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

# 第三類環境宣告(EPD)
# 暨
# 碳足跡(CFP)查證服務簡介

# 國際環境標誌與宣告

- 環境標誌與宣告係提供一項產品或服務的整體環境特性、一種或多種特定環境考量面的相關資訊。
- 採購者可利用這項資訊，並依據環境或其他的考量，來選擇所需的產品或服務。
- 環境標誌能夠有效地影響採購者，做出對其產品或服務有利之採購決策
- 提昇該產品或服務之市場佔有率，降低該類產品或服務之環境衝擊。

# 環境標誌與宣告-ISO/CNS 14020 系列標準

| | |
|---|---|
| 第一類<br>**環保標章**<br>ISO/CNS14024 | 以預先設定之產品規格標準，經過第三者驗証，選擇對環境產生不利衝擊較低的產品，頒發專用之商標(發給最優良產品) |
| 第二類(廠商)<br>**自我宣告**<br>ISO/CNS14021 | 由產品製造商、進口商、配銷商、零售商提出，多屬單一考量與單一產品、大部分無第三者驗證。 |
| 第三類<br>**產品環境宣告**<br>ISO/CNS14025 | 為多重考量、多重行業別、多種參數 、經第三者驗證後提供給消費者定量化環境資訊。 |
| 其他單一性議題之環保標章<br>(無ISO標準) | 針對單一產品或行業（如造紙業、漁業）、單一環保特性（如能源之星）或取自永續自然資源之原料的「環境標誌與宣告」。 |

# 第三類產品環境宣告之目的
# (ENVRONMENTAL PRODUCT DECLARATION, EPD)

ISO 14025條文(序言)：

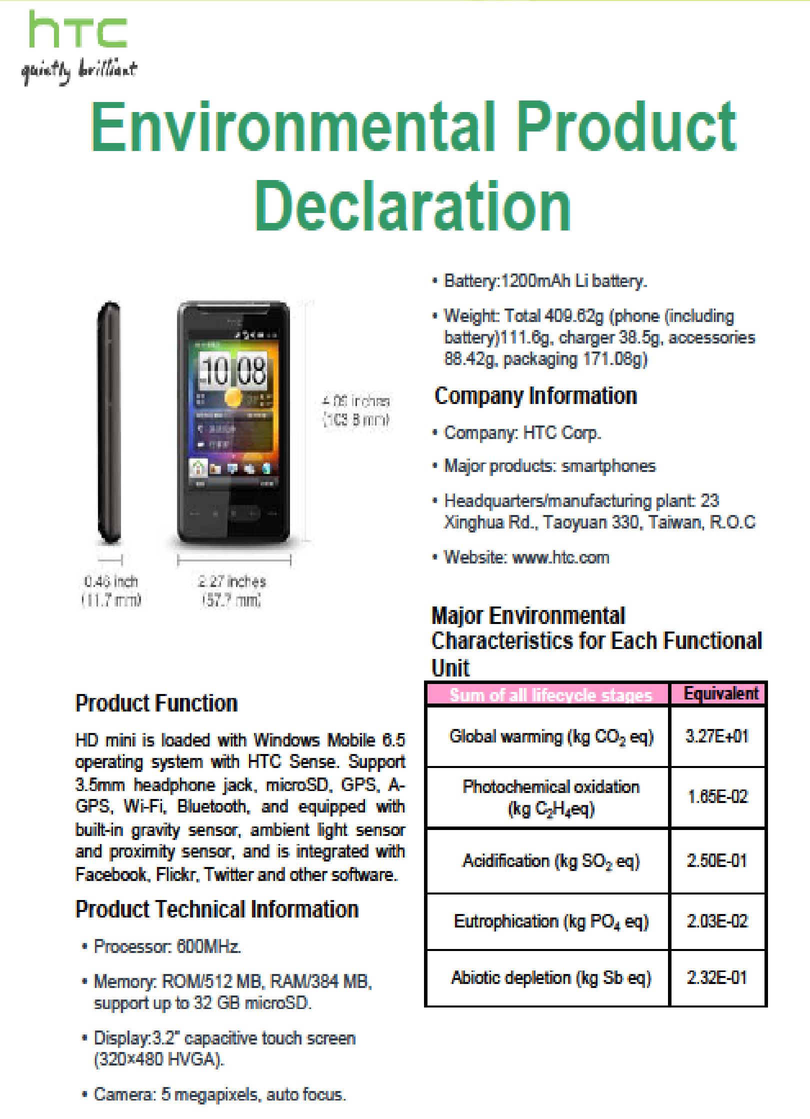
- 此標準之推出，主要作為企業進行*對外溝通*之目的，亦不排除企業直接對消費者溝通之依據。
- 第三類環境宣告中*量化*之產品*生命週期評估*環境資訊，使相同功能產品間之宣告*得以比較*

*EPD比較基礎*

ISO 14025條文：

為*確保*相同功能產品間環境宣告之*可比較性*、*透明性(可追溯性)*及*可驗證性*，ISO 14025標準亦規範方案執行者(Program Operator)，在進行產品環境宣告之前，必須確保其產品類別規則(Product Category Rule; PCR)之取得

# 第三類產品環境宣告(EPD)案例



htc
quietly brilliant

## Environmental Product Declaration

4.06 inches
(103.8 mm)
0.46 inch
(11.7 mm)
2.27 inches
(57.7 mm)

### Product Function

HD mini is loaded with Windows Mobile 6.5 operating system with HTC Sense. Support 3.5mm headphone jack, microSD, GPS, A-GPS, Wi-Fi, Bluetooth, and equipped with built-in gravity sensor, ambient light sensor and proximity sensor, and is integrated with Facebook, Flickr, Twitter and other software.

### Product Technical Information

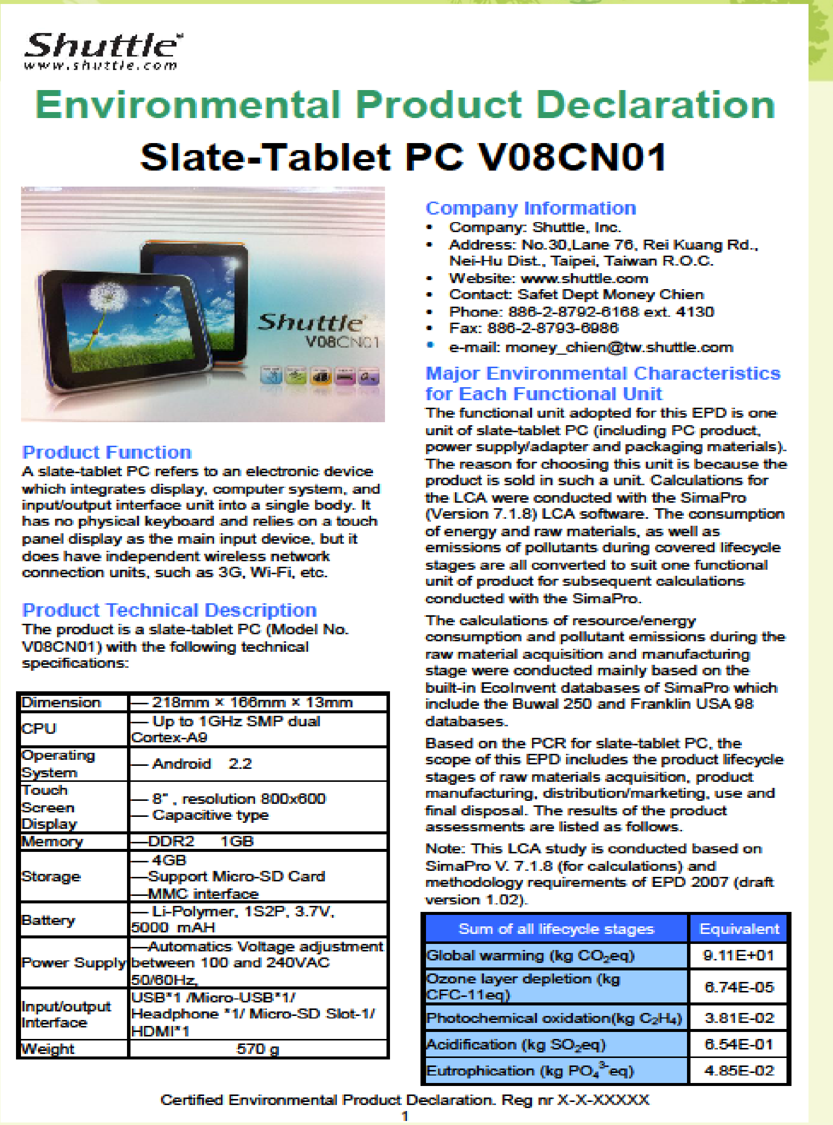
- Processor: 600MHz.
- Memory: ROM/512 MB, RAM/384 MB, support up to 32 GB microSD.
- Display:3.2" capacitive touch screen (320×480 HVGA).
- Camera: 5 megapixels, auto focus.
- Battery:1200mAh Li battery.
- Weight: Total 409.62g (phone (including battery)111.6g, charger 38.5g, accessories 88.42g, packaging 171.08g)

