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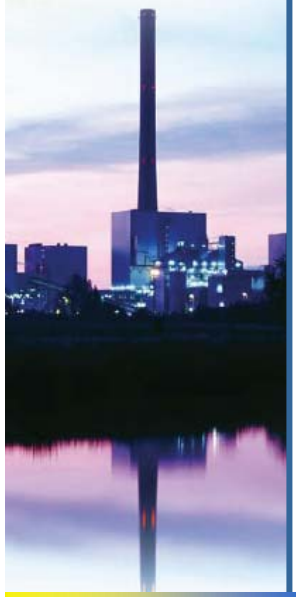

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COP-13 IEA side-event, Bali

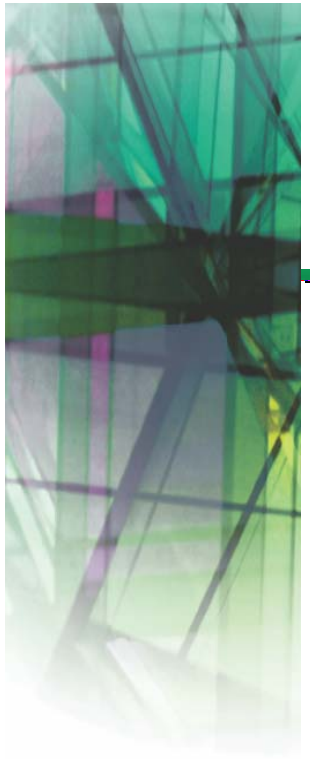
From Heiligendamm to Hokkaido: The IEA's concrete recommendations to the G8 on energy efficiency

Paul Waide, PhD

Senior Policy Analyst

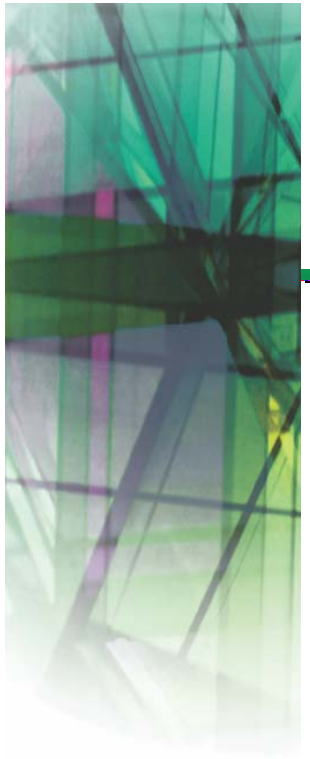
International Energy Agency

10th December 2007



Background to the concrete recommendations

- The 2005 Summit of the G8 at Gleneagles was focused on the development of strategies to mitigate climate change, secure clean energy and achieve sustainable development
- The Gleneagles Plan of Action mandated the IEA to identify means by which G8 policy-makers could attain this objective and report the findings to the 2008 Japanese Summit (to be held in Hokkaido)
- IEA Energy Ministers and G8 Heads of State have made several calls for the IEA to provide detailed policy advice on energy efficiency, particularly in the transport, industrial, equipment and building sectors

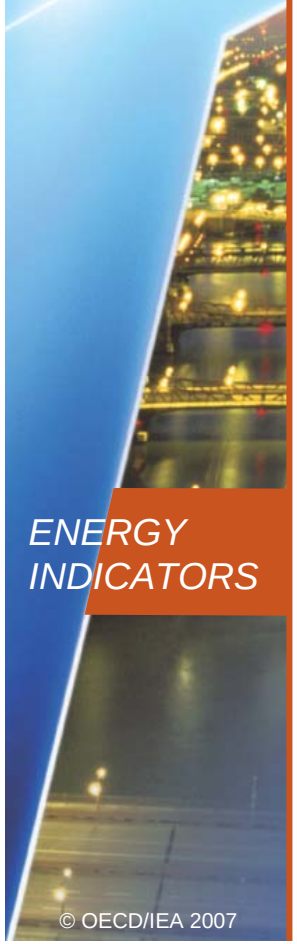


The road from Gleneagles

- Responding to these requests the IEA began to prepare concrete energy efficiency policy recommendations for consideration by the G8 and Plus Five (Brazil, China, India, Mexico and South Africa) but also other governments
- Four concrete energy efficiency policies were submitted to the G8 Summit in St Petersburg held in July 2006
- Additional recommendations were submitted to the G8 Heiligendamm summit in 2007
- More are being prepared ahead of the Hokkaido Summit in July 2008

