
Introduction of Guideline for Carbon Labeling

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 **KEITI** 한국환경산업기술원

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Description on Guideline for Carbon Labeling

I. Background of Guideline for Carbon Labeling

Eco-labeling of Korea (before 2008)

Eco-labeling system of Korea	Environment Mark System	Environment Labeling System
Type	Type 1	Type 3
Standard	ISO14024	ISO/TR14025
Environment Information	Mark or label	Datasheet
Scope	Life cycle	Life cycle
Verification	Independent parties	Independent parties
Introduction	1992	2001
Design		

I. Background of Guideline for Carbon Labeling

Overview of Eco-Labeling System (1)

● Eco-labeling

- The eco-labeling system displays environmental information on the life cycle from producing raw materials and products to distribution, consumption and disposal to improve environmental features



● Purpose

- The eco-labeling system opens exact environmental information on products in the market for customers to purchase eco-friendly products based on easy and transparent access to the information to lead consequent environmental improvement driven by the market

I. Background of Guideline for Carbon Labeling

Overview of Eco-Labeling System (2)

- Features of eco-labeling system

- The life cycle assessment, environmental evaluation, shall be performed and the results shall be provided as environmental information
- Have no legal binding, but based on voluntary participation to save consumers and the Earth
- Products with eco-labeling certificate voluntarily open their environmental information and have excellent environmental reliability

Scope	Unit
Resource consumption	Kg Sb-eq
Global warming	Kg CO ₂ -eq
Affecting ozone layers	Kg CFC11-eq
Acidification	Kg SO ₂ -eq
Eutrophication	Kg PO ₄ ³⁻ -eq
Generating photochemical oxides	Kg ₂ H ₄ -eq

I. Background of Guideline for Carbon Labeling

Performance of Implementing Eco-labeling

Feb, 2000
Setting up legal backgrounds in the Framework Act on the Environment

Feb, 2001
Implementing eco-labeling system

Jan, 2002 Designated as an organization for LCI DB (former environment mark association)

Mar, 2004 Consigned as an organization for selecting products with environmental labeling (eco-friendly Production promotion agency)

