出國報告（出國類別：國際會議）

出席亞洲碳足跡網絡2018年會員會議

服務機關：行政院環境保護署
姓名職稱：葉信君科長、曾慶昌 科長
派赴國家：柬埔寨
出國期間：107年9月10日至107年9月13日
報告日期：107年12月13日

出國報告摘要

一、 出國計畫名稱：出席亞洲碳足跡網絡(Asia Carbon Footprint Network，ACFN)2018年會員會議

二、 出國人：葉信君科長、曾慶昌科長

三、 出國日期：107年9月10日至9月13日

四、 出國行程與內容概要

日 期	工 作 內 容 概 要
107.9.10	啟程，出發至柬埔寨金邊。
107.9.11	參加臺、韓、泰三國碳足跡產品類別規則(CFP-PCR)調和工作小組會議，討論調和「不含酒精飲料」「肌膚及毛髮清潔劑」及「可食用油」碳足跡產品類別規則，為後續三國碳標籤產品互認作準備；參加亞洲碳足跡網絡2018年會員會議。
107.9.12	參加年度研討會，與會報告之國家或區域包括韓國、馬來西亞、泰國等，議題包括永續消費與生產模式、碳足跡產品ISO標準的最新發展以及碳足跡推動現況及其對中小企業的影響等。
107.9.13	返程，回到臺北。

五、行程成果評估及心得建議

（一） 與韓國及泰國共同發展調和碳足跡產品類別規則，已有初步成果，將持續推動碳標籤產品相互承認事宜：

1、 於9月11日臺、韓、泰三國碳足跡產品類別規則調和工作小組會議，完成調和及定稿「不含酒精飲料」共通產品類別規則文件。

2、 「肌膚及毛髮清潔劑」共通產品類別規則文件，三方已對產品範疇達成共識，界定以需用水之清潔產品為主。惟因韓國尚無法提供使用情境，文件預計最快於明(108)年6月定案。

3、 「可食用油」共通產品類別規則文件，已完成共通條文文字核對，預計明年 3 月工作小組會議再確認適用產品範疇並定稿。

4、 針對後續碳標籤產品相互承認事宜，由我國與韓國先提供申請標籤所需補充申請文件格式進行討論，並於下次會議請各國提出試行產品；預計明(108)年 3 月於泰國舉行工作小組會議。

5、 碳足跡產品類別規則調和為全球碳足跡標籤推動的重要突破，可作為未來各國相互承認產品類別規則，乃至相互承認碳足跡標籤的基礎，目前已完成「不含酒精飲料」產品類別規則，下一步選定試行產品，將可協助台商產品走進國際市場及提升綠色貿易商機。

（二） 因應國際間發展產品宣告趨勢，持續精進碳標籤制度並導入企業，具體落實永續消費與生產理念：

1、 產品環境足跡發展情形：自本年 6 月 13 日起，義大利訂定「“義大利綠色製造(Made Green in Italy)”」法規將包含碳足跡等產品環境足跡納入立法，其立法目的在於支持可持續消費和生產政策，並於公共採購範圍，由自願性揭露改為強制要求。

2、 碳足跡產品 ISO 標準最新發展：107 年 8 月 20 日修正發布的 ISO 14067 標準正式版(IS)，此次修訂主要係修改名詞定義、對於使用再生能源如何與電網電力做出明確分割及明定數據品質分級等，訂定具體指導方法，後續將參考該標準修訂我國產品與服務碳足跡計算指引。

3、 韓國第三類環境宣告標籤整合推動經驗分享：韓國因應國際間發展產品宣告趨勢，已整合推動第三類環境宣告(EPD)制度，並於會議上分享查證現況、運作機制、及查證程序，並發展出不同環境衝擊類別、低碳產品認證及整合性等各項標章。

4、 為擴大更多企業（尤其是中小企業）加入碳標籤制度，韓國、泰國及馬來

西亞也分享相關推廣作法，包括公共採購納入評比、與綠卡(Green Card)集點策略作結合、減免註冊費或驗證費、簡化碳足跡產品計算或提供應用系統協助計算，以及與其他政府部門及企業協會合作等。

5、 因應國際產品環境足跡發展，我國可持續評估建置各項環境衝擊指標本土係數資料庫及計算工具之可行性，在碳標籤制度既有之基礎上，發展揭露多項環境衝擊資訊之第 3 類環境標誌，協助國內產品環境資訊揭露，以帶動綠色經濟蓬勃發展。

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壹、目的

亞洲碳足跡網絡組織(Asia Carbon Footprint Network，ACFN)係由聯合國亞太經濟社會委員會－東亞和東北亞辦事處(the United Nations ESCAP-ENEA)和韓國環境產業技術研究院(KEITI)共同發起，為亞太地區國家針對各國碳足跡推動現況、產品類別規則，以及碳排放係數資料庫等相關訊息交流與整合之合作交流管道，藉此有效推廣碳標籤產品，達到永續消費與生產最終目標，自西元 2013 年起原則每年辦理 1 次年會，本年度會員會議訂於本(107)年 9 月 11、12 日於柬埔寨金邊舉辦，會議重點包括：(1)歡迎新成員(柬埔寨)加入【目前網絡組織成員國包括我國等 8 個國家，計 16 個會員組織加入】(2)透過碳足跡及環境揭露架構推廣研究(3)歐洲與亞洲環境標籤制度現況(4)臺、韓及泰三國產品類別規則調和工作會議。

參與 2018 年亞洲碳足跡網絡會議之目的包括：

一、 與會員組織進行碳標籤、減碳標籤、查證制度、數據品質要求等推動經驗交流，以建立溝通管道。

二、 參加「臺、韓、泰三國碳足跡產品類別規則(CFP-PCR)調和工作小組會議」，我國與韓國、泰國代表針對調和「不含酒精飲料」「肌膚及毛髮清潔劑」「可食用油」產品類別規則內容進行意見交流與討論，為三國通用之碳足跡產品類別規則做準備。

貳、 行程及內容摘要

日　期	工 作 內 容 概 要
9.10(一)	啟程，出發至柬埔寨金邊。
9.11(二)	1.臺、韓、泰三國工作小組會議（產品類別規則調和）： ● 「不含酒精飲料」「肌膚及毛髮清潔劑」及「可食用油」3類碳足跡產品類別規則 2.亞洲碳足跡網絡 2018 年會員會議： ● 新成員加入
9.12(三)	研討會： ● 產品環境足跡與碳足跡產品 ISO 標準最新發展 ● 韓國、泰國等國家分享相關碳標籤推動經驗
9.13(四)	返程，回到臺北。

參、與會過程及內容

一、 參加「臺、韓、泰三國碳足跡產品類別規則(CFP-PCR)調和工作小組會議」

（一） 會議概要：臺灣、韓國及泰國於 105 年 3 月起率先發起通用產品類別規則文件試行研究，臺灣環境管理協會與韓國環境產業技術研究院(KEITI)並於 106 年 5 月簽署技術合作備忘錄，本次討論延續上次（第 4 次）工作小組會議結果進行。

（二） 出席人員：

1. 韓方出席人員

(1) 韓國環境部代表 Jong-Seon, Kwak

(2) 韓國環境產業技術研究院(KEITI)代表 Dr. Jae-Seok Kim, Dr. Joon-Jae Lee, 及 Kim NaYoung

2. 泰方出席人員：泰國溫室氣體管理機構(TGO)代表 Dr. Pongvipa Lohsomboon 及 Phuagphan Srithong

3. 我國出席人員

(1) 本署管考處代表葉信君科長、曾慶昌科長

(2) 國立臺北科技大學環境工程與管理研究所胡憲倫教授

(3) 財團法人工業技術研究院朱志弘研究員、沈芙慧副研究員

(4) 社團法人臺灣環境管理協會代表甘智仁經理

圖 1　　會議討論情形。照片右方為我方代表，中央為韓國代表，左上為泰國代表，左下為 UN 東北亞辦公室代表

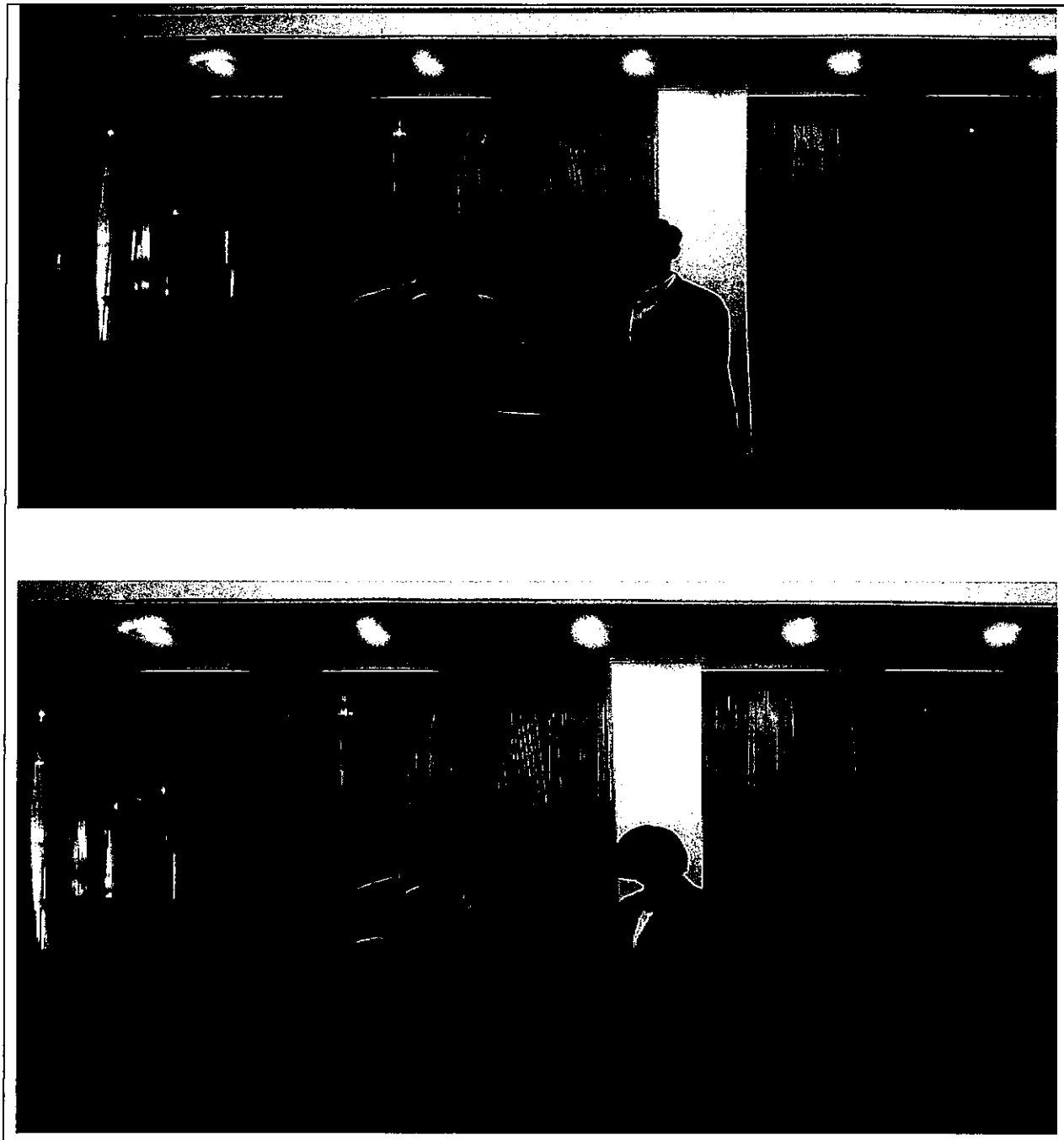


圖 2　我方代表（葉信君科長）與韓方代表（Dr. Jae-Seok Kim）、泰方（Dr. Pongvipa Lohsomboon）互贈伴手禮

（三）　會議討論結果(議程如附錄 1)

1. 完成調和及定稿「不含酒精飲料」共通產品類別規則文件(如附錄 2)。

2. 「肌膚及毛髮清潔劑」共通產品類別規則文件，三方已對產品範疇達成共識，界定以需用水之清潔產品，範疇限縮為洗髮精(shampoo)與肥皂(soap)為主。惟因韓方尚無法提供使用情境，文件預計最快於明(108)年定案。

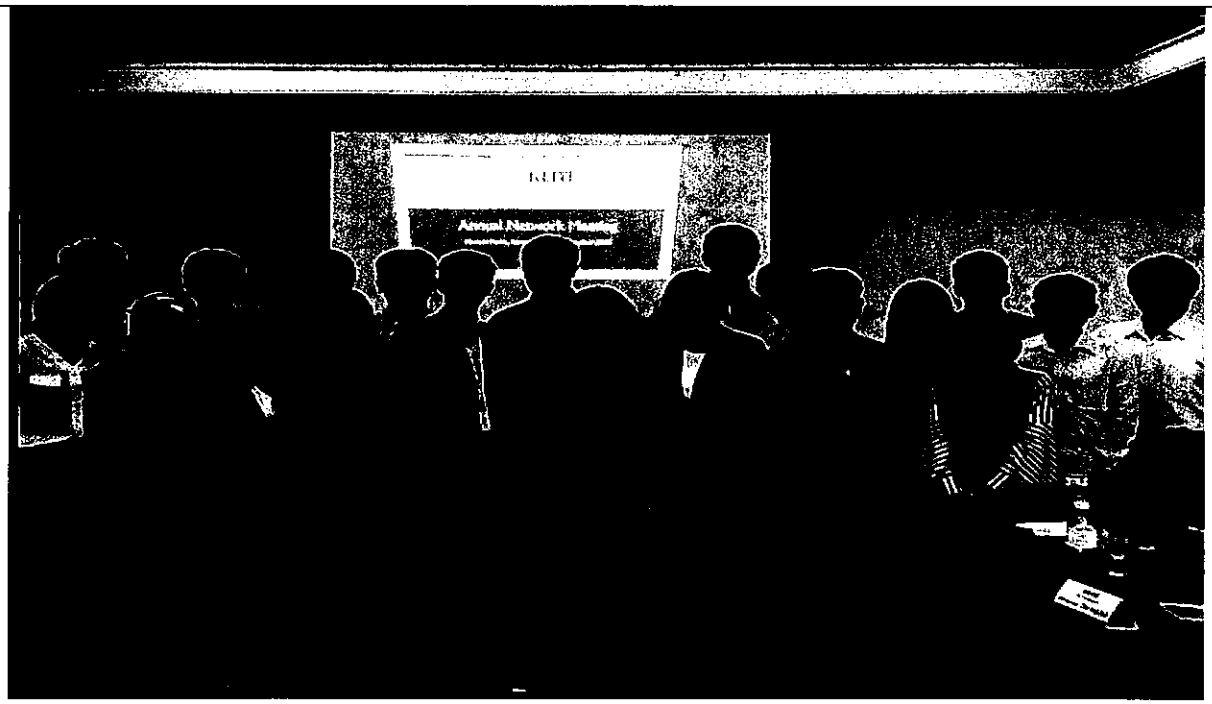
3. 「可食用油」共通產品類別規則文件，已完成共通條文文字核對。

4. 針對後續碳標籤產品相互承認事宜，由我國與韓國先提供申請標籤所需補充申請文件格式進行討論，下次會議將請各國提出試行產品。

5. 臺、韓、泰三方議定於 2019 年 3 月於泰國再次舉行碳足跡產品類別規則(CFP-PCR)調和工作小組會議。

二、 亞洲碳足跡網絡 2018 年會員會議(議程如附錄 1)

本(107)年度由聯合國亞太經濟社會委員會－東亞和東北亞辦事處與韓國環境產業技術院(KEITI)共同籌辦「亞洲碳足跡網絡 2018 年會員會議」，於 9 月 10 日至 14 日在柬埔寨金邊舉行，本次會議有來自 7 個國家計 13 個會員組織參與【包括：韓國、泰國、中國（香港）、馬來西亞、蒙古，另未出席為菲律賓與俄羅斯】。本次 ACFN 會員大會主要為介紹柬埔寨將新加入成員，並回顧了歷屆會議重點、2017-2018 計畫活動進展，交流各國最新碳標籤趨勢、更新 ACFN 官網，由各會員組織推薦下次會議議題。



亞洲碳足跡網絡 2018 年會員會議

三、 亞洲碳足跡網絡會議研討會(議程如附錄 1)

本次研討會由亞太經濟社會委員會(UNESCAP)、韓國環境工業技術研究院

(KEITI)與亞歐中小企業生態創新中心(ASEIC)和柬埔寨永續發展委員會(NCSD)合辦，由 ASEIC 的秘書長 Sejong Kim 與 NCSD 委員長 Dr.Tin Ponlok 共同主持，參與會員代表及主辦國當地人士計 70 人，探討議題如下：

（一） 產品環境足跡發展：歐盟產品環境足跡計畫與義大利於本年 6 月 13 日起，新訂定的「“義大利綠色製造(Made Green in Italy)”」法規將包含碳足跡等產品環境足跡納入立法，義大利立法目的在於支持可持續消費和生產政策，並於公共採購範圍，由自願性揭露改為強制要求。

（二） 碳足跡產品 ISO 標準最新發展：本年 8 月 20 日修正發布的 ISO 14067，是碳足跡產品量化的通用標準，此次修訂主要內容係修改名詞定義【如：碳封存(Carbon storage)名詞變革】、對於使用再生能源如何與電網電力做出明確分割、明定數據品質分級以及如何計算等，訂定具體指導方法，該標準將作為我國後續修訂產品碳足跡計算指引相關規則之參考。

（三） 韓國第三類環境宣告標籤整合推動經驗分享：

韓國因應國際間發展產品宣告趨勢，已將其國內碳標籤、低碳標籤及產品第三類環境宣告標籤進行整合：

1. 第三類環境宣告要呈現的環境衝擊類別種類，是參考 CML 或 ReCiPe 方法學制定。

2. 截至 2018 年 7 月，累計有 2,943 項產品通過查證；包括：

   (1) 取得產品第三類環境宣告的產品有 399 項。

   (2) 取得碳標籤的產品有 2,544 項 (碳排放有 2,069 項產品，低碳產品有 475 項)。

3. 產品類別規則分為三類：

   (1) 使用能源產品(通用型)。

(2) 不使用能源產品，向下細分為耐用產品、不耐用產品、B2B 產品以及服務型。

(3) 反映產品特性的獨立型 PCR，包括：馬桶、固態硬碟(SSD)、汽車用輪胎、洗衣店用的清潔劑以及淨水器。

4. 減碳標籤的核發方法

(1) 產品低於同類別產品的平均碳足跡

(2) 採用低碳技術減少產品碳足跡，比三年前降低 4.24%(此設定數值經向韓國請教，為國家減量總目標分攤給產品的結果)。

(3) 減碳標籤的認證，產生減碳效益 860 萬噸二氧化碳當量。

5. 額外的獎勵政策：

(1) 使用獲得 EPD 的建材，或獲得減碳標籤的建材，要取得韓國綠建築標章(G-SEED)時，可以獲得加分。

(2) 與公共採購結合，成為採購評選的一部分。不同採購產品，環境考量面在價格、品質與環境三者的權重不同。

(3) 與綠卡(Green Card)集點策略作結合，只要執行低碳生活、使用環境友善產品或購買綠色產品皆可集點或得到折扣優惠。

（四） 泰國分享相關碳標籤推動經驗：

1. 目前訂有 29 個國家級產品類別規則，10 個服務型產品類別規則以及 180 個試驗型產品類別規則。

2. 泰國生命週期評估資料庫由 MTEC 建置與維護，有受日本 JEMAI 與歐盟 JRC 技術支援，目前我國有與其簽署係數引用合約。

3. 泰國減碳標籤申請資格有兩種：

(1) 比基準年減少 2%的碳足跡(2%為廠商統計的結果，之後只要能維持不上升就可持續使用，第二次申請不用再次降 2%)。

(2) 低於 TGO 設定的產品類別的基線值。

(3) 呈現的減碳效益為：2,838,107 噸二氧化碳當量。

4. 截至 2018 年 7 月，累計有 3,341 項產品通過查證（以食品飲料業申請最多）包括：

(1) 取得碳標籤產品有 2,844 項。

(2) 取得減碳標籤產品有 497 項。

5. 提升標籤數作法

(1) 政府資源的支持（類似台灣的工業局、食藥署、中小企業處）：案件申請費用減免、查證費用補助。

(2) 碳足跡盤查簡化：僅列出重大項目進行盤查。

（五） 馬來西亞分享相關碳標籤推動經驗：

1. 馬來西亞本次報告的單位為馬來西亞標準與工業研究院（The Standard and Industrial Research Institute of Malaysia， SIRIM），為馬來西亞財政部下的組織，負責馬來西亞國家標準的制定與認證，因此其標籤也具有政府標籤的內涵。

2. 馬來西亞碳足跡是依照第三類環境宣告(EPD)標準進行，但只宣告碳足跡：

(1) 目前訂定 13 份產品類別規則，2017 年發展的 PCR 為固態生質燃料與膠合層壓木材。

(2) 2013~2015 年初步試行期間，碳標籤申請既有 23 家公司，27 項產品獲得標籤；但從 2017 年至今，只有 3 家公司，4 項產品。

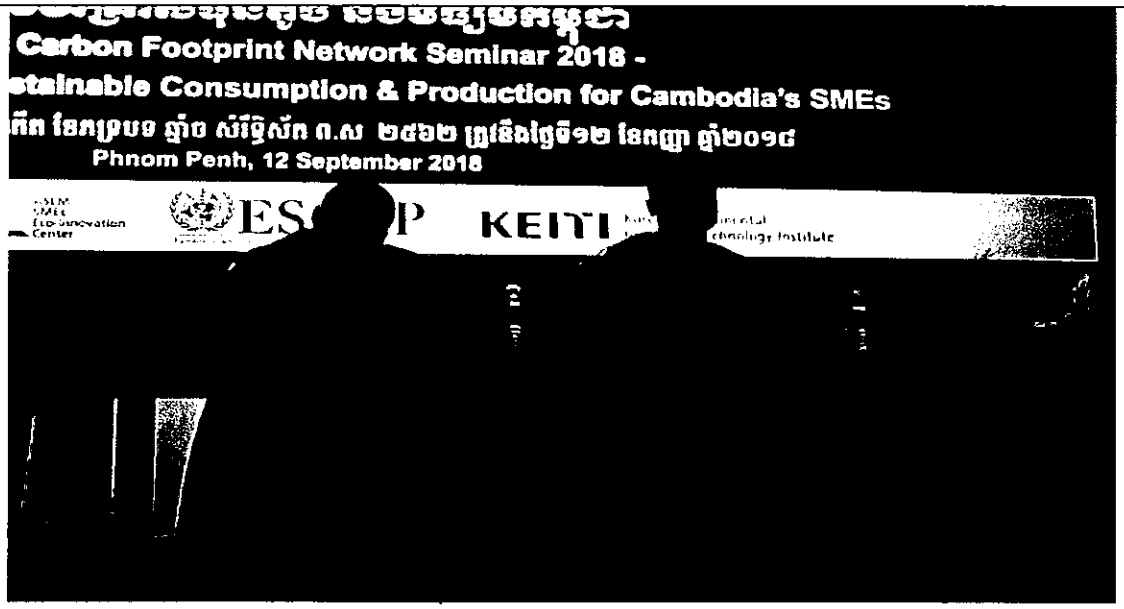
3. 馬來西亞自 2010 年起發展生命周期評估資料庫，裡面有 177 項資料，此資料格式為 ILCD 的格式，資料出自 GaBi 資料庫。

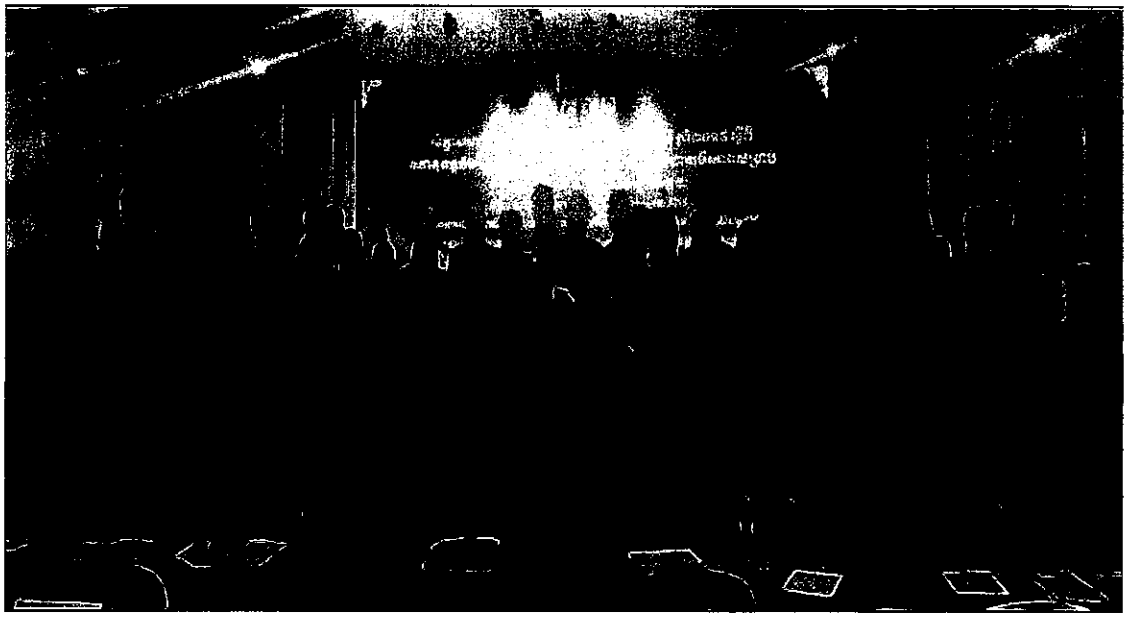
4. 馬來西亞標準與工業研究院內對碳足跡的分工，由三大機構分別負責：

(1) SIRIM STS Sdn.(這個機構類似台灣標檢局，負責發展馬來西亞國家標準) ，發展 PCR。

(2) SIRIM LCA Team at SIRIM' s Environmental Technology Research Centre.進行顧問輔導工作。

(3) SIRIM QAS International Sdn.Bhd. 負責第三方查證與核發標籤。





亞洲碳足跡網絡會議研討會

肆、 心得及建議

本次出國參加「亞洲碳足跡網絡(Asia Carbon Footprint Network，ACFN)2018年會員會議」及「臺、韓、泰三國碳足跡產品類別規則(CFP-PCR)調和工作小組會議」，心得及建議如下：

一、 **與韓國及泰國共同發展調和碳足跡產品類別規則，已有初步成果，將持續推動碳標籤產品相互承認事宜：**碳足跡產品類別規則調和為全球碳足跡標籤推動的重要突破，本次會議我國與韓國、泰國代表針對調和「不含酒精飲料」「肌膚及毛髮清潔劑」「可食用油」產品類別規則內容進行意見交流與討論，目前已完成「不含酒精飲料」產品類別規則，下一步將選定試行產品，協助台商產品走進國際市場及提升綠色貿易商機。另三方相互承認碳標籤產品之流程，並訂於 2019 年 3 月於泰國舉辦「臺、韓、泰三國碳足跡產品類別規則調和工作小組會議」繼續討論。

二、 **因應國際間發展產品宣告趨勢，持續精進環保標章與碳標籤制度並導入企業，具體落實永續消費與生產理念：**

(一) 因應國際產品環境足跡發展，我國可持續評估建置各項環境衝擊指標本土係數資料庫及計算工具之可行性，在碳標籤制度既有之基礎上，發展揭露多項環境衝擊資訊之第 3 類環境標誌，協助業者走進國際市場及幫助消費者更清楚辨識綠色產品。

(二) 本次會議亦分享碳足跡產品 ISO 標準的最新發展，107 年 8 月 20 日修正發布 ISO 14067，是碳足跡產品量化的通用標準，此次修訂標準將作為我國後續修訂產品碳足跡計算指引相關規則之參考。

附錄 1

「亞洲碳足跡網絡 2018 年會員會議」及
「臺、韓、泰三國工作小組會議」議程

DAY1: Tuesday, 11 September 2018

Asia Carbon Footprint Network (ACFN): PCR Meeting plus Annual Meeting

Tonle Mekong Room, Hotel Cambodiana, 11September 2018

Working Group Meeting on Product Category Rules (PCRs)		
09:00~11:30	Finalization of Product Category Rules for Skin and Hair Products	ITRI, KEITI, TGO
11:30~13:00	Lunch	-
13:00~15:30	Discussions on the common PCR (Cooking Oil) development	ITRI, KEITI, TGO
15:30~	Closing	

Annual Network Meeting	
16:00-16:10	**Opening Session** • Welcoming and opening remarks by the ACFN Secretariat - KEITI - ESCAP
16:10-16:30	**Tour de table** • *Go around the table, asking the participants to introduce themselves and share any updates* • 要求參與者自我介紹並分享任何更新
16:30-17:00	**Review progress** - Review past and current activities: *The Secretariat will give an overview of the past and current activities* - 回顧過去和當前的活動：秘書處將概述過去和當前的活動
17:00-18:00	**Plan future activities** - *The meeting wishes to have ideas from members on possible collaborative programmes.* - 會議希望成員就可能的合作計劃提出意見。 o *Project meeting schedule* 項目會議日程

	○ *Seminar and capacity building* 研討會和能力建設
18:00	**Other matters and wrap-up of the meeting** 其他事項和會議總結

DAY2: Wednesday, 12 September 2018 ACFN Seminar 2018

Eco-innovation and sustainable production and consumption: empowering SMEs to contribute to the SDGs

Tonle Chaktomuk Room, Hotel Cambodiana, 12 September 2018

A. Background and Objective

The Asia Carbon Footprint Network (ACFN) aims to bring key stakeholders together and promote carbon labeling implementation in the Asian region through disseminating good practices initiated by public and private sectors. To promote information and knowledge exchange, the ACFN annually organizes a seminar with various partners.

The Seminar 2018 will be jointly organized by the United Nations ESCAP and Korea Environmental Industry and Technology Institute (KEITI) (in the capacity of the ACFN Secretariat) in partnership with the ASEM SMEs Eco-Innovation Center (ASEIC) and the Ministry of Environment of Cambodia.

The Seminar is expected to provide the ACFN members, local government policy makers and professionals with a platform to understand eco-innovation and sustainable consumption and production in the context of Sustainable Development Goals (SDGs).

Sustainable Consumption and Production (SCP) is an overarching objective and an essential requirement for sustainable development. Goal 12 of 17 SDGs emphasizes SCP which enables sustainable and efficient management of resources on all the stages of the supply-chain of goods and services.

Given the breadth of the challenges and actions required to achieve SCP, activities are focused on specific tools, encompassing policies, market-based instruments and voluntary approaches, with emphasis given to some specific economic sectors. These include product information tools such as **environmental labelling.**

Eco-innovation is defined as any form of innovation aiming at a significant and demonstrable progress towards the goal of sustainable development, through reducing impacts on the environment or achieving a more efficient and responsible use of resources including both intended and unintended environmental effects from innovation as well as not only environmental technology but processes, systems and services. Contextually eco-innovation emerged as an important pathway towards sustainable development. Above all, establishing sustainable consumption and production patterns (Goal 12) is the common aim of eco-innovation.

