

International Workshop for Scope 3 and LCA for Organization

21 Nov. 2013

**from Carbon to Environment
from Product to Organization**

Atsushi INABA

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

**1-24-2 Nishi-Sinjuku, Shinjuku-ku, Tokyo 163-8677, JAPAN
Phone;+81-3-3340-2679 Fax;+81-3-3340-0147
e-mail: a-inaba@cc.kogakuin.ac.jp**



Activities related to LCA

	Product	Organization
GHGs (CFP)	<ul style="list-style-type: none"> ▪ GHG Protocol ▪ ISO/TS-14067(2013) 	<ul style="list-style-type: none"> ▪ GHG Protocol (SCOPE3) CDP use it UNEP-FI want to use it ▪ Japanese Guideline ▪ ISO/TS-14069(2013)
More than GHGs	<ul style="list-style-type: none"> ▪ ISO-14040/44(2006) : LCA ▪ Pilot Project in France ▪ The Sustainability Consortium(TSC) ▪ Sustainable Apparel Coalition ▪ EC-Environmental Footprint 	<ul style="list-style-type: none"> ▪ ISO/TS-14072(WD) UNEP/SETAC Life Cycle Initiative ▪ EC-Environmental Footprint
Water(WFP)	<ul style="list-style-type: none"> ▪ ISO-14046(DIS) ▪ ISO-TS-????(WD) 	

TS 14067(2013)

Carbon footprint of products — Requirements and guidelines for quantification and communication

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

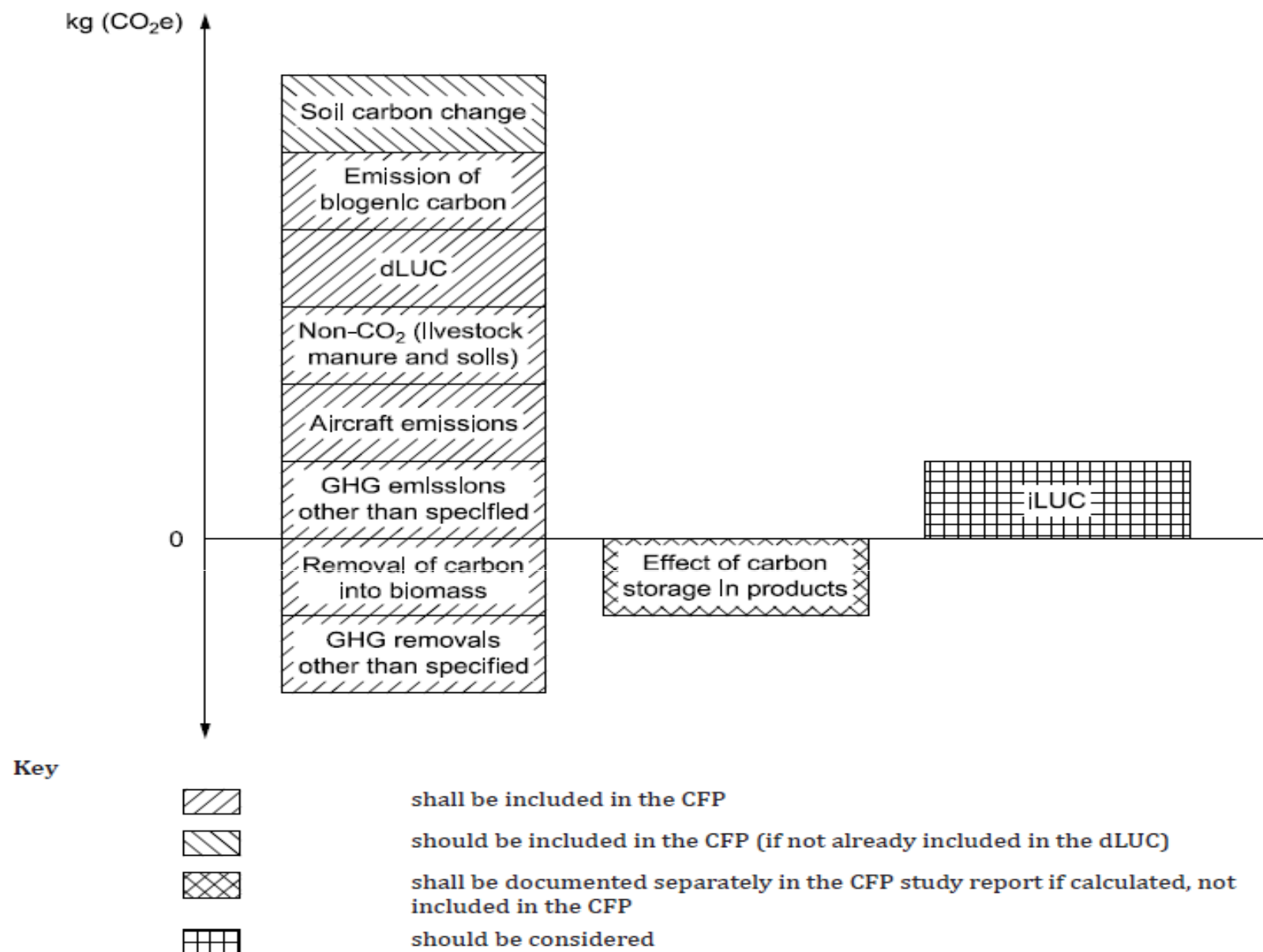
Disapproval to TS : **Argentina, Brazil, China, Colombia, India, Trinidad and Tobago**

*Uncertainty of the data, Difficulty for counting GHGs, Focusing only GHGs,

* Shall be a guidance without any requirement, etc.

Main “shall” and Should”

- (6.3.4.1) CFP and the partial CFP shall not include offsetting.
- (6.4.8) GHG arising from the life cycle of a product shall be calculated over the entire life cycle of the product, including the use stage and the end-of-life stage.
- (6.4.9.2) GHG emissions and removals arising fossil and biogenic carbon sources and sinks shall be included.
- (6.4.9.3) GHG associated with Electricity shall include life cycle data.
- (6.4.9.4) LUC(Land use change) GHG shall be documented separately. Indirect land use change(iLUC) should be considered.
- (6.4.9.5) GHG occurring as a result of soil carbon change should be included.
- (6.9.6) carbon storage shall be treated in 6.4.8.
- (6.4.9.7) The non CO₂ GHG(e.g. N₂O and CH₄) shall be included.
- (6.4.9.8) aircraft GHG shall be included.



NOTE Soil carbon change, dLUC, Non-CO₂ (livestock, manure and soils) and iLUC can have a positive or negative contribution to the CFP.

