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sense and simplicity

The Contribution of Energy Efficient Lighting in tackling Climate Change in our Cities and Buildings

- *A Triple Win for People, Environment and Economy* -

Kaj den Daas

Chairman Philips Lighting North America

UN Climate Change Conference Poznan, Poland - 7 December 2008

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Global economic crisis

Climate crisis

Energy crisis

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Lighting: a world of opportunity

Lighting accounts for 19%
of global electricity use

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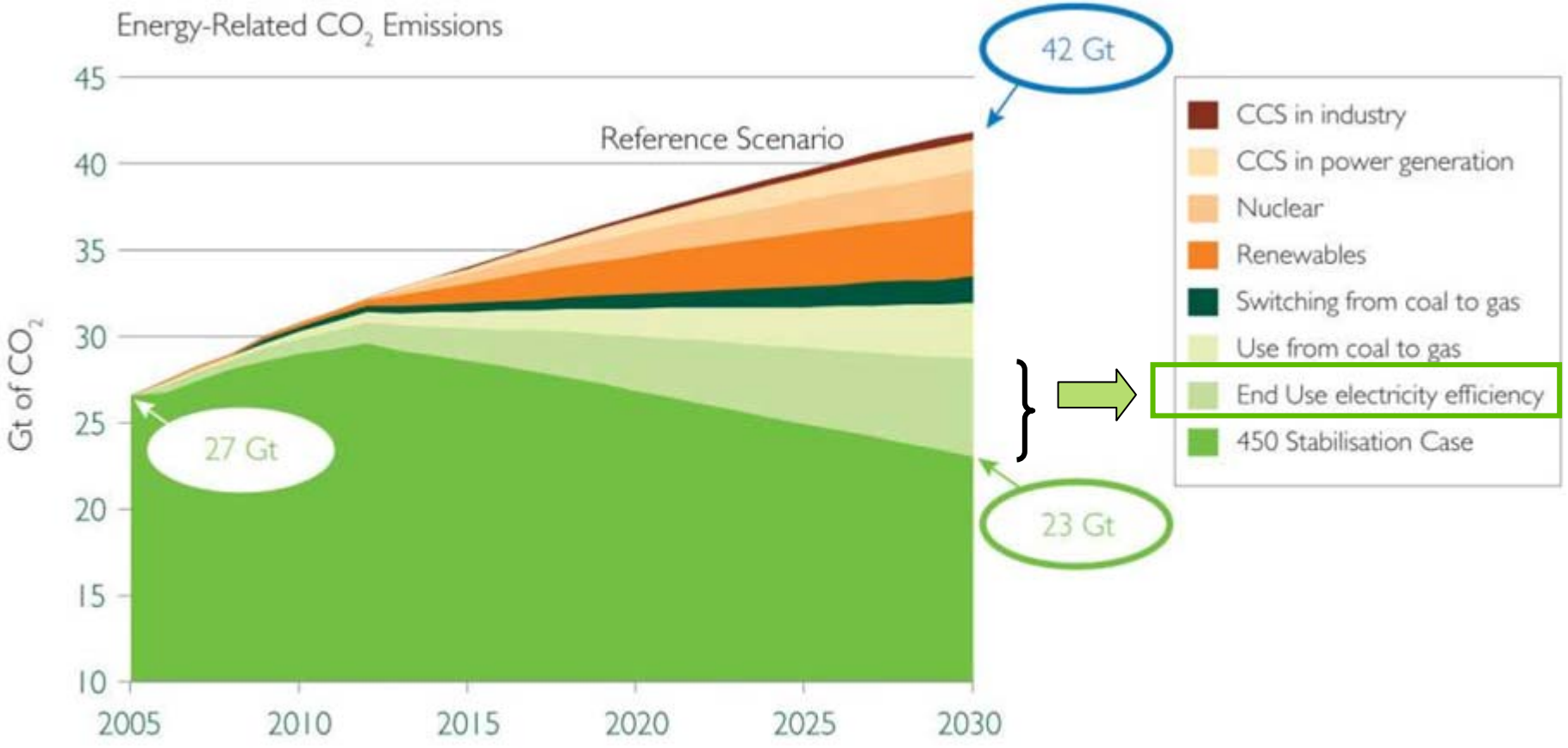
CO_2 emissions - stabilization case



