

# **An Inconvenient Truth: The Reality of “Shoddy” CFLs in Developing Asia, and a Plan for Eliminating Them**

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## **ABSTRACT**

The adoption of high-quality, energy-saving compact fluorescent lamps (CFLs) can provide the Asia region with an important opportunity for mitigating greenhouse gas emissions, while also enhancing international collaboration on common clean energy challenges. More than 80% of the world’s CFLs are made in China, and while CFLs exported to the U.S. generally meet ENERGY STAR® guidelines, there is no effective regional scheme to certify the quality of CFLs sold throughout Asia. As a result, Asian markets are currently being flooded with shoddy, sub-standard CFL products. Given the current urgency of political commitments being made worldwide, and in Asia, to phase out incandescent lamps without regard to CFL production capacity and quality issues, this situation has the potential makings of a massive policy failure.

This paper will present the readers with:

- A detailed overview of CFL markets and programs in China, India, and the four largest ASEAN nations—Indonesia, Philippines, Thailand, and Vietnam. These countries represent 96% of the GDP of developing Asia’s GDP.
- An assessment of the quality of CFLs currently available in these markets.
- A strategic framework for improving the quality of CFLs sold in Asia, by linking together a number of current and planned initiatives on CFLs and energy-saving lighting, including the Efficient Lighting Initiative (ELI), the International CFL Harmonization Initiative (CFLI) and the Global Environment Facility’s (GEF’s) Global Lighting Initiative to develop a quality identification system for CFLs sold in Asia.

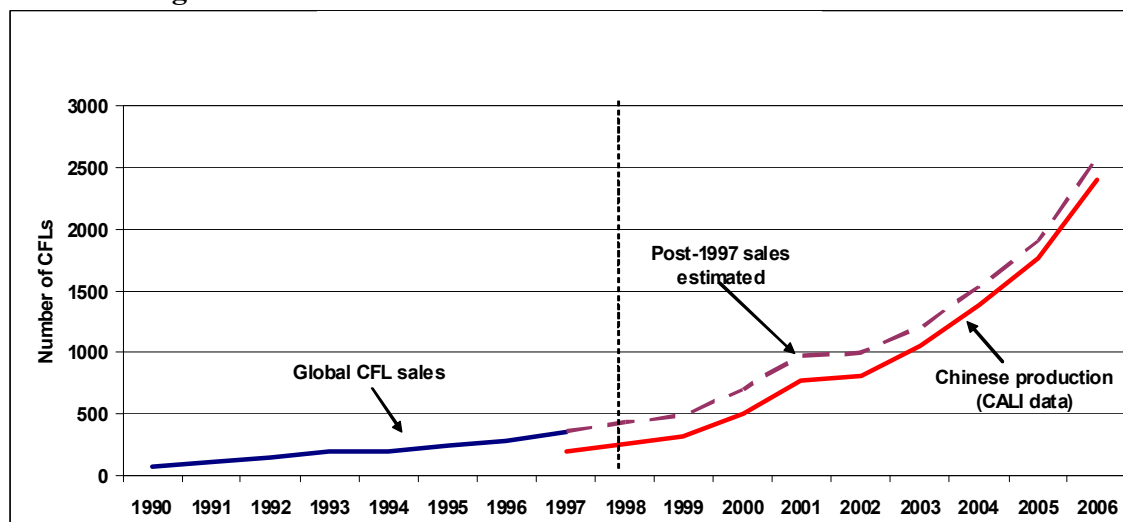
## **Introduction**

Concerns about energy security, air pollution, and climate change have prompted Asian policymakers to place more focus on the need for energy conservation and clean energy promotion. This focus has resulted in a proliferation of high-level regional and international initiatives and agreements on energy efficiency, renewable energy, energy security, and energy cooperation involving Asian countries. In fact, investments in energy-efficiency programs as well as the level of consumer awareness of energy efficiency and the link to climate change may be at a higher point than any time in the last five years.