### Company Information

- Company: HTC Corp.
- Major products: smartphones
- Headquarters/manufacturing plant: 23 Xinghua Rd., Taoyuan 330, Taiwan, R.O.C
- Website: www.htc.com

### Major Environmental Characteristics for Each Functional Unit

| Sum of all lifecycle stages | Equivalent |
|---|---|
| Global warming (kg $CO_2$ eq) | 3.27E+01 |
| Photochemical oxidation (kg $C_2H_4$eq) | 1.65E-02 |
| Acidification (kg $SO_2$ eq) | 2.50E-01 |
| Eutrophication (kg $PO_4$ eq) | 2.03E-02 |
| Abiotic depletion (kg Sb eq) | 2.32E-01 |



Shuttle
www.shuttle.com

## Environmental Product Declaration

## Slate-Tablet PC V08CN01

### Product Function

A slate-tablet PC refers to an electronic device which integrates display, computer system, and input/output interface unit into a single body. It has no physical keyboard and relies on a touch panel display as the main input device, but it does have independent wireless network connection units, such as 3G, Wi-Fi, etc.

### Product Technical Description

The product is a slate-tablet PC (Model No. V08CN01) with the following technical specifications:

| | |
|---|---|
| Dimension | — 218mm × 166mm × 13mm |
| CPU | — Up to 1GHz SMP dual Cortex-A9 |
| Operating System | — Android 2.2 |
| Touch Screen Display | — 8" , resolution 800x600<br>— Capacitive type |
| Memory | —DDR2 1GB |
| Storage | — 4GB<br>—Support Micro-SD Card<br>—MMC interface |
| Battery | — Li-Polymer, 1S2P, 3.7V, 5000 mAH |
| Power Supply | —Automatics Voltage adjustment between 100 and 240VAC 50/60Hz, |
| Input/output Interface | USB*1 /Micro-USB*1/ Headphone *1/ Micro-SD Slot-1/ HDMI*1 |
| Weight | 570 g |

### Company Information

- Company: Shuttle, Inc.
- Address: No.30,Lane 76, Rei Kuang Rd., Nei-Hu Dist., Taipei, Taiwan R.O.C.
- Website: www.shuttle.com
- Contact: Safet Dept Money Chien
- Phone: 886-2-8792-6168 ext. 4130
- Fax: 886-2-8793-6986
- e-mail: money_chien@tw.shuttle.com

### Major Environmental Characteristics for Each Functional Unit

The functional unit adopted for this EPD is one unit of slate-tablet PC (including PC product, power supply/adapter and packaging materials). The reason for choosing this unit is because the product is sold in such a unit. Calculations for the LCA were conducted with the SimaPro (Version 7.1.8) LCA software. The consumption of energy and raw materials, as well as emissions of pollutants during covered lifecycle stages are all converted to suit one functional unit of product for subsequent calculations conducted with the SimaPro.

The calculations of resource/energy consumption and pollutant emissions during the raw material acquisition and manufacturing stage were conducted mainly based on the built-in EcoInvent databases of SimaPro which include the Buwal 250 and Franklin USA 98 databases.

Based on the PCR for slate-tablet PC, the scope of this EPD includes the product lifecycle stages of raw materials acquisition, product manufacturing, distribution/marketing, use and final disposal. The results of the product assessments are listed as follows.

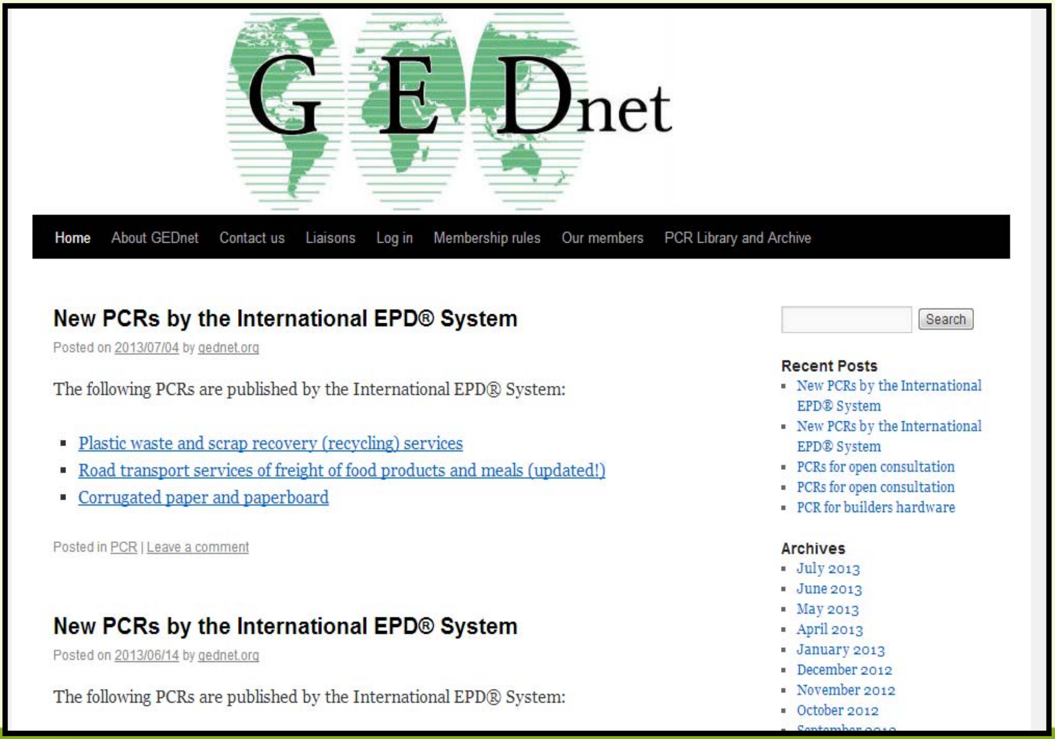
Note: This LCA study is conducted based on SimaPro V. 7.1.8 (for calculations) and methodology requirements of EPD 2007 (draft version 1.02).

| Sum of all lifecycle stages | Equivalent |
|---|---|
| Global warming (kg $CO_2$eq) | 9.11E+01 |
| Ozone layer depletion (kg CFC-11eq) | 6.74E-05 |
| Photochemical oxidation(kg $C_2H_4$) | 3.81E-02 |
| Acidification (kg $SO_2$eq) | 6.54E-01 |
| Eutrophication (kg $PO_4^{3-}$eq) | 4.85E-02 |

Certified Environmental Product Declaration. Reg nr X-X-XXXXX
1

# 國際間主要PCR&EPD發展

- 全球第三類環境宣告網路組織-GEDnet (Global Type III Environmental Product Declarations Network) http://gednet.org/
- 共有10餘個會員組織(日本、韓國、瑞典、挪威、丹麥、德國、中國、澳洲、美國及我國-中華台北、荷蘭等)


GEDnet
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Contact us
Liaisons
Log in
Membership rules
Our members
PCR Library and Archive
Search

**New PCRs by the International EPD® System**

Posted on 2013/07/04 by gednet.org

The following PCRs are published by the International EPD® System:

- Plastic waste and scrap recovery (recycling) services
- Road transport services of freight of food products and meals (updated!)
- Corrugated paper and paperboard

Posted in PCR | Leave a comment

**New PCRs by the International EPD® System**

Posted on 2013/06/14 by gednet.org

The following PCRs are published by the International EPD® System:

