

LED

Cutting CO₂ emissions from global lighting

THE °CLIMATE GROUP



This is part of
THE CLEAN REVOLUTION

WHAT'S OUR VISION?

For LED lighting to represent 25% of the global indoor and outdoor lighting market by 2020, reducing electricity use and costs—and associated CO₂ emissions—by 50 - 70%.

WHY DOES IT MATTER?

Close to a fifth of all global electricity use is for lighting. LED lamps will be three times more energy efficient than compact fluorescent lamps (CFLs) by 2015, offering opportunities for significant cuts in global emissions.

WHAT ARE WE DOING?

Our LightSavers initiative represents a global coalition of public and private sector leaders working together to remove barriers to rapid scale-up of LED technologies. Altogether, emissions from our 10 municipal partners' street and parking area lighting assets accounts for approximately 1.3 million tons CO₂ annually.

WHAT WILL IT COST?

\$1M per year.

INTRODUCTION

Lighting accounts for 6% of global carbon dioxide (CO₂) emissions—equivalent to 70% of the world's car emissions. Cities are among the largest end users, with street and outdoor area lighting accounting for one tenth of this impact. By switching to efficient Light Emitting Diode (LED) streetlamps combined with smart controls, cities can cut the related emissions, electricity use and operating costs from their lighting by more than two thirds.

LEDs are long lasting, easy to maintain and produce high quality light. Cities—because of their scale and willingness to accept longer term paybacks—are well positioned to help speed up acceptance and drive down costs in the wider high brightness white LED lighting market.

Our LED program—in its initial phase—aims to enable high brightness white LEDs to capture 2.5% of the outdoor lighting market by 2013. In the second phase, we will target strategic indoor applications where LEDs make the most sense, aiming for LEDs to capture over a quarter of the outdoor and indoor markets by 2020. At that point we believe rapid market penetration by LEDs will be self-sustaining. We have already developed an unprecedented global technology trial working with 10 cities internationally. We are focused on models for scale-up as positive results come in from the comprehensive performance testing.

THE CHALLENGE

To transform the global grid-connected lighting market and cut global emissions, we are addressing the barriers that currently limit LEDs from being installed at scale. In addition to enthusiastic acceptance by lighting asset managers, rapid scale-up of LEDs will require a combination of strong public policy and incentives for business innovation, investment and LED deployment.

According to The Freedonia Group, global demand for all electric lighting products has been growing at a rate of 6.3% annually and is expected to increase to 7.4% annually, rising to \$57.6 billion in expenditure in 2017. Brazil, Russia, India, and China (BRIC)—are the fastest growing markets, with China's lighting demand growing at 13.5% annually.

Global GHG emissions from lighting are rising more rapidly than most sectors of the economy.

Meanwhile, according to Strategies Unlimited, the high brightness white LED market rose to \$665 million globally in 2009 and is increasing annually at the rate of 49%. This rapid growth offers an important opportunity for LED deployment in strategic market segments like outdoor lighting. Significant barriers to market acceptance remain, however. These include:

- Uncertainty about how well LED lamps light outdoor spaces in 'real world' situations;
- Skepticism about manufacturer claims of 50,000 hour lifetimes or more;
- Public acceptance of the whiter light produced by LED street lamps; and
- Current high upfront capital costs resulting in payback periods of 5 - 8 years or more for early adopters.

WHY THE CLIMATE GROUP

The Climate Group is an independent global nonprofit. We operate in seven countries including the US, the EU and Australia, as well as two of the BRIC countries, China and India. Our mission is to accelerate the growth of a global low carbon economy—a clean industrial revolution that will unleash a new wave of economic growth and job creation.

A new technology spreads when end users want and actively seek information about it, and then grapple with and work to resolve the uncertainties about its relative advantages and disadvantages. The process takes time, eventually leading the users to decide to adopt (or not) new innovations into ongoing practice. We believe that this process of ‘technology diffusion’ is essentially a social one, in which a critical mass of people in a peer network decisively opts for change. Facilitating such interaction among business and government leaders is The Climate Group’s forte.

Our LED program has been shaped by extensive research on market transformation and intensive consultation with our members and partners. The program’s leader is highly experienced in the dynamics of market transformation and climate change at the municipal level. We already have 19 municipal LED trials underway testing 36 LED products.

We are using our proven expertise in cross-sector coalition building to bring together some of the world’s largest cities and state governments, financial institutions and lighting manufacturers. These are leaders with the power and influence to drive a clean industrial revolution in the lighting sector.

Through this first-of-its-kind program we are already having impact on the scale of this new technology. We plan to publicize our independent body of data—on how this technology performs in the real world—giving LEDs market a further significant boost.

WORK PLAN

We deliver impact by supporting and strengthening the leadership of both business and government partners:

With our municipal partners in Hong Kong, London, New York, Sydney, Toronto and other large cities, we are conducting the first global set of ‘LightSavers’ LED trials using a common protocol. These trials are generating critical performance data—independent from LED manufacturers—quantifying illumination benefits, real-world return on investment, and carbon savings of this transformative technology.