Of the many available technological options, the compact fluorescent lamp (CFL)—which uses only one quarter as much energy and lasts six to ten times as long as the traditional incandescent lamp—has the potential to be an important, highly viable, and quickly implemented solution. The CFL’s elevated visibility has been boosted by recent political commitments by a number of nations to limit their greenhouse gas emissions, including the phasing out of

incandescent lamps, and identifying CFLs as the immediate preferred alternative.<sup>1</sup> Indeed, world-wide CFL production has seen a dramatic increase, reaching more than a billion units per year earlier this decade, and now exceeding 2 billion units annually (see Figure 1). As a result, the manufacturing of CFLs has expanded from a handful of well-known manufacturers to literally several hundred around the globe, with most of these based in China.

**Figure 1. Estimated Global CFL Sales and Chinese Production**



Source: International Association of Energy-Efficient Lighting for pre-1997 data; estimates by the China Association of Lighting Industries (CALI) and ECO-Asia CDCP for post-1997 estimates.

The political commitments for the phase-out of incandescent lamps, as well as energy-efficiency programs that promote CFLs, are premised upon the assumption that suppliers can meet the future need for CFLs with products that perform well, save energy, and satisfy consumers. However, there are many risks associated with the current global CFL expansion, in both capacity and quality of the products that are available.

The objectives of this paper are three-fold. First, it provides an overview of CFL markets and programs in China, India, and the four largest ASEAN nations—Indonesia, Philippines, Thailand, and Vietnam. Second, the report presents an assessment of the quality of CFLs currently available in these markets. Finally, the report proposes a strategic framework for improving the quality of CFLs, by linking together a number of current and planned initiatives on CFLs and energy-saving lighting. Specifically, the report proposes an immediate and intensive coordination of existing regional CFL initiatives in order to support development of a broad-based quality identification system for CFLs sold in Asia. Such a quality assurance program can help identify good-quality CFLs for policymakers, manufacturers and consumers alike, and can support the development of effective price signals for CFL quality in the marketplace.

<sup>1</sup> As of May 2008, at least forty countries had made commitments to use policies to phase out the use of inefficient lamps (Waide, 2008).

## Asia's Regional CFL Market

There is no doubt that the worldwide market for CFLs is growing rapidly, with substantial growth happening in many parts of Asia. In contrast to the early stages of CFL production, during which CFL manufacturing was dominated by a few well-known international brands (e.g., Phillip, OSRAM Sylvania, General Electric, and Panasonic), with production based in Europe, the US, Japan, and China, CFL manufacture is now being carried out by a large group of less well-known manufacturers. China currently leads the region (and the world) in the number of CFL manufacturers. At present there are a total of nearly 500 CFL manufacturers and suppliers of special CFL materials and components in China, where more than 80 percent of the CFLs sold worldwide are currently manufactured (Chen, Y., 2008).

**Table 1. Summary of Regional CFL Production and Sales<sup>2</sup>**

Country	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

Source: Based on AGO, 2006a - g. Supplemented with interviews during May to September 2007 by USAID ECO-Asia Clean Development and Climate Program.

## The Issue of Quality

Not surprisingly, the proliferation of manufacturers and brands, along with the increase in production capacity and demand for CFLs, has resulted in intense price competition in many markets, and this pressure is reflected in the quality of available products.<sup>3</sup>

## What Makes a “Poor” Quality CFL?

The pressure to lower production costs has the effect of creating a “race to the bottom” by manufacturers in terms of CFL product performance – a trend that is confirmed through discussions with both consumers and experts around the region. CFLs produced under these conditions tend to have lower efficacy, shorter lifetime, less consistent color rendering, or a combination of all three shortcomings, when compared to CFLs currently available in many western economies or even with CFLs available in the region a few years ago (AGO 2006a).

<sup>2</sup> Data for China represent total CFL production. It is estimated that domestic CFL sales in China are in the range of 400 to 500 million annually. Data for other countries represent estimates of total in-country sales (production minus exports, plus imports).

<sup>3</sup> According to interviews with national lighting experts during late 2007, and data from the Australian Greenhouse Office Report, *International CFL Market Review: A Study of Seven Asia-Pacific Economies* (2006) the pressure to lower production costs to compete has driven many manufacturers to produce CFLs with low efficacy, short lifetime, inconsistent color rendering, a combination of all three shortcomings, or other undesirable characteristics. In addition, in order to further manager their costs, these manufacturers tend to not subject their products to rigorous testing or quality control measures.