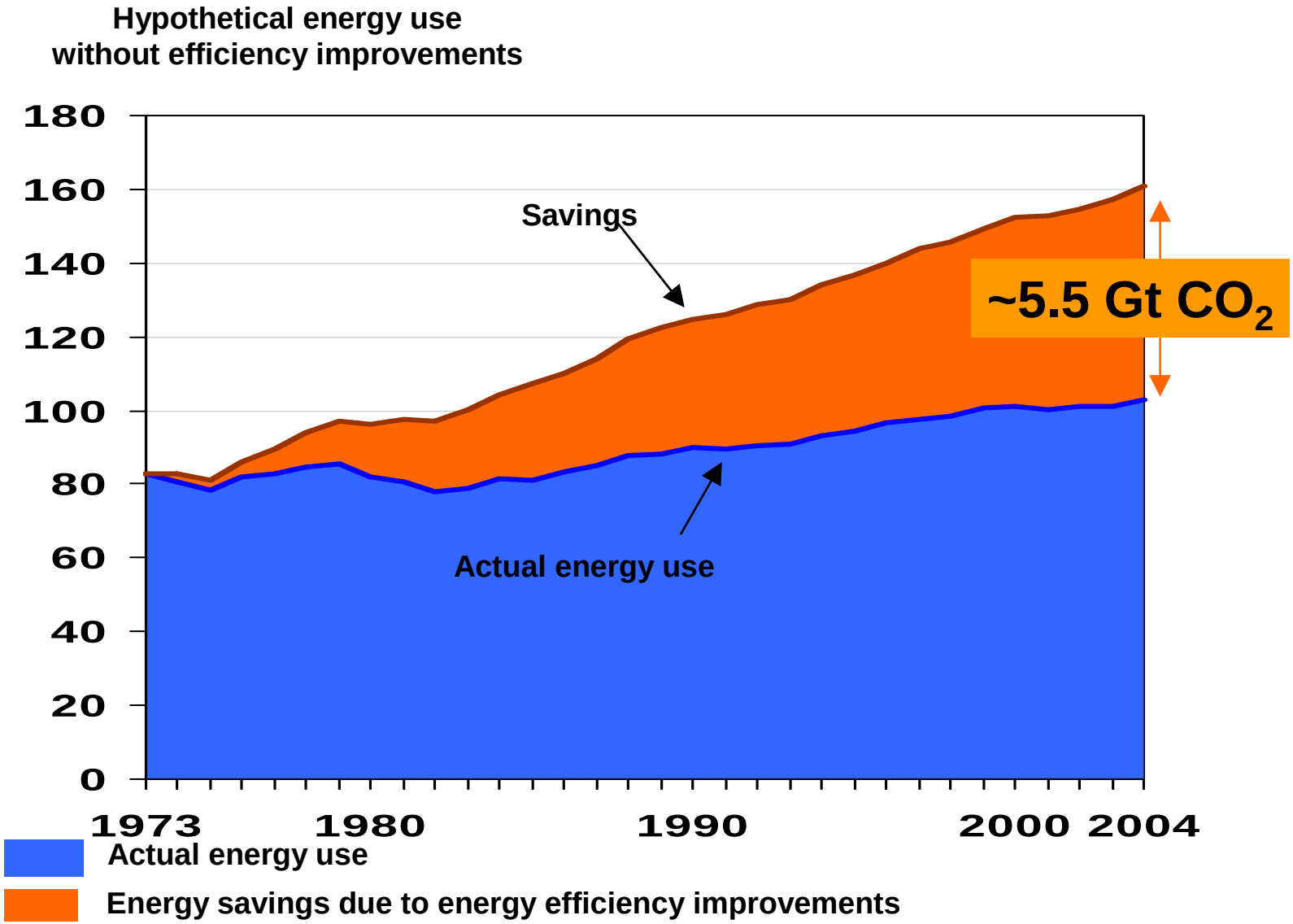
Energy Use in the New Millennium

Trends in IEA Countries



ENERGY INDICATORS

Energy efficiency is the "Biggest Fuel" and the cleanest: historical impact for IEA-11



