baseline and commitment of carbon reduction	Review the effectiveness of carbon reduction	Grant the right to use carbon reduction labeling

Within three years

Since 2014 CO_2 Carbon Footprint Taiwan EPA

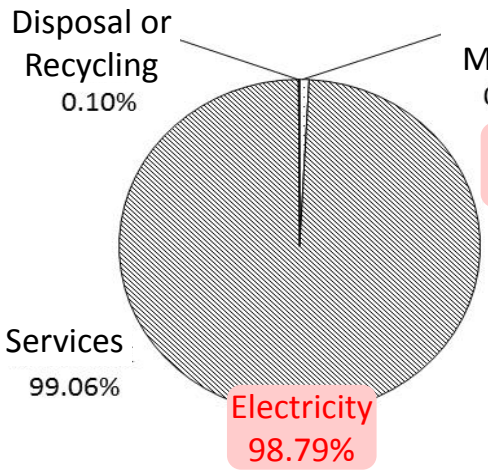
Taiwan's Carbon Labeling

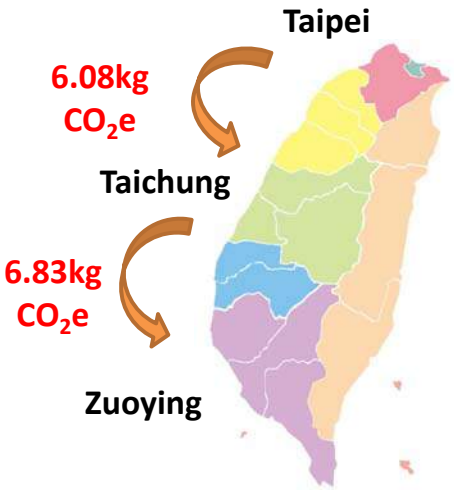


	2010	2011	2012	2013	2014	2015
products	13	80	44	70	95	37
vendors	9	30	23	18	21	13

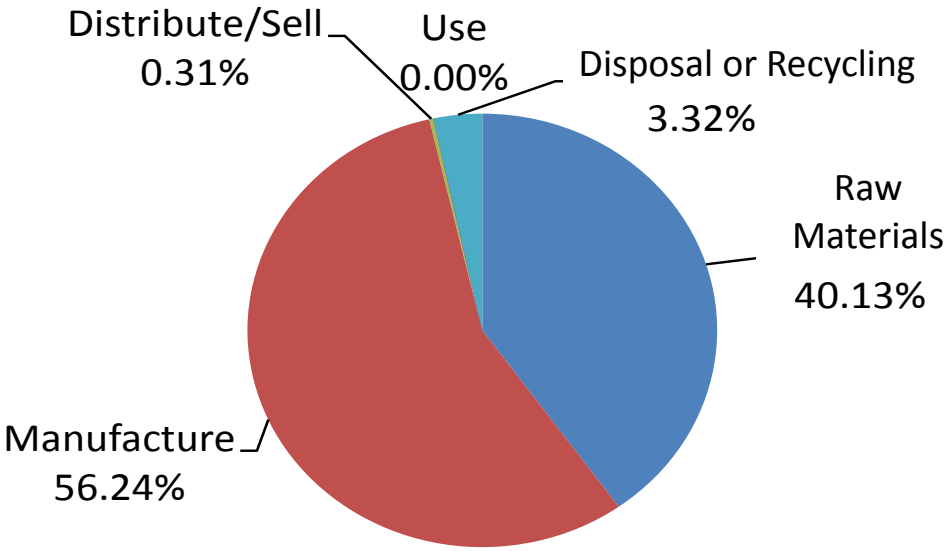
- Until October 20, 2014, Taiwan EPA has awarded 87 companies to apply Product Carbon Footprint Labeling on a total of 339 products.

The Case of Taiwan's Carbon Labeling (1/2)



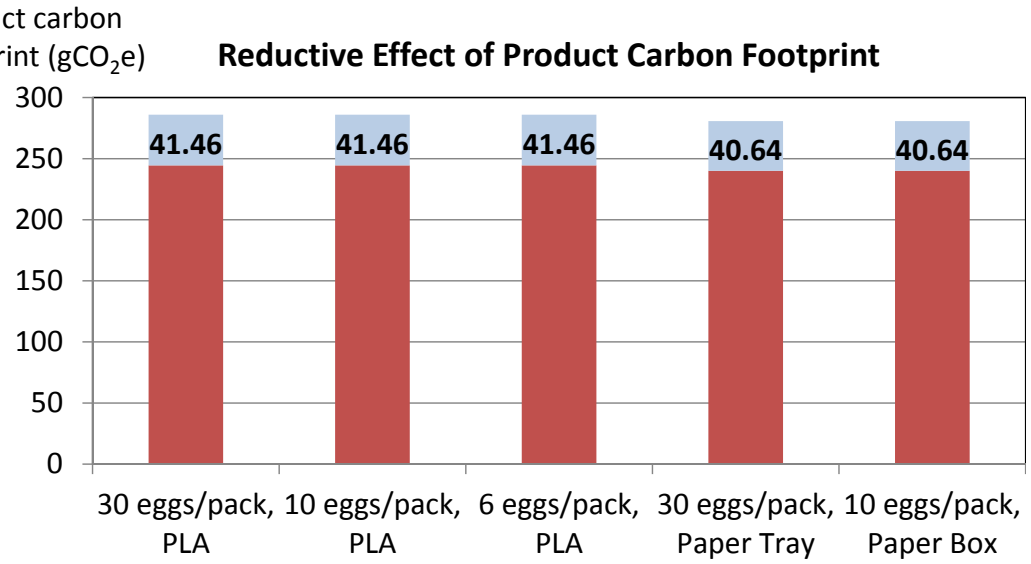


The Case of Taiwan's Carbon Labeling (2/2)



- Environmental protection administration promotion principles
  - Representative products (local characteristics)
  - The beneficial result of promotion

The Case of Taiwan's Carbon Reduction Labeling

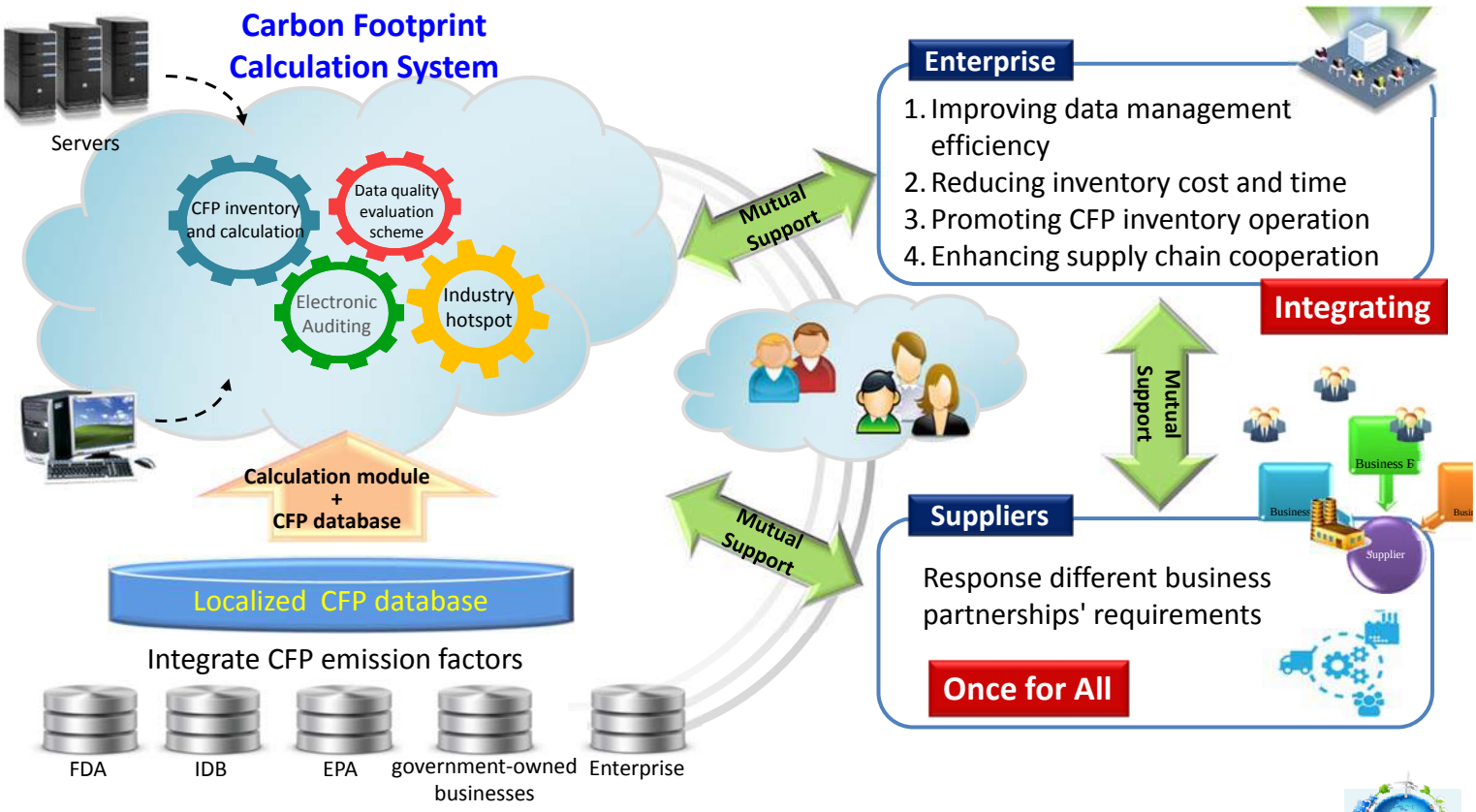


- Methodology of reducing Product Carbon Footprint
  - The amount of chicken feed reduced because the way of raising has changed
  - CH_4 emission from chicken droppings reduced

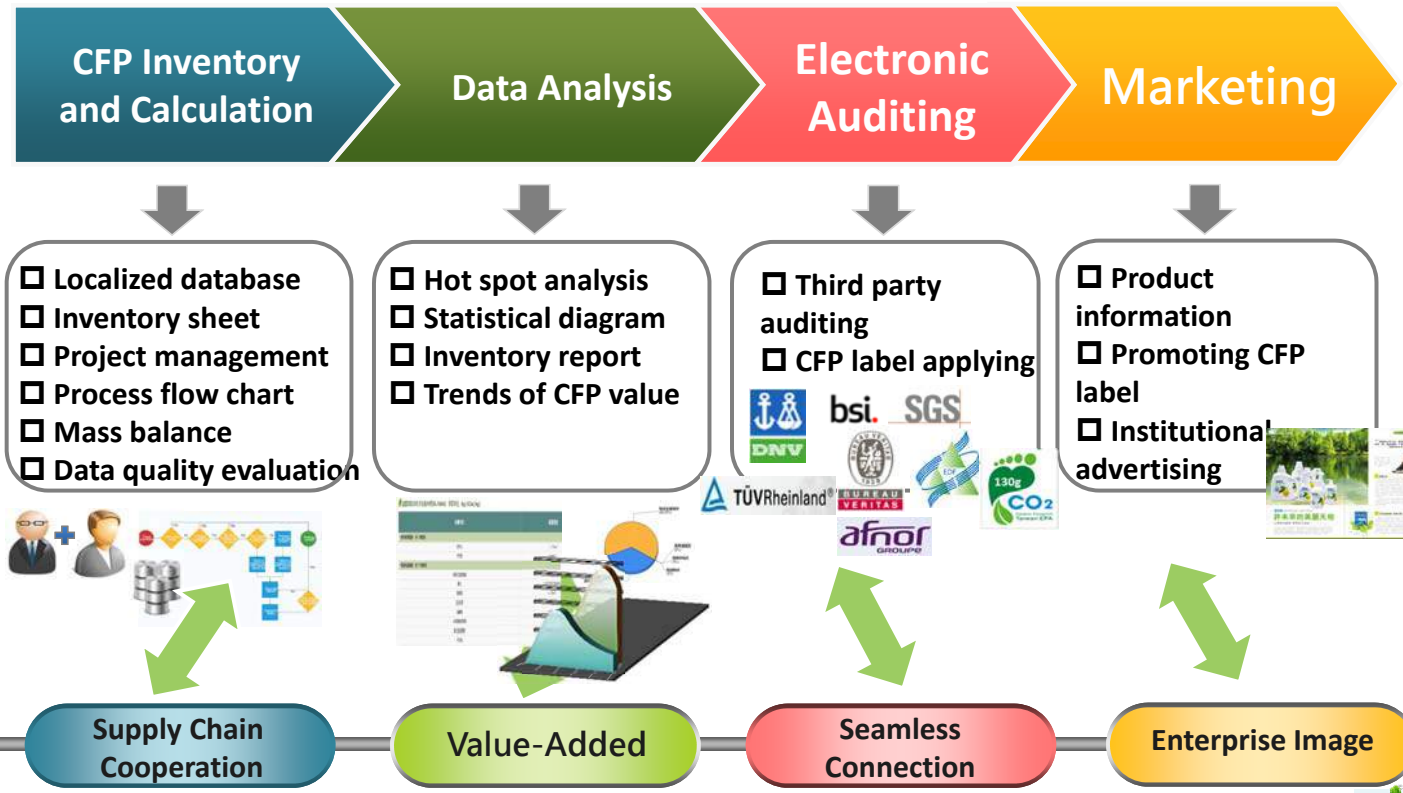
Taiwan Product Carbon Footprint Information Site

- **"Taiwan Product Carbon Footprint Site" (http://cfp.epa.gov.tw) was established and went online on May 10th, 2010.**
- **Provide search for information on product carbon footprint labeling, provide businesses to search for related regulations and online carbon footprint labeling application, rapidly spreading related information on product carbon footprint labeling mechanisms.**

Benefits of using Cloud-based Carbon Footprint Calculation System



Structure of the Cloud-based Carbon Footprint Calculation System



Characteristic of Cloud-based Carbon Footprint Calculation System

Localized Database

1. Integrate the data generated from carbon footprint emission factors in different government departments and enterprise.
2. Enables the establishment of carbon emission benchmarks for various product types in Taiwan.