Since CFLs are being promoted as a direct replacement for incandescent lamps, CFLs that do not outperform incandescent lamps in any of the above performance metrics can result in serious consumer dissatisfaction with the product category as a whole. Thus, the terms “low-quality,” “lower-quality,” “sub-standard,” “poor,” or “shoddy” are now being used by experts, program managers, and regulators to describe the typically poor-performing CFLs that are being produced in large quantities and sold in many markets in the Asia region.

## Defining Market Segments

Due to the lack of publicly available test data on CFL quality, it is difficult to accurately characterize the nature and quality of CFLs available within Asia. Instead, this analysis draws on a previously developed metric developed for the Australian Greenhouse Office (AGO, 2006a) outlining four broad market segments to approximate the quality of CFLs in Asian markets, using available data on a combination of criteria—such as claimed or tested product lifetime, evidence of product certification and registration, etc.—that serve as rough proxies of product quality (see Table 2). This method is inexact, and somewhat subjective. However, in the absence of available test data for countries in the region, this method of market segmentation serves as the only available means for categorizing CFL quality.

**Table 2. Breakdown of Quality Market Segments for Self-Ballasted CFLs<sup>4</sup>**

Market category	Description of market category
High quality – International or well-known brands	<ul style="list-style-type: none"> <li>Well-known name brands, such as OSRAM, Philips, National/Panasonic, GE, etc.</li> <li>≥ 6,000 hour lifetime</li> <li>Evidence of testing and/or quality registration</li> </ul>
High quality – National or not-well known brands	<ul style="list-style-type: none"> <li>Not well-known name brands</li> <li>≥ 6,000 hour lifetime</li> <li>Evidence of testing and/or quality registration</li> </ul>
Poor quality	<ul style="list-style-type: none"> <li>Not well-known name brands</li> <li>3,000 to 6,000 hour lifetime</li> <li>Little or no evidence of testing</li> </ul>
Very poor quality	<ul style="list-style-type: none"> <li>Not well-known name brands</li> <li>&lt; 3,000 hour lifetime or no claimed lifetime</li> <li>Little or no evidence of testing and/or quality registration</li> <li>Typically US\$1 or less in the market</li> </ul>

## Estimates of Market Shares

A number of CFL and lighting experts in each of the surveyed countries were asked to review the data in the 2006 AGO reports, and to estimate the market share for each of the above categories of CFL in their respective country. The results of this survey are summarized in Table

<sup>4</sup> This market segmentation approach was originally developed for the Australian Greenhouse Office’s CFL benchmarking report in 2006 (AGO 2006a). The categorizations are slightly revised for this report, based on comments by a number of international expert reviewers.

3. While the scope of the country survey was limited, the estimates of market shares were confirmed by a number of manufacturers who reviewed this document.

Based on this analysis, it appears that the total market share of low-quality CFLs<sup>5</sup> averages close to 50 percent of the market (with a range of 15 percent to 55 percent). This means that a typical Asian consumer currently has a nearly one in two chance of selecting a sub-standard CFL. Even at the lower end (15 percent), a one in six chance of encountering a bad product does not bode well for any consumer.

**Table 3. Approximate Breakdown of Market Shares in Asia for Different CFL Quality Levels**

Country	High Quality Well-known brands (%)	High Quality Not well-known brands (%)	Poor & Very Poor Quality (%)
China <sup>6</sup>	15	30	55
India	NA	NA	40
Indonesia	36	35	29
Philippines <sup>7</sup>	68		32
Thailand <sup>8</sup>	70	15	15
Vietnam	17	44	39

Source: AGO, 2006a - g; ECO-Asia CDCP, 2007.

### Impacts of Poor-Quality CFLs

The negative impacts of poorly-performing CFLs are significant. First, if CFLs do not meet performance claims, they will not meet targets for energy savings and greenhouse gas reduction. Second, poor-quality CFLs create dissatisfied consumers, endangering the continued and increased adoption of this energy-saving technology where incandescents are not banned. Other energy-saving technologies may also suffer the same perception as a consequence.