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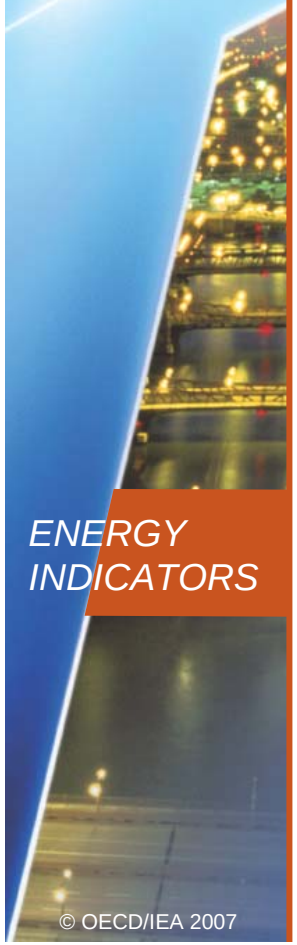
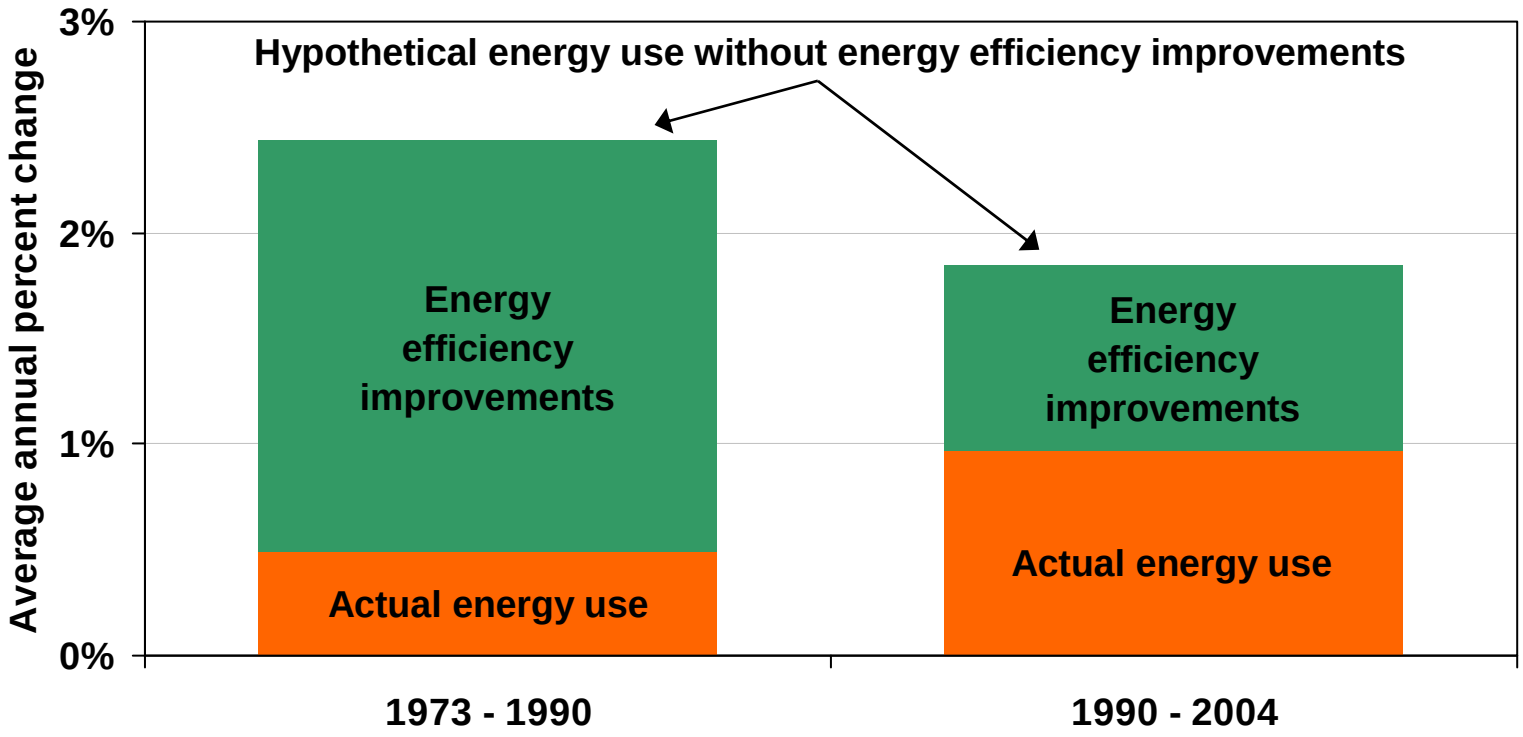
Energy Use in the New Millennium