Against the background, the Seminar is specifically designed to empower SMEs to contribute to the SDGs through policies, strategies, and practices for eco-innovation and sustainable production.

B. Target Participants

The seminar is expected to have representatives from the ACFN member organization, government policy makers, professionals in environment, eco-innovation, SCP from public and private sectors, and experts from the research centers and universities.

C. Date and Venue

Wednesday, 12 September 2018, Tonle Chaktomuk Room, Hotel Cambodiana

D. Provisional Programme

	Opening Session	
08:00~08:30	Registration	
08:30~08:40	Welcoming Remarks	**MOE/NCSD, Cambodia**
08:40~08:50	Opening Remarks	**ASEIC**
08:50~08:55	Video clip on "What is Eco-Innovation?"	
08:55~09:00	Photo Session	
	Session 1. Introduction to Eco-innovation and SCP **SCP(確保永續消費及生產模式)**	
09:00~09:10	Introduction to Eco-Innovation and Sustainable Consumption & Production	***Ms. Lee Hankyung*** ECO&PARTNERS
09:10~09:40	Introduction and current state of Eco-labelling (Type 3)	***Mr. Kwak Jongsun*** MOE, KOREA
09:40 ~10:00	Introduction and current state of Eco-labelling (Type 1)	***Dr. Kim Jaeseok*** KEITI
10:00~10:20	Coffee Break	

Session 2. Product Carbon Footprinting and Labelling : Information for SMEs on Tackling the Carbon Footprinting Challenges

中小企業(small- and medium-sized enterprises)

10:20-10:50	How to Assess the Carbon Footprint by International Standards (ISO) and Implication for SMEs 如何按國際標準（ISO）評估碳足跡及其對中小企業的影響	***Mr. Daniele Pernigotti*** Aequilibria
10:50-11:10	Establishing a scheme of carbon footprint to help SMEs to reduce carbon emission: case of Malaysia 建立碳足跡計劃，幫助中小企業減少碳排放：以馬來西亞為例	***Ms. Engku Noor Shuhada Engku Jaafar*** SIRIM Berhad
11:10-11:30	Carbon footprinting and labelling as strategic opportunities and challenges for SMEs: lessons learned from Thailand 碳足跡和標籤作為中小企業的戰略機遇和挑戰： 從泰國吸取的經驗教訓	***Dr. Pongvipa Lohsomboon*** Thailand Greenhouse Gas Management Organization
11:30-11:40	Q & A	
11:40-13:00	Lunch	

Session 3. Environmental Management System for SMEs

13:00~13:10	Intro session for Environmental Management System for SMEs 中小企業環境管理系統介紹	***Ms. Lee Hankyung*** ECO&PARTNERS
13:10~13:40	Environment management trends of SMEs and its demands 中小企業環境管理趨勢及其需求	***Mr. Song Gildo*** Korea Management Registrar
13:40-14:10	Environmental management implementation manual for SMEs 中小企業環境管理實施手冊	***Mr. Song Gildo*** Korea Management Registrar
14:10~14:40	Eco-Innovation to add values in the agriculture sector 生態創新，以增加農業部門的價值	***Mr. Lee Jungin*** Foundation of Agri, Tech, Commercialization & Transfer
14:40-15:10	Future trends on sustainable agricultural industry and case study 永續農業產業的未來趨勢和案例研究	***Mr. Lee Jungin*** Foundation of Agri, Tech, Commercialization

		& Transfer
15:10-15:30	Coffee Break	
	Session 4. Eco-innovation implementation strategy for SMEs	
15:30~16:00	Eco-Innovation implementation strategy for sustainable production in SMEs 中小企業永續生產的生態創新實施策略	***Mr. Song Gildo*** Korea Management Registrar
16:00-16:30	On-site cleaner technology implementation strategy for SMEs 中小企業現場清潔技術實施策略	***Mr. Song Gildo*** Korea Management Registrar
16:30~17:00	Q&A and Closing	

**Note: There will be simultaneous interpretation into Cambodian, English, and Korean at the Seminar.*

附錄 2

「不含酒精飲料」「肌膚及毛髮清潔劑」
「可食用油品類」碳足跡產品類別規則

[PCR KTT 2017-01]

Product Category Rules for Non-alcoholic beverages

0. General Introduction

This PCR is developed as a part of activities to share experiences and achievements of each system and promote deeper understanding and cooperation among Korea, Taiwan and Thailand, which are successfully operating carbon labeling schemes in Asian region.

The three countries are respected the independence and uniqueness of its respective carbon labeling schemes and the parties are able to utilize this PCR for the mutual development and international application.

0.1 This PCR is based on existing PCR developed by each country.

0.2 This PCR may be used for mutual recognition between the three countries, in which case the regulations and procedures established by the relevant shall be applied.

1. Definition of the product group/ Scope

This PCR applies to non-alcoholic beverages listed products corresponding to the following CPC codes (Ver.2.1). It excludes milk and dairy products.

UN CPC 2143 Fruit juices

UN CPC 244 Soft drink

1.1 Functional unit or declared unit

The declared unit is unit packaged product or sales unit.

1.2 Specification of the product

Information related to product characteristic shall be provided.

(e.g.) product name, product capacity (weight or volume), packaging material (bottle, can, carton, etc), refrigerated storage

2. References

There are existing PCR documents developed by each country. The documents, in whole or in part, are normatively referenced and indispensable for the application of this guideline. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including all amendments) applies.

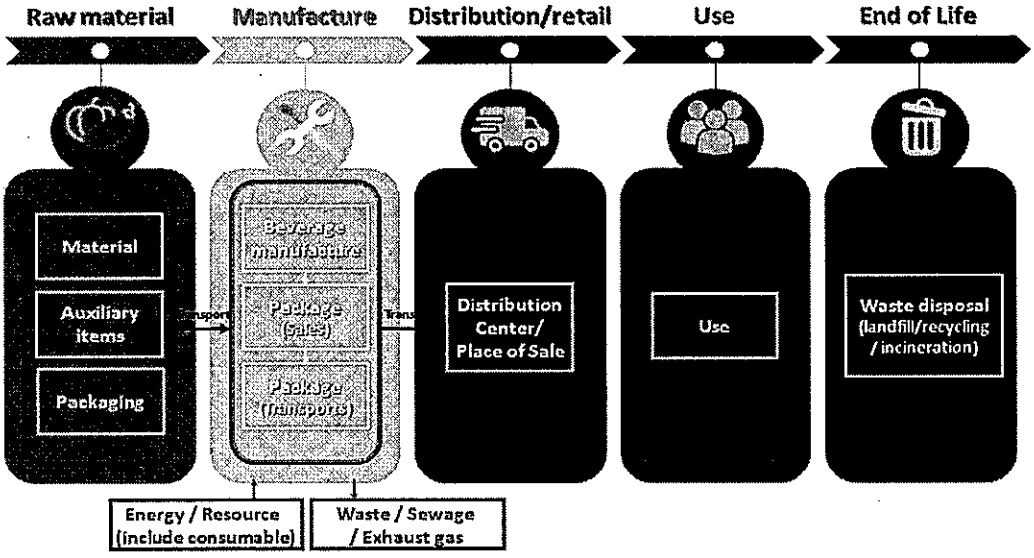
- (Korea) National Guideline for the Environmental Product Declaration (Notification of Ministry of Environment, Republic of Korea)

- (Taiwan) Guidelines for the Development, Reference and Revision of Product Category Rules for Carbon Footprints of Products
- (Thailand) The National Guideline on Product Carbon Footprinting and Thai National Product Category Rules for Beverages

3. System boundary

System boundary for non-alcoholic beverage product includes pre-manufacturing phase, manufacturing phase, distribution/retail phase, use phase, and end-of-life phase.

Figure 1: Presentation of general system boundary



3.1 Raw material acquisition phase

"Raw material acquisition phase" comprises cradle-to-gate information on the production of raw materials and packaging materials for the product.

Such as: Production of ingredients used in the product
Production of semi-product
Production of primary, secondary, and tertiary packing materials
Transport from production site of raw materials and packaging materials to manufacturing site

The requirements and transport scenarios specified in the reference as mentioned in Chapter 2 are followed.

3.2 Manufacturing phase

"Manufacturing phase" comprises gate-to-gate information on the product production and handling of processes-related emissions and waste. This phase includes processes related to the production of the product. In case of carbonated beverages, direct CO_2 emission shall be considered.

Such as: Food processing
Packaging processes (e.g. filling, labeling...)
Cold or frozen storage
Waste treatment of waste generated during manufacturing

3.3 Distribution/retail phase

"Distribution/retail phase" comprises quantitative information on transport of product from manufacturing site to distribution platform. The requirements and transportation scenarios specified in the reference as mentioned in Chapter 2 are followed.

3.4 Use phase

"Use phase" is considered when the product needs a cold storage at manufacturing or at retail site for preserving its shelf life, the environmental impact related to this process shall be estimated. Electricity due to cold storage shall be evaluated with the formula in the reference as mentioned in Chapter 2. In case of carbonated beverages, direct CO_2 emission shall be considered.

3.5 End-of-life phase

"End-of-life phase" comprises quantitative information on recycling or handling of product after use. Treatment methods for packing materials are in accordance with relevant laws and regulations.

End-of-life scenarios for the geographical area are specified in **Annex A.**

4. Data collection and data quality

One year of data shall be collected and be representative of the product.
Primary data (also referred to as site-specific data) shall be taken precedence.
The requirements specified in the reference as mentioned in Chapter 2 are followed.

4.1 Cut-off criteria

Using cut-off criteria depends on each country scheme but it should not give the perceptions of hiding information, but rather to facilitate the data collection for users. It is assumed that the defined cut-off criteria in the reference as mentioned in Chapter 2 ensure the representativeness of the collected data.

4.2 Allocation

If allocation is necessary, it should be performed with the most suitable parameters. The criteria for the allocation shall be in accordance with the reference as mentioned in Chapter 2.

5. CFP calculation

The details shall be as specified in the reference as mentioned in Chapter 2 are followed.

6. Displaying the CFP result

The requirements specified in the reference as mentioned in Chapter 2 are followed.

7. Changes in this PCR document

[PCR KTT 2017-01] 2018-05-17, Original version published.

[Annex A] End-of-life scenario

This annex provides country-specific end-of-life scenarios to assist in calculating GHG emissions for waste associated with the product.

B.1 Republic of Korea

a) As for products, parts or raw·ancillary materials, the recycling ratio shall be calculated under the "Mandatory Recycling Ratio depending on each product and packing material", specified in Article 17.1 of the「Act on the Promotion of Saving and Recycling of Resources」.

b) As for electrical and electronic products, the "mandatory recycling by product group" specified in Article 16.3 of the「Act on Resource Circulation of Electrical and Electronic Equipment and Vehicles」shall be applied.

c) The amount of substances of landfill, incineration and recycling identified by a) and b) should be determined depending on the ratio of landfill, incineration and recycling per material specified by the 'separate disposal of recyclable resources' of domestic wastes that the Ministry of Environment announced in the "National waste generation & treatment status".

d) As for substances not subject to recycling items or materials identified by a) and b), or substances not specified as recyclable by a) and b), the amount of landfill, incineration and recycling should be determined depending on the rates of landfill, incineration and recycling per material specified in the 'integrated disposal by volume-rate (waste) disposal system' of domestic wastes that the Ministry of Environment announced in the "National waste generation & treatment status".

e) All greenhouse gas such as refrigerants contained in product packages and products are considered to be discharged at the stage of disposal. However, if a system to recollect all or part of the greenhouse gas (such as refrigerants contained in products) is established and it is deemed desirable to recognize such performance, clear evidence data that proves as much should be offered.

f) As for statistical data concerning wastes applicable from a) to d), the head of an organization shall make notifications based on relevant data.

B.2 Taiwan

a) The process of clearing and transporting to the designated disposal site the unwanted materials used in the packing of a product (if taking recycling system into consideration) should be included in the calculation of Carbon Footprint.

b) No primary activity data is required in the waste disposal stage. Incineration or landfill of all waste items related to the product should be ascertained, except those for

recycling (as the raw materials for other products). Please refer to the official website of Recycling Fund Management Board (https://recycle.epa.gov.tw/en/index.html) for the recycling items and recycling rate.

c) The secondary data in the waste disposal stage depends on the actual situation. It is prior to adopt the carbon emission factor on the Carbon Footprint Calculation Platform (http://cfp-calculate.tw/cfpc/webpage/loginpage.aspx). Thereafter, databank of life cycle assessment or reference to public credibility is taken into account.

B.3 Thailand

a) waste disposal:

The GHG emissions from the final waste disposal phase shall be included in the full carbon footprinting (B2C) case as landfill scenarios but excluded for the partial carbon footprinting (B2B) case. For recyclable materials, the GHG emissions shall be calculated as follows;

$$EEoL = \Sigma [(1-RR,i) \times Ed,i] + EtW$$

Where -

EEoL = emissions factor of the final waste disposal phase of product

RR,i = recycle ratio of material i (table 1)

Ed,I = emissions factor of the final waste disposal phase of material i

EtW = emissions factor of waste transportation

Table 1: recycle ratio of industrial waste

Type	Recycle ratio (%)
Paper	59
Plastic	38
Rubber	25

Source: Pollution Control Department (2013)

The GHG emissions of products in the final disposal phase that are transferred to another system (e.g. methane recovery from landfill) shall be taken into account.

If primary data cannot be collected, then secondary data can be used that shall be based on the IPCC Guideline for National Greenhouse Gas Inventories – Volume 5: Waste (see Table 2), on waste disposal in a shallow landfill. For waste types other than those included in Table 1 of the IPCC Guidelines, and wastes that have carbon content, the GHG emission factor of 2.32 tCO2 per ton of waste shall be used. In case of wastes with no carbon content, the GHG emissions shall be zero. For on-site waste treatment,

the GHG emissions shall be based on the actual practice of waste disposal.

In the case of products that are disposed by another system, such as infectious waste rubber gloves, the GHG emissions shall be calculated from its incineration or actual treatment.

In the case that the methane emitted from the landfill is flared, the reduction of GHG emissions must be taken into account.

Table 2: GHG emissions from a shallow landfill (IPCC, 2006)

Waste type	GHG emissions (tCO2e per ton of waste)
Paper	2.93
Fabric	2.00
Food	2.53
Wood	3.33
Garden wastes (i.e. leaves, grass)	3.27
Paper diaper	4.00
Rubber and leather	3.13

Source: 2006 IPCC Guidelines for National Greenhouse Gas Inventories – Volume 5: Waste

The transport of waste to a landfill site shall be based on the following scenario: Transportation by 10-wheel, 16-ton truck through a distance of 40 km; 100% loading on trip to landfill and empty return.

[PCR KTT 2018-01]

Product Category Rules for Skin & Hair Cleaning Products

0. General Introduction

This PCR is developed as a part of activities to share experiences and achievements of each system and promote deeper understanding and cooperation among Korea, Taiwan and Thailand, which are successfully operating carbon labeling schemes in Asian region.

The three countries are respected the independence and uniqueness of its respective carbon labeling schemes and the parties are able to utilize this PCR for the mutual development and international application.

0.1 This PCR is based on existing PCR developed by each country.

0.2 This PCR may be used for mutual recognition between the three countries, in which case the regulations and procedures established by the relevant shall be applied.

1. Definition of the product group/ Scope

This PCR applies to skin and hair cleaning products corresponding to the following table 1. It excludes cosmetics and make-up products. For guidance, this corresponds to UN CPC 3532 (Ver.2.1).

Table 1: Scope of skin and hair cleaning product

Product type	Details of products
Hair Care	Shampoo, Hair conditioner, Rinse,
Bathing, Showering	Soap, Shower gel, Hand wash soap

1.1 Functional unit or declared unit

The declared unit is unit packaged product or sales unit.

1.2 Specification of the product

Information related to product characteristic shall be provided.

(e.g.) product name, product capacity (weight or volume), packaging material (bottle, can, carton, etc.), refrigerated storage

2. References

There are existing PCR documents developed by each country. The documents, in whole or in part, are normatively referenced and indispensable for the application of this

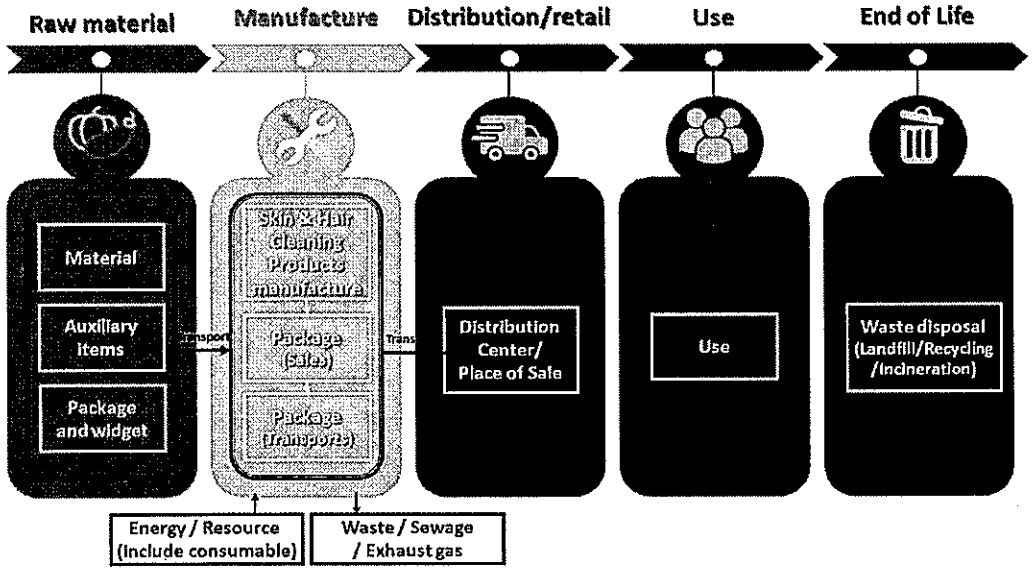
guideline. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including all amendments) applies.

- (Korea) National Guideline for the Environmental Product Declaration (Notification of Ministry of Environment, Republic of Korea)
- (Taiwan) Guidelines for the Development, Reference and Revision of Product Category Rules for Carbon Footprints of Products
- (Thailand) The National Guideline on Product Carbon Footprinting and Thai National Product Category Rules for Household Cleaning Products

3. System boundary

System boundary for skin & hair cleaning product includes pre-manufacturing phase, manufacturing phase, distribution/retail phase, use phase, and end-of-life phase.

Figure 1: Presentation of general system boundary



3.1 Raw material acquisition phase

"Raw material acquisition phase" comprises cradle-to-gate information on the production of raw materials and packaging materials for the product.

Such as: Production of ingredients used in the product
Production of semi-product
Production of primary, secondary, and tertiary packing materials
Transport from production site of raw materials and packaging materials to manufacturing site

The requirements and transport scenarios specified in the reference as mentioned in Chapter 2 are followed.

3.2 Manufacturing phase

"Manufacturing phase" comprises gate-to-gate information on the product production and handling of processes-related emissions and waste. This phase includes processes related to the production of the product.

Such as: Cleaning, Sterilization processes
Packaging processes (e.g. filling, labeling...)
Waste treatment of waste generated during manufacturing

3.3 Distribution/retail phase

"Distribution/retail phase" comprises quantitative information on transport of product from manufacturing site to distribution platform. The requirements and transportation scenarios specified in the reference as mentioned in Chapter 2 are followed.

3.4 Use phase

"Use phase" is estimated considering the typical water and energy consumption to assess the environmental performance of products at the use phase (e.g. the amount of the product use, water consumption, etc.) This phase includes processes related to releases and wastes of products at the use phase.

Usage scenarios for the geographical area are specified in **Annex A.**

3.5 End-of-life phase

"End-of-life phase" comprises quantitative information on recycling or handling of product after use. Treatment methods for packing materials are in accordance with relevant laws and regulations.

End-of-life scenarios for the geographical area are specified in **Annex B.**

4. Data collection and data quality

One year of data shall be collected and be representative of the product.
Primary data (also referred to as site-specific data) shall be taken precedence.
The requirements specified in the reference as mentioned in Chapter 2 are followed.

4.1 Cut-off criteria

Using cut-off criteria depends on each country scheme but it should not give the perceptions of hiding information, but rather to facilitate the data collection for users. It is assumed that the defined cut-off criteria in the reference as mentioned in Chapter 2 ensure the representativeness of the collected data.

4.2 Allocation

If allocation is necessary, it should be performed with the most suitable parameters. The criteria for the allocation shall be in accordance with the reference as mentioned in Chapter 2.

5. CFP calculation

The details shall be as specified in the reference as mentioned in Chapter 2 are followed.

6. Displaying the CFP result

The requirements specified in the reference as mentioned in Chapter 2 are followed.

7. Changes in this PCR document

[PCR KTT 2018-01] 2018-05-17, Original version published.

[Annex A] Usage scenario

This annex provides country-specific usage scenarios to assist in calculating GHG emissions for assess the environmental performance of products at the use phase.

B.1 Republic of Korea

Korea is currently developing a usage scenario.
We want to make a usage scenario reflecting the companies' needs for water footprint.
Our first plan to develop the scenario is measuring the real water usage for the product.
We tried to compare the performance of detergency.

B.2 Taiwan

If the product's usage involves energy consumption, scenario assumption should conform to the following requirements or consideration:

1. hand sanitizer (containing medicine): need washing with cold water, with 2 liters of water consumption (according to the calculation formula of water-resource assessment indicator).
2. dentifrice: need washing with cold water, with 300 milliliters of water consumption, based on capacity of mug commonly used in household (according to tooth mug in the 10 major water-conserving habits, cited by Water Resources Agency, Ministry of Economic Affairs).
3. Agents for shaving or before or after shaving: need washing with cold, with 6.5 liters of water consumption, based on the capacity of a washbasin (according to capacities of washing utensils, defined by Taipei Water Department).
4. liquid surfactant and concocted products (e-monthly on environmental education and training, Environmental Protection Administration);
    a. bathing: about 200 liters of water consumption, with the scenario of water being heated to 37 degrees Celsius from 25 degrees;
    b. shower: about 100 liters of water consumption, with the scenario of water being heated to 37 degrees Celsius from 25 degrees.
5. Usage volume of shampoo, conditioning cream, and rinse, whether containing medicine or not: 22.5 liters of water consumption each time, with the scenario of water being heated to 37 degrees Celsius from 25 degrees.
6. Other beauty-treatment or cosmetic products and skin-care products (except medicine): Set up own assumptive usage scenarios for various products.
7. Other mouth or dental hygiene products: Set up own assumptive usage scenarios for various products.

Heating scenarios for different fuels follow:

1. Power: For heating water from 25 degrees Celsius to 37 degrees Celsius, it needs of calorie to raise one millimeter of water by one degree or 12 calories for 12 degrees, or 50.208J, as one calorie equals 4.184J. One kilowatt-hour of power can heat 71.70 liters of water by 12 degrees Celsius, as one it equals 3,600,000J/hour.
2. Natural gas and liquefied petroleum gas: Heat water from 25 degrees Celsius to 37 degrees and calculate how many liters of water which can be heated, in reference to the heat value in the year on the carbon-footprint calculation service platform.

B.3 Thailand

The usage for soap, liquid soap and shampoo, consider the use of water and waste water. Usage volume of products and water consumption each time as shown in the table.

List	Soap	Liquid soap/shampoo	Reference
Amount of Water	30 liters/wash	30 liters/wash	Department of Environmental Quality Promotion ,Thailand
Amount of product per 1 wash	2 gram/wash*	5 ml./wash**	*Reference from Average consumption of the 30 sample **Average small package shampoo for 1 wash
Amount of waste water	30 liters /wash	30 liters /wash	

Remark: Assume the type of water that Thai people use to clean the body is normal water temperature.

[Annex B] End-of-life scenario

This annex provides country-specific end-of-life scenarios to assist in calculating GHG emissions for waste associated with the product.

B.1 Republic of Korea

a) As for products, parts or raw·ancillary materials, the recycling ratio shall be calculated under the "Mandatory Recycling Ratio depending on each product and packing material", specified in Article 17.1 of the「Act on the Promotion of Saving and Recycling of Resources」.

b) As for electrical and electronic products, the "mandatory recycling by product group" specified in Article 16.3 of the「Act on Resource Circulation of Electrical and Electronic Equipment and Vehicles」shall be applied.

c) The amount of substances of landfill, incineration and recycling identified by a) and b) should be determined depending on the ratio of landfill, incineration and recycling per material specified by the 'separate disposal of recyclable resources' of domestic wastes that the Ministry of Environment announced in the "National waste generation & treatment status".

d) As for substances not subject to recycling items or materials identified by a) and b), or substances not specified as recyclable by a) and b), the amount of landfill, incineration and recycling should be determined depending on the rates of landfill, incineration and recycling per material specified in the 'integrated disposal by volume-rate (waste) disposal system' of domestic wastes that the Ministry of Environment announced in the "National waste generation & treatment status".

e) All greenhouse gas such as refrigerants contained in product packages and products are considered to be discharged at the stage of disposal. However, if a system to recollect all or part of the greenhouse gas (such as refrigerants contained in products) is established and it is deemed desirable to recognize such performance, clear evidence data that proves as much should be offered.

f) As for statistical data concerning wastes applicable from a) to d), the head of an organization shall make notifications based on relevant data.

B.2 Taiwan

a) The process of clearing and transporting to the designated disposal site the unwanted materials used in the packing of a product (if taking recycling system into consideration) should be included in the calculation of Carbon Footprint.

b) No primary activity data is required in the waste disposal stage. Incineration or landfill of all waste items related to the product should be ascertained, except those for recycling (as the raw materials for other products). Please refer to the official website

of Recycling Fund Management Board (https://recycle.epa.gov.tw/en/index.html) for the recycling items and recycling rate.

c) The secondary data in the waste disposal stage depends on the actual situation. It is prior to adopt the carbon emission factor on the Carbon Footprint Calculation Platform (http://cfp-calculate.tw/cfpc/webpage/loginpage.aspx). Thereafter, databank of life cycle assessment or reference to public credibility is taken into account.

B.3 Thailand

a) waste disposal:

The GHG emissions from the final waste disposal phase shall be included in the full carbon footprinting (B2C) case as landfill scenarios but excluded for the partial carbon footprinting (B2B) case. For recyclable materials, the GHG emissions shall be calculated as follows;

$$EEoL = \Sigma [(1-RR,i) \times Ed,i] + EtW$$

Where -

EEoL = emissions factor of the final waste disposal phase of product

RR,i = recycle ratio of material i (table 1)

Ed,I = emissions factor of the final waste disposal phase of material i

EtW = emissions factor of waste transportation

Table 1: recycle ratio of industrial waste

Type	Recycle ratio (%)
Paper	59
Plastic	38
Rubber	25

Source: Pollution Control Department (2013)

The GHG emissions of products in the final disposal phase that are transferred to another system (e.g. methane recovery from landfill) shall be taken into account.

If primary data cannot be collected, then secondary data can be used that shall be based on the IPCC Guideline for National Greenhouse Gas Inventories – Volume 5: Waste (see Table 2), on waste disposal in a shallow landfill. For waste types other than those included in Table 1 of the IPCC Guidelines, and wastes that have carbon content, the GHG emission factor of 2.32 tCO2 per ton of waste shall be used. In case of wastes with no carbon content, the GHG emissions shall be zero. For on-site waste treatment, the GHG emissions shall be based on the actual practice of waste disposal.

In the case of products that are disposed by another system, such as infectious waste rubber gloves, the GHG emissions shall be calculated from its incineration or actual treatment.

In the case that the methane emitted from the landfill is flared, the reduction of GHG emissions must be taken into account.

Table 2: GHG emissions from a shallow landfill (IPCC, 2006)

Waste type	GHG emissions (tCO2e per ton of waste)
Paper	2.93
Fabric	2.00
Food	2.53
Wood	3.33
Garden wastes (i.e. leaves, grass)	3.27
Paper diaper	4.00
Rubber and leather	3.13

Source: 2006 IPCC Guidelines for National Greenhouse Gas Inventories – Volume 5: Waste

The transport of waste to a landfill site shall be based on the following scenario: Transportation by 10-wheel, 16-ton truck through a distance of 40 km; 100% loading on trip to landfill and empty return.

NY_KEITI_181019

[PCR KTT 2018-02]

Product Category Rules for Edible Vegetable Oils

0. General Introduction

This PCR is developed as a part of activities to share experiences and achievements of each system and promote deeper understanding and cooperation among Korea, Taiwan and Thailand, which are successfully operating carbon labeling schemes in Asian region.

The three countries are respected the independence and uniqueness of its respective carbon labeling schemes and the parties are able to utilize this PCR for the mutual development and international application.

0.1 This PCR is based on existing PCR developed by each country.

0.2 This PCR may be used for mutual recognition between the three countries, in which case the regulations and procedures established by the relevant shall be applied.

1. Definition of the product group/ Scope

This PCR applies to edible vegetable oils listed products corresponding to the following CPC codes (Ver.2.1). It includes crude and refined (but not chemically modified) products.

UN CPC 216 Vegetable oils

註解 [U1]: Review is requested

1.1 Functional unit or declared unit

The declared unit is unit packaged product or sales unit.

1.2 Specification of the product

Information related to product characteristic shall be provided.

(e.g.) product name, product capacity (weight or volume), packaging material (bottle, can, carton, etc), refrigerated storage

2. References

There are existing PCR documents developed by each country. The documents, in whole or in part, are normatively referenced and indispensable for the application of this guideline. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including all amendments) applies.

- (Korea) National Guideline for the Environmental Product Declaration (Notification of Ministry of Environment, Republic of Korea)

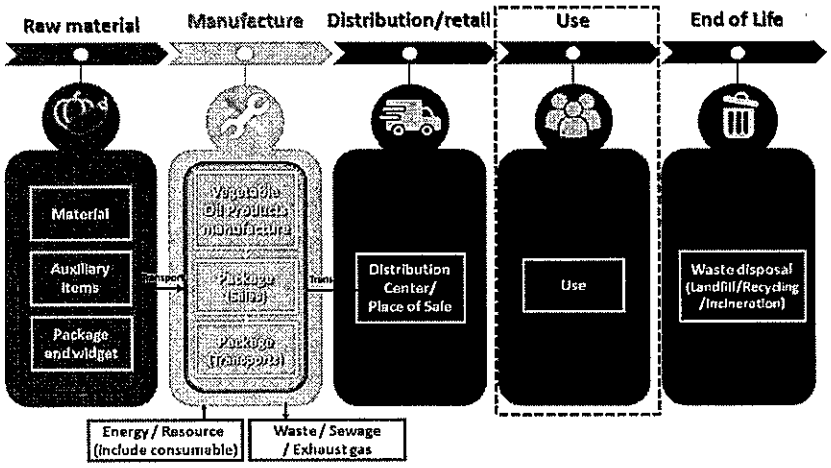
- (Taiwan) Guidelines for the Development, Reference and Revision of Product Category Rules for Carbon Footprints of Products
- (Thailand) The National Guideline on Product Carbon Footprinting and Thai National Product Category Rules for Soybean Oils

註解 [U2]: Review is requested

3. System boundary

System boundary for vegetable oil products includes pre-manufacturing phase, manufacturing phase, distribution/retail phase, use phase, and end-of-life phase.