Figure 2 — Illustration of the specific components of the CFP

Communication of ISO TS-14067

- 5 Communications
 - CFP External Communication Report
 - CFP Performance Tracking Report
 - Type I [CFP Label]
 - Type II [CFP Claim] **out of Scope (shall follow ISO-14021(2011))**
 - Type III [CFP Declaration]
- Publicity Available
 - Type I (Label) is only for Public Available.
 - 3rd Party CFP Verification** or CFP Disclosure Report
- Not Publicity Available
 - Independent CFP Verification** or CFP Disclosure Report

	CFP external communication report (9.1.2)	CFP performance tracking report (9.1.3)	CFP label (9.1.4)	CFP declaration (9.1.5)
CFP communication Intended to be publicly available (9.2)	CFP communication programme optional	CFP communication programme optional	CFP communication programme mandatory	CFP communication programme mandatory
	CFP-PCR optional	CFP-PCR optional	CFP-PCR mandatory	CFP-PCR mandatory
	3 rd party CFP verification or CFP disclosure report mandatory	3 rd party CFP verification or CFP disclosure report mandatory	3 rd party CFP verification or CFP disclosure report mandatory	3 rd party CFP verification or CFP disclosure report mandatory
CFP communication not Intended to be publicly available (9.3)	CFP communication programme optional	CFP communication programme optional		CFP communication programme mandatory
	CFP-PCR optional	CFP-PCR optional		CFP-PCR mandatory
	Independent CFP verification or CFP disclosure report optional	Independent CFP verification or CFP disclosure report optional		Independent CFP verification or CFP disclosure report mandatory

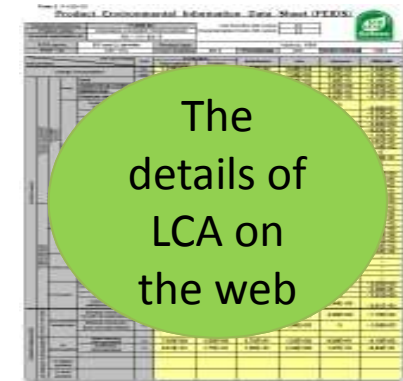
Figure 3 — General requirements and guidelines for the different CFP communication options

Current LCA-based actions for products in Japan

EcoLeaf (Type III-based Environmental Declarations (since 2000))

- Multi-criteria
- Based on ISO 14025; PCR approach, comparability
- Easy-to-use supporting software available

Labels	1,160labels (accumulated)
Published PCRs	80 PCRs
Participants	72companies/organizations



Website <http://www.ecoleaf-jemai.jp/eng/>

CFP (Carbon Footprint Program (since2008))

- CFP-PCR development – industrial groups are preferable
- Development of Basic Database – a certain level of requirements were set, and LCA experts reviewed whether they are fulfilled.

Verified products	741 products (135 companies/organizations)
Published CFP-PCRs	84 CFP-PCRs
Datasets in Basic Database	More than 1,000 datasets



CO₂の「見える化」
カーボンフットプリント
1袋あたり
<http://www.cfp-japan.jp>
CR-XXYY-ZZZZZ

Website <http://www.cfp-japan.jp/english/>

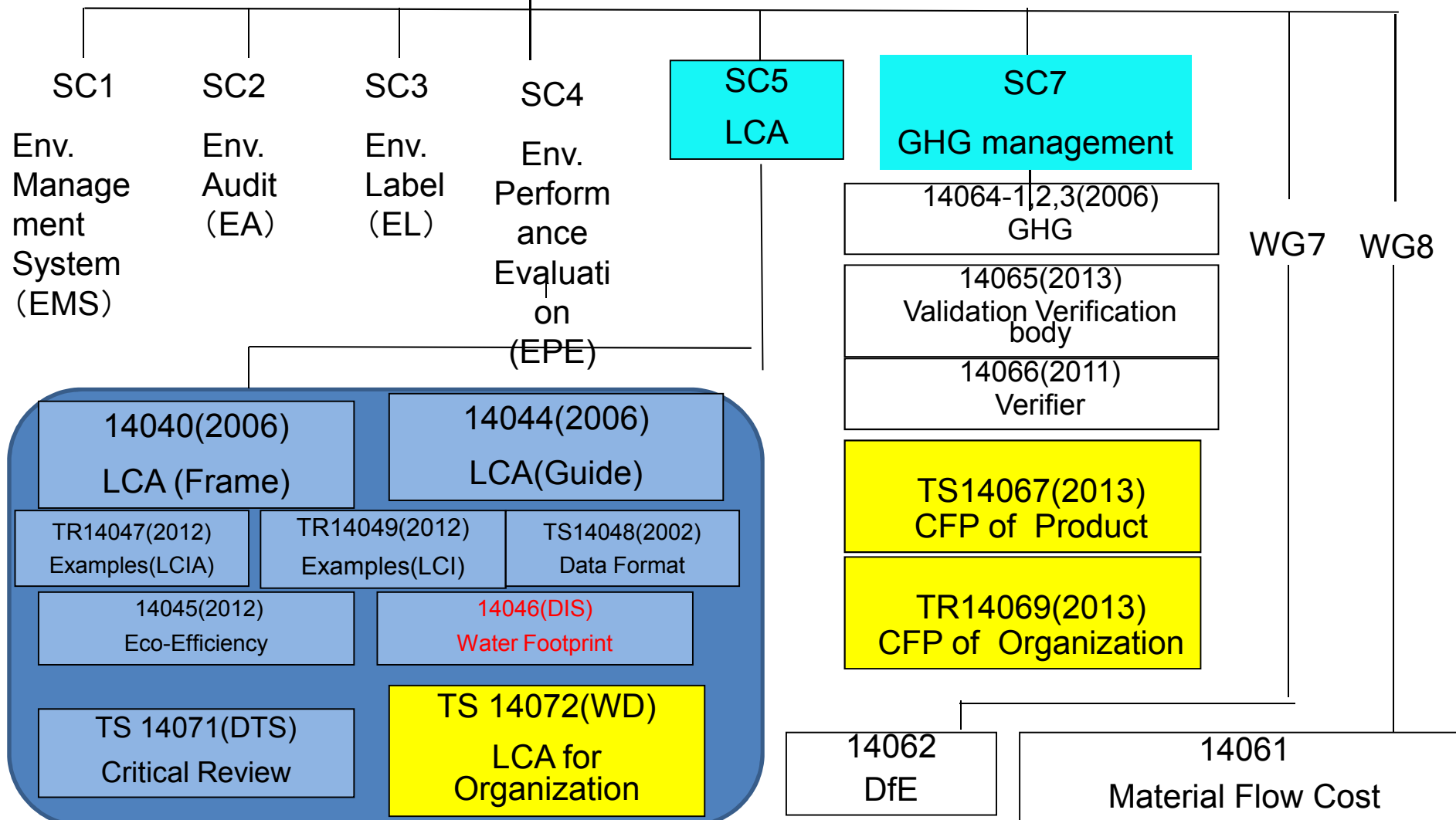
Activities related to LCA

	Product	Organization
GHGs (CFP)	<ul style="list-style-type: none"> ▪ GHG Protocol ▪ ISO/TS-14067(2013) 	<ul style="list-style-type: none"> ▪ GHG Protocol (SCOPE3) CDP use it UNEP-FI want to use it ▪ Japanese Guideline ▪ ISO/TS-14069(2013)
More than GHGs	<ul style="list-style-type: none"> ▪ ISO-14040/44(2006) : LCA ▪ Pilot Project in France ▪ The Sustainability Consortium(TSC) ▪ Sustainable Apparel Coalition ▪ EC-Environmental Footprint 	<ul style="list-style-type: none"> ▪ ISO/TS-14072(WD) UNEP/SETAC Life Cycle Initiative ▪ EC-Environmental Footprint
Water(WFP)	<ul style="list-style-type: none"> ▪ ISO-14046(DIS) ▪ ISO-TS-????(WD) 	

ISO TC207 (LCA and GHG)



