Lighting: Energy saving opportunities asimpleswitch.c@m

Andreas Wente CEO Business Group Lamps Lighting and Innovation analysts' Day September 28, 2007

Agenda



• The world wide Energy & Climate saving opportunity

- Business opportunities:
 - Outdoor: Street lighting
 - Indoor buildings: Offices industry education, Hospitality
 - Home
- Realizing the opportunity
- Conclusions

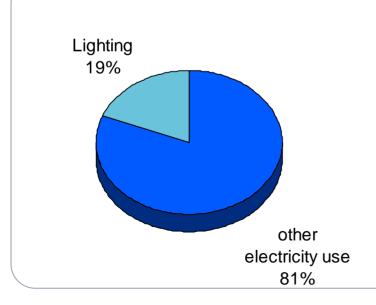
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Energy & Climate Challenges

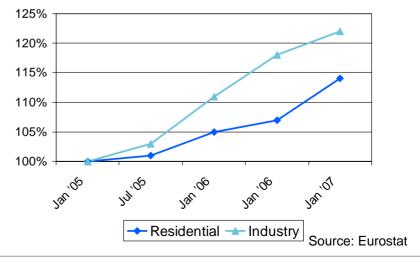
Different regional accents

- Rising energy prices
- Climate change / Kyoto
- Energy shortage
 - Risk of black-outs
 - Limiting economic growth





Average European Electricity prices (index)



Energy saving opportunity general lighting

• New innovative lighting solutions could realistically save up to 40% energy on all today's installed lighting

Global savings of:

EUR 106 billion in energy costs per year This equates to:



- 555 million tonnes of CO₂ per year
- 1.5 billion barrels of oil per year
- Annual output of 530 medium sized power stations @ 2TWh/yr



For each market segment an energy efficient lighting solution exist already today

Area of lighting	Energy saving	CO ₂ savings per lamp per year
Road lighting	HPL 57% CosmoPolis	132 kg CO ₂
Shop Lighting	Halo	140 kg CO ₂
Office & Industrial Lighting	TL8	93 kg CO ₂
Home Lighting	GLS 💡 🍋 🥛 CFLi	41 kg CO ₂
LEDs	GLS 💡 👶 💞 LED	41 kg CO ₂

*HPL=High Pressure mercury, CDM=Ceramic Discharge GLS = incandescent bulb, CFLi= Compact fluorescent

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We focus on Outdoor, Indoor and Home lighting

Potential Energy Savings through innovative lighting solutions

Segment	% of total CO ₂ emission	Main Product	Potential savings in segment *
Outdoor: Street lighting	18%	HID / Metal Halide CosmoPolis	35%
Indoor: Buildings	45%	New TL	35%
Homes	25%	CFLi / Eco-Hal / LED	70%
Lighting total			40%

Outdoor: street lighting





- 56 Mio street-lighting light points in Europe
- 18 Mio still using 1930`s technology
 - High-Pressure Mercury Lamps (HPL)
- Alternatives available:
 - High Pressure Sodium
 - Ceramic Metal Halide (Cosmopolis)