In line with G-8 appeal in Heiligendamm, by 2030 emissions are reduced to some 23 Gt

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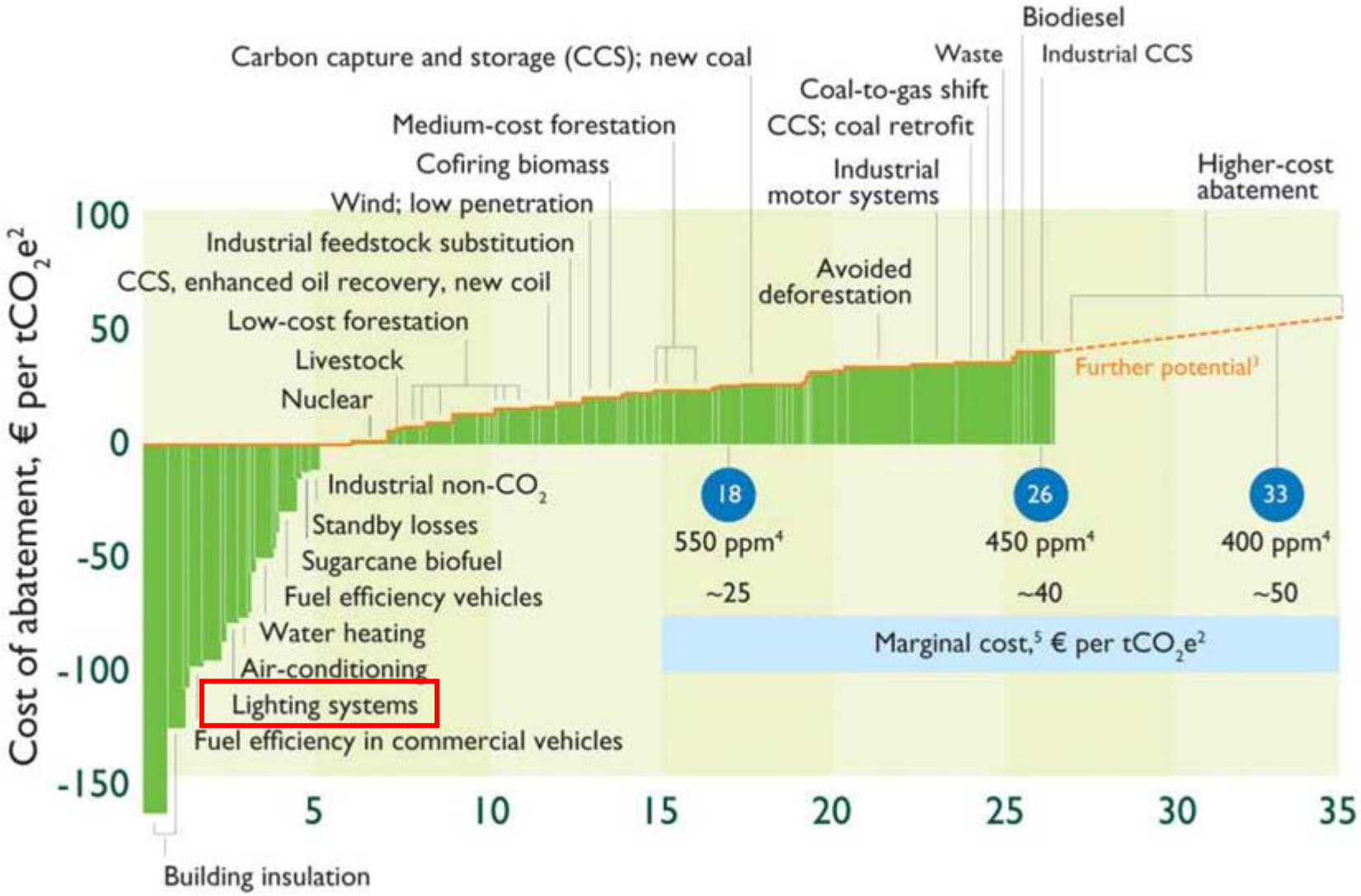
What might it cost?

