

Workshop on the development of climate relevant common core criteria (CCC) for **Fluorescent Lamps** in ASEAN

Technical Background and Proposal for Common Core Criteria (CCC)

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Bangkok, May 2014



Preliminaries

The aims of this technical workshop

- Identify climate relevant common core criteria (CCC) among eco-label schemes in ASEAN
- Discuss levels of ambition of the identified criteria
- Discuss verification mechanism
- Identify **what is possible what is not** regarding common core criteria

Definition of Common Core Criteria (CCC):

- Several eco-labels (e.g. Thai Green Label and the Malaysian Eco-Label) refer to a common set of basic criteria targeting at the same environmental impact. For example two eco-labels have a criterion on energy efficiency in their criteria set.
- If the requirements for the criterion are the same in both eco-labels as well as the verification mechanism, we can speak of harmonisation of the common core criterion.

Overview

- 1** Scope of the Product Group
- 2** Energy Consumption & Climate Change
- 3** Draft Common Core Criterion Proposal n°1
- 4** Draft Common Core Criterion Proposal n°2
- 5** Draft Common Core Criterion Proposal n°3

Typology of Lamps (1)



Criterion	Filament lamps (Incandescent)	Halogen lamps	Compact Fluorescent Lamps (CFL)	Light-Emitting Diode (LED) lamps
Luminous Flux	150 – 1500 lm	150 – 1800 lm	60 – 1500 lm	10 – 960 lm
Power	15 – 150 W	10 - 120 W	3 - 25 W	1 - 12 W
Energy Efficiency (Energy Savings)	10 -15 lm/W (Base Case)	15 – 20 lm/W (-30%)	40 – 60 lm/W (-80%)	10 – 80 lm/W (-90%)
Life time	1000h	2000h	6000-15,000h	15000-50,000h
Switching cycles	unlimited	unlimited	3000-500,000	20,000 – 1 Mio.
Starting time	immediately	immediately	20s – 180s	immediately

Typology of Lamps (2) – other fluorescent lamps (FL)



	Single Socket Fluorescent lamps			Linear Fluorescent lamps, so called „tubes“ or Double Socket FL	
Model / Socket	TC-D / G24q TC-T / GX24q TC-L / 2G7...	TC-F / 2G10	TC-L ring / 2GX13	T5 [T16] G5	T8 [T26] G8
Power [W]	10 - 26 W 13 - 70 W 7 - 28 W	18 - 36 W 13 - 70 W 7 - 28 W	22 - 55 W	14 - 80 W	18 - 58 W
Luminous Flux [lm]	600 - 1800 900 - 5200 400 - 2800	1100-2800 lm	1800- 4200 lm	1350 - 7000 lm	1350- 5200 lm
Efficiency	50 - 67 lm/W 63- 69 lm/W 44 - 90 lm/W	58-72 lm/W	71- 95 lm/W	77 - 94 lm/W	71- 95 lm/W

Scope: Fluorescent Lamps



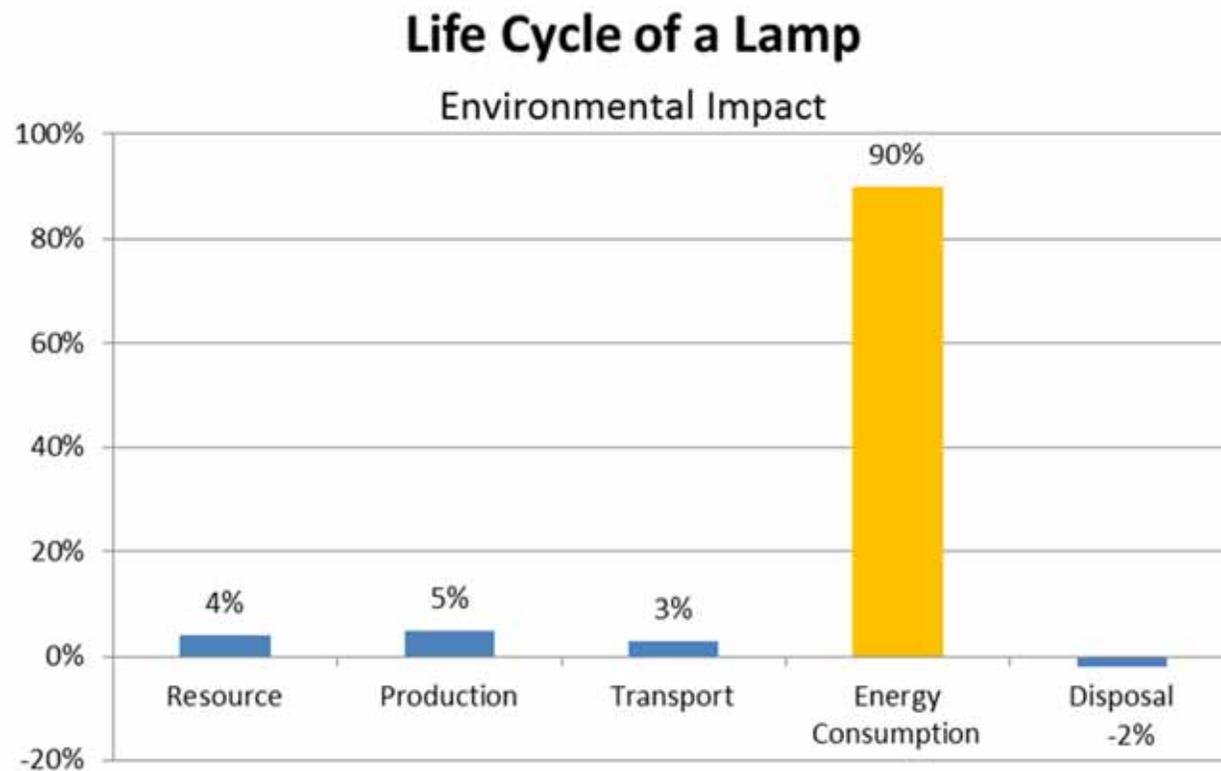
	Green Label Thailand	Green Choice Philippines	SIRIM Eco-Label Malaysia	European Eco-Label	Blue Angel RAL UZ – 151	EU-Energy Efficiency Label / Eco-Design
Scope	Single- & double-capped fluorescent lamps (incl. CFL)	Linear and compact fluorescent lamps for general lighting service applications.	Linear, Circular and compact fluorescent lamps	Light sources of a luminous flux ≥ 60 and $\leq 12,000$ (Under revision: term lamp instead of light source)	Lamps of a luminous flux ≥ 60 and $\leq 6,500$ lumens; Mains voltage	Filament, fluorescent, high-intensity discharge, LED lamps ; New Label and Directive valid since 9/2013
Proposal for common scope	<ul style="list-style-type: none"> Compact Fluorescent Lamps (single capped with integrated ballast) Single capped FL without integrated ballast Linear (double capped) Fluorescent Lamps (such as T5 and T8) Circular (double capped and single capped) FL for general lighting services. 					

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- 4** Draft Common Core Criterion Proposal n°2
- 5** Draft Common Core Criterion Proposal n°3

Environmental Impact – Energy consumption

At least 90% of the cumulated energy consumption of lamps is due to their use phase



Source: Own Illustration according to data of the EU-Eco-lighting project; Draft Preliminary Study; Task 1 following ELC.

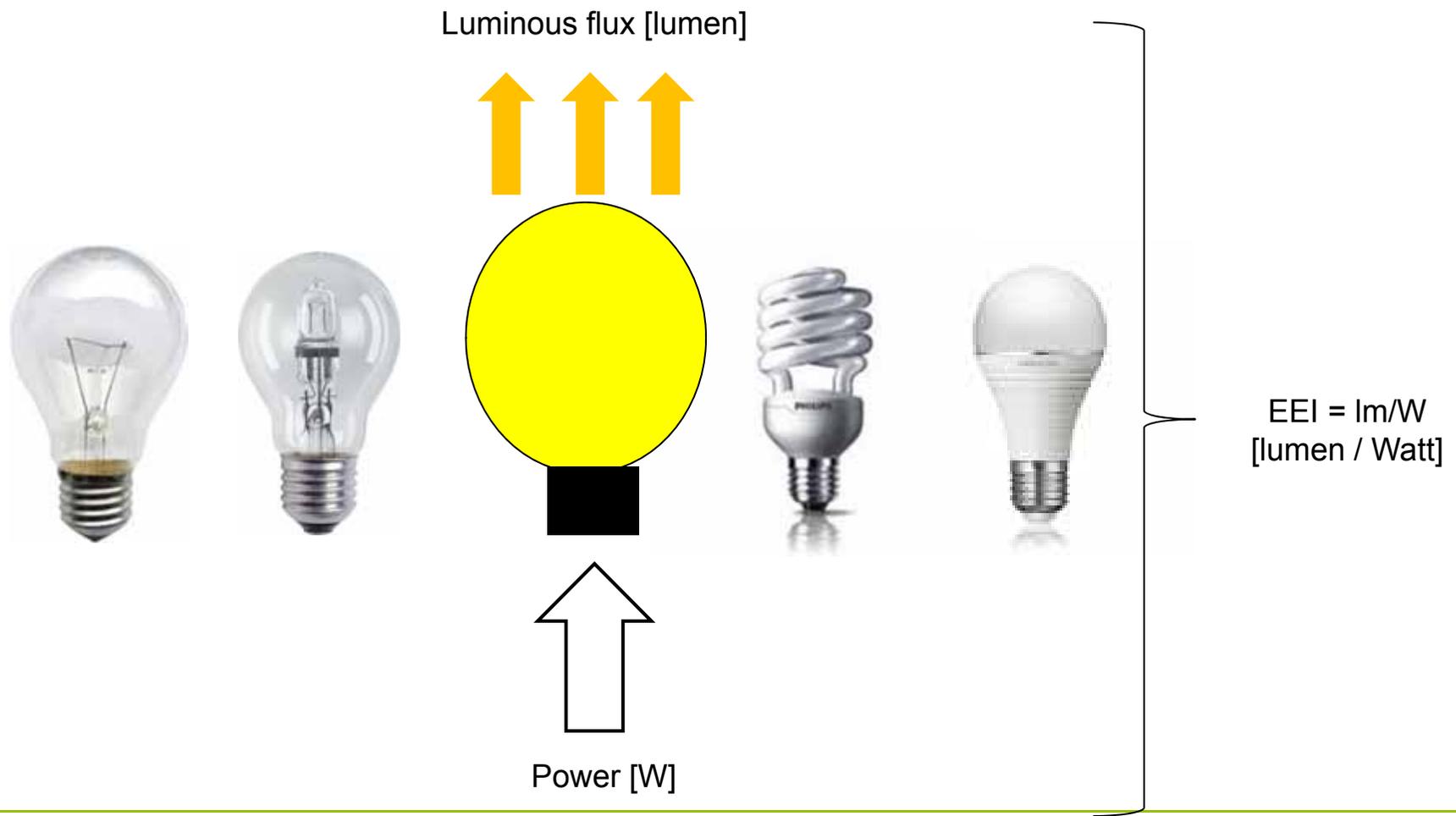
Global Warming Potential during life-cycle of lamps