ISO/TC207





WORLD
RESOURCES
INSTITUTE

Greenhouse Gas Protocol Product & Supply Chain Initiative



World Business Council for
Sustainable Development



GREENHOUSE
GAS PROTOCOL

Corporate Value Chain (Scope 3) Accounting and Reporting Standard

*Supplement to the GHG Protocol Corporate
Accounting and Reporting Standard*



GREENHOUSE
GAS PROTOCOL

Product Life Cycle Accounting and Reporting Standard



WORLD
RESOURCES
INSTITUTE



wbcsd

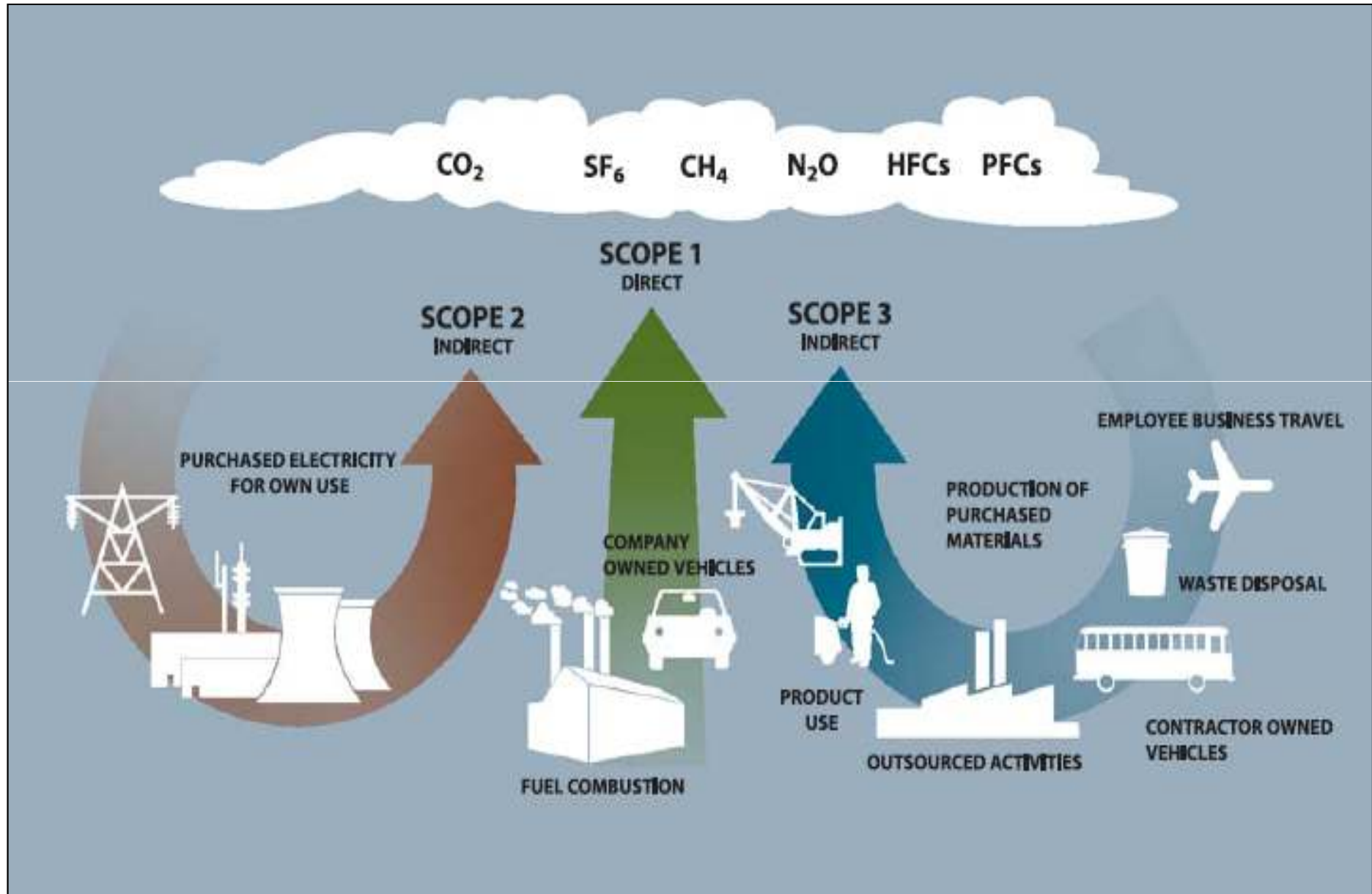


WORLD
RESOURCES
INSTITUTE



wbcsd

The GHG Protocol : SCOPE3



Calculation of GHGs in Scope 3

	#	Category
Up Stream	1	Purchased Goods & Services
	2	Capital Goods
	3	Fuel- and Energy- Related Activities Not Included in Scope 1 or 2
	4	Transportation & Distribution (Upstream)
	5	Waste Generated in Operations
	6	Business Travel
	7	Employee Commuting
	8	Leased Assets (Upstream)
	9	Investments
Down Stream	10	Transportation & Distribution (Downstream)
	11	Processing of Sold Products
	12	Use of Sold Products
	13	End-of-Life Treatment of Sold Products
	14	Leased Assets (Downstream)
	15	Franchises

Supplier Emissions

CDP Japan Report 2012

企業名	2012スコア		2011回答ステータス	スコア1,2排出量合計	スコア3排出量	スコア4排出量	スコア5排出量回答数	検証/保証	排出量報告
Materials									
Asahi Kasei Corporation	74	C	AQ	5,896,885	4,416,247	1,480,638	1	VAR S1,S2,S3	Abs
DIC Corporation	61	D	AQ	653,437	332,466	320,971	1		Abs
Dowa Holdings Co., Ltd.	75	C	AQ	1,378,800	864,800	514,000	2		Abs
FP Corporation	83	C	AQ	95,115	5,914	89,201	3		Abs, Int
FujiFilm Holdings Corporation	85	C	AQ	1,266,537	773,521	493,016	4	VAR S1,S2	Abs
Hitachi Chemical Company, Ltd.	48		AQ	295,412	104,518	190,894	1		Abs, Int
Hitachi Metals, Ltd.	41		NR	NP	NP	NP	NP	NP	NP
JSR Corporation	20		AQ	660,000	388,000	272,000			Int
Kaneka Corporation	73	C	AQ	NP	NP	NP	NP	NP	NP
Kobe Steel., Ltd.	47		AQ	17,694,000	17,213,000	481,000	1		Abs
Kuraray Co., Ltd.	79	C	AQ	1,741,600	1,147,100	594,500	1		Int
Mitsubishi Chemical Holdings Corporation	72	C	AQ	NP	NP	NP	NP	NP	NP
Mitsubishi Gas Chemical Company, Inc.	58	D	AQ	NP	NP	NP	NP	NP	NP
Mitsubishi Materials Corporation	81	C	AQ	12,270,000	10,595,000	1,675,000	1		Abs
Mitsui Chemicals, Inc.	77	C	AQ	5,450,000	4,060,000	1,390,000	1		Abs
Nippon Paint Co., Ltd.	75	C	AQ	30,313	11,667	18,646	1	VAR S1,S2	Abs
Nippon Paper Group Inc	56	D	AQ				1		Abs
Nippon Shokubai Co., Ltd.	55	D	AQ	NP	NP	NP	NP	NP	NP
Nippon Steel Corporation	86	C	AQ	NP	NP	NP	NP	NP	NP
Nisshinbo Holdings Inc.	73	C	AQ	NP	NP	NP	NP	NP	NP
Nitto Denko Corporation	62	D	AQ	625,293	407,699	217,594			Int
Oji Paper Co., Ltd	78	B	AQ	NP	NP	NP	NP	NP	NP
Rengo Co., Ltd.	76	C	AQ	1,127,321	882,379	244,942	1	VAA S1,S2	Abs
Shin-Etsu Chemical Co., Ltd.	44		AQ	4,263,639	1,528,537	2,735,102		VAR S1,S2	Int
Showa Denko K.K.	61	E	AQ	NP	NP	NP	NP	NP	NP
Sumitomo Chemical Co., Ltd.	90	B	AQ	3,436,000	1,999,000	1,437,000	2	VAR S1,S2,S3	Int
Sumitomo Metal Industries, Ltd.	76	D	AQ	NP	NP	NP	NP	NP	NP
Sumitomo Metal Mining Co., Ltd.	53	E	AQ	2,244,000	1,342,000	902,000	1		Int
Taiheiyo Cement Corporation	68	D	AQ	NP	NP	NP	NP	NP	NP
Teijin Ltd.	88	B	AQ	2,252,452	1,261,263	991,189	1	VAA S1,S2,S3	Abs, Int
Toray Industries, Inc.	85	C	AQ	4,744,523	3,142,752	1,601,771	6		Abs, Int
Toyo Seikan Kaisha, Ltd.	70	D	AQ	1,688,977	731,412	957,565	7		Abs
Toyo Tanso Co., Ltd.	44		AQ	NP	NP	NP	NP	NP	NP
Toyobo Co., Ltd.	73	D	AQ	851,909	694,279	157,630	1		Abs, Int
Ube Industries, Ltd.	77	C	AQ	NP	NP	NP	NP	NP	NP
Zeon Corporation	46		AQ	NP	NP	NP	NP	NP	NP