Figure 1: Presentation of general system boundary



3.1 Raw material acquisition phase

"Raw material acquisition phase" comprises cradle-to-gate information on the production of raw materials and packaging materials for the product.

Such as: Production of ingredients used in the product
Production of semi-product
Production of primary, secondary, and tertiary packing materials
Transport from production site of raw materials and packaging materials to manufacturing site

The requirements and transport scenarios specified in the reference as mentioned in Chapter 2 are followed.

3.2 Manufacturing phase

"Manufacturing phase" comprises gate-to-gate information on the product production and handling of processes-related emissions and waste. This phase includes processes related to the production of the product.

Such as: Extraction processes
Packaging processes (e.g. filling, labeling...)
Waste treatment of waste generated during manufacturing

3.3 Distribution/retail phase

"Distribution/retail phase" comprises quantitative information on transport of product from manufacturing site to distribution platform. The requirements and transportation scenarios specified in the reference as mentioned in Chapter 2 are followed.

3.4 Use phase

Use phase emissions are not included. No refrigeration is required.

註解 [U3]: Review is requested

3.5 End-of-life phase

"End-of-life phase" comprises quantitative information on recycling or handling of product after use. Treatment methods for packing materials are in accordance with relevant laws and regulations.

End-of-life scenarios for the geographical area are specified in **Annex A.**

4. Data collection and data quality

One year of data shall be collected and be representative of the product.
Primary data (also referred to as site-specific data) shall be taken precedence.
The requirements specified in the reference as mentioned in Chapter 2 are followed.

4.1 Cut-off criteria

Using cut-off criteria depends on each country scheme but it should not give the perceptions of hiding information, but rather to facilitate the data collection for users. It is assumed that the defined cut-off criteria in the reference as mentioned in Chapter 2 ensure the representativeness of the collected data.

4.2 Allocation

If allocation is necessary, it should be performed with the most suitable parameters. The criteria for the allocation shall be in accordance with the reference as mentioned in Chapter 2.

5. CFP calculation

The details shall be as specified in the reference as mentioned in Chapter 2 are followed.

6. Displaying the CFP result

The requirements specified in the reference as mentioned in Chapter 2 are followed.

7. Changes in this PCR document

[PCR KTT 2018-01] 2018-05-17, Original version published.

[Annex A] End-of-life scenario

This annex provides country-specific end-of-life scenarios to assist in calculating GHG emissions for waste associated with the product.

B.1 Republic of Korea

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Table 1: recycle ratio of industrial waste

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Source: Pollution Control Department (2013)

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附錄 3

「亞洲碳足跡網絡 2018 年會員會議」
會議資料

Introduction and Current status of Korea Eco-Label

Eco-Certification Office

KEITI Korea Environmental Industry & Technology Institute

Contents

01. Background of Eco-label

02. Korea Eco-label Program Overview

03. Korea Eco-Label Certification Criteria

04. Korea Eco-Label Certification

05. Monitoring and Surveillance

06. Implementing Strategy

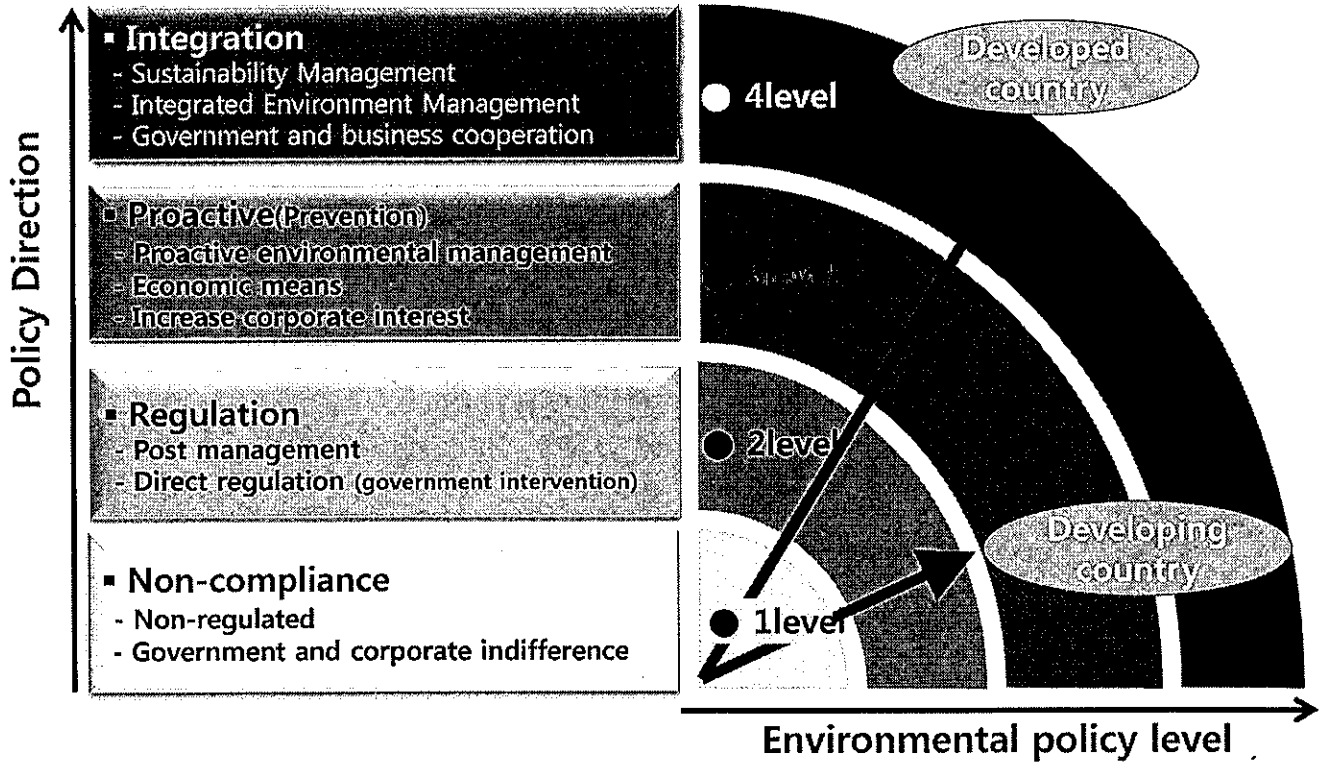
01. Background of Eco-label

KEITI Korea Environmental Industry & Technology Institute

01. Background of Eco-label

KEITI Korea Environmental Industry & Technology Institute

◈ **Paradigm Shift :** Regulation ➔ Proactive management ➔ Integration management



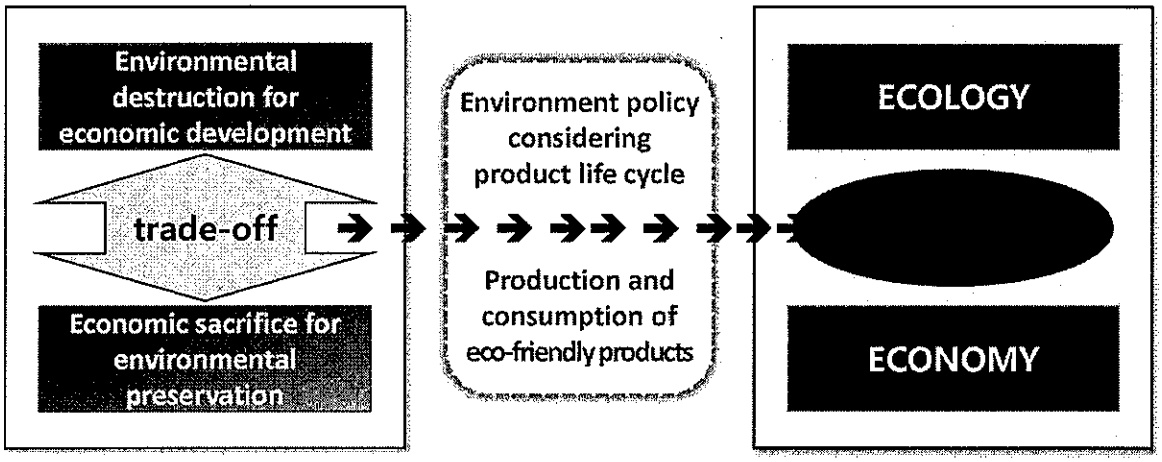
01. Background of Eco-label

KEITI Korea Environmental Industry & Technology Institute

◈ Necessity

- Accelerating the transition from 'environment-economic conflict' to 'environment-economic coexistence and cyclical relationship'

➔ We can pursue environment and economy at the same time by promoting environmental policy considering product life cycle



01. Background of Eco-label

KEITI Korea Environmental Industry & Technology Institute

◈ Enterprise Responses

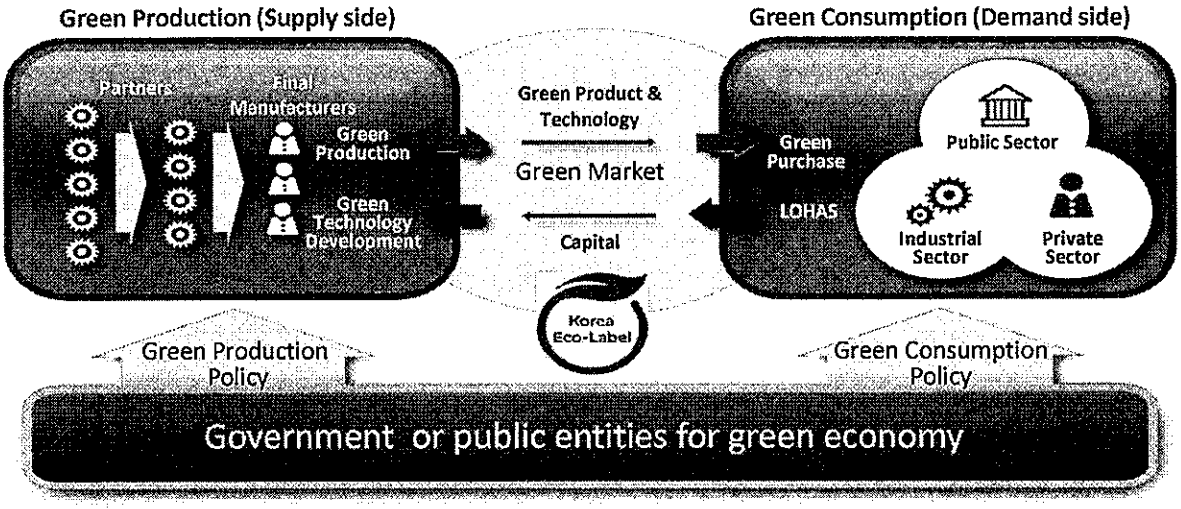
- ✓ The quality of the environment and the overall quality are complementary and synergistic concepts
- ✓ Minimize enterprise risk by considering product quality and environment together

	(Quality Management)	(Environmental Management)	
Low Cost	Approach to Improve Defects	Approach to environmental improvement	Low Cost
	Total quality control	EMS(Environment Management System) Cleaner Technology	
	Quality inspection in the final process	End-of-Technology	
High Cost	Product recall	Treatment after environmental accidents	High Cost

01. Background of Eco-label

◈ Green economy policy

- ✓ Green Production & Consumption are the key elements to drive Green Economy
- ✓ Green Procurement stimulates the demands on greener products, thereby creating a virtuous cycle of green production & consumption



02. KOREA ECO-LABEL PROGRAM

Overview

02. Korea Eco-label Program Overview

KEITI Korea Environmental Industry & Technology Institute

◈ Korea Eco-label

- Voluntary method of environmental performance certification for products or services proven environmentally preferable overall, within a specific category

- Awards a license that authorizes the use of environmental labels on the environmentally preferable products based on life cycle consideration (Certification Period: 2years)

◈ Introduction of Integrated Logo

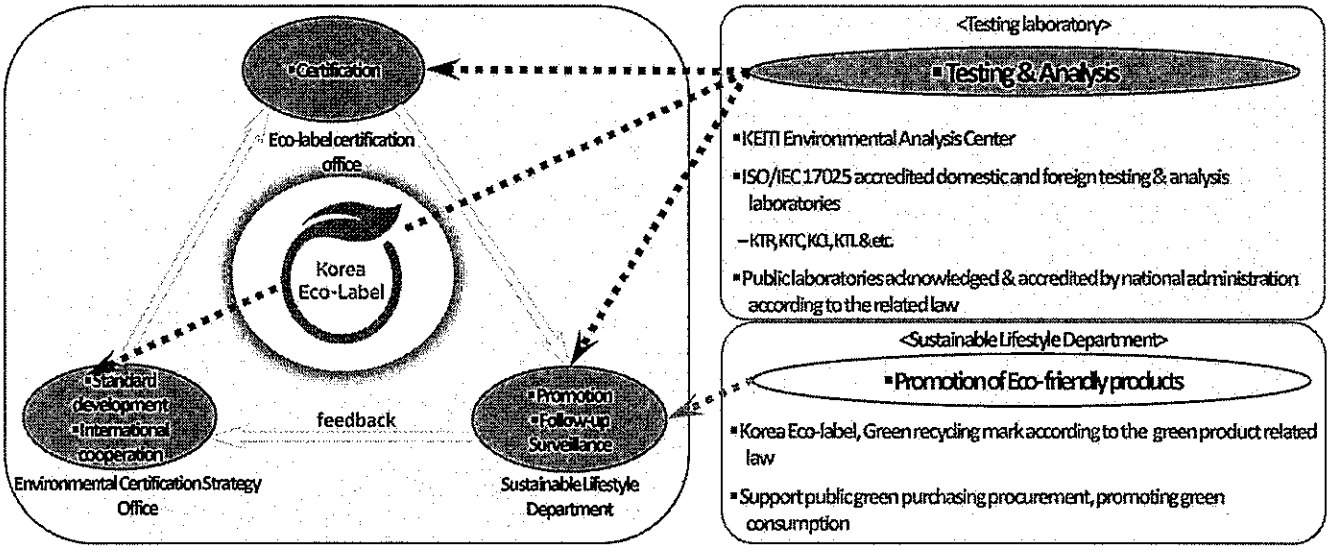
- Design implication:
  - ✓ A green leaf symbolizing eco-friendlessness,
  - ✓ Round shape indicating the eco-friendly product that protects the earth

02. Korea Eco-label Program Overview

KEITI Korea Environmental Industry & Technology Institute

◈ Eco-labelling system operating agencies(based on ISO 14024 and ISO 17065)

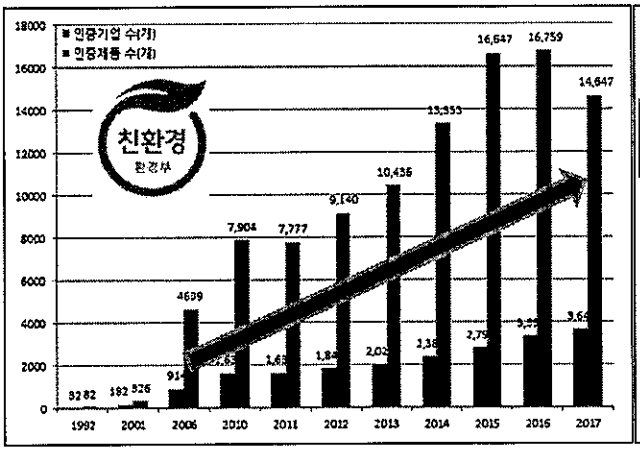
- (Ministry of Environment) Overall management of the Eco-labelling system
- (KEITI) Selection for the target eco-label products, Eco-label Certification , Follow-up surveillance, Promoting Eco-friendly products
- (Testing labs)Test & analysis of certifying & certified products

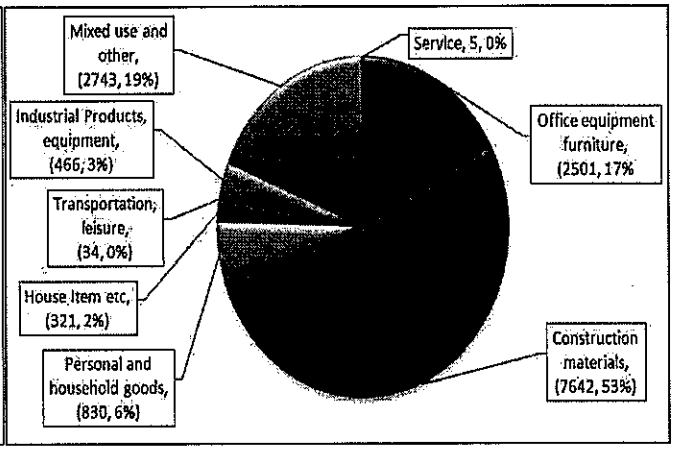


02. Korea Eco-label Program Overview

KEITI Korea Environmental Industry & Technology Institute

◈ Annual Certification Status





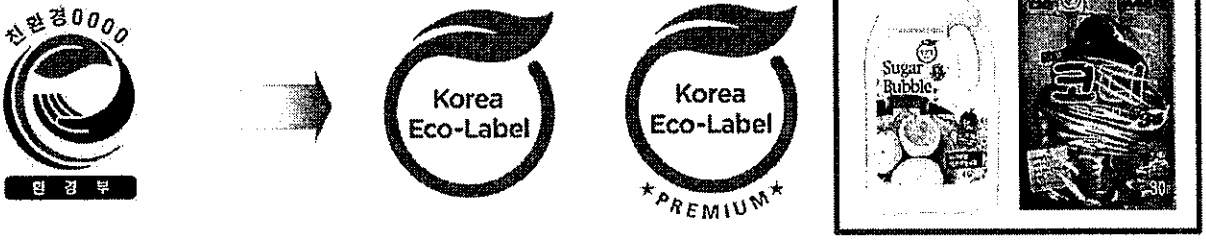
- Exceeded 10,000 certified products(in 2013)
- Increased number of certified products 326(in 2001) → 14,542(in 2018)
- As of 2018-06, Product : 14,014 ea, Company : 3,630 ea
- Most of Certified product : Construction materials (such as windows, LED Lighting, Paint)

02. Korea Eco-label Program Overview

KEITI Korea Environmental Industry & Technology Institute

◈ Design for Korea Eco-Label, Environmental product declaration, Carbon foot print marks changed as unified one to clarify brand identity

◈ With the integrated design, Premium Korea Eco-Label introduced as useful marketing tools and accepted symbols of consumer choice for more reliable products



03. Korea Eco-Label Certification Criteria

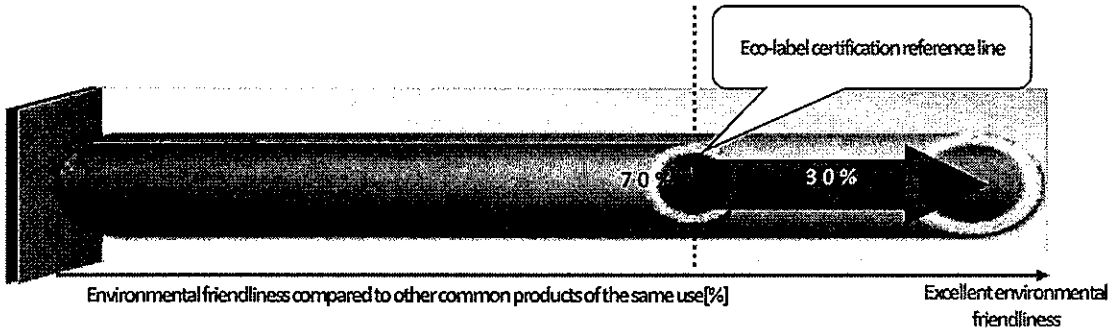
KEITI Korea Environmental Industry & Technology Institute

03. Korea Eco-Label Certification Criteria

KEITI Korea Environmental Industry & Technology Institute

◈ Korea Eco-label Certification Criteria

- **Consider both 'Environmental friendliness' & 'Quality' of the product** (According to the ISO14024 principle)
  - **(Environmental friendliness)** Establishing criteria to satisfy environmental friendliness in multiple environmental attributes



  - **(Quality)** shall be equal or higher quality compared to the related Korean Standard
  - **(Safety)** shall meet the safety related regulation
  - **(Compliance of environmental law)** Company shall meet law for regional and domestic environment during certification period
  - **(Delivery of fair product information)** shall comply with the 「Act on Fair Labeling and Advertising」

03. Korea Eco-Label Certification Criteria

KEITI Korea Environmental Industry & Technology Institute

◈ Environmental Standard Development Procedures

<table>
<tr><td colspan="5">Selection of Target Product and Establishment of Certification Criteria</td></tr>
<tr><td>Proposer</td><td colspan="2">KEITI (1 year)</td><td>Ministry of Environment</td><td>KEITI</td></tr>
<tr><td rowspan="2">Proposal for the selection of target ecolabelled products

*Some product groups are proposed by internal research.</td><td rowspan="2">Selection of target products (Selection Committee)</td><td>Preparation of the draft certification criteria by target product (Criteria Committee)</td><td>Notification after reviewing the target products and the draft certification Criteria</td><td rowspan="2">Informing the proposer of the contents notified by the Ministry of Environment</td></tr>
<tr><td>Report to the Ministry of Environment</td><td>Reporting the review result to the President of KEITI</td></tr>
</table>

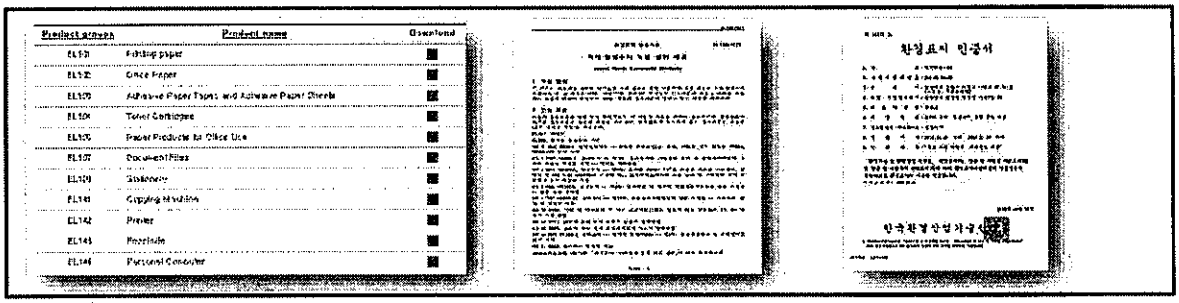
03. Korea Eco-Label Certification Criteria

KEITI Korea Environmental Industry & Technology Institute

◈ Certification criteria

- Status
  - Korea Eco-Labelling criteria : 165 ea
  - The Criteria can be grouped into 8 categories.

    ※ Office Equipment & furniture / Construction material / Personal and Household goods / House item / Transportation, leisure / Industrial Product, equipment / Mixed use and other / Service)



- Check of the Environmental Standards

  Korea Eco-Label Information System

  : http://el.keiti.re.kr/enservice/enindex.do

03. Korea Eco-Label Certification Criteria

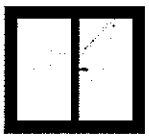
KEITI Korea Environmental Industry & Technology Institute

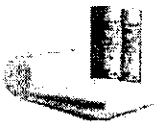
Construction materials


LED Lighting Luminaire

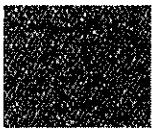

Paint


Urinals


Windows


Lagging insulating material

Textile products


Textile goods for Decoration


Clothing


Clothing

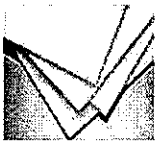

Bags


Bedding

Wood Products


Furniture


Office Partition


Recycled Wood Products


Wood Plastic Composite Products

House Item, etc


TV


Air conditioners


DVD Player


Gas Range


Beds

KEITI Korea Environmental Industry & Technology Institute

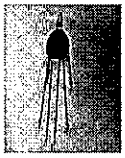
03. Korea Eco-Label Certification Criteria

KEITI Korea Environmental Industry & Technology Institute

Transportation & Leisure


Tire


Engine Oil

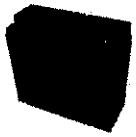

Fishing sinkers


Anti-freezing Solutions for Car

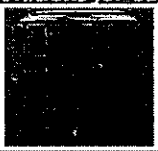

Windshield Washers for Automobiles

Industrial Products &equipment


Printing Inks and Writing Inks


Industrial Battery


Deodorants


Deicer


Buoys for Fish Culture

Mixded Use and Others


garbage bag


Sola-powered or Self-generating Products


Fire Extinguisher


Wood Plastic Composite Product

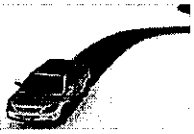

Recycled Construction Materials

Service


Hotel service


Automobile insurance


Resort condominium service


Car sharing

Laundry & Dry cleaning service

KEITI Korea Environmental Industry & Technology Institute

04. Korea Eco-Label Certification

KEITI Korea Environmental Industry & Technology Institute

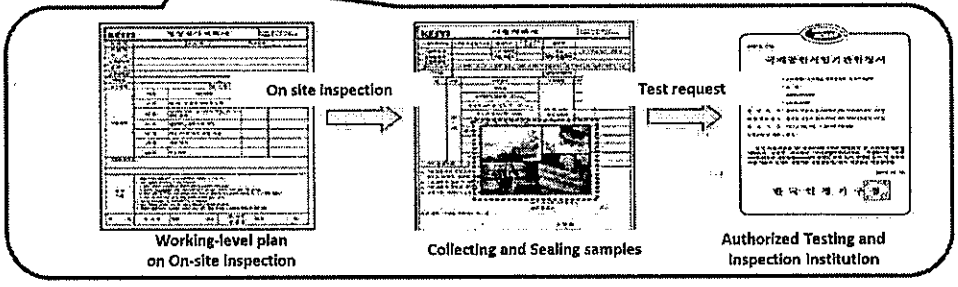
04. Korea Eco-Label Certification

KEITI Korea Environmental Industry & Technology Institute

◈ Certification process & Certificate

Certification for the Ecolabel				
Applicant (Company)	KEITI(30 days, excluding testing·analysis period)		KEITI Applicant (Company)	User (Company)
Application for the certification for the use of the Ecolabel	Document review Field inquiry Testing·Analysis	Deliberation and decision (Deliberation Committee)	Reporting the result and making a contract for the use of the Ecolabel	Use of the Ecolabel (2 years)

Korea Eco-Label



04. Korea Eco-Label Certification

KEITI Korea Environmental Industry & Technology Institute

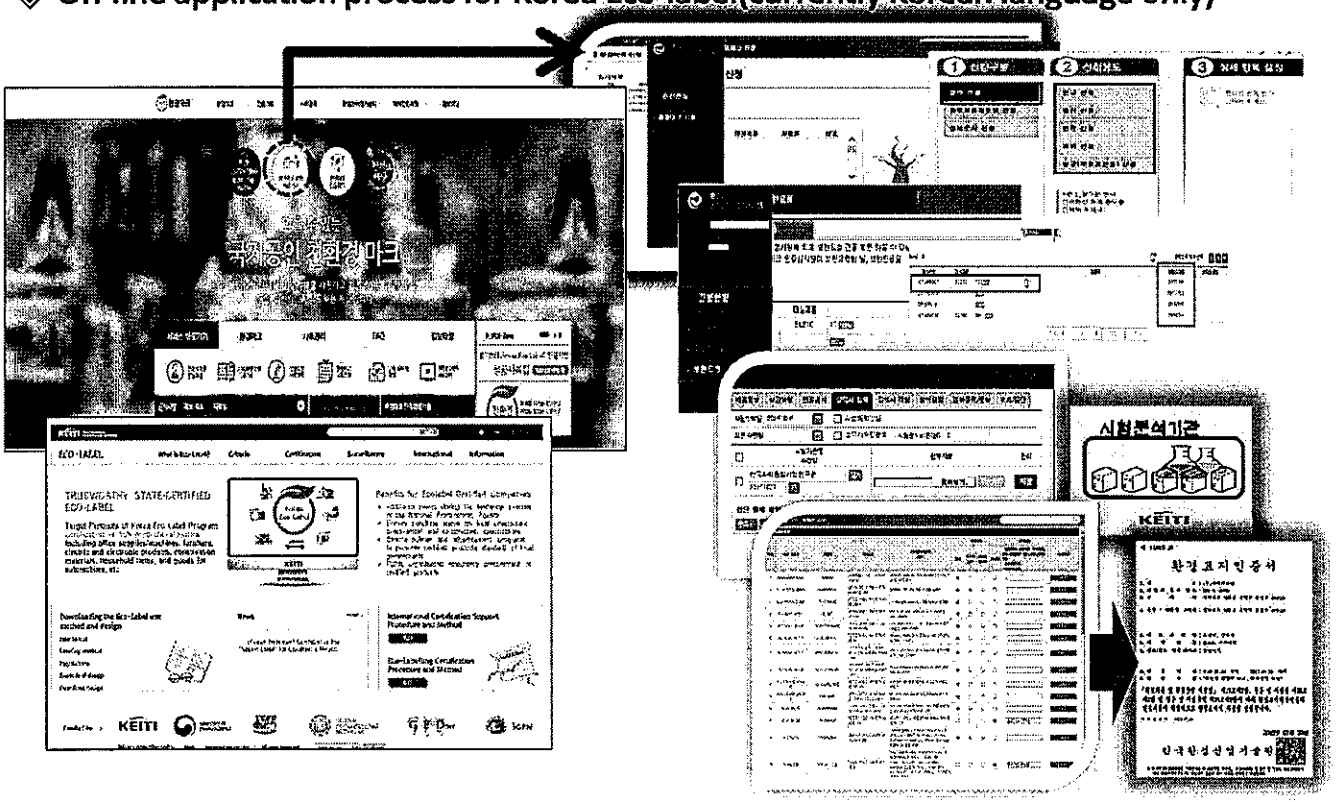
◈ Certification Procedure

Identification of Qualification standard for Ecolabel target product and Submission of Application document , evidential material (receiving application)	• Application document for Ecolabel use • Data for environmental effect of target product • Quality data for target product • Evidential material for the proof of suitability in certification criteria
Field investigation for quality standard and environmental standard of target product / sapling (Field investigation and product evaluation)	• Field investigation for document submitted(history of raw material use) • Sampling for test and analysis • confirmation of others related to certification
Certification Evaluation for Ecolable use And Conclusion of Agreement (certification Evaluation of Ecolabel)	• Conformity assessment of quality standard and environmental standard for applicable scope, history of raw material use and submitted document • Notification of evaluation result • Conclusion of Agreement for Ecolabel use issuing certification

04. Korea Eco-Label Certification

KEITI Korea Environmental Industry & Technology Institute

◈ On-line application process for Korea Eco-label(currently Korean language only)



05. Monitoring & surveillance

KEITI Korea Environmental Industry & Technology Institute

05. Monitoring & surveillance

KEITI Korea Environmental Industry & Technology Institute

◈ Monitoring & follow up surveillance procedure

Monitoring & Follow-up Surveillance

Checking for indications· advertisements (frequently)

Conforming or nonconforming to the certification criteria (regularly/frequently)

Checking whether the ecolabel is used for non-certified products

Checking whether the ecolabel is used after the certification period ends

Checking whether ecolabel indications or advertisements are appropriate

Inquiry into the goods on the market or in the production field

Sample collection

Testing·Analysis

Data review

Judgment on conforming or non-conforming to the certification criteria

Imprisoned (maximum 2 years), penalty (US 8,700$), in case of violation

Cancellation of non-conforming Products

Monitoring

Surveillance

05. Monitoring & surveillance

◈ Market monitoring and surveillance for credibility of Korea Eco-label

Establishing Surveillance Plan & Prior-notice for Target Companies	• reviewing current status of the certified products for periodic surveillance check • Prior-notice for Target Companies • companies submit quality assurance assessment form
Classifying Investigation method in accordance with Products, Conducting surveillance check	• Classifying Investigation method (on-site inspection, testing and analysis) • reviewing the result of inspections and test report ※ Prior-notice is not required for Special surveillance investigation
Hearing deliberation & Follow-up	• notification of prior disposition • materials for explanation submitted and Hearing deliberation is to be held • KEITI notifies the company concerned of the result and reports it in the official gazette.