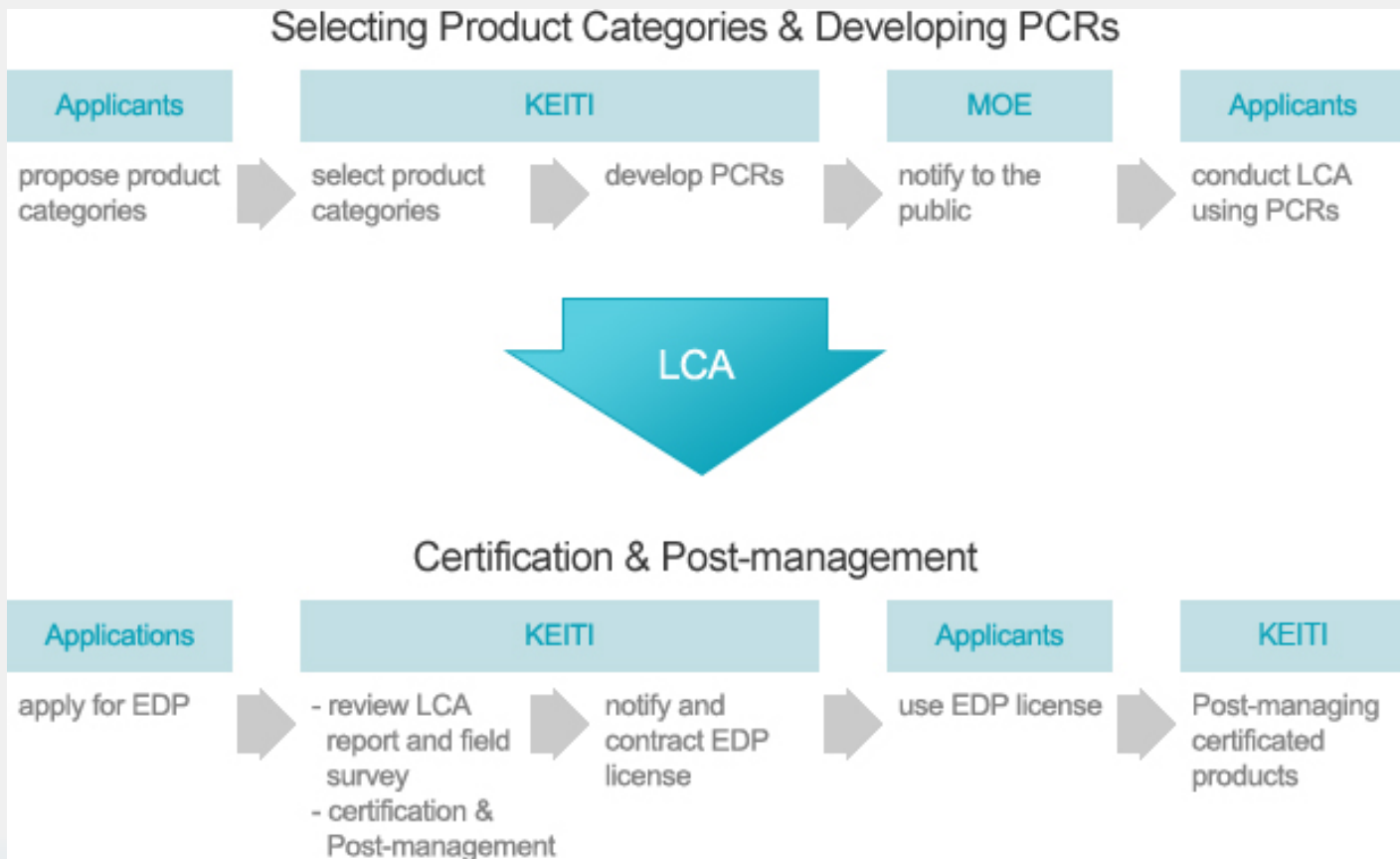
Apr, 2001
- Designated as training organization (Environment protection agency)
- Selected first candidates

Mar, 2002
- Selected as certification (Environment management corporation)
- Notified initial guidelines

Jun, 2006 Established enforcement decree and amended its rules (types of eco-labeling marks, etc)

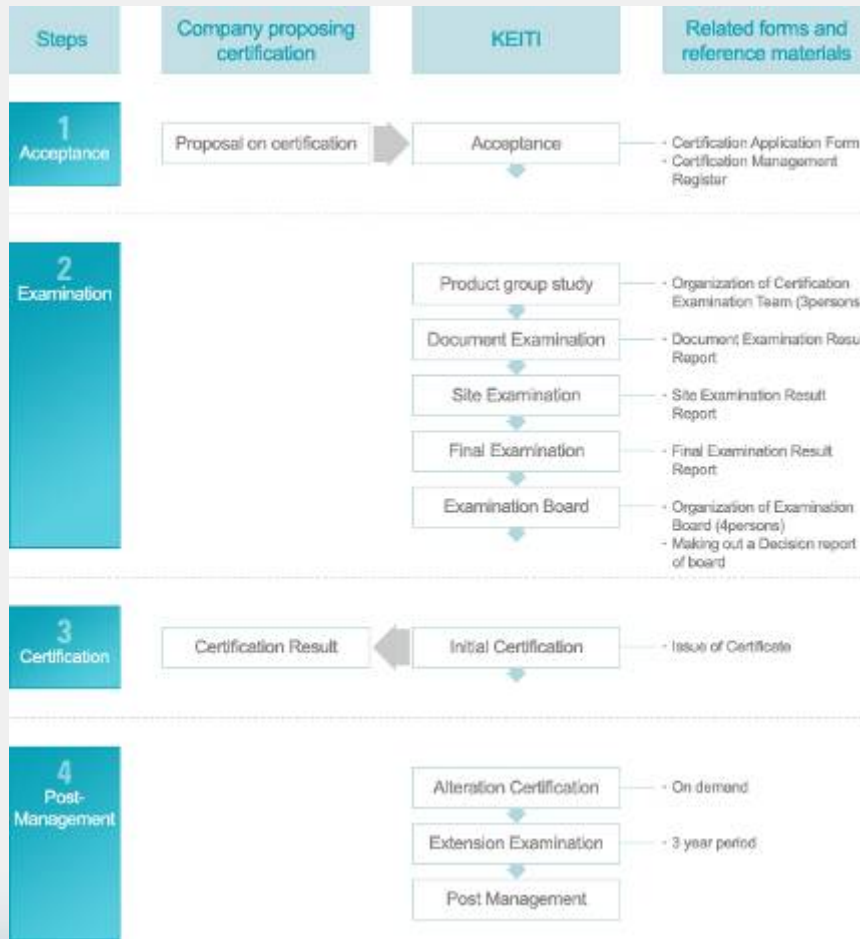
I. Background of Guideline for Carbon Labeling