Japanese Guideline for SCOPE3 by MOE and METI, March 2012

サプライチェーン排出量のカテゴリと算定対象

■ サプライチェーン排出量の算定対象は以下に示すとおり、「自社での排出 (Scope1,2)」と、自社の上流および下流での「その他間接排出 (Scope3)」とする

区分	カテゴリー		算定対象	
自 社	直接排出 (SCOPE1)		自社での燃料の使用や工業プロセスによる直接排出	≒算定・報告・公表制度
	エネルギー起源の間接排出 (SCOPE2)		自社が購入した電気・熱の使用に伴う間接排出	
その他の間接排出 (SCOPE3)				
上 流	1	購入した製品・サービス	原材料・部品、仕入商品・販売に係る資材等が製造されるまでの活動に伴う排出	
	2	資本財	自社の資本財の建設・製造から発生する排出	
	3	Scope1,2に含まれない燃料及びエネルギー関連活動	他者から調達している電気や熱等の発電等に必要な燃料の調達に伴う排出	
	4	輸送、配送(上流)	原材料・部品、仕入商品・販売に係る資材等が自社に届くまでの物流に伴う排出	
	5	事業から出る廃棄物	自社で発生した廃棄物の輸送、処理に伴う排出	
	6	出張	従業員の出張に伴う排出	
	7	雇用者の通勤	従業員が事業所に通勤する際の移動に伴う排出	
	8	リース資産(上流)	自社が賃借しているリース資産の操業に伴う排出 (Scope1,2で算定する場合を除く)	
下 流	9	輸送、配送(下流)	製品の輸送、保管、荷役、小売に伴う排出	
	10	販売した製品の加工	事業者による中間製品の加工に伴う排出	
	11	販売した製品の使用	使用者(消費者・事業者)による製品の使用に伴う排出	
	12	販売した製品の廃棄	使用者(消費者・事業者)による製品の廃棄時の輸送、処理に伴う排出	
	13	リース資産(下流)	賃貸しているリース資産の運用に伴う排出	
	14	フランチャイズ	フランチャイズ加盟者における排出	
	15	投資	投資の運用に関連する排出	
	その他	従業員や消費者の日常生活に関する排出等		

ISO-TR14069(2012)

Greenhouse gases - Quantification and reporting of GHG emissions for organizations - Guidance for the application of ISO 14064-1

- 2009, Mar : Submitted NWIP by France
- 2009, Jun : NWIP was approved
Chair : Jean-Pierre TABET (France),
Secretary : Laurence THOMAS (France)
- 2010, Jan : The 1st Meeting (Paris)
- 2012, Jan : Voting DTR → Approved

Almost the same as GHG Protocol (SCOPE3)

ISO-TR14069(2012) Greenhouse gases – Quantification and reporting of GHG emissions for organizations - Guidance for the application of ISO 14064-1

Annex C

Table C.1 — Categories and examples of emission sources (2 on 3)

	Type of Emissions (see the note)	N°	Category	Example of emission sources
	U	7	Indirect emissions from consumed energy imported through a physical network (Heating, steam, cooling, compressed air) excluding electricity	Emissions resulting from the generation of imported steam, heating, cooling, compressed air. In case of a GHG inventory of an energy supplier that owns or controls the transmission and distribution system, the GHG emissions from the transmission and distribution system should be accounted in energy indirect emissions.
Other indirect GHG emissions	U	8	Energy-related activities not included in direct emissions and energy indirect emissions	Extraction, production, and transport (leaks included) of fuels that are consumed by the organization (upstream emissions linked to categories 1 and 2). Extraction, production, and transport (leaks included) of fuels in the generation of electricity, steam, heating cooling and compressed air imported by the reporting organization (upstream emissions linked to categories 6 and 7) Electricity, steam, heating, cooling and compressed air consumed in transmission and distribution of network energies. When the reporting organization is an utility company that sold energy to an end users, emissions from the extraction, production and transport of purchased electricity, steam, heating, cooling and compressed air
	U	9	Purchased products	Extraction and production of inputs (i.e., purchased or acquired goods, services, materials,) Outsourced activities, including contract manufacturing, data centres, outsourced services, etc. associated with direct (tier 1) suppliers. It includes upstream franchises (partial allocation of the franchisor's emissions to be reported by franchisee). Disposal/treatment of waste generated in the production of inputs (i.e. purchased or acquired goods, services, materials or fuels)
	U	10	Capital equipment	Manufacturing/construction of capital equipment owned or controlled by the reporting organization
	U	11	Wastes generated from organizational activities	Disposal/treatment of waste generated in operations Transport of waste generated in operations
	U	12	Upstream transport and distribution	Transport and distribution of inputs (i.e., purchased or acquired goods, services, materials or fuels), including intermediate (inter-facility) transport and distribution, warehousing and storage, associated with direct suppliers

Activities related to LCA

	Product	Organization
GHGs (CFP)	<ul style="list-style-type: none"> ▪ GHG Protocol ▪ ISO/TS-14067(2013) 	<ul style="list-style-type: none"> ▪ GHG Protocol (SCOPE3) CDP use it UNEP-FI want to use it ▪ Japanese Guideline ▪ ISO/TS-14069(2013)
More than GHGs	<ul style="list-style-type: none"> ▪ ISO-14040/44(2006) : LCA ▪ Pilot Project in France ▪ The Sustainability Consortium(TSC) ▪ Sustainable Apparel Coalition ▪ EC-Environmental Footprint 	<ul style="list-style-type: none"> ▪ ISO/TS-14072(WD) UNEP/SETAC Life Cycle Initiative ▪ EC-Environmental Footprint
Water(WFP)	<ul style="list-style-type: none"> ▪ ISO-14046(DIS) ▪ ISO-TS-????(WD) 	