**Recent Posts**

- New PCRs by the International EPD® System
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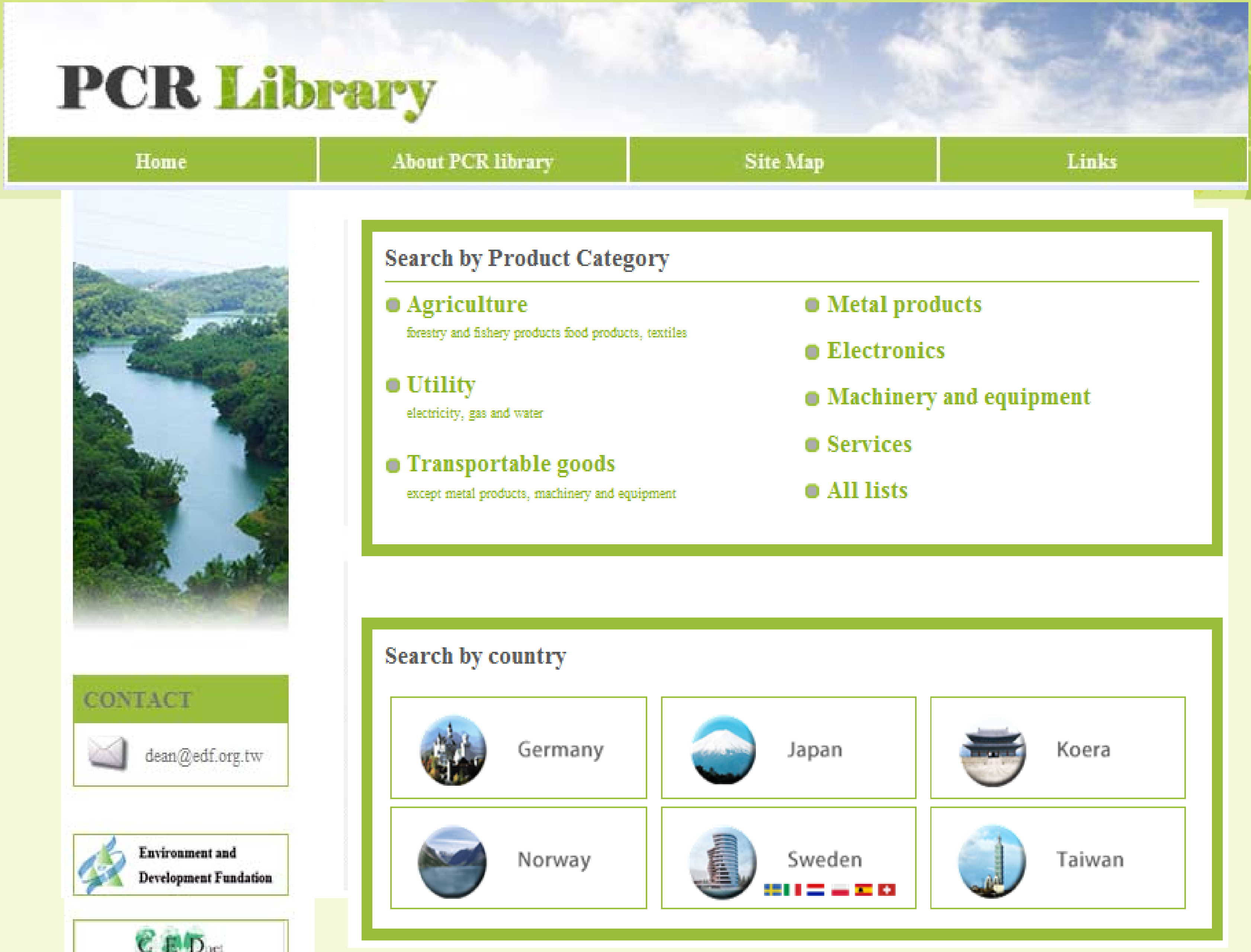
- PCRs for open consultation
- PCRs for open consultation
- PCR for builders hardware

**Archives**

- July 2013
- June 2013
- May 2013
- April 2013
- January 2013
- December 2012
- November 2012
- October 2012



# PCR Library

## Search by Product Category

- **Agriculture**
  forestry and fishery products food products, textiles
- **Utility**
  electricity, gas and water
- **Transportable goods**
  except metal products, machinery and equipment
- **Metal products**
- **Electronics**
- **Machinery and equipment**
- **Services**
- **All lists**

## Search by country

| | | |
|---|---|---|
| Germany | Japan | Koera |
| Norway | Sweden | Taiwan |

CONTACT

dean@edf.org.tw

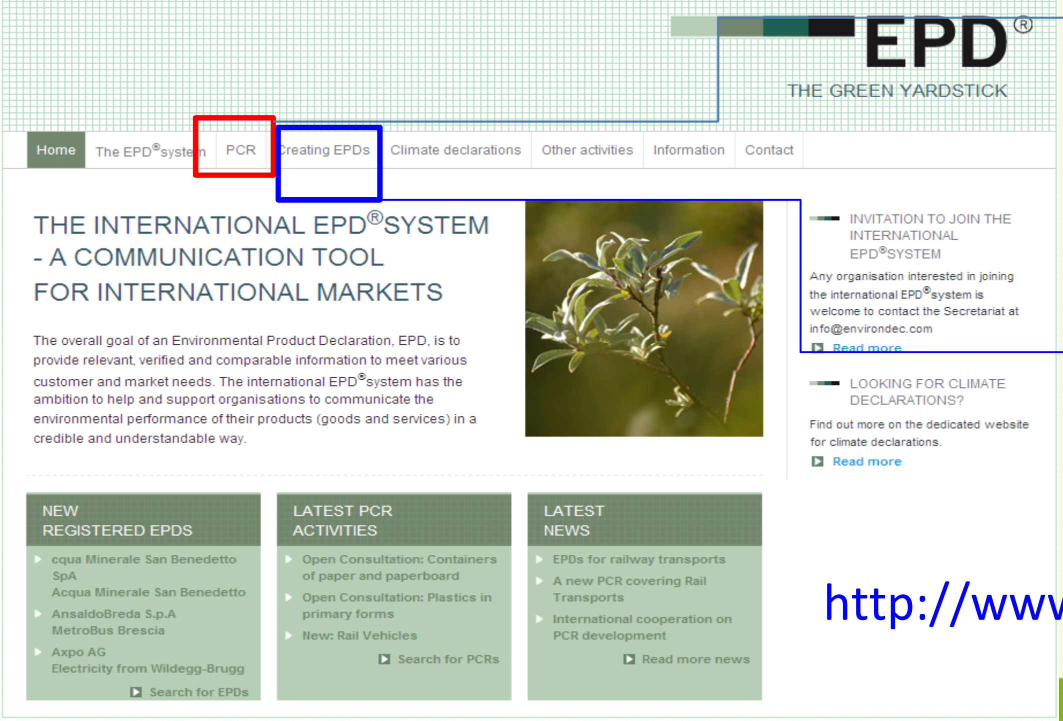
Environment and Development Fundation

CEDnet

http://pcr-library.edf.org.tw/

# 國際間主要PCR&EPD發展

- **瑞典 EDP 計畫**
  - 建立於1997年，由環境管理協會（SEMCO）擔任管理團體
  - 屬瑞典政府支持之國際性環境宣告計畫
  - 超過70個產品項目PCR，涵蓋食品、建材、機器設備、電器產品、廢棄物處置等項目，總申請產品EPD通過數量已達160多個



EPD®
THE GREEN YARDSTICK

Home | The EPD® system | PCR | Creating EPDs | Climate declarations | Other activities | Information | Contact

THE INTERNATIONAL EPD® SYSTEM - A COMMUNICATION TOOL FOR INTERNATIONAL MARKETS

The overall goal of an Environmental Product Declaration, EPD, is to provide relevant, verified and comparable information to meet various customer and market needs. The international EPD® system has the ambition to help and support organisations to communicate the environmental performance of their products (goods and services) in a credible and understandable way.

INVITATION TO JOIN THE INTERNATIONAL EPD® SYSTEM

Any organisation interested in joining the international EPD® system is welcome to contact the Secretariat at info@environdec.com

Read more

LOOKING FOR CLIMATE DECLARATIONS?

Find out more on the dedicated website for climate declarations.