Certification Procedure for Eco-labeling (1)



I. Background of Guideline for Carbon Labeling

Certification Procedure for Eco-labeling (2)



- Guideline shall be developed in advance for a product to obtain its eco-labeling
- Otherwise, guideline development shall be proposed on the website of KEITI
- KEITI reviews guideline for proposed product and the MEV notifies

I. Background of Guideline for Carbon Labeling

Eco-labeling Certification (ex)



Product: Laser Printer ML-2150
 Certification No. : EMC-2004-003
 Product: Laser printer
 Period: Mar 26, 2004 – Mar 25, 2007
 Certified by: EDP

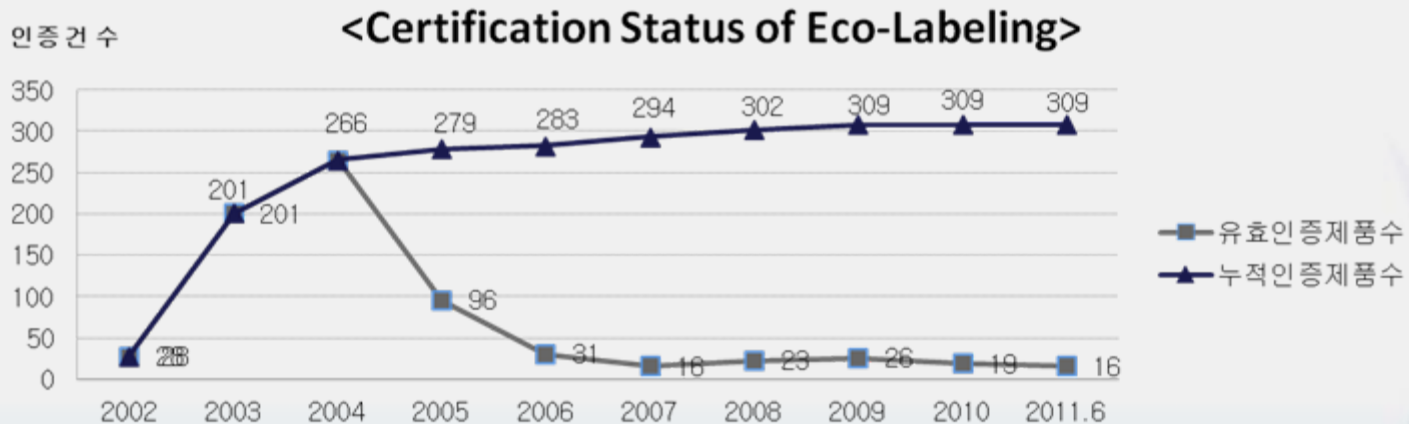


Spec (Unit)	Taking raw material/manufacturing and production phase	In use	Disposal	Total
Material consumption (Kg Sb-eq)	1.0E+00	2.9E+00	6.4E-03	4.0E+00
Global warming (Kg CO ₂ -eq)	1.6E+02	1.0E+03	1.0E+00	1.2E+03
Affecting ozone layer (Kg CFC11-eq)	4.7E-06	9.0E-06	9.4E-08	1.4E-05
Acidification (Kg SO ₂ -eq)	6.4E-01	9.7E+00	9.6E-03	1.0E+01
Eutrophication (Kg PO ₄ ³⁻ -eq)	3.9E-02	5.2E-01	1.1E-03	5.6E-01
Generating photochemical oxides (Kg ₂ H ₄ -eq)	6.0E-01	1.0E+01	1.3E-03	1.1E+01