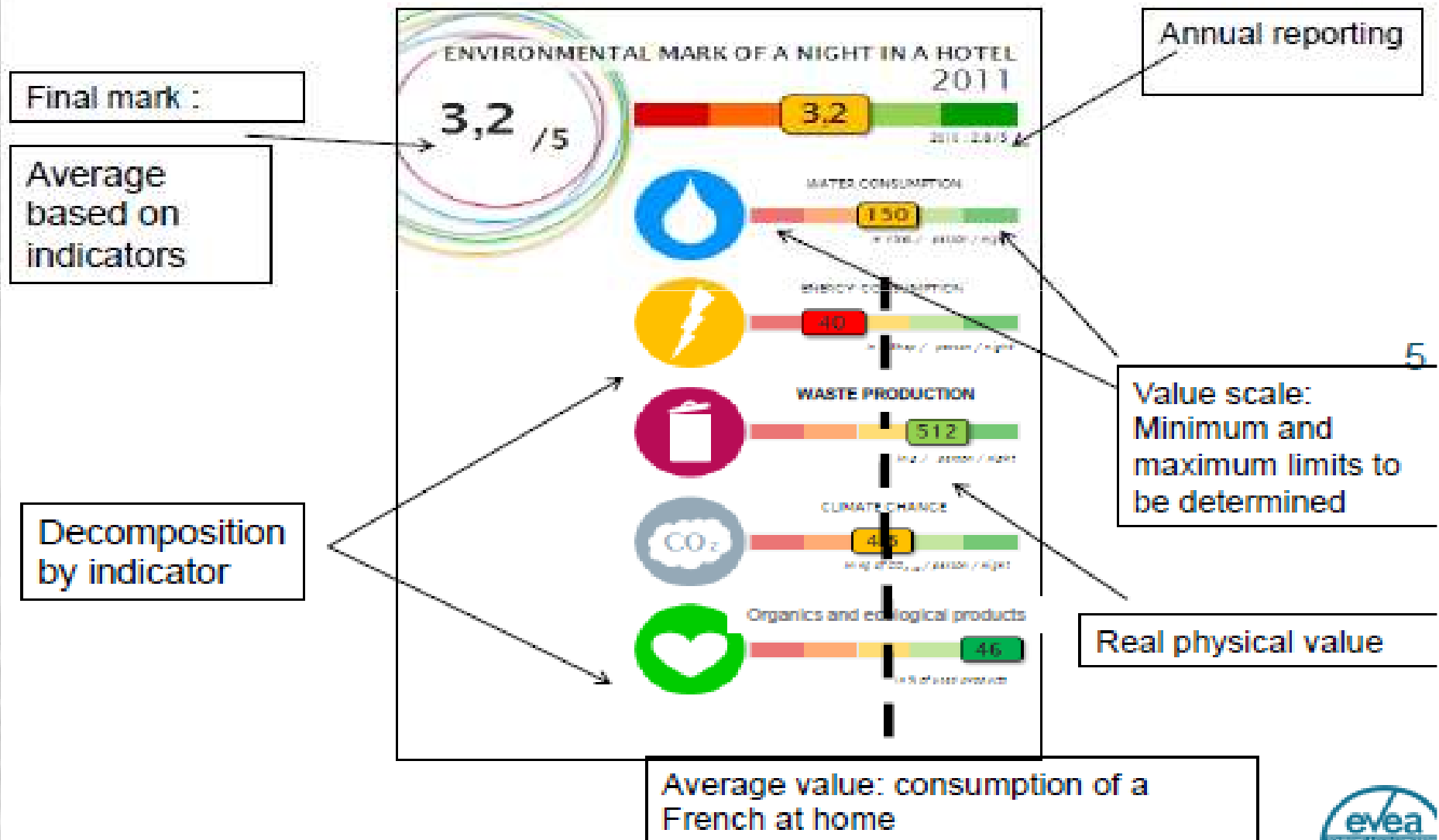
Pilot Project in France(2011.06~2012.12) 168 companies

Experiment: a wide range of operations



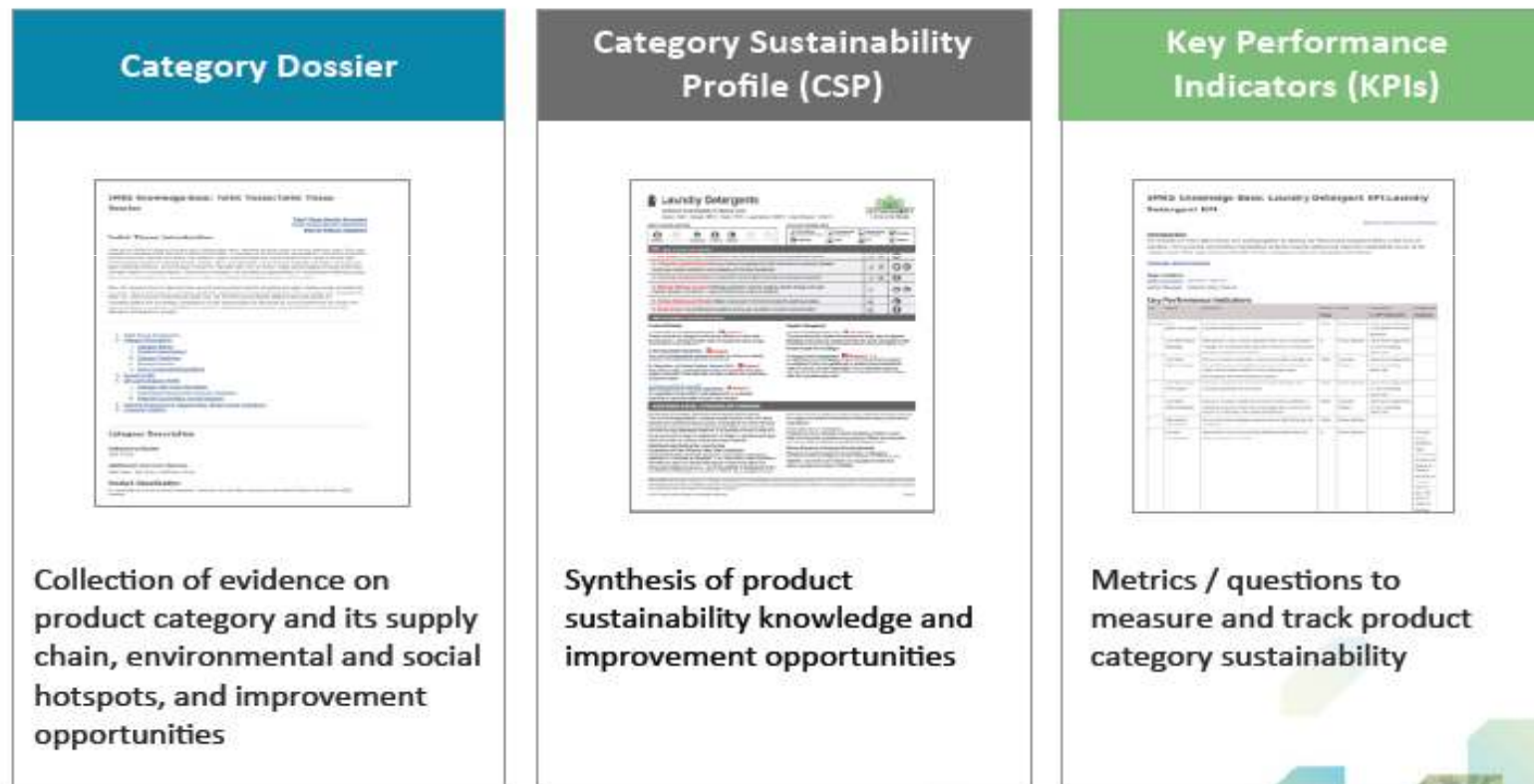
Pilot Project in France(2011.06~2012.12) 168 companies

Environmental tag for tourist hotels



The Sustainability Consortium (TSC) will analyze 141 products

TSC “Level 1” category-level products have 3 major components Including “Social hotspot analysis”