The use of lower-quality CFLs—which typically may provide just 75 percent of the energy performance in terms of lumens-per-watt of high quality CFLs—can cause consumers to use more energy, (assuming that they need more lamps in order to get the needed amount of light) and reduce their energy saving potential. In reality, the lost opportunity would be even more significant, since many consumers may simply switch back to incandescent sources to get the light levels that they need. Another impact is waste: compared to high-quality CFLs, sub-standard CFLs will burn out sooner and create more waste for landfills—including mercury, which is contained in small amounts in CFLs.

<sup>5</sup> Low-quality CFLs are described as “poor” or “very poor”, according to the metrics in the Table 2—those for which there is no evidence of product testing and registration, and/or which have a rated lifetime of less than 6,000 hours.

<sup>6</sup> Chinese production of CFLs broadly includes two types of factories—for high-end and low-end CFLs. Discussions with industry experts suggests that the capacity utilization for factories that produce high-quality CFLs is basically 100%, while there remains significant available production capacity for factories that produce low-quality CFLs that have been flooding Asian markets.

<sup>7</sup> It was not possible to get an estimated breakdown between the two “high-quality” categories in the Philippines.

<sup>8</sup> The share of sub-standard lamps in the Thai market has fallen significantly over the past two years. One reason cited by Philips Thailand is that Philips carried out market surveys, found the share of poor quality CFLs to be quite high, and subsequently lowered its CFL prices to be more competitive.

In addition, due to the fact that no common quality guidelines exist in the region today, manufacturers lack a sufficient incentive to produce high quality CFLs, and consumers gravitate toward cheaper, lower-quality products. Because the CFL market is still relatively new in many parts of Asia, ordinary market forces do not yet work, and there is no market signal telling the consumer that an expensive (e.g., US\$ 3-4) CFL will last longer and provide better quality light than a cheap (e.g., US\$ 1) CFL.<sup>9</sup> In this environment, even a consumer who is motivated to purchase a CFL faces difficulties in choosing the appropriate products for their needs, while the consumer who is not initially motivated to purchase a CFL may not bother with the effort (ECO-Asia CDCP 2007).

## CFL Regulations, Testing, and the Costs of Compliance

Although nearly all CFLs sold in Asia are produced in China, India, Indonesia, or Vietnam, these countries each have different test procedures, specification levels, and minimum energy performance standards (MEPS), if any at all. Most countries have at least a test protocol in place, but there is no harmonization of either test procedures or minimum energy performance requirements. And many countries have only limited means for testing CFL quality. Indeed, a lack of testing laboratories, as well as related resources (personnel and operating budgets), result in a lack of available test data, and this makes it difficult for policymakers and regulators to certify and track product quality in the market.

**Table 4. Overview of CFL Testing Protocols, Standards, and Labelling Requirements**

Country	CFL Test Protocol	Basic Safety and Quality Standard	Minimum Energy Performance Standard	Energy Label
China	✓ Mandatory	✓ Mandatory	✓ Both <sup>a</sup>	✓ Voluntary
India	✓ Voluntary	✓ Voluntary	N/A	✓ Voluntary
Indonesia	N/A <sup>b</sup>	✓ Mandatory	N/A	✓ Voluntary <sup>b</sup>
Philippines	✓ Mandatory	✓ Mandatory	✓ Mandatory	✓ Mandatory
Thailand	✓ Voluntary	✓ Mandatory	✓ Mandatory	✓ Voluntary
Vietnam <sup>c</sup>	N/A	N/A	✓ Voluntary	N/A

Notes: a. Multi-tiered with voluntary and mandatory elements;

b. Standards under consideration;

c. As of October 2007, Vietnam has a number of standards under consideration.