I. Background of Guideline for Carbon Labeling

Need for Improving Eco-labeling System

- Take a long time to obtain certification for new products due to individual guideline
- Difficult certification while implementing the LCA for 6 categories
- Lowering recognition due to insufficient knowledge of customers for each category



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II. Overview of Guideline for Carbon Labeling

Definition of Guideline

- What is the guideline for carbon labeling?
 - A guideline to calculate greenhouse gas emission with reproductive ways of a life cycle including producing raw materials and products, distribution, use and disposal
- *Legal background
 - Notification No. 2011-130 of MEV, Article 3 of Regulation on Carbon Labeling Certification
 - Article 2 of the Guideline for Carbon Labeling (Sep, 2011)
 - Articles 4 – 7 of Business Guideline for Carbon Labeling (Sep, 2011)
- Purpose
 - To provide easy and accurate methods for users who want to calculate greenhouse gases emitted during the life cycle of products (services)
 - User: (potential) accredited companies, organizations and assessment organization

II. Overview of Guideline for Carbon Labeling

Guideline Structure

Structure of guideline for carbon labeling

The guideline consists of 3 instructions

[Appendix 1] Guideline for general products (instruction 1)

[Appendix 2] Guideline for energy use products (instruction 2)

[Appendix 3] Guideline for scenarios of energy-using products (instruction 3)

Instruction	Products	Remarks
Instruction 1	General products using no energy	-
Instruction 2	Energy-using products	
Instruction 3	Energy-using products	<ul style="list-style-type: none"> - Completed for 30 products like water purifier, home refrigerator and car - To be developed for 12 items in 2011

II. Overview of Guideline for Carbon Labeling

Guideline Structure

Guideline concept and structure

ISO 14040, ISO 14044 & ISO 14025, ISO 14064 / PAS 2050

- Durables using no energy (instruction 1), durables using energies (instruction 2), scenario of durables using energies (instruction 3)
- Case studies for individual instruction

Level for common instruction

Level for individual product

Specific item for guideline (instruction 1 and 2)

Scope, functional unit, system boundary, data collection and quality, data calculation, allocation and declaration of greenhouse gases for life cycle

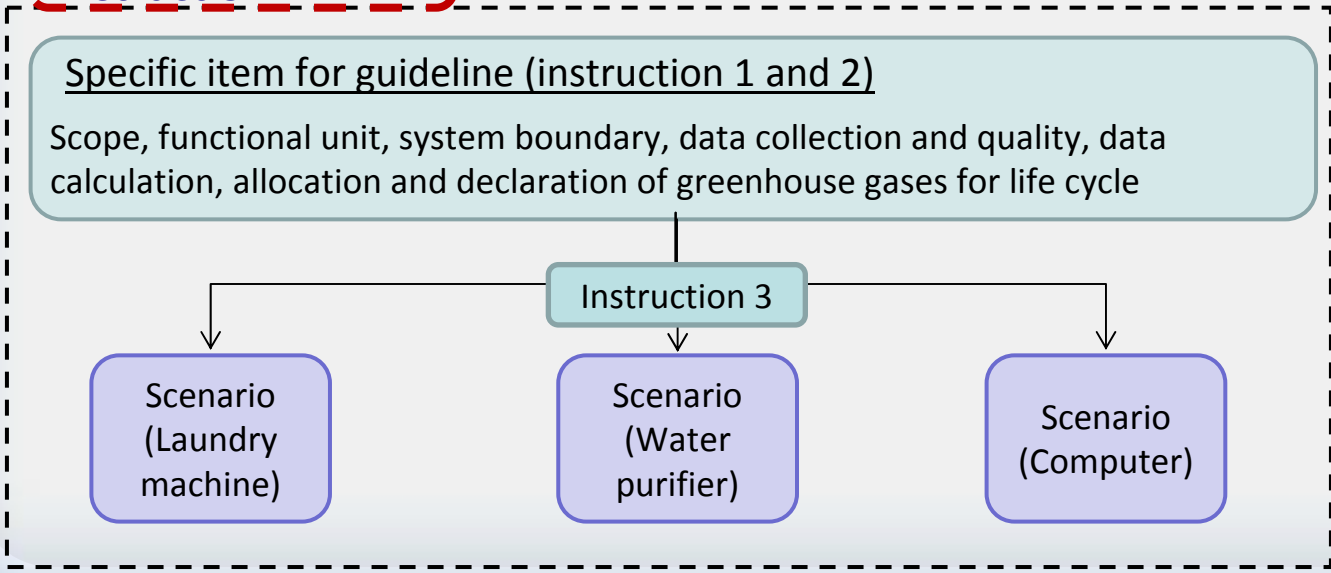
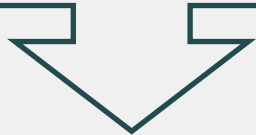
Instruction 3