Global GHG cost of abatement curve



Source: McKinsey/Vattenfall

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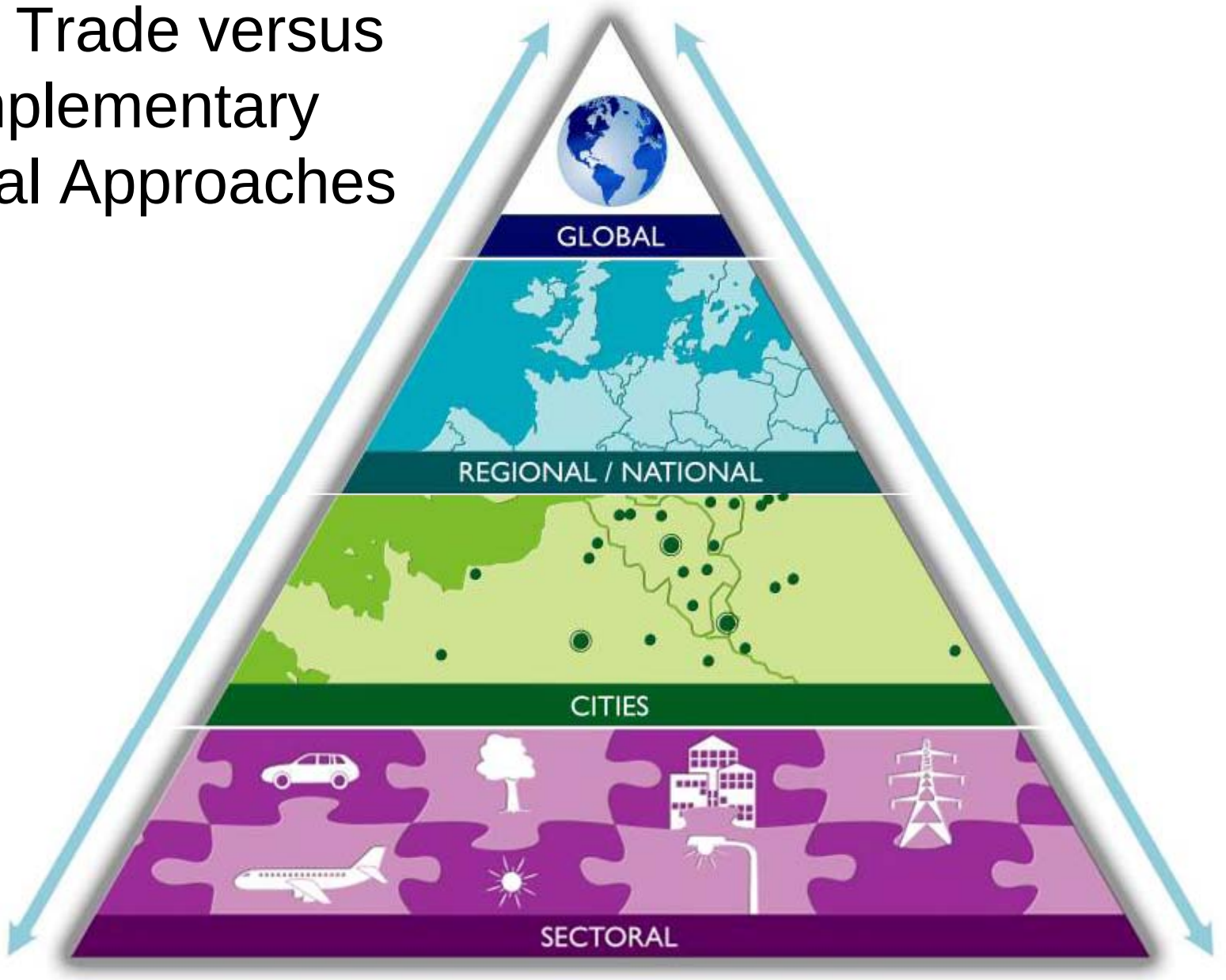
Cap & Trade versus complementary Sectoral Approaches



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Energy efficiency building codes & standards worldwide

- An array of codes and standards; mandatory & voluntary
  - Energy Performance Building Directive (EPBD) – Europe
  - IECC & ASHRAE – USA
  - LEED – USA
  - BREEAM – USA and elsewhere
  - BOMA Go Green – Canada
  - Norma Oficiales Mexicanas – Mexico
  - Building Code Australia – Australia
  - CASBEE – Japan
  - BEAM – Hong Kong
  - Thermal performance of buildings – Russia
  - Emerging buildings codes in China and India
  - And more…