06. IMPLEMENTING STRATEGY

06. Implementing Strategy

KEITI Korea Environmental Industry & Technology Institute

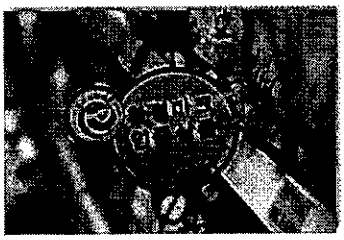
◈ Incentives for Eco-Label Certified Products

1. Certified products become targets of obligatory purchase by public institutions

2. KEITI promotes certified products and supports distribution to big box retailers, department stores, and etc.

3. The eco-friendliness and other benefits of the Korea Eco-labeled products are promoted through a various media such as TV, radio, newspapers.

4. KEITI supports registration to the Office of Supply as good products (comprehensive technological report)



Ecolabeled products
at big box retailers

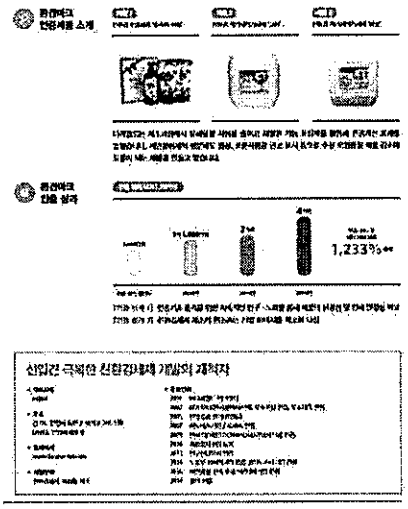
Giving prizes to companies which have made and distributed eco products

06. Implementing Strategy

KEITI Korea Environmental Industry & Technology Institute

◈ Incentives for Eco-Label Certified Products

5. Companies are provided information on the benefits of the Korea Eco-labeled products in order to assist self-promotion of products.



06. Implementing Strategy

KEITI Korea Environmental Industry & Technology Institute

◈ Mutual Recognition Agreement (MRA)

- (Objective) Better access to overseas certification of domestic eco-labeled products
- (Definition) Mutually recognize the other party's credibility of eco-label program and verification process, agreed to co-operate in trans-boarder certification, etc.
- (Current status) MRA with 11 programs of 10 Region · Countries

Chinese Taipei	Thailand	Japan	Australia	China	New zealand	Nordic 5 countries	USA	Canada	Germany	Chinese Taipei
'02	'02	'03	'04	'05	'06	'10	'12	'12	'13	'13
Green Mark	Green Label	Eco Mark	Good Env. Choice	環境標志	Env. Choice	Nordic Swan	Green Seal	EcoLogo	Blue Angel	Green Building Material

06. Implementing Strategy

KEITI Korea Environmental Industry & Technology Institute

◈ Mutual Recognition Agreement (MRA)

- (Co-operation approach for each counter-parties in MRA)

Countries/Program \ Tier		Tier 1	Tier 2	Tier 3
		Accept Credibility	Mutual Agency for Compliance Verification	Harmonized Criteria(*)
Japan	Eco Mark	■	■	■
China	環境標志	■	■	■
Chinese Taipei	Green Mark	■	■	
Thailand	Green Label	■	■	
Australia	Good Env. Choice	■	■	
New Zealand	Env. Choice	■	■	
USA	Green Seal	■	■	
Canada	EcoLogo	■	■	
Germany	Blue Angel	■	■	
Nordic 5 countries	Nordic Swan	■		

* Common criteria of China, Japan, Korea : harmonized partially, skips redundant verification when it comes to common items

- **Tier 1 :** Mutually **accept** the other party's credibility & Implement **comprehensive** co-operation
- **Tier 2 :** Mutually recognize the other party's **verification process** & **Compliance verification** on domestic applicants for **counterpart's certification**
- **Tier 3 :** Develop **common criteria & Verification exemption** of common items for the simplification of certification process

☞ ***"Higher level of MRA achieved through harmonized criteria and procedure of certification, saving cost and time for trans-boarder certification"***

06. Implementing Strategy

◈ Future Plan

- Expanding the scope of products subject to the Korea Eco-labeled Certification, centering on products whose environmental performance is of strong interest for the consumers

- Reinforcing promotional activities focusing on the benefits of green products including information on the benefits of using eco-labeled products, in order to encourage environmental consciousness among consumers with the purchase of relevant products.

- Enhancing the reliability of the Korea Eco-labeling by preventing unqualified products from being distributed in the follow-up management of eco-labeled products in market.

- Strengthening support for SMEs in acquiring the Korea Eco-labeled by expanding technical consultations, thereby inducing the development and manufacture of green products.

Thank You very much!

Sustainable Lifestyle & Welfare(Health) Division

http://el.keiti.re.kr/enservice/enindex.do

KEITI Korea Environmental Industry & Technology Institute

Eco-Label &
Environmental Product Declaration (EPD) in Korea

2018. 9. 12.

Ministry of Environment KEITI Korea Environmental Industry & Technology Institute

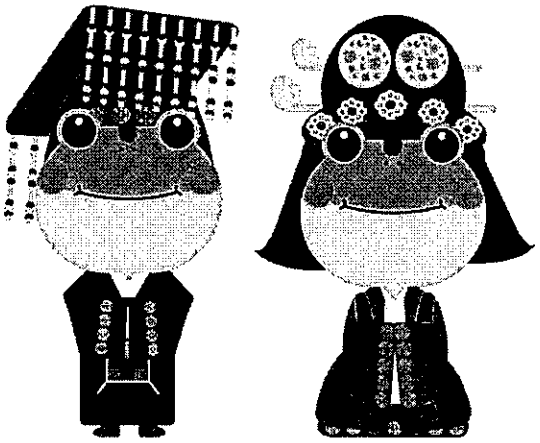
Contents

1 Introduction of MoE & KEITI

2 Before introducing EPD

3 EPD Certification

4 Certification Support



1. Introduction of MoE & KEITI

Ministry of Environment

&

Korea Environmental Industry & Technology Institute

1.1 Introduction of MoE

➢ Major Policies

- Climate Change
- Air
- Water Environment
- Waterworks, Sewage, & Drinking water
- Soil & Groundwater
- Environmental Health
- Waste
- Nature and Land
- International Environmental Cooperation
- Green Economy

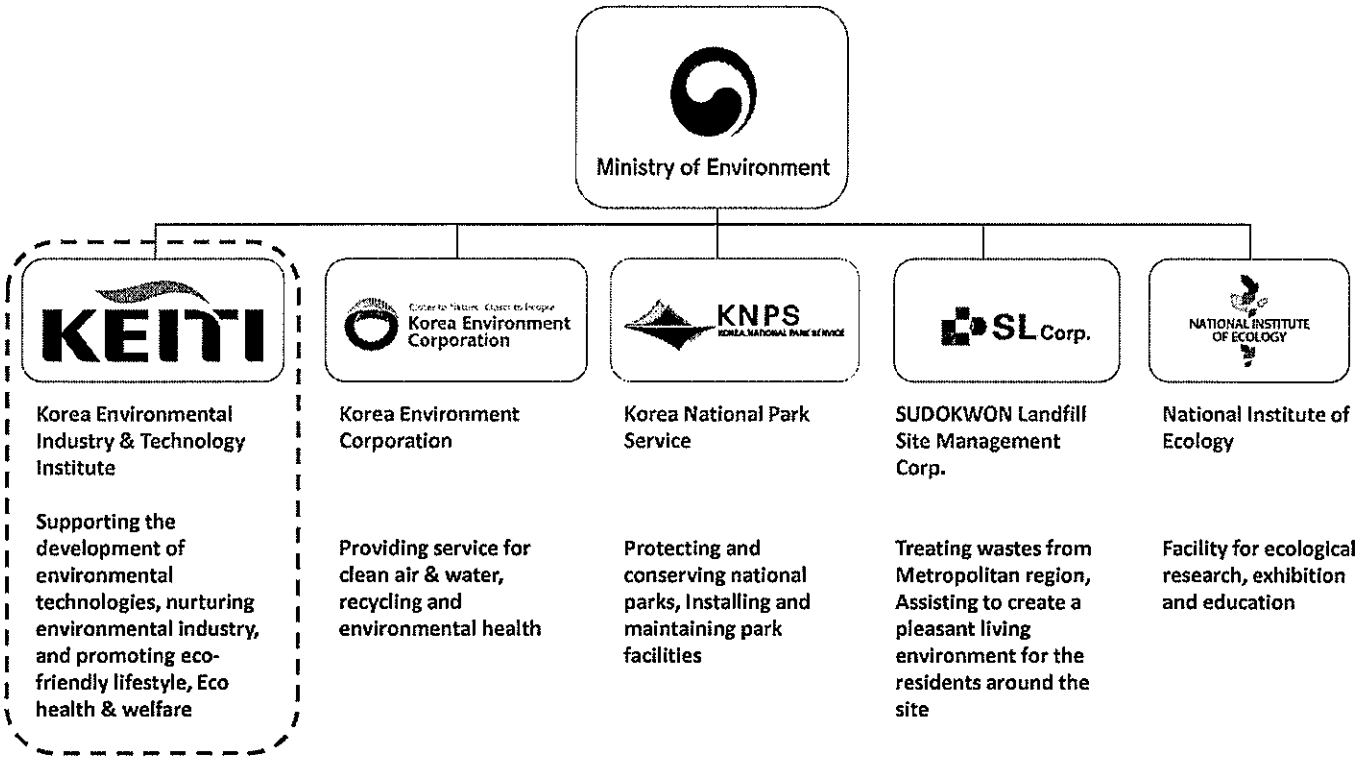
Ministry of Environment

➢ Promotion History

1987.3	1980.1	1994.12	1996	2017
Established Environmental Management Corporation(EMC)	Established Environmental Administration(EA)	Ministry of Environment	Laws for Enforcement decree of the development of and support for environmental technology act	Inauguration as a Minister, Eunkyung Kim.

1.2 Introduction of KEITI

➢ KEITI is public organization to implement ME policies and programs



1.2 Introduction of KEITI

◈ KEITI - The Public Organization Under the ME

KEITI Korea Environmental Industry & Technology Institute

For Environmental Sustainability ECO-Friendly Products and Sustainable Business Practices	- Environmental technology product certification, verification, evaluation - Promotion of eco-friendly product - Facilitating Green consumption
For Environmental Sustainability R&D	- Basic and applied technology development and research - Fusion of development technology - Commercialization of environmental technology application
Pursuing Future Values Industry Nurturing & Job Creation	- Supporting for eco-friendly start-up and commercialization and development of environment expert personnel available - Expansion of environment market to overseas and enhanced export
A Safe and Happy Society ECO-Health and Welfare	- Research and Development of Environmental policies for Eco-friendly Life - Policy Research Focusing on Commonly Used product
Global Cooperation Global Partnership & Contribution	- Exploring cooperative projects to improve Environment in Partner Country - International Cooperation Program for Environmental Technologies

☐ **The role of Bridge among R&D, Industry, Welfare, and Global Partnership**

1.3 Overview of Korea Eco-label V.S. EPD

Eco-Labeling Scheme

- (Type1)
  Eco-labeling according to ISO 14024
- Voluntary certification scheme to attach logo to product with superior environmental quality throughout its lifecycle to other products of the same use, and thus to provide product information to consumers
- History
  - Eco-labelling enforced (1992.04)
  - Law for Eco-labelling scheme established(1994)
  - Joined GEN(1997)
  - Law for mandatory purchase of green products established(2005)

EPD (Environmental Product Declaration)

- (Type3)
  EPD according to ISO 14025
- Measuring and displaying information on environmental performance(environmental impact) generated during lifecycle of a product(including service).
- Lifecycle is from the acquisition of the raw materials to production, distribution, use and disposal
- History
  - Development LCI DB(1998)
  - Law for EPD scheme enforced(2001)
  - Certification of Carbon Emission(2009)
  - Certification of Low Carbon Product(2011)

2. Before introducing EPD…

Environmental Product Declaration

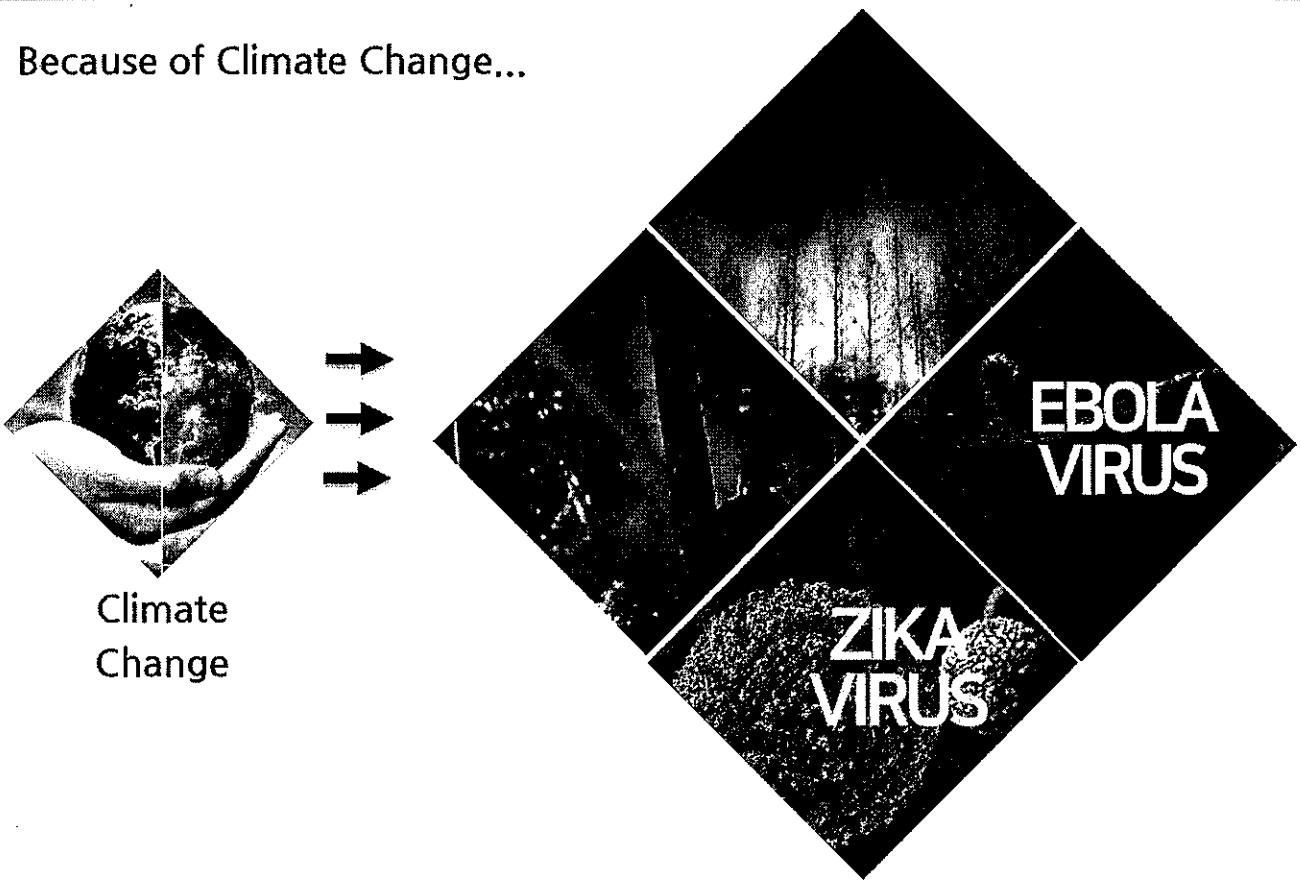
2.1 Problems of Climate Change

- Because of Climate Change...

Climate Change

2.1 Problems of Climate Change

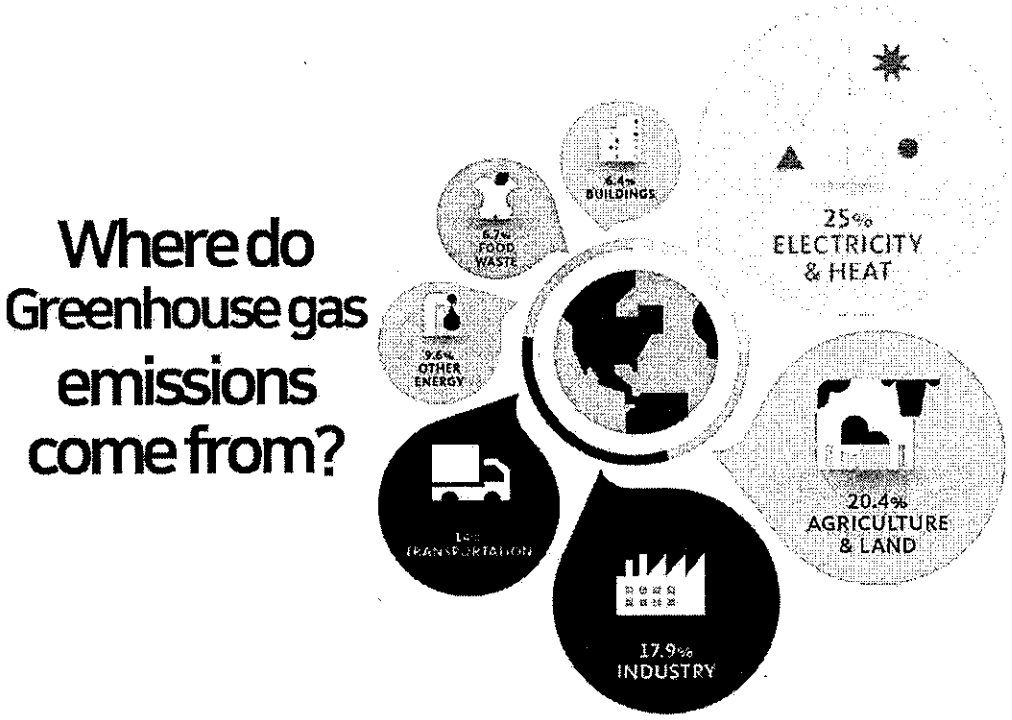
- Because of Climate Change...



Climate Change

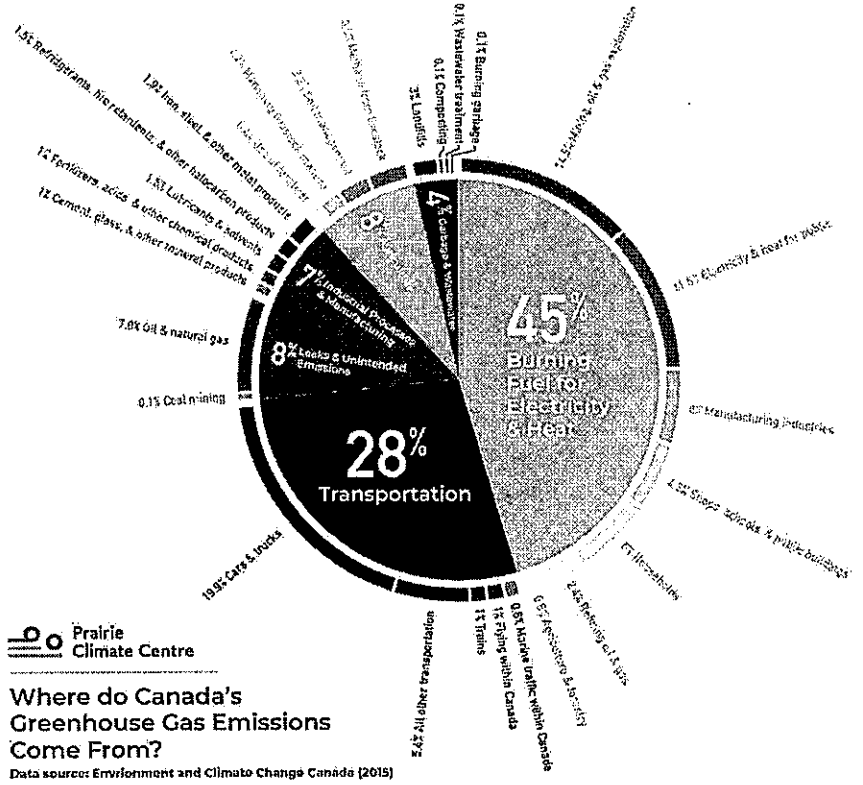
2.2 Main Culprit

- Climate is caused by Greenhouse Gas!!!!



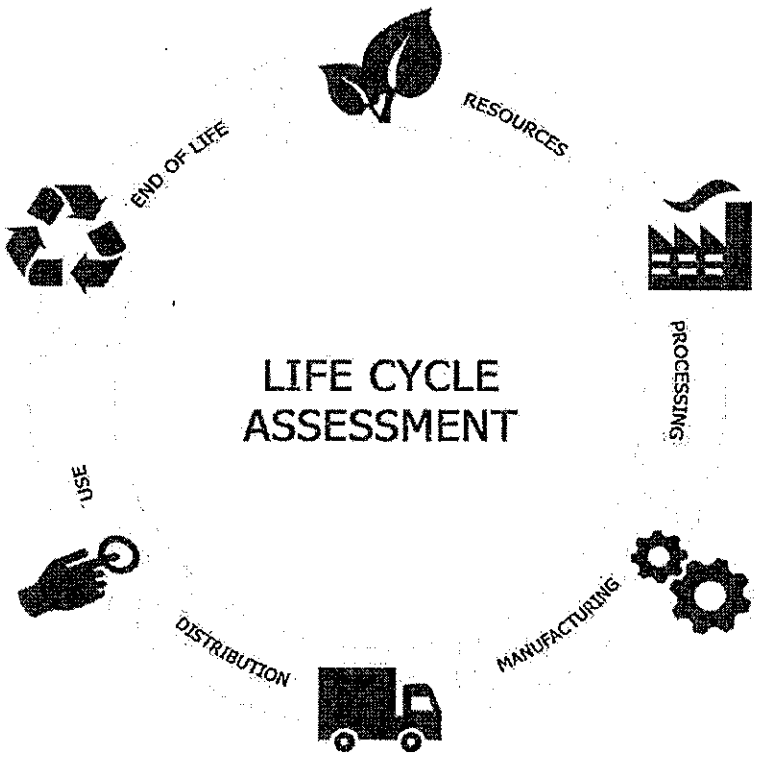
2.3 How to know the figure?

- Climate is caused by Greenhouse Gas!!!!



2.4 LCA

➢ Life Cycle Assessment



Examine the Environmental Impacts

- Accounting for all the inputs and outputs throughout the life cycle of that product
- From its birth, including design, raw material extraction, material production, part production, and assembly, through its use, and final disposal

For LCA...

- LCI DB(Life Cycle Inventory Database) is needed
- Providing individual gate-to-gate, cradle-to-gate and cradle-to-grave accounting of the energy and material flows into and out of the environment that are associated with producing a material, component, or assembly

2.3 Environmental Impact

➢ Introducing new information on environmental performance

Carbon Footprint

Impact on climate change caused by greenhouse gas emitted into the air

Ozone Depletion

Impact on ozone layer in the stratosphere caused by ozone depleting substances emitted into the air

Resource Footprint

Global impact caused by development and consumption of minerals and fossil fuels

Eutrophication

Impact on ecosystem caused by excessive concentration of organic substances (nitrogen and phosphorous) in air, water and soil

Photochemical Smog

Impact on human body and ecosystem caused by pollutants on the ground surface generated through active materials from human activities reacting to light

Water Footprint

Impact on water resources, such as water quality and volume, caused by agricultural and industrial human activities

Acidification

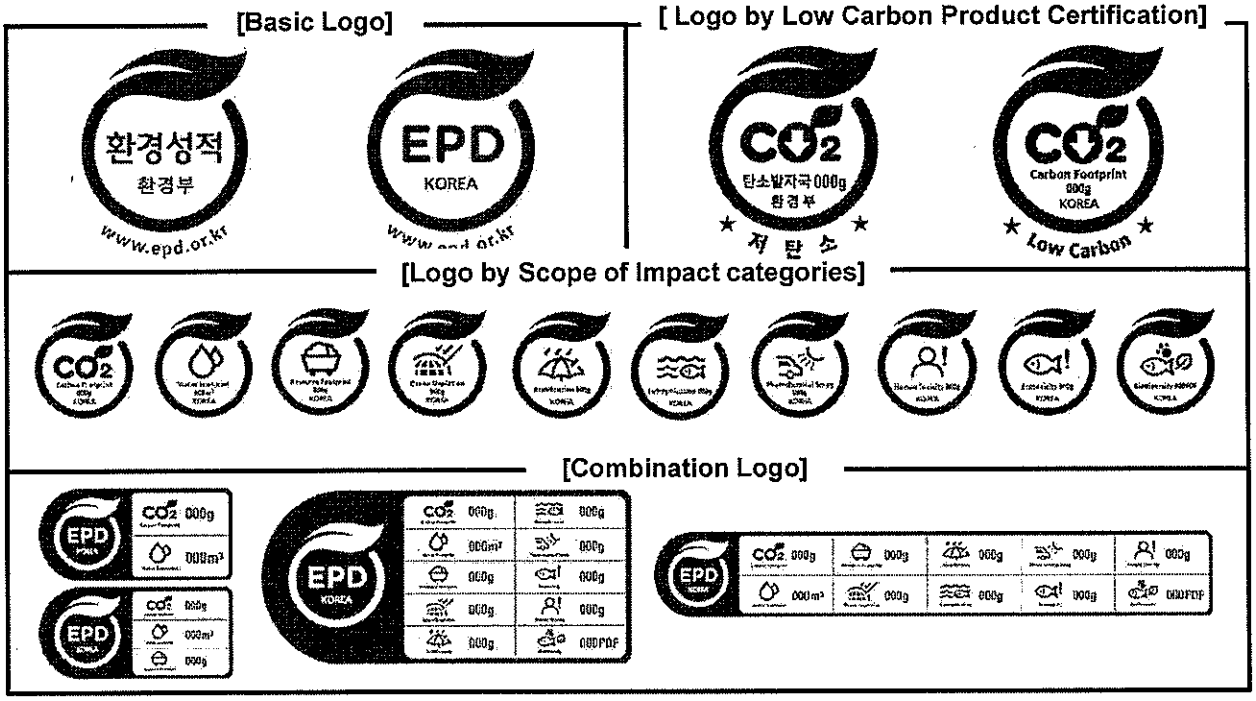
Impact on human activities and ecosystem caused by acidifying substances in the air falling down in rain

※ Redefined through reference to Guideline for the EPD and overseas impact assessment methodologies, such as CML and ReCiPe

2.3 EPD and Environmental Impact Logo

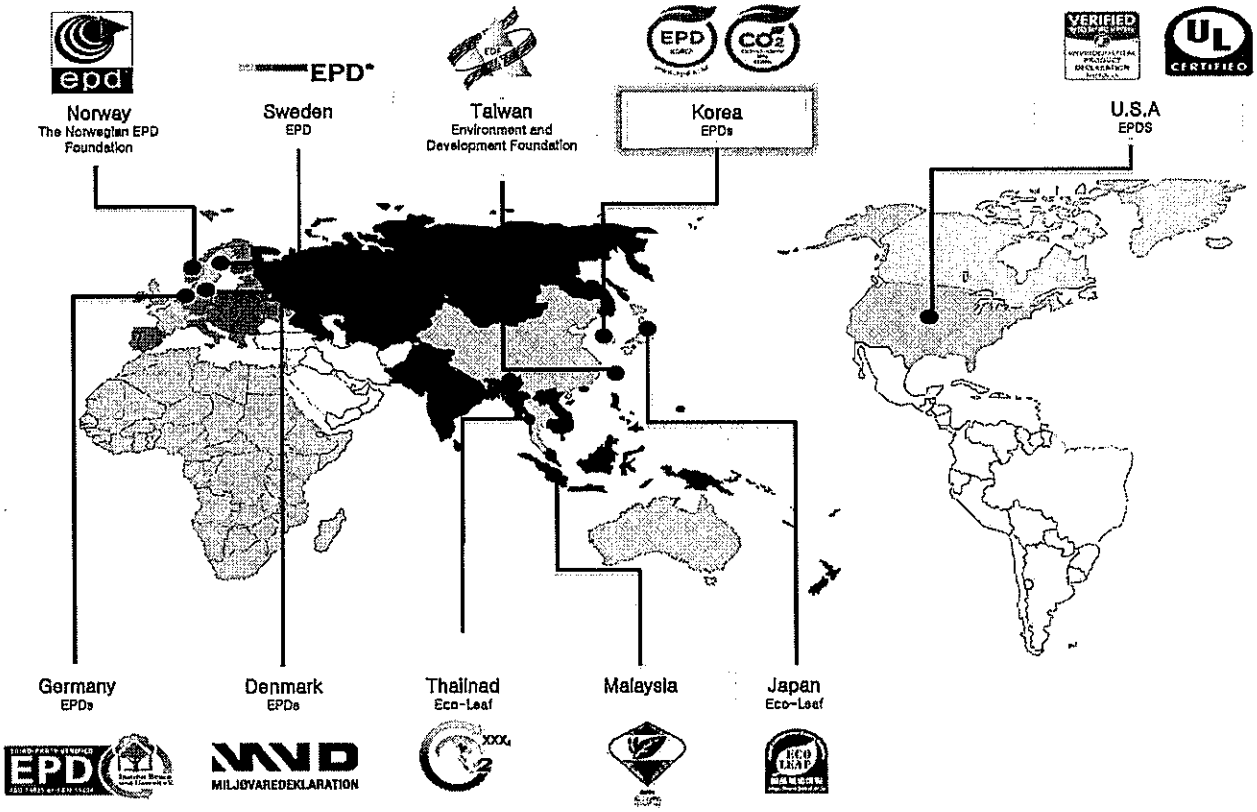
➢ Improving the display method of information on environmental performance

▪ Developing logo by scope of impact categories, low carbon product certification and combination (Apr. 14, 2017)