Scenario (Laundry machine)

Scenario (Water purifier)

Scenario (Computer)

Case study



II. Overview of Guideline for Carbon Labeling

Global Warming Index for each Greenhouse Gas

Name	Formula	Global warming index (for 100 years)	CAS No.	Name	Formula	Global warming index (for 100 years)	CAS No.
Carbon dioxide(CO ₂)	CO ₂	1	124-38-9	HFC-143a	C ₂ H ₃ F ₃	3800	420-46-2
Methane	CH ₄	21	74-82-8	HFC-227ea	C ₃ HF ₇	2900	431-89-0
Nitrous oxide(N ₂ O)	N ₂ O	310	10024-97-2	HFC-236fa	C ₃ H ₂ F ₆	6300	690-39-1
HFC-23	CHF ₃	11700	75-46-7	HFC-245ca	C ₃ H ₃ F ₅	560	1814-88-6
HFC-32	CH ₂ F ₂	650	75-10-5	Sulphur hexafluoride(SF ₆)	SF ₆	23900	2551-62-4
HFC-41	CH ₃ F	150	593-53-3	Perfluoromethane(CF ₄)	CF ₄	6500	75-73-0
HFC-43-10mee	C ₅ H ₂ F ₁₀	1300	138495-42-8	Perfluoroethane(C ₂ F ₆)	C ₂ F ₆	9200	76-16-4
HFC-125	C ₂ HF ₅	2800	354-33-6	Perfluoropropane(C ₃ F ₈)	C ₃ F ₈	7000	76-19-7
HFC-134	C ₂ H ₂ F ₄	1000	811-97-2	Perfluorobutane(C ₄ F ₁₀)	C ₄ F ₁₀	7000	355-25-9
HFC-134a	CH ₂ FCF ₃	1300	811-97-2(a)	Perfluorocyclobutane(c-C ₄ F ₈)	c-C ₄ F ₈	8700	115-25-3
HFC-152a	C ₂ H ₄ F ₂	140	75-37-6	Perfluoropentane(C ₅ F ₁₂)	C ₅ F ₁₂	7500	678-26-2
HFC-143	C ₂ H ₃ F ₃	300	430-66-0	Perfluorohexane(C ₆ F ₁₄)	C ₆ F ₁₄	7400	355-42-0

※ Source: UNFCCC, Secondary Report of IPCC guideline

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III. Description on Guideline for Carbon Labeling

Guideline Contents (Instruction 1 and 2)

0. Overview	
1. Scope	
2. Definitions of terms	
3. Principles	
4. Greenhouse emission source	4.1 Types of greenhouse gases
	4.2 Sources of greenhouse gases
5. Calculating greenhouse gas emission from the life cycle	5.1 Functional unit
	5.2 System boundary
	5.3 Data collection and quality
	5.4 Data calculation
	5.5 Allocation
6. Greenhouse gas declaration for the life cycle	6.1 Overview
	6.2 Greenhouse gas emission declaration
Schedule A Global warming index for greenhouse gases Schedule B Transportation distance	
Reference	