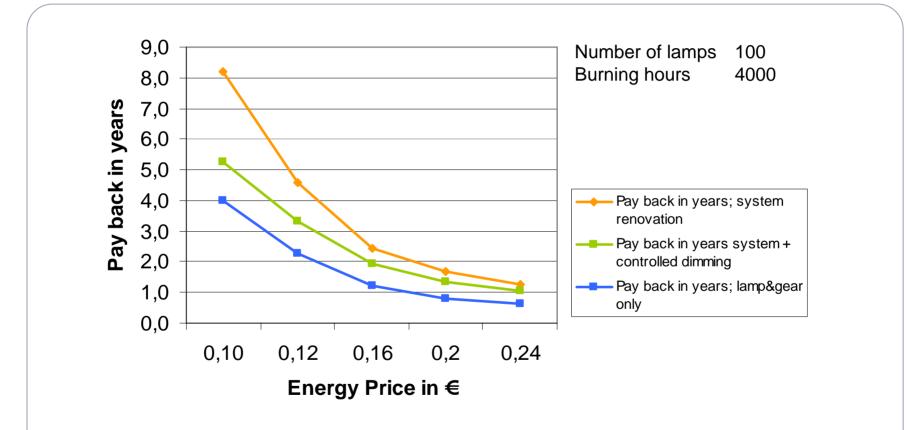
Outdoor: street lighting

Cosmopolis; an award winning solution

- Lighting Design Award 2006 United Kingdom (organised by Lighting Equipment News magazine and the lighting federations ILE and LIF)
- European Environmental Press award Netherlands for best environmental technology innovation
- Energetab 2006 award Poland for best technological innovation on the Bielsko Fair



Outdoor: street lighting - Pay Back improvement HPL 125W vs Cosmo White 60W



Acceleration of renewal rate at shorter pay back periods Pay-back times are becoming more attractive with increasing energy prices

Outdoor: street lighting - a global success

 CosmoPolis globalisation projects today in Anyang City, Seoul, Shang Hai, Singapore, Jakarta, Perth, Melbourne, Panama City, Kiev and Recife

 CosmoPolis European sales spread over 35 OEMs design-in over 75 Iuminaire families available over 50 european cities applied CosmoPolis over 50,000 systems currently installed



Cities applying CosmoPolis

<u>UK</u> Leeds South Tyneside North Walsham

North Walsham Portsmouth Croydon Redbridge Derby Milton Keynes Godalming Suffolk Norfolk Redcar London Underground Blackpool

<u>Spain</u>

Somosaguas Madrid Torreledones Ponferada Pozuelo Bilbao

<u>Germany</u>

Hamburg Vechta Leipzig Bispingen Koln Böblingen / Sindelfingen

Netherlands

Groningen Assen Meppel Elspeet Coevorden

Belgium Antwerpen Brussels Turnhout Liege Hasselt

Portugal O'Porto

<u>Poland</u> Poznan

<u>Austria</u> Vienna

<u>Denmark</u> Holbaek

<u>Italy</u> Milano Florence Venice

France

Villeneuve d'Asque La Baule Montoir de Bretange Aurillac Vichy Dinan St. Gereon Rixheim Petersbach <u>Korea</u> An-Yang City Seoul

<u>Panama</u> Panama City

Singapore City

Indonesia Jakarta

<u>Brasil</u> Recife

<u>China</u> Shanghai

> <u>Ukrain</u> Kiev



...and many more

Outdoor: street lighting - Qipu Road, Shanghai CosmoPolis systems in China.



The location is a clothes market, pedestrians are the main users of the road.

Outdoor: street lighting – Caoxibei Road, Shanghai CosmoPolis systems in China



Located in Xujiahui, one of the commercial centers in Shanghai.

Outdoor: street lighting

Energy efficient street lighting systems in Malaysia



Outdoor: street lighting

Saves energy by dimming when there is less traffic



Indoor building lighting

Offices, Industry, Education

Old Technology



- Old fluorescent lamps
- Passive Analogue Electro magnetic drivers

New technology



- High efficiency TL5 fluorescent lamps
- Active electronic drivers
- Lighting control systems

Europe: 75% of offices use old technology; only 1% using lighting controls

Indoor and outdoor lighting:

Lighting controls contribute to Energy Savings

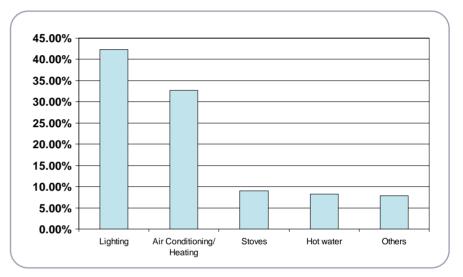
Energy savings with lighting controls can be achieved by Switching off or regulating artificial light depending on:

- Presence detection
- Amount of daylight available
- Scheduling (day/night settings)
- Traffic and weather conditions
- Lamp aging
- Philips has solutions in
 - Indoor: Lightmaster Modular system
 - Outdoor: Starsense system
- Can generate 30% to 70% energy savings depending on circumstances

Indoor building lighting: Hospitality

Lighting up to 40% of total energy costs

- Lighting is between 23% and 40% of the total energy costs
 - Source: ICAEN: Spanish Government

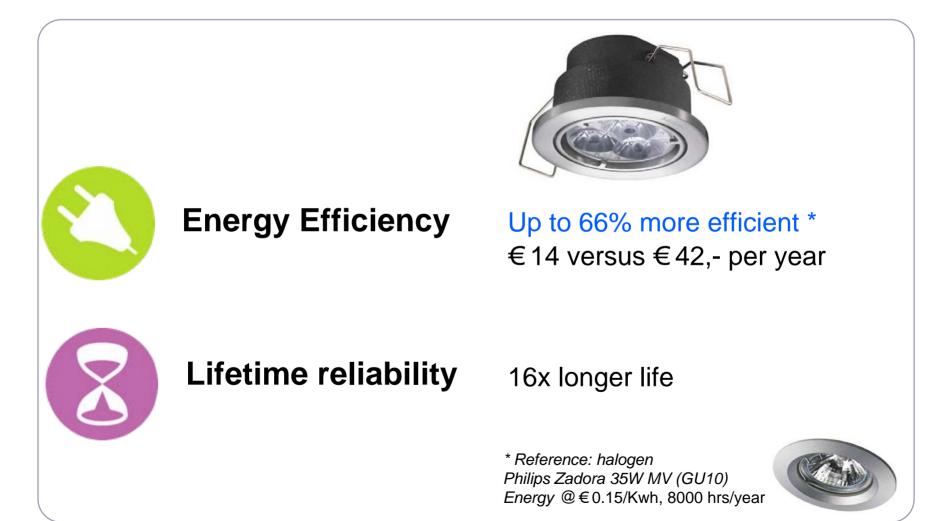


 Energy Saving, Maintenance and Ambiance are most important buying attributes

Source: Research Germany



Indoor building lighting: Hospitality Energy efficient solution: Spot LED 3K2



Home lighting: Energy saving opportunities

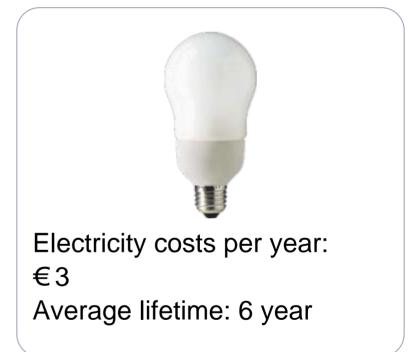
100W incandescent light bulb



Electricity costs per year: Up to €15 Average lifetime: 1 year