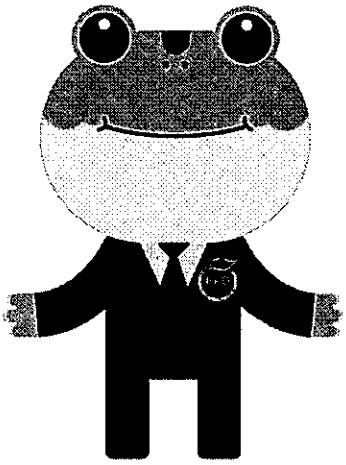


3.4 International Cooperation

8 Countries in the world have EPD Scheme

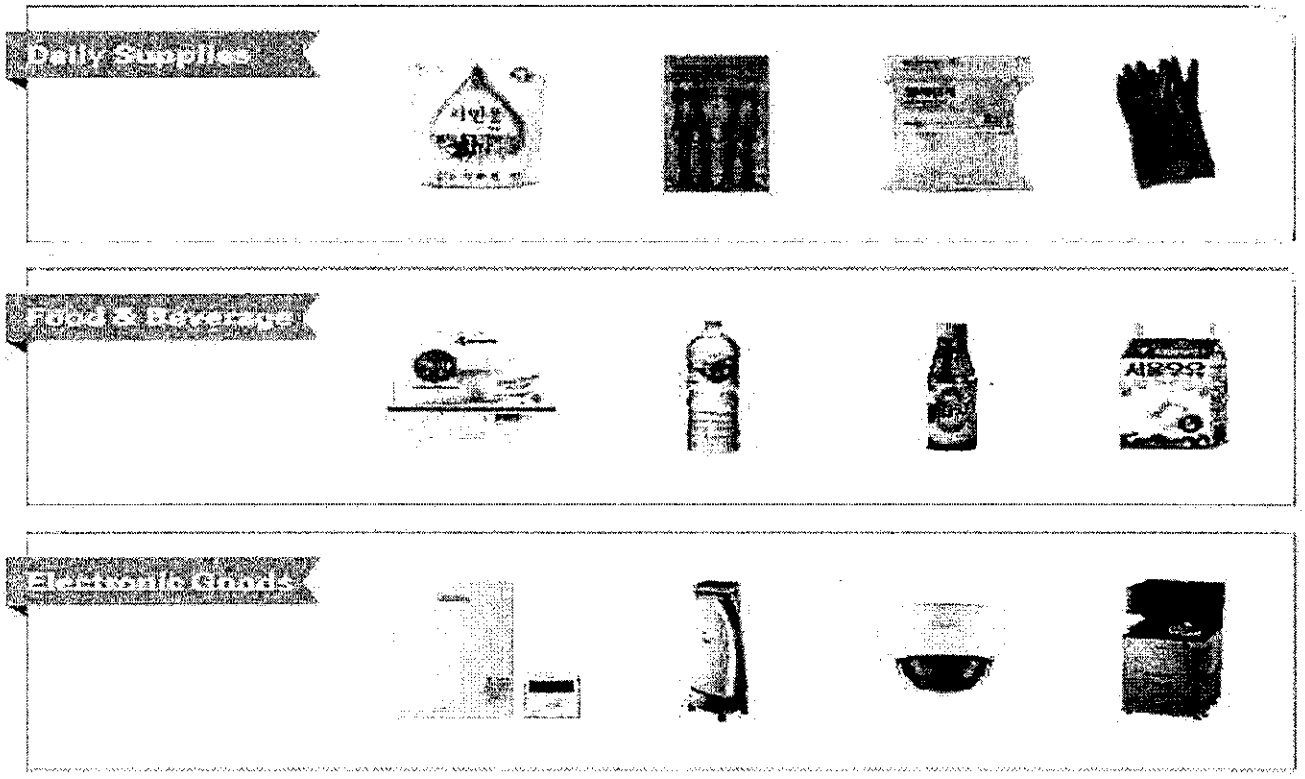


3. EPD
(Environmental Product Declaration)



3.1 Introduction of EPD

➢ Certification products

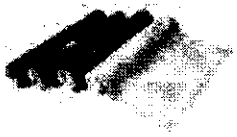


3.1 Introduction of EPD

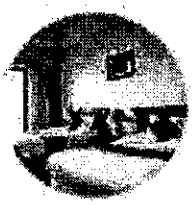
➢ Certification products

Construction Material

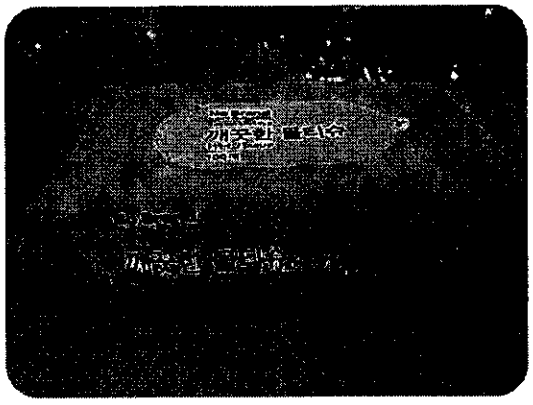
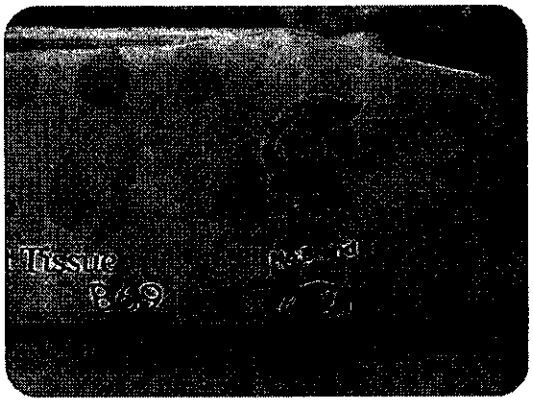





Services

3.1 Introduction of EPD

3.1 Introduction of EPD

3.2 Certification Status and Recognition

➢ Number of EPD products

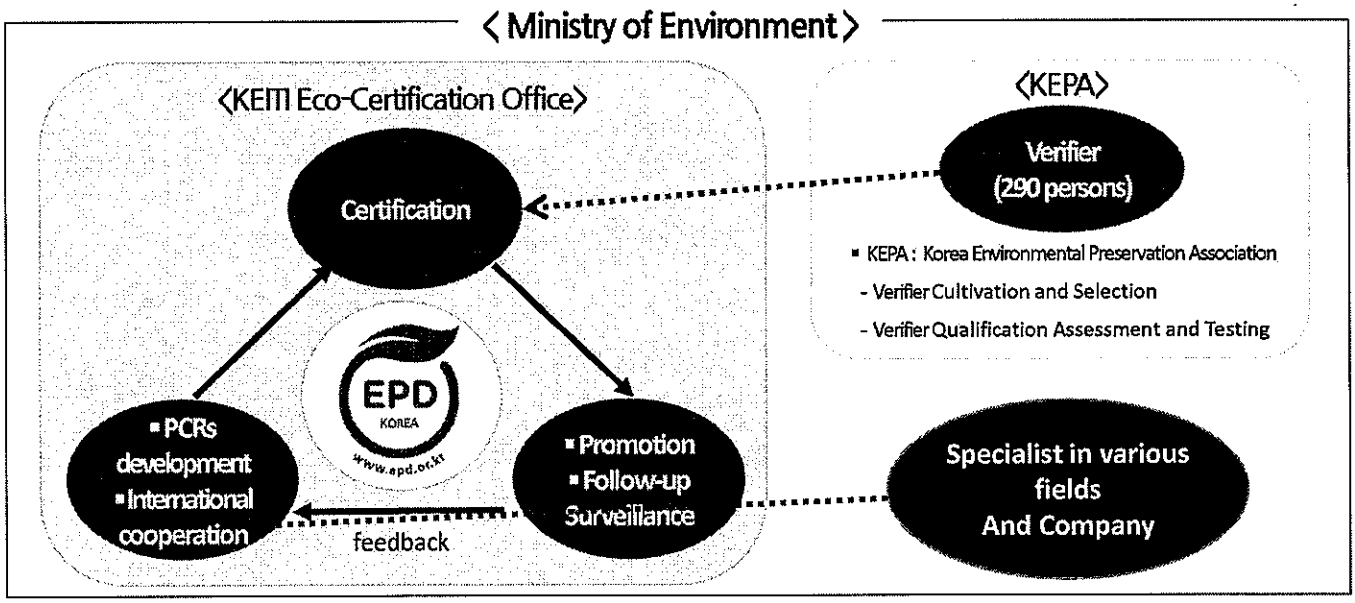
- **2,943 products** (accumulated, end of July. 2018)
  - EPD:383 products, Water footprint : 19 product
  - Carbon Footprint: 2,536 products, established as a key of climate change certification in Korea (Carbon Emission: 2,042 products / Low Carbon Product: 475 products)

	2014	2015	2016	2017	2018.7.
Products	2,004	2,267	2,570	2,823	2,943
EPD	337	344	346	375	389
Carbon Footprint	1,667	1,923	2,224	2,438	2,544
Carbon Emission(Step 1)	1,390	1,571	1,819	1,978	2,069
Low Carbon(Step 2)	277	352	405	460	475
Water footprint				10	10

3.3 Certification Operating System

➢ EPD Operating

-(Ministry of Environment) Overall management of the EPD system
-(KEITI) Selection for the target EPD products, EPD Certification , Follow-up surveillance, Promoting Eco-friendly products
-(KEPA) Verifier cultivation, selection, testing and assessment

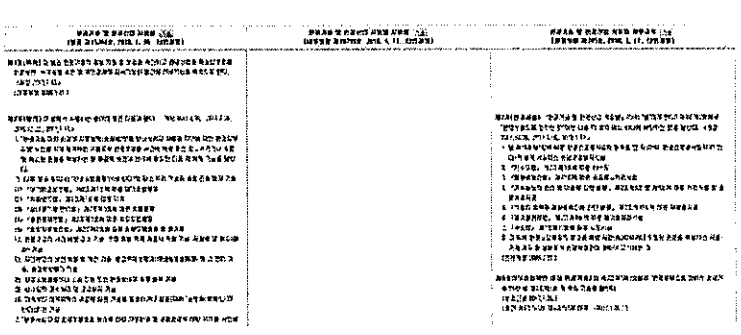


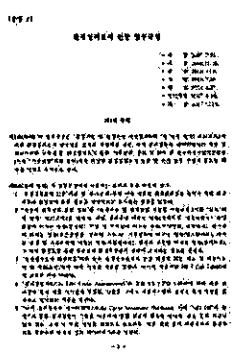
3.3 Certification Operating System

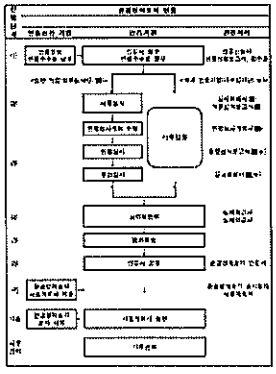
➢ Legal Ground

- **Act : Environmental Technology and Industry Support Act**
- **Presidential Decree : Enforcement Decree of the Environmental Technology and Industry Support Act**
- **Minister of Environment Rule : Enforcement Rule of the Environmental Technology and Industry Support Act**
- **Ministry of Environment Notice**

- Product Category Rules of Environmental Product Declaration
- EPD Certification Verifier Qualification Criteria
- EPD Certification Fee







3.3 Certification Operating System

➢ Product Category Rules(PCRs)

- **Common PCRs : General rule**

- **Energy using Product PCR**

- **Energy non-using Product PCR** : Non-durable and durable product, B2B product, Service

- **Individual PCRs :** PCR that reflects the characteristics of a particular product

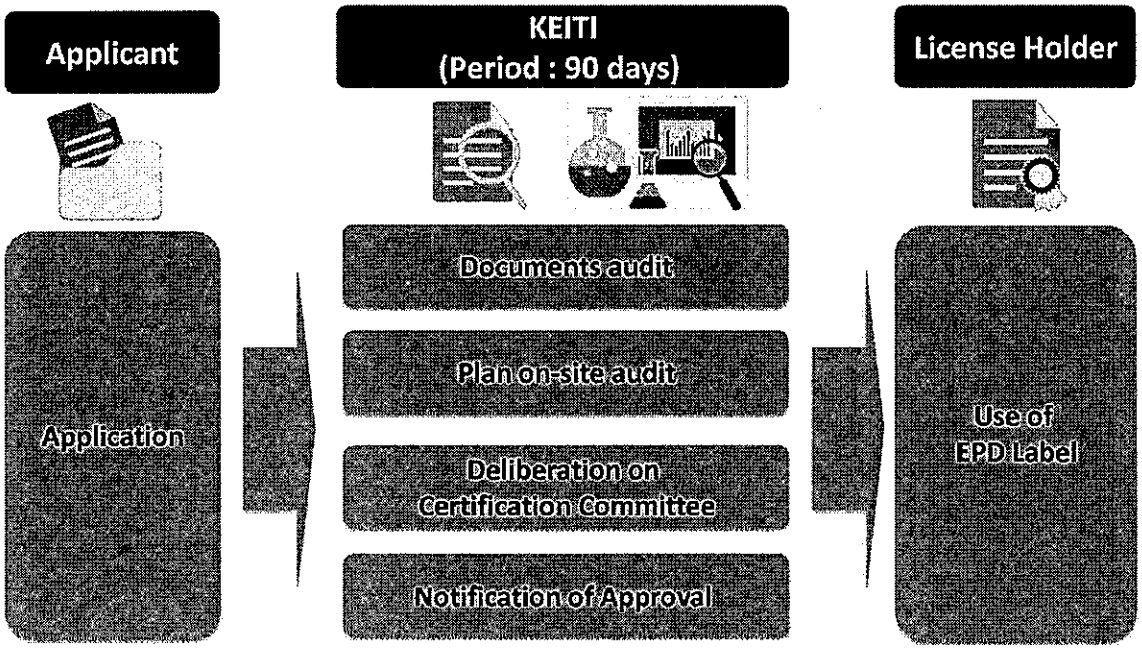
- **5 individual PCRs** : Toilet Bowl, Solid state drive, Automobile tires, Laundry detergent, Water Purifier

- **Using step scenario :** Scenario of use stage of energy use product

- **48 scenarios** : Residential gas heating boiler, Motor vehicles, Household washing machine, Air cleaner, Television, Electric refrigerator, Microwave and multi-functional microwave, Mobile phone, Surveillance camera, etc.

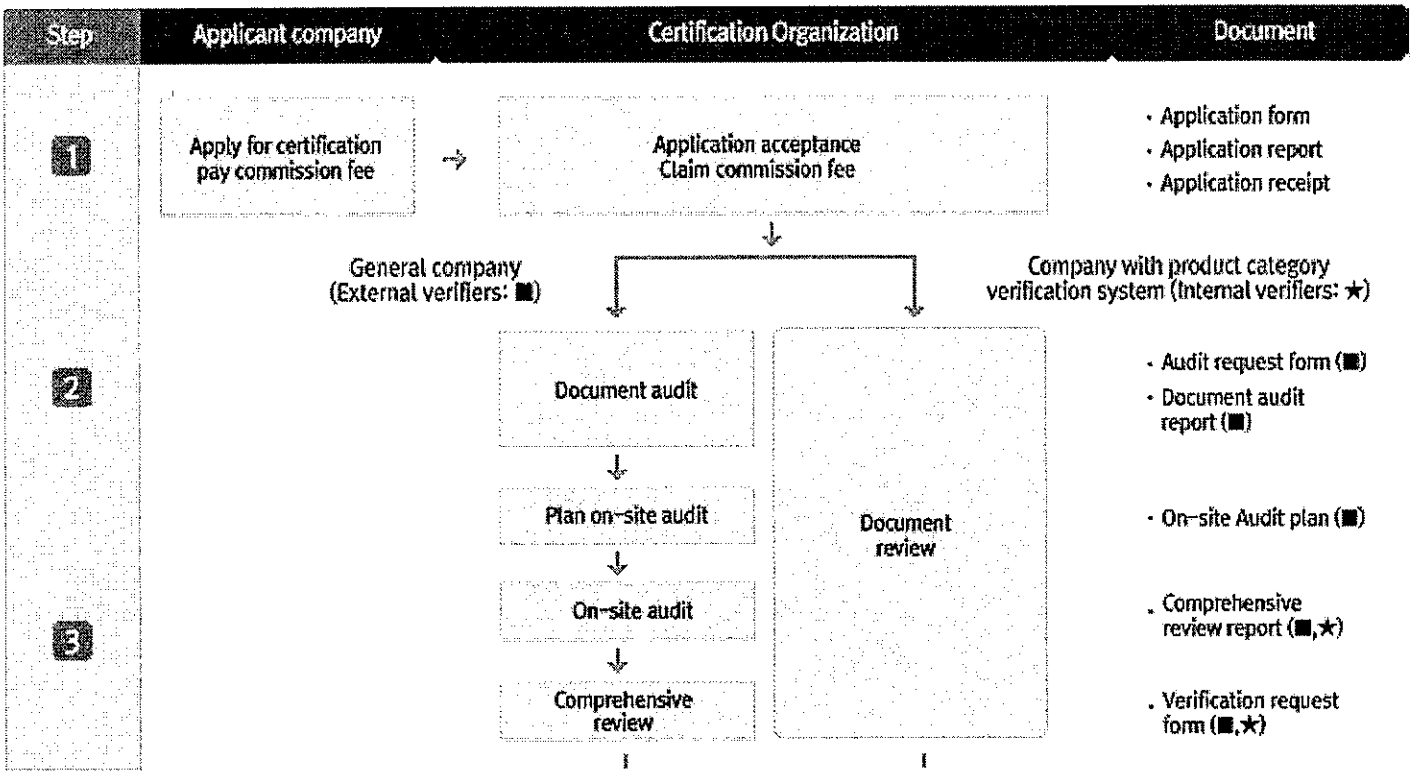
3.4 EPD Certification Process

➢ Certification Process 1



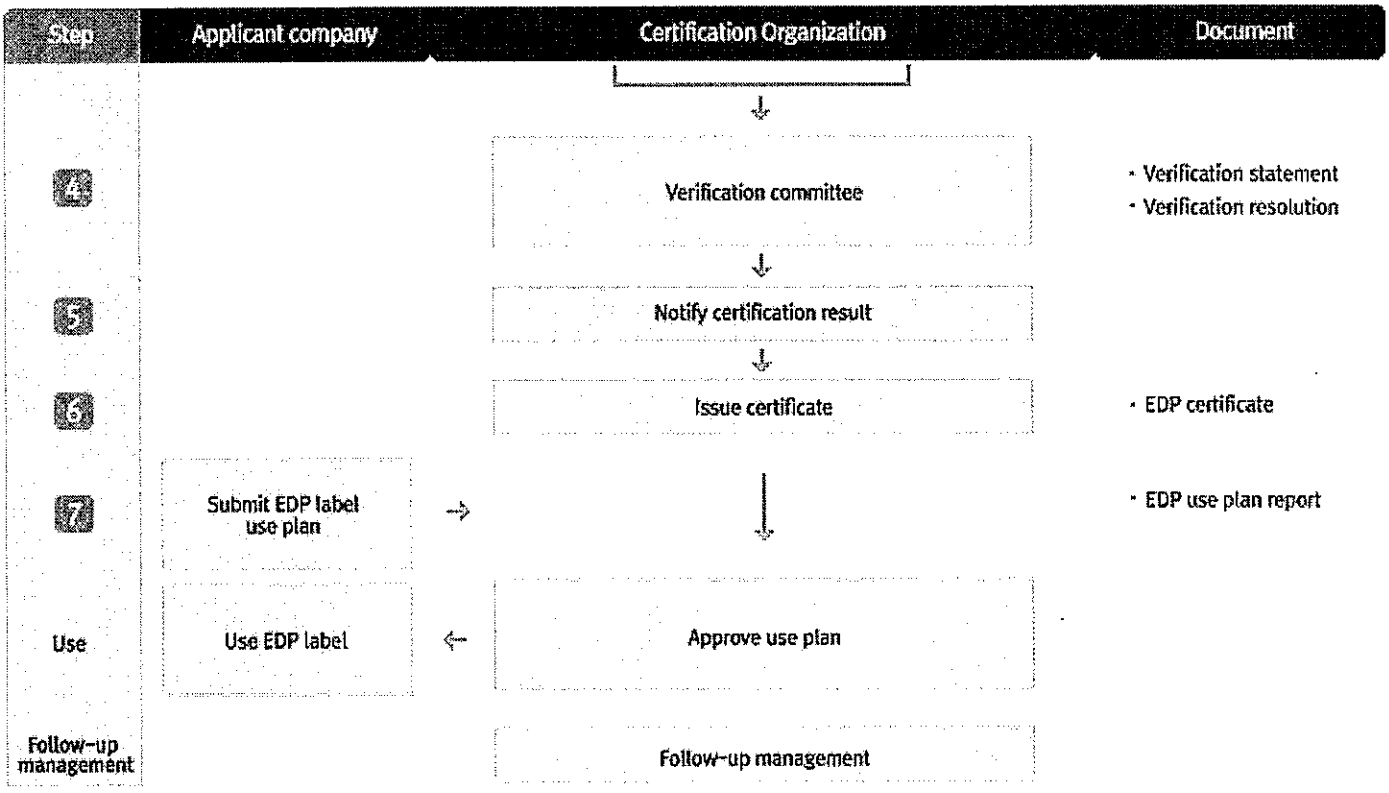
3.4 EPD Certification Process

➢ Certification Process 2



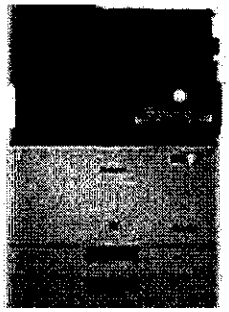
3.4 EPD Certification Process

➢ Certification Process 3



3.5 EPD certified product scheme

➢ Case of EPD certified product



- Product Model: Color Laser Copier (MultiXpress X7600GX)
- Certification No. : 2017-003
- Product Category: Lasercopier
- Valid: Feb 23, 2017 – Feb 22, 2020
- Certified by: KEITI

EPD KOREA www.epd.or.kr

Impact category (Unit)	Life cycle stages: Raw material	manufacturing and production	Use	Disposal	Total
Resource Footprint (Kg Sb-eq)	3.58E+00	4.10E-01	1.02E+02	3.98E+00	1.10E+02
Carbon Footprint(Kg CO_2-eq)	5.74E+02	6.69E+01	1.52E+04	2.80E+03	1.87E+04
Ozone layer Depletion (Kg CFC11-eq)	4.47E-05	3.58E-06	4.12E-03	8.00E-05	4.24E-03
Acidification (Kg SO_2-eq)	1.69E+00	6.11E-01	6.10E+01	5.68E+00	6.90E+01
Eutrophication (Kg PO_4^{3-}-eq)	6.64E-01	5.74E-02	1.22E+01	8.33E+00	2.12E+01
Photochemical smog(Kg C_2H_4-eq)	5.83E-01	4.51E-02	2.74E+01	1.78E+00	2.98E+01

3.6 Low Carbon Products

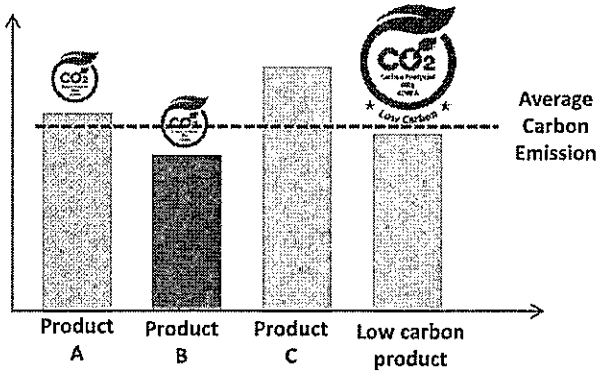
➢ Certification of Low Carbon Products

EPD KOREA www.epd.or.kr CO2 Carbon Footprint

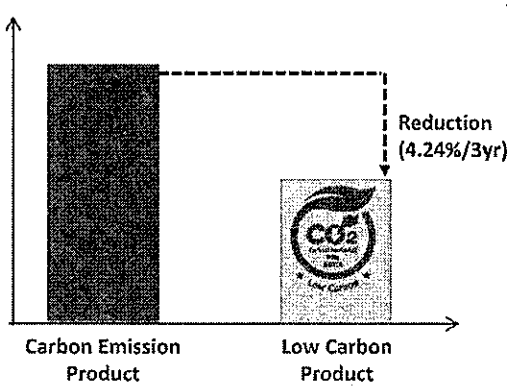
Product with carbon emission mark certified in case the amount of carbon emission is reduced and carbon emission is lower than average amount from products of the same type (This phase was introduced in Nov. 2011.)

- **Based on carbon emission:** Certification based on average carbon emission from products of the same category
- **Based on carbon reduction:** Certification based on the government's national greenhouse gas reduction goal (4.24%/3 years)

※ By Dec. 31, 2017, certification is given in case either of the two categories is satisfied



< Based on carbon emission >

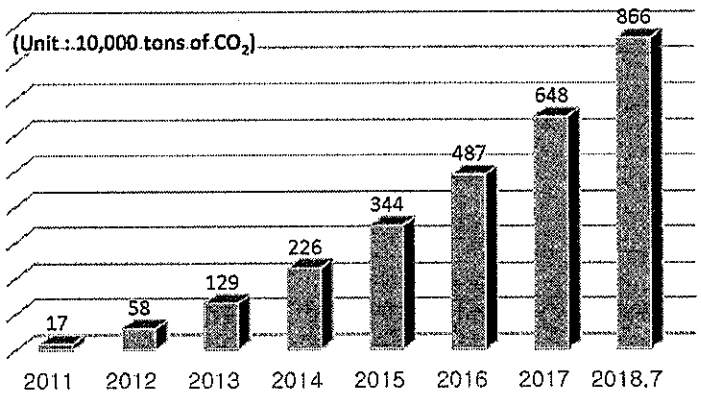


< Based on carbon reduction >

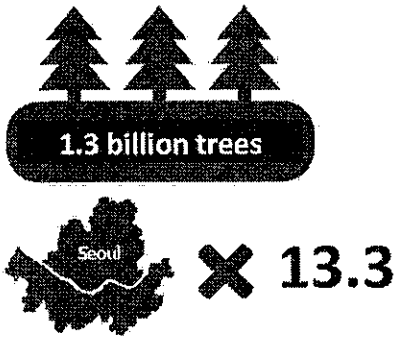
3.6 Low Carbon Products

➢ Reducing greenhouse gas by 8.6 million tons (CO_2_eq) through low carbon product certification

- **(Human Activities)** Greenhouse gas emitted by 628,000 people in Korea (13.8 tons of CO_2/ person) (National Greenhouse Gas Inventory Report 2014)
- **(Forestation Effect)** Equivalent to planting 1.3 billion of 30-year-old pine trees (6.6kg of CO_2/ year/ tree)
- **(Passenger Cars)** Greenhouse gas emitted by 2.17 million cars a year



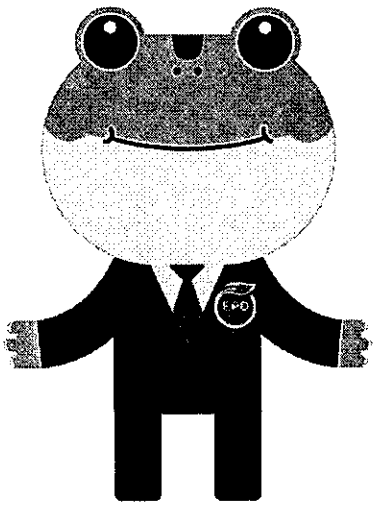
[GHG Reduction Amount]



Planting trees in an area 13.3 times that of Seoul (605km²)

[Forestation Effect]

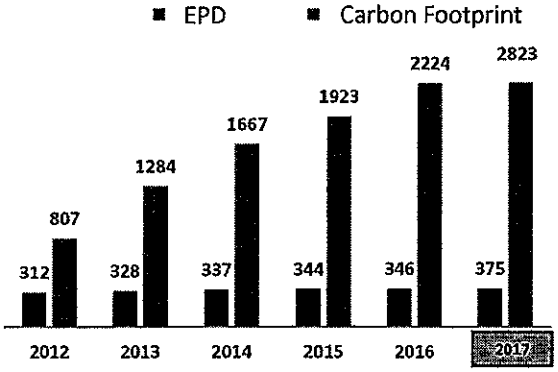
4. Certification Support



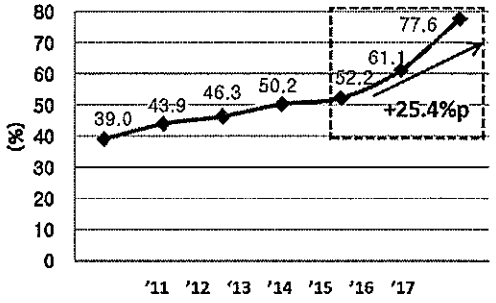
4.1 Certification Recognition

➢ Establishing direction of scheme operation by reflecting national recognition survey result each year

▪ **Public Recognition Increasing Each Year**: 39% (2011)→43.9% (2012)→46.3% (2013) →50.2% (2014)→ 52.2% (2015) → **61.1% (2016)** → **77.6%(2017)** + **25.4%p**



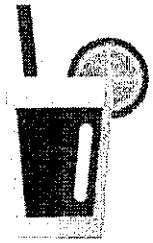
[Certification by Year]



[Carbon Footprint Recognition by Year]

4.7 Certification Effect

➢ **Case of energy and raw material reduction though EPD certification**



▪ **A Company : Fruit juice products**

- About 8% energy(electricity, LNG) saving by improving process efficiency after EPD certification

➔ **Reduced energy usage** over **one month(1,700MW, 38,000Nm^3)** compared to last year's energy usage

➔ **About 435,000 dollar saving per year**

▪ **B Company : Health drink products**

- Reduce 15% of raw material by adjusting glass bottle thickness

➔**After EPD certification,**

the glass bottle thickness was found to be thicker than necessary.