III. Description on Guideline for Carbon Labeling

Principle of Guideline Development

1. Considering product life cycle
 - Including taking, manufacturing, transporting, using and disposing of raw materials for greenhouse gas emission
2. Providing comparability among the same products
 - Developing to compare environmental improvement
3. Providing unbiased emission data
 - Not excluding stages with large emission from the life cycle
4. Providing simple calculation method
 - Simplifying guideline not compromising 3 principles above

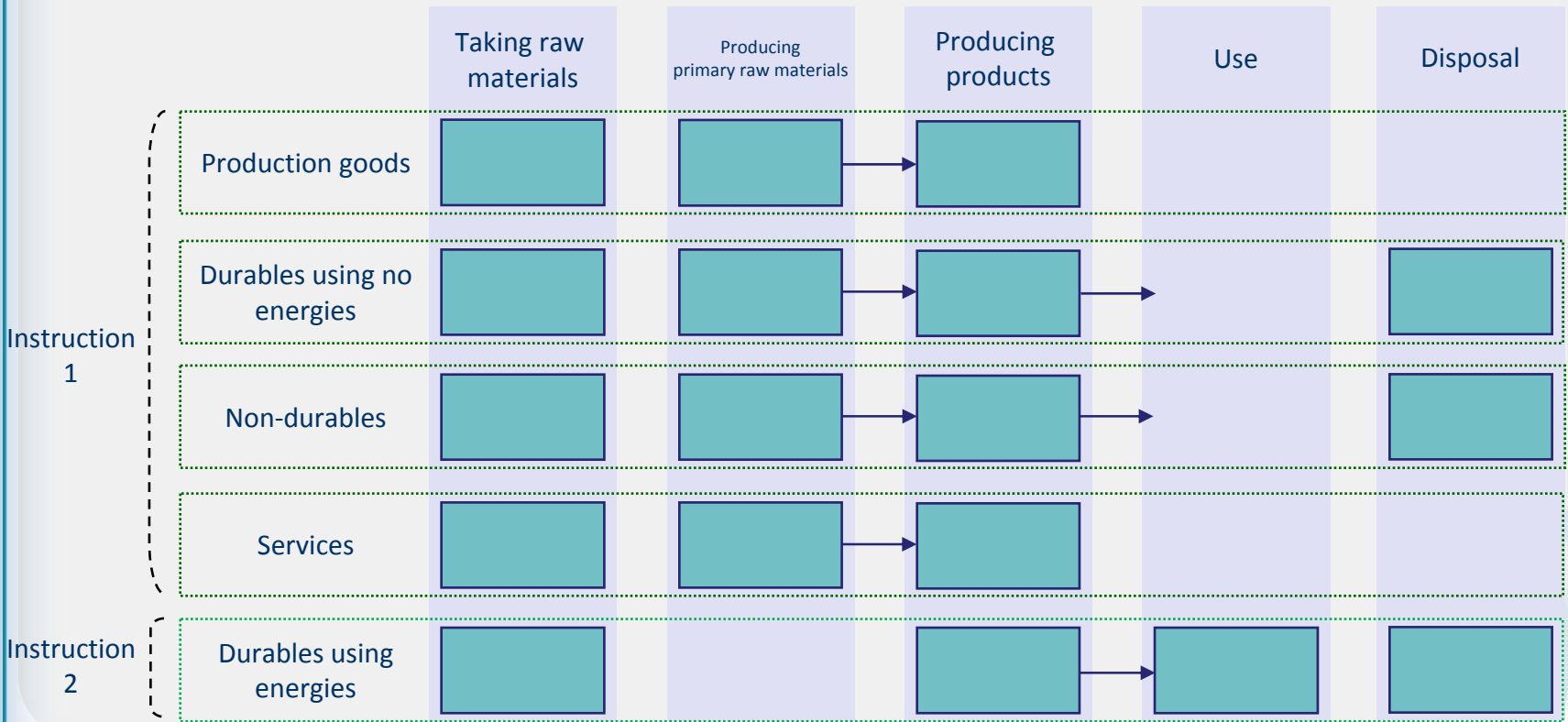
III. Description on Guideline for Carbon Labeling