100W light bulb 1000 hours per year €0.15 p/kwh

20W Energy saving CFL light bulb



Up to 12 euro saving per year or €72,-during 6 years

Home lighting: clear energy saving options

Philips address this market via 3 steps



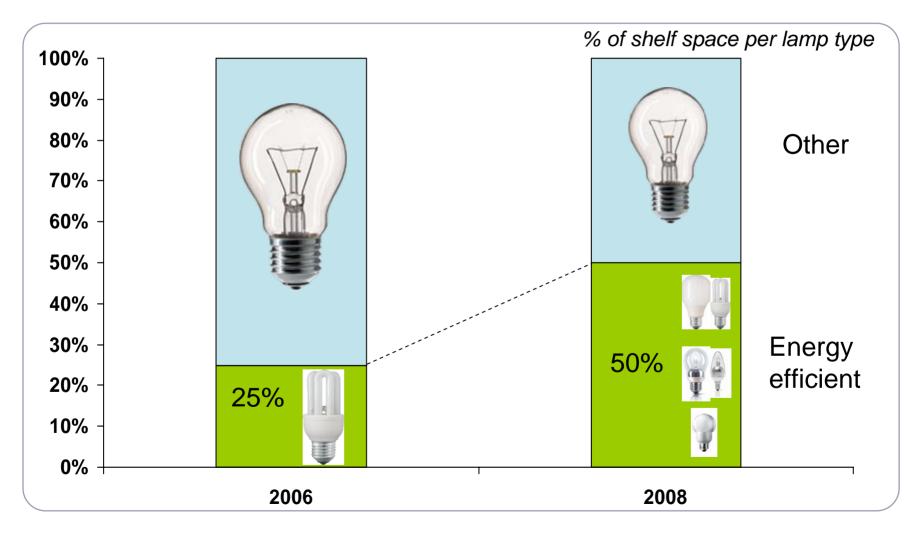
- 1. Compact Fluorescent Lamps
 - 80% Energy Savings
 - Major improvements last few years (size; light quality; forms, cost, dim ability)



- 2. Eco-Classic: Energy Saving Halogen
 - Up to 50% Energy Savings;
 brilliant, high quality light
 - New range in launch phase
- 3. Solid State Lighting (LED`s)
 - Currently for decorative
 - replacements and orientation light
 - Today limited but fast improving light output

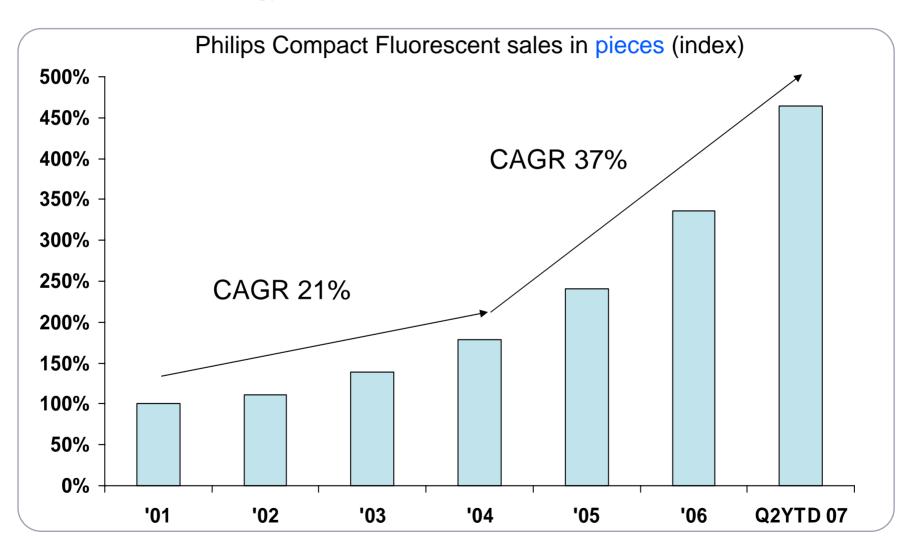
Home lighting: Innovation of product portfolio

shifts future retail shelves towards energy saving solutions



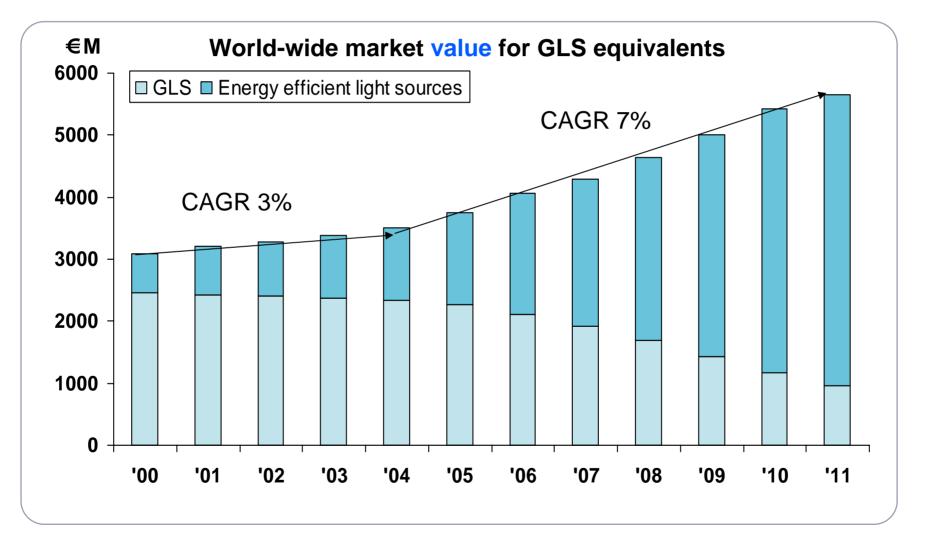
Home lighting:

Philips sales of energy savers accelerates



Market value growth by phasing out GLS

value captured by Compact fluorescent, Eco-classic and SSL solutions



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We take initiatives to increase switch-over rate

e.g. street lighting: changeover rate 3% per year, for office lighting 7%.

Taking away the hurdles to accelerate switch-over via:

- Awareness Campaigns (public / private)
- New legislation (e.g energy-certification for buildings)
- Partnerships (public / private / NGO`s / utilities)



Awareness campaigns:

Political, Corporate & Public Awareness

- Energy Efficiency & Lighting
- "Everybody" is talking about it and wants action!









Street lights at the crossroads

The technologically mature street lighting basiness is about to get a shot in the arm with new lamps and control year, in James Hooker reveals

New High-street in Issued

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THE EU PLAN

zum Umweltschutz!

ie Verringerung des Stromwerbrauchs zählt nach wie vor zu den einfachsten Möglichkeiten, einen effizienten Beitrag zu Umweltschutz und Sen-

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EU leaders set new targets Friday to cut

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EU pushes for energy-saving light bulbs



Huge cost and energy savings could

be made by updating lighting systems

Lamps

75% of office lighting

E-mail | Save | Print |

Herald Tribune (Global Top 250 Media) 21-02-2007

Australia wants (incandescent) lights out

By Tim Johnston SYDNEY: Australia looks set to b

BRUSSELS (AP) - The European Union is looking to join

other parts of the world in efforts to slash energy consump

come the first country to phase out is candescent light bulbs in favor of mor energy-efficient compact fluorescer bulbs, as part of its drive to reduc

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Philips appesta por la mejora de la eficiencia energética en los sistemas de alumbrado público en Europa

upgrade lighting systems with the latest state of the ert and anergy officsent technology.

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Efficiency is also a great

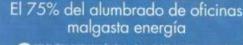
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IS IT TIME TO BAN THE BULB?

Concerns about energy resources and globa warming spur government intervention to phase out general service incandescent lamps

IN LATE JANUARY, a member of the electric lighting, announ California legislature proposed a ban out of today's general on the sale of general service incan- descent lamps. Other descent lamps. By mid-March, coun- considering a phase out tries representing more than 430 effort to reduce million people, or roughly one out of IO emissions people on the planet with access to al warming





percent of the world's electric y, or the equivalent of roughly 500,000 tons of coal a day. Forty percent of that powers old-fashioned incandescent light bulhs-a 19th-century echnology that wastes most of the power it consumes on



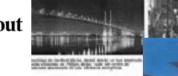
Schutzen wi Als vällig unkomplizierte unser Klimal Maßnahme, ohne jegliche Einbuße von Lebensquali-Mit der "Krone" und dem Lebensministerium tät, erweist sich dabei der Austausch von Glühbirnen gegen Energiesparlampen: Denn diese benötigen bis zu kronen 80% (!) weniger Strom, während normale Birnen nur 5% der verbrauchten Energie in Licht umsetzen und die restlichen 95% ein-



by pushing for an increased use of energy-saving light bulb European leaders agreed Friday to ask the EU's executive TER, LJUN



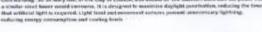
fillion compact fluores-cnt bulbs a year by 2008, cmpared to 40 million in 205. Philips has annanced plans to stop mak-in incandescent bulbs by tube to glow.