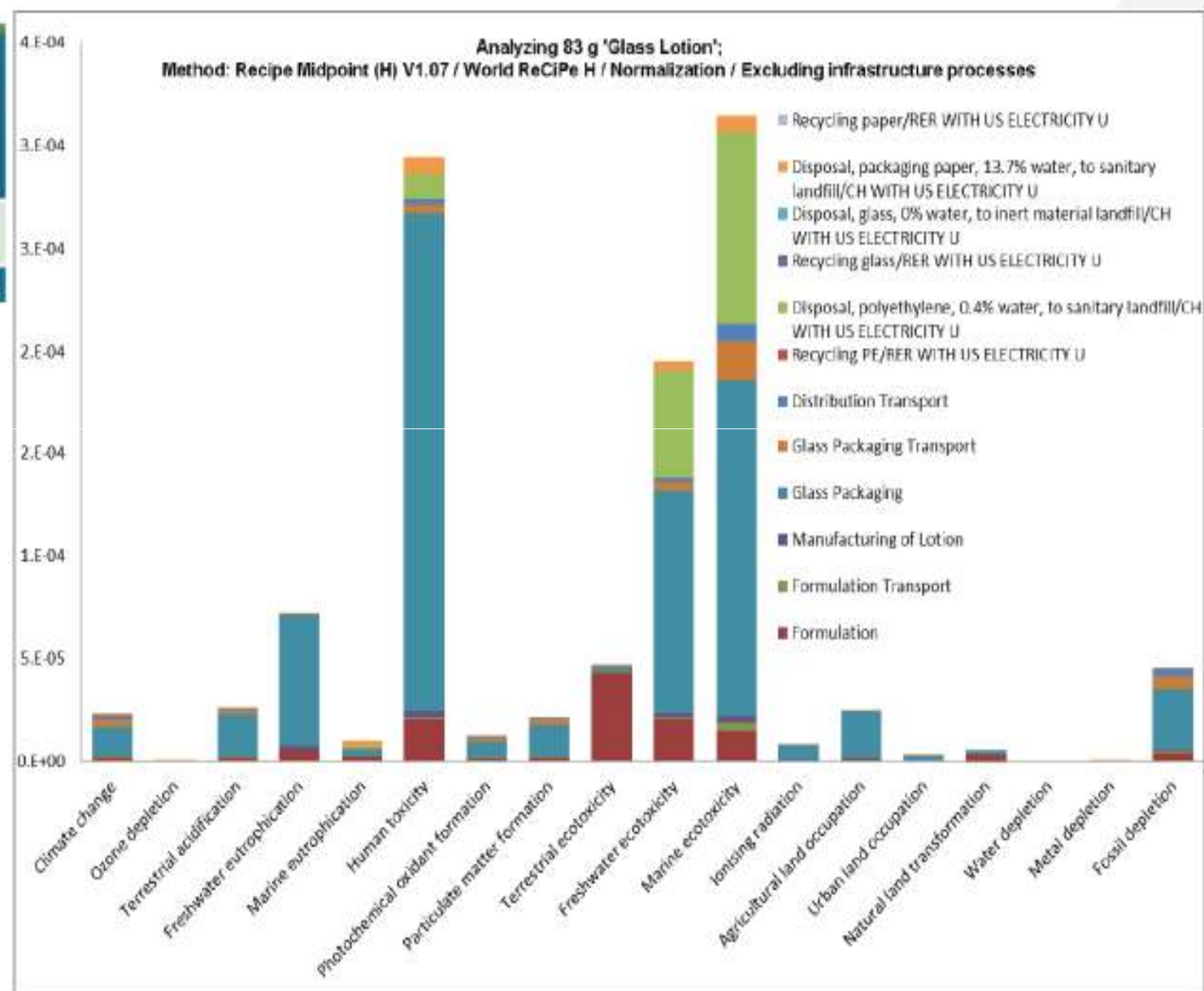
Source: TSC



Figure 1: ReCiPe World Midpoint H Normalized Results for Small Glass Packaged Lotion



2013年3月



Sustainable Apparel Coalition

- One of the examples of voluntary collaboration between leading industries to set their own PCR and reporting rules
- Published 6 PCRs, 13 May 2013; (Coats and Jackets, T-shirts, Slacks and Trousers and Shorts)x(2 kind)

adidas
GROUP
Adidas

asics
Asics

The Coca-Cola Company
The Coca Cola Company

Columbia
Sportswear Company
Columbia

ESPRIT
Esprit

GAP
Gap, Inc.

H&M
H&M

Hanes
HanesBrands

INDITEX
Inditex

Levi's
Levi Strauss & Co.

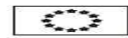
Loomstate
Organic
Loomstate

B
new balance
New Balance

Activities related to LCA

	Product	Organization
GHGs (CFP)	<ul style="list-style-type: none"> ▪ GHG Protocol ▪ ISO/TS-14067(2013) 	<ul style="list-style-type: none"> ▪ GHG Protocol (SCOPE3) CDP use it UNEP-FI want to use it ▪ Japanese Guideline ▪ ISO/TS-14069(2013)
More than GHGs	<ul style="list-style-type: none"> ▪ ISO-14040/44(2006) : LCA ▪ Pilot Project in France ▪ The Sustainability Consortium(TSC) ▪ Sustainable Apparel Coalition ▪ EC-Environmental Footprint 	<ul style="list-style-type: none"> ▪ ISO/TS-14072(WD) UNEP/SETAC Life Cycle Initiative ▪ EC-Environmental Footprint
Water(WFP)	<ul style="list-style-type: none"> ▪ ISO-14046(DIS) ▪ ISO-TS-????(WD) 	

製品



EUROPEAN COMMISSION
JOINT RESEARCH CENTRE
Institute for Environment and Sustainability
HSE Sustainability Assessment Unit



- 1 DRAFT – ONLY FOR USE IN STAKEHOLDER CONSULTATION –
- 2 DO NOT USE FOR ANY OTHER PURPOSE, CITE, OR
- 3 DISTRIBUTE
- 4

Product Environmental Footprint Guide



組織



EUROPEAN COMMISSION
JOINT RESEARCH CENTRE
Institute for Environment and Sustainability
HSE Sustainability Assessment Unit



DRAFT – ONLY FOR USE IN STAKEHOLDER CONSULTATION
- DO NOT USE FOR ANY OTHER PURPOSE, CITE, OR
DISTRIBUTE

Organisation Environmental Footprint Guide



The latest draft was published on 2012. July



EUROPEAN COMMISSION
JOINT RESEARCH CENTRE
Institute for Environment and Sustainability
HSE Sustainability Assessment Unit

Product Environmental Footprint (PEF) Guide

Deliverable 2 and 4A of the Administrative
Arrangement between DG Environment and the
Joint Research Centre No N 070307/2009/552517,
including Amendment No 1 from December 2010.

European Commission (EC)
Joint Research Centre (JRC)

Institute for Environment and Sustainability (IES)
Authors: Simone Manfredi, Karen Allacker, Kirana
Chomkhamsoi, Nathan Pelletier, Danielle Maia de Souza
Project Leader and main reviewer: Rana Pant
Action Leader and reviewer: David Pennington
Approved by: Constantin Ciupagea

Ispra, Italy, July 2nd, 2012



EUROPEAN COMMISSION
JOINT RESEARCH CENTRE
Institute for Environment and Sustainability
HSE Sustainability Assessment Unit

Organisation Environmental Footprint (OEF) Guide

Deliverable 2 and 4A to the Administrative
Arrangement between DG Environment and Joint
Research Centre No. N 070307/2009/552517,
including Amendment No 1 from December 2010.

European Commission (EC)
Joint Research Centre (JRC)

Institute for Environment and Sustainability (IES)
Authors: Nathan Pelletier, Karen Allacker, Simone Manfredi,
Kirana Chomkhamsoi, Danielle Maia de Souza
Project Leader and main reviewer: Rana Pant
Action Leader and reviewer: David Pennington
Approved by: Constantin Ciupagea

Ispra, Italy, July 06, 2012

Organization Environmental Footprint(PEF) Guide (July 6 2012)

Principles for OEFSRs

1. Relationship with the OEF Guide

Comparability

The methodological requirements set out for OEFSRs shall apply to OEF studies in addition to the requirements of the OEF Guide. Where the OEFSRs provide more specific requirements than this OEF Guide, the specific requirements of the OEFSR shall be fulfilled.

2. Involvement of selected interested parties

The process of developing OEFSRs shall be open and transparent and should include a consultation with selected interested parties. Reasonable efforts should be made to achieve a consensus throughout the process (adapted from ISO 14020:2000, 4.9.1, Principle 8). The OEFSRs shall be peer reviewed.