Read more

NEW REGISTERED EPDS
- cqua Minerale San Benedetto SpA
  Acqua Minerale San Benedetto
- AnsaldoBreda S.p.A
  MetroBus Brescia
- Axpo AG
  Electricity from Wildegg-Brugg

Search for EPDs

LATEST PCR ACTIVITIES
- Open Consultation: Containers of paper and paperboard
- Open Consultation: Plastics in primary forms
- New: Rail Vehicles

Search for PCRs

LATEST NEWS
- EPDs for railway transports
- A new PCR covering Rail Transports
- International cooperation on PCR development

Read more news

PCR搜尋

EPD搜尋

http://www.environdec.com/pageId.asp

# INTERNATIONAL EPD® SYSTEM

- 為整合各國現有EPD系統，所推出的國際EPD系統
- 目的在促進各國的第三類環境宣告達成一致化（harmonization）以減少不必要之貿易障礙。
- 由瑞典發起，已完成了一份「國際EPD系統之一般性計畫指引」。重點在

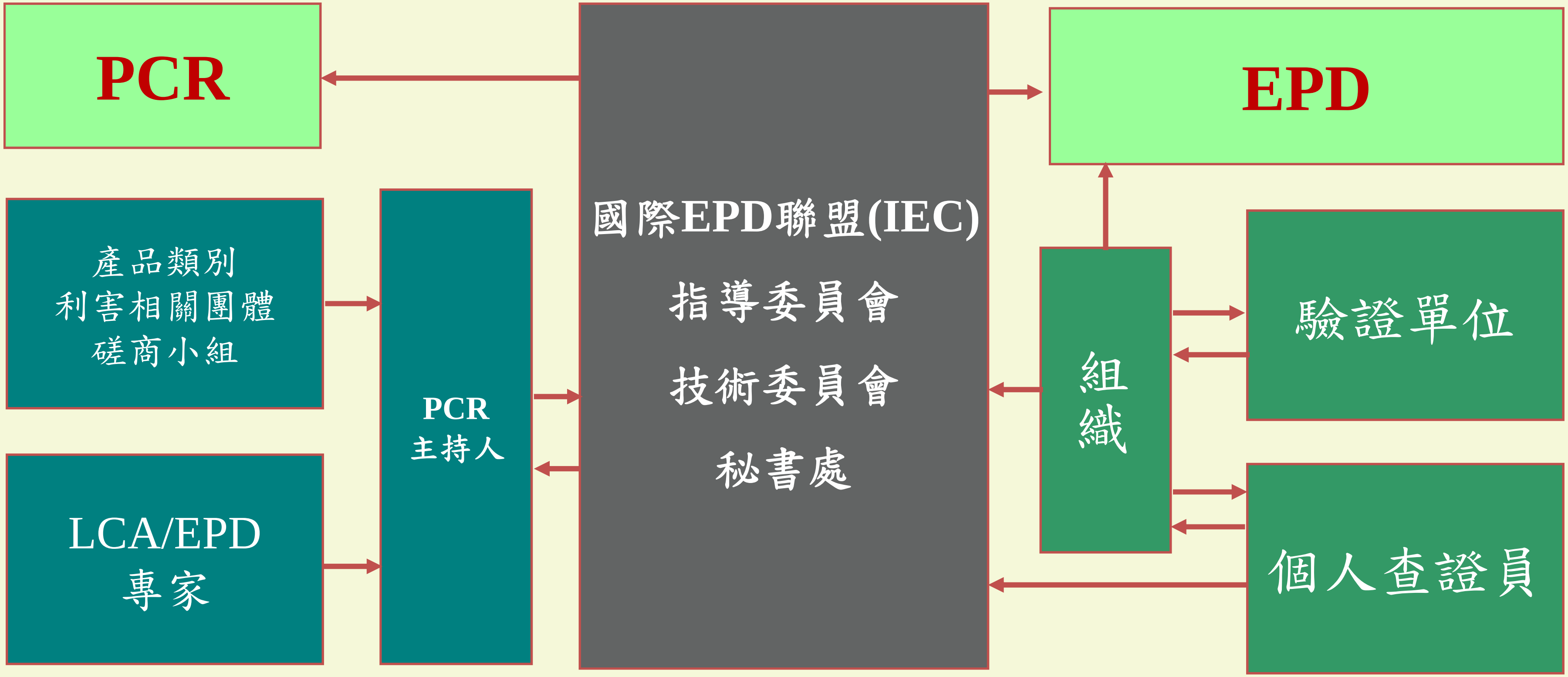
  （1）將PCR開發程序模式化與標準化，

  （2）建立一個PCR論壇以促進各界公開討論，

  （3）加速LCA數據蒐集及

  （4）簡化EPD驗證程序與費用。

# INTERNATIONAL EPD® SYSTEM



PCR

EPD

國際EPD聯盟(IEC)
指導委員會
技術委員會
秘書處

產品類別
利害相關團體
磋商小組

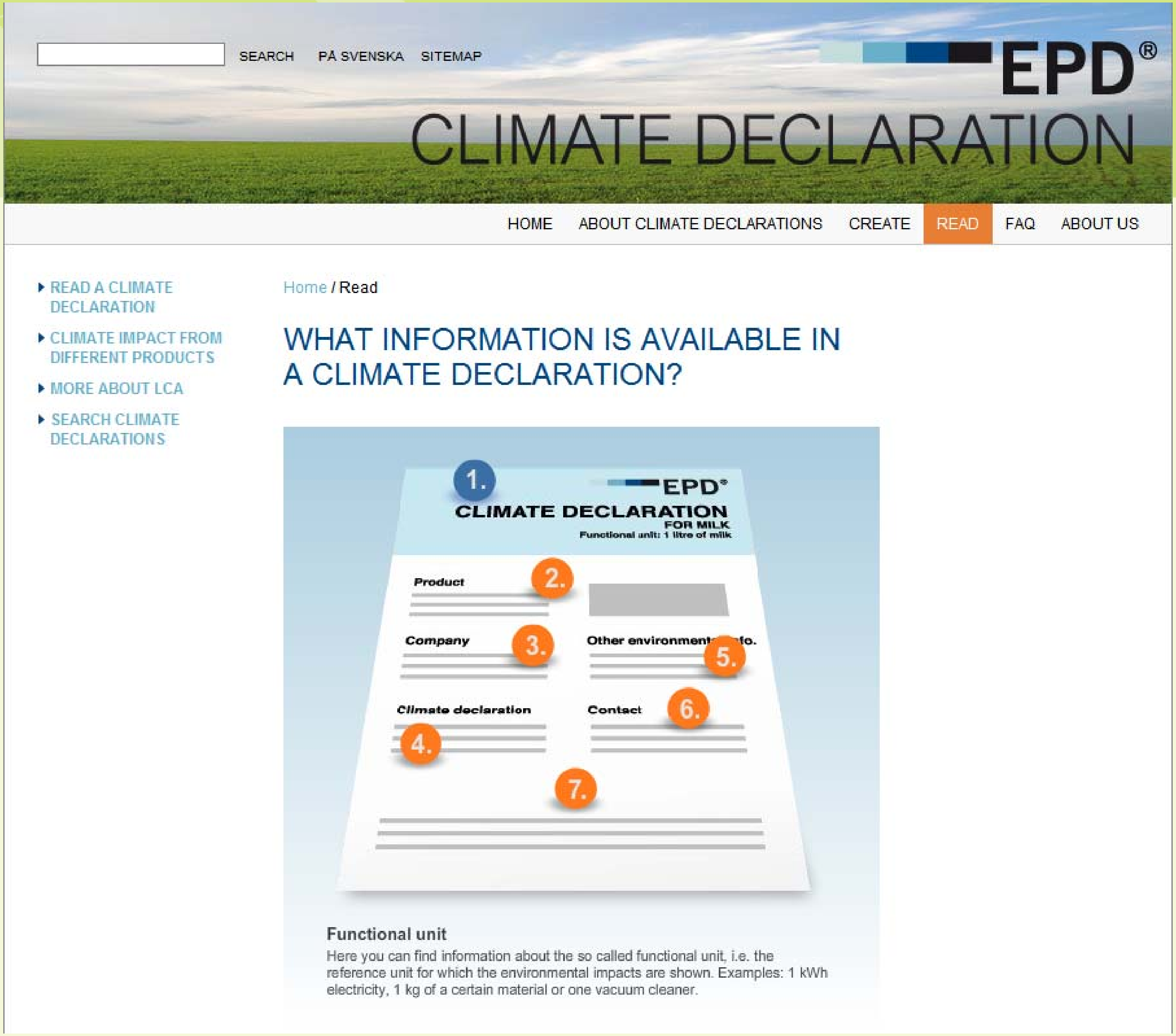
PCR
主持人

LCA/EPD
專家

組
織

驗證單位

個人查證員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SITEMAP
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ABOUT CLIMATE DECLARATIONS
CREATE
READ
FAQ
ABOUT US
READ A CLIMATE DECLARATION
CLIMATE IMPACT FROM DIFFERENT PRODUCTS
MORE ABOUT LCA
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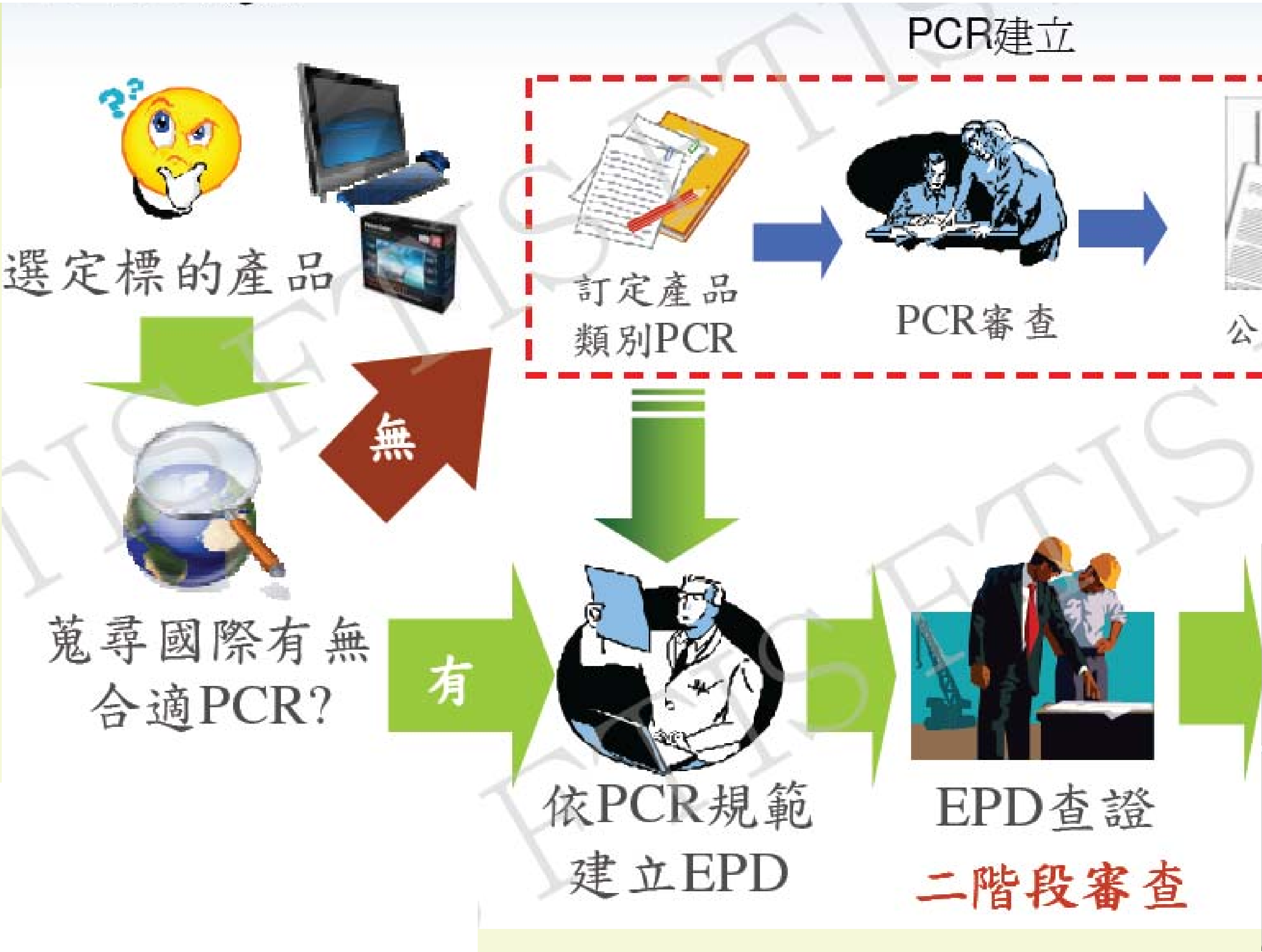
1.
EPD®
CLIMATE DECLARATION
FOR MILK
Functional unit: 1 litre of milk
Product
2.
Company
3.
Other environmental info.
5.
Climate declaration
4.
Contact
6.
7.

## WHAT INFORMATION IS AVAILABLE IN A CLIMATE DECLARATION?

**Functional unit**

Here you can find information about the so called functional unit, i.e. the reference unit for which the environmental impacts are shown. Examples: 1 kWh electricity, 1 kg of a certain material or one vacuum cleaner.

# EPD查證與PCR之關係



選定標的產品

蒐尋國際有無合適PCR?