4.8 Expansion of Certification Support

➢ Giving additional points to green building certification assessment

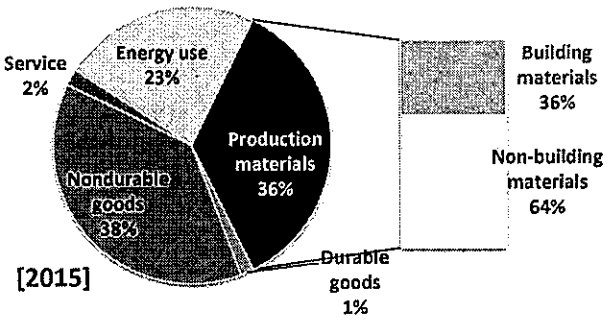
Give additional points when EPD certified building materials are used

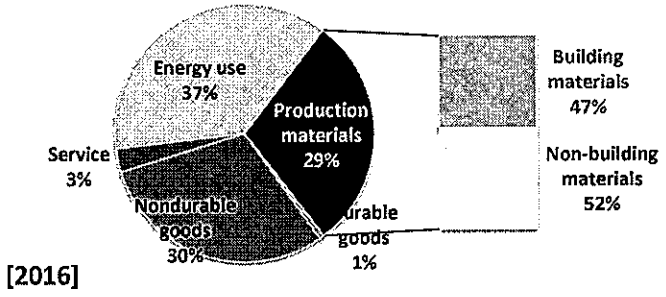
Field	Certification Item	Allocated Points
3. Materials and resources	3.1 Use of EPD products (0.4~1.0)	4
	3.2 Use of low-carbon materials (0.4~1.0)	2
	3.5 Green building material application ratio (0.4~1.0)	4

녹색건축인증
최우수(그린1등급)
★★★★

Increase environmental performance certification (carbon footprint) of building materials in addition to expansion of certification benefits

Certification Ratio of Building Materials among Production Materials: 36%(2015)→ 47%(2016), increase by 9%



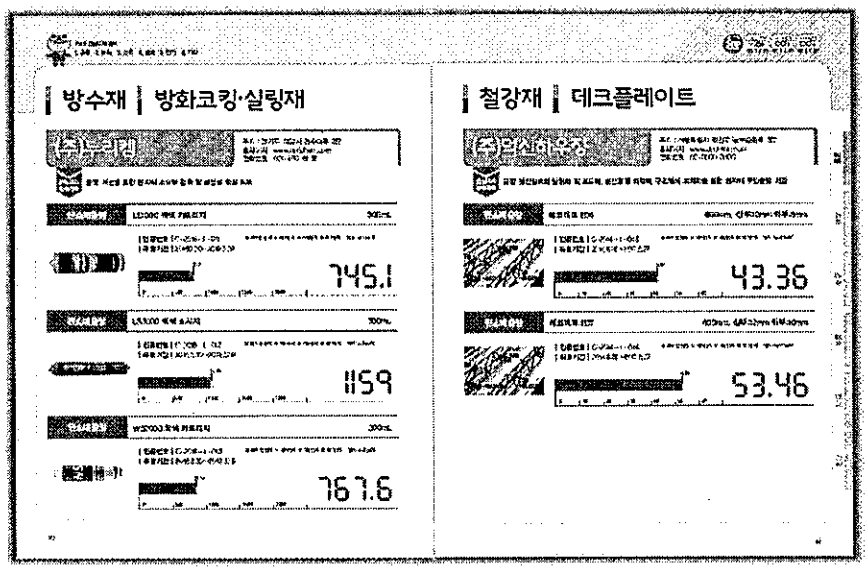


4.8 Expansion of Certification Support

➢ Publishing EPD and carbon footprint construction materials information book

Publishing information book in order to ensure convenience of EPD certified product information search

- **Listing information on 262 certified products** (products with valid certification as of Dec. 2016)



4.8 Expansion of Certification Support

➢ Reflecting comprehensive bidding system of Public Procurement Service

To decide successful bid by comprehensively considering product price, quality and environmental value (Public Procurement Service Order No. 1631)

- **Target items which are applicable for environmental superiority criteria of comprehensive bidding system in PPS : 9 in total**

Environmental value assessed with life cycle carbon emission

Target Items		Application Factors	Remarks
Applied Products	Air conditioner, washing machine, LCD monitor, desktop computer	Price (40%) + quality (30%) + environmental value (30%)	**Calculated by dividing carbon emission amount of a product from a bidding company with average carbon emission amount of products from all companies in the bidding** ※ "Carbon labeling certification" presented as the base data for carbon emission amount
Products for Expanded Application	Laptop computer, TV, printer, LCD lamp, air purifier	Price (40%) + quality (20%) + environmental value (40%)	

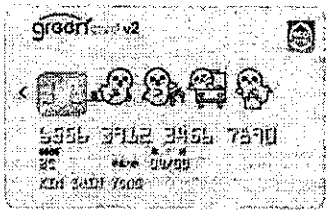
4.8 Expansion of Certification Support

➢ Promoting sale of certified products through a link with Green Card

<Green Card>

- Point accumulation when practicing low carbon/ eco-friendly living, such as saving energy, using public transportation and purchasing green products, through government offices, local governments and businesses by using credit cards and point system
- Customer consumption pattern/ trend analysis using Green Card v1→ Green Card v2 issued in 2016
  - **Made using wooden material, reducing greenhouse gas emission down to approx. 4.7% of PVC cards**

    ※ (PVC) approx. 2,150g → (wooden material) approx. 102g
  - **Expending Green Card benefits by reflecting consumer needs.**



Green Card v1 Benefits	Additional Benefits of Green Card v2
Eco Money when purchasing eco-friendly products (up to 24%) Using public transportation (bus, subway, KTX, express bus) - Up to 10,000 points a month Up to 100,000 points for energy saving Using public facilities (tourism, culture, sports) - Discount including free admission to 933 facilities across the country	**5% accumulation for automatic payment of living expenses** **5% accumulation for online businesses** **KRW 2,000 discount on claim for online movie ticket booking** **10% discount on claim for coffee** **5% discount on claim for used automobile parts (scheduled)**

4.8 Expansion of Certification Support

➢ Expanding carbon labeling certification support to SMBs

Expanding carbon emission calculation support for products from Small and medium-sized companies (2012~)

- Provide free consulting on carbon labeling certification application and acquisition, foster professional human resources for carbon emission calculation
- To support **60 products from 30 companies (2018)** * Accumulated, 367 products from 176 companies

Applying to exemption from overhead expenses out of certification-related charges for SMBs

- Reduce certification charges by approx. 50%
- Alleviate the burden of certification cost and simplify procedures for certification application by SMBs

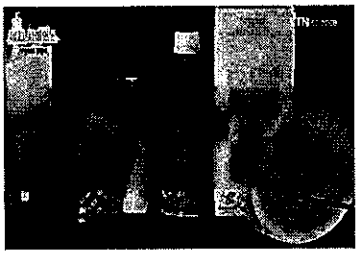
Supporting carbon label design use on products from SMBs (2016~)

- Promote design use and improve P.R. effect by supporting carbon label mold manufacturing cost
- KRW 24 million to 12 companies **(2017)** → to support **KRW 30 million to 15 companies (2017)**

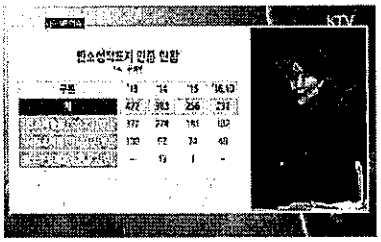
4.8 Expansion of Certification Support

➢ Publicizing corporate image and certified product through promotional activities

- **Publicize EPD system and certified product through various channels**
- **Publicize certified product through mass media (TV, newspaper), exhibitions, newsletter and shows**
- **Operate Eco Friends Supports (2013~)**



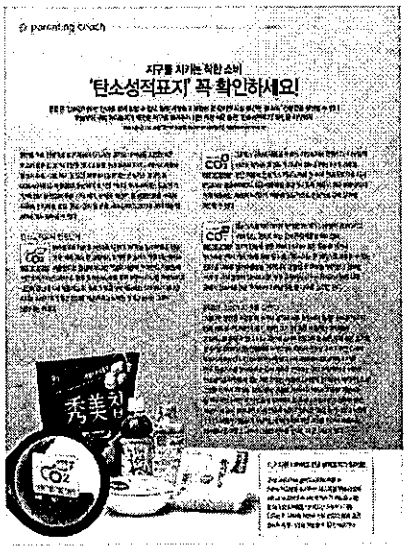
[YTN Science – Easy Science, "Protecting Green Earth']



[K-TV Live Issue "Eco Tourism"]

[University Students' Supporters Campaign]

[Business Agreement for Environmental Olympic Games]



[Promotional Article in September Issue of Best Baby]

4.8 Expansion of Certification Support

➢ Installing and expanding operation of exhibition areas for EPD certified products

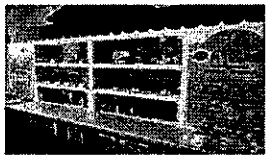
Expanding exhibition areas across the country, opening permanent exhibition halls for long-term operation (2013~)

- Exhibition of EPD certified products (food and beverage, household items), educational programs

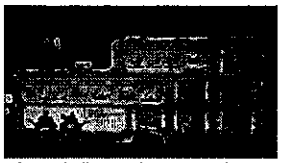
*Opened 18 exhibition areas including Climate Change Experience Centers in Suwon and Gimhae, Climate Change Response Education Center in Wonju and Green Purchase Support Centers on Chungcheongbuk-do, Daejeon and Jeju

Participating in domestic and international events, operating P.R. booths in exhibitions (as frequently as necessary)

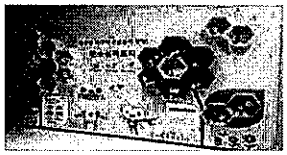
- EPD booth at "ECO-EXPO Korea 2016" (Oct. 18 – 21, 2016, COEX)



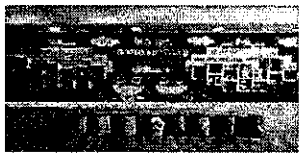
[Climate Change Education and Experience Center, Yongin(2017)]



[Gulponuri Climate Change Experience Center, Bupyeong (2016)]



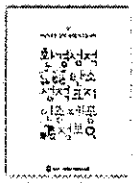
[Green Future Science Hall, Gimcheon (2015)]



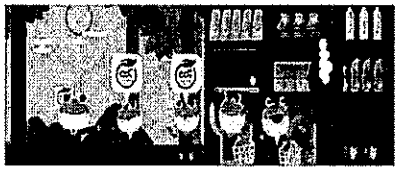
[Climate Change Experience Center, Gimhae (2015)]

➢ Distributing leaflets, information book and USB for EPD certified products

[Carbon Footprint P.R. Leaflet]



[Information Book on Certified Products]

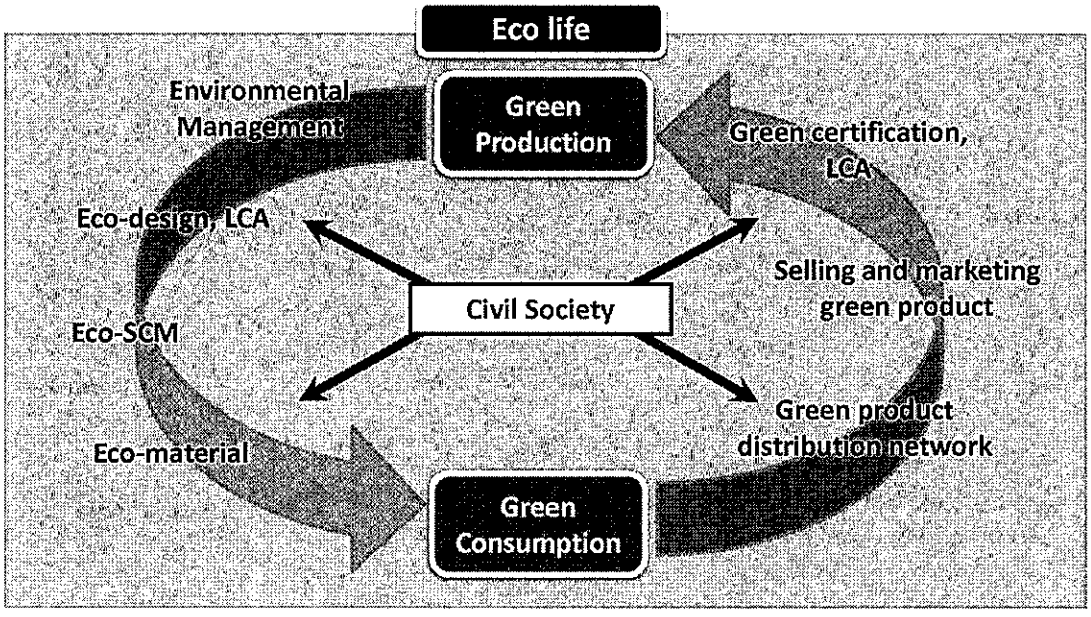


[Carbon Footprint P.R. Video]

[Carbon Footprint P.R. DVD and USB]

4.9 Conclusion

Achieving Sustainable society through production and consumption of eco-friendly products




Thank you!
អរគុណ ច្រើន

UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

KEITI

The new ISO standard on Carbon Footprint of Product: an opportunity for SMEs in an international evolving market

Daniele Pernigotti

Cambodia, 11th September 2018

Prospettive Sostenibili in Evoluzione

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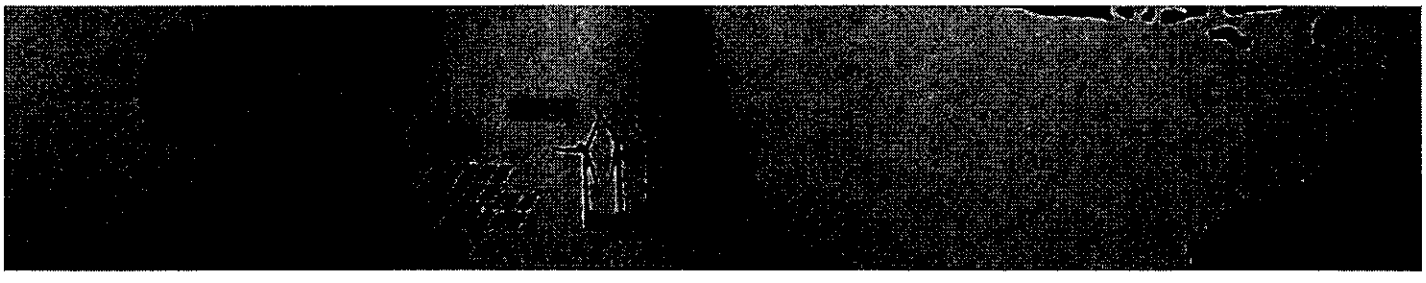
1. Background information on my experience
2. PEF in Europe and the Italian experience of Made Green in Italy
3. The new standard ISO 14067
4. Update on common ISO rules for CFP verification and accreditation
5. CFP programme operators



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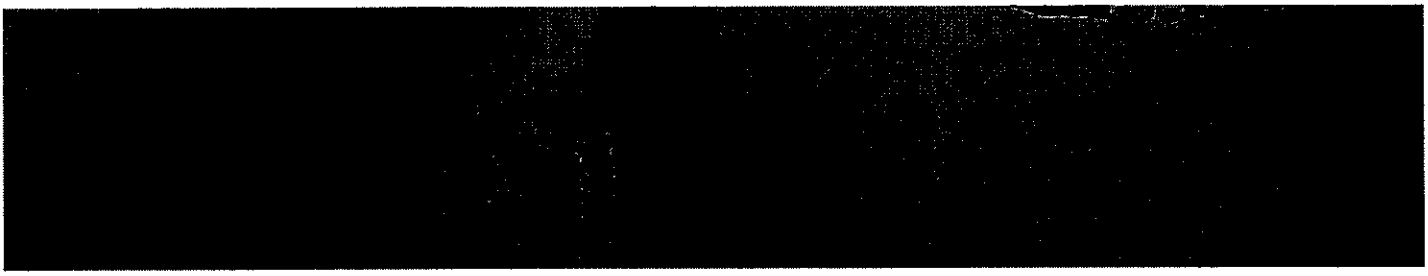

Presentation of Aequilibria

Aequilibria, environmental consulting and training firm, was founded in 2002 by Daniele Pernigotti. It offers **services** in the areas of **carbon management (Carbon Footprint of product** and **GHG Inventory of organization), LCA** (Life Cycle Assessment) including **EPD, EMS** (Environmental Management Systems), **ETS** (Emission Trading System), and **environmental communication.**

Presentation of Daniele Pernigotti

- **Convenor** of **ISO/TC 207/SC7/WG 8 – Revision** of **ISO/TS 14067** (Carbon Footprint of product)
- **Convenor** of the **Ad Hoc Group ISO** on **Circular Economy**
- **Convenor** of the Working Groups of **UNI** on Environmental Management Systems and on climate change.
- Italian **delegate** in ISO/TC 207 for the **revision of ISO 14001** and **the development of standards on GHG**
- **Technical advisor** on GHG for **Accredia** and Italian delegate in European WG on **ETS accreditation**
- Follows international negotiations (**UNFCCC**) on climate change as a **journalist**

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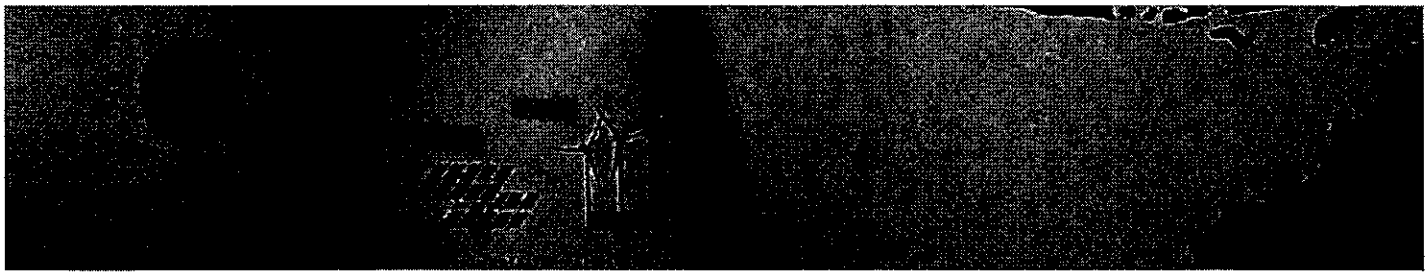
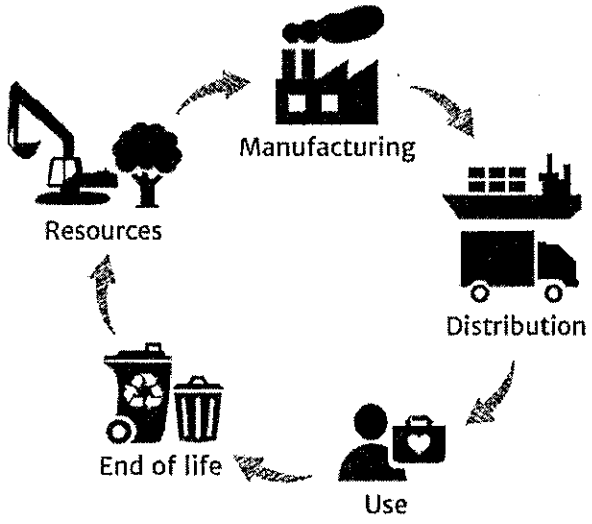


PEF and OEF

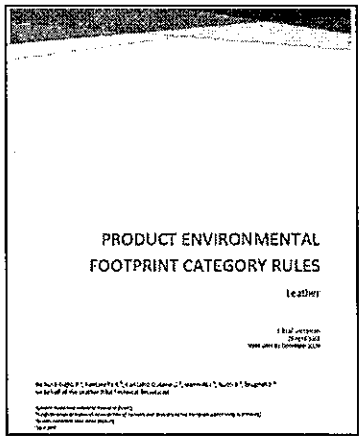
The *Product Environmental Footprint (**PEF**)* and the *Organisation Environmental Footprint (**OEF**)* are **methods** based on **Life Cycle Assessment** to quantify the most relevant **environmental impacts** of products **(goods** and **services)** and **companies**.



PEF-CR

The aim on PEF/OEF is to develop **milestones** for the creation of a green market by 2020 in Europe.

Key aspects of these tools are the **outputs of the benchmarking** and the **development of specific PEF-CR**.


PRODUCT ENVIRONMENTAL FOOTPRINT CATEGORY RULES

leather

The sectors of PEF Pilot phase

1) Batteries and accumulators
2) Decorative paints
3) Hot and cold water supply pipes
4) Household detergents
5) Intermediate paper product
6) IT equipment
7) Leather
8) Metal sheets
9) Footwear
10) Photovoltaic electricity generation
~~11) Stationery (discontinued)~~
12) Thermal insulation
13) T-shirts
14) Uninterruptible Power Supply
15) Beer
~~16) Coffee (discontinued)~~
17) Dairy
18) Feed for food-producing animals
~~19) Marine fish (discontinued)~~
~~20) Meat (bovine, pigs, sheep) (discontinued)~~
21) Olive oil
22) Packed water
23) Pasta
24) Pet food (cats & dogs)
25) Wine

PEF-CRs will be published in October

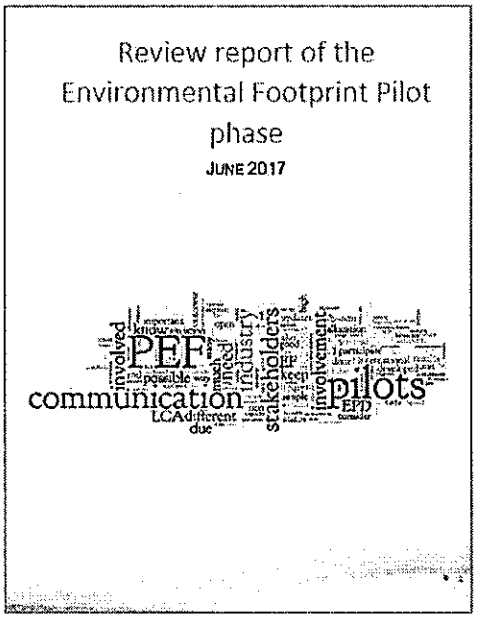
Peer review of PEF/OEF (1/2)

To evaluate how the pilot phase of the PEF/OEF has been transparent, inclusive and effective, the European Commission has identified the following **team of experts**:

- ✓ Llorenc Milà i Canals (**UNEP**)
- ✓ Daniele Pernigotti (**Aequilibria**)
- ✓ Penelope Vincent – Sweet (**Sweet by Nature**)

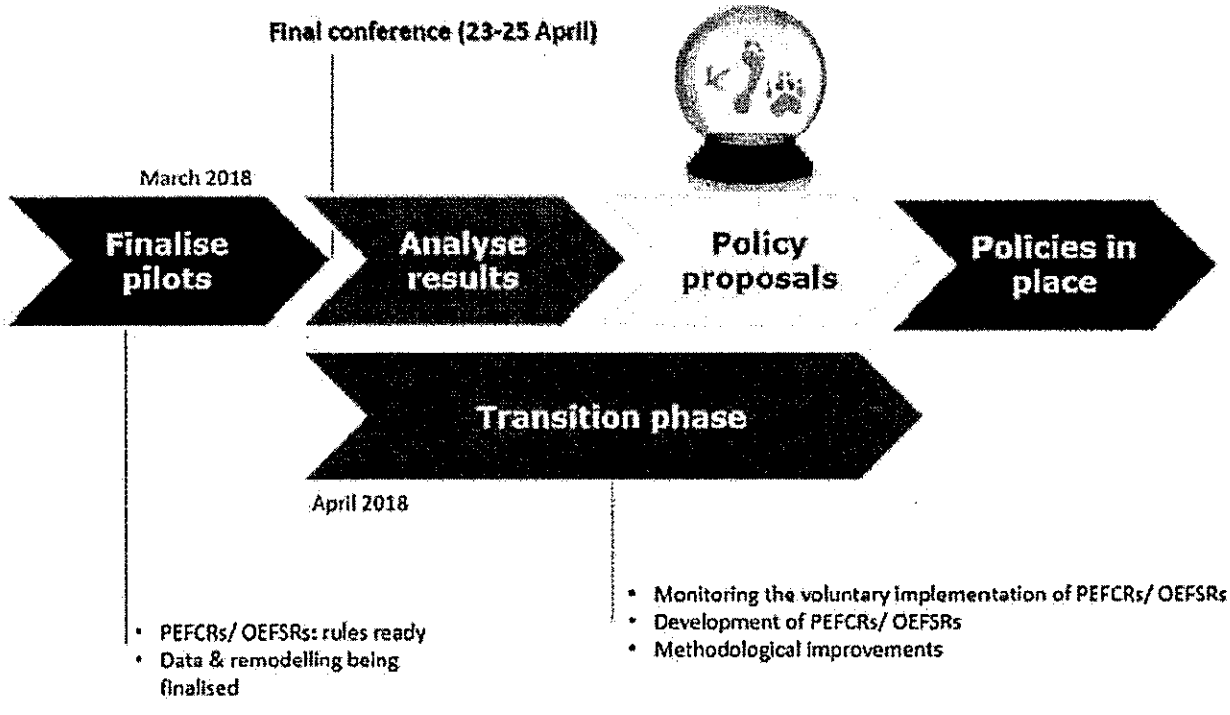
Peer review del PEF/OEF (2/2)

Strengths and weaknesses of PEF / OEF, the judgment of the Peer reviewers:



Click here to download the report in .pdf

Next stèps for PEF/OEF



Made Green in Italy

Made Green in Italy is the **national voluntary scheme** recently developed by the Italian **Ministry of the Environment** adopting the **PEF** methodology (Decree n.56 - 21 March 2018).

This programme is still in the **initial development phase.**

MINISTERO DELL'AMBIENTE
MADE GREEN
IN ITALY

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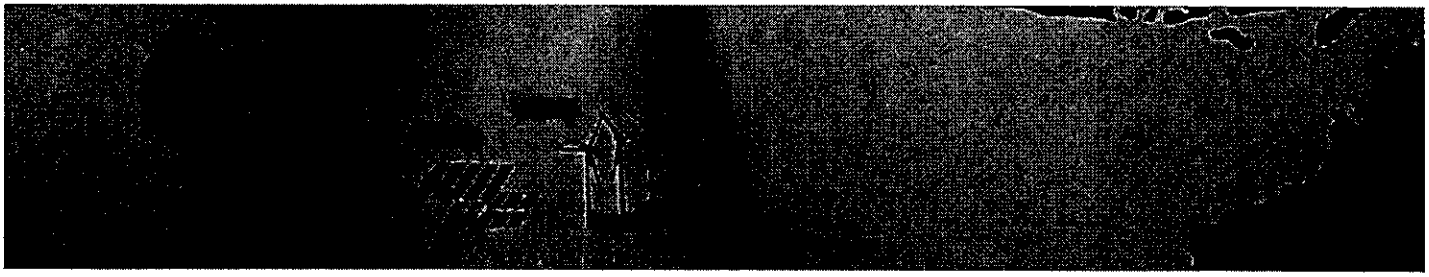
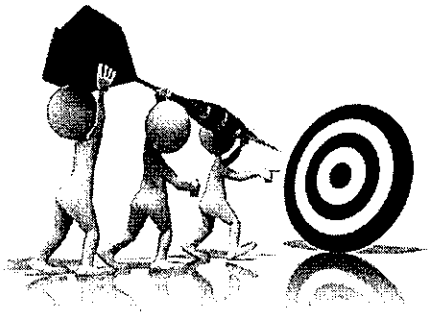
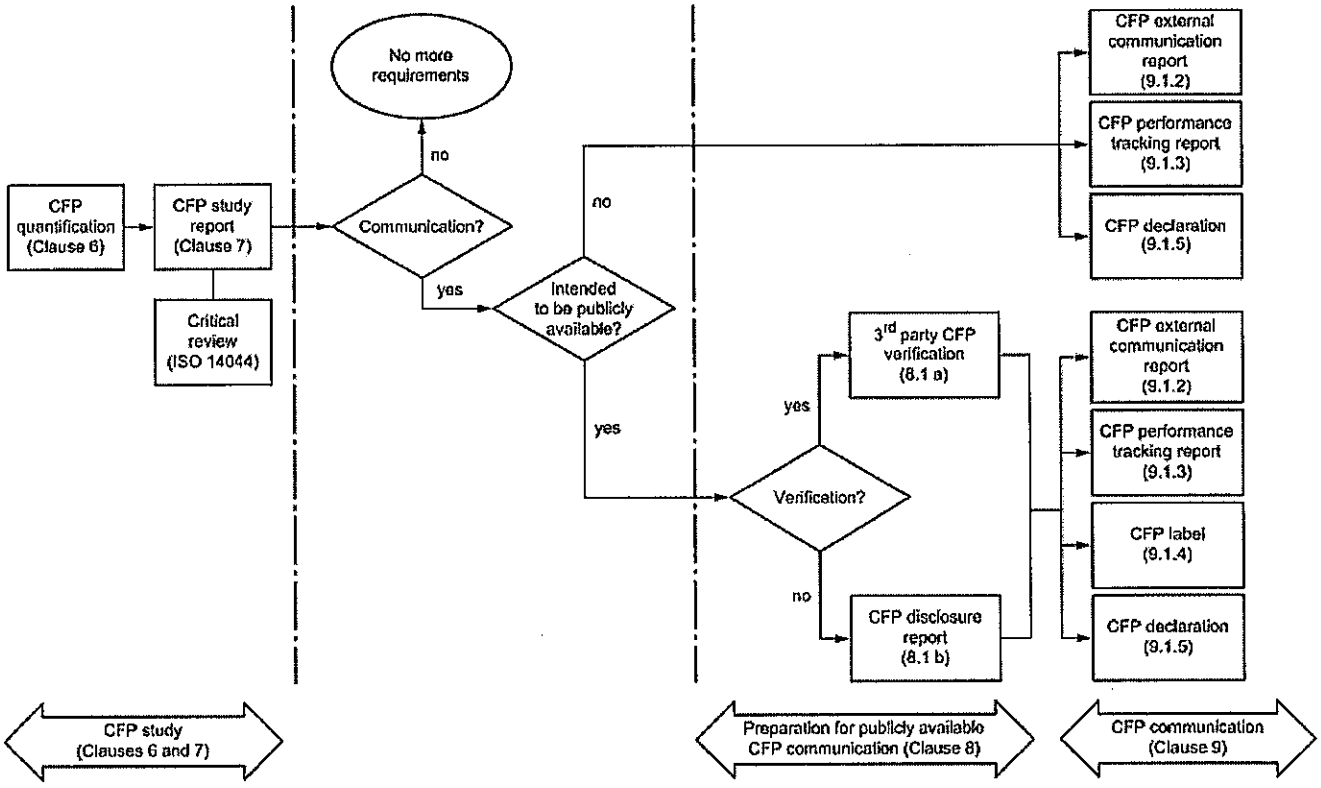


The old scope

The ISO/TS 14067:2013 was the Technical Specification regarding principles, requirements and guidelines for the **quantification and communication** of the Carbon Footprint of Product (CFP).



TS structure



ISO/TS 14067

On September 2015 in Delhi was confirmed the start of the works to transform the **Technical Specification** into an **International Standard.**

WG **Leadership:**

Convenor: Mr. Daniele Pernigotti (**Italy**)

Co-Convenor: Ms. Harmke Immink (**South Africa**)

Secretariat: Ben Hedley (**UK**)

Co-Secretariat: U Das (**India**)

The ISO 14067 mandate

The revision process of ISO/TS 14067 was formally launched with the following mandate:

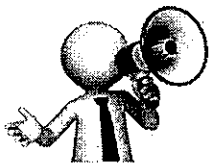
The revision will be in accordance with the ISO TC207 SC7 "CFP AHG" recommendation ***to remove clauses*** *from ISO TS 14067 related to* ***communication, PCR*** *and* ***verification*** *and replace them with references to* ***appropriate ISO TC 207 standards.***

The revision of the new ISO will ***focus only*** *on CFP* ***quantification.***

The new references

ISO 14026

- *Communication of footprint information*

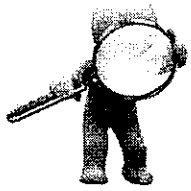


ISO/TS 14027

- *Development of product category rules* (PCR)

ISO 14064-3

- *GHG emissions verification process*



The ISO 14067 revision path

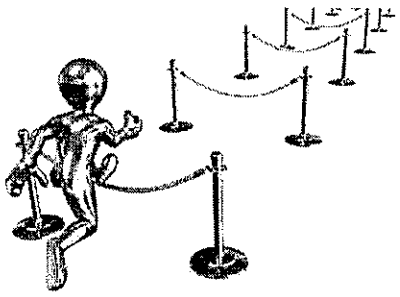
DATE	PLACE	STATUS	NUMBER OF COMMENTS
September 2015	NEW DELHI (India)	NWIP	/
April 2016	YOGYAKARTA (Indonesia)	NP	180
August 2016	SEOUL (South Korea)	WD 1	300
February 2017	ANGERS (France)	WD2	537
June 2017	HALIFAX (Canada)	CD	543
January 2018	MILAN (Italy)	DIS	533

An obstacle driving towards ISO/TS 14067

The first development path (2008) of **ISO 14067** has been strongly hampered by some **developing countries**, concerned on potential technical trade barriers (**TTB**).

