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Asia Lighting Council: Developing a New Quality System for CFLs in Asia

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Presentation Overview

- Background on ECO-Asia CDCP's activities related to energy efficient lighting in Asia
- 2007 report on CFL market and follow-up actions
- The Manila Compact and the Asia Lighting Council (Asia CFL Quality Charter)
- A regional set of performance tiers and product mark
- Potential Impacts
- Next steps



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Background

ECO-Asia CDCP's efforts in energy efficient lighting:

- Quantifying Regional CFL Quality
- Regional Analysis of CFL Standards
- Harmonization of CFL Standards



Regional Analysis of CFL Programs and Markets: Overview

- Covered China, India, Indonesia, Philippines, Thailand, and Vietnam (96% of GDP of developing Asia)
- In 2007, analysis covered:
 - ◆ CFL markets
 - ◆ Product quality
 - ◆ Pricing trends
 - ◆ Regulations governing the sales of CFLs
 - ◆ Programs to promote CFLs





Review of ECO-Asia CDCP Efforts

Approximated Market Size

Country	CFL Production and Sales: Annual Volume (in million units)					
	2001	2002	2003	2004	2005	2006
China	750	800	1,040	1,380	1,760	2,400
India	NA	34	40	46	70	100
Indonesia	10	40	50	60	70	90
Philippines	4.5	NA	NA	18	25	NA
Thailand	NA	NA	NA	NA	10	15
Vietnam	NA	NA	5.4	7	8.4	11

* Preliminary estimates

Source: Australian Green House Office Reports 2006, and ECO-Asia 2007



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Regional Analysis of CFL Programs and Markets: Findings

Common Regional Issues:

1. Rapid growth in CFL production capacity
2. Shortage of materials, quality concerns
3. Proliferation of CFL promotional programs
4. Proliferation of CFL standards and specifications
5. No common quality standards (testing, performance)
6. Little/no publicly available test data on CFL quality
7. No price signal for high-quality CFLs
8. Lack of regionally recognized quality threshold



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Regional Analysis of CFL Programs and Markets: Recommendations

1. Recognize that sub-standard CFLs are a serious policy problem
2. Develop regional agreement on a common test procedure
3. Develop common performance quality standards for the region
4. Adopt a regional quality certification level
5. Develop a framework for standards and labeling of CFLs
6. Increase public awareness about CFL quality
7. Seek funding for testing and compliance
8. Seek technical assistance in improving CFL manufacture.
9. Provide exchange of information and technical experts



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A Way Forward

Regional Initiatives Can Work with Governments and Private Sector to Develop a Common Approach

- **International CFL Harmonization Initiative (CFLI)**
 - ♦ Test protocol, performance tiers, compliance
- **Global Environment Facility (with UNDP and UNEP)**
 - ♦ Global lighting initiative to assist in GLS phase-out
 - ♦ BRESL regional program
- **International Energy Agency**
 - ♦ High-level policy dialogue, analysis
- **USAID ECO-Asia Clean Development and Climate**
 - ♦ Enhance regional information-sharing, promote regional agreements (harmonization), encourage national initiatives
- **Asia Lighting Council (Asia Quality CFL Charter)**
 - ♦ Industry-led CFL quality labeling scheme



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Regional Analysis of CFL Programs and Markets: Actions Taken

Follow up to 2007 report

- Bangkok workshop in December 2007 to discuss findings and recommendations.
- The “Manila Compact” signed in June 2008
- Established the Asia CFL Quality Charter, now with a total of 20 manufacturers and lighting associations, including ELCOMA
- Final AQC Guidelines completed in January 2009.
- Product mark developed in March 2009