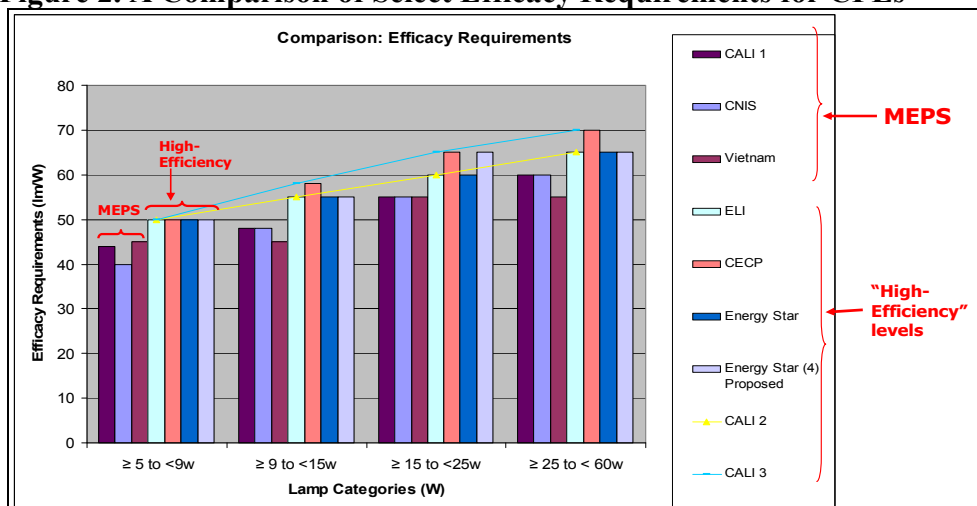
Source: ECO-Asia CDCP 2007.

<sup>9</sup> In a more mature market place, the products that do not work well get identified and suffer market share loss over time. In this case, standard market pressure has not had a chance weed out the bad products. Although consumers can expect to get less performance for lower price, they currently do not have any reference of a decent performing CFL product.

While CFL production is highly localized in just a few countries, the CFL market is international and dispersed. Consequently, to comply with the proliferation of different CFL standards (and test protocols), multiple testing and certification steps are necessary. This can increase compliance costs. Faced with the common weak market surveillance and compliance regime, some suppliers may choose not to certify their products at all. Table 4 provides an overview of CFL testing, standards, and labeling requirements in the six surveyed countries.

The requirements for CFL efficacy among various countries and programs in the region can further serve as an illustrative example of this challenge. Figure 2 shows the various requirements for CFL efficacy across four size categories. There are two types of requirements being established: minimum energy performance standards (MEPS), and voluntary targets for “high-efficiency” products (used for endorsement labelling programs). As can be seen, these requirements are all within a few lumens per Watt of each other. From the graphical comparison, it is clear that a common set of requirements could be adopted among these programs without significantly affecting the share of products affected.

**Figure 2. A Comparison of Select Efficacy Requirements for CFLs**



Key: CALI 1, 2, and 3: performance target levels proposed by the Chinese Association of Lighting Industries, under the framework of the CFL Harmonization Initiative; CNS: Chinese National Standard; Vietnam: minimum energy performance standard proposed by the Vietnamese Ministry of Industry and Trade; ELI: Efficient Lighting Initiative endorsement level; Energy Star: U.S. ENERGY STAR endorsement levels.

Source: ECO-Asia Clean Development and Climate Program, 2007.

Further complicating the picture, countries with standards or minimum efficacy requirements have selected different CFL product “bins” or categories for rating CFLs (such as 8-15 watts, or 9-14 watts, etc.), further adding to the challenges facing CFL manufacturers.

## Main Findings of the Regional Analysis

Our analysis identified a number of common issues related to CFL quality in the region, which are elaborated below.

**Increased CFL Production Capacity.** First, the region as a whole is rapidly building capacity for CFL production, with manufacturers in a number of countries such as China, India, Indonesia, and Vietnam investing in additional capacity. The increasing demand appears to be

creating shortages of raw materials and resources, such as phosphors, electronic components, and glass, even if production capacity is available. A more immediate concern than production capacity and components, however, is the quality of the CFLs themselves. If this issue is not addressed in the near term, programs and consumers depending on CFLs to reduce energy use and control greenhouse gas emissions will not achieve desired results.