We need simpler, quicker initiatives as well

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Energy efficient lighting

- Simple, low-cost way to make immediate savings, addressing:
  - climate change goals
  - energy usage and cost reductions
  - energy security issues
  - economic growth at time of rising energy prices

Making progress:

- 7 December 2006, Philips calls for phasing out of incandescent bulbs
- Phase-outs now going global:
  EU by 2012, USA end of 2013
  AUS/NZ 2010/11 + many others

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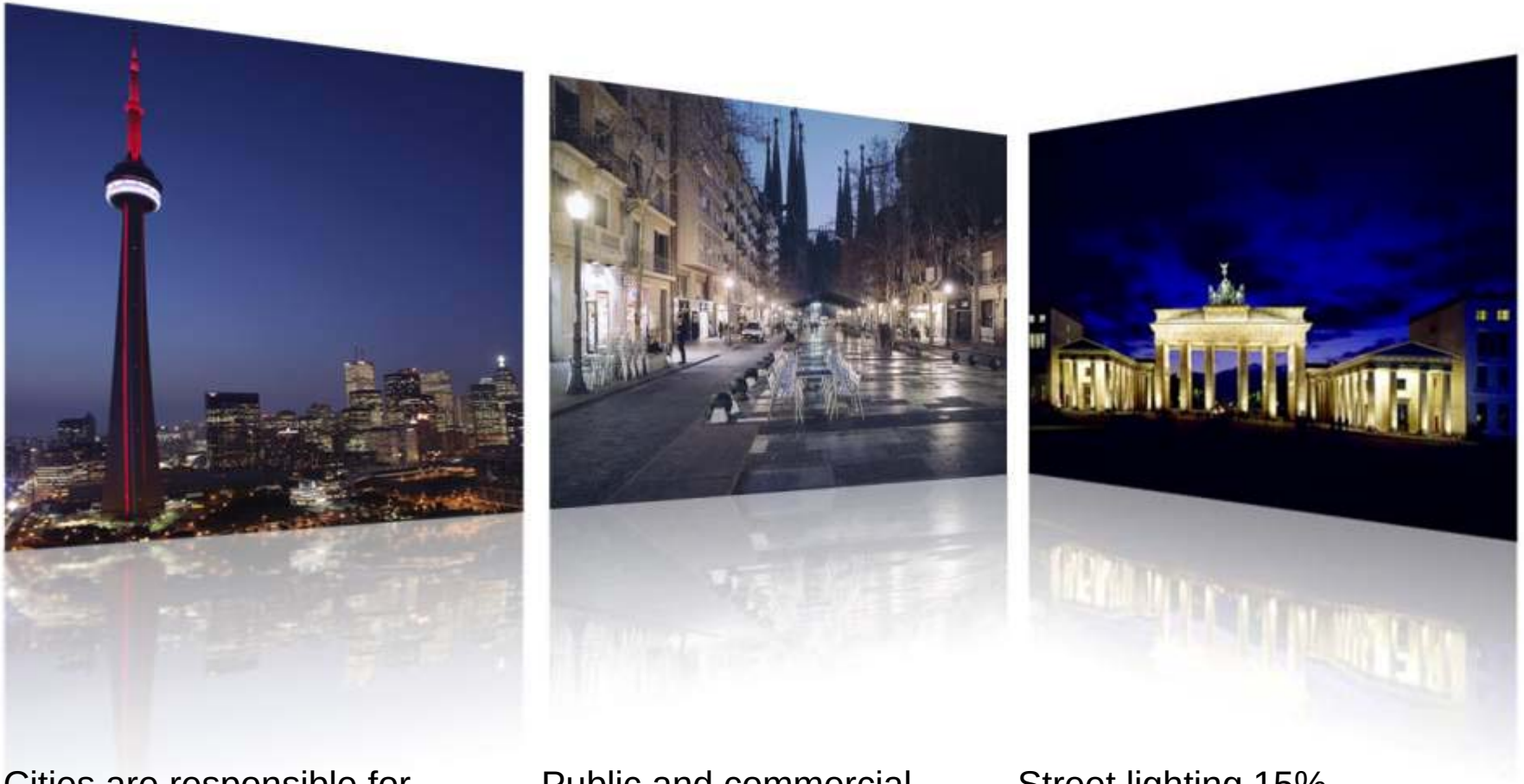
Cities and Buildings – the opportunity