Absolute results of the environmental impacts per year of a Filament lamp (60 Watt), Compact Fluorescent Lamp (CFL; 11 W) and a LED-Lamp (7 Watts)

	CED [MJ]	GWP [kg CO ₂ eq.]	AP [g SO ₂ eq.]
Production Filament Lamp	53	5	12
Production Compact Fluorescent Lamp (CFL)	6	1	1
Production LED-Lamp	2	0	0
Use Phase Filament Lamp	743	42 [89%]	58
Use Phase Compact Fluorescent Lamp (CFL)	136	8 [~100%]	11
Use Phase LED-Lamp	48	3 [~100%]	4
Disposal Filament Lamp	1	0	0
Disposal Compact Fluorescent Lamp (CFL)	0	0	0
Disposal LED-Lamp	0	0	0
Total Filament Lamp	797	47	70
Total Compact Fluorescent Lamp (CFL)	142	8	12
Total LED-Lamp	50	3	4

Depending on lamp 90-100 % of GWP in use phase

Measuring energy efficiency of lamps



Overview

- 1 Scope and Criteria of the Product Group
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- 3 Draft Common Core Criterion Proposal n°1:
Energy Efficiency = Luminous Efficacy
- 4 Draft Common Core Criterion Proposal n°2:
- 5 Draft Common Core Criterion Proposal n°3

Eco-Label Criteria for Fluorescent Lamps in ASEAN and beyond



Criterion	Green Label Thailand	SIRIM Eco-Label Malaysia	Green Choice Philippines	European Eco-Label	European Legislation [Standards & Label]	Blue Angel
Luminous Efficacy (Criterion for Energy Efficiency)	Minimum Requirements (see next slide)	Minimum requirements (see next slide)	Not considered	Now: Class A -10% New: Class A+(+)	New label No. 874/2012/EU and Dir. 244/2009; 245/2009	Max Efficiency-Index depending on luminous flux Φ and colour rendering index Ra

No. 1:
climate relevant criterion

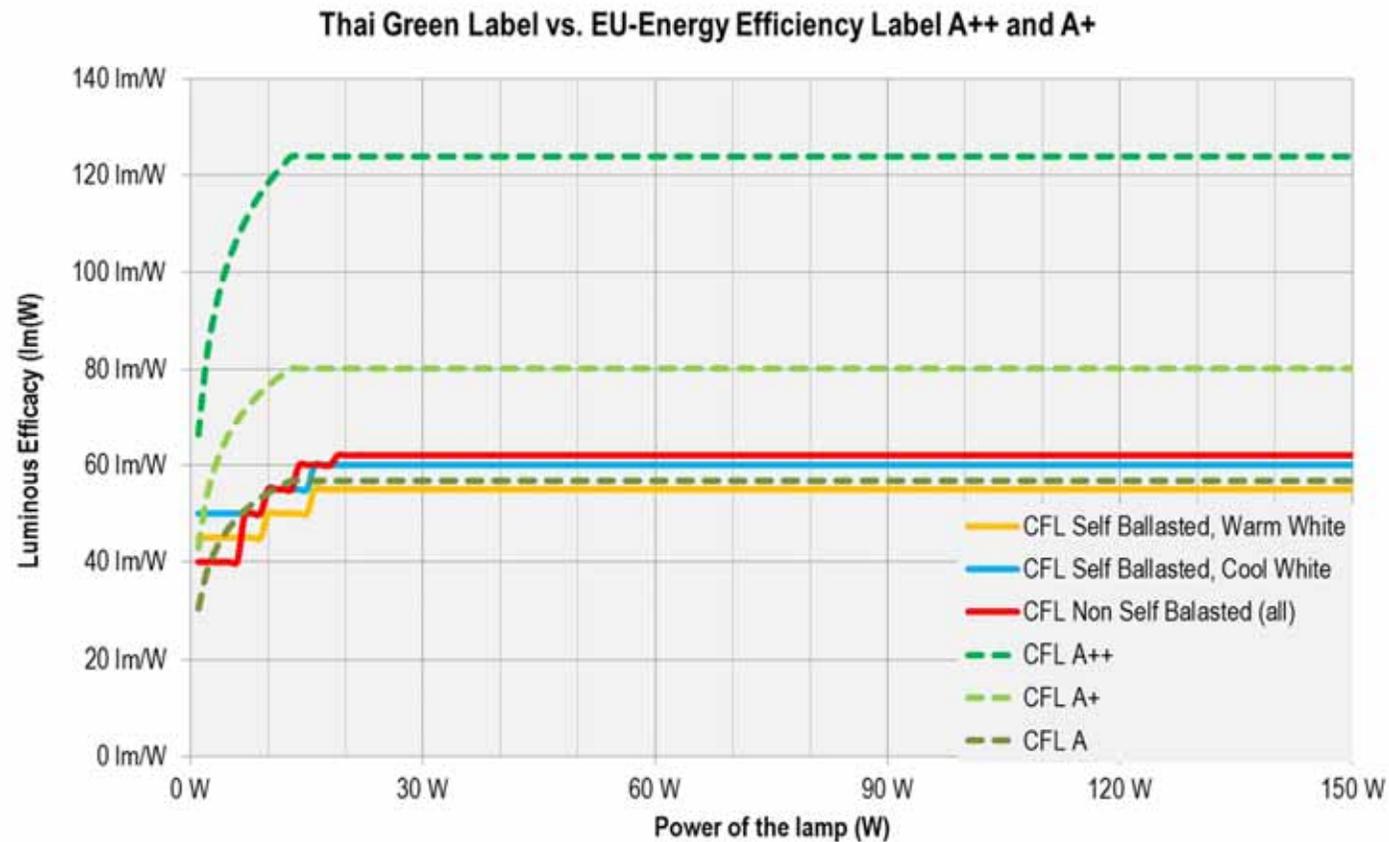
Comparison of Criteria on Luminous Efficacy



Lamp Type	Green Label Thailand			SIRIM Eco-Label Malaysia		
Compact Fluorescent Lamps (CFL), with ballast	Type	Power (W)	Lum. Efficacy (lm/W)	Basically: 80 lm/W		
	Daylight	<10	≥45	<u>Tc >5000 K (Daylight):</u> <u>-10% (=72 lm/W)</u>		
		10-15	≥45			
		>15	≥50			
	Warm white/ cool white	<10	>50	80 lm/W		
		10-15	>55			
		>15	>60			
	Color Rendering Index (CRI) = Ra	No differentiation			High (90-95)	- 20 % (64 lm/W)
					Very High (>95)	- 30% (56 lm/W)

Comparative Level of Ambition

Level of ambition of CFL efficiency criteria:



Source: Schleicher 2013. using a tool by Gasser, S. 2012

Draft Common Core Criterion Proposal n°1

Proposal for a harmonized Common Core Criterion (CCC) for Luminous Efficacy of Compact Fluorescent Lamps

Lamp Type	Common Core Criterion for ASEAN	
Compact Fluorescent Lamps (CFL) with ballast	Type	Basically: 80 lm/W
	Daylight	Tc >5000 K (Daylight): -10% (=72 lm/W)
	Warm white/ cool white	80 lm/W
	Color Rendering Index (CRI) = Ra	High (90-95)
Very High (>95)		- 30% (56 lm/W)



Comparison of Criteria on Luminous Efficacy



Lamp Type	Green Label Thailand		SIRIM Eco-Label Malaysia	
Non-self ballasted single capped Fluorescent Lamps	Power (W)	Triphosph. (lm/W)	Basically: 80 lm/W	
	<7	≥40	Tc >5000 K (Daylight):	
	7-9	≥50	-10% (=72 lm/W)	
	9-13	≥55		
	13-18	>60	80 lm/W	
	>18	>62		
	No differentiation		High (90-95)	- 20 % (64 lm/W)
		Very High (>95)	- 30% (56 lm/W)	

Draft Common Core Criterion Proposal n°1

Proposal for a harmonized Common Core Criterion (CCC) for Luminous Efficacy of non-self ballasted single capped Fluorescent Lamps

Lamp Type	SIRIM Eco-Label Malaysia	
Non-self ballasted single capped Fluorescent Lamps	Basically: 80 lm/W	
	Tc >5000 K (Daylight):	
	-10% (=72 lm/W)	
	80 lm/W	
	High (90-95)	- 20 % (64 lm/W)
Very High (>95)	- 30% (56 lm/W)	



Comparison of Criteria on Luminous Efficacy



Lamp Type	Green Label Thailand				SIRIM Eco-Label Malaysia	
Double capped Flourescent Lamp other than T5- Lamps (e.g. T8-Lamps)	Type	Power (W)	Halophos. (lm/W)	Triphosph. (lm/W)	Basically: 90 lm/W	
	Day Light	≤ 18	≥ 50	≥ 72	<u>Tc >5000 K (Daylight):</u>	
		>18	≥ 60	≥ 90	-10% (=81 lm/W)	
	Warm White/ Cool White	≤18	> 60	> 75	90 lm/W	
		>18	≥ 65	> 93		
	Color Rendering Index (CRI) = Ra	No differentiation				<u>High</u> (90-95)
				<u>Very High</u> (>95)	- 30% (63 lm/W)	

Draft Common Core Criterion Proposal n°1

Proposal for a harmonized Common Core Criterion (CCC) for Luminous Efficacy of Double Capped FL (without Ballast)

Lamp Type	Common Core Criterion for ASEAN		
Double capped Flourescent Lamp other than T5 Lamps (e.g. T8-Lamps)	Type	Power (W)	Efficacy (lm/W)
	Day Light	≤ 18	≥ 81
		>18	≥ 90
	Warm White/ Cool White	≤ 18	≥ 90
		>18	≥ 93
	Color Rendering Index (CRI) = Ra	<u>High</u> (90-95)	≥ 72
		<u>Very High</u> (>95)	≥ 63

Comparison of Criteria on Luminous Efficacy



Lamp Type	Green Label Thailand			SIRIM Eco-Label Malaysia	
Double-Capped Fluorescent Lamp that are T5-Lamps	Type	Power (W)	Triphosph. (lm/W)	Basically: 90 lm/W	
	Day Light	≤ 18	≥ 85	Tc >5000 K (Daylight): -10% (=81 lm/W)	
		>18	≥ 90		
	Warm White/ Cool White	≤18	≥ 85	90 lm/W	
		>18	≥ 90		
	Color Rendering Index (CRI) = Ra	No differentiation		High (90-95)	- 20 % (72 lm/W)
Very High (>95)				- 30% (63 lm/W)	

Draft Common Core Criterion Proposal n°1

Proposal for a harmonized Common Core Criterion (CCC for Luminous Efficacy of Double Capped T5-Flourescent Lamps (without Ballast)