Data Quality

1. Universal inventory sheet
2. Confirm inventory process and data on-line
3. Stand good quality data by understanding the relationship between mass balance and quality of calculation.

Characteristic

Openness & Transparency

1. Use of the same database improves the comparability of CFP info.
2. Shorten carbon information disclosure schedule.

Finance Control

1. Doesn't need to buy and maintain their own databases and software.
2. Accelerate follow-up inventories (Save inventory time).

Current Status of Carbon Footprint Database in Taiwan

Application Documents → Initial Verification → Advanced Verification → Final Verification → Public Announce CFP Database

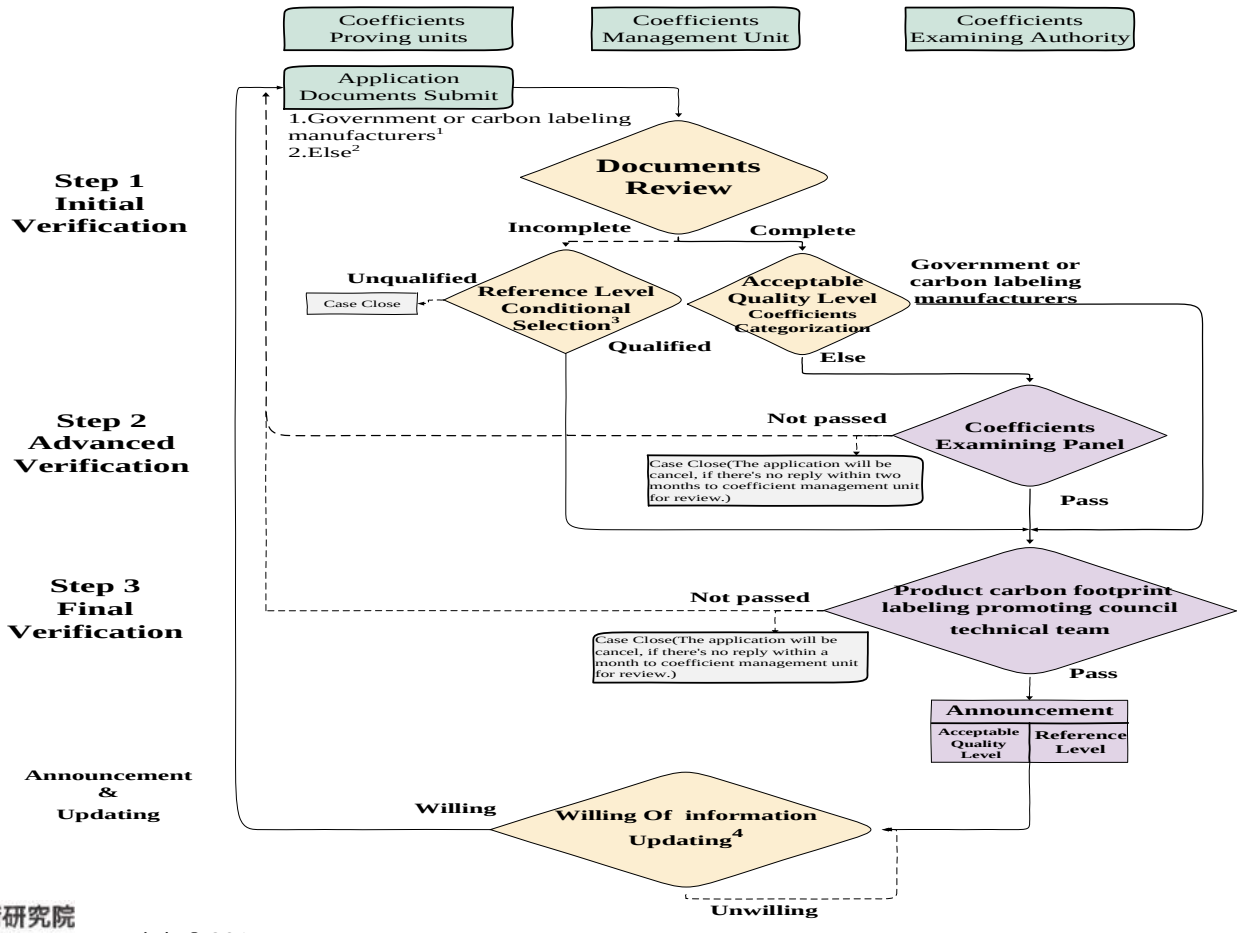
- Application Documents: Application submit by coefficients provider
- Initial Verification: Documents review are proceeded by coefficients management unit
- Advanced Verification:
  - All of the documentations are examined by coefficients examining panel
  - Member of coefficients examining panel should includes certification authority, consultants counseling, academics, industry association, and etc.
- Final Verification: Monitor by product carbon footprint labeling promoting council technical team

Cooperation of public agencies and private companies

01 Government projects
02 Carbon label
03 Industry Associati
04 Private companies
05 International database

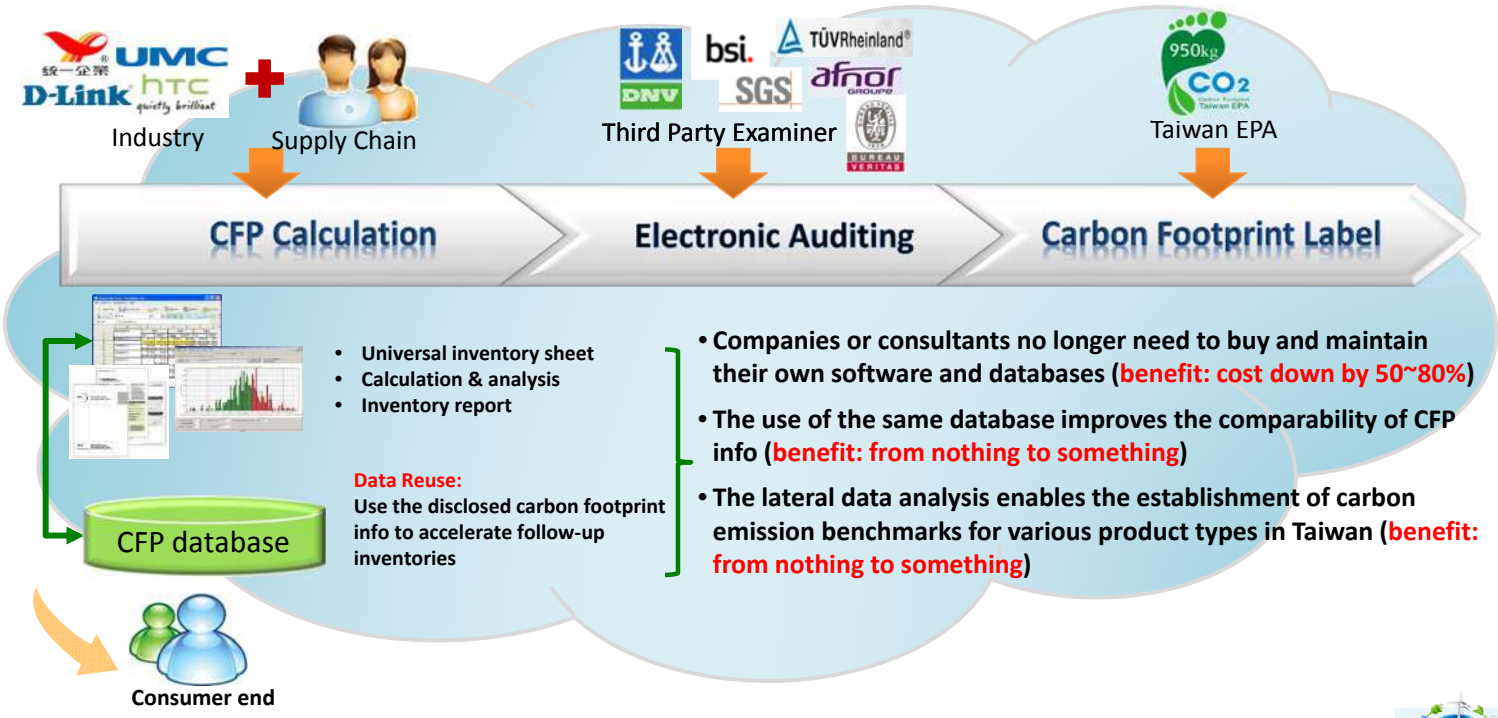
- 2012: Start setting up
- 2013: 63 sets
- 2014: Accumulating to 155 sets
- 2015: Accumulating to 321 sets
- 2016
- 2017
- 2018: Approaching 550 sets

Carbon Coefficient Verification Procedure



Benefit of Cloud-based Carbon Footprint Calculation System

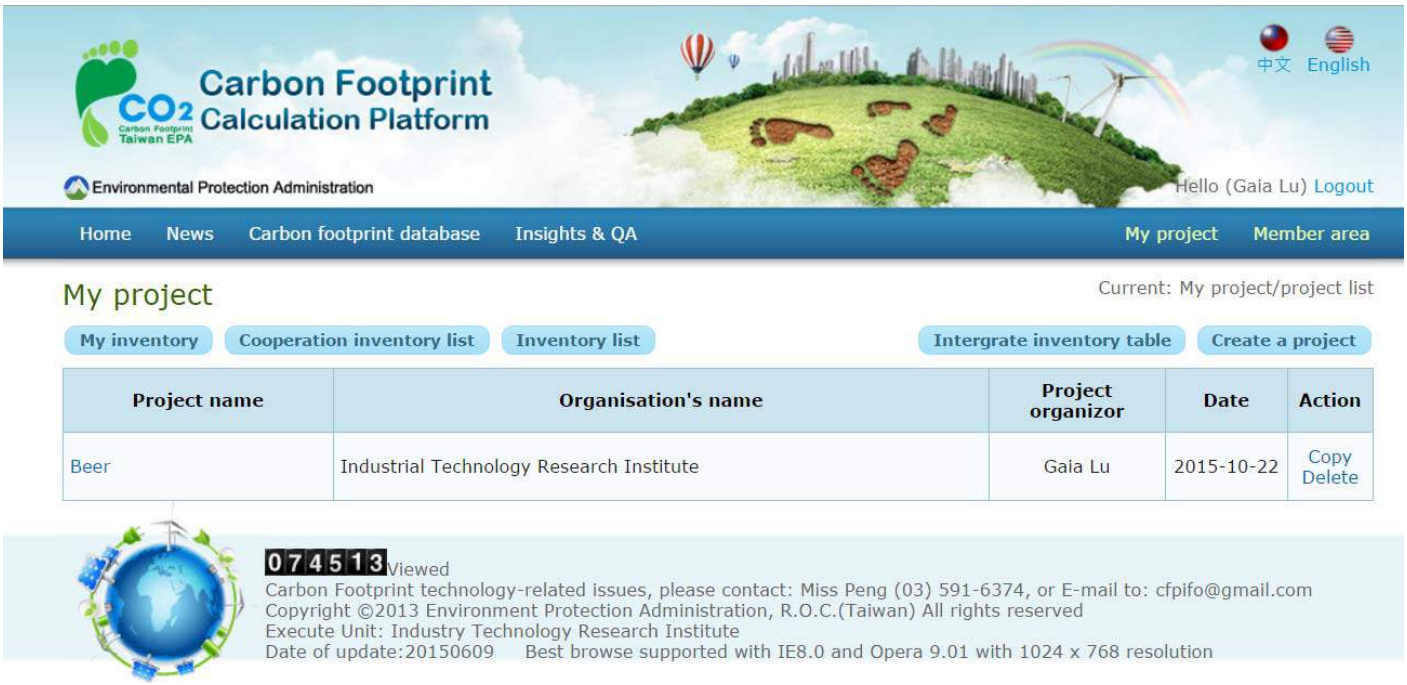
Put the expensive life cycle calculation system in the cloud.