Cities are responsible for 70% of global total energy consumption, and buildings for 40%

Public and commercial buildings represent 60% of *lighting electricity* consumption

Street lighting 15% of *lighting electricity* consumption

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We can all make a difference

- Globally energy-efficient lighting in offices, industry, retail and hospitality could save:
  - 62 billion Euros
  - 331 million tons of CO_2
  - 936 million barrels of oil equivalent
  - 312 power stations @ 2TWh/yr
- Replacing T8 fluorescent tubes in an office or factory by TL5s with lighting controls, saves:
  - 61% energy
  - 93 kg CO_2 per year per lamp
  - 19 Euros per year per lamp
- Small actions add up to big effects

The power of a systems approach

60-70% savings feasible on lighting consumption in offices, schools, hospitals, ….

Systems improvement - office lighting

Systems improvement – street lighting

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Renovation is vital!

Energy-efficient lighting in new buildings is not enough

- 80% of lighting in buildings is old technology; outdated and inefficient
- Only 1% uses lighting controls: presence detection, daylight controls

99% of opportunities are in existing buildings

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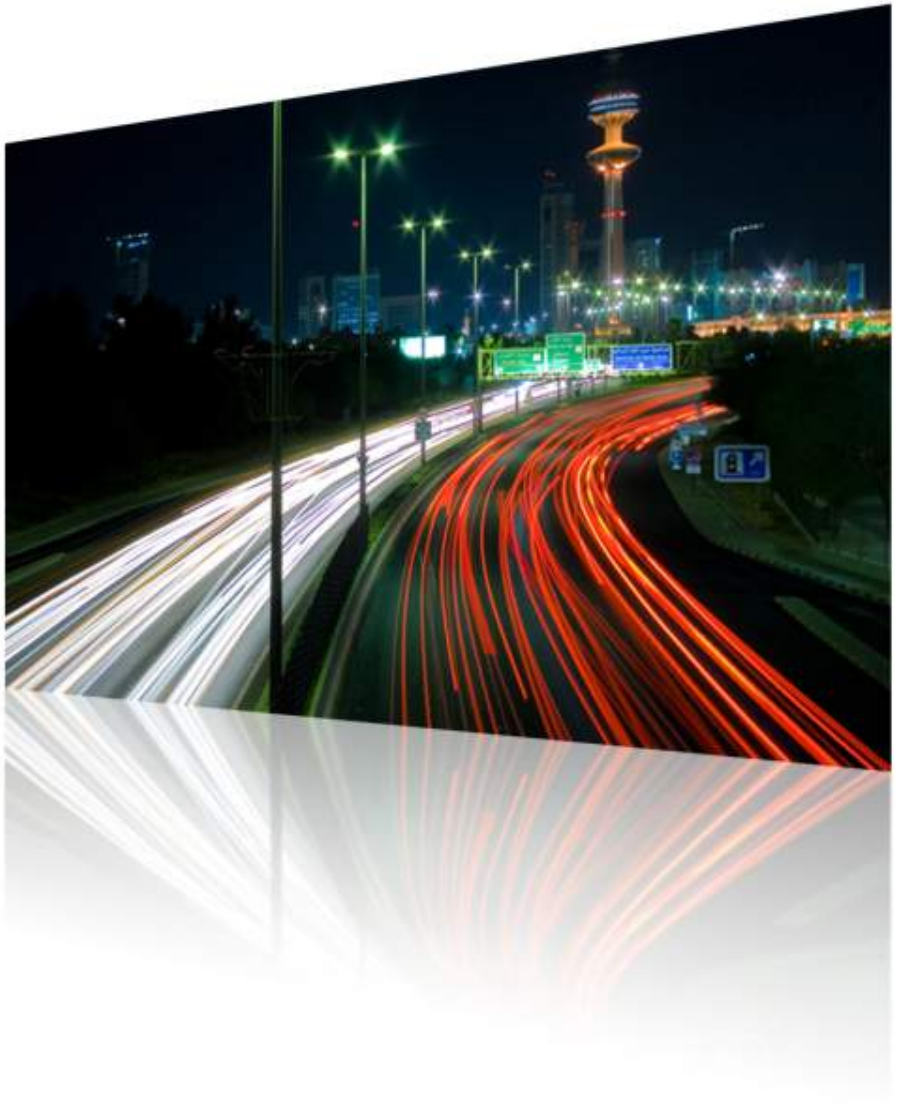
The need for speed