無

有

PCR建立

訂定產品類別PCR

PCR審查

公佈PCR規範

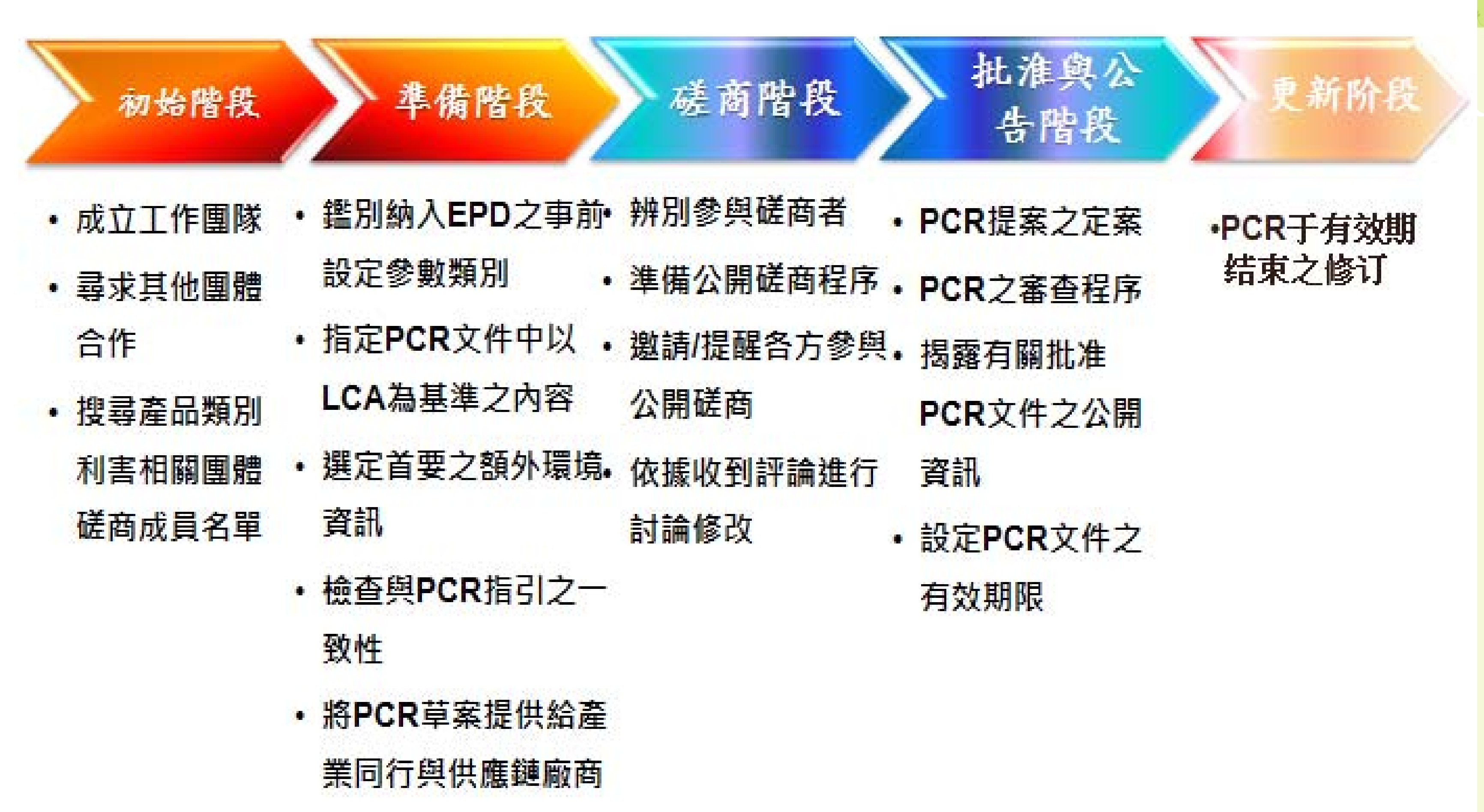
依PCR規範建立EPD

EPD查證

二階段審查

Environmental Product Declaration

# ISO 14025 PCR公告流程

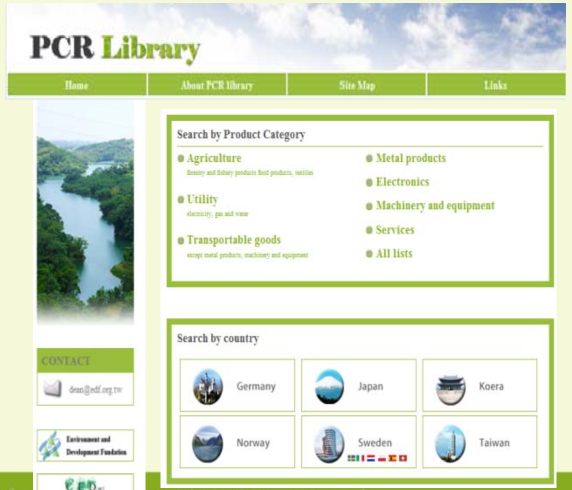


| 初始階段 | 準備階段 | 磋商階段 | 批准與公告階段 | 更新阶段 |
|---|---|---|---|---|
| • 成立工作團隊<br>• 尋求其他團體合作<br>• 搜尋產品類別利害相關團體磋商成員名單 | • 鑑別納入EPD之事前設定參數類別<br>• 指定PCR文件中以LCA為基準之內容<br>• 選定首要之額外環境資訊<br>• 檢查與PCR指引之一致性<br>• 將PCR草案提供給產業同行與供應鏈廠商 | • 辨別參與磋商者<br>• 準備公開磋商程序<br>• 邀請/提醒各方參與公開磋商<br>• 依據收到評論進行討論修改 | • PCR提案之定案<br>• PCR之審查程序<br>• 揭露有關批准PCR文件之公開資訊<br>• 設定PCR文件之有效期限 | •PCR于有效期结束之修订 |