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A winning strategy to cut CO₂ BUILDINGS account for strinf ElitCO, emission thouse in part to the inconcerned house our conditioning and venti-









Awareness campaigns:

LiveEarth Concerts

Concerts in 8 countries with 150 artists

- New York
- Rio de Janeiro
- London
- Hamburg
- Johannesburg
- Tokyo
- Shanghai
- Sydney

Audience of 2 billion people

Over 600.000 people make a pledge to replace 3.3 million light bulbs on Internet site



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Awareness campaigns:

Mr. Al Gore recognizes leading role of Philips



New legislation:

Climate Change is now at the top of political agenda

BRUSSELS EUROPEAN COUNCIL 8/9 MARCH 2007

PRESIDENCY CONCLUSIONS

The European Council: invites the Commission to rapidly submit proposals to enable increased energy efficiency requirements on street and office lighting to be adopted by 2008 and on incandescent lamps and other forms of lighting in private households by 2009;





Partnerships will change the business models

- Utility Funded Schemes (Public Energy Suppliers)
- Exploring public & private funding for street lighting
 - PFI: Private Finance investment
 - PPP: Public Private partnership
- Carbon Trading methodology

Partnerships: PPP contract with VINCI

Example: City of Rouen

- 120 000 inhabitants (Area: 450 000 inh.); Normandy Regional Urban Pole
- VINCI's PPP contract amount: 100 M€, a large 18-years Design, Build, Finance, Operate & Maintain contract in the area of:
 - Public lighting (15 000 public lighting points)
 - Wireless local lop in the old center
 - Traffic management equipments



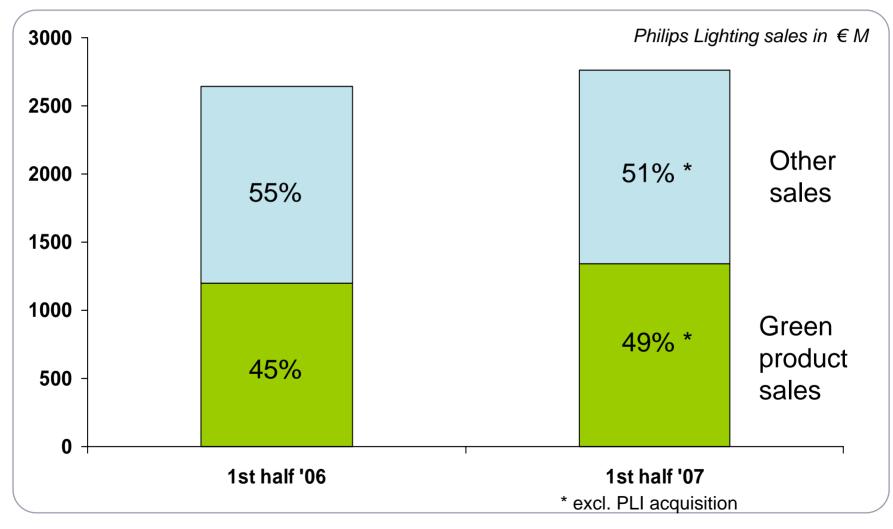
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Innovative energy efficient (Green) products grow two times faster than total Philips Lighting



Conclusions

- Energy efficient lighting solutions are available and drive market growth
- New lighting innovations provides clear benefits for
 - Consumers & Tax payers : save costs & better light quality
 - Environment: lower energy consumptions & CO₂ emissions
 - Business & Countries: increased competitiveness & new business models
- Legislation plays a crucial role in realizing energy savings potential
- Philips Lighting provides complete solutions

The Clear Leader; Setting the pace in the lighting industry

PHILIPSsense and simplicity