As a compromise the **Technical Specification** was published in 2013 instead of a true international standard and a specific clause (4) was dedicated to this topic.

Later, TMB clarified that **avoiding TTB is a general ISO rule** and asked to delete any explicit references to it in the new ISO 14067.



A generic standard recognised for CFP quantification

ISO 14067 has been published the 20th August 2018 and is defined as "**the generic standard for the quantification of the carbon footprint of products**".

This means that the standard shall be applied as the reference for the development of any CFP **sectorial standards**.

From carbon storage to carbon content

ISO/TS 14067:

3.1.3.3 Carbon storage: *carbon removed from the atmosphere and stored as carbon in a product*

ISO 14067:

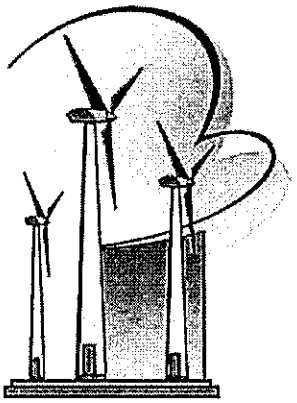
6.4.9.3 Biogenic carbon in products: *biomass-derived carbon contained in a product is referred to as the biogenic carbon content of the product.*

Renewable energy in ISO 14067

The new standard gives now more clarity on how to **account renewable energy in the CFP**, using related emission factors.

The use of these electricity attributes, such as **green certificates**, allows the producer to **benefit** on the consumption of renewable energy.

ISO 14067:2018, however, specifies further requirements in order to **avoid double counting** of these renewable energy also in the national mix.



A new interesting "systematic" approach

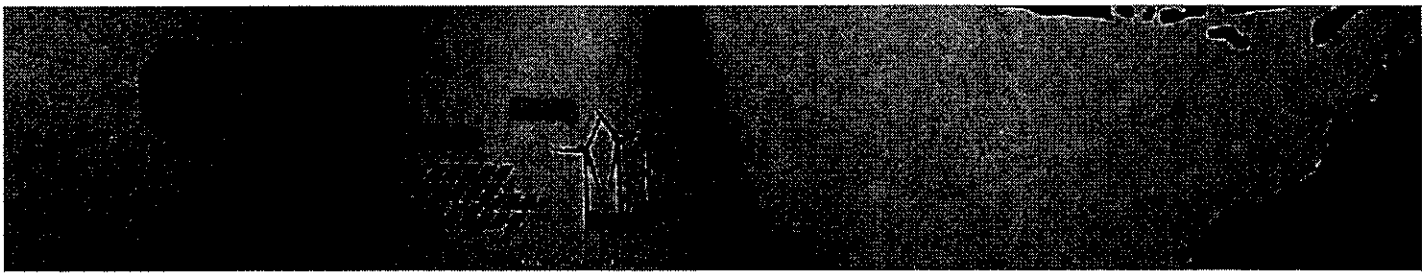
One of the most innovative content of new standard is the **CFP systematic approach,** that facilitate CFPs development of more products within the same organization.

The Systematic approach is a combination of a sort of **management system** and an **integrated data management tool** for the CFP.

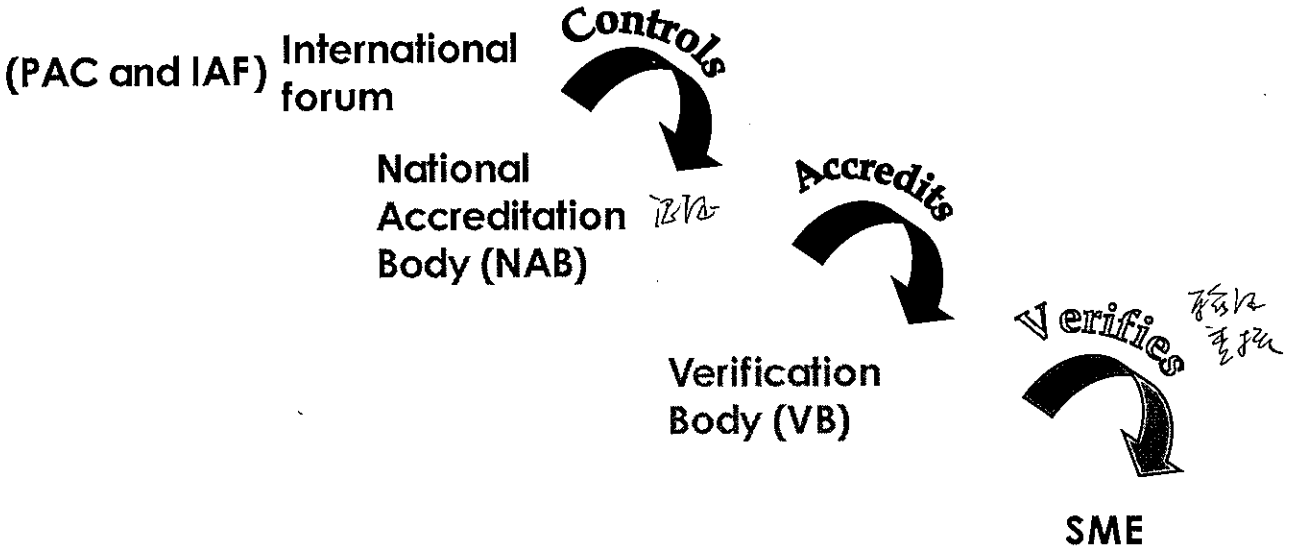
It also allows a substantial **simplification of the verification activities** and consequently the related **cost reduction**, crucial aspect for the SMEs.

Contents

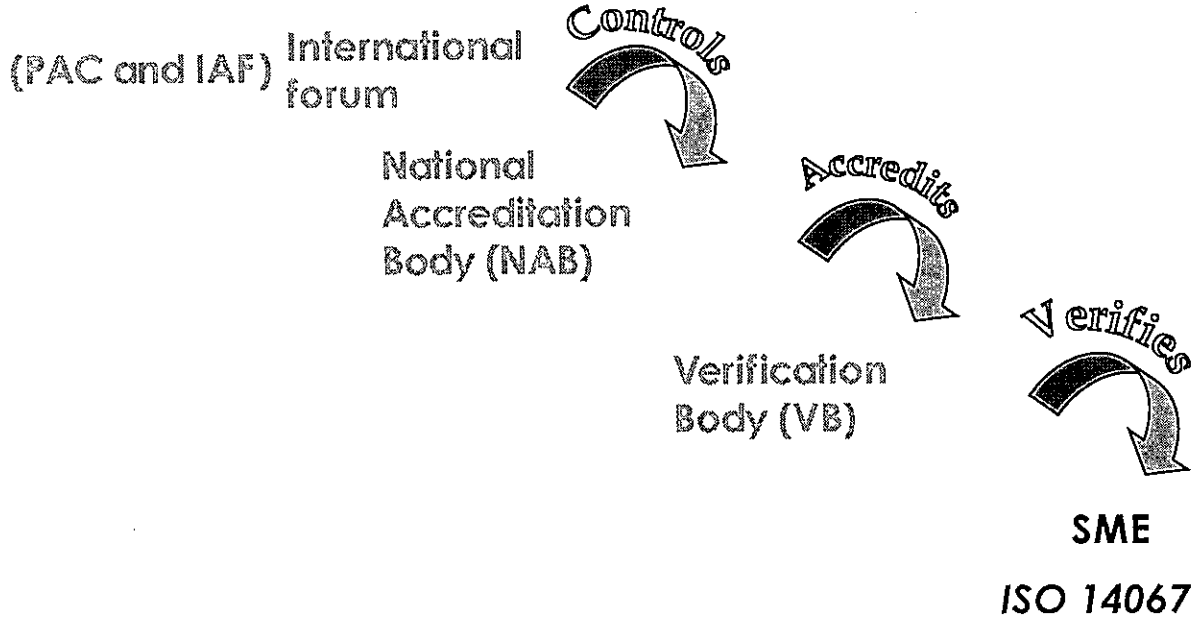
1. Background information on my experience
2. PEF in Europe and the Italian experience of Made Green in Italy
3. The new standard ISO 14067
4. Update on common ISO rules for CFP verification and accreditation
5. CFP Programme Operators



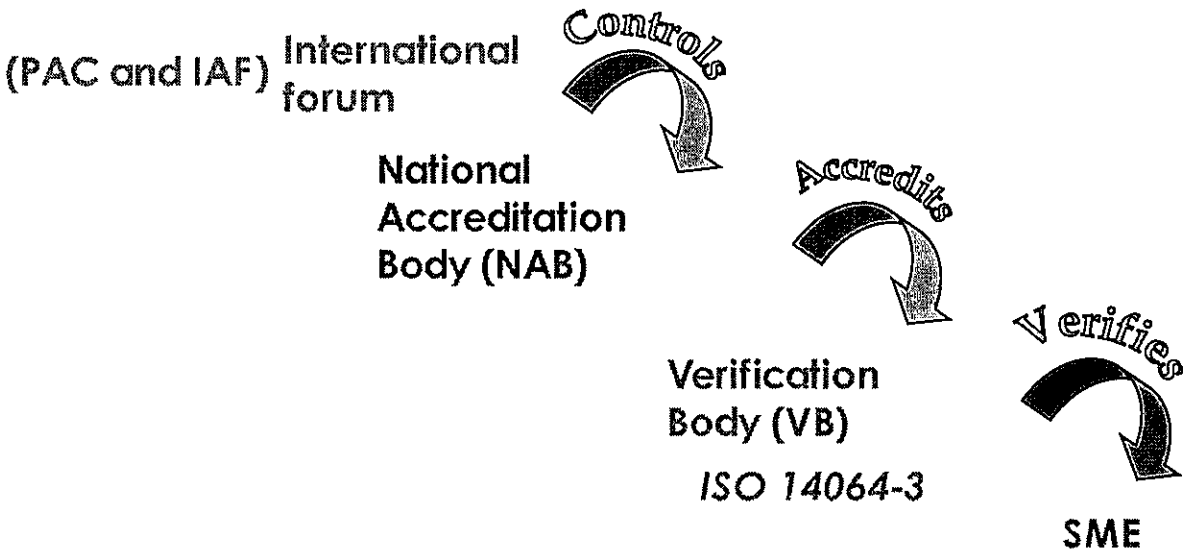
The international opportunities for SMEs



The actors of the verification



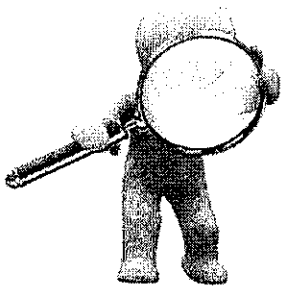
The standard for the verification



ISO 14064-3

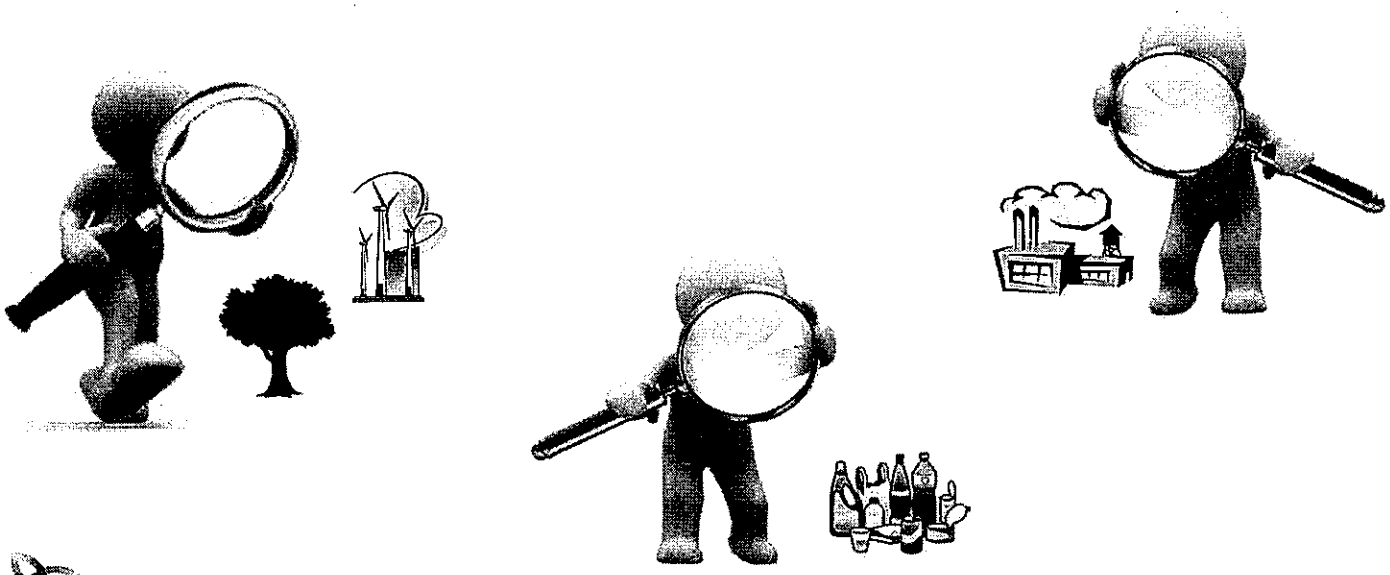
ISO 14064-3 is the standard describing how to perform a **GHG verification activity.**

The standard is currently **under revision** and it is expected to be published **by the end of the year.**

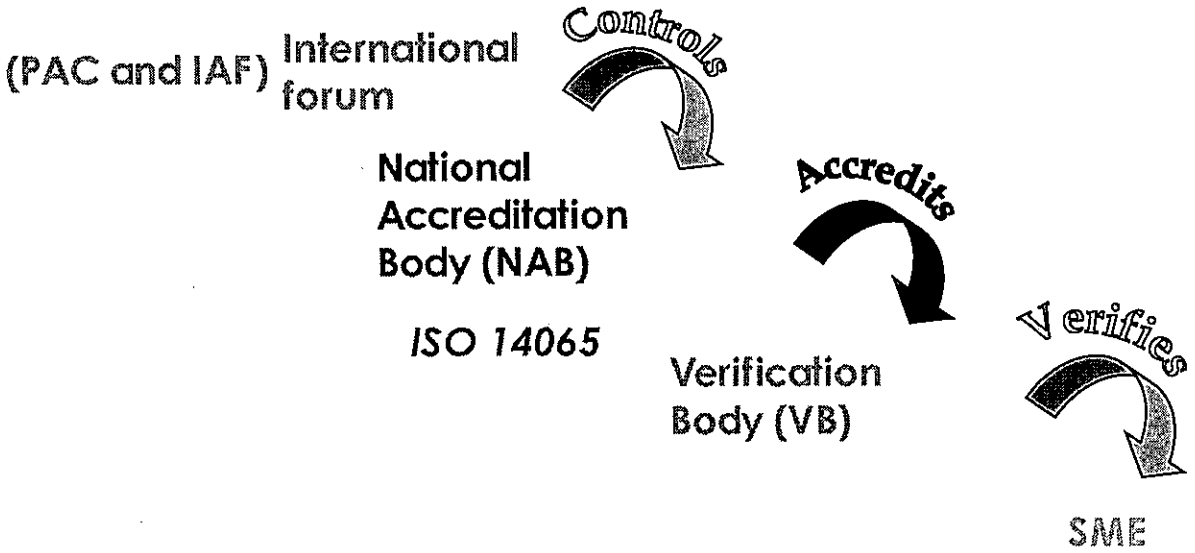


GHG verifications

There are common rules based on ISO standards for **verification activities (ISO 14064-3).**



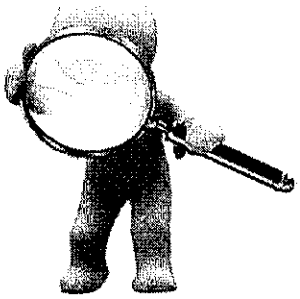
The standard for the accreditation



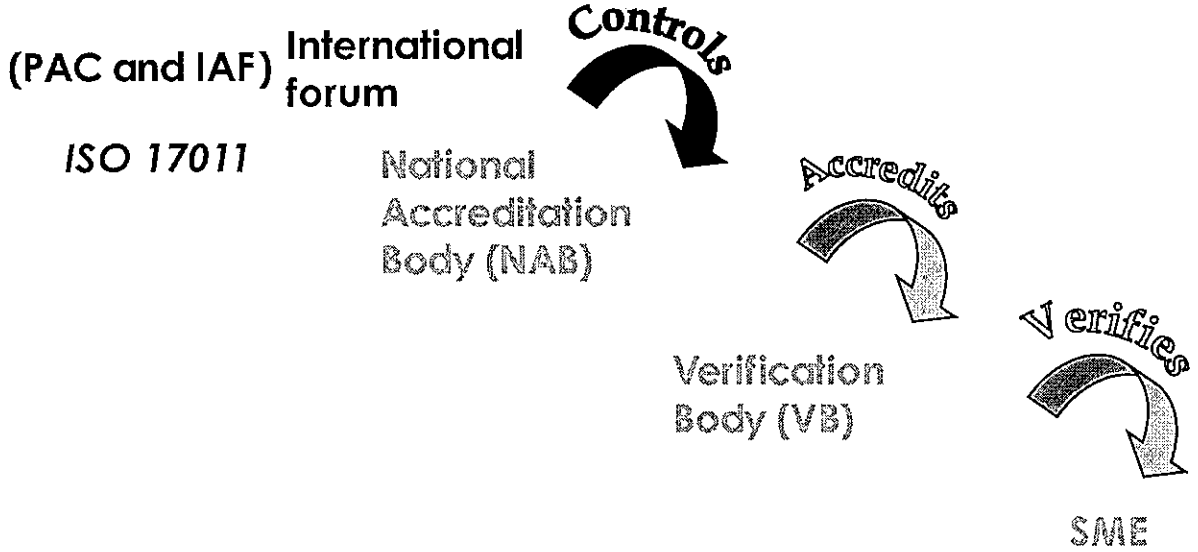
ISO 14065

ISO 14065 is the standard describing how a verification body shall be **organized** and shall **operate to be accredited.**

The standard is currently **under revision** and it is expected to be published **by the next year.**



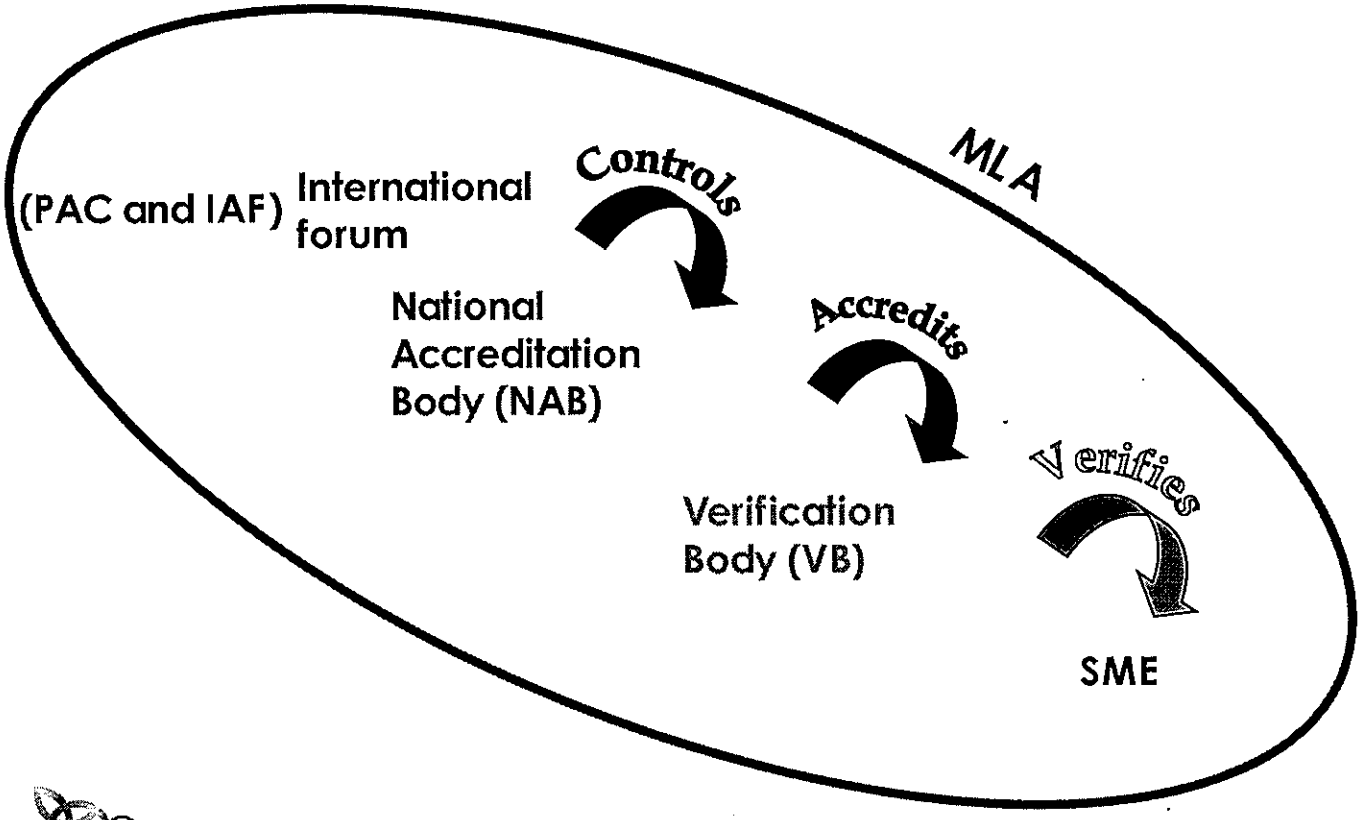
The standard for the "control"



Multi Lateral Agreement

The **MLA** is an **agreement** signed between the members of **PAC** and **IAF** to **recognise** and **accept the equivalence** and **reliability** of their individual accreditation **services** and thus the **certificates** and **reports** issued by the organisations they accredit (conformity assessment results).

The global value of the local verification



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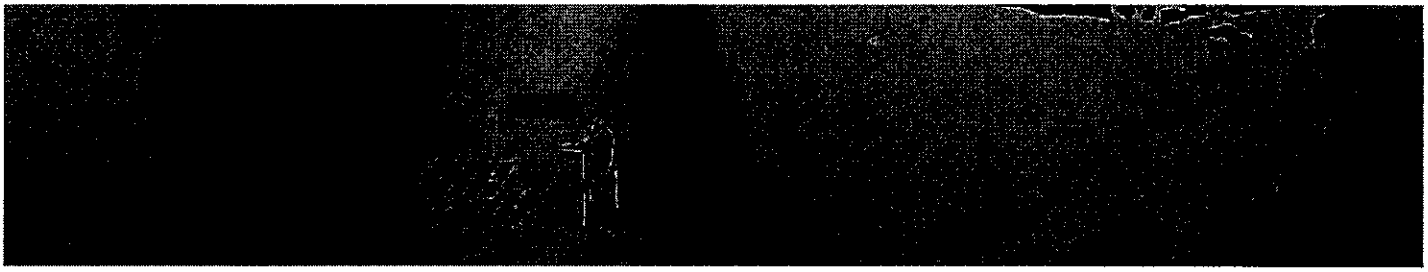


CFP experiences on the market

At international level there are many programmes on the **Carbon Footprint of Product**:

CARBON TRUST STANDARD
REDUCING CO2 YEAR ON YEAR

CO_2

XXXg

CO_2 Carbon Footprint Taiwan EPA

CO_2

CO_2 Carbon Footprint 000g KOREA

Carbon Trust

Carbon Trust is a body established in 2001 to promote the **transition to a low carbon economy.**

From a joint project between Carbon Trust and the environment agency DEFRA, the **PAS 2050** was published in 2008 by BSI.

After the **publication of ISO 14067**, according to the Vienna Agreement it is expected that the **PAS 2050** will be soon **withdrawn.**

So far:

- 28.000 certified products

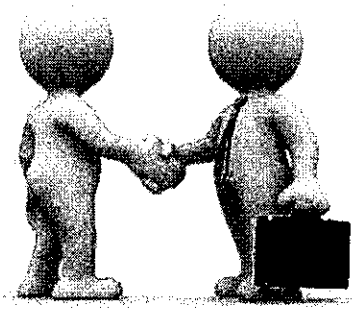
CARBON TRUST STANDARD

REDUCING CO2 YEAR ON YEAR

Source(16/05/2018): https://www.carbontrust.com/client-services/advice/footprinting/

The importance of recognition

In order to facilitate the **broad recognition** between the **verification statements** issued within different national programme operators, it is important to work in a perspective of networking and cooperation between the programme operators.



Carbon Footprint International

Carbon Footprint International is an example of international network between **national CFP Programme Operators**.

CARBON FOOTPRINT INTERNATIONAL

Home Programme operators Network Secretariat

THE INTERNATIONAL NETWORK OF CARBON FOOTPRINT COMMUNICATION PROGRAMMES

Several Carbon Footprint Communication Programmes are operating worldwide. Each of them have credibility and logo well known at national level. Their recognition decreases abroad due to the great presence of international environmental logos having a variable level of credibility.

The aim of the Carbon Footprint International initiative is to create a network of several national Carbon Footprint Communication Programmes mutually recognized, because based on the same level of credibility, in terms of international standard adopted for Carbon Footprint quantification and verification.

ITALY

Carbon Footprint Italy is applicable both at product and organisation level. The programme includes a part dedicated to the carbon footprint quantification and one to the reduction of the footprint, named Carbon Reduction.

JAPAN

JEMAI CFP communication program aims to visualize "carbon-footprint" in a product's life cycle as well as promoting the communication between companies and consumers with a view to accelerate the move towards a low-carbon society.

REPUBLIC OF KOREA

The *CFP Labeling system* in Korea is applicable at the product level since 2009. CFP Labeling system consists of two steps : first carbon emission certificate and second low-carbon product certificate. More than 2,000 products are certified by the end of 2017.

The importance of common standards

It would also be interesting to think on the possible development of a **Peer Evaluation programme** with the aim of signing a possible future **MLA**.

I wish that more opportunities to meet together will be possible in the future, because this kind of event are a **remarkable opportunity** to share knowledge and experiences at international level.

Any questions?

THANK YOU FOR YOUR ATTENTION!

Daniele Pernigotti:
dpernigotti@aequilibria.com

FOR FURTHER INFORMATION
www.aequilibria.com/en

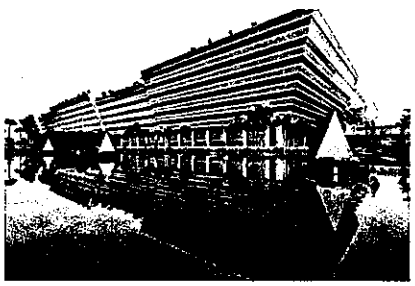
Dr. Pongvipa Lohsomboon
Thailand Greenhouse Gas Management Organization
(Public Organization)

Thailand Greenhouse Gas Management Organization (Public Organization) "TGO"

Founded in: July ,2007. Under the Ministry of Natural Resources and Environment

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

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.



Statement by H.E. General Prayut Chan-o-cha (Ret.),

Prime Minister of the Kingdom of Thailand
at the General Debate of the 70th Session of the United Nations General Assembly
New York, 29 September 2015

"Today, the adverse impacts of climate change and natural disasters can reverse decades of sustainable development gains. It is, therefore, incumbent upon every person and every country to join hands in solving this pressing global challenge"

"On Thailand's part, we reaffirm our commitment under the Intended Nationally Determined Contributions (INDCs) to reduce our greenhouse gas emissions between 20 and 25 per cent by the year 2030,"

Current Status of Carbon Footprint Label in Thailand

Thailand Greenhouse Gas Management Organization (Public Organization): TGO

Development of Carbon Footprint of Product in Thailand

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.

This pilot project aimed to setup the CFP system, guideline for the product carbon footprint calculation.

Development Process (1)

⏭ Establish Carbon Footprint Technical Committee

- 15 members from universities, industry, government and research organizations
- selected based on their life cycle assessment experience.

⏭ Select pilot companies - 20 companies

- CFP knowledge to pilot companies through training/seminar/workshop

Development Process (2)

- Collect data by questionnaires, site visit, and verify data
- Analyze carbon footprint of products
- Develop guideline for the product carbon footprint calculation
- Setup the CFP verification and certification system

The National Guidance on Carbon Footprint Calculation for Products

Key references

- ISO 14025:2006, Environmental Labels and Declarations - Type III
- ISO 14040,14044 :2006, Environmental Management - LCA
- ISO 14064-1:2006, Greenhouse gases - Part 1: Specification with guidelines at the organizational level for the quantification and reporting of greenhouse gas emissions and removals.
- ISO/CD 14067.2: 2011, Requirements and Guidelines for Quantification and Communication.
- PAS 2050:2008, Specifications for the assessment of life cycle greenhouse gas emissions of goods and services.

Product Category Rule : PCRs

Type of PCRs

- National PCR developed by TGO
- Pilot PCR, developed by the first company to be registered, in case of no national PCR or other pilot PCRs

National PCRs of product

1	apparel made from textile	16	Insulation materials
2	Textile articles other than apparel	17	PVC and PE piping system
3	Yarn thread and textile fabrics	18	Paints
4	Rice	19	Lighting Product
5	Fruit and Vegetable	20	Large Household Appliences
6	Livestock	21	Small Household Appliences
7	Commercial Printing Products	22	Consumption Equipments
8	Processed Products from Native Tapioca Starch	23	Vehicles
9	Building Material Product: Floor and Wall	24	Multifunction Photocopier
10	Para and Para Products	25	Construction Material: Glass
11	Paper Products	26	Plastic resin and plastic compound products
12	Sugarcane and Sugar Products	27	Household Cleaning Products
13	Ceramic Sanitary Ware	28	Feed for Food producing animals
14	Roofing	29	Pet food
15	Beverages		

National PCRs of service

1	Accommodation Service	6	Meetings and relative activities
2	Press and Post Press	7	Conventions and relative activities
3	Prepress	8	Exhibition and relative activity
4	Content Creation for Printing	9	Convenience store
5	Incentives Travels	10	Logistic Services

Pilot PCRs

Pilot PCR: 180

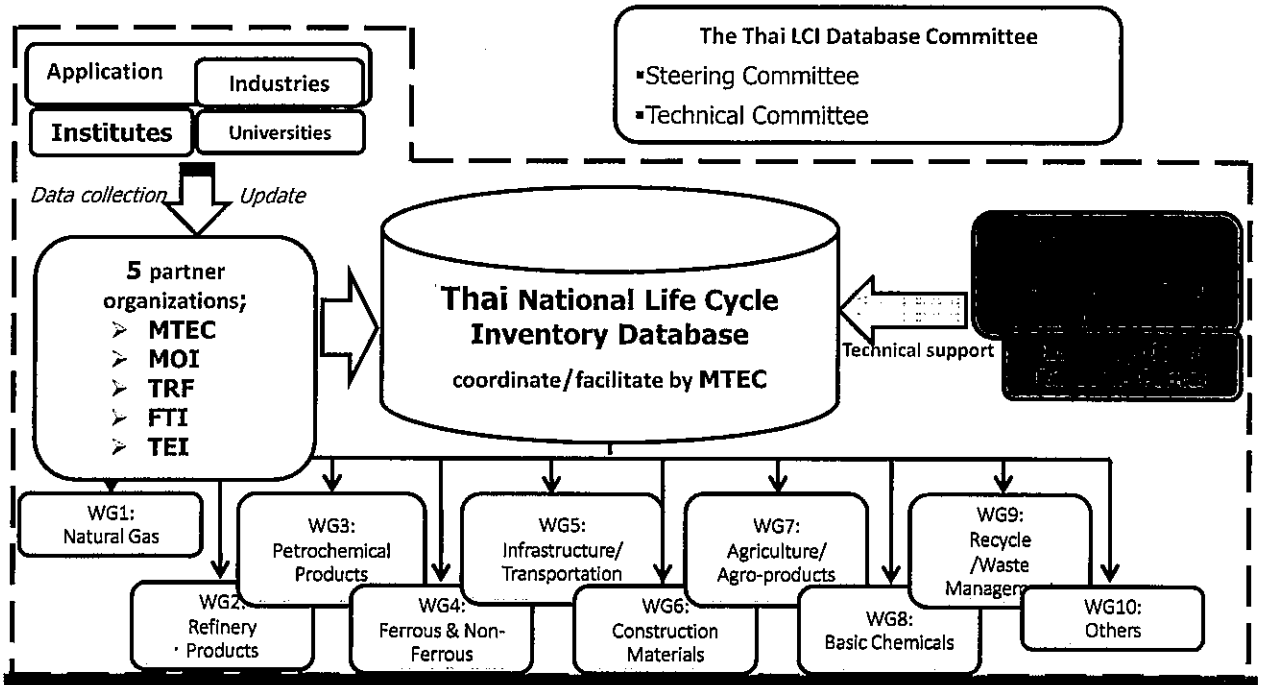
Pilot PCR will be removed from the list if the National PCRs have been developed.