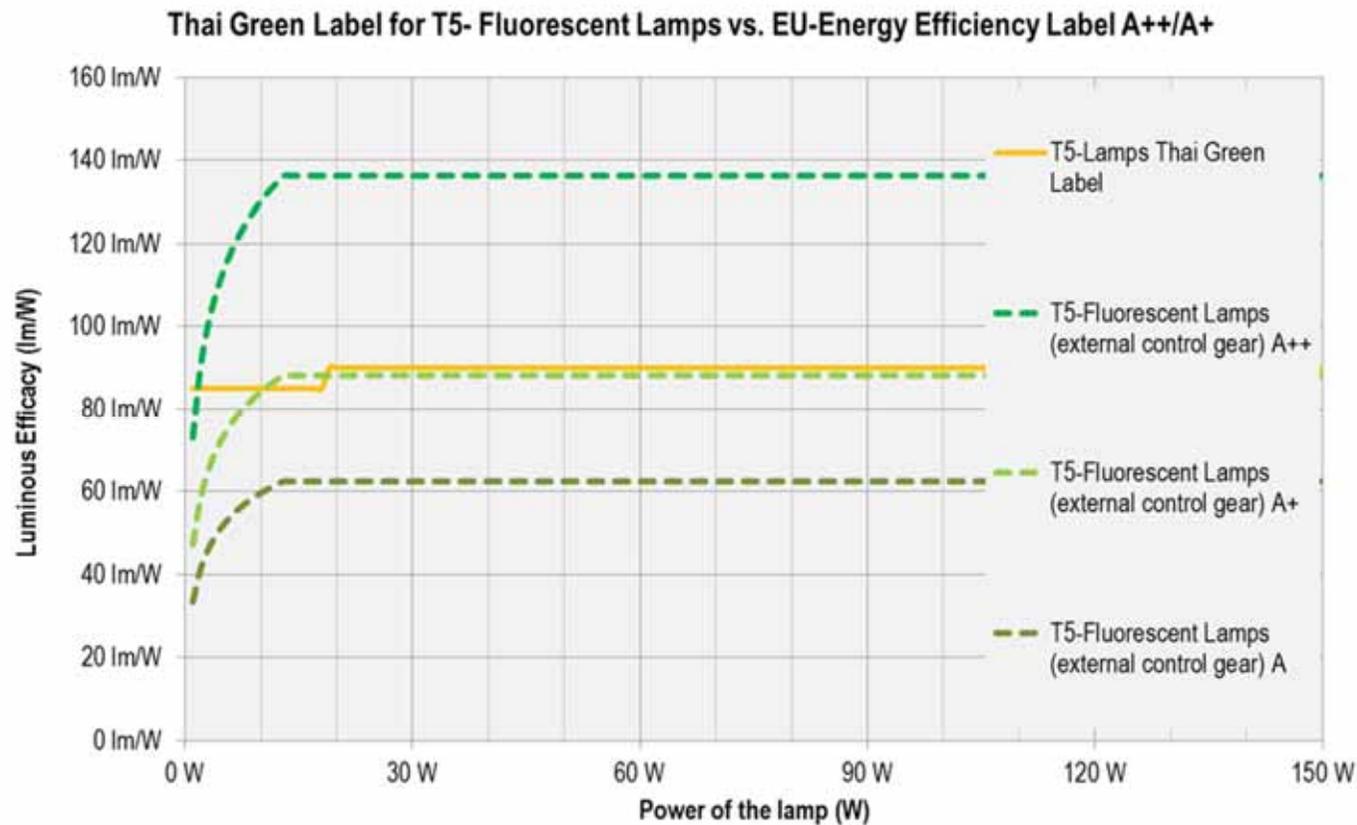


Lamp Type	Common Core Criterion for ASEAN		
Double-Capped Fluorescent Lamp that are T5-Lamps	Type	Power (W)	Efficacy (lm/W)
	Day Light	≤ 18	≥ 85
		>18	≥ 90
	Warm White/ Cool White	≤ 18	≥ 90
		>18	≥ 90
	Color Rendering Index (CRI) = Ra	High (90-95)	≥ 72
Very High (>95)		≥ 63	



Comparative Level of Ambition

The efficiency criteria for T5-lamps of the Thai Green Label correspond to EU Energy Efficiency Class A+.



Source: Schleicher 2013. using a tool by Gasser, S. 2012

EU-Energy Efficiency Classes

Energy efficiency class	Non-directional lamps	Directional lamps
A++ (most efficient)	Class currently empty, apart from some low-pressure sodium lamps used in street lighting. Soon to include best LEDs (including modules)	Class currently empty, soon to include best LEDs (including modules)
A+	Best LED lamps and modules, best linear fluorescent, compact fluorescent and high intensity discharge (HID) lamps	Best LED lamps and modules
A	Average LEDs and modules, average compact fluorescent lamps and less efficient linear fluorescents and less efficient HID	Average LEDs and modules, average to good compact fluorescents and HID
B	Less efficient compact fluorescent lamps and LEDs, best halogen lamps (extra low voltage capsules)	Less efficient compact fluorescent lamps and LEDs, best halogen lamps (extra low voltage capsules)
C	Less efficient conventional extra low-voltage halogen lamps	Less efficient conventional extra low-voltage halogen lamps
D	Best (xenon-filled) mains-voltage halogen lamps Conventional halogen lamps and best incandescent	Best (xenon-filled) mains-voltage halogen lamps Conventional halogen lamps and best incandescent
E (least efficient)	Typical incandescent range	Incandescent lamps and less efficient mains-voltage halogen lamps

Verification Mechanisms for Eco-Labels

1. Self Declaration (not recommended)
2. Specify a standard for the measurement
(also a form of self measurement)
3. Specify a standard, confirmation and a test
from an independent laboratory / test institute
4. Specify a standard, confirmation and test from an
independent laboratory / test institute
certified according to a specific standard
(e.g. ISO 17025)

Draft Common Core Criterion Proposal n°1

Verification Methods



	Green Label Thailand	SIRIM Eco-Label Malaysia								
Report	The applicant shall submit a test report according to the following methods	The bidders/suppliers must provide evidence proving that they meet these specifications.								
Type of FL	<table border="0"> <tr> <td></td> <td>Test method</td> </tr> <tr> <td>Double capped :</td> <td>TIS 236 or IEC 81</td> </tr> <tr> <td>Single capped:</td> <td>TIS 1713 or IEC 901</td> </tr> <tr> <td>Self-ballasted :</td> <td>TIS 2233 or IEC 969</td> </tr> </table> <p>Test condition mentioned in TIS 236, 1713 and 2233 are as the followings;</p> <ul style="list-style-type: none"> • Working temperature: 15 – 50 °C • Use real condition as intended by the manufacturer • Test cycle: the lamp shall be switched off for 15 minutes after every 2 hours 45 minutes running time. • Number of specimen: 20 lamps shall be randomly taken from the same production line • Failure rate: if more than 2 samples could not pass the criteria, the product shall be judged as “failed” 		Test method	Double capped :	TIS 236 or IEC 81	Single capped:	TIS 1713 or IEC 901	Self-ballasted :	TIS 2233 or IEC 969	<p>This covers any document that describes the properties and uses of a substance which includes the identity, chemical and physical properties, health hazard information and precautions for use and safe handling information (e.g. safety data sheet such as MSDS and CSDS, technical data sheet, biodegradation and eco-toxicity test report, 3rd party lab test report, 3rd party verified lab report, etc.).</p>
	Test method									
Double capped :	TIS 236 or IEC 81									
Single capped:	TIS 1713 or IEC 901									
Self-ballasted :	TIS 2233 or IEC 969									

Draft Common Core Criterion Proposal n°1

Verification Method

- For the efficiency of fluorescent lamps, the applicant shall provide **test reports** using
 - reliable, accurate and reproducible measurement procedures,

which take into account the generally recognised state of the art measurement methods.

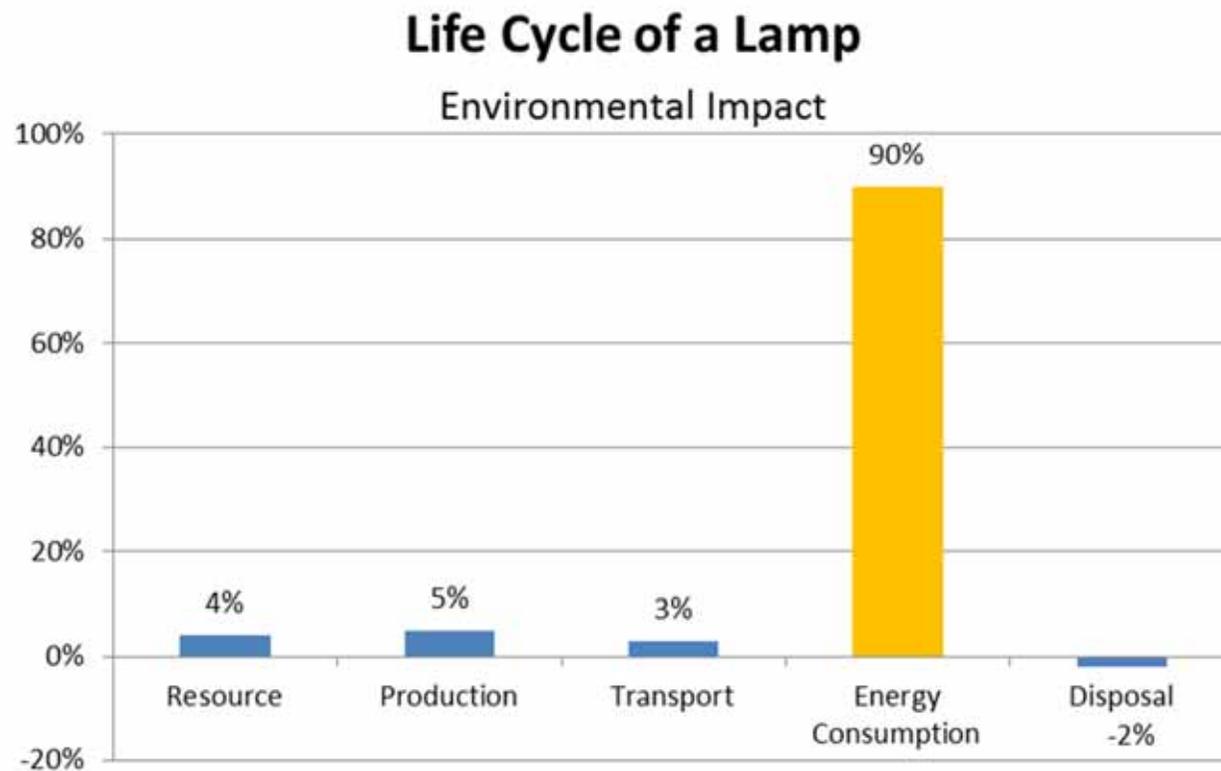
- The test procedures shall be as referred to in **EN 50285**.
- The applicant shall provide a **test report of proof of compliance** measured in an accredited laboratory according to **ISO 17025**.
- The report shall state the energy efficiency of the lamp.