Carbon Footprint Calculation System

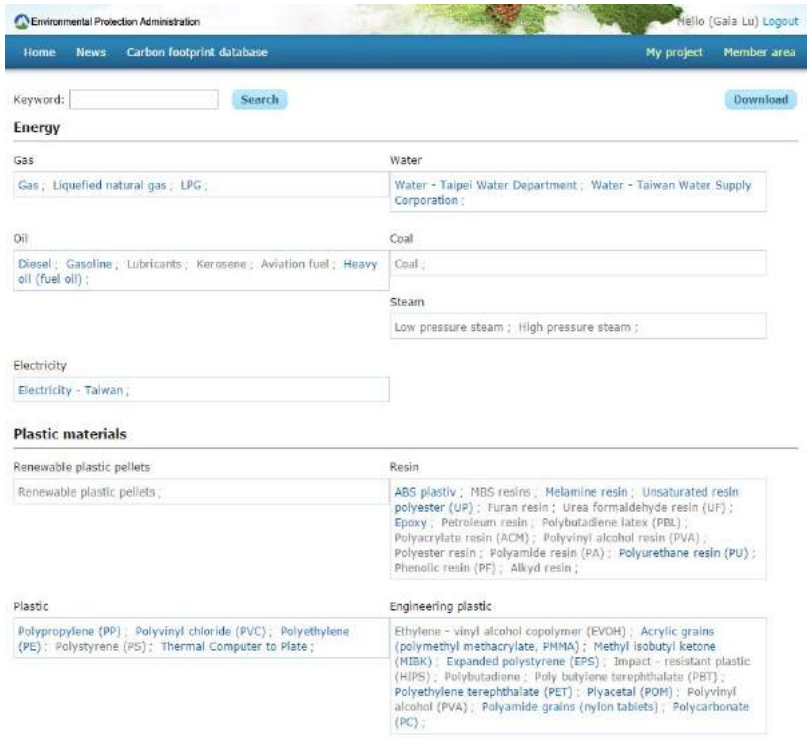
https://cfp-calculate.tw/eng/WebPage/LoginPage.aspx

My Project



Carbon Footprint Database

Expose item		Contents
Chinese name		Electrical carbon footprint (2012)
English name		Electricalcarbonfootprint(2012)
Chemical formula or Trivial name		-
Carbon footprint		6.90E-001
Unit		KgCO2e
Per unit quantities		1
Declared unit		kwh
Lifecycle category		cradle to gate
Excluded processes or items		-
Technology descriptor		1. Covers from raw material mining, raw material transportation, refining and combustion, power generation, and electricity transmission to power generation-related waste disposal. 2. Wire losses of the power network are contained in the value, but electric power users are not classified (used for lighting or other power system).
Area name		Taiwan
Valid time span		2012-01-01 ~ 2012-12-31
Data generator		101 Annual Energy Agency Energy Statistics Manual, EPA greenhouse gas emission coefficient management table version 6.0 , and Taiwan Power company website.
Emission coefficient sources		-
Product data quality score	Reliability	2
	Integrity	1
Consulting unit		Industrial Technology Research Institute
Data commissioner unit		Environmental Protection Administration, Executive Yuan, ROC (Taiwan)
Third-party certification		No
Date of publish		2014
Note		



謝謝聆聽

THANK YOU FOR YOUR ATTENTION

Advices for the ACFN

1. Establishing an Integrated Platform for CFP data exchange
   (1) Co-review the form of data from every scheme in Asia countries.
   (2)Build an unify form to organize the data from every scheme.
   (3)Sharing those information as an ASIA CFP data pool to outside of ASIA.
2. Establishing an Integrated Platform for CFP-PCR information sharing.
   (1) Understand the different between schemes.

Annex

24

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Carbon Footprint Data Quality Evaluation Scheme

International Connectivity

- Data quality documentation → ISO/TS 14048
- Data quality rating → Weidema series matrix

Data Documentation

Data documentation

1. Basic information of targeted objects	2. I/O information of unit product	3.Management information	4. Rating of the data quality • activity data • emission factor

The data quality is assured to be at good level:
This will be the first example in the world

Data quality evaluation scheme

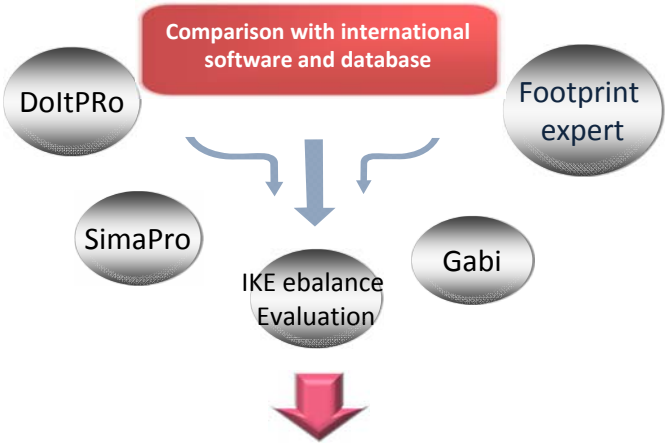
Data Quality System

- Two major tool
  - –Data format
  - –Data quality index

Data Quality System

ISO/TS 14048:2002 Data format

- 91 items



Required : 25 items

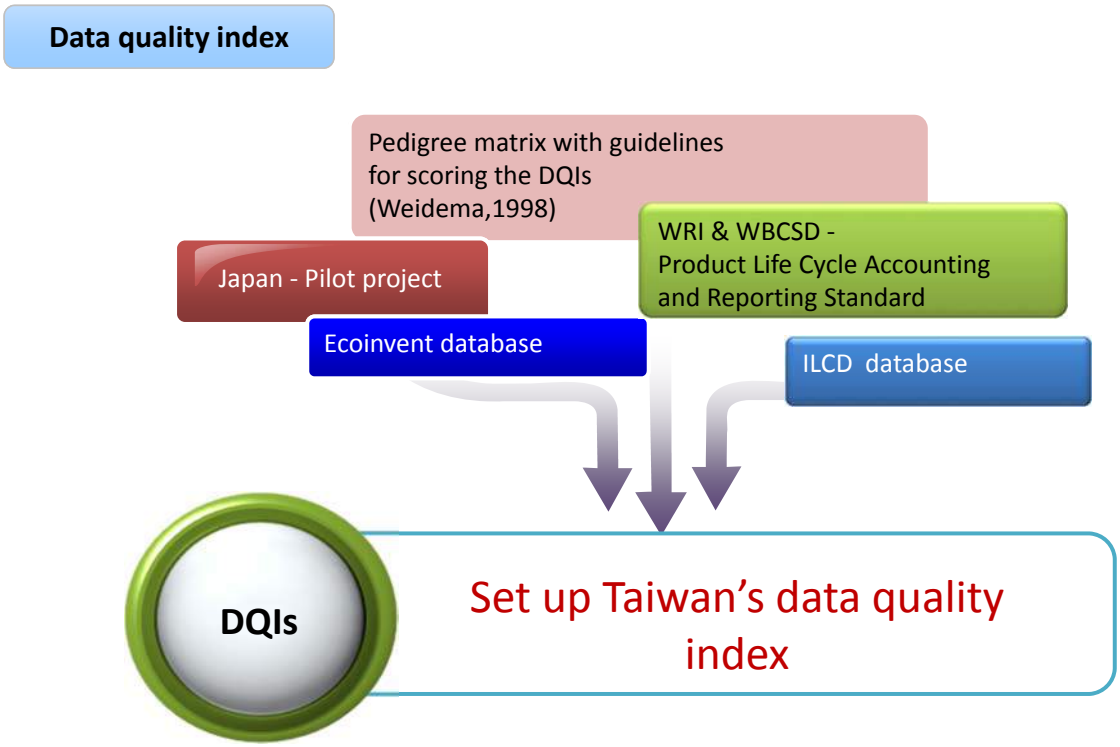
Selective : 4 items

ISO/TS 14048 (Required & Selective Field)		
1.1.1 Process's Name	1.1.8.3 Sites	1.2.14.2 Collection date
1.1.2.1Class's Name (Selective)	1.1.9.2 Sampling sites	2.2 Information Sources
1.1.2.2 Reference to nomenclature (Selective)	1.1.9.3 Number of sites	*2.4.2 Criteria for Excluding Intermediate Product Flows (Selective)*
1.1.3.3 Unit	1.1.9.4.1 Absolute	2.4.4.2 Allocation Explanation
1.1.3.4 Amount	1.2.3 Group	2.6.4 Validator
1.1.4 Technical Scope	*1.2.7.* Geographical Location (Selective*)*	3.4 Data Commissioner
1.1.6.1 Short Technology Descriptor	1.2.10.1 Name text	3.5 Data Generator
1.1.7.1 Start Date	1.2.12.2.1 Name	3.6 Data Documenter
1.1.7.2 End Date	1.2.12.3.2 Value	3.7 Date Completed
1.1.8.1 Area Name	1.2.14.1 Data collection	

Data Quality System

CNS 14048名稱	填入內容 (Content)	說明 (Explanation)
1.過程 (Process)		
1.1.1 過程名稱 (Process's Name)		
1.1.1 過程名稱 (Process's Name)	貨車_自用 (Freight car_Private uage)	填入產品過程之描述名稱， 例如螺絲製造或電路板組裝製程 (Descriptive and most commonly known name of the process.)
1.1.2. 類別 (Class)		
1.1.2.1 類別名稱 (Class's Name)		填入製程類別編號與名稱，在一類別中某過程所隸屬的名稱之規範係取自文件化的使用者界定之專門用語 (The appropriate name in the class that specifies the process according to a class-nomenclature.)
1.1.2.2 專門用語參照 (Reference to nomenclature)		填入1.1.2.1.之參考來源 (Reference to nomenclature) 例如國際工業分類標準(International Standard Industrial Classification,ISIC) http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=27 中華民國國家標準(CNS NO) http://www.cnsonline.com.tw/ 中華民國輸出入貨品分類表(CCC cdoe) https://fbfh.trade.gov.tw/rich/text/indexfh.asp 化學文摘服務(CAS NO) http://sp.chemnet.com/cn/ 中華民國行業標準分類，http://www.stat.gov.tw/lp.asp?CtNode=1309&CtUnit=566&BaseDSD=7&mp=4
1.1.3. 量化參考 (Quantitative Reference)		
1.1.3.3 單位 (Unit)	延噸公里 (TKM)	參考產品類別規則(PCR)或盤查報告書，請填入功能單位或宣告單位(個數、公升、公斤、平方公尺等) (The unit of the quantitative reference)
1.1.3.4 數量 (Amount)	1	上述量化參考數量,預設為1.0 (The amount of the quantitative reference)
		描述功能單位或宣告單位與重量的轉換方式
1.1.4 技術範疇 (Technical scope)		
1.1.4 技術範疇 (Technical Scope)	搖籃到大門	從涵蓋於數據內的操作為觀點，使用專門用語對過程的技術範疇簡短通述專門用語。 產品涵蓋範圍: 搖籃到大門(Cradle to gate)、搖籃到墳墓(Cradle to grave)、大門到大門(Gate to gate)及大門到墳墓(Gate to grave)。
1.1.6 技術 (Technology)		
1.1.6.1 簡短技術描述 (Short Technology Descriptor)	利用油品燃燒，產生動力，進行貨物運送服務 (Transportation service by fuel consumption)	產品生產技術進行簡短描述(Short description of the included technology.)
1.1.6.3 技術圖 (Technology Picture)		Graphic representation of the technology e.g. a graphical flowchart of the process.