3. Striving for comparability

The results of OEFs that have been conducted in line with the OEF Guide and the relevant OEFSR document may be used to support the comparison of the environmental performance of organisations in the same sector on a life cycle basis, as well as to support comparative assertions (intended to be disclosed to the public). Therefore, comparability of the results is crucial. The information provided for this comparison shall be transparent in order to allow the user to understand the limitations of comparability inherent in the calculated result (adapted from ISO 14025¹²).

Organization Environmental Footprint(PEF) Guide

(July 6 2012)

Table 1: Key requirements for OEF studies in relation to the intended application.

		Goal & Scope definition	Screening exercise	Meeting data quality requirements	Multi-functionality hierarchy	Choice of impact assessment methods	Classification & Characterisation	Normalisation & Weighting	Interpretation of OEF results	Reporting elements	Critical review (1 person)	Critical review panel (3 persons)	Requires OEFSR
Intended applications													
<i>In-house (claiming to be in line with the OEF Guide)</i>		M	R	R	M	M	M	O	M	O	M	O	O
<i>External</i>	Without comparisons / comparative assertions	M	R	M	M	M	M	O	M	M	M	R	R
	With comparisons / comparative assertions	M	R	M	M	M	M	O	M	M	/	M	M

“M” = mandatory

“R” = recommended (not mandatory)

“O” = optional (not mandatory)

“/” = not applicable

Organization Environmental Footprint(PEF) Guide (July 6 2012)

REQUIREMENTS FOR OEF STUDIES

For an OEF study, all of the specified default EF impact categories and associated specified EF impact assessment models and indicators (see Table 2) shall be applied. Any exclusion shall be explicitly documented, justified and reported in the OEF report and supported by appropriate documents. The influence of any exclusion on the final results, especially related to limitations in terms of comparability to other OEF studies, shall be reported and discussed in the interpretation phase. Such exclusions are subject to review.

ADDITIONAL REQUIREMENTS FOR OEFSRs

The OEFSR shall specify and justify any exclusion of the default EF impact categories, especially related to aspects of comparability.

Organization Environmental Footprint(PEF) Guide (July 6 2012)

Table 2: Default EF impact categories with their respective EF impact category indicators and EF impact assessment models for OEF studies.

EF Impact Category	EF Impact Assessment Model	EF Impact Category Indicator	Source
Climate Change	Bern model - Global Warming Potentials (GWP) over a 100 year time horizon.	Tonne CO ₂ equivalent	Intergovernmental Panel on Climate Change, 2007
Ozone Depletion	EDIP model based on ODPs of the WMO over an infinite time horizon.	kg CFC-11 equivalent*	WMO, 1999
Ecotoxicity – fresh water ⁴¹	USEtox model	CTUe (Comparative Toxic Unit for ecosystems) ⁴²	Rosenbaum et al., 2008
Human Toxicity - cancer effects	USEtox model	CTUh (Comparative Toxic Unit for humans) ⁴³	Rosenbaum et al., 2008
Human Toxicity – non-cancer effects	USEtox model	CTUh (Comparative Toxic Unit for humans) ¹²	Rosenbaum et al., 2008
Particulate Matter/Respiratory Inorganics	RiskPoli model	kg PM _{2.5} equivalent**	Humbert, 2009
Ionising Radiation – human health effects	Human Health effect model	kg U ²³⁵ equivalent (to air)	Dreicer et al., 1995
Photochemical Ozone Formation	LOTOS-EUROS model	kg NMVOC equivalent***	Van Zelm et al., 2008 as applied in ReCiPe
Acidification	Accumulated Exceedance model	mol H+ equivalent	Seppälä et al., 2006; Posch et al, 2008
Eutrophication – terrestrial	Accumulated Exceedance model	mol N equivalent	Seppälä et al., 2006; Posch et al, 2008
Eutrophication – aquatic	EUTREND model	fresh water: kg P equivalent marine: kg N equivalent	Struijs et al., 2009 as implemented in ReCiPe
Resource Depletion – water	Swiss Ecoscarcity model	m ³ water use related to local scarcity of water ⁴⁴	Frischknecht et al., 2008
Resource Depletion – mineral, fossil	CML2002 model	kg Sb equivalent****	van Oers et al., 2002
Land Use	Soil Organic Matter (SOM) model	kg C (deficit)	Milà i Canals et al., 2007
<p>* CFC-11 = Trichlorofluoromethane, also called freon-11 or R-11, is a chlorofluorocarbon.</p> <p>** PM_{2.5} = Particulate Matter with a diameter of 2.5 µm or less.</p> <p>*** NMVOC = Non-Methane Volatile Organic Compounds</p> <p>**** Sb = Antimony</p>			

LCA International Workshop in Japan (27-28 February, 2013)

First day: On Policies

Theme & Purpose

- “International Workshop on Future Utilization of Visualized Information on Environmental Impacts in Product Life Cycle & Corporate Value Chain”
- Sharing of experience and findings of world’s major initiatives, and considering of future directions

Chairperson

Dr. Atsushi INABA, LCA expert & Professor of Kogakuin university



Speakers

- European committee
- French government (official of labeling under the Grenelle 2)
- Korea Environmental Industry & Technology Institute
- Caux Round Table-Japan
- United Nations Environment Program
- Japan Environmental Management Association Industry (JEMAI)

(About 100 people participated (from industries, experts, officials and medias))

LCA International Workshop in Japan (27-28 February, 2013)

Second day: On Database

Theme & Purpose

- “International Workshop for LCA Database - Can Present Databases Adapt to EC Environmental Footprint? –”
- To discuss how we can implement the environmental footprint taking into account the current state of the LCA database

Presenters & Speakers

- AIST (IDEA)
- JRC (ELCD Database)
- ecoinvent Center (ecoinvent)
- PE INTERNATIONAL (Gabi)
- PRe (SimaPro)
- CIRAIG (Quebec LCI Database)
- MTEC (Thai national database)
- KEITI (Korea National LCI database)
- NREL(U.S. LCI Database)
- UNEP/SETAC Life Cycle Initiative
- GreenDeLTA (Open LCA Data Hub)



(About 150 people participated (from industries, experts, officials and medias))

Discussion Theme: Adaptability to 14 Impact Categories

Opinions

✓ Possibilities

- Able to address, if there are enough human resource and plenty of time
- Able to address in the future except land use, if users wish to do
- Able to implement in Europe, except some issues of water resource and land use. However, there is not enough data on important emerging countries (e.g. Asia) in global value chain
- Unable to address water resource and land use, because there is no data on them
- Unable to standardize the method for water resource, land use and ionizing radiation

✓ Challenges

- The category that companies currently have the most interest is probably GHG, and there may be unnecessary categories for them such as chemicals managed by site
- Important impact categories differ according to country, area and product. Therefore, screening should be needed, such as in defining of impact categories for each PCR

Conclusions

- There is a large recognition gap among participants of the workshop, whether they can address 14 impact categories due to their different backgrounds
- **Impact categories to be addressed will differ according to product category.** To define that, we should consider how to get global consensus in developing PCRs

Discussion Theme : Comparability

Opinions

✓ **Possibilities**

- Uncertainty and variation may occur according to assumptions of modeling, collecting of foreground data and selection of the background data from any database
- For ensuring comparability, many technical efforts will be needed such as updating of data
- Even if the same inventory, the impacts caused by the local conditions are different
- There is uncertainty in weighting methodologies due to subjective preference for value

✓ **Challenges**

- Selection of impact categories depends on PCR development process such as screening and making consensus
- Even if comparable, discussions for applying to policy have not been matured
- Companies may disclose their assessment results only in case of superior results they have
- Common methodologies for assessment of flows and impact categories should be used

