



# Accelerating the Global Adoption of ENERGY-EFFICIENT LIGHTING

POLICY GUIDE SERIES



ไฟฟ้าและอิเล็กทรอนิกส์  
ELECTRICITY AND ELECTRONICS  
กรมส่งเสริมการค้าระหว่างประเทศ - วัตถุประสงค์พิเศษ



**15 per cent** of global electricity is used to light our homes, schools and businesses



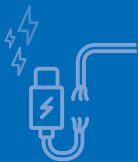
Developing and emerging economies could **reduce annual electricity demand for lighting by 40 to 60 per cent**



The use of lighting is projected to rise by about **50 per cent** over the next two decades



United for Efficiency supports developing and emerging economies to transform their markets with **high-efficiency and quality lighting** through its **proven Integrated Policy Approach**



Electricity that powers these lights **will be wasted** if **robust policies** are not adopted and enforced



## BACKGROUND

Good lighting is critical to enhancing quality of life. It helps students to read and write when the school day is over, it enables businesses to operate consistently throughout the day, it illuminates areas that may otherwise be unsafe, and much more.

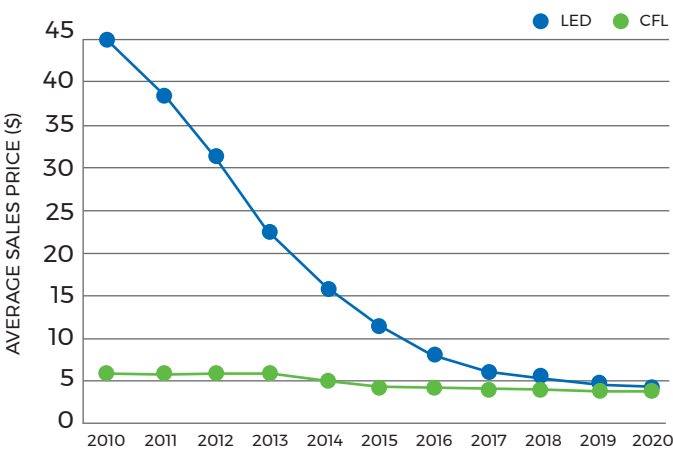
**About 15 per cent of global electricity is used for lighting** As economies grow and populations expand, the demand for lighting increases.

There is significant opportunity to improve the energy efficiency of lighting, while providing an equal or better quality of light. This can save customers money on their electricity bills and help utilities reach more customers with their existing power plants. Inefficient and short-lived technologies are still pervasive, such as incandescent lamps that are based on a 125 year-old technology. It is easy to replace these wasteful products with **widely available quality lighting products that can cut power use by 80 - 90 per cent.**

## WHY LEAPFROG TO ENERGY-EFFICIENT LIGHTING?

**Over the next two decades, the amount of lighting is projected to rise by approximately 50 per cent relative to current usage.** Fortunately, there are proven ways to accelerate the adoption of products with performance far superior to that of out dated products that are still present in many markets.

Getting this transition right unlocks multiple benefits for governments, businesses, and consumers. There are plenty of useful examples from around the world of lower electricity bills; reduced peak loading at power plants and related pollution; less mercury released in the soil and water, and less material sent to landfills.



The average retail price of a retrofit LED lamp replacement for a 60W incandescent lamp decreases rapidly.

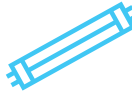





Source: Memoori Business Intelligence, 2013.



**Well-designed and implemented energy efficiency policies can enable governments to reduce electricity demand for lighting by up to 40 to 60 per cent.**

This savings requires a widespread shift from conventional technologies like incandescent, halogen and fluorescent lighting to light-emitting diodes (LEDs).

Energy-efficient lighting typically has a higher up-front to the consumer. The cost of this investment is paid back through savings on the utility bill. The payback time varies depending on equipment and electricity costs. It ranges from less than one year to two to three years for a complete lighting system overhaul. The latter requires higher investments but will render higher annual electricity bill savings in return.