Principles of Calculation and Report

1. **Properness:** The greenhouse list shall verify that it is for evaluated products or related greenhouse gases for decision-makers to utilize it
2. **Perfection:** All the greenhouse gases generated from pre-defined system boundaries shall be included
3. **Consistency:** Guideline for greenhouse gas emission from products shall be consistently applied to compare the emissions for different products
4. **Transparency:** Data related to greenhouse gases based on clear facts shall be provided for potential users to make decision with proper confidence
5. **Accuracy:** Those who calculate greenhouse gas emissions from products shall minimize uncertainty and secure highest data quality by collecting data proposed above
6. **Conservative:** Assumptions, data selection and procedure shall be carefully applied to verify that the greenhouse gas emission is not underestimated
7. **Comparability:** Greenhouse gas data during the life cycle of calculated products shall be transparently prepared for consumers to compare products with the same capacity

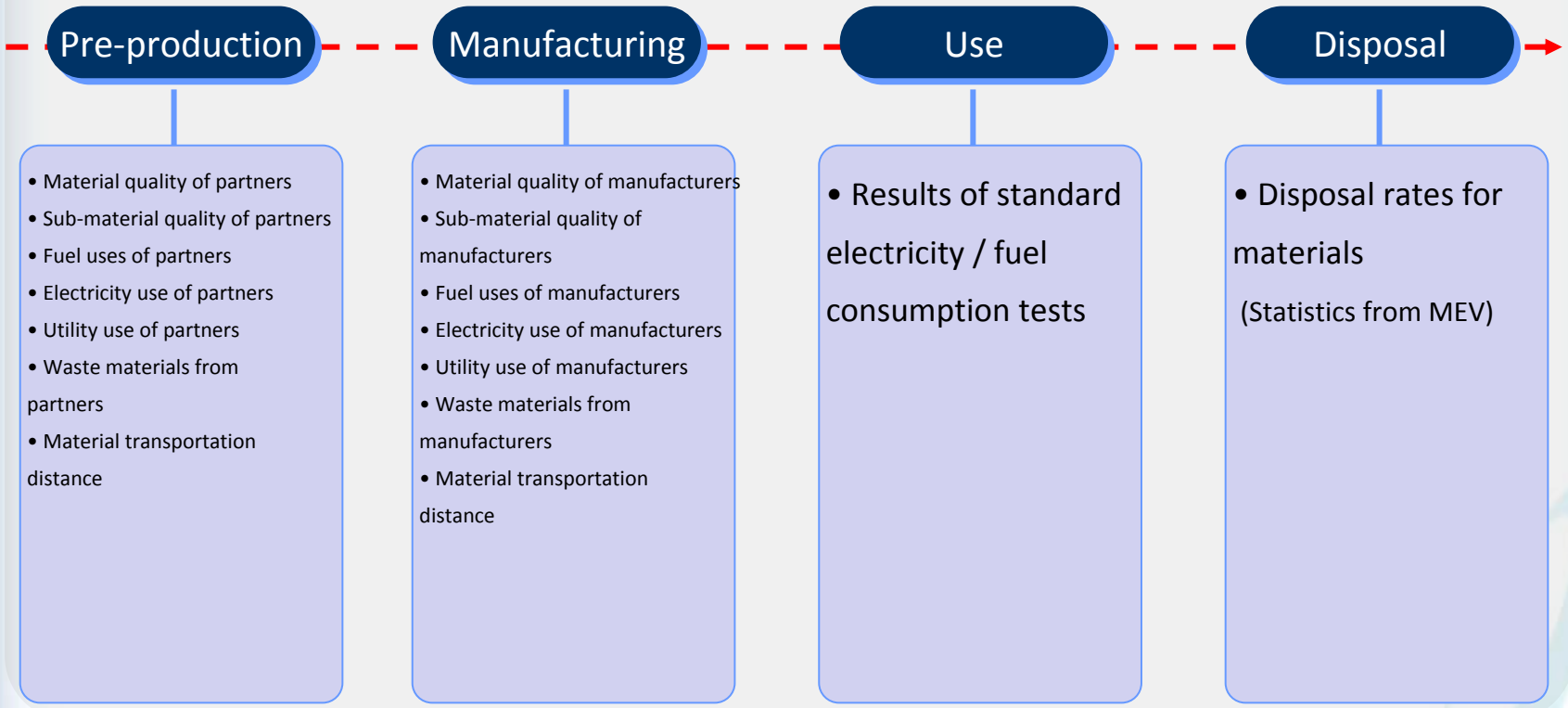
III. Description on Guideline for Carbon Labeling