Emission factor for CFP calculation

- National LCI database,
- Thesis and research which has peer reviews/publication,
- LCA software
- IPCC

The Thai National LCI Database

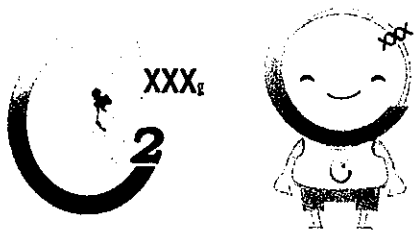
Thai LCI Database Administrative Structure



Certified Carbon Footprint of Products

2018	Total
351 Products	2,844 Products
53 Companys	532 Companys

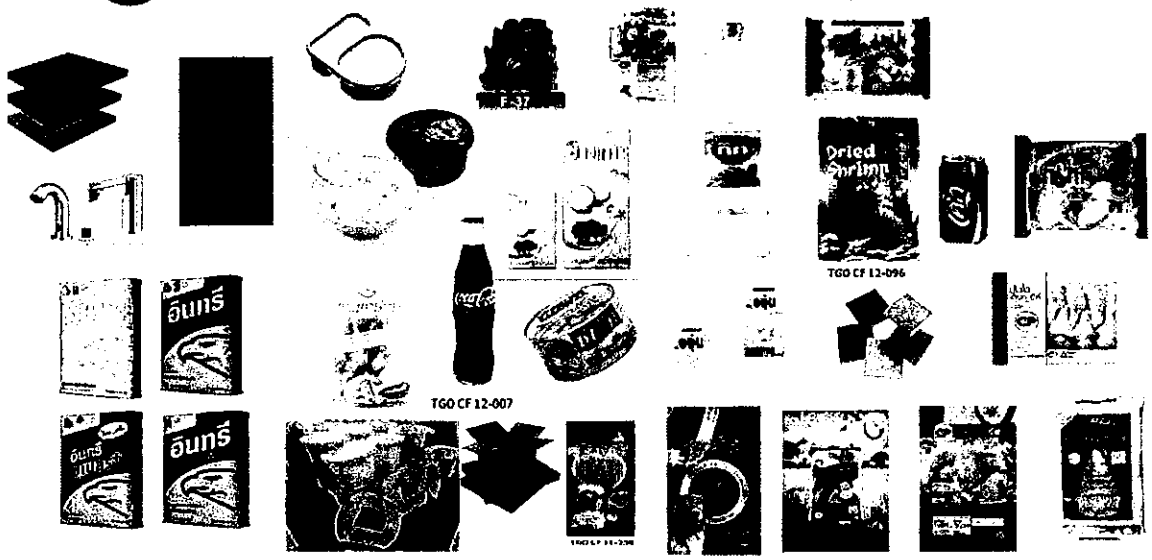
Update: 31 Junly 18



Industry	Total Company
Food and drink	290
Wood and rubber	47
Construction	40
Plastic and Packaging	36
Textile	29
Petroleum and chemicals	26
Paper/paper container	11
other	53

Carbon Footprint of Certified Products

2,844 Products/ 532 Companies



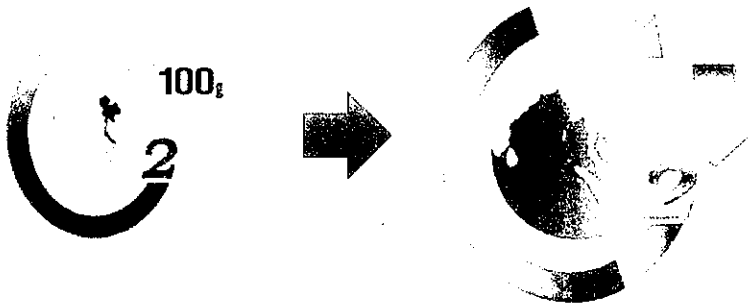
As of 31 July 2018

Why manufacturers are interested to have the CFP label

From surveys

- Respond to the Corporate Social Responsibility program
- Identify GHG emissions hotspots in their supply chain leading to emissions reductions and cost savings
- Want to increase their export competitiveness
- CFP label was requested by customers in other countries
- Same product by other manufacturers has CFP certified
- Prepare for the possible effects of future regulation

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



TGO launched the "Carbon Footprint Reduction in May 2014

Objective: demonstrate an achievement in reduction the product's carbon footprint through its life cycle

Carbon Footprint Reduction (CFR) Criteria

Award the this label shall meet the following requirements;

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

Certified CFR Products

2018	Total
201 Products 15 Companies	497 Products 71 Companies

Update: 31 July 18

Industry	Total Companies
Food and drink	27
Construction	15
Plastic and Packaging	10
other	19

GHG reduction emissions 2,838,107 tonCO2eq

Carbon Footprint for SMEs

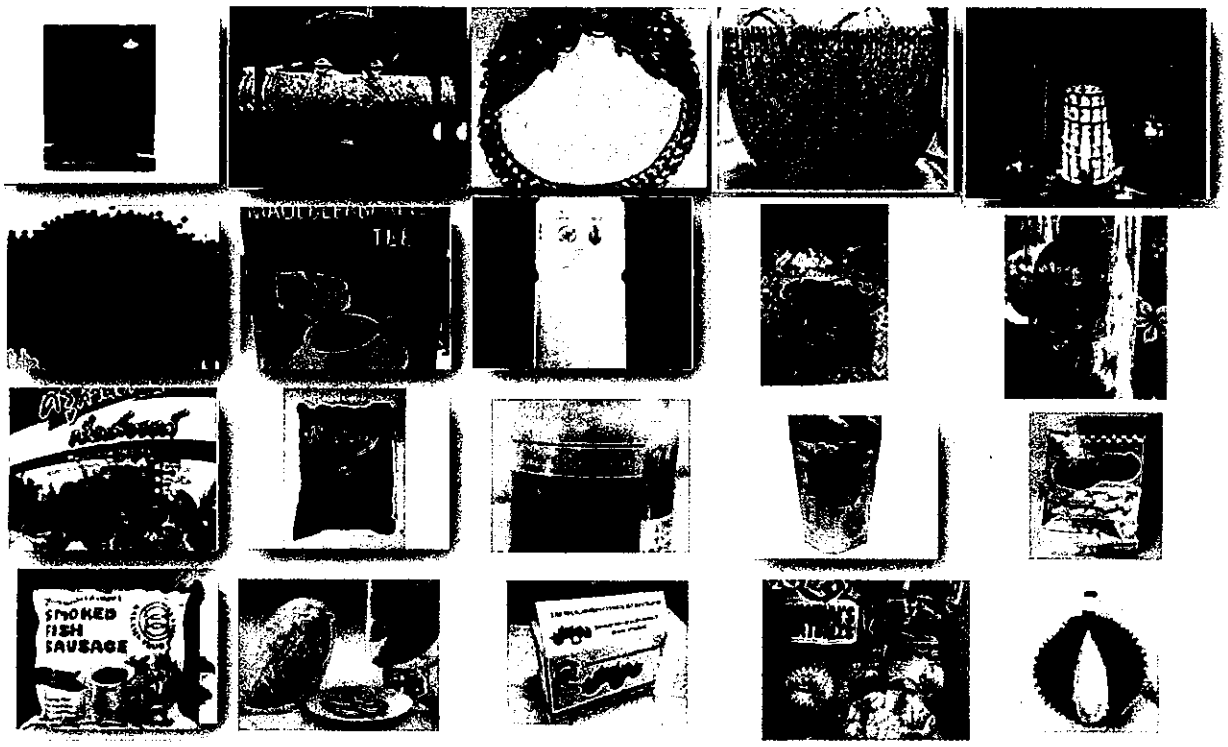
- Join the pilot project with government agencies. There will be many support such as training, registration fee or verification budget
- Do not need consultants to calculate carbon footprint because the production process is not complex, thus reducing the cost of hiring consultants
- If any questions, can contact TGO directly

Certified CFP from SMEs Manufacturers

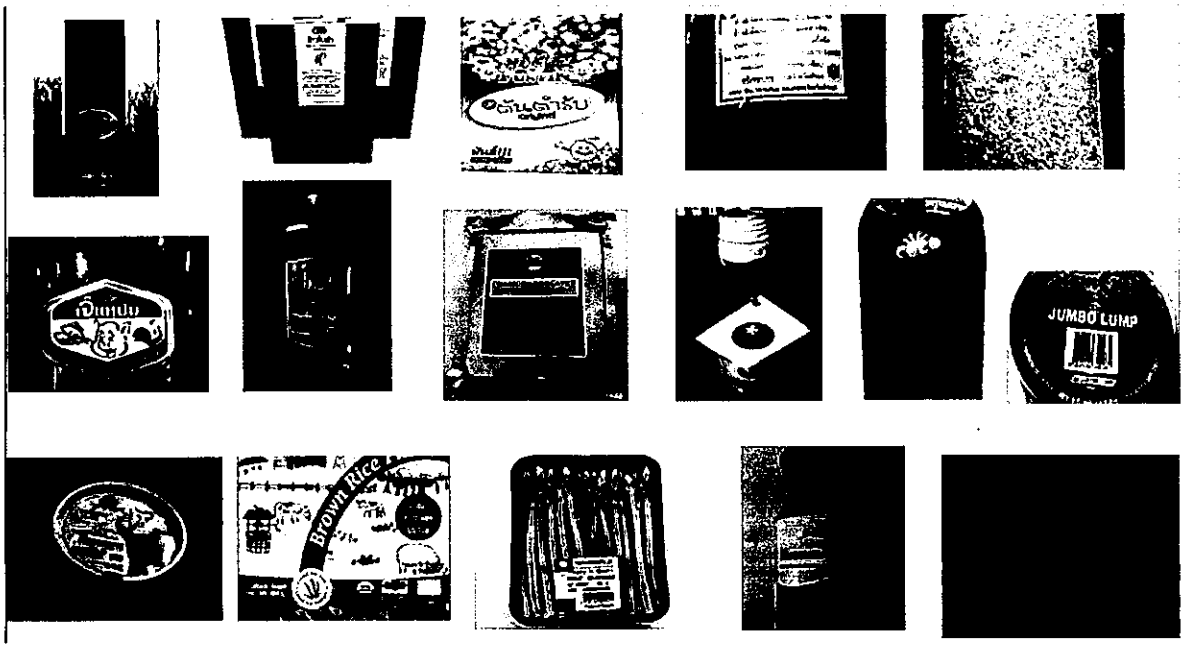
Type	Companies	Amount of Products
Paper	1	1
Construction Equipment	4	4
Book printing	1	2
Beverage	19	28
Plastic	1	5
Pharmaceuticals	3	3
Textile	6	6
Craft and jewelry	12	46
Food	67	73
Ceramic Mug	1	1

Most SMEs are supported by government agencies.

SMEs Products



SMEs Products



Lesson Learned

- Life Cycle inventory (Emission Factors) is a must
- Make simple rule and easy to calculate CFP
- More trainings and consultation meetings with SMEs
- Need collaboration with other government agencies and SMEs Associations to promote CFP

For more information

http://thaicarbonlabel.tgo.or.th

TGO Carbon label & Carbon Footprint for Organization

Thai English

Home | Carbon Label | CF Organization | CF Calculator | CF Forum | Download | Contact us

Carbon Label

- การบอนฟุตพริ้นท์ของผลิตภัณฑ์ Carbon footprint of Product
- ฉลากลดคาร์บอนฟุตพริ้นท์ Carbon Footprint Reduction
- ฉลากคูลโหมด CoolMode

การบอนฟุตพริ้นท์ขององค์กร Carbon footprint for Organization

เครื่องมือคำนวนการบอนฟุตพริ้นท์ของบุคคล

ประกาศผลการขึ้นทะเบียนฉลากคารบอน ครั้งที่ 5/2557

Government Complex, Building B Floor 9, 120 Chaengwattana Road, Laksi, Bangkok 10210
Tel. 02 141 9828 Fax 02 143 8403 www.tgo.or.th
pongpiva@tgo.or.th, phakamon@tgo.or.th

Status of Carbon Footprint Labelling Scheme in Malaysia

Engku Shuhada E. Jaafar / Mazlina W. Hussein
Environmental Technology Research Centre
SIRIM Berhad

SIRIM

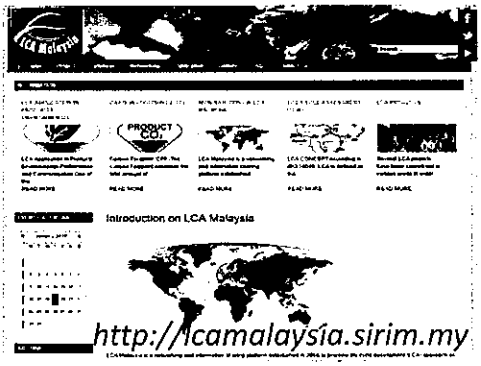
Contents

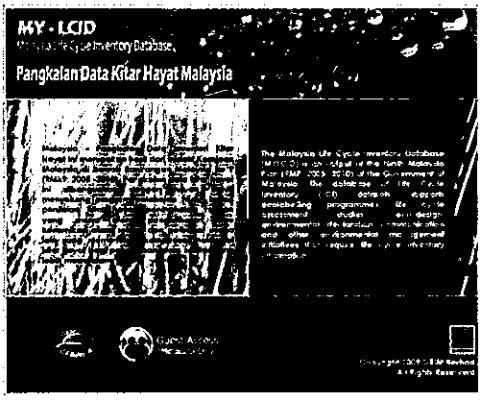
1. The Starting Point for CFP Labelling Scheme
2. CFP Scheme Structure in SIRIM
3. CFP Certified Products/Companies
4. Way Forward

The Starting Point for CFP Labelling Scheme

Chronological event:

- 2004: Life Cycle Assessment (LCA)
- 2010: Life Cycle Inventory Database (MYLCID)
- 2012: **SWITCHAsia Project: Environmental Declaration Scheme for Construction and Building Materials**
  - Carbon Foot-printing (CFP)
  - Product Category Rules (PCR)
  - In-house Tool for Carbon Footprint Analysis



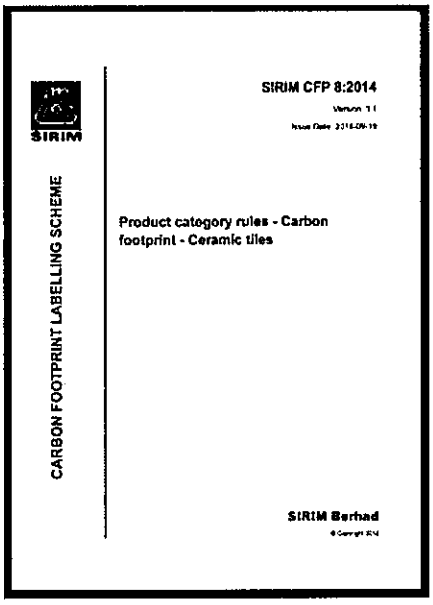


switchasia PROGRAMME

MY SuBuMa Sustainable Building Material

Guidance Documents & Calculation Tool

Product Category Rules (PCR)


SIRIM

CARBON FOOTPRINT LABELLING SCHEME

SIRIM CFP 8:2014

Product category rules - Carbon footprint - Ceramic tiles

SIRIM Berhad

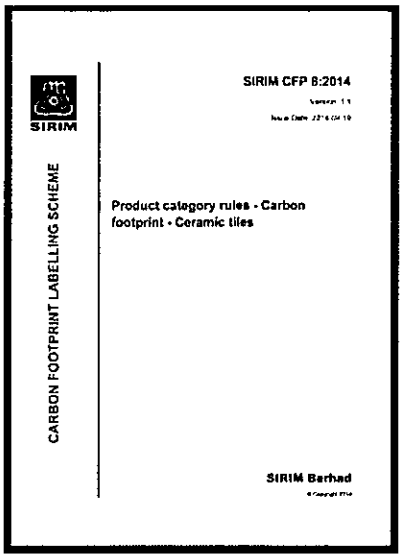
In-house CFP Calculator

CFP Scheme Structure in SIRIM

Institutional Matrix

SIRIM STS	SIRIM	SIRIM QAS INTERNATIONAL
SIRIM STS (subsidiary) (STANDARDS DEPARTMENT)	**SIRIM Berhad (ENVIRONMENTAL TECHNOLOGY RESEARCH CENTRE)**	**SIRIM QAS INTERNATIONAL (subsidiary) (PRODUCT CERTIFICATION & INSPECTION DEPT)**
• Secretariat of WGs: - Establishment of WG by nomination of potential members (experts) - Coordination of WG meetings - Finalization and approval of PCD	• Technical input provider : - Carrying out study on comparative data - Conducting literature search - Drafting of preliminary documents	• Identification of product for the "green market" sectors • Provide independent verification, certification and labelling

CFP Labelling (Eco-labelling Type III)



Product Category Rules

Product CFP labelling Initiated in 2013 (partial ISO 14025 Type-III)

PRODUCT CO_2

SIRIM

2013-2015 pilot project:

27 CFP certified product from 23 companies (MNC / large /SMEs)

2017-2020 post pilot project:

Only 4 CFP certified products from 3 companies (MNC / large)

CFP Certified Products

CFP Logo

PRODUCT CO_2

SIRIM

http://www.sirim-qas.com.my/our-services/management-system-certification-related-services/product-carbon-footprint

Concrete Interlocking Roofing Tiles

Eco-block / bio-brick (masonry)

Standard core plasterboard

Fibre cement ceiling sheet

Vitrified clay pipe

Paint

Product Category Rules - Updates

2 New PCR documents developed in 2017:

- ❑ Carbon Footprint - Solid Biofuel
- ❑ Carbon Footprint – Glued Laminated Lumber

SIRIM CARBON FOOTPRINT (CFP)
(PUBLICATION STATUS)

NO.	SIRIM CARBON FOOTPRINT	ISSUED DATE	FIRST REVISION	SECOND REVISION	PRICE (RM)
	CFP 1				
14	CFP 14 PRODUCT CATEGORY RULES - CARBON FOOTPRINT - SOLID BIOFUEL (EFFECTIVE DATE: 6 DECEMBER 2017)	DECEMBER 2017			50
15	CFP 15 PRODUCT CATEGORY RULES - CARBON FOOTPRINT - GLUED LAMINATED LUMBER (EFFECTIVE DATE: 6 DECEMBER 2017)	DECEMBER 2017			50
9	CFP 9 PRODUCT CATEGORY RULES - CARBON FOOTPRINT - METAL DECKING AND PANELING (EFFECTIVE DATE: SEPTEMBER 2014)	SEPTEMBER 2014			50

Way Forward – Supporting GGP

Eco-labelling to Support GGP in Malaysia:

- SIRIM Eco-Labelling Scheme (certification & testing)
- Development of eco-labelling standards
  - 2004: Ecolabelling Criteria Documents for Products & Services
  - 2015: Product Category Rules for Carbon Footprint of Products

SIRIM Eco-Services	Status
SIRIM Eco-labelling Criteria (ISO 14024 Type I; multiple criteria, 3rd party verification)	82 PCDs (9 in progress)
CFP Labelling - Product Category Rules	15 PCRs
SIRIM Carbon Footprint Labelling Scheme (partial ISO 14025 Type III Eco Labels)	23 companies 12 SMEs Companies

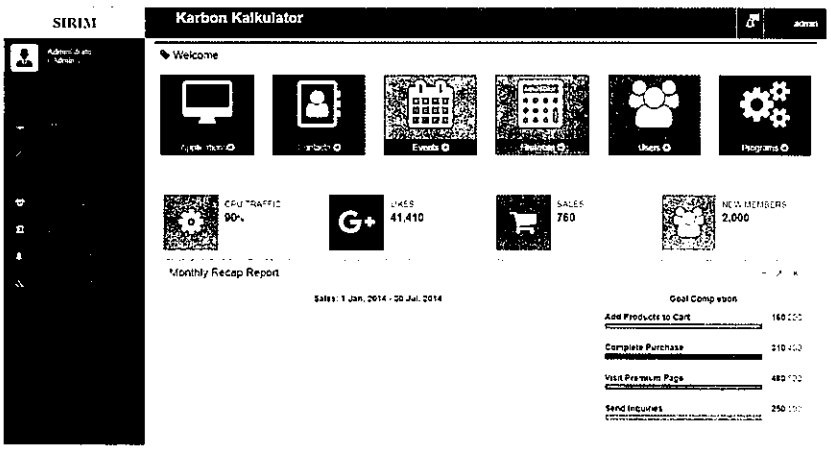
Status as of 2018:

- 4 certified products from 3 companies (MNC / Large)

Way Forward – Enhancing CFP Labelling Scheme

In-house CFP Calculator – upgraded tool:

- ✓ Simplified calculation process with application system
- ✓ Streamlined database of CO_2e factors
- ✓ Various sector application i.e construction, manufacturing, agriculture, etc



Way Forward – National Initiatives

- ✓ Government Green Procurement (GGP)
- ✓ MyHijau Programme
- ✓ MyCREST

[1] Green Label Certification (ISO 14024 Type I Eco-labels)
e.g. SIRIM Eco Labelling Scheme

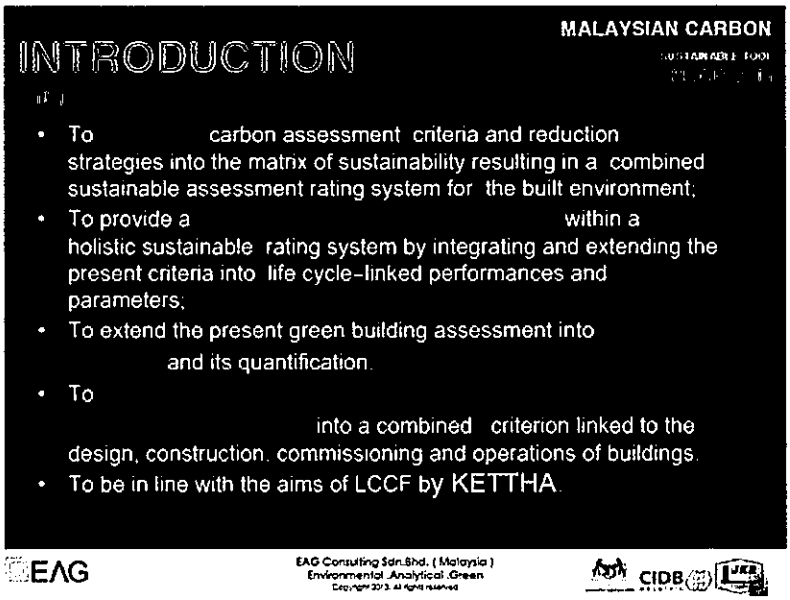
[2] Green Label Certification (ISO 14025 Type III Eco-labels)
e.g. SIRIM Carbon Footprint Labelling Scheme

[3] Green Label Certification (Other Type I-like Voluntary Sustainable Scheme; VSS)
e.g. Energy Efficiency, Water Efficiency, PEFC & MCS

[4] Performance Standard Compliance
e.g. MS 2413:2011 (P) Electric Motorcycles Specification Part 3 (Performance Test)

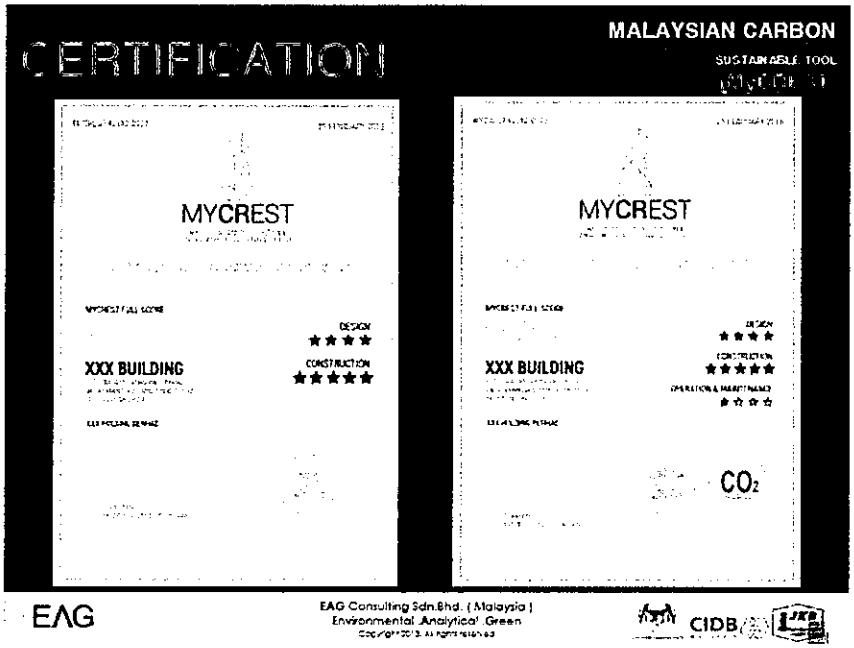
Way Forward - CFP in Construction Sector

- MALAYSIAN CARBON REDUCTION SUSTAINABLE TOOL (MyCREST)
- Introduced by Construction Industry Development Board (CIDB)



Way Forward - MyCREST

MyCREST Certification



SIRIM ECO SERVICES

Thank you

SIRIM Berhad
No. 1, Persiaran Dato' Menteri
Section 2, 40700 Shah Alam
Selangor, MALAYSIA
Website: www.sirim.my

附錄 4

公務期間國外人士個人資料彙整表

公務出國期間國外人士個人資料彙整表

會議/活動名稱	姓名	單位及職稱	國別	專長領域	會晤日期	聯絡電話	電子郵件	我方接洽者姓名職稱	交流內容	備註
Asia Carbon Footprint Network Conference 2018	Jong-Seon, Kwak	Ministry of Environment/Senior Program Officer	韓國	氣候變遷、LCA、碳足跡	9/11	+82-44-201-6959	brainjs@korea.kr	葉信君科長 曾慶昌科長	碳標籤制度及推動現況、臺、韓、泰PCR 調和事宜	
	Jae-Seok Kim	KEITI / Sustainable Business Department /team Leader	韓國	LCA、碳足跡	9/11	+82-2-2284-1530	kimjs@keiti.re.kr	葉信君科長 曾慶昌科長	碳標籤制度及推動現況、臺、韓、泰PCR 調和事宜	
	Joon-Jae Lee	KEITI / Environmental Declaration Office /Researcher	韓國	LCA、碳足跡	9/11	+82-2-2284-1577	twoj@keiti.re.kr	葉信君科長 曾慶昌科長	碳標籤制度及推動現況、臺、韓、泰PCR 調和事宜	
	Kim NaYoung	KEITI / Sustainable Business Department Eco-Certification Office /Researcher	韓國	LCA、碳足跡、EPD	9/11	+82-2-2284-9773	nyishero@keiti.re.kr	葉信君科長 曾慶昌科長	碳標籤制度及推動現況、臺、韓、泰PCR 調和事宜	本次行前聯繫窗口

	Minkyung Hong (Carrie)	United Nations/ESCAP East and North-East Asia Office / Research Associtate	韓國	LCA、碳足跡	9/11	+82-(0)32-458-6605	Hong6@un.org	葉信君科長 曾慶昌科長	環境足跡、碳標籤制度及推動現況	
	Engku Noor Shuhada Engku Jaafar	SIRIM / Environmental Management Section / Researcher	馬來西亞	LCA、碳足跡	9/11	+603-5544-6588	nshuhada@sirim.my	葉信君科長 曾慶昌科長	碳標籤制度及推動現況	
	Deng Qiuwei	Energy Conservation and ow Carbon Department/Director	中國	LCA、碳足跡	9/11	+010-68718969	Dengqw@cscaec.com.cn	葉信君科長 曾慶昌科長	碳標籤制度及推動現況	
	Oyunbat Batsaikhan	Mogolian National Chamber of Commerce and Industry / Sustainable Development Policy and Green Financial Office/Head	蒙古	LCA、碳足跡	9/11	+976-11-329167	esco@mongolchamber.mn	葉信君科長 曾慶昌科長	碳標籤制度及推動現況	

	Pongvipa Lohsomboon	TGO / Carbon Business Office/Deputy Executive Director	泰國	LCA、碳足跡	9/11	+66-0-2141 9801	pongvipa@tgo.or.th	葉信君科長 曾慶昌科長	碳標籤制度及推動現況 臺、韓、泰 PCR 調和事宜	
	Phuangphan Srithong	TGO / Carbon Label Program Carbon Business Office / Manager	泰國	LCA、碳足跡	9/11	+66-0-2141 9829	phuangphan@tgo.or.th	葉信君科長 曾慶昌科長	碳標籤制度及推動現況 臺、韓、泰 PCR 調和事宜	
	Linda W.P. Ho	Green Council / Chief Executive Officer	香港	LCA、碳足跡	9/11	+852-2810-1122	lindaho@greencouncil.org	葉信君科長 曾慶昌科長	碳標籤制度及推動現況	
	Steven C.P. Choi	Green Council / Senior Project Manager	香港	LCA、碳足跡	9/11	+852-2810-1122	stevenchoi@greencouncil.org	葉信君科長 曾慶昌科長	碳標籤制度及推動現況	
	Joseph K.Y. Chiu	CMA Testing and Certification Laboratories/ Certification Manager	香港	LCA、碳足跡	9/11	+852-2690-8280	josephchiu@cmatesting.org	葉信君科長 曾慶昌科長	碳標籤制度及推動現況	