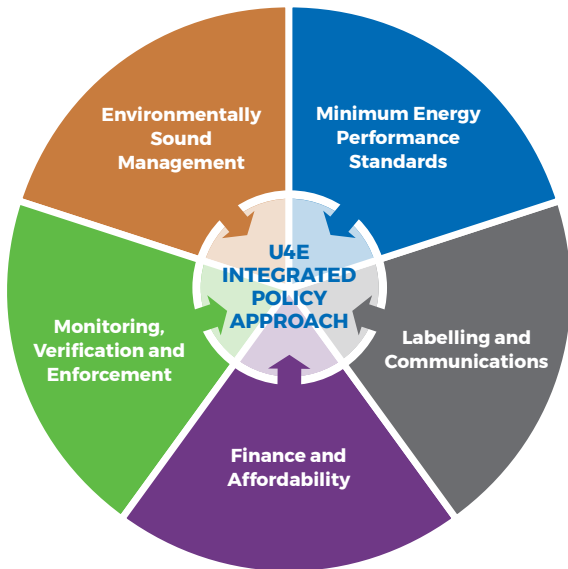
	Indoor Lighting Technology	Typical Efficacy (lumens/Watt)	Lifetime (hours)
	LED luminaire	80-150 *****	20,000 - 60,000 ⓪⓪⓪⓪⓪⓪
	LED lamp	60-130 *****	15,000 - 30,000 ⓪⓪⓪⓪⓪⓪
	Linear fluorescent lamp	80-110 *****	15,000 - 30,000 ⓪⓪⓪⓪⓪⓪
	Compact fluorescent lamp (CFL)	50-70 *****	6,000 - 15,000 ⓪⓪⓪⓪⓪⓪
	Halogen lamp	11-21 *****	2,000 - 3,000 ⓪⓪⓪⓪⓪⓪
	Incandescent lamp	8-17 *****	1,000 - 1,500 ⓪⓪⓪⓪⓪⓪

**New indoor lighting technologies are more energy-efficient than old ones.**

While LEDs tend to have a higher initial cost, prices have fallen rapidly as is shown in the above figure. Prices in many economies are at parity between LEDs and CFLs. But **LEDs offer many advantages to consumers - they are longer lasting (typically 10-15 years), not as fragile, turn on instantly to full brightness, and contain no mercury.**

## RECOMMENDATIONS TO POLICYMAKERS

The United for Efficiency initiative encourages countries to follow an Integrated Policy Approach to transform their markets with efficient, quality lighting products.



United for Efficiency guidance can be applied to indoor and outdoor lighting applications (e.g. streetlights, pedestrian walkways and parking lots). The scope encompasses all light sources, including incandescent, halogen, fluorescents, high-intensity discharge, and LEDs.

Governments are encouraged to develop a National Efficient Lighting Strategy. The process brings parties together to develop a vision for the lighting market and identifies the resources and mechanisms needed to pursue it. The strategy provides clarity for consumers, sellers and manufacturers on the current status and future trajectory of this sector.

Countries should consider regional harmonisation and sharing of resources and experiences with neighbouring countries. These result in lower trade barriers and minimise the costs to implement their strategies (e.g. test products at one laboratory in the region rather than in each country).



### An Integrated Policy Approach includes:



**Standards** put in place a minimum energy efficiency level for a product to be sold in the market. Countries should consider other performance requirements aspects to avoid low quality products from being sold on the market. Mandatory minimum energy performance standards (MEPS), are essential to market transformation. Testing methods and definitions should reference international standards such as those of the International Electrotechnical Commission (IEC) and/or the International Commission on Illumination (CIE).



**Labelling** supports standards by ensuring that energy efficiency information is clearly and consistently conveyed. Endorsement, comparative and informative labels affixed to products help purchasers understand performance and other attributes so they can make informed decisions. Countries should consider using a well-recognized existing label to minimise trade barriers and costs for manufacturers.



**Communication** efforts raise awareness of the benefits and activities associated with energy-efficient lighting, so as to reinforce the long-term effects of other related energy efficiency measures. Awareness campaigns help people and businesses understand their role in contributing to market transformation, such as how to read and apply labelling information in their purchasing decisions and how changes in their habits can impact electricity use.



**Monitoring, verification and enforcement (MVE)** ensures the integrity of market-transformation by overseeing products sold in the market, verifying compliance with standards and labels (e.g. by testing the products), enforcing these requirements, and reporting the results so that consumers and businesses trust and benefit from lighting products that meet their energy and quality claims. Enforcement of regulatory measures should be a high priority to ensure that no business receives an unfair advantage.