Overview

- 1 Scope and Criteria of the Product Group
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- 3 Draft Common Core Criterion Proposal n°1:
Energy Efficiency
- 4 Draft Common Core Criterion Proposal n°2: Lifetime
(incl. Lumen maintenance, Lamp survival factor)
- 5 Draft Common Core Criterion Proposal n°3

Environmental Impact – Energy consumption

At least 90% of the cumulated energy consumption of lamps is due to their use phase

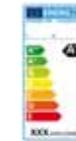


Source: Own Illustration according to data of the EU-Eco-lighting project; Draft Preliminary Study; Task 1 following ELC.

Criteria Comparison on Lamp Lifetime

The second proposed Common Core Criterion refers to **Lamp Lifetime**

Criterion n°2



Criterion	Green Label Thailand	SIRIM Eco-Label Malaysia	Green Choice Philippines	European Eco-Label	European Legislation [Standards]	Blue Angel
Life-time	Tri-phosphor FL: $\geq 15,000$ h halo-phosphor FL: $\geq 8,000$ h CFL: $\geq 6,000$ h		Not considered.	Single-ended: 15,000 hours Double-ended : 20,000 hours	Basic functionality requirements ➤ CFL: 244/2009/EU ➤ LED: 1194/2009/EU ➤ Directional: 1194/2009/EU ➤ Others: 244/2009/EU	Useful life time: $\geq 6,000$ h
Lumen-maintenance (LM)		LM ≥ 92.5 % at 2000 hours		Single-ended: LM 80% at 9000 hours Double-ended : LM 90% at 16 000 hours.		(Number of switching cycles 20,000; Early failure rate: $\leq 2\%$)

Criteria Comparison on Lamp Lifetime

The second proposed Common Core Criterion refers to **Lamp Lifetime**



Criterion	Green Label Thailand	SIRIM Eco-Label Malaysia	Green Choice Philippines	European Eco-Label	European Legislation [Standards]	Blue Angel
Lamp Survival Factor (LSF)		≥ 98 % at 2,000 hours	Not considered.	Ecolabel is under revision	Basic functionality requirements ➤ CFL: 244/2009/EU ➤ LED: 1194/2009/EU ➤ Directional: 1194/2009/EU ➤ Others: 244/2009/EU	Early failure rate: ≤ 2%

Draft Common Core Criterion Proposal n°2

The second proposed harmonized Common Core Criterion refers to **Lamp Lifetime**



Criterion	Green Label Thailand	SIRIM Eco-Label Malaysia	Green Choice Philippines
Common Core Criterion	<p>Life-time: Double-ended: Tri-phosphor FL: $\geq 10,000$; Halo-phosphor FL: $\geq 8,000$ Single-ended: CFL: $\geq 6,000$ h (according to Thailand)</p> <p>Lumen-maintenance (LM): LM ≥ 92.5 % at 2,000 hours (according to Malaysia)</p> <p>Lamp Survival Factor (LSF): ≥ 98 % at 2,000 hours (according to Malaysia)</p>		

Verification Mechanisms for Eco-Labels

1. Self Declaration (not recommended)
2. Specify a standard for the measurement (also a form of self measurement)
3. Specify a standard, confirmation and a test from an independent laboratory / test institute
4. Specify a standard, confirmation and test from an independent laboratory / test institute certified according to a specific standard (e.g. ISO 17025)

Draft Common Core Criterion Proposal n°1

Verification Methods



	Green Label Thailand	SIRIM Eco-Label Malaysia
Report	The applicant shall submit a test report according to the following methods	The bidders/suppliers must provide evidence proving that they meet these specifications.
Type of FL	<p>Test method</p> <p>Double capped : TIS 236 or IEC 81</p> <p>Single capped: TIS 1713 or IEC 901</p> <p>Self-ballasted : TIS 2233 or IEC 969</p> <p>Test condition mentioned in TIS 236, 1713 and 2233 are as the followings;</p> <ul style="list-style-type: none"> • Working temperature: 15 – 50 °C • Use real condition as intended by the manufacturer • Test cycle: the lamp shall be switched off for 15 minutes after every 2 hours 45 minutes running time. • Number of specimen: 20 lamps shall be randomly taken from the same production line • Failure rate: if more than 2 samples could not pass the criteria, the product shall be judged as “failed” 	<p>This covers any document that describes the properties and uses of a substance which includes the identity, chemical and physical properties, health hazard information and precautions for use and safe handling information (e.g. safety data sheet such as MSDS and CSDS, technical data sheet, biodegradation and eco-toxicity test report, 3rd party lab test report, 3rd party verified lab report, etc.).</p>

Draft Common Core Criterion Proposal n°2

Verification Method

- For the lifetime of fluorescent lamps, the applicant shall provide test reports using
 - reliable,
 - accurate and
 - reproducible measurement procedures,

which take into account the generally recognised state of the art measurement methods.

- The test procedures shall be as referred to in EN 50285.
- The applicant shall provide a test report of proof of compliance measured in an accredited laboratory according to ISO 17025
- The report shall state the lifetime, lumen maintenance and the lamps survival factor of the lamp.

Overview

- 1** Scope and Criteria of the Product Group
- 2** Energy consumption & climate change
- 3** Draft Common Core Criterion Proposal n°1: Energy Efficiency
- 4** Draft Common Core Criterion Proposal n°2: Lifetime (incl. Lumen maintenance, Lamp survival factor)
- 5** Draft Common Core Criterion Proposal n°3: Mercury

Eco-Label Criteria for Fluorescent Lamps in ASEAN - Mercury



Criterion	Green Label Thailand	Green Choice Philippines	SIRIM Eco-Label Malaysia	European Eco-Label	European Legislation [Standards & Label]	Blue Angel
Hazardous materials: Mercury	CFL: Hg < 5 mg Double-capped: FL: Hg < 8 mg	CFL: Hg < 5 mg Double-capped: FL: Hg < 10 mg (Haloph.); Hg < 5 mg normal Tri-Ph.; Hg < 8 mg long life Triphosphor	CFL: 5 mg Single-capped: 5 mg Double-capped: Hg < 10 mg (Haloph.); Hg < 5 mg normal Tri-Ph.; Hg < 8 mg long life Triphosphor	Mercury in Single ended FL: < 1.5 mg; Double ended FL: < 3.0 mg	RoHS-Directive 2011/65/EU <ul style="list-style-type: none"> > 2.5 mg for CFL > 3.5 and 5 mg Linear FL 	HG ≤ 0,6 + 0,03×√Φ + 0,00008×LD

Common Core Criterion No. 3:

Draft Common Core Criterion Proposal n°3

Verification Methods



Green Label Thailand	SIRIM Eco-Label Malaysia	Green Choice Philippines
<ul style="list-style-type: none"> Manufacturer must submit the test of the amount of mercury in lamps by a method of atomic absorption spectroscopy following Appendix of 95/533 /EC or IEC 62554 Sample preparation for measurement of mercury level in fluorescent lamps, the test result must have been signed by the authorized person on behalf of the anufacturer. 	<ul style="list-style-type: none"> The bidders/suppliers must provide evidence proving that they meet these specifications. This covers any document that describes the properties and uses of a substance which includes the identity, chemical and physical properties (e.g. safety data sheet such as MSDS and CSDS, technical data sheet, biodegradation and eco-toxicity test report, 3rd party lab test report, 3rd party verified lab report, etc.). 	<p>The applicant shall submit a certification that the product has passed the maximum limit for mercury content based on acceptable and internationally recognized testing procedures for mercury.</p>

Draft Common Core Criterion Proposal n°3

Verification Method

- For the mercury content of fluorescent lamps the applicant shall provide test reports using
 - reliable,
 - accurate and
 - reproducible measurement procedures.
- Test report according to IEC 62554 for a sample preparation, IEC 62321 for measurement.
- The procedure takes into account the generally recognized state of the art measurement method.

Thank you for your attention!

Do you have any questions?



Contact

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**Regional Workshop on Sustainable Public Procurement
and Harmonization of Eco-Labeling**

The Development of the Common Criteria in China

Zhou Caihua

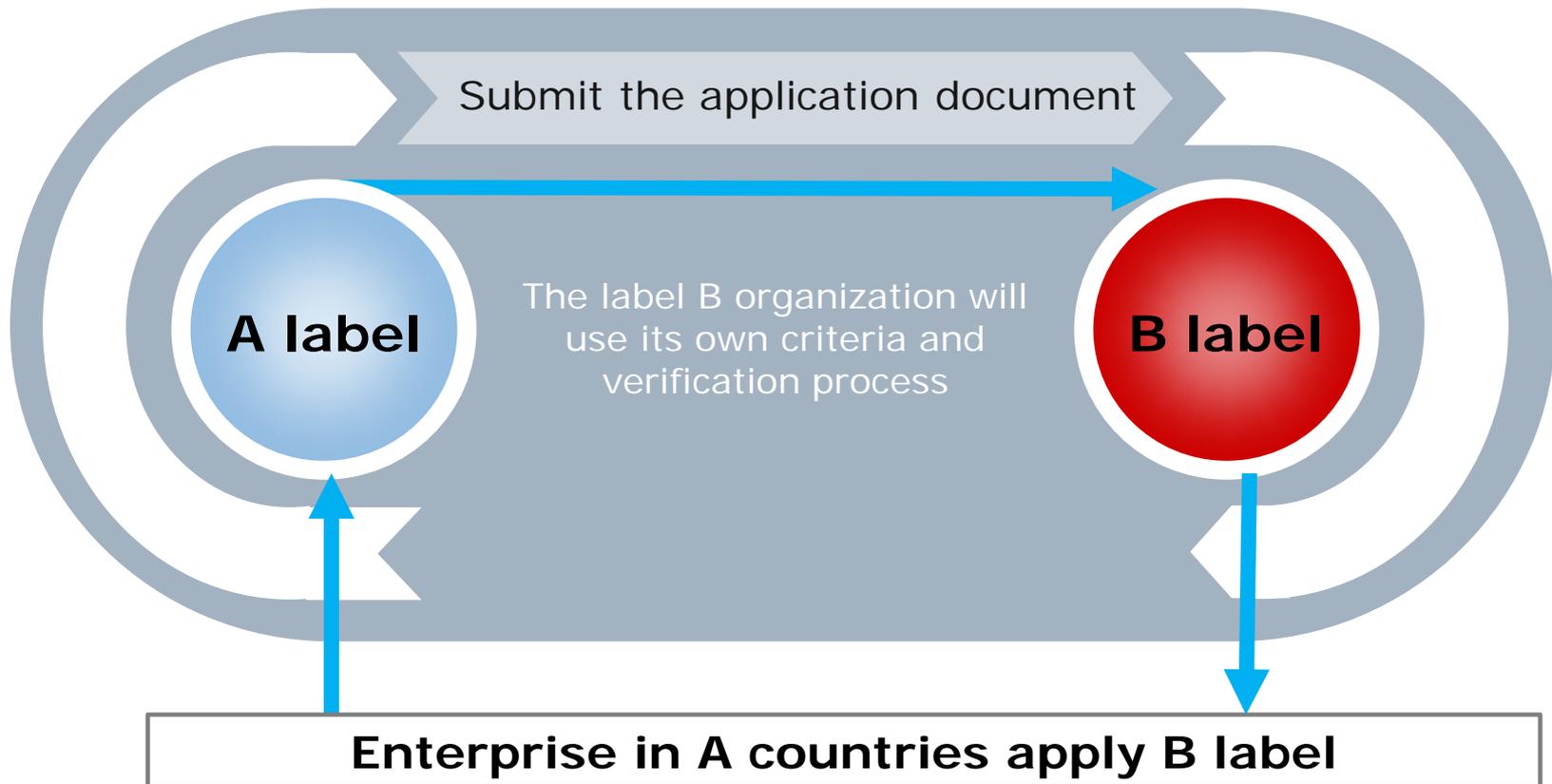
China Environmental United Centre, MEP (CEC)