Data Quality System



Data Quality Index

Indicator score	1	2	3	4	5
Reliability (Re)	1.Verified data based on measurements	2.Verified data partly based on assumptions OR nonverified data based on measurements	3.Non-verified data partly based on qualified estimates	4.Qualified estimate (e.g. by industrial expert); data derived from theoretical information (stoichiometry, enthalpy, etc.)	5.Non-qualified estimate
Completeness (Co)	1.Representative data from all sites relevant for the market considered over an adequate period to even out normal fluctuations	2.Representative data from >50% of the sites relevant for the market considered over an adequate period to even out normal fluctuations	3.Representative data from only some sites (<<50%) relevant for the market considered OR >50% of sites but from shorter periods	4.Representative data from only one site relevant for the market considered OR some sites but from shorter periods	5.Representativeness unknown or data from a small number of sites AND from shorter periods
Time-related representativeness (Ti)	1.Less than 3 years of difference to our reference year (2012)	2.Less than 6 years of difference to our reference year	3.Less than 10 years of difference to our reference year	4.Less than 15 years of difference to our reference year	5.Age of data unknown or more than 15 years of difference to our reference year
Geographical representativeness (Ge)	1.Data from area under study	2.Average data from larger area in which the area under study is included	3.Data from smaller area than area under study, or from similar area	4.Data from area with slightly similar cost condition, different currency	5.Data from unknown OR distinctly different area (north america instead of middle east, OECD-Europe instead of Russia)
Technological representativeness (Te)	1.Data from enterprises, processes and materials under study (i.e. identical technology)	2.Data from processes and materials under study from different enterprises, similar accounting systems	3.Data on related processes or materials but same technology, OR Data from processes and materials under study but from different technology	4.Data on related processes or materials but different technology, OR data on laboratory scale processes and same technology	5.Data on related processes or materials but on laboratory scale of different technology

Data Quality System

How to combine data quality rating of active data and emission factor together ?
Considering the formula of GHG …

GHG= Activity Data * Emission Factor

$$DQR_{Ni} = DQR_{Ai} \times DQR_{Ei}$$

where
DQR_{Ni} : the product of DQR_{Ai} and DQR_{Ei} for each indicator;
DQR_{Ai} : data quality rating of active data;
DQR_{Ei} : data quality rating of emission factor.

adopting the concept of matrix

Active Data (DQR_{Ai}) X Emission Factor (DQR_{Ei})	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Data quality system

Transform DQR_{Ni} to DQRi

Grade	Transformation of DQR_{Ni} Active Data (DQR_{Ai}) X Emission Factor (DQR_{Ei})		
1	1	2	3
2	4	5	
3	6	8	9
4	10	12	16
5	15	20	25

Transfer the multiplied value to data quality score a for each indicator

Get the data quality rating for each indicator

$$DQRi = \frac{Re+Co+TiR+GeR+TeR+Xw*5}{i+5}$$

where ,
Re : Reliability
Co : Completeness
TiR : Time-related representativeness
GeR : Geographical representativeness
TeR : Technological representativeness
Xw : weakest quality level obtained (i.e. highest numeric value) among the data quality indicators
i : number of applicable (i.e. not equal "0") data quality indicators

Data Quality Rating Formula

$$DQR = \frac{Re+Co+TiR+GeR+TeR+Xw*5}{i+5}$$

where ,
Re ：Reliability
Co ： Completeness
TiR ： Time-related representativeness
GeR ： Geographical representativeness
TeR ： Technological representativeness
Xw ： weakest quality level obtained (i.e. highest numeric value) among the data quality indicators
i ： number of applicable (i.e. not equal "0") data quality indicators

Data quality system

$DQRw = DQR*Fi$
where,
DQR_W ：the weighting of each indicator;
DQR ： data quality level for each input/output item
F_i ：the ratio of CO2 emission

Extend to 100%

$DQR_{Total} = (\Sigma DQR_w)/(\Sigma F_i)$
where,
DQR_{Total} ：Overall data quality rating of the LCI data set

Overall data quality rating (DQR)	Overall data quality level
DQR≤ 1.7	High quality
1.7 < DQR ≤ 3.0	Basic quality
3.0 < DQR ≤ 5.0	Data estimate

"CF Calculator and CF Scanner"
:Innovative Applications from Thailand

Phakamon Supappunt
Program Manager
Thailand Greenhouse Gas Management Organization

TGO's Role

TGO as the Designated National Authority for CDM office in Thailand;

- We have activities to promote and support GHG emissions reduction that have been developed by the TGO and collaborative organizations.
- One of the most outstanding achievements is the promotion of carbon labeling in the country.

Carbon Footprint of Products

- TGO and MTEC (National Metal and Material Technology Center of Thailand) launched the “Carbon Footprint of Products” Project in Thailand in 2009.

- Objectives: To promote the use of a carbon footprint on Thai products; which in turn could increase the competitiveness of Thai industries for meeting the global trend market and to provides GHG emission of products to consumers.

Carbon Footprint of Product >> Carbon Footprint Reduction (CFR)

- TGO launched the “Carbon Footprint Reduction in 2014, to demonstrate an achievement in reduction the product’s carbon footprint through its life cycle.
  - Achieving in reduction of its present year carbon footprint when compare to its base year's carbon footprint which shall not less than 2% or
  - Achieving in reduction of its carbon footprint which shall lower or equal to the benchmarking threshold of each product category set by TGO

Current status: 1,353 products/331 companies (15/11/57)

Carbon Footprint Reduction : 112 Products /29 companies (reduced GHG 121,474 tCO_2)

The World Business Council for Sustainable Development

Climate change, corporate response and carbon footprint

Mark Didden

Manager, Redefining Value

Hong Kong, October 2015

wbcsd

1. WBCSD Introduction

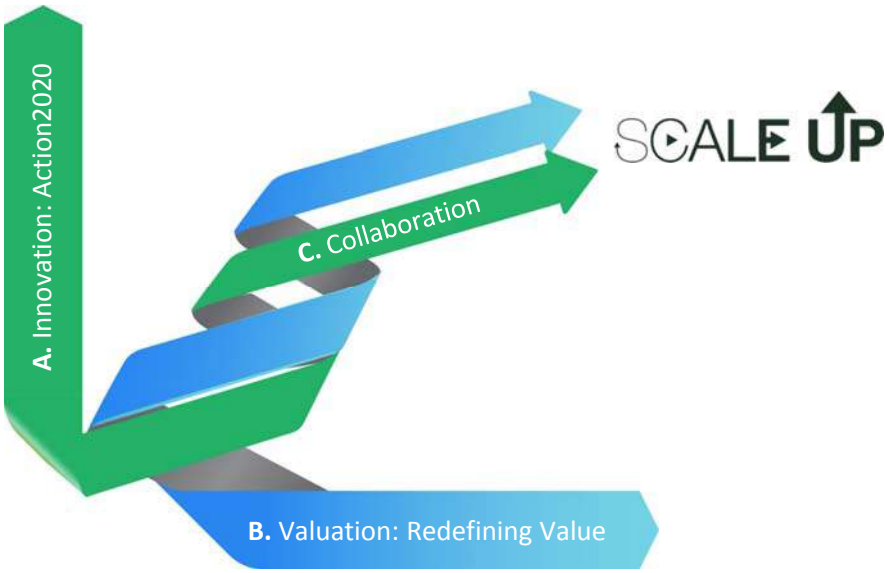
wbcsd

About the WBCSD

- CEO-led organization of some 200 global forward-thinking companies that galvanizes the global business community to create a sustainable future for business, society and the environment
- Vision2050: 9 billion people, living well, within the limits of the planet
- 9 priority areas informed by science

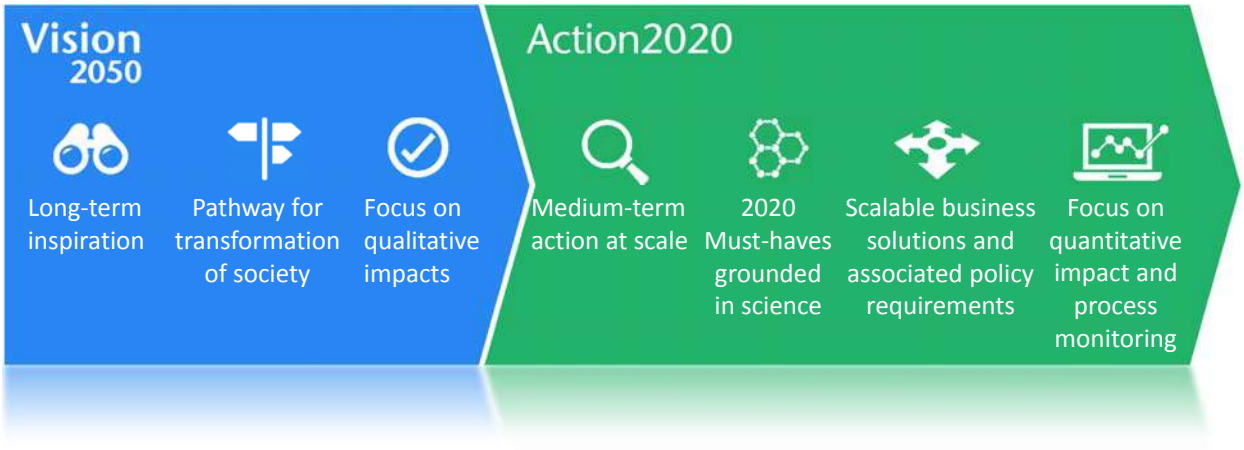
wbcsd

WBCSD Strategy: Scaling up Business Solutions



wbcsd

A. From Vision to Action



wbcsd

Action2020

Objectives:

- Set the sustainable business agenda for the decade on a platform for joint action
- Develop business solutions that address social and environmental challenges most in need of attention, where business can have highest impact
- Coordinate scalable sustainability actions to work on collaboratively across sectors

Visit our website

wbcsd

The EU Environmental Footprint (PEF/OEF) Pilot Process

- Jan Christian Polanía Giese

- Asia Carbon Footprint Network Conference 2015
- Hong Kong, 26-27 October 2015

PEF World Forum

What is Environmental Footprinting?

But can it be part of the solution for SCP?

A one-fits-all solution?

PEF World Forum

OVERVIEW

- About the PEF World Forum & THEMA1
- Policy Background
- The Development Process Of The Environmental Footprint Methodology
- Experiences during the pilot phase
- Outlook on communication

PEF World Forum

Thema1

- Berlin based think-do-tank
- Key expertise:

Skills	Issues
Building Single Issue Alliances	Environmental Footprinting
Facilitation/ Hosting/ Events	Footprinting/Energy/ Renewables/
Stakeholder Dialogue / Communications	Music/ Entertainment/ Film

- Selected projects:

BERECHNET CO2 Fußabdruck www.pcf-projekt.de

Product Carbon Footprint Pilot Project Germany

PEF World Forum

Product Environmental Footprint World Forum

PEF World Forum

Product Environmental Footprint World Forum

The PEF World Forum - formerly known as PCF World Forum - is a neutral platform for companies and their stakeholders to reflect and act on challenges, practical experiences, initiatives, tools and insights towards climate-conscious and environmentally sound value chains. The PEF World Forum is a network of international organisations. www.pef-world-forum.org

The PEF World Forum is a project by think-do-tank THEMA1.

PEF World Forum

PEF World Forum

PEF World Forum

Japan Environmental Management Association for Industry

ACFN Conference 2015 in Hong Kong

CFP (Carbon Footprint of Products) Communication Programme in Japan and current state of play

Akira Kataoka
General Manager

Eco-Design office, LCA Centre,
Dept. of Product and Environmental Aspects. JEMAI

26 October 2015

JEMAI's main activities

LCA
Life Cycle Assessment

Labelling programmes

LCA consulting
- Conduct 3rd party reviews for companies
- Assist CSR reports, e.g. critical reviews
- Organise LCA seminars

LCA expert certification
- Conduct LCA Society of Japan exams

MiLCA (LCA calculation software)

http://www.milca-milca.net/english/

Secretariat
- LCA Society of Japan (JLCA)
http://lca-forum.org/

Overseas support
- Provide experts to overseas countries

ISO Subcommittee Secretariat
- ISO secretariat for ISO/TC 207 subcommittees
SC3: Environmental Labelling, SC4: Environmental Performance Evaluation, SC5: Life Cycle Assessment (LCA) SC7, greenhouse gas management, and related activities.