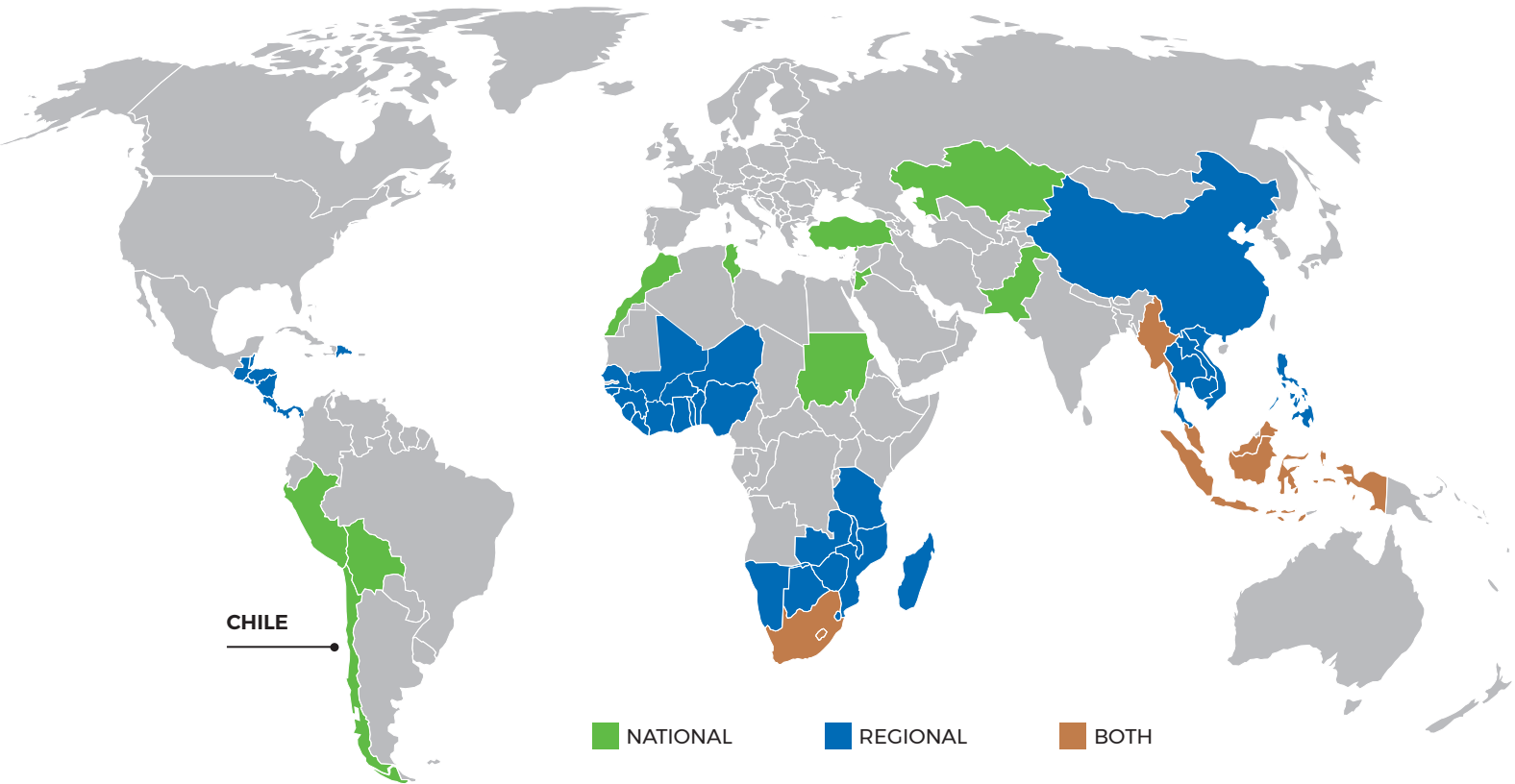
**Financial mechanisms** help address the higher purchase price of efficient products. Governments may utilise existing budgets or outside sources (e.g. fees, donors), while consumers may tap grants or financing options (e.g. loans, leases, utility bill assessments) to cover the incremental cost. Examples of the financial mechanisms that are frequently used include on-bill financing, rebates, bulk procurement and new business models, including lighting lease to own model.



**Environmentally Sound Management and Health** considerations are crucial to ensure products do not cause undue harm to people or the planet - during manufacturing, operation, or recycling/disposal. Potentially hazardous ingredients (e.g. mercury in CFLs) must be handled according to global best practices, such as the "Basel Convention on the Control of Transboundary Movement of Hazardous Wastes" and the Minimata Convention on Mercury".



# CURRENT UNITED FOR EFFICIENCY NATIONAL PROJECTS AND REGIONAL HARMONISATION ACTIVITIES



## FOCUS ON CHILE

United for Efficiency is supporting Chilean regulators and regional bodies to advance policies and actions for the phase-out of inefficient lighting.

The project has put in place minimum energy performance standard (MEPS), consumer awareness campaigns and a bulk procurement to accelerate the market transformation.

Energy-Efficient Lighting will Save Chile Annually



**2 TWH OF ELECTRICITY**, equivalent to 5 powerplants (100 MW)



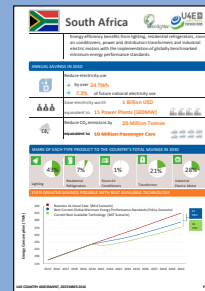
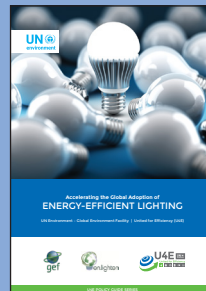
**NEARLY 500 MILLION US\$** in reduced electricity bills



**1 MILLION TONNES OF CO<sub>2</sub> EMISSIONS**, equivalent to taking over 500 million passenger cars off the road

## ABOUT UNITED FOR EFFICIENCY

United for Efficiency is a global initiative led by UN Environment, funded by the Global Environment Facility, and supported by an array of leading companies, expert organisations, and public entities with a shared interest in transforming markets for lighting, appliances, and equipment.



Download the full policy guide and review the 150 United for Efficiency Country Savings Assessments at our website.



## LEARN MORE

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