No common standards for CFL testing and quality. Second, there is significant interest in CFLs and a proliferation of CFL programs in the region that can benefit from closer coordination, especially on product quality. However, the review found a proliferation of CFL standards and testing requirements across the region, and this creates an undesirable situation. Currently there exists no systematically adopted and harmonized test procedure and quality standards for CFLs. And even if a country has minimum requirements in place, it may lack the technical standards or the method and means of testing and assuring CFL quality.

No market signal for CFL quality. With low consumer awareness and without a common measure for product quality, it is impossible to distinguish between products, aside from brand recognition. Thus, consumers cannot separate a good quality from a poor quality CFL, prior to purchasing it. Similarly, manufacturers have little incentives to produce high quality CFLs without a way to distinguish them. As a result, consumers will gravitate towards low price as their only universal criterion for CFL selection, and proliferating lower-quality product in the process, especially where incandescent products are eventually banned.

No price signal for quality CFLs. Fourth, because there exists neither a regional agreement on CFL quality nor a harmonized set of CFL standards, the current price signal for CFLs around the region seems to put sellers of higher-quality CFLs at a disadvantage in two ways: their CFLs are not only more expensive to produce, but they are also burdened by the additional costs of proving that they are higher quality products. Simply stated, the main obstacle to improving CFL quality in the region is the lack of a regionally recognized minimum threshold for CFL quality.

## **Recommendations**

### **Forging International Cooperation**

Given the globalized nature of the CFL market, a concerted, regional approach to addressing these market challenges is not only appropriate, but necessary. The strategies to harmonize product requirements, increase the level of consumer awareness and education, and achieve CFL quality assurance are not new, and a number of them have been successfully implemented elsewhere.<sup>10</sup> However, the market size, geographic and economic settings, as well as the number and levels of government agencies involved are unprecedented, and can present significant challenges to such a regional harmonization effort.

### **A Call to Action for CFL Quality Assurance**

The increased adoption of high-quality, energy-saving CFLs can provide the Asia region with an important opportunity for mitigating climate change, while also enhancing international collaboration on common clean energy challenges. The urgency of climate change, combined

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<sup>10</sup> For example, the ENERGY STAR program in the US helped to reduce the need for utility programs with different requirements and highlight quality CFLs for all US consumers.



with political commitments worldwide to phase out incandescent lamps, without regard to production and quality issues, have the makings of a massive policy failure. It is urgent that governments and private sector lighting suppliers in the region come together to develop and implement a viable, regional quality control scheme within the next 12 to 18 months – or risk losing consumer confidence due to the proliferation of poor or “shoddy” CFL products. Existing international standards are available. The challenges is for governments and suppliers to work together to develop a common, harmonized approach.

It is imperative for stakeholders in the region to work together and take a number of coordinated actions. Table 5 summarizes a priority set of actions, and proposes which actors could take the lead in each case.

**Table 5. Summary of Priority Actions to Improve CFL Quality**

Action	CFL Stakeholder					
	National Gov'ts	Regional Gov'ts	Funding Agencies	Test Labs	CFL MFRs	NGOs
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 the ELI scheme as 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 CFL testing and compliance	○		○	●		○
8. Seek technical assistance in improving CFL manufacture	○		○		●	
9. Provide exchange of information and technical experts	○	○	●			

Key: ● = lead role; ○ = supporting role

1. Recognize that sub-standard CFLs are a problem. High-level policymakers must recognize that while CFLs represent a viable and cost effective tool for climate change mitigation, the prevalence of low-quality (i.e. sub-standard, or shoddy) CFLs in the market represents a significant barrier to the full realization of this strategy for the whole region.
2. Develop regional agreement on a common test procedure. There is an urgent need for a regional uniform process to test and assure the quality of CFLs sold in the region. Nearly all governments in Asia that have CFL programs in place use the IEC test procedures as their international reference standard. Governments should state their support for adopting the IEC test procedure as the common test procedure for testing the quality and energy performance of CFLs. This simple step – which would not require adopting any new standards, but rather would codify the common use of an existing international standard – would facilitate the testing and comparison of CFLs manufactured and sold anywhere in the Asia region.