- Office lighting current changeover rate 7% per year
- City lighting 3% per year
  - too slow
  - more than 30 years to achieve full financial and environmental benefits



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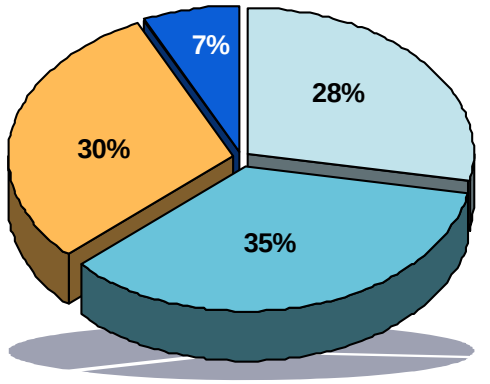
From talk to action

Philips' renovation initiative for cities and non-residential buildings

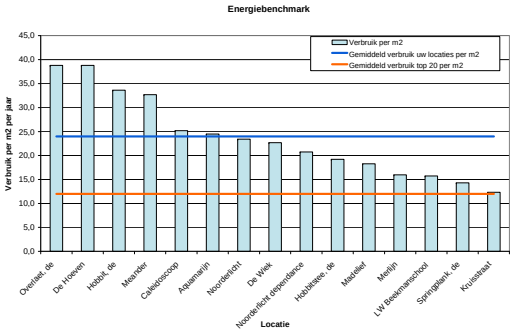
1. Assessment tools and methodologies
2. Products and system solutions
3. Financial solutions

Assessment tools and methodologies

Awareness about energy usage

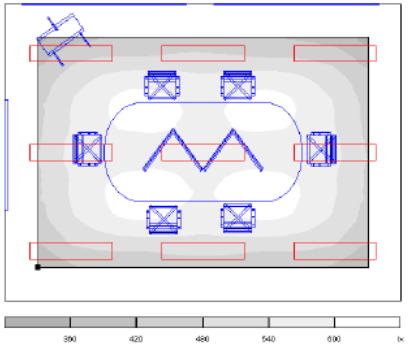


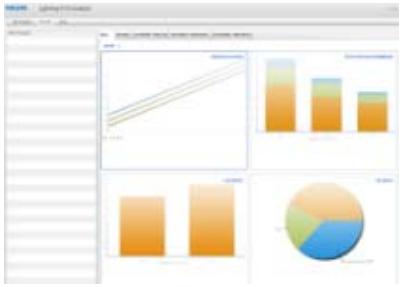
Involvement in own savings potential



kWh/m^2/yr

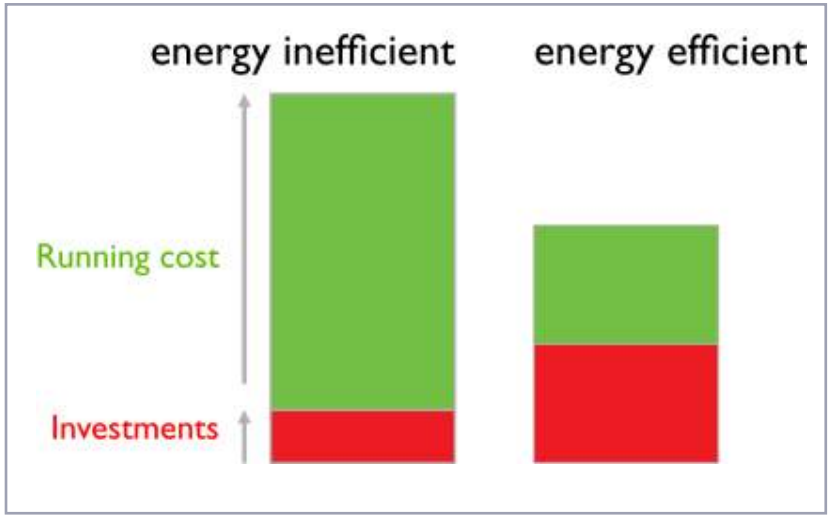
Lighting renovation solution inc. total cost of ownership