Chemical Risk Management

JEMAI iCHEM
(International Support Centre for Chemicals Management
- Regulatory and strategic consulting, GHS services
- Help companies comply with chemical management regulations

JAMP

The Joint Article Management Promotion-consortium

http://www.jamp-info.com/english

Pollution Control Managers

Air Pollution, Water Pollution, Noise and Vibration Abatement, Specific Dust Pollution, General Dust Pollution, Dioxins Pollution

Environmental Management System Auditing

Eco Products exhibition (since 1999)

Largest environmental fair in Japan, attracting over 180,000 visitors from businesses, government, academia, general consumers interested in environmental issues.

Organised every December

http://eco-pro.com/2015/english.html

History of CFP Communication Programme

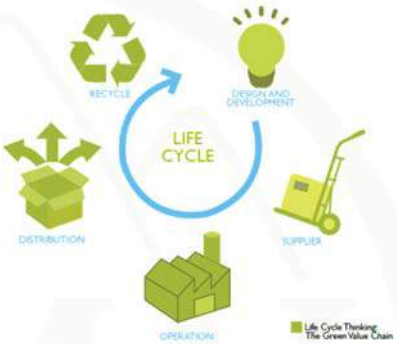
2008	Cabinet decision made to approve the Action Plan for Achieving Low-Carbon Society.
2009	Ministry of Economy, Trade and Industry (METI) conducted preliminary feasibility study for Carbon Footprint of Products (CFP) project. METI launched CFP project as a pilot project JEMAI joined the project.
2012	Pilot phase completed. CFP project transferred to JEMAI. Renamed as 'CFP Communication Program', with changes to improve cost-effectiveness of the programme.

- CFP Communication programme aims to:
  - visualise 'carbon-hotspots' in a product's life cycle
  - promote communication between companies and consumers, with a view to accelerate the move towards a low-carbon society.
- Programme conforms to ISO 14040, ISO 14044 and ISO/TS 14067.
- No legal framework for the programme.
  - all the activities related to the programme undertaken on a voluntary basis.

Assessment

<u>Assessment standard of carbon footprint</u>

- LCA is used in the CFP Communication Program to calculate the amount of GHG emissions associated with products.



<u>Database</u>

Three databases and one library are made available:

- Basic secondary database
- Database on distance data between countries and regions
- Heating value database
- Data library (as secondary data)

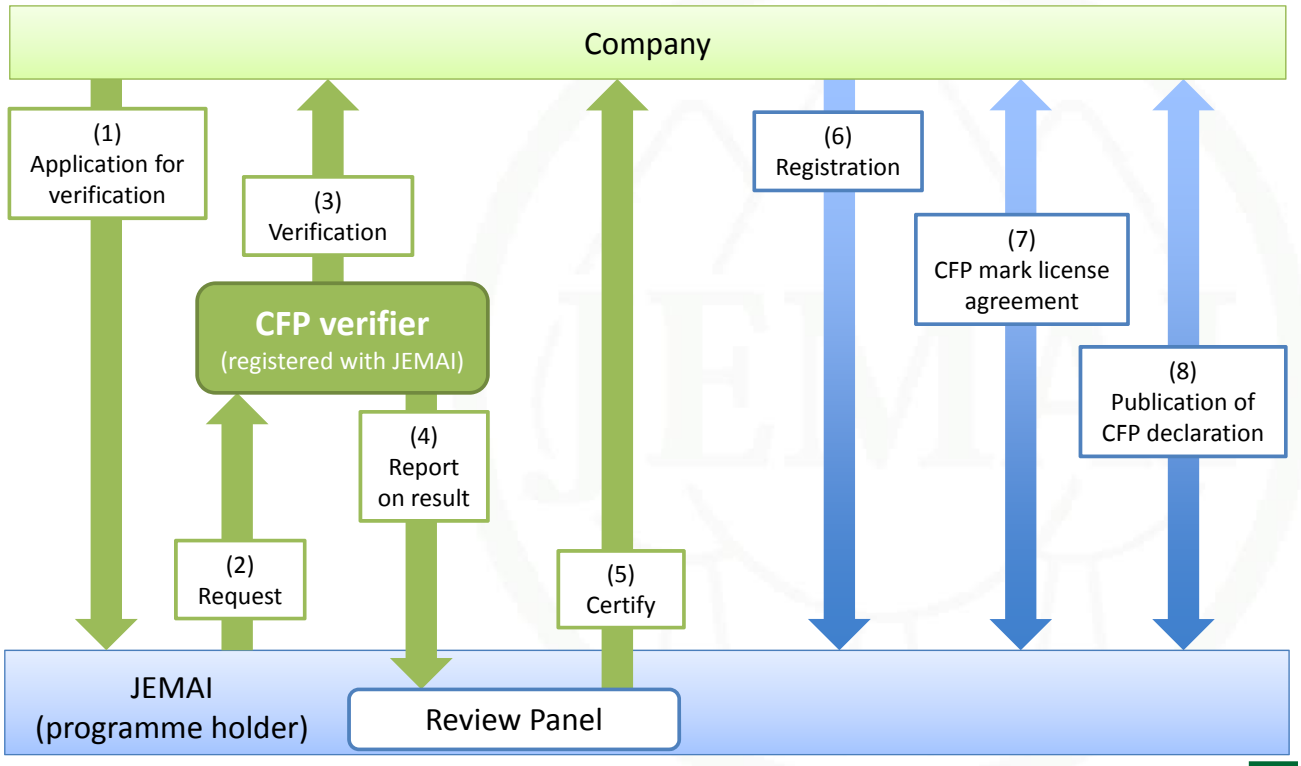
Application, Verification and Certification

Permission to use CFP logo is granted through 3-step application procedures:

1) Selection of existing CFP-PCR or Development of CFP-PCR for a new product category
   - A company wishing to register its product selects a PCR from the existing CFP-PCRs.
   - If an appropriate PCR does not exist, the applicant company develops its own CFP-PCR.
2) CFP calculation and verification
   - Once the applicable PCR is set, the applicant company conducts the calculations for its product using the selected/developed PCR.
   - Submits the result to the third party verifier.
   - If the result passes the verification, the applicant company may apply for the registration
3) Application for registration and publication of CFP
   - Permission to use the CFP mark is granted to the company.
   - CFP logo may then be used for the product on the market.

- JEMAI's CFP Program offers two methods of verification:
  - Product-by-Product Verification
  - System Certification
- Both methods are third-party verified and equally valid.

Product-by-Product Verification



International Pprocesses on Carbon Footprint Methodologies

1. Current ISO/TS 14067;2013
2. New Work on ISO CFP
3. Future Trend
4. Intergovernmental network of LCA Database

Asia Carbon Footprint Network: 2015 Conference
Hong Kong, 26-27 October 2015

Atsushi INABA
Professor, Department of Environmental and Energy Chemistry
Faculty of Engineering, Kogakuin University

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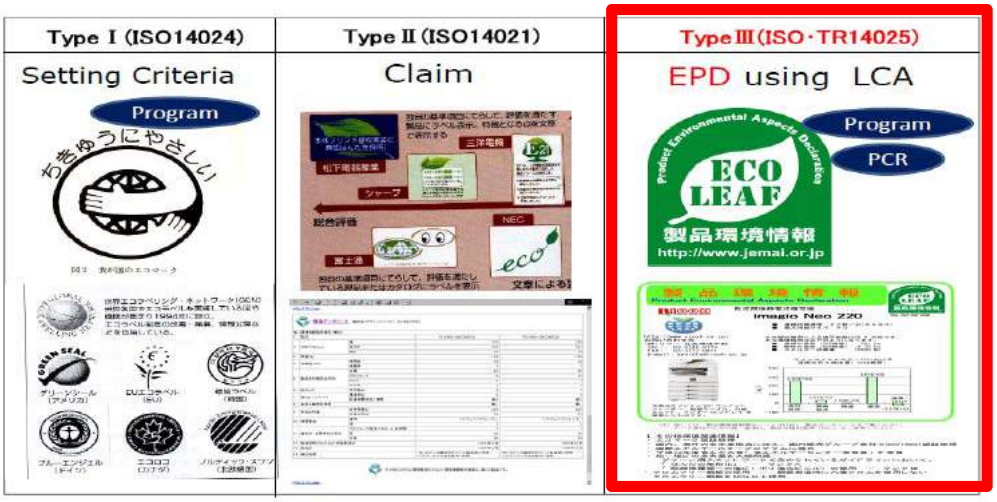
Phone;+81-3-3340-2679 Fax;+81-3-3340-0147
e-mail: a-inaba@cc.kogakuin.ac.jp

工学院大学
KOGAKUIN UNIVERSITY

We thought -----



focus on GHG

show the LCA result on the package

Carbon Footprint

EPD and Carbon Footprint

EPD(EcoLeaf in Japan) is “Declaration” using the web.
Carbon footprint is:
① limited to GHGs;
② directly labeled the number on Package of Product;
③ mainly targeted on food and necessities.

International Pprocesses on Carbon Footprint Methodologies

1. **Current ISO/TS 14067;2013**
2. **New Work on ISO CFP**
3. **Future Trend**
4. **Intergovernmental network of LCA Database**

Atsushi INABA

工学院大学
KOGAKUIN UNIVERSITY

ISO/TS 14067(2013)
Carbon footprint of products — Requirements and guidelines for quantification and communication

- 2008, Jan：Working group was established in SC7
  Chair：Kraus Radunsky（Austria）
  Co-chair：Daegyun Oh (Korea)
  Secretary：Katherina Wührl（Germany）
- 2008, Nov：NWIP was endorsed.
  Started Part1(quantification) and Part2(communication)
- 2009, Jan：The 1st Meeting(Kota Kinabalu)
- 2011, Jan:The 6th Meeting(Italy/Tolieste) Merging Part1 and Part2.
- 2011, Nov：The 10th Meeting(Toronto) Voting of DIS→Disapproved
- 2012, Jun：The 11 th Meeting(Bangkok)）Voting of DIS.2→Disapproved
- 2013, May：Voting of TS→Published as TS-14067

Disapproval to TS：Argentina, Brazil, China, Colombia, India, Trinidad and Tobago
*Uncertainty of the data, Difficulty for counting GHGs, Focusing only GHGs,
* Shall be a guidance without any requirement, etc.

Main “shall” and Should”

- (6.3.4.1) CFP and the partial CFP shall not include offsetting.
- (6.4.8) GHG arising from the life cycle of a product shall be calculated over the entire life cycle of the product, including the use stage and the end-of-life stage.
- (6.4.9.2) GHG emissions and removals arising fossil and biogenic carbon sources and sinks shall be included.
- (6.4.9.3) GHG associated with Electricity shall include life cycle data.
- (6.4.9.4) LUC(Land use change) GHG shall be documented separately. Indirect land use change(iLUC) should be considered.
- (6.4.9.5) GHG occurring as a result of soil carbon change should be included.
- (6.9.6) carbon storage shall be treated in 6.4.8.
- (6.4.9.7) The non CO_2 GHG(e.g. N_2O and CH_4) shall be included.
- (6.4.9.8) aircraft GHG shall be included.