Beijing ·2014-05-22

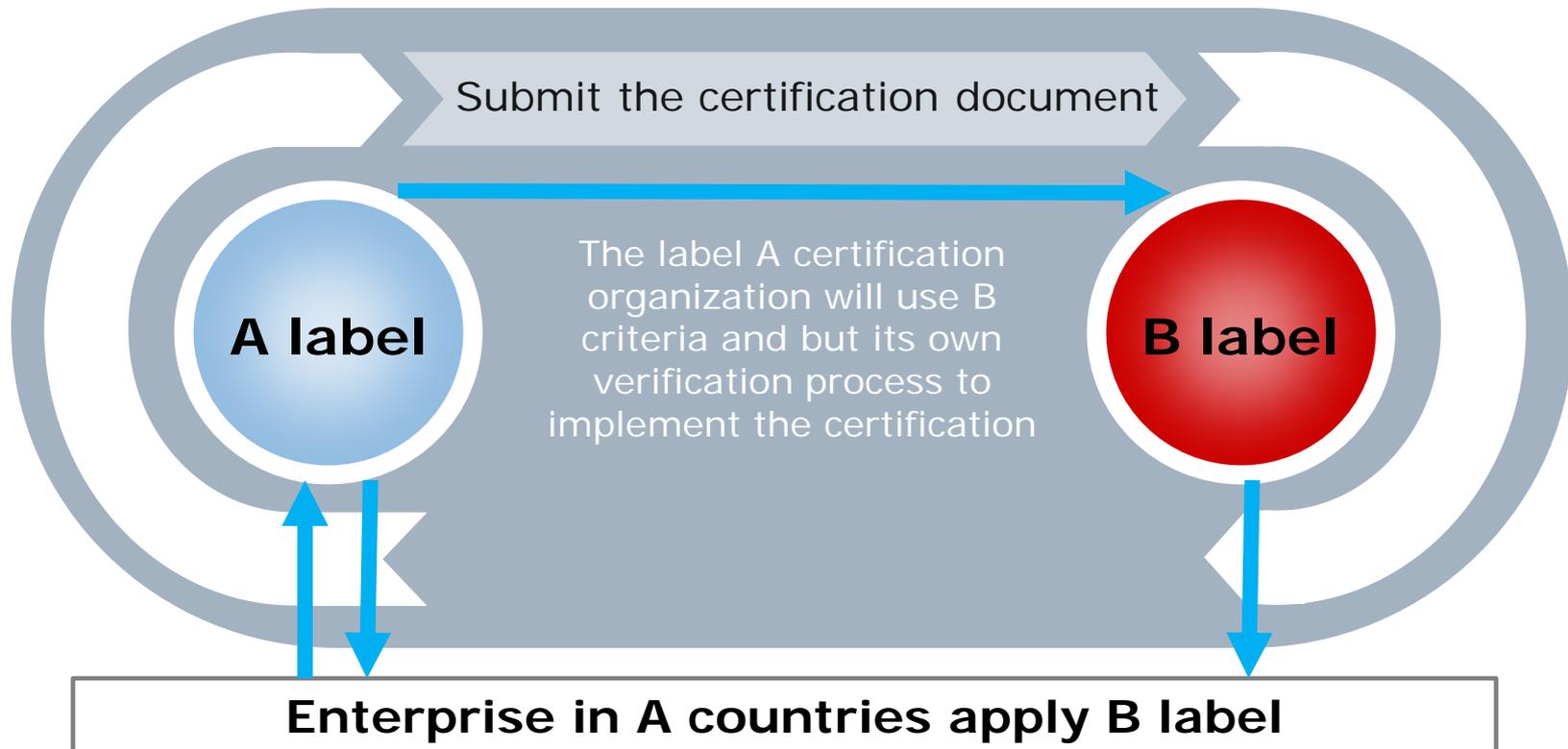
Harmonization of Eco-Labeling



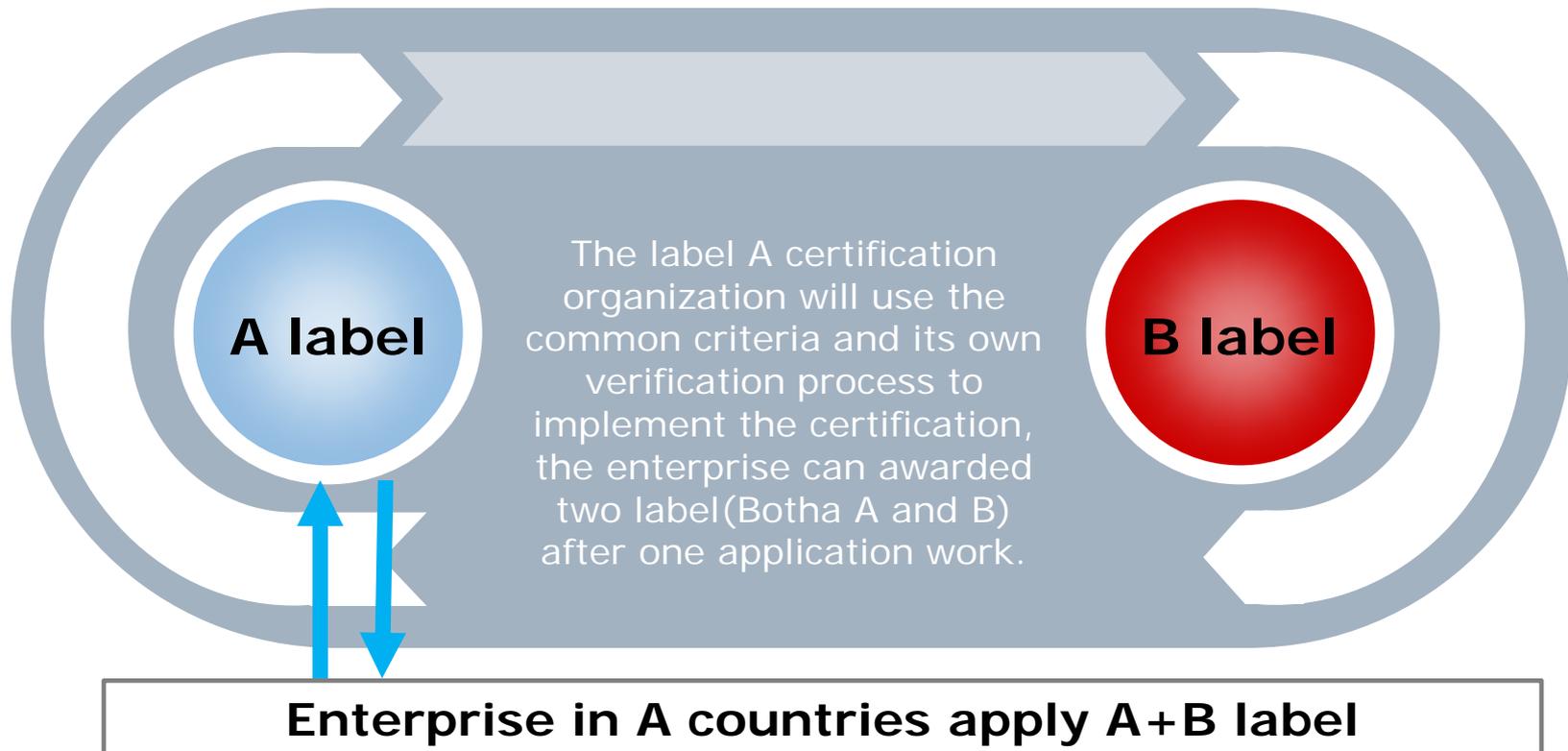
Level 1: Mutual Agency



Level 2: Mutual Recognition

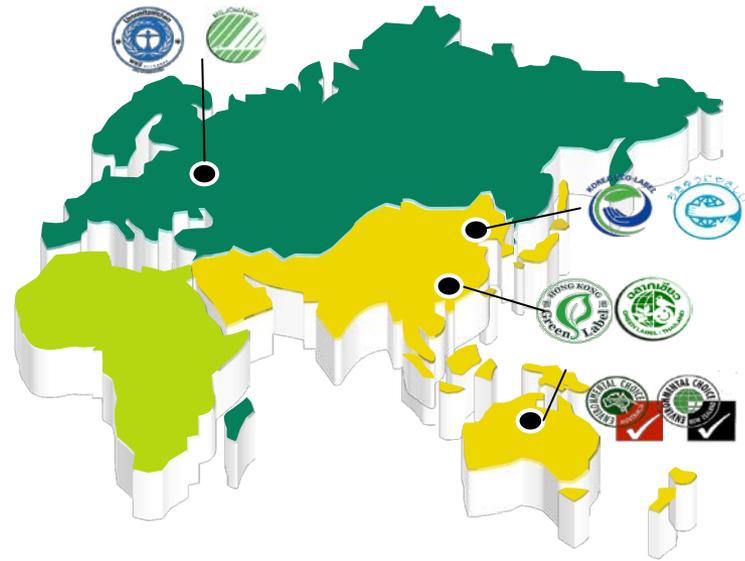


Level 3: Common Criteria



China experience

China Environmental Labeling has already signed the cooperation and mutual recognition agreement with Germany, Japan, Korea, Australia and New Zealand, and lays the groundwork for future cooperation between China and these countries on environmental labeling.