Regional Analysis of CFL Programs and Markets: Actions Taken

Follow up to 2007 report

The Manila Compact



Signed on this 6th day of June 2008, Manila, Philippines,

Name: <u>[Signature]</u>	Name: <u>[Signature]</u>
Organization: <u>SG CFL/Philips Lighting</u>	Organization: <u>Energy Mad Ltd.</u>
Name: <u>Ming Cao</u>	Name: <u>Summy Tang</u>
Organization: <u>GE Lighting and Industrial</u>	Organization: <u>Zhongshan Opplle Lighting Company Limited</u>
Name: <u>[Signature]</u>	Name: <u>[Signature]</u>
Organization: <u>OSRAM Asia Pacific Limited</u>	Organization: <u>Lighting Council Australia</u>
Name: <u>[Signature]</u>	Name: <u>[Signature]</u>
Organization: <u>Philippine Lighting Industry Association, Inc.</u>	Organization: <u>APERLINDO (The Indonesian Electrical Lighting Industry Association)</u>

Supporting Organizations:

Name: <u>[Signature]</u>	Name: <u>[Signature]</u>
Organization: <u>USAID ECO-Asia Clean Development and Climate Program</u>	Organization: <u>Efficient Lighting Initiative Quality Certification Institute</u>

Name: Melanie Slade

Organization: Australian Government Department of the Environment, Water, Heritage and the Arts



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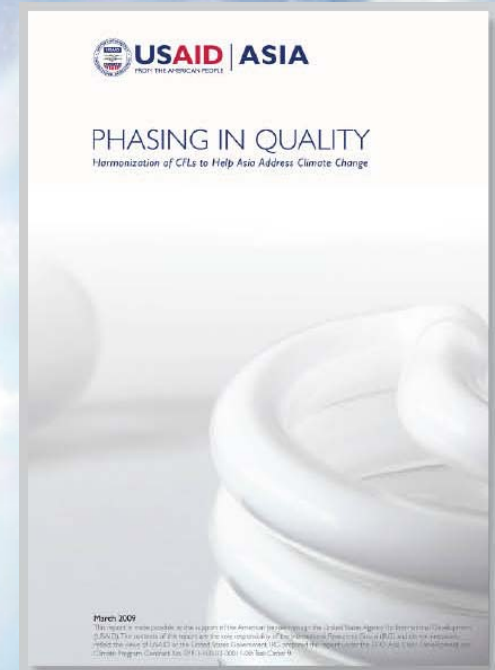
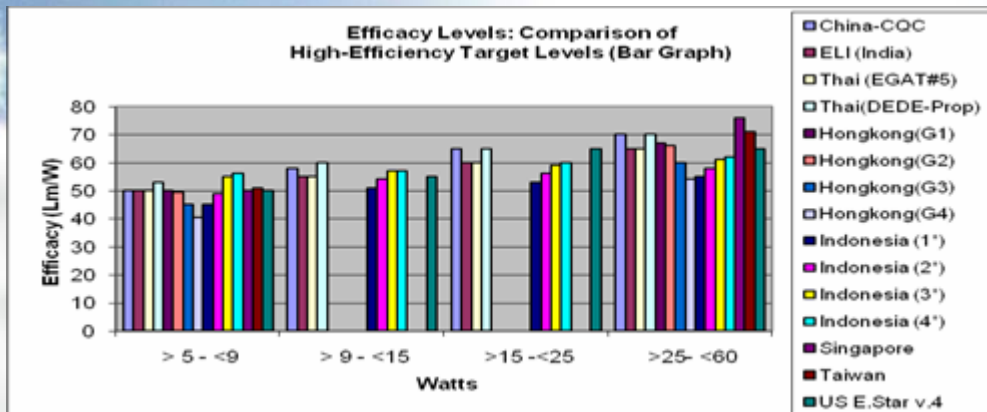
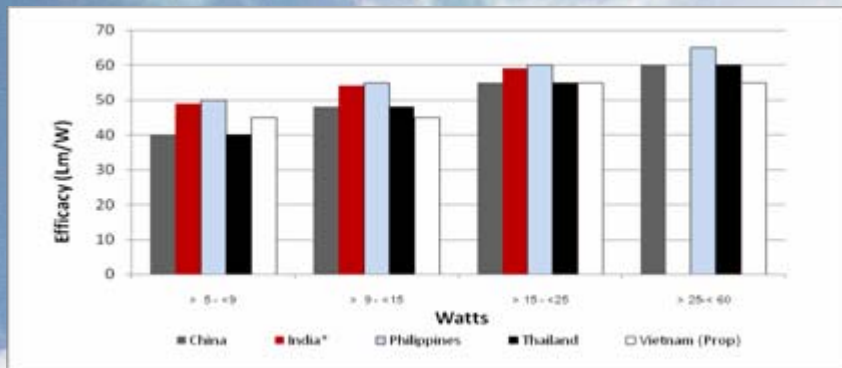
Regional Analysis of CFL Programs and Markets: Actions Taken