The Introduction of Low-carbon Certification in China and the Way Forward

Oct 26th, 2015 Hong Kong

ZHOU Caihua
Deputy Director
Climate Change Department
China Environment United Center (CEC)

Content

1

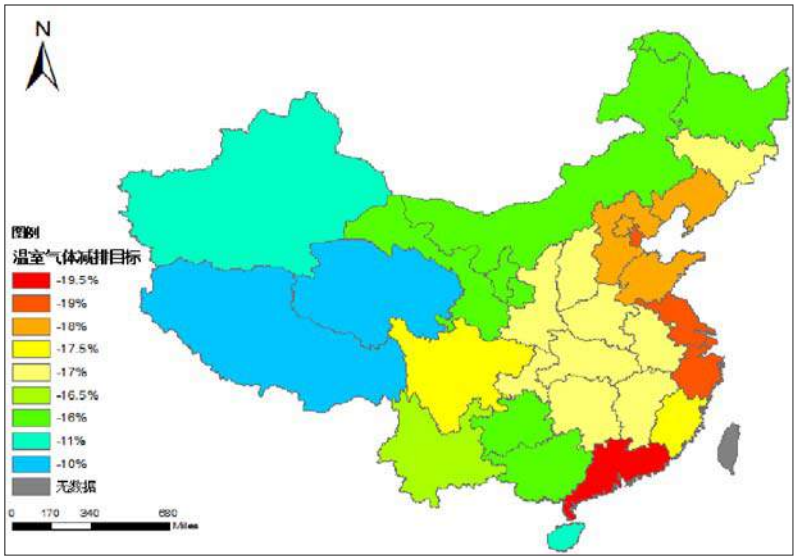
The Climate Change Policy Background in China

1.1 The carbon intensity Object in China

2015 Vs 2010	2020 Vs 2005	2030 Vs 2005
↓ 17%	↓ 40-45%	↓ 60-65%

1.2 The target decomposition

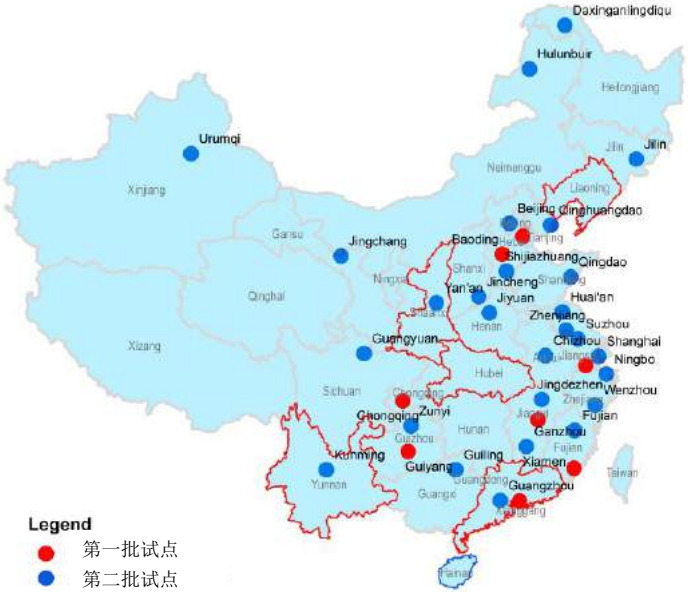
The carbon emission reduction target per GDP have been broke down from top-down. 单位GDP碳排放下降指标自上而下逐级分解

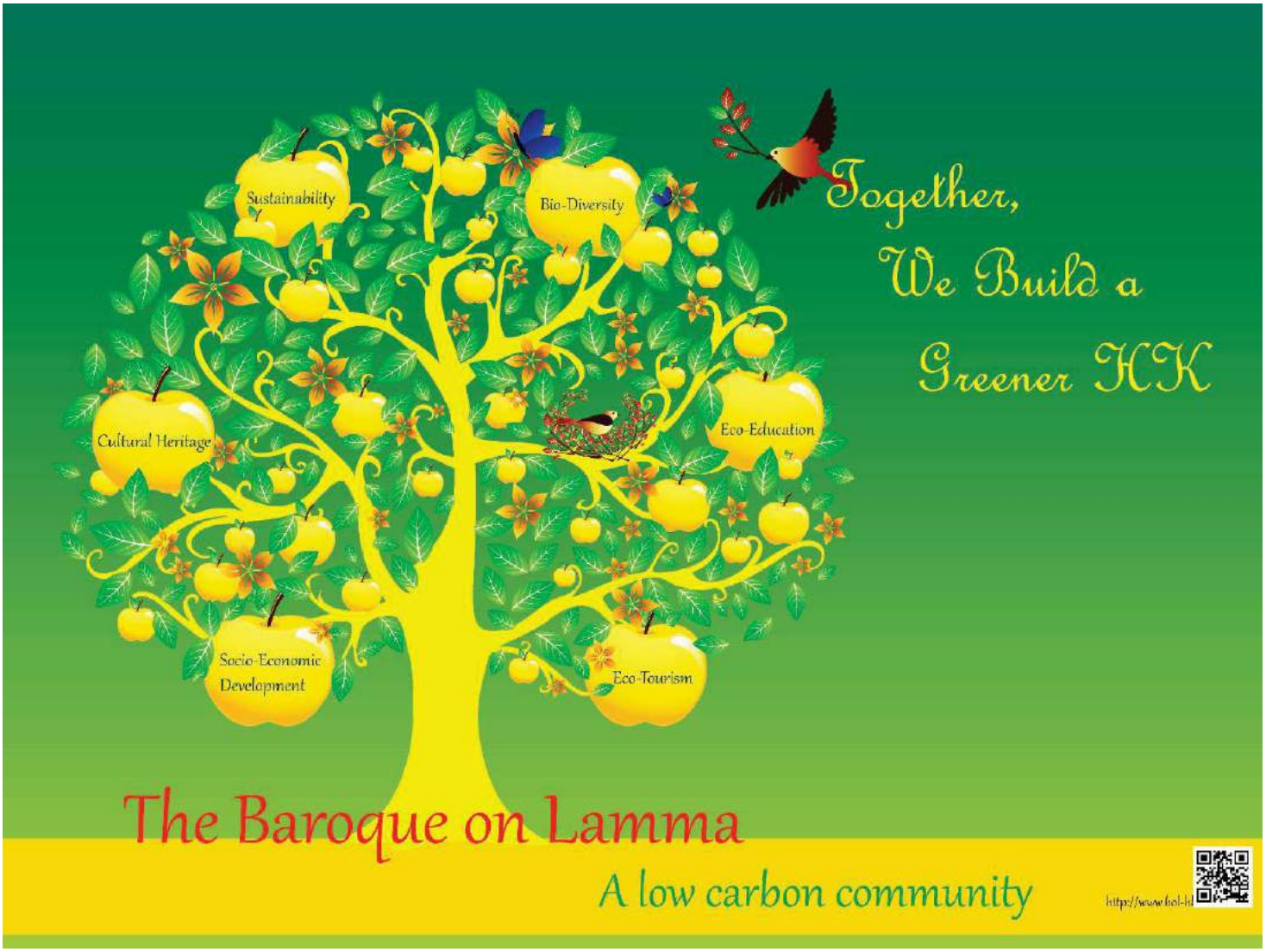


The province carbon emission reduction target per GDP Date resource：《“十二五”温室气体排放控制目标实施方案》

1.3 The Pilot Provinces and Cities in China

The first and second groups of National Low-carbon Pilots





The making of a low carbon community

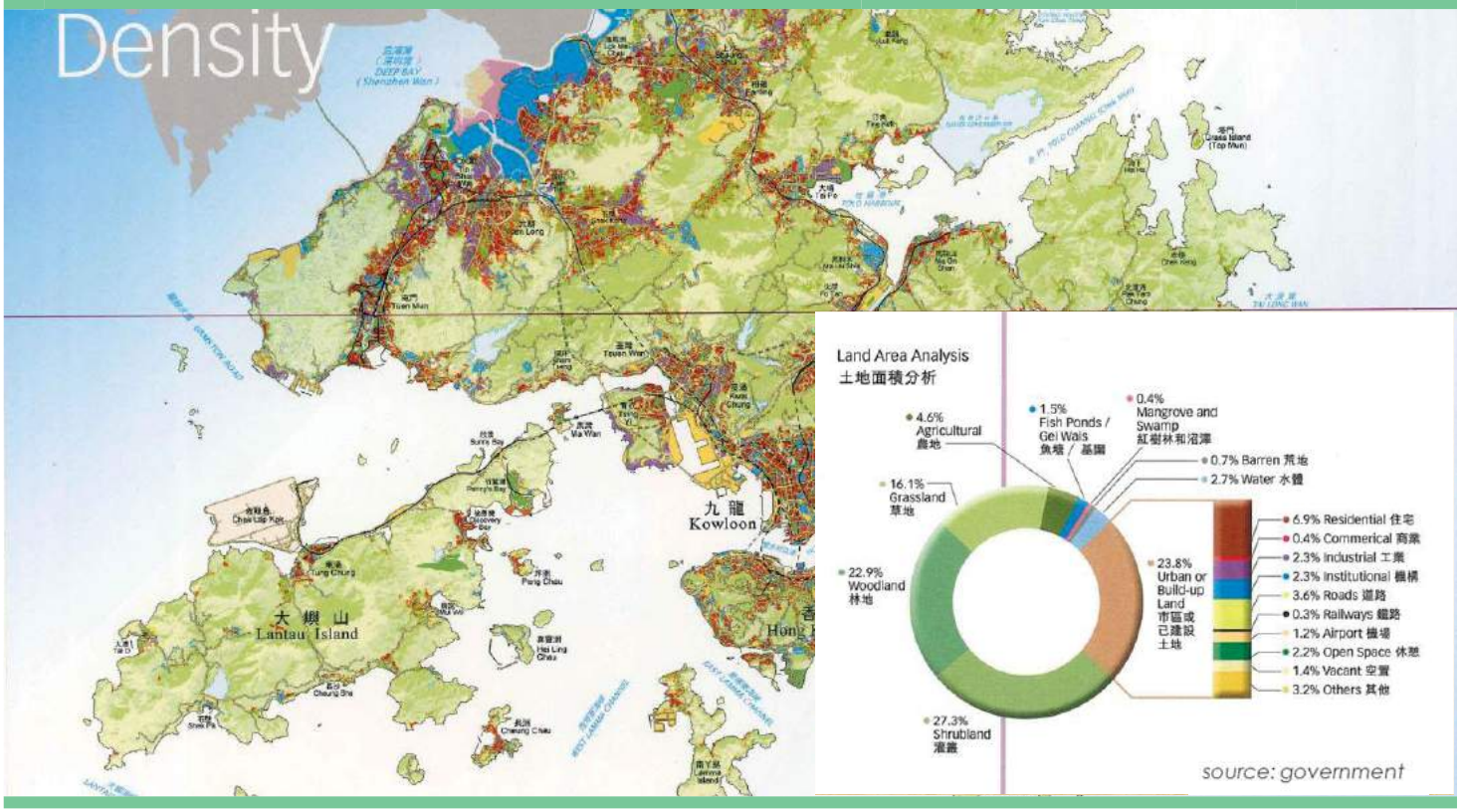
Three steps towards a low carbon community:

1. Reduction of GHG by preserving existing trees and planting new ones.

development necessarily in conflict with conservation?

Hong Kong's current Land Use by Proportion:

woodland, mangrove, swamp and water:	26.0%
Urban or build up land:	23.8%
Agricultural land & fish pond:	6.1%
Grassland, shrub land and barren land:	44.1%



We believe it is possible to minimize impact on existing woodland without stopping development,

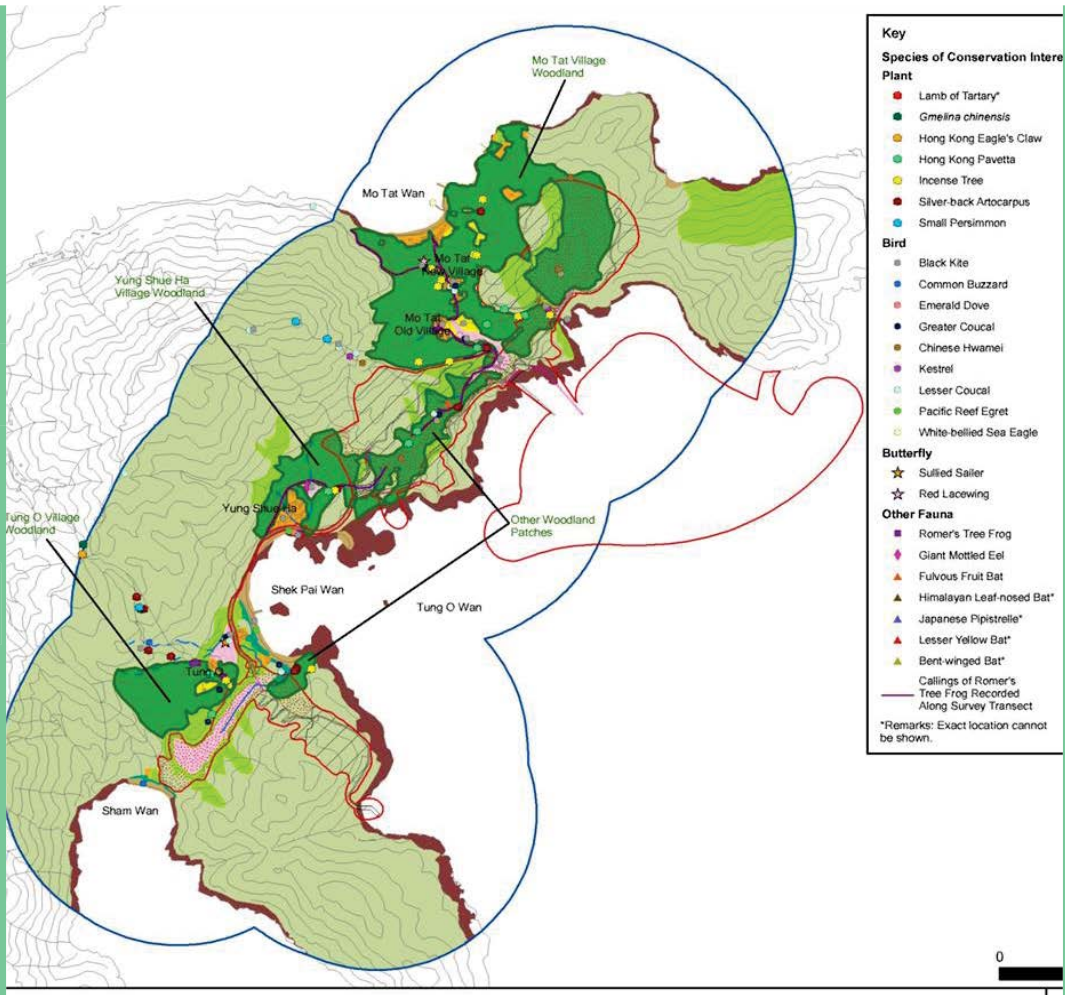
Bearing in mind we only need an extra 4% of land for the anticipated 1 million additional population

Starting with the Master Plan:

Preserving existing Secondary Woodland

Not only preserving local bio-diversity

Building on existing grassland/shrub land and planting of additional trees remove further amount of GHGs.