China-Germany Common Criteria



Sign agreement for the common criteria

- In 2008, sign the Toner Cartridge common criteria;
- In 2013, the TV and paper shredder common criteria are formulated;

China-Japan-Korea Common Criteria



Publish the common criteria for computer

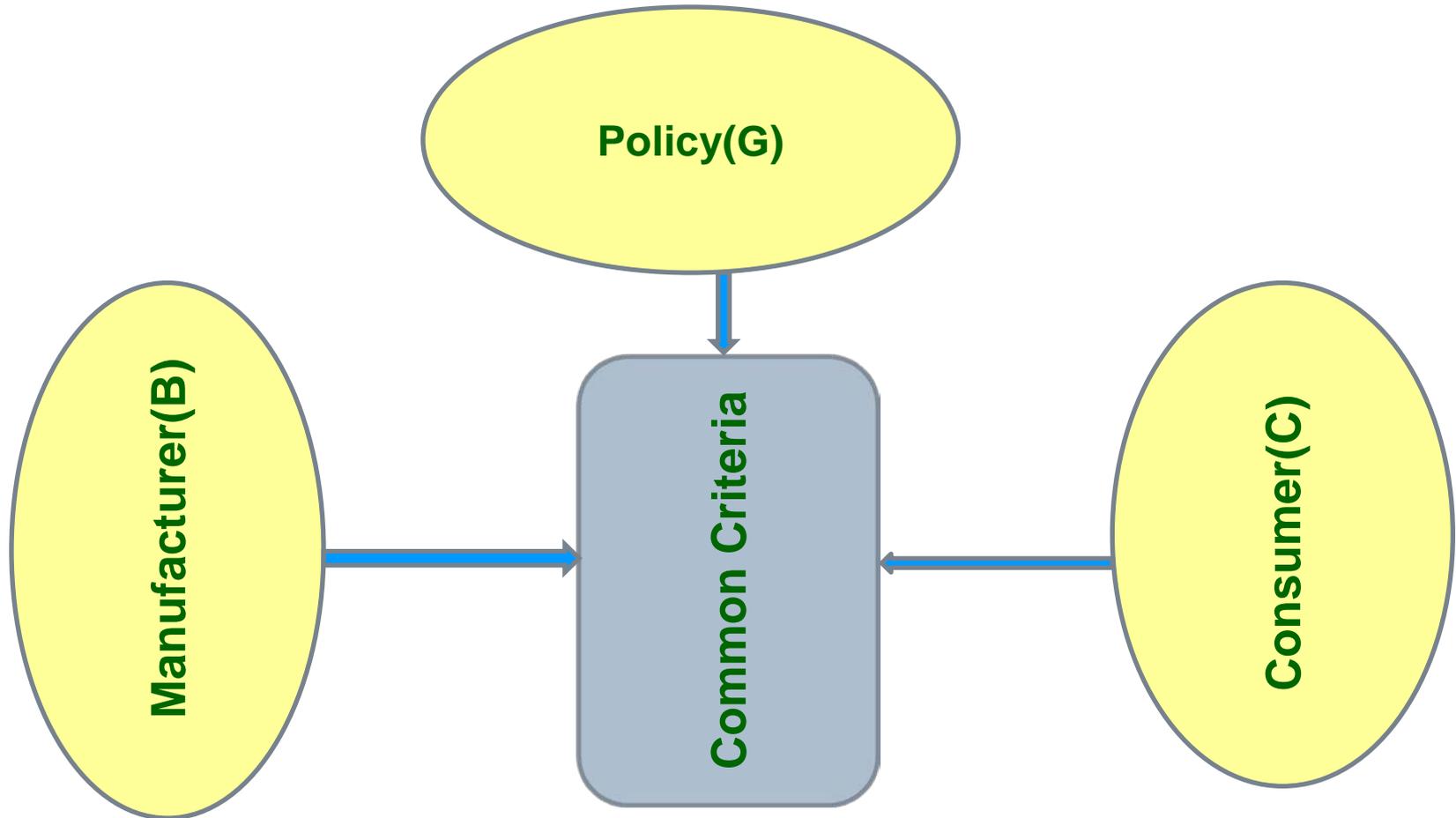
- In 2009, sign the computer common criteria;
- In 2011, the print based MFD and copy based MFD common criteria are issued;
- In 2013, the DVD computer common criteria is under discussion;



Common Core Criteria

- CEC is working with New Zealand Ecolabelling Trust to develop paper common core criteria.

Why Harmonization





Key Benefits

- Facilitate the export trade develop; Reduce the time and money cost of export enterprises; Minimize the difficulty of obtaining the foreign Eco-label;
- Make the domestic eco-label criteria acting on international convention, improve the advancement of the criteria;
- Lead the enterprise to upgrade and reform to produce more environment friendly products;



Principles

Selection on Product for Common Criteria

- Both the countries have the Eco-labelling criteria revise plan;
- Base on the import/export market data



Process of Common Criteria

selection of common criteria

The selection of the common criteria will be confirmed by all stakeholders



The formulation of common criteria

The common criteria will be formulated by one county and ask for the comments from the other stakeholder



Issued by respective Counties

The common criteria need to be issued by respective counties.



Sign the common criteria

All the stakeholders sign the common criteria



Challenges

- The advancement of the common criteria is not enough;
- The formulation period of the common criteria is too long;

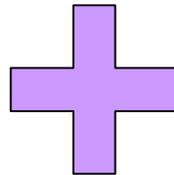


China Low-carbon product certification

- **China Environmental Labelling Low-carbon Product Certification has been launched since the year of 2010**
 - **The main point is to add the related requirement of carbon emissions of product to China Environmental Labelling Standards**



China Environmental Labelling Standards



Requirement on
product's CO₂
emission during its
primary part of life
cycle



China low-carbon product certification

- Released a new Label for low-carbon product certification to the public
- The label conveys a meaning to the public that choosing low-carbon products can protect the environment which human lives.





China low-carbon products certification

- In September 27, 2010, MEP of China officially released the revision plan for first 4 criteria for low-carbon products certification

环境保护部公告

公告 2010年 第70号

关于发布《环境标志产品技术要求 家用制冷器具》等4项国家环境保护标准修改方案的公告

为贯彻《中华人民共和国环境保护法》，配合《中国应对气候变化国家方案》的实施，保护环境，我部决定对《环境标志产品技术要求 家用制冷器具》（HJ/T 236-2006）、《环境标志产品技术要求 家用电动洗衣机》（HJ/T 308-2006）、《环境标志产品技术要求 数字式多功能复印设备》（HJ/T 424-2008）、《环境标志产品技术要求 数字式一体化速印机》（HJ 472-2009）等4项国家环境保护标准进行修改。现公布修改方案，自发布之日起实施。

特此公告。

- 附件：1. [《环境标志产品技术要求 家用制冷器具》（HJ/T 236-2006）修改方案](#)
2. [《环境标志产品技术要求 家用电动洗衣机》（HJ/T 308-2006）修改方案](#)
3. [《环境标志产品技术要求 数字式多功能复印设备》（HJ/T 424-2008）修改方案](#)
4. [《环境标志产品技术要求 数字式一体化速印机》（HJ 472-2009）修改方案](#)

二〇一〇年九月二十七日

主题词：环保 标准 修改 公告

Please visit this page to find more information:

http://www.mep.gov.cn/gkml/hbb/bgg/201009/t20100930_195245.htm

China low-carbon product certification



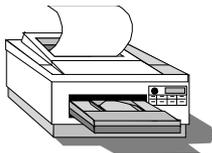
Cement



Office Equipment



Television



printer



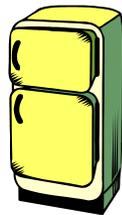
computer



furniture



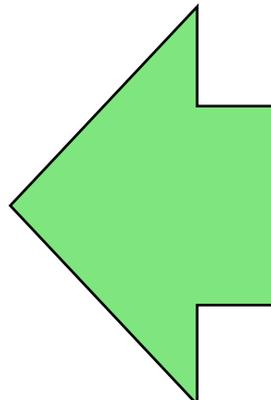
lighting



Refrigerator



Scanner

A large green arrow pointing from the text box towards the product images.

Till now, It have 13 low carbon product standards including cement, lighting, refrigerator, TV, washing machine, copy machine, duplicator, shredder, scanner, projector, DVD, Printers, fax machines, multi-function equipment , Industrial and commercial refrigeration equipment. It have 34 company of 648 type products awarded China Environmental Low Carbon certificate.

Thank you !



Workshop on the development of climate relevant common core criteria (CCC) for Printers in ASEAN

Technical Background and Proposal for Common Core Criteria (CCC)

Tobias Schleicher
Bangkok, May 2014



Overview

- 1** Comparison of the Scope of the Product Group
- 2** Environmental impact – Energy consumption & climate change
- 3** Draft Common Core Criterion Proposal n°1
- 4** Draft Common Core Criterion Proposal n°2
- 5** Draft Common Core Criterion Proposal n°3

Scope of the Product Group

Printers are part of office imaging equipment



- Other imaging equipment devices:

Copiers

Multifunctional Devices (MFD)



- Within the Blue Angel imaging equipment is defined as office equipment which
- at least offer **printing or copying function**
 - capability to produce monochrome (black-and-white) or colour **printouts**
 - work as **electro photographic devices** or as **ink jet devices**
 - **noise emissions** do not exceed 75 dB(A) during monochrome printing

Scope: Printers as part of Imaging Equipment



	Green Label Thailand TGL –37-04	Green Choice Philippines	SIRIM Eco-Label Malaysia	Energy Star 2.0 (July 2013)	Blue Angel RAL UZ – 171 (Version 2013)
Scope	<p>The criteria for printers covers products that creates pictures on printing materials, which receives information from a single user or networked computer or other input equipment (such as digital camera).</p> <p>The printer is dependent on electrical energy sources.</p> <p>The criteria also include multifunction printer with printing function as the main function.</p>	<p>The criteria are applicable to Dot Matrix, Inkjet Printers and Laser Printers</p> <p>MFD</p>	-	<p>Imaging Equipment (Printer, Scanner, Copier, Facsimile, Multifunctional Device (MFD), Digital Duplicator, Mailing Machine)</p> <p><u>Printer</u>: A product whose primary function is to generate paper output from electronic input. A printer is capable of receiving information from single-user or networked computers, or other input devices (e.g., digital cameras). This definition is intended to cover products that are marketed as printers, and printers that can be field-upgraded to meet the definition of an MFD.</p>	<p>Imaging Equipment (Printers, Copiers, multifunctional devices)</p> <p><i>Office devices (usually referred to as printers, copiers and/or multifunction devices) which</i></p> <ul style="list-style-type: none"> - at least offer printing or copying as their primary function - are capable of producing monochrome (black-and-white) or colour paper printouts, - work as electrophotographic devices (LED or laser technology) by using toner - whose noise emissions (guaranteed sound power level) do not exceed 75 dB(A) during monochrome printing.
Proposed Scope for CCC	<p>Scope according to Energy Star Version 2.0;</p> <p>→This means that criteria shall hold for imaging equipment: Printers, Scanners, Copiers and MFD</p>				

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Environmental impact – Energy consumption

- 90% of the product's total energy consumption in the use phase is related to paper
- If paper is excluded, the overall environmental impact correlates directly with the product weight (material mass) in the manufacturing phase and with energy consumption in the use phase