3. Develop a common set of CFL performance and quality tiers for the region. Quality standards are needed to keep low quality CFLs out of the market. There is the need for agreement on two, or possibly three, voluntary CFL performance levels that could be recognized across the region. Since manufacturers are the only stakeholders who work across all of the countries in Asia, the most probable strategy for success is for industry to announce a set of voluntary performance quality tiers for Asia. Government agencies and bulk purchasers of CFLs would be free to recognize the common CFL performance level, or levels, on a voluntary basis.
4. Adopt the Efficient Lighting Initiative (ELI) scheme as quality certification scheme. ELI has an established certification scheme for CFLs that can be used by governments in the region as a common metric for defining, testing, and certifying CFL quality. Australia has already announced that it will accept ELI-certified products for sale in the country, with no other in-country certification required.<sup>11</sup>
5. Develop a framework for standards and labeling of CFLs. Voluntary approaches to product efficiency are limited, and research shows that over the long-term it is important to have mandatory testing and labeling of all products in the market and develop minimum energy performance standards. CFLs should be addressed as other appliances, with a program in place to test products, provide labeling of all products in the market to assist consumers in buying high-efficiency models, and eventual adoption of minimum energy performance requirements.
6. Increase public awareness about CFL quality. Government agencies, the private sector (including manufacturers and retailers of CFLs) and NGOs in the region should take concrete actions to increase awareness of high-quality CFL products.
7. Seek funding for testing and compliance. Government agencies in the region require funding and technical assistance in setting up testing and compliance procedures. This includes funding for personnel to develop and operate compliance schemes, as well as funding for product testing. A number of countries in the region have expressed an interest in establishing national accredited laboratories in their countries.
8. Promote the use of mutual recognition agreements. While it may be desirable for countries to set up their own national test laboratories, it is also important for policymakers to promote the use of existing mutual recognition agreements (MRAs), which require the acceptance of product test results from accredited laboratories in other countries. MRAs exist in an international framework of laboratory recognition, and their use would dramatically reduce the costs that suppliers incur to recertify CFL products in every country where they are sold.<sup>12</sup>
9. Seek technical assistance in improving CFL manufacture. A number of the governments in the region have expressed the need for technical assistance for local manufacturers to help improve the quality of CFLs manufactured in their countries.
10. Provide exchange of information and technical experts. A number of countries in the region need technical assistance in setting up the infrastructure (testing facility, development of standards, training of laboratory personnel. etc.) in certifying the

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<sup>11</sup> Under this announcement that it will accept third-party certification, Australia also announced that it will accept products certified for the Energy Saving Trust program, which promotes CFLs in the United Kingdom.

<sup>12</sup> Based on a survey of regional CFL suppliers, the AGO report found that redundant costs for testing and certifying CFLs in each country may add in the range as much as 1-5% to the cost of CFLs (AGO 2006a).

performance of CFLs, as well as in recycling CFLs and dealing with end-of-life issues, including mercury content and safe lamp disposal.

## Conclusions

The international CFL market is currently undergoing rapid global and regional expansion. Amid this unprecedented proliferation of CFLs, production has migrated chiefly to China and a few other locations in Asia (India, Indonesia, and Vietnam). These CFLs are in turn exported widely throughout the world. At the same time, a growing number of countries in the region are adopting CFL promotion programs, and in some cases, carrying out large-scale bulk procurement of CFLs. And a number of countries in the region (including Australia, the Philippines, and Thailand) have even committed to the phasing out of incandescent lamps.

The current climate of CFL production and distribution creates a number of common challenges, which mainly include: the high share of poor-quality CFLs entering the region's lighting market; the lack of market signal on CFL quality; and low consumer awareness regarding CFL quality.

Since a number of regional and international initiatives are under way or planned, there is no reason that successful solutions cannot be tailored regionally. A move toward regional cooperation and integration fits well with the current state of awareness and the desire to take action by policymakers. As individual countries are designing their own quality and testing programs for CFLs, now is the time to scale the discussion of common approaches to CFLs up to a regional level, and recognize existing, common solutions, before a patchwork of programs dictate the regional market. It is not a viable strategy for each country to continue creating policy and programmatic responses individually, in isolation.

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