Financial solutions

Example buildings/indoor lighting



Not in line with lighting norm	In line with lighting norm		
P: 100W, E: 300 kWh	P: 47W, E:141 kWh		
	Pay back time vs electricity cost kWh		
	0,15 €	0.10€	0.05 €
	3 year	4.5 year	8 year

- Project financing
- Innovative financing solutions

Old technology

- TL-D 33
- EM Gear
- <60% LOR

New technology

- T5 lamp
- HF Gear
- >80% LOR

With dimming additional savings of 30-50% possible,
so payback times can be just 1– 2 years

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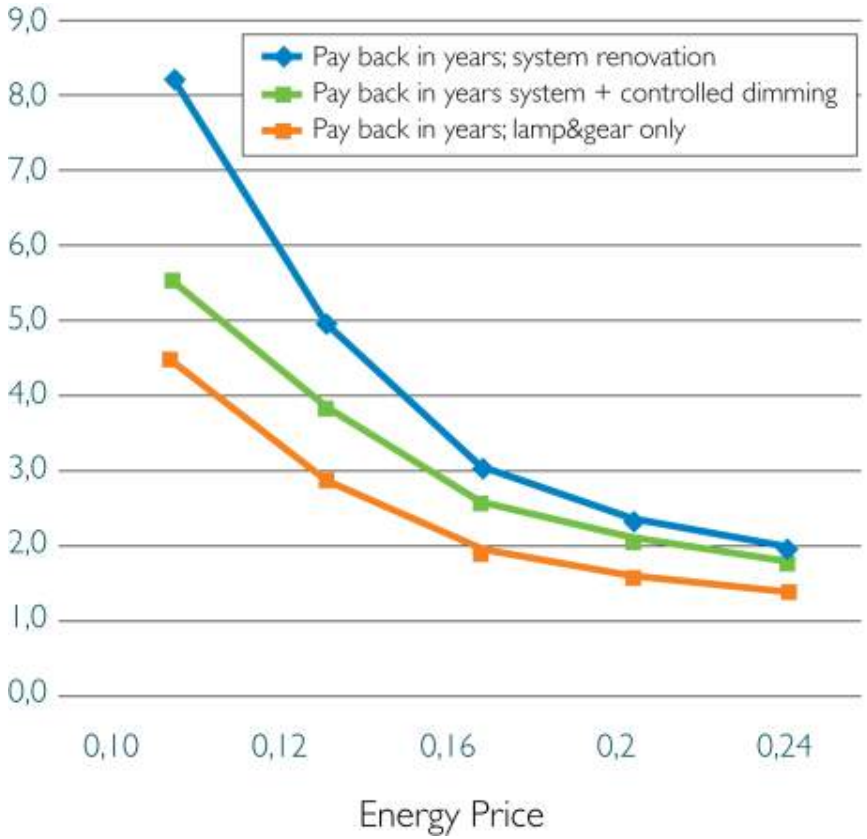
Financial solutions

Example streetlighting



Number of lamps	100
Burning hours	4000

- Project financing
- Innovative financing solutions, e.g. PPP

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

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Products and system solutions (projects)

Rundbau, Gerling Konzern - Cologne, Germany

- Renovation of 40 year old landmark building

- Requirements for office lighting:
  - enhance the characteristic round architecture
  - offer comfort to employees
  - maximize energy efficiency

- Solution:
  - TL-5 luminaires (Arano) with Omnisense
  - Presence detection
  - Daylight regulation

- Energy savings of up to 70%

Products and system solutions (projects)

Sainsbury's Supermarkets - United Kingdom

- Freezer lighting in 350 UK stores
- Requirements for lighting:
  - Reduce energy costs
  - Good quality lighting positively influencing shoppers' buying decisions
  - Uniform lighting in line with brand values and company image
- Solution:
  - Affinium LED Freezer Modules
- Energy savings 75%
  (>1 ton CO_2 / year / freezer)

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Products and system solutions (projects)