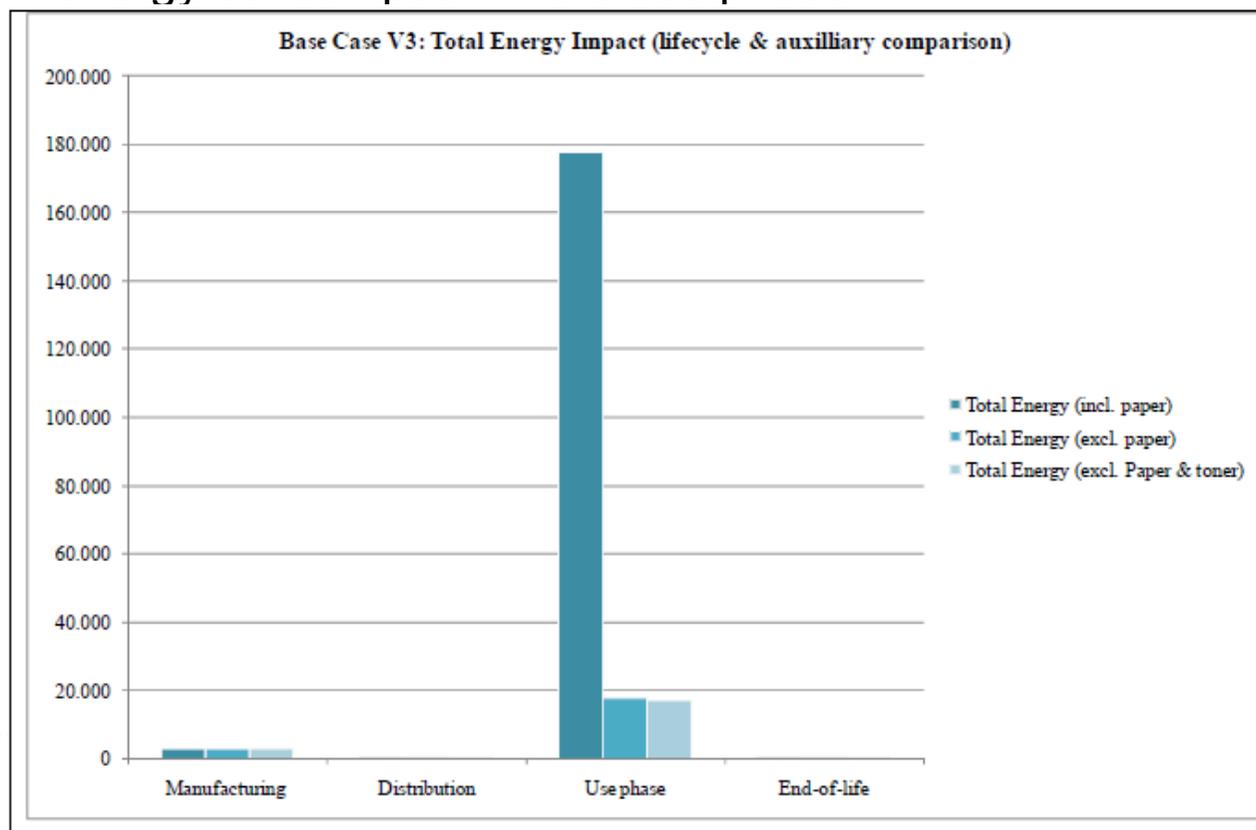


Figure: Total energy impact (MJ)
- Laser printer/ SFD

Environmental impact – Climate change

- More than 90% of the products total GHG emissions in the use phase is related to paper

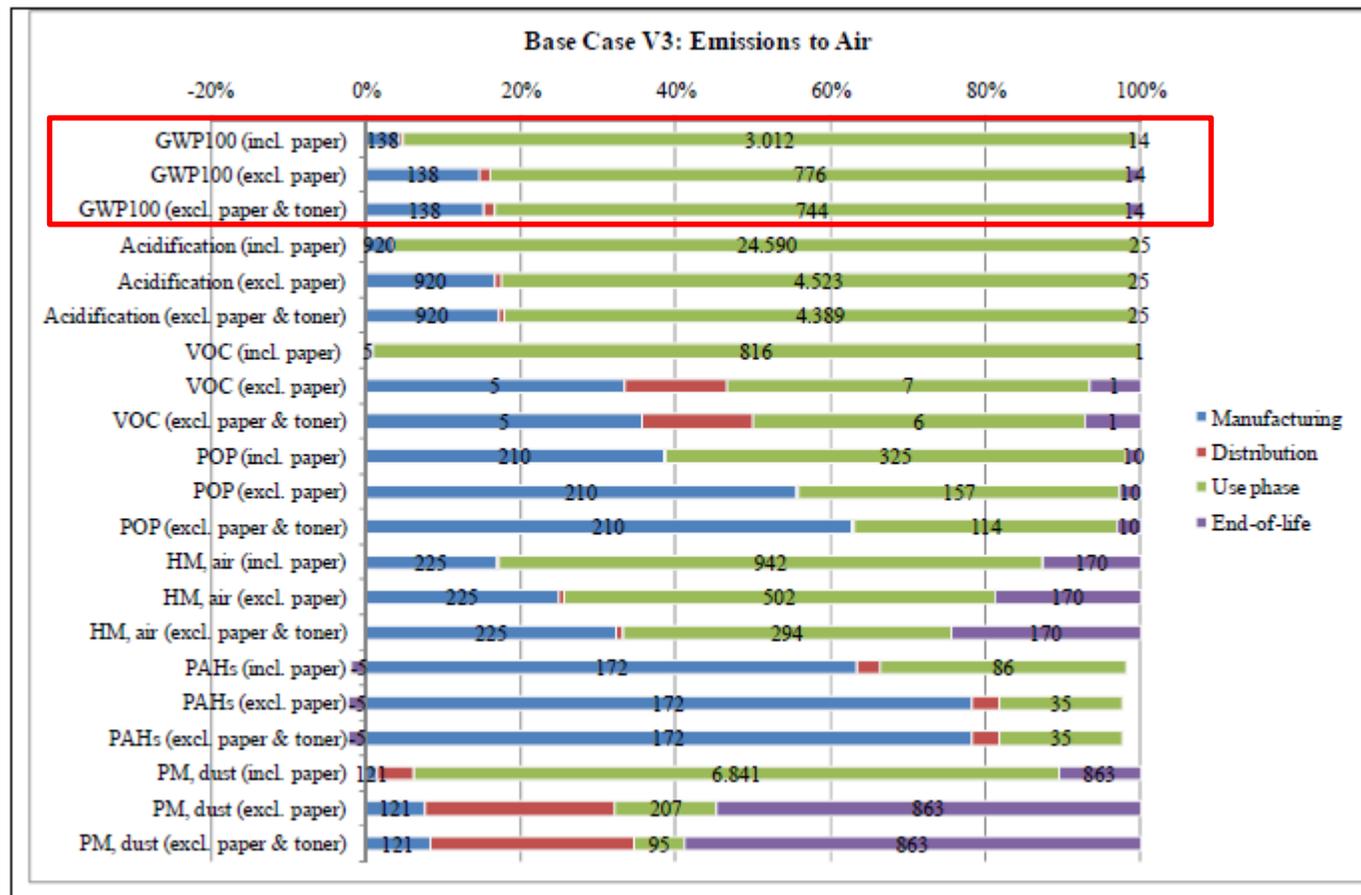
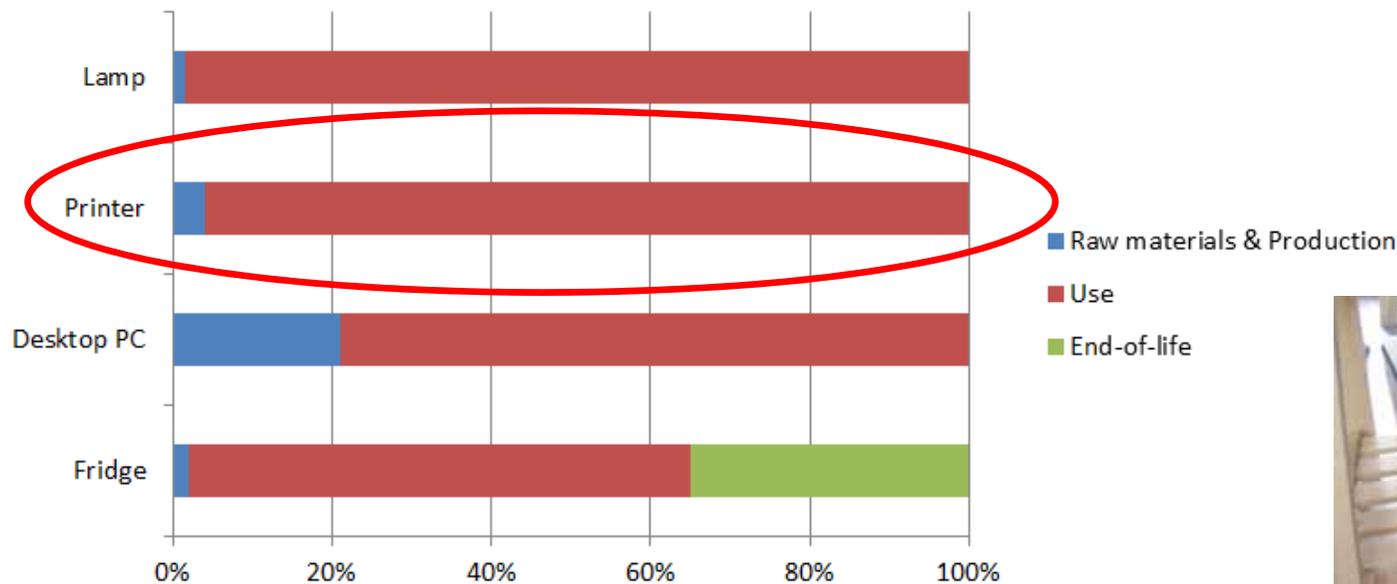


Figure: Emissions to air
- Laser printer/ SFD

Environmental impact – climate change

GHG Emissions over the product life-cycle



- ⇒ High energy-efficiency in use-phase
- ⇒ Technical options to reduce (virgin) paper-use (double-sided printing + ability to use recycling paper)

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Energy Efficiency in Eco-Label Criteria for Printers in ASEAN and beyond



	Green Label Thailand TGL –37-04	Green Choice Philippines	SIRIM Eco-Label Malaysia	Energy efficiency label - Indonesia	Energy Star 2.0 (July 2013)	Blue Angel RAL UZ – 171 (Version 2013)
Criteria	Energy efficiency criterion refers to the Energy Star	Energy efficiency criterion refers to the Energy Star	tba. →	tba. →	TEC and OM Requirements	Different methods

Harmonization is on a good way already

Potential for Malaysia and Indonesia to follow

Energy Efficiency Requirements in Energy Star 2.0

Measuring energy consumption of Printers

Two methods are used by the Energy Star depending on the media format and the marking technology

- Typical Electricity Consumption (TEC): Standard Printers
- Operational Mode (OM): Large and Small Printers