# 國際GEDnet組織會員

- 全球第三類環境宣告組織-GEDnet(Global Environmental Product Declarationals Network)為全球量化環境宣告之主流平台
- 環發會為GEDnet創始會員，參與國際EPD計畫之執行，*為國際認可之EPD與PCR之審核機構；*於2007年起，已協助台灣完成*70餘*項PCR宣告。

http://pcr-library.edf.org.tw/



PCR Library

Search by Product Category

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- Services
- All lists

Search by country

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Sweden
Taiwan

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dean@edf.org.tw

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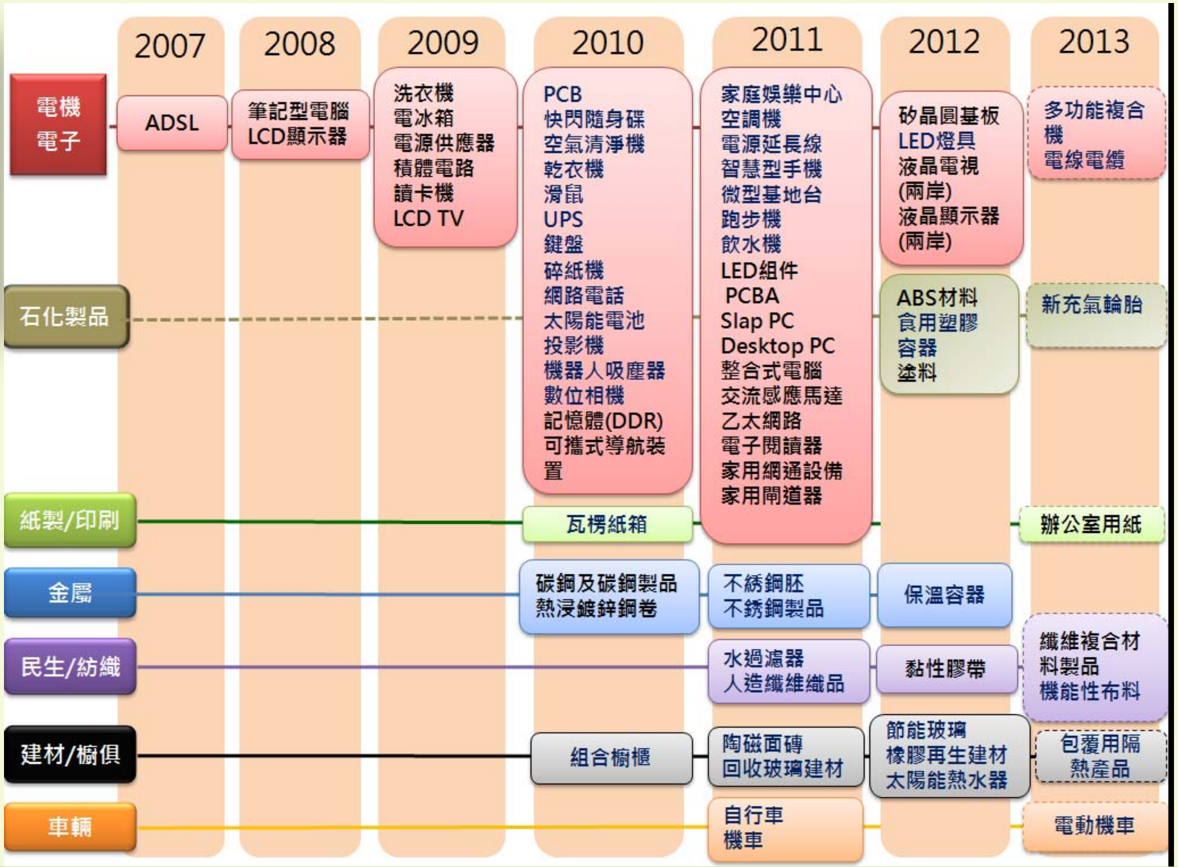
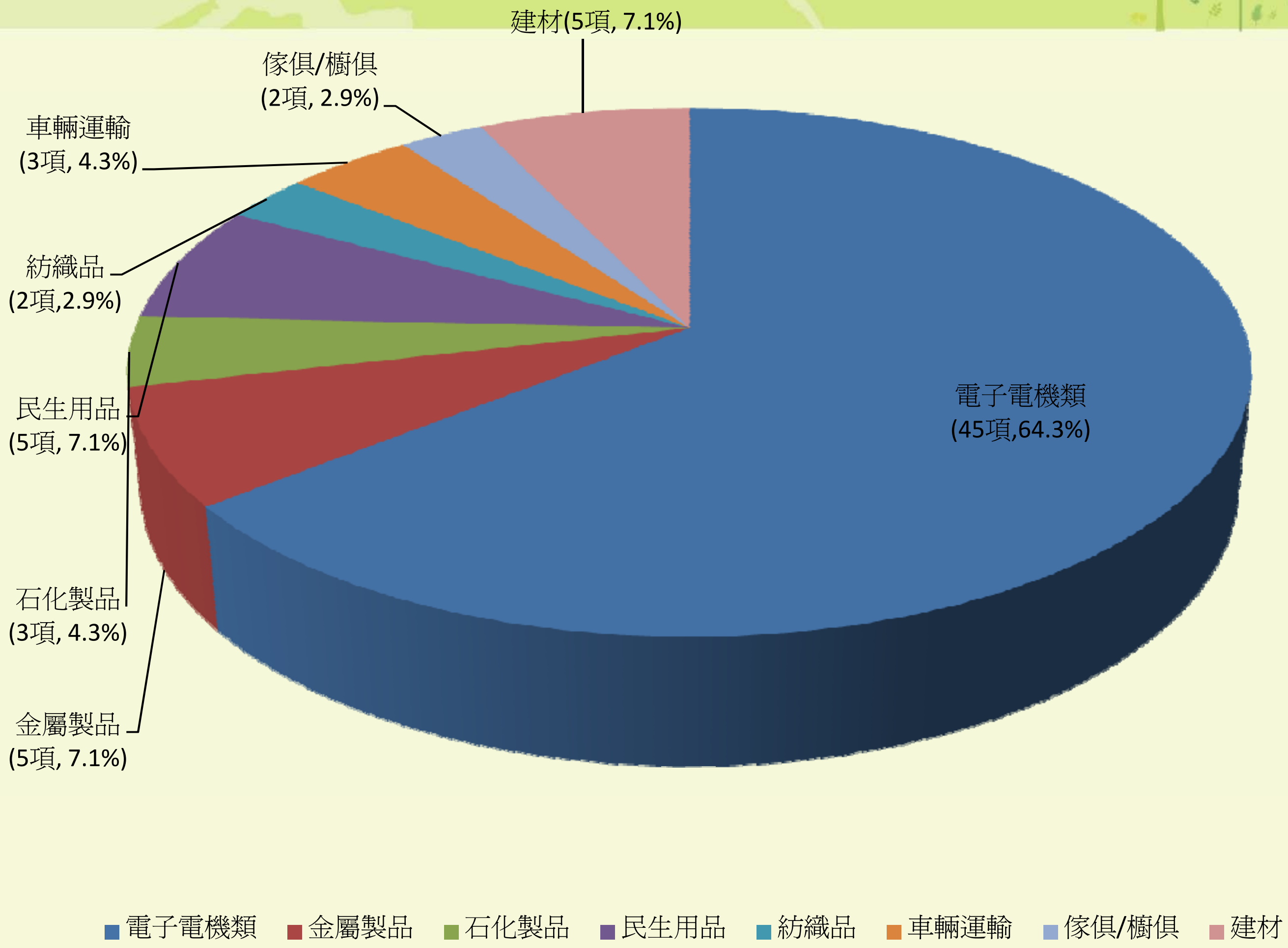