Habitat Map and Locations of Species of Conservation Interest Recorded (Keyplan)

g0116093_Habitat_Species.mxd

ASIA CARBON FOOTPRINT NETWORK CONFERENCE 2015
"CARBON FOOTPRINT AND LABELLING SCHEMES:
RECENT DEVELOPMENTS AND THE WAY FORWARD"

DECARBONISATION OF PUBLIC HOUSING DEVELOPMENTS :

THE INSIDE STORY

ADA Y. S. FUNG, JP
FHKIA, RIBA, REGISTERED ARCHITECT, APEC ARCHITECT
DEPUTY DIRECTOR OF HOUSING (DEVELOPMENT & CONSTRUCTION)
HONG KONG HOUSING AUTHORITY

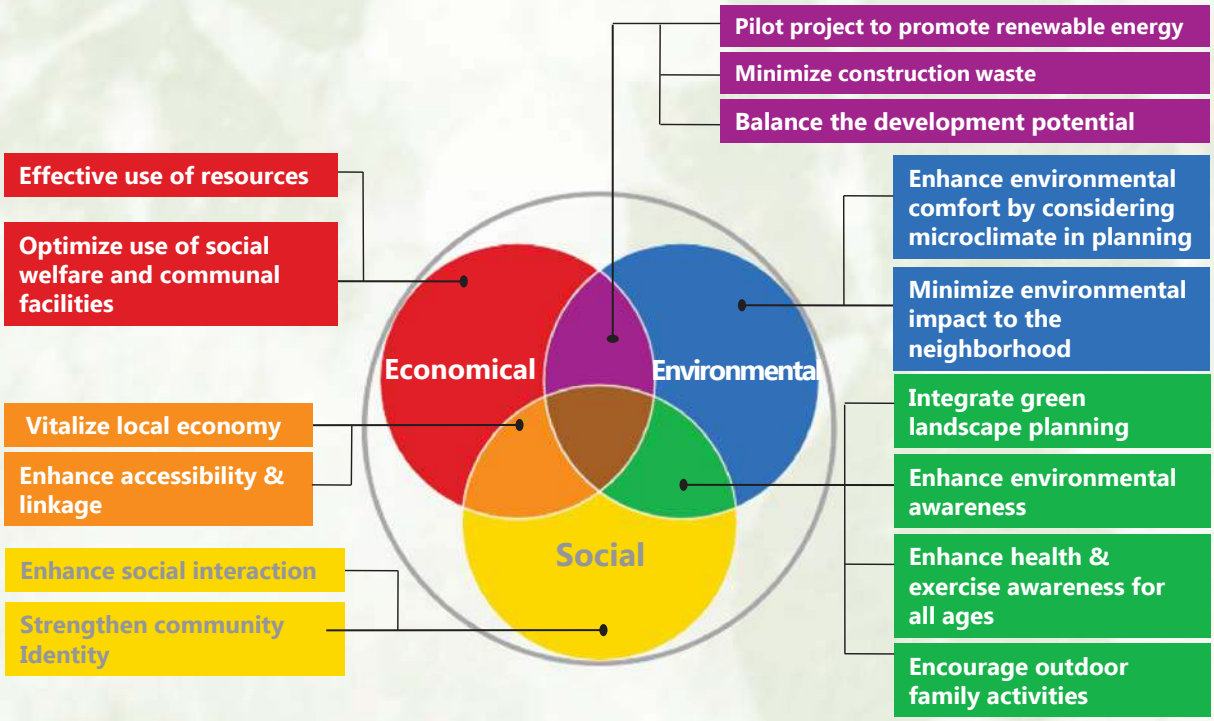
CONTENT

1. THE DRIVER
2. THE ROADMAP
3. THE INSIDE STORY
4. WAY FORWARD

1. THE DRIVER

SUSTAINABLE DEVELOPMENT

TO MEET PRESENT SOCIAL, ECONOMICAL AND ENVIRONMENTAL NEEDS BUT NOT AT THE EXPENSE OF FUTURE GENERATIONS



CARBON FOOTPRINT

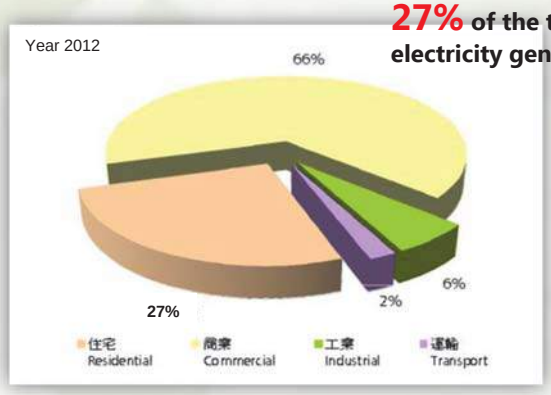
30% HK Population

782,400 flats in use

Residential buildings consume about **27%** of the total electricity generated

200,000 new rental flats (10-year period)

90,000 new subsidized sale flats (10-year period)



Source : EMSD, Hong Kong Energy End-use Data, 2014

CARBON FOOTPRINT

Large Housing Stock and High Production Volume in a –

High-Rise, High Density Urban Living Environment

Call for innovation in creating a low carbon community .....

..... for low income families.

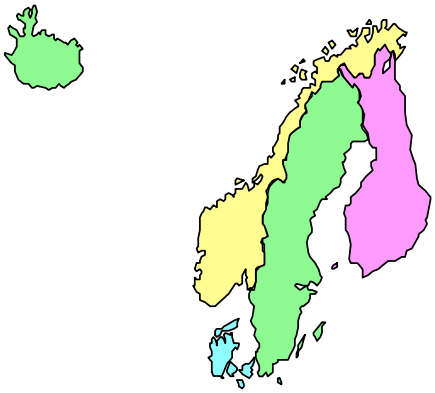
CF labelling and Type I ecolabelling

How can and should they co-exist and succeed in national and international market

Bjorn-Erik LONN | Global Ecolabelling Network

The Nordic Ecolabel – The Swan

The Nordic Swan



- **Official**
  Established in 1989 by the Nordic Council of Ministers

- **International**
  Encompasses all five Nordic countries
  Denmark, Finland, Iceland, Norway and Sweden

- **Non-profit**
  Financed with governmental support (1/5) and fees. All earnings are used to operate the organisation and in information campaigns

A need for reliable environmental information – 25+ years of experience

- ”Greenwashing” grows with growing demand for environmental information for products
- Proliferation in the product labelling world: single-issue labels pop up (often private)
- Among consumers : growing focus on reliable information and reduced thrust in companies´ own messages
- Official (government-supported) third part as guarantee for environmental and health quality

Risks for misinterpreted information

- Single issue or/and single lifecycle phase
- Burden shift (i.e. risk for hazardous chemicals for reduced energy use)
- Modified, possibly reduced, product quality
- Only for issues controlled by the licensee
- System boarders defined
- Generic or specific data bases

ISO 14024 Type 1-ecolabels are based on a multicriteria lifecycle approach with exclusion of less good environmental performance (CO_2-performance included)

Scope in WD ISO 14026

This International Standard specifies general requirements and guidelines for the communication of environmental footprint information relating to products to ensure that the footprint communication is not misleading.

This International standard also provides specific requirements and guidelines for the communication of environmental footprint information within related programmes, as well as requirements for verification procedures.

This International Standard does not cover the quantification of environmental footprint information. This International standard also does not cover the communication of footprint information not related to the environment.

With references to

Type I, II and III ecolabels

ISO 14046 on water footprint – Principles, requirements and guidelines

ISO 14067 on carbon footprint of products – Requirements and guidelines

Perception of figures and labels

Product contra producer related ?
On product only product specific

For all products or only the best ?
Figures always with a reference value

Simple message or basis for further calculation ?
The easier the merrier !?

Consumer or supply-chain use ?

My conclusions

Co-existence based on common rules and agreements

CF labelling is better for professional use; ecolabels for consumers

National CF labelling more difficult to spread internationally due to national energy policies and priorities

Thank You.

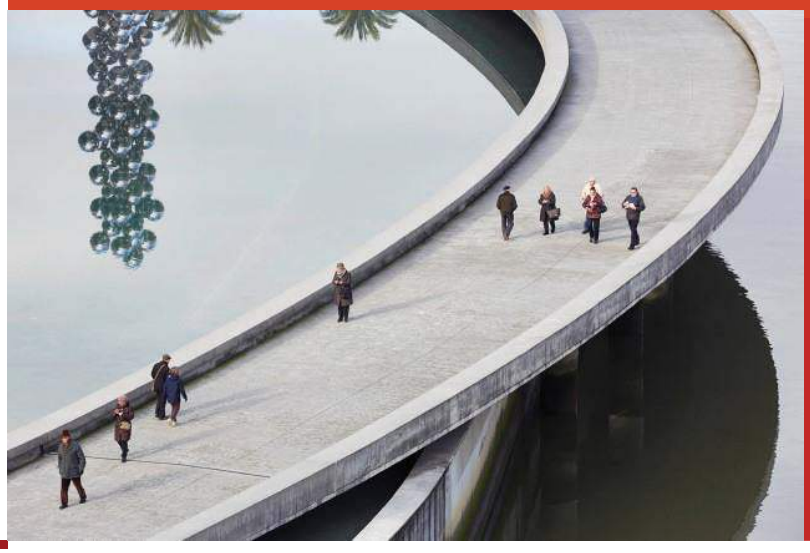
For More Information | www.globalecolabelling.net
Contact me | bel@ecolabel.no

www.pwc.co.uk

Low Carbon Economy Index 2015

'Conscious uncoupling?'

Hannah PwC China / Hong Kong

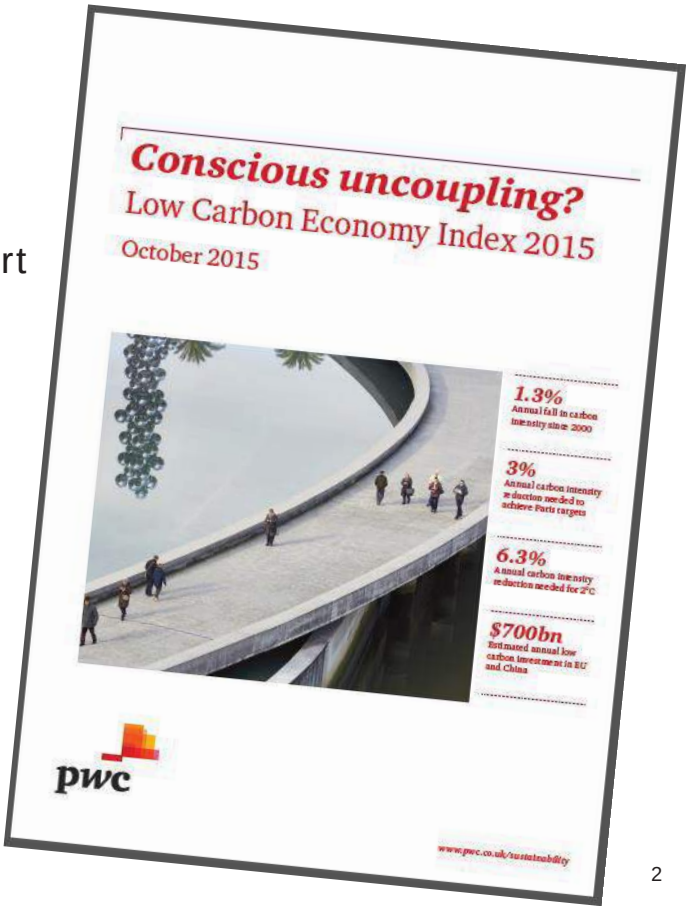


pwc

Low Carbon Economy Index – 12th October

Conscious uncoupling?