Equipment Type	Media Format	Marking Technology	ENERGY STAR Evaluation Method
Printer	Large	IJ, Impact	OM
		DT, DS, EP, IJ, SI, TT	OM
	Standard	High Performance IJ, DT, DS, EP, SI, TT	TEC
		IJ, Impact	OM
	Large or Small	DT, DS, EP, Impact, IJ, SI, TT	OM
Small	High Performance IJ	TEC	
Scanner	All	N/A	OM

Technical Background

Measuring energy consumption of laser printers with TEC according to Energy Star 2.0

- TEC is used by the Energy Star and stands for Typical Electricity Consumption and is measured in terms of kWh per

Equation 1: TEC Calculation for Printers, Fax Machines, Digital Duplicators with Print Capability, and MFDs with Print Capability

$$TEC = 5 \times \left[E_{JOB_DAILY} + (2 \times E_{FINAL}) + [24 - (N_{JOBS} \times 0.25) - (2 \times t_{FINAL})] \times \frac{E_{SLEEP}}{t_{SLEEP}} \right] + 48 \times \frac{E_{SLEEP}}{t_{SLEEP}},$$

Where:

- TEC is the typical weekly energy consumption for printers, fax machines, digital duplicators with print capability, and MFDs with print capability, expressed in kilowatt-hours (kWh) and rounded to the nearest 0.1 kWh;
- E_{JOB_DAILY} is the daily job energy, as calculated per Equation 3, in kWh;
- E_{FINAL} is the final energy, as measured in the test procedure in kWh;
- N_{JOBS} is the number of jobs per day, as calculated in the test procedure,
- t_{FINAL} is the final time to Sleep, as measured in the test procedure, in hours;
- E_{SLEEP} is the Sleep energy, as measured in the test procedure in kWh; and
- t_{SLEEP} is the Sleep time, as measured in the test procedure, in hours.

Energy Efficiency Requirements in Energy Star 2.0

TEC criteria in Energy Star Version 2.0

- Laserprinters are covered by Non-MFDs
- Daily Job Energy Calculation and adoption for Functional Adders according to equations 5 and 6 in Energy Start Version 2.0



Table 5: TEC Requirement Before A3 Allowance (If Applicable)

Color Capability	Monochrome Product Speed, s , as Calculated in the Test Method (ipm)	TEC _{REQ} (kWh/week, to the nearest 0.1 kWh/week for reporting)
Monochrome Non-MFD	$s \leq 5$	0.3
	$5 < s \leq 20$	$(s \times 0.04) + 0.1$
	$20 < s \leq 30$	$(s \times 0.06) - 0.3$
	$30 < s \leq 40$	$(s \times 0.11) - 1.8$
	$40 < s \leq 65$	$(s \times 0.16) - 3.8$
	$65 < s \leq 90$	$(s \times 0.2) - 6.4$
	$s > 90$	$(s \times 0.55) - 37.9$
Monochrome MFD	$s \leq 5$	0.4
	$5 < s \leq 30$	$(s \times 0.07) + 0.05$
	$30 < s \leq 50$	$(s \times 0.11) - 1.15$
	$50 < s \leq 80$	$(s \times 0.25) - 8.15$
	$s > 80$	$(s \times 0.6) - 36.15$
Color Non-MFD	$s \leq 10$	1.3
	$10 < s \leq 15$	$(s \times 0.06) + 0.7$
	$15 < s \leq 30$	$(s \times 0.15) - 0.65$
	$30 < s \leq 75$	$(s \times 0.2) - 2.15$
	$s > 75$	$(s \times 0.7) - 39.65$
Color MFD	$s \leq 10$	1.5
	$10 < s \leq 15$	$(s \times 0.1) + 0.5$
	$15 < s \leq 30$	$(s \times 0.13) + 0.05$
	$30 < s \leq 70$	$(s \times 0.2) - 2.05$
	$70 < s \leq 80$	$(s \times 0.7) - 37.05$
	$s > 80$	$(s \times 0.75) - 41.05$

Technical Background

Other requirements for standard printers (TEC) in Energy Star 2.0

- External power supply (EPS)
- Typical Energy Consumption of Digital Front End (DFE)
- Automatic Duplex Requirement

Energy Efficiency Requirements in Energy Star 2.0

Requirements for Default Delay Time to Sleep according to Energy Star 2.0



Table 6: Required Default Delay Time to Sleep for OM Products

Product Type	Media Format	Monochrome Product Speed, s , as Calculated in the Test Method (ipm or mppm)	Required Default Delay Time to Sleep, t_{SLEEP_REQ} (minutes)*
Copier	Large	$s \leq 30$	30
		$s > 30$	60
Fax Machine	Small or Standard	All	5
MFD	Small or Standard	$s \leq 10$	15
		$10 < s \leq 20$	30
		$s > 20$	60
	Large	$s \leq 30$	30
		$s > 30$	60
Printer	Small or Standard	$s \leq 10$	5
		$10 < s \leq 20$	15
		$20 < s \leq 30$	30
		$s > 30$	60
	Large	$s \leq 30$	30
		$s > 30$	60
Scanner	All	All	15
Mailing Machine	All	$s \leq 50$	20
		$50 < s \leq 100$	30
		$100 < s \leq 150$	40
		$s > 150$	60

* Measured Default Delay Time to Sleep (t_{SLEEP}) shall be less than or equal to the Required Default Delay Time to Sleep (t_{SLEEP_REQ}), as specified in Section 3.4.3.

Technical Background

Measuring energy consumption of laser printers for OM products according to Energy Star 2.0

- Calculation of Maximum Sleep Mode Power Consumption Requirement for OM products

Equation 7: Calculation of Maximum Sleep Mode Power Consumption Requirement for OM products

$$P_{SLEEP_MAX} = P_{MAX_BASE} + \sum_1^n Adder_{INTERFACE} + \sum_1^m Adder_{OTHER}$$

- Sleep Mode Power Allowance for Base Marking Engine and Functional Adders according to tables 7 and 8 in Energy Star 2.0.

Technical Background

Requirements for large and small laser printers (OM) in Energy Star 2.0

- Multiple Sleep Modes
- Requirements for Digital Front End
- Sleep Mode power consumption
- Standby Requirements (max. 0.5 W)
- Default Delay Times
- External Power Supply

Verification Mechanisms for Eco-Labels

1. Self Declaration (not recommended)
2. Specify a standard for the measurement (also a form of self declaration)
3. Specify a standard, confirmation and a test from an independent laboratory / test institute
4. Specify a standard, confirmation and test from an independent laboratory / test institute certified according to a specific standard (e.g. ISO 17025)

Draft Criteria Proposal for Imaging Equipment

Energy efficiency requirements according to Energy Star 2.0

- Except for double side printing requirement

Verification: According to Energy Star Imaging Equipment Test Method, Revision June 2013

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Double Side Printing in Eco-Label Criteria for Printers in ASEAN and beyond



	Green Label Thailand TGL -37-04	Green Choice Philippines	SIRIM Eco-Label Malaysia	Energy efficiency label Indonesia	Energy Star 2.0 (July 2013)	Blue Angel RAL UZ – 171 (Version 2013)
Criteria	Depend-ing on ppm	No criteria	tba.		Dependin-g on ppm	Depending on ppm
Common Core Criterion	<p>Criteria for Imaging Equipment according to the Blue Angel (see next slides)</p> <p>The duplex printing and or copying function shall be set as default in the original software provided by the manufacturer. For the devices receiving a printing order from a computer, a message should be formulated by the manufacturer and displayed on the computer screen of the user when the default setting is changed into one-side printing. The content of this message should highlight the fact that one-side printing mode will contribute to significantly higher environmental impacts than double-side printing.</p>					

Comparison of Double Side Printing Requirements



Monochrome

Product speed (Pages Per Minute; PPM)	Double side printing
$0 < \text{PPM} \leq 24$	Not applicable
$25 \leq \text{PPM} \leq 44$	Standard function at purchasing, or optional function
$\text{PPM} \geq 45$	Standard function at purchasing

Color

Product speed (Pages Per Minute; PPM)	Double side printing
$\text{PPM} \leq 19$	Not applicable
$20 \leq \text{PPM} \leq 39$	Standard function at purchasing, or optional function
$\text{PPM} \geq 40$	Standard function at purchasing

Table 3: Automatic Duplexing Requirements for all Color TEC Copiers, MFDs, and Printers

Monochrome Product Speed, s , as Calculated in the Test Method (ipm)	Automatic Duplexing Requirement
$s \leq 19$	None
$19 < s < 35$	Integral to the base product or optional accessory
$s \geq 35$	Integral to the base product



Table 4: Automatic Duplexing Requirements for all Monochrome TEC Copiers, MFDs, and Printers

Monochrome Product Speed, s , as Calculated in the Test Method (ipm)	Automatic Duplexing Requirement
$s \leq 24$	None
$24 < s < 37$	Integral to the base product or optional accessory
$s \geq 37$	Integral to the base product

Comparison of Double Side Printing Requirements



Page Throughput S_M ^[22] [DIN A4 Pages Per Minute]		Minimum Requirements for Duplex Printing and Copying
Colour Printing Devices	Monochrome Printing Devices	
≤19	≤24	The devices must offer a manual (copiers) or an additional software-supported (printers, multifunction devices) option for duplex printing and copying.
>19–39	>24–44	The devices must be equipped with a component for duplex printing and copying by default or such a component must be offered as supplementary equipment.
>39	>44	The devices must be equipped with a component for duplex printing and copying by default.

➔ Blue Angel has the most stringent requirements as compared to Energy Star 2.0

Verification Methods for Double Side Printing



Verification Procedure:

Applicant must submit a letter of declaration for compliance confirming that electro photographic printer must be capable of printing on both side of the paper according to criteria 5.8.1. This document must be signed by managing committee or authorized personnel of the manufacturer or authorized personnel of the applicant's company and stamped with the company seal.

Verification: The manufacturer declares compliance with these requirements and discloses it on the product information sheet.

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Eco-Label Criteria for use of recycling paper in printers in ASEAN and beyond



	Green Label Thailand	Green Choice Philippines	SIRIM Eco-Label Malaysia	Blue Angel
Criterion: Use of recycled paper	All type of printers must be capable of printing on recycled paper with recycled content of more than 40%	The equipment shall be capable of using recycled paper made from 100% waste paper and shall not void the warranty of the equipment.	No Document for Printers: <i>Existing Product Group: Recycled Paper</i>	Use of 100 % recycling paper
Draft CCC	Capability of using 100 % recycling paper.			

Alternative possibility for use of recycling paper

Possibility to use recycling paper according to national eco-label criteria

- Malaysia according to Product Group Recycled Paper
 - Philippines according to Product Group Printing and Writing Paper
 - Thailand according to existing criteria and in the future to draft criteria product group “Paper” (Workshop July 2013) within the SCP4LCE-Project
- ✓ *Verification: The manufacturer declares compliance with these requirements and discloses it on the product information sheet.*

Thank you for your attention!

Do you have any questions?



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