Restaurant Flinstering - Breda, The Netherlands

- Winner of Dutch TV Award ‘Mijn tent is top’ (‘My Place Is Best’)
- Requirements for lighting:
  - Create an unforgettable dining experience for 30+ restaurant guests… with the help of dynamic lighting
  - Provide restaurant owners with ingenious energy and cost-saving lighting installation
- Solution:
  - Philips LEDline2, SpotLEDs, eW Powercore downlights and cove lighting
- Energy savings of 70%

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Products and system solutions (projects)

British Gas Office - Mumbai, India

- LEED Platinum Certified Building
- Requirements for office lighting:
  - Minimize environmental impact
  - Create a clean, healthy interior space
  - Maximize energy efficiency
- Solution:
  - TL-5 luminaires with Omnisense lighting controls
  - Downlights with MasterColour lamps
  - Dynamic LED lighting
- Max. 9 W/m^2 used for lighting in office spaces

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Products and system solutions (projects)

Guillotière Bridge - Lyon, France

- Historic bridge in town center

- Requirements for public lighting:
  - Create a pleasant urban nightscape: white light with good color rendering
  - Use existing characteristic masts
  - Maximize energy efficiency

- Solution:
  - CitySoul luminaires with CosmoPolis 140 W lamps

- Energy savings of 48%
- Light level increased 4.5 times

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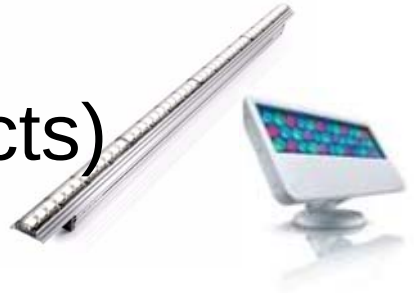
Products and system solutions (projects)

Marriott Custom House Tower - Boston, USA



- Boston’s first skyscraper

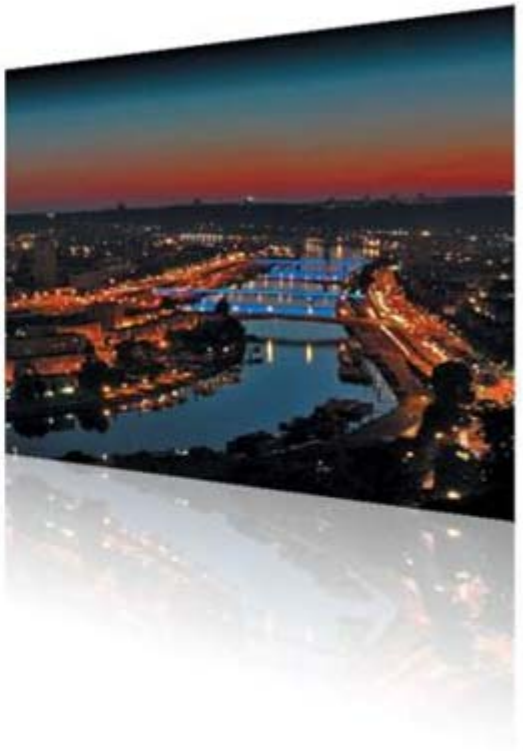
- Requirements for lighting:
  - Restore night time image of landmark building
  - Use existing mounting positions from halogen fixtures
  - Maximize energy efficiency while minimizing maintenance

- Solution:
  - 125 LED luminaires Philips Colorkinetics eW Blast Powercore and eW Graze Powercore
  - Metal halide fixtures from Philips Lightolier

- Energy savings of 67%

Products and system solutions (projects)

City of Rouen - Normandy, France



- PPP including VINCI and Philips

- 18-year Design, Build, Finance, Operate & Maintain contract
  - Public lighting with 15 000 lighting points
  - Wireless network in the old center
  - Traffic management equipment

- Philips involvement
  - Exclusive lamps supplier and preferred luminaires supplier
  - Technical support throughout contract
  - Guidance on lighting projects
  - Design competence for special lighting products
  - Training maintenance teams

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- Energy efficiency in cities and non-residential buildings

A triple win

- For end-users, for the environment, for business
  - Knowledge for the next generation
  - Generate employment
  - Boost economic prosperity and growth

Can we do it?

Yes we can!


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