Conclusions

- **Have not reach conclusion yet about handling of comparability**, because there is much uncertainty such as inaccuracy of database and the methodology for LCI and LCIA
- Need to discuss comparability issues among database managers, developers and policy makers altogether

Pilot phase



Pilot Project started on 2013.05

1st wave of pilots

- Call for volunteers **April 2013**
- No food and drink related products (ENVIFOOD Protocol)

2nd wave of pilots

- Call for volunteers expected **beginning 2014**
- Open to food and drink related products

3 environmental categories shall be included, at least

Activities related to LCA

	Product	Organization
GHGs (CFP)	<ul style="list-style-type: none"> ▪ GHG Protocol ▪ ISO/TS-14067(2013) 	<ul style="list-style-type: none"> ▪ GHG Protocol (SCOPE3) CDP use it UNEP-FI want to use it ▪ Japanese Guideline ▪ ISO/TS-14069(2013)
More than GHGs	<ul style="list-style-type: none"> ▪ ISO-14040/44(2006) : LCA ▪ Pilot Project in France ▪ The Sustainability Consortium(TSC) ▪ Sustainable Apparel Coalition ▪ EC-Environmental Footprint 	<ul style="list-style-type: none"> ▪ ISO/TS-14072(WD) UNEP/SETAC Life Cycle Initiative ▪ EC-Environmental Footprint
Water(WFP)	<ul style="list-style-type: none"> ▪ ISO-14046(DIS) ▪ ISO-TS-????(WD) 	

ISO Technical Specification 14072

Requirements and guidelines to apply life cycle thinking to organizations

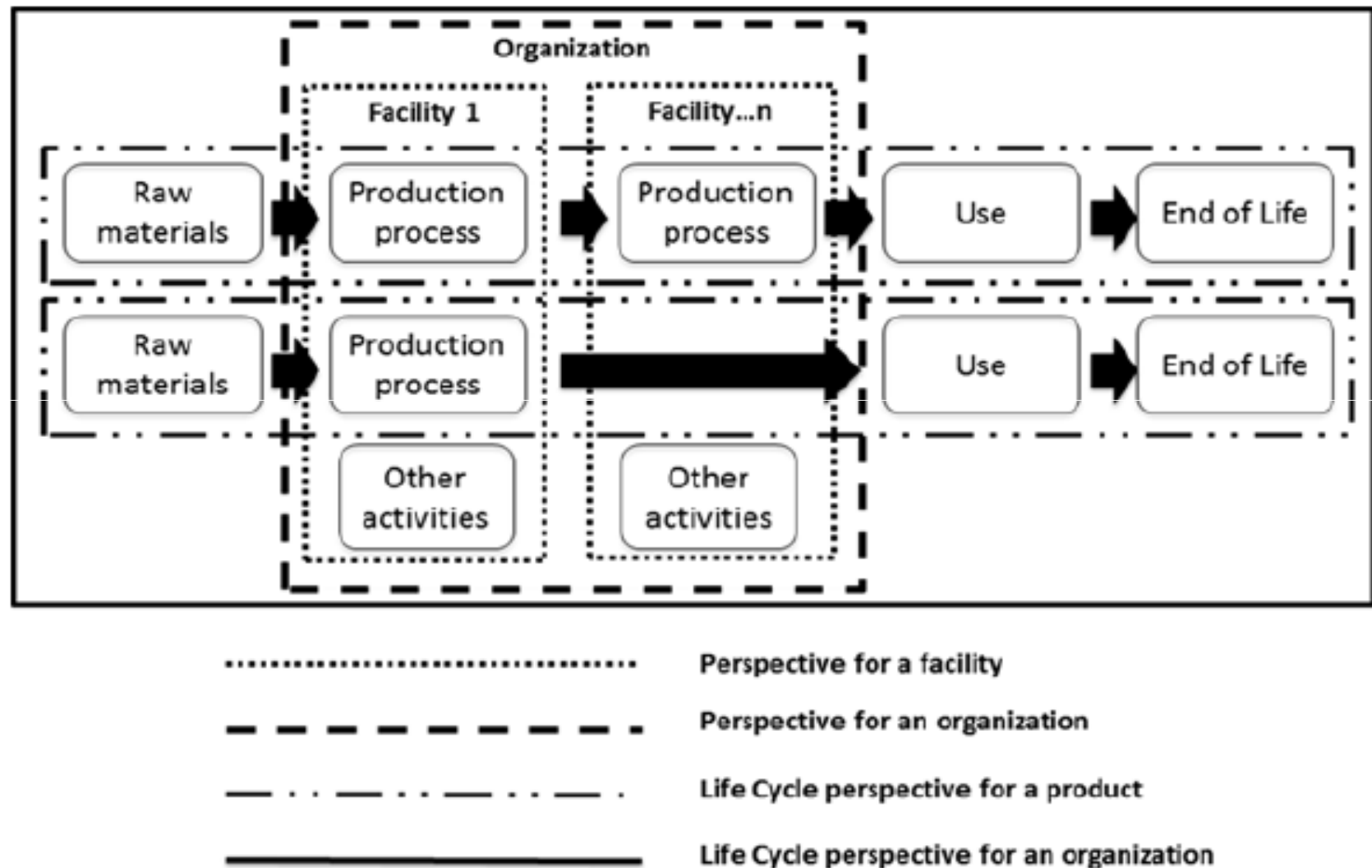


Figure 1. Examples of different perspectives for Inventory of organization

Activities related to LCA

	Product	Organization
GHGs (CFP)	<ul style="list-style-type: none"> ▪ GHG Protocol ▪ ISO/TS-14067(2013) 	<ul style="list-style-type: none"> ▪ GHG Protocol (SCOPE3) CDP use it UNEP-FI want to use it ▪ Japanese Guideline ▪ ISO/TS-14069(2013)
More than GHGs	<ul style="list-style-type: none"> ▪ ISO-14040/44(2006) : LCA ▪ Pilot Project in France ▪ The Sustainability Consortium(TSC) ▪ Sustainable Apparel Coalition ▪ EC-Environmental Footprint 	<ul style="list-style-type: none"> ▪ ISO/TS-14072(WD) UNEP/SETAC Life Cycle Initiative ▪ EC-Environmental Footprint
Water(WFP)	<ul style="list-style-type: none"> ▪ ISO-14046(DIS) ▪ ISO-TS-????(WD) 	

ISO-14046(DIS)

Water footprint—Requirements and guidelines

- 2009, Mar.: NWIP by Switzerland
- 2009, Jun: NWIP was approved, WG8 was established at Cairo
(Convinar: Switzerland, Mexico) started as PWI
- 2009, Nov: The 1st meeting at Stockholm; CD1
- 2013, Jan: Voting DIS: not approved.
- 2013, Apr: start to develop a TR of examples (WD1)



©WFP can be used for Product and Organization

©WFP of ISO is not the virtual Water

©WFP shall include LCIA(Life Cycle Impact Assessment)

TR ?????

- A(Australia) rice cultivation; water stress index
- B(Japan)?;water scarcity footprint
- C(Canada) Cardboard ; water scarcity footprint, water availability footprint, water footprint
- D(France) Corn production ; water eutrophication footprint
- E(Australia) Agriculture; Weighting(water scarcity footprint + water degradation footprint)
- F(France) Agriculture ; water footprint profile(fresh water depletion, rainwater depletion, water pollution)
- G(France) ? ; water footprint profile(water availability, eutrophication, ecotoxicity, acidification)
- H(USA) containerboard ; LCA and water availability
- I(Water Footprint Network) Cooling process ; process water availability

Future trend based on LCA

- Carbon Footprint; from Product to Organization
- from Carbon footprint to Environmental Footprint
- Disclose own data; Communication

● To Green your value chain !