Once we can provide independent verification of how LEDs and smart controls perform in widely varying climates and real world applications, we will work closely with:

- Our city partners to scale up outdoor LED lighting;
- Finance industry leaders to develop turnkey financial solutions;
- Climate policy makers to ensure they understand the technology’s significant GHG emission reduction potential;
- Lighting policy makers to encourage more LED white light friendly standards.

TRACK 1

GLOBAL TRIALS

Trials enable lighting asset managers to learn about and eventually accept new technologies. Nineteen LightSavers trials are now already underway testing 36 different products in 10 different cities. Professional networking at LightSavers events is speeding knowledge transfer.

Milestones for 2011:

- **Complete** majority of initial trials;
- **Publish a major report** that synthesizes the trials’ results, making the information accessible to lighting asset managers and LED manufacturers while encouraging product improvements and large-scale purchase decisions;
- **Advise city partners** who are ready on scale-up strategies;
- **Recruit 5 - 10 new influential partners**—cities, states/regions, and corporate members—to facilitate intelligence gathering on successful scale-up endeavors;
- **Publish a tool-kit** that includes a generic trial protocol and model procurement specifications, to speed early adopters’ own LED trials;
- **Use our communications expertise** and web site to support partner media events around pilot launches, increasing visibility, impact and global knowledge transfer.

TRACK 2

POLICY RESEARCH AND FINANCING INTERVENTIONS

While LEDs offer significant potential for GHG emissions reductions, the technology is fundamentally different from incumbent lighting technologies, which over that past century have accumulated their own entrenched sets of standards. In order to capitalize on our independent LED trials results, we will encourage governments to adopt LED friendly standards and policies.

Milestones for 2011:

- **Identify existing incentives, policies and approaches** that are successful in accelerating LED scale-up and can serve as models worldwide;
- **Convene a global cross-sector lighting alliance** that works with The Climate Group’s team to facilitate LED friendly policies and financing options in strategic markets;
- **Bring together** for the first time government leaders from countries with major LED support programs to facilitate international cooperation and action on LED market support mechanisms;
- **Facilitate a global lighting sector agreement** around the Clean Development Mechanism (CDM) working with major stakeholders such as the World Bank and our network of state and regional governments.

Children playing under LED lamps in Guiyang provided by The Climate Group and Philips in partnership with Jet Li's One Foundation



TRACK 3 NETWORKING AND COMMUNICATIONS

Our experience and research show that peer-to-peer networking and communication drive market transformation by encouraging social interaction. We will address concerns about the risks associated with being an early adopter by facilitating knowledge sharing and relationship building.

Milestones for 2011:

- **A global summit in Shanghai** in May 2011 will convene our partners to speed up the transfer of knowledge on LED performance and scale-up strategies;

- **Publish and distribute profiles of our partners** and their trials at industry conferences and high-level events;
- **Undertake and widely distribute case studies** of the most successful government and corporate sponsored LED scale-up initiatives;
- **Communicate the content and findings** of our work at industry events such as LightFair International, and Strategies in Light international conferences;
- **Deliver our messaging** at the highest levels of government and feature them in local, trade, national and international press.

GOVERNANCE

This LED program is convened and administered by The Climate Group which manages and raises funds for activities, and coordinates communications and research on behalf of our partners.

MARKET FOCUS

We will concentrate our activities on the following geographic markets:

North America
Greater China
Europe
India
Australia

PARTNERS



The Climate Group licenses the LightSavers trademark for global use from the Toronto Atmospheric Fund. Photography by Ryan Pyle.

PARTICIPATION IN OUR LED PROGRAM

There are several ways to get involved in our LED program:

Philanthropic Supporter

We are seeking philanthropic support to underwrite 50% of the costs of the program, estimated at US\$1M per annum for three years, with the remainder coming from membership and partnership fees. We are grateful for the support of the HSBC Climate Partnership in establishing this program.

Corporate Partner: US \$100,000 +

We are seeking Corporate Partners to help support our LED program with thought leadership and resources. Corporate Partners receive full membership benefits of The Climate Group in addition to the specific benefits agreed as part of the partnership.

Member: Up to \$45,000

Participation in the LED program and LightSavers network is open to all members of The Climate Group. Benefits include involvement in relevant workstreams and programs; events; quarterly webinars; regular climate policy briefings; profiling on our website; the opportunity to showcase leadership through case studies; and, in most cases, a dedicated relationship manager.

CONTACT DETAILS

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ABOUT US

The Climate Group is an independent, not-for-profit organization working internationally with government and business leaders to advance the smart policies, technologies and finance needed to cut global emissions and unlock a clean industrial revolution. Our global coalition of companies, states, regions and cities around the world recognizes the economic and environmental imperatives of taking decisive action now. The Climate Group was founded in 2004 and has operations in Australia, China, Europe, India and North America.

www.theclimategroup.org