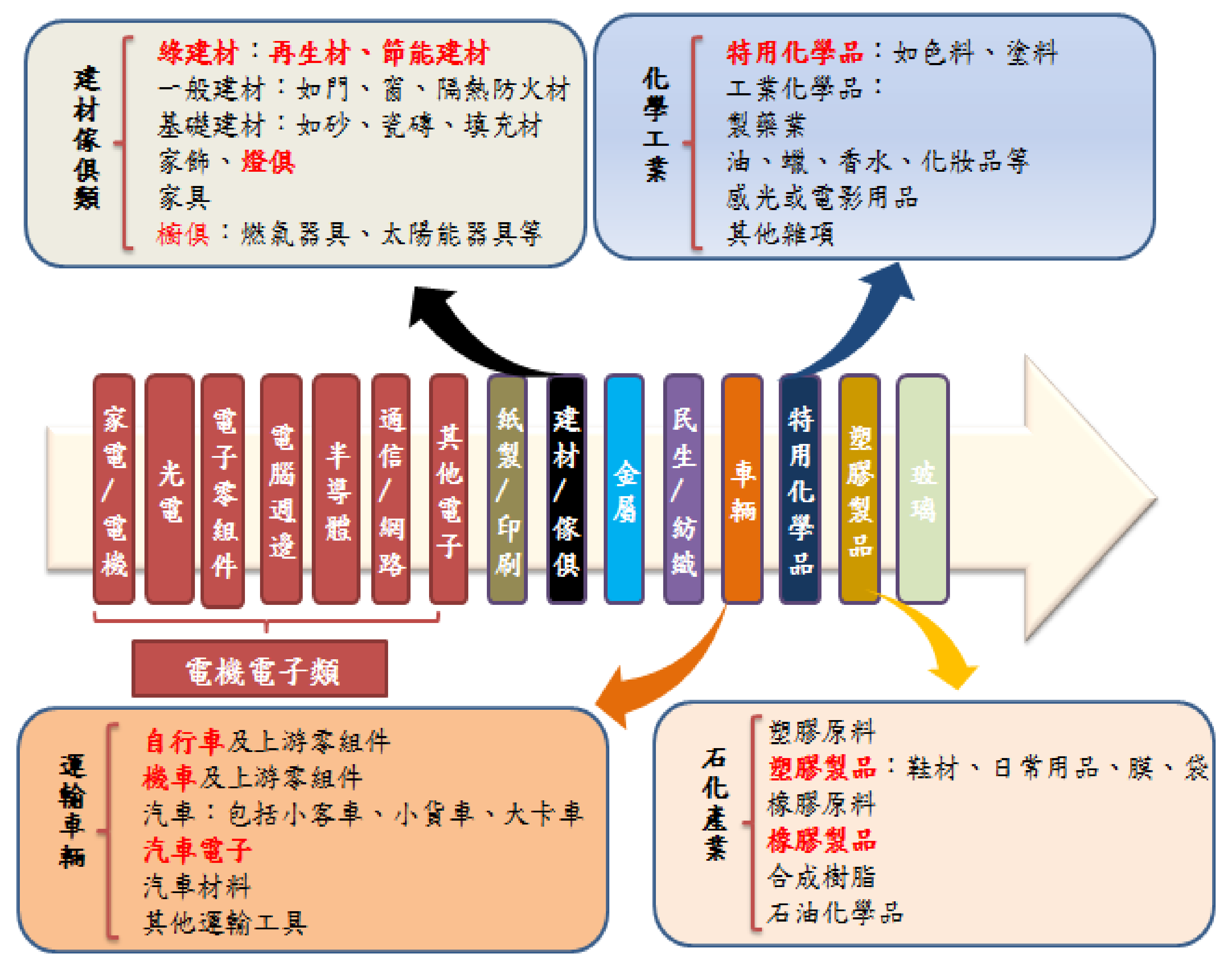
|  | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| 電機電子 | ADSL | 筆記型電腦<br>LCD顯示器 | 洗衣機<br>電冰箱<br>電源供應器<br>積體電路<br>讀卡機<br>LCD TV | PCB<br>快閃隨身碟<br>空氣清淨機<br>乾衣機<br>滑鼠<br>UPS<br>鍵盤<br>碎紙機<br>網路電話<br>太陽能電池<br>投影機<br>機器人吸塵器<br>數位相機<br>記憶體(DDR)<br>可攜式導航裝置 | 家庭娛樂中心<br>空調機<br>電源延長線<br>智慧型手機<br>微型基地台<br>跑步機<br>飲水機<br>LED組件<br>PCBA<br>Slap PC<br>Desktop PC<br>整合式電腦<br>交流感應馬達<br>乙太網路<br>電子閱讀器<br>家用網通設備<br>家用閘道器 | 矽晶圓基板<br>LED燈具<br>液晶電視(兩岸)<br>液晶顯示器(兩岸) | 多功能複合機<br>電線電纜 |
| 石化製品 |  |  |  |  |  | ABS材料<br>食用塑膠容器<br>塗料 | 新充氣輪胎 |
| 紙製/印刷 |  |  |  | 瓦楞紙箱 |  |  | 辦公室用紙 |
| 金屬 |  |  |  | 碳鋼及碳鋼製品<br>熱浸鍍鋅鋼卷 | 不綉鋼胚<br>不銹鋼製品 | 保溫容器 |  |
| 民生/紡織 |  |  |  |  | 水過濾器<br>人造纖維織品 | 黏性膠帶 | 纖維複合材料製品<br>機能性布料 |
| 建材/櫥俱 |  |  |  | 組合櫥櫃 | 陶磁面磚<br>回收玻璃建材 | 節能玻璃<br>橡膠再生建材<br>太陽能熱水器 | 包覆用隔熱產品 |
| 車輛 |  |  |  |  | 自行車<br>機車 |  | 電動機車 |