- New report released on 1 April 2009: *Phasing in Quality: Harmonization of CFLs to Help Asia Address Climate Change*
- More detailed review of CFL markets and programs in six target countries
- Comparative analyses covering the current standards, regulations, testing, labeling, and other CFL performance and quality requirements.
- Recommends immediate and intensive effort to coordinate existing regional CFL initiatives



Regional Analysis of CFL Programs and Markets: Actions Taken

Phasing in Quality: Harmonization of CFLs to Help Asia Address Climate Change





Asia Lighting Council Activities: CFL Quality

ALC's CFL Quality Guidelines:

- Based on extensive analysis of international standards.
- Uses a “tiered” approach: good, better, best.
- Consider characteristics necessary for broad acceptance of CFLs by
 - Consumers
 - Regulators
 - Utilities
 - Program managers
 - Energy advocates



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AQC Activities: CFL Quality Guidelines

Keeping in mind the “quality” characteristics of a mass-produced, international product that needs to be:

- Efficient,
- Affordable,
- Long lasting,
- Approximate the incandescent lamp in fit, function and light.



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AQC Activities: CFL Quality Guidelines

AQC Guidelines performance categories:

- Initial efficacy
- Lifetime
- Lumen maintenance
- Start-up time
- Run-up time
- Premature failure
- CRI
- SDCM
- Power factor
- Switching withstand
- EMI
- Mercury
- Safety



AQC Activities: CFL Quality Guidelines

AQC Guidelines performance categories:

2.3.1 Criteria with levels that vary by tier

Criteria	Asia CFL Quality Charter Guidelines Criteria Requirements					
	Tier 1		Tier 2		Tier 3	
Efficacy (lumens per Watt)						
Wattage bins/CCT	≤ 4500K	> 4500K	≤ 4500K	> 4500K	≤ 4500K	> 4500K
< 5W	40	36	45	42	Comply with the Requirements of Energy Savings Trust Lamp Specification Version 6 – 2007 for Compact Fluorescent Lamps for applicable Lamp Class	
5W to < 9W	44	40	50	46		
9W to < 16W	48	44	55	52		
16W to < 25W	55	51	60	57		
≥ 25W	60	57	65	62		
Lifetime	6,000 hours		8,000 hours			
Lumen maintenance	80% of measured 100-hour lumen level after 2,000 hrs		80% of measured 100-hour lumen level after 2,000 hrs			
Colour (x,y)	Within 7 color steps (SDCM) per the IEC standard		Within 5 color steps (SDCM) per the IEC standard			



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AQC Activities: CFL Quality Guidelines

AQC Guidelines performance categories:

2.3.2 Criteria with minimum threshold levels

Criteria	Asia CFL Quality Charter Guidelines Criteria Requirements		
	Tier 1	Tier 2	Tier 3
Start-up time	1.5 seconds maximum		Comply with the Requirements of Energy Savings Trust Lamp Specification Version 6 – 2007 for Compact Fluorescent Lamps for applicable Lamp Class
Premature failure	Not more than 10% failure within 1,000 hours		
Run-up time	Up to 3 minutes to reach 80% of light output (should be aligned with changes in IEC standard)		
Color rendering index (CRI)	≥ 80		
Power factor	≥ 0.5		
Mercury	≤ 5 mg		
Switch withstand test	At least 3,000 cycles based on cycle of 270 seconds off and 30 seconds on*		
Safety	Products should meet safety regulations per IEC 60968		
EMC and harmonics	Products should meet safety regulations per CISPR 15, IEC 61547, IEC 61000-3-2		



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AQC Activities: CFL Quality Guidelines

All 3 “tiers” based on existing standards where available:

- CALI
- ELI
- EST

No reinvention of the wheel, IEC-based.



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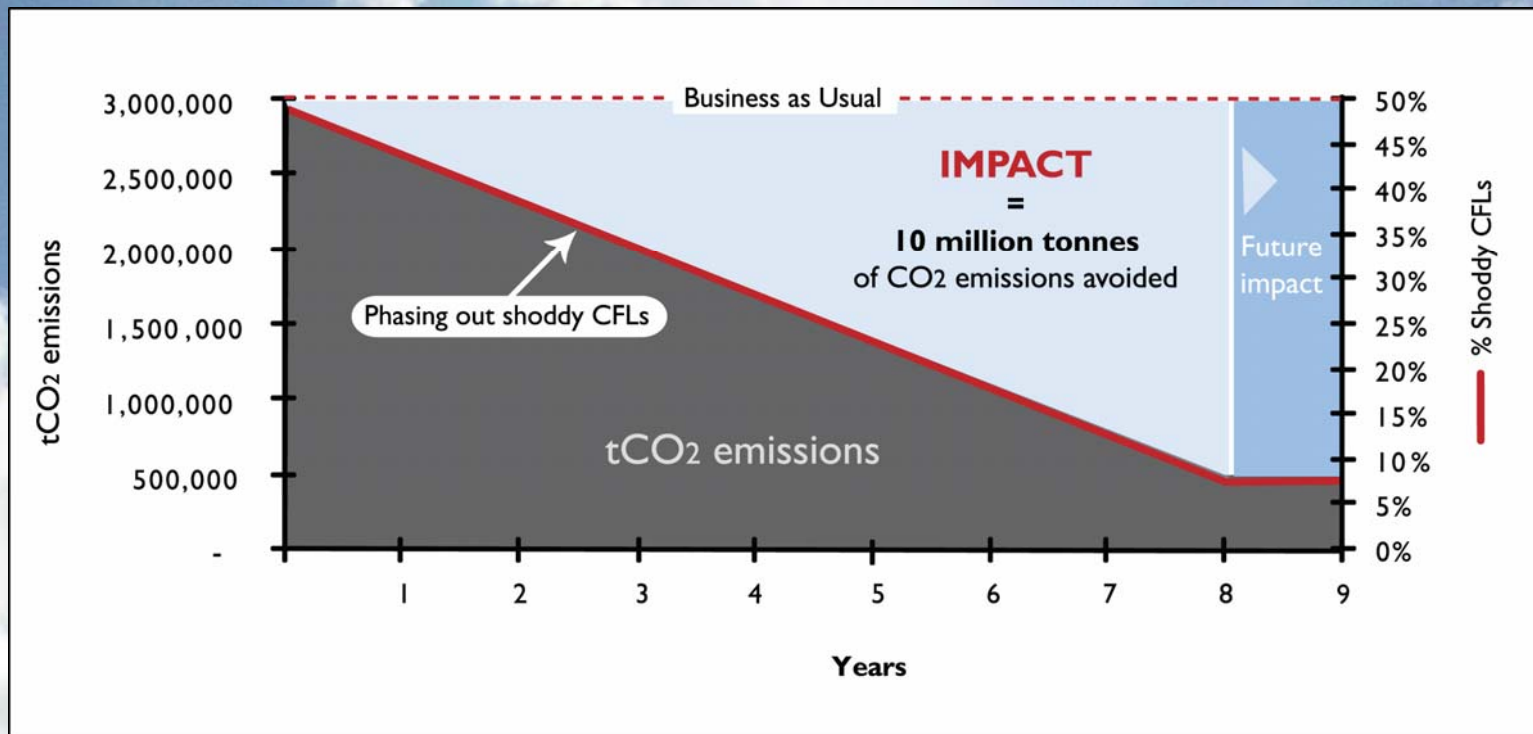
Potential Impacts of CFL Quality Guideline Adoption