System Boundaries for each Guideline



III. Description on Guideline for Carbon Labeling

Activation Data for Life Cycle



III. Description on Guideline for Carbon Labeling

Guideline contents (instruction 3)

1. Scope and function	1.1 Scope
	1.2 Function
2. Data collection and calculation	2.1 Energy consumption
	2.2 Other particulars including consumable goods

- **Scope:** Scope and exemption for the guideline
- **Function:** Definitions of product functions
- **Energy consumption**
 - Defining scenarios to calculate energy uses
 - Defining test methods of energy consumption
- **Other particulars including consumable goods: defining uses of consumables**

III. Description on Guideline for Carbon Labeling

Development Status of Guideline

Guideline No.	Product Name
-	Common standards for general products
-	Common standard for products using energies
COOL 001	Water purifier
COOL 002	Home boiler
COOL 003	Home laundry machine
COOL 004	Automobile
COOL 005	Commercial gas heat pump – external device for heating and cooling devices
COOL 006	Air purifier
COOL 007	Bidet
COOL 008	Devices drying food wastes from households
COOL 009	TV sets
COOL 010	Electric hand drier
COOL 011	Home gas electric range
COOL 012	Air conditioner
COOL 013	Electric freezer and refrigerator
COOL 014	Humidifier
COOL 015	Mobile phone

Guideline No.	Product Name
COOL 016	Microwave oven and electric oven
COOL 017	Commercial electric heat pump – external device for heating and cooling devices\
COOL 018	Electric vacuum cleaner
COOL 019	Surveillance camera (CCTV)
COOL 020	Industrial turbo air compressor
COOL 021	Personal computer
COOL 022	Laptop computer
COOL 023	Monitor
COOL 024	Office printer
COOL 025	Receipt and label printer
COOL 026	Home dish washer
COOL 027	Home robot cleaner
COOL 028	Wireless telecommunication devices for Internet
COOL 029	Copier
COOL 030	Multifunction printer
COOL 031	Electric fan
COOL 032	LED light

III. Description on Guideline for Carbon Labeling

Reference

- [1] Guideline for eco-labeling [Appendix 2], common standard
- [2] ISO 14025:2007, Environmental labeling and declaration – type 3, environmental declaration – principle and procedure
- [3] ISO 14040:2007, Environmental management – LCA – principle and basic structure
- [4] ISO 14044:2007, Environmental management – LCA – Requirement and guideline
- [5] ISO 14064-1:2006, Greenhouse gas – Part 1: Rules and guideline for using data on removing and emitting greenhouse gas emission at the organizations level
- [6] ISO 14064-2:2006, Greenhouse gas – Part 2: Rules and guideline for quantifying, monitoring and reporting greenhouse gas emission and removal at the project level
- [7] ISO 14064-3:2006, Greenhouse gas – Part 3: Rules and guideline for feasibility evaluation and verification on greenhouse gas declaration
- [8] Greenhouse gas protocol – Standards for calculating and reporting emission by companies (2004), greenhouse gas protocol initiative
(Greenhouse protocol initiative, WBCSD & WRI)
- [9] PAS2050 - Specification for the assessment of the life cycle greenhouse gas emissions of goods and services, carbon trust
- [10] 1996 IPCC Guidelines for National Greenhouse Gas Inventories



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