1. Progress in 2014
2. Paris targets – a step change in effort
3. Implications for business



Key messages

Good progress in 2014

Determined national contributions

The investment implications

1.3%

2.7%

3.0%

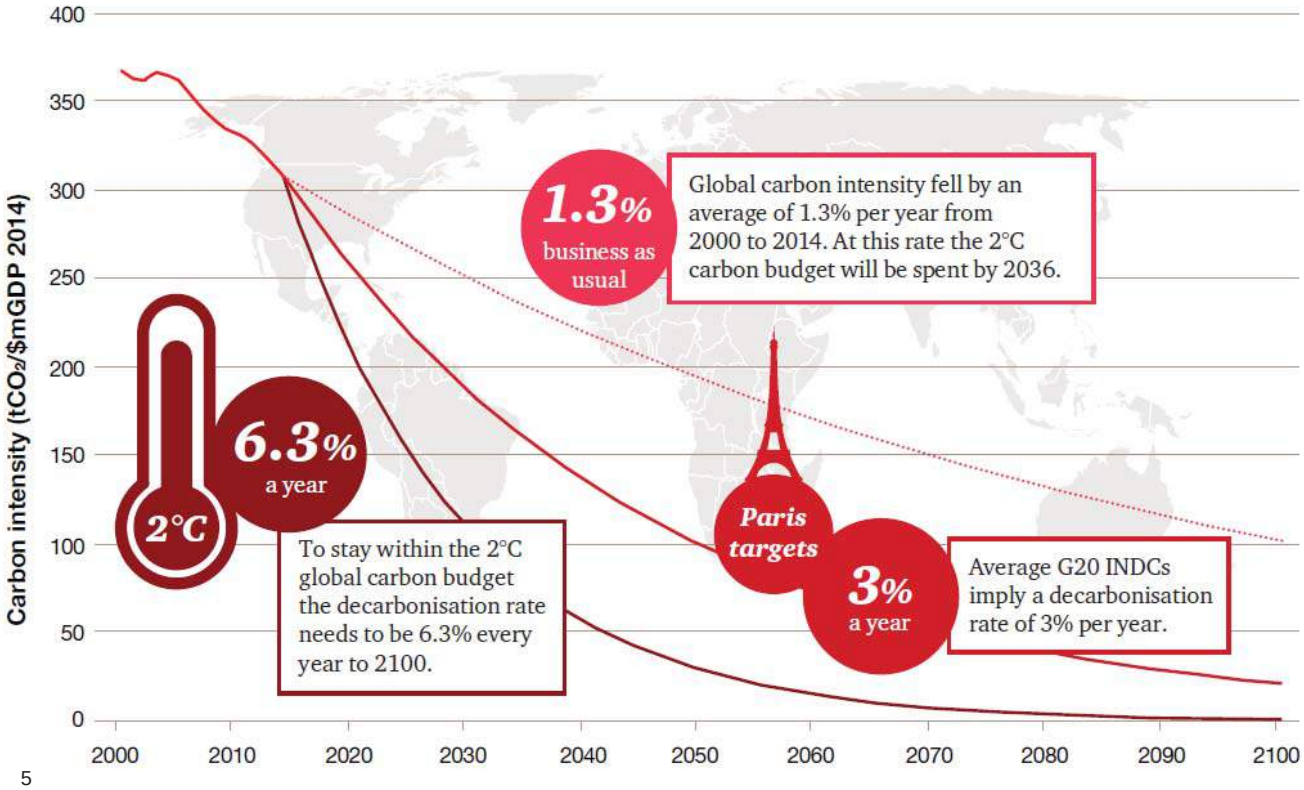
$700bn

PwC

Good progress in 2014

PwC

Paris targets are a step change from business as usual, but fall short of 2°C goal



› See LCEI page 5

The Index: results for 2014

	2013-2014				Trend this century	
Country	Change in carbon intensity 2013 – 2014	Carbon intensity (tCO2/$m GDP) 2014	Change in energy related emissions 2013 – 2014	Real GDP growth (PPP) 2013 – 2014	Annual average change in carbon intensity 2000 – 2014	Annual average change in GDP 2000 – 2014
World	-2.7%	306	0.5%	3.3%	-1.3%	3.7%
G7	-3.1%	266	-1.5%	1.6%	-2.0%	1.4%
E7	-3.4%	378	1.8%	5.4%	-1.1%	6.7%
UK	-10.9%	173	-8.7%	2.6%	-3.3%	1.7%
France	-9.1%	124	-8.9%	0.2%	-2.7%	1.1%
Italy	-7.8%	151	-8.2%	-0.4%	-2.2%	-0.1%
Germany	-7.1%	201	-5.7%	1.6%	-2.0%	1.0%
EU	-6.7%	187	-5.4%	1.3%	-2.4%	1.2%
China	-6.0%	515	0.9%	7.4%	-2.0%	9.8%

Key: Top 5 | Bottom 5

Partial results – see Table 1, page 8 for full table

On behalf of
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
of the Federal Republic of Germany

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Asia Carbon Footprint Network Conference 2015
Carbon Footprint and Labelling Schemes: Recent Developments and Way Forward

26th – 28th October 2015, Hong Kong China

Carbon Footprint and Eco-labels: Experiences from Thailand

Lunchakorn Prathumratana, Ph.D

27th October 2015

On behalf of
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
of the Federal Republic of Germany

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Outline

- Introduction of GIZ and SCP4LCE project
- Carbon footprint labels in Thailand
- Type I Eco-label in Thailand
- Carbon footprint and Eco-label criteria
- Benefits and challenges
- Conclusion

German International Cooperation (GIZ)

- Germany's leading provider of international cooperation services
- Fully owned by the Federal Republic of Germany
- Main sponsors:
  - The Federal Ministry for Economic Cooperation and Development (BMZ)
  - The Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB)
- More than 16,500 staff around the globe and more than 130 countries worldwide

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
On behalf of Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of the Federal Republic of Germany

SCP4LCE Project

Sustainable Consumption and Production for Low-Carbon Economy-low emission public procurement and eco-labelling

- ✓ Funded by the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB)
- ✓ Implementing organizations: GIZ
- ✓ Partners:
  1) Pollution Control Department (PCD)
  2) Thailand Environment Institute (TEI)
  3) Thailand Greenhouse Gas Management Public Organization (TGO)
  4) Federation of Thai Industries (FTI)
- ✓ Project Duration: 06/2012 – 10/2015

SCP4LCE project (cont.)

- Achievements:
  - Integration of climate relevant criteria to 13 products of Thai Green Public Procurement (GPP) and Thai Green Label
  - Climate change impacts (GHG emission reduction) from integration of climate friendly criteria into Thai GPP
  - Improvement of online monitoring and evaluation system for Thai GPP
  - Development of Thai GPP mobile application

On behalf of
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
of the Federal Republic of Germany
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Carbon Footprint Labels in Thailand

財團法人
環境與發展基金會
Environment and Development Foundation

Promotion, Cooperation and Mutual Recognition among Labelling Programs: Lessons Learnt from Type I Ecolabelling and Others

Dr. Ning Yu, Senior Advisor
Environment and Development Foundation
Chinese Taipei

Oct.27, 2015

Why Mutual Recognition ?

- Reduce cost of international green product certification for manufacturers
- Increase supply of green products, facilitate green consumption & procurement
- Avoid barrier to international trade

Different Types of Ecolabelling

- Mandatory or voluntary
- Single or multiple issue
- Single or multiple sector
- Inform, compare or leadership
- Self-declared or 3rd-party verified

Type I Ecolabelling

Patented Logo

Germany, Canada, Japan, Nordic, ROC, USA, Brazil, China

Korea, EU, Singapore, NZ, HKFEP, Philippines, SSNC, Indonesia

Thai, Australia, India, TCO, Czech, HK, Ukraine

Preset criteria with multiple requirements, only the best products can be awarded to use the logo; Consumers may buy these products without doubt.

Type I Ecolabelling and Trade

1. Type I programs create international trade barrier if
   - **Access to the label is not equal**
   - **Program transparency is not enough**
   - **with NPRPPM (non-product related process and production method) requirements**
2. Government Green Procurement Initiatives unfavorable to importers
3. Harmonization of product criteria, mutual recognition and equivalency of requirements

Für Mensch & Umwelt

Umwelt Bundesamt

ACFN Conference Hong Kong 2015

Blue Angel and Climate Protection

Susanne Heutling
Section III1.3
Ecodesign, Ecolabelling,
Green Public Procurement

Topics

I. CRITERIA DEVELOPMENT PROCESS

II. CO_2 SAVING POTENTIALS

III. LESSONS LEARNT

IV. COMMUNICATION

TOP 100 – Environmental label for climate relevant products and services

GOALS

- Developing sound environmental criteria for up to 100 product groups and services
- Broadening the range of energy efficient and climate friendly products and services in the Blue Angel portfolio
- Establishing the Blue Angel as national climate protection label
- Estimated saving potentials: up to 50%

TOP 100 – Environmental label for climate relevant products and services

PROJECT OUTLINIE

- Part of the National Climate Protection Initiative of the Federal Environmental Ministry
  http://www.bmu-klimaschutzinitiative.de
- Timeline 2009 – 2012
- Öko-Institut e.V., IFEU, Ökopol, lichtl

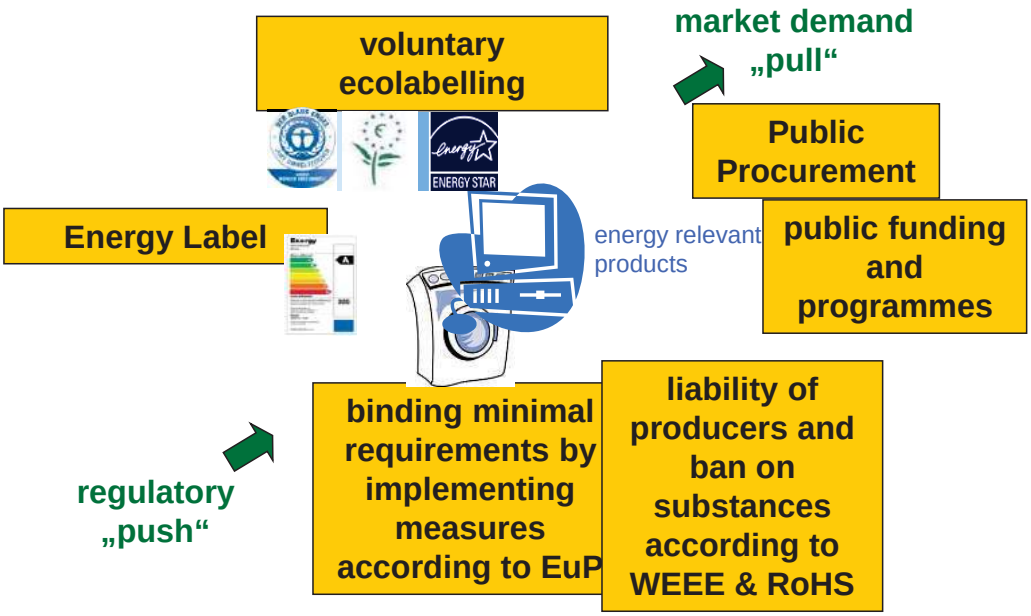
Öko-Institut e.V.
Institut für angewandte Ökologie
Institute for Applied Ecology

Ökopol
Institut für Ökologie und Politik GmbH

ifeu

.lichtl
Ethics & Brands

Ecolabelled Front Runner



Product Policy Mix – Strategy Paper on Ecodesign and The Blue Angel by FEA/Oekopl 2008

PROSA Study: LCA for Coffee Machines

PROSA Espressomaschinen

Kriterien für das Umweltzeichen für klimarelevante Produkte und Dienstleistungen