- Significant improvement in CFL quality for 50% of the market (~1 billion plus CFLs in the Asia market)
- Ensure consumer satisfaction: maintain or increase current adoption rates for CFLs in Asia
- Reduced waste from both burned out incandescent and CFL lamps
- Reduced mercury emissions from both electric generation and prematurely failed CFLs



Potential Impacts of CFL Quality Guidelines Adoption

Carbon Dioxide Emissions Reduction Through Phasing Out Shoddy Quality CFLs:





Potential Impacts of Guidelines Adoption: Some Rough Estimates

Reduction in SO_x Emissions:

- China – between 5800 and 28000 tonnes per year
- India – up to 19000 tonnes per year

Reduction in NO_x Emission:

- China – between 578 and 6800 tonnes per year
- India – up to 1600 tonnes per year

Emission factors from C. Cherry, 2007 and Enzen Global Solutions, 2000



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APP Project on CFL Harmonization and Quality: Support

Testing and compliance

- 160 CFL models from 6 countries 2000+ lamps will undergo testing at 4 laboratories in 3 countries
- Lamps will be tested for a number of performance parameters
- Laboratories will be using a common test methodology
- A subset will also be tested for mercury content
- Provide “snap shot” of regional CFL performance to inform standards development and harmonization process
- Data will be publically available for policy makers and program managers
- Data will be maintained in Regional “CFL Registry”



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Asia CFL Quality Charter: Next Steps

Establish a new, independent organization, the *Asia Lighting Council* in order to:

- Implement product marking system
- Operate regional product registry, the “Asia CFL Quality Registry”
- Outreach to manufacturers of good-quality CFLs
- Work with national governments and agencies.



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AQC: Next Steps

- Work with national governments and agencies.
- Support IEC process
- Outreach to program implementers and managers
- Outreach to purchasers



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Tests carried out on CFLs in India

QUALITY TESTS

1. Start up time
2. Run up time
3. Lamp power
4. Initial lumens
5. Power factor
6. Colour Temperature
7. Lamp efficacy
8. Lumen Maintenance (2000 hrs)

MERCURY TESTS : Mercury Content



Ranges of wattage, luminous flux and efficacy

Efficacy ranges	Model	Wattage	Lux	Efficacy
upto 30	3	6.47-9.86	151-607	23.4-27.48
30 - 39	8	5.14-9.57	354- 522	30.22-36.31
40- 49	3	7.51-10.66	354-522	44.81-48.32
50- 59	15	8.33-16.49	421-988	50.59-59.95
60- 69	24	9.25-22.22	506-1455	60.14-69.03
70- 79	5	10.34-17.74	794-1247	70.32-79.67



Mercury content- findings

No. of Lamps Analyzed : 98

Minimum Level of Hg = 0.1 mg/lamp

Maximum Level of Hg = 15.33 mg/lamp

1-5 mg = 62 Nos.

5-11 mg = 18 ”

> 11 mg = 3 ”



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Presentation Summary

- Industry-driven regional standard to address problem of multiple standards across the region
- Three-tiered system: good-better-best
- Product mark for easy identification for regulators
- A step towards international collaboration on compliance
- Can assist Indian industry in the export of quality CFL products



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**ASIA CLEAN ENERGY FORUM 2009
MANILA
JUNE 17-19, 2009**



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Thank you!

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