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Electronic & Electrics** | **ADSL** | •Notebook<br>•LCD Display | •Washing Machine<br>•Refrigerator<br>•Power Supply<br>•IC<br>•Card Reader<br>•LCD TV | •PCB<br>•USB Flash Drive<br>•Air-cleaning Appliances<br>•Clothes Dryer<br>•Mouse<br>•UPS<br>•Keyboard<br>•Paper Shredder<br>•VoIP Phones<br>•Solar Cell<br>•Digital Projector<br>•Robotic Vacuum Cleaner<br>•Digital Camera<br>•DDR<br>•Potable Navigator Device | •Digital Home Media Center<br>•Air Conditioner<br>•Portable Power Outlets<br>•Smart Phone<br>•Femto Cell<br>•Treadmill<br>•Water Dispenser<br>•LED Component<br>• PCBA<br>•Slap PC<br>•Desktop PC<br>•Integrated PC<br>•AC Motor<br>•Ethernet<br>•E-Reader<br>•Home Network<br>•Home Gateway | •Silicon Substrate<br>•LED Lights<br>•LCD TV (With TEEMA/ CQC, China)<br>•LCD Display (With TEEMA/ CQC, China) | •Multi function Device<br>•Cable & Wires |
| **Petroleum Products** | | | | | | •Plastic Food Container<br>• Rubber Recycling Productions | •Polymer Composite Products<br>•New Pneumatic Tyres |
| **Paper/ prints** | | | | •Corrugated Container | | | •Office Paper |
| **Metals** | | | | •Carbon Steel and Carbon Steel prods.<br>•Hot-Dip Metallic Coated Steel Coils | •Stainless steel slab/billet<br>•Stainless steel H/C rolled Prod. | •Insulated Container | |
| **Articles/ Textile** | | | | | •Water Purifier<br>•Artificial Fiber Textiles | •Adhesive Tape | •Functional Fabrics |
| **Building** | | | | •System Cabinet | •Ceramic Tiles<br>•Recycling glass | •Low-E Glasses<br>•Solar water heater | •Industrial thermal insulation textiles |
| **Transport** | | | | | •Bicycle<br>•Motorcycle | | •Electric scooter&bike |

# 我國EPD-PCR發展概況(續)



# 我國EPD-PCR的發展展望



**建材傢俱類**
- **綠建材：再生材、節能建材**
- 一般建材：如門、窗、隔熱防火材
- 基礎建材：如砂、瓷磚、填充材
- 家飾、**燈俱**
- 家具
- 櫥俱：燃氣器具、太陽能器具等

**化學工業**
- **特用化學品**：如色料、塗料
- 工業化學品：
- 製藥業
- 油、蠟、香水、化妝品等
- 感光或電影用品
- 其他雜項

家電/電機
光電
電子零組件
電腦週邊
半導體
通信/網路
其他電子
紙製/印刷
建材/傢俱
金屬
民生/紡織
車輛
特用化學品
塑膠製品
玻璃

**電機電子類**

**運輸車輛**
- **自行車**及上游零組件
- **機車**及上游零組件
- 汽車：包括小客車、小貨車、大卡車
- **汽車電子**
- 汽車材料
- 其他運輸工具

**石化產業**
- 塑膠原料
- **塑膠製品**：鞋材、日常用品、膜、袋
- 橡膠原料
- **橡膠製品**
- 合成樹脂
- 石油化學品

# EPD/碳足跡查證程序

**第一階段**

初始審查

- 產品碳足跡主張
- 揭露文件
- 風險評估

**第二階段**

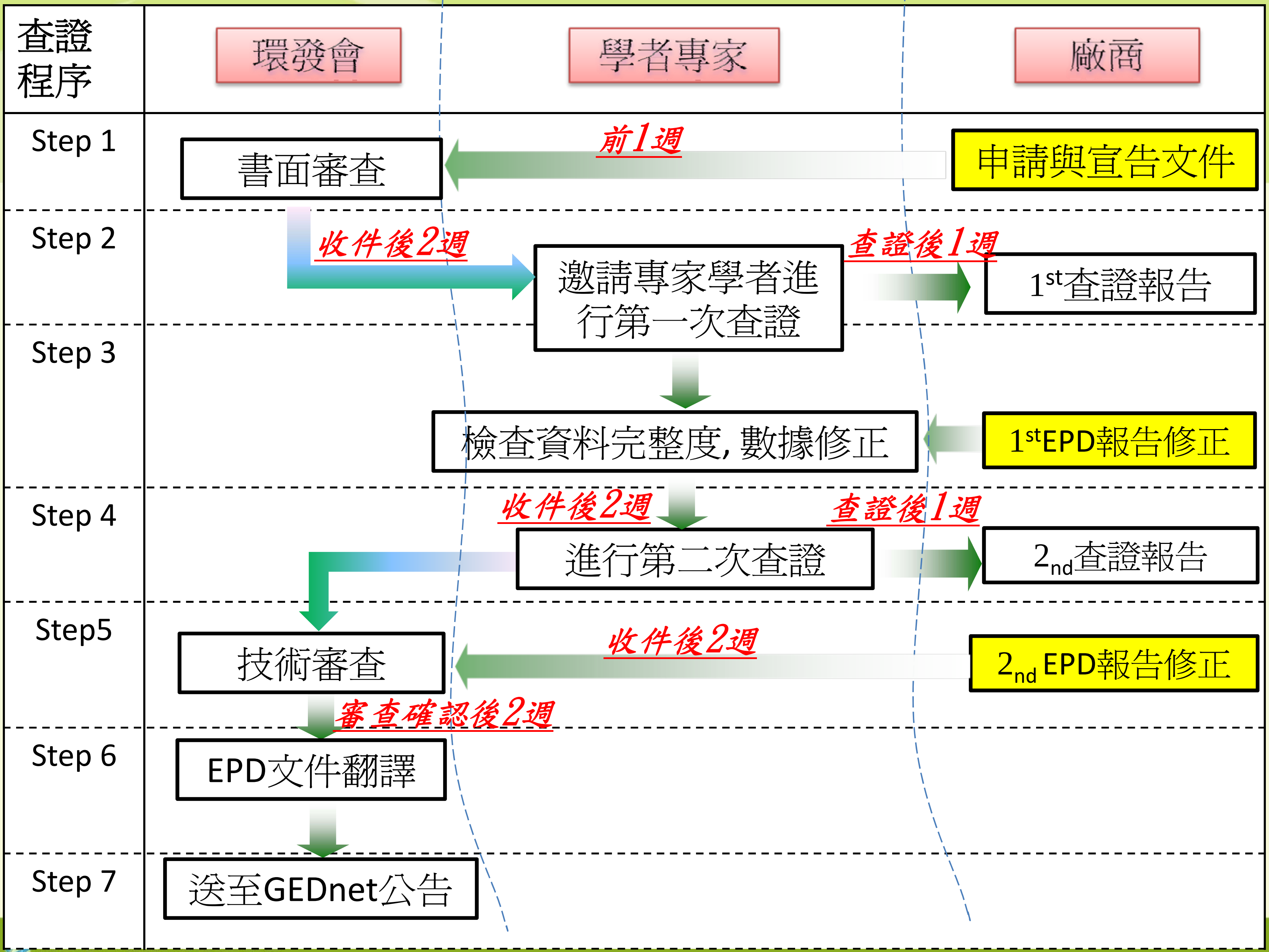
實體審查

- 符合性評估
- 數據品質查證

**第三階段**

技術審查

- 內部審查結論
- 核發查證聲明書



查證程序

環發會

學者專家

廠商

Step 1

書面審查

前1週

申請與宣告文件

Step 2

收件後2週

邀請專家學者進行第一次查證

查證後1週

1st查證報告

Step 3

檢查資料完整度, 數據修正

1stEPD報告修正

Step 4

收件後2週

進行第二次查證

查證後1週

$2_{nd}$查證報告

Step5

技術審查

收件後2週

$2_{nd}$ EPD報告修正

審查確認後2週

Step 6

EPD文件翻譯

Step 7

送至GEDnet公告

# 環境宣告與碳足跡查證服務

環境與發展基金會
Environment and Development
Foundation

- 國際GEN創始會員
- 國際GEDnet創始會員
- 瑞典國際EPD®系統查證機構
- 臺灣環保署環保標章查證機構
- 臺灣環保署碳標籤查證機構

## 已導入環境宣告廠商查證實蹟

ASUS
acer
AUO
BenQ
CHIMEI
DELTA
ECS
GIGABYTE™
LITEON®
INNOLUX
msi 微星科技
MiTAC
tsmc
Qisda
wistron
ZyXEL