Trends in IEA Countries



ENERGY INDICATORS

Improvement rates have slowed down: *average annual rate of change in IEA-11*



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WORLD ENERGY OUTLOOK

2006

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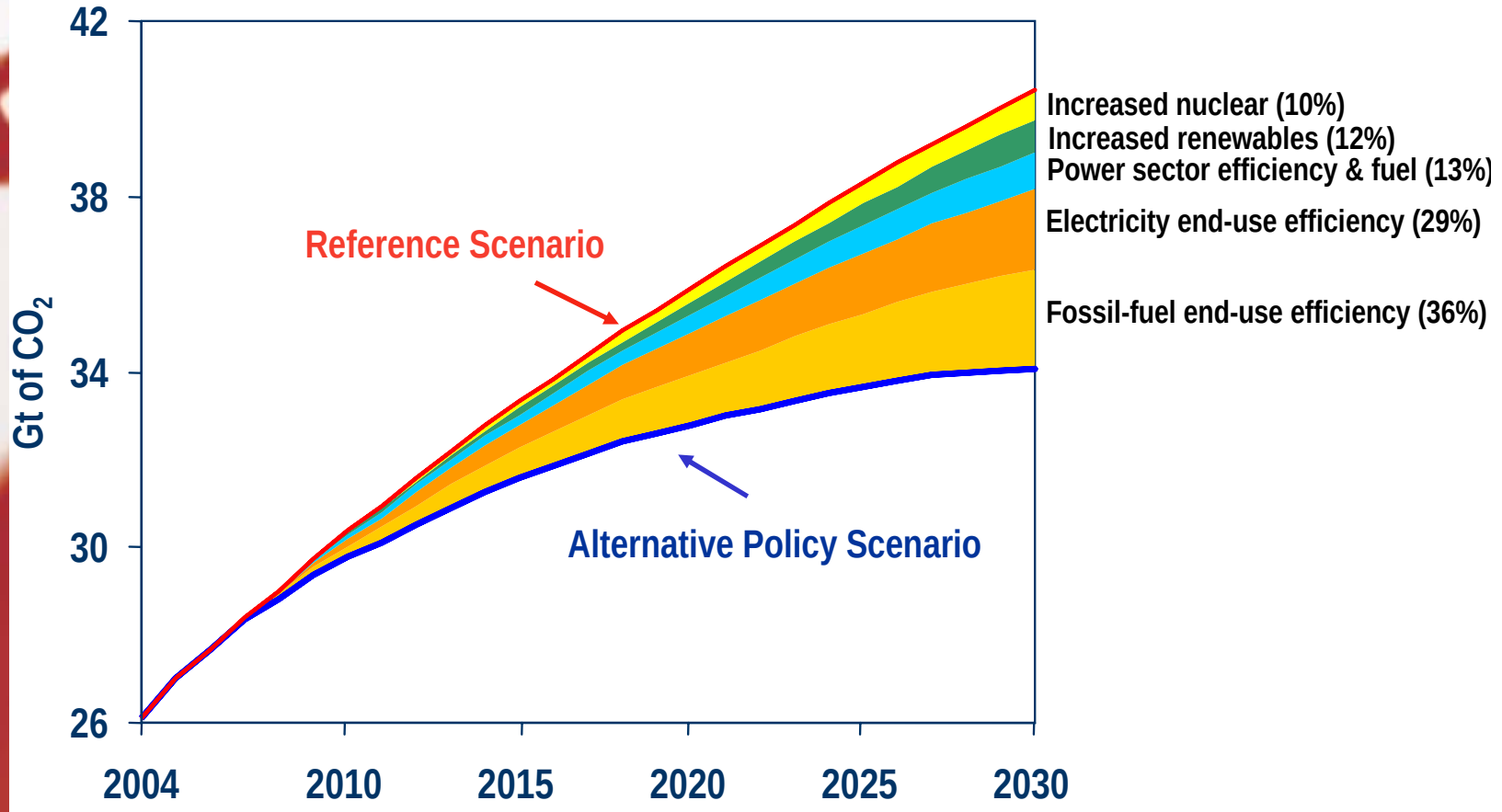
Alternative Policy Scenario: Key Policies for CO_2 Reduction



Improved end-use efficiency accounts for <u>two-thirds</u> of avoided emissions in 2030 in the APS

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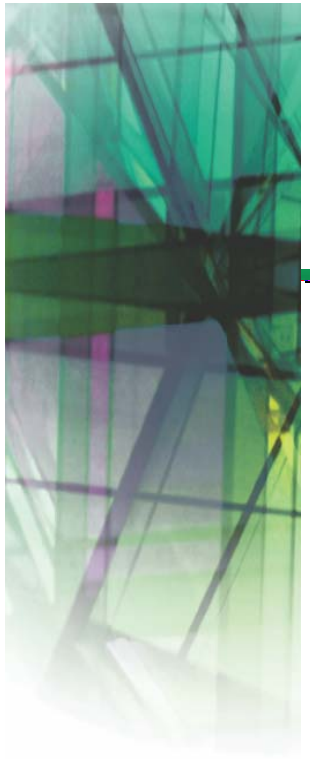
Barriers to energy efficiency

- Missing or partial information on energy efficiency – it is not visible to end user
- Low levels of awareness re cost-effective savings potentials
- Split incentives: Landlord-Tenant issue; division of capital acquisition vs. operation & maintenance budgets; energy capital lifespan often longer than ownership period, etc.
- Fragmented supply chains and shortage of necessary skills to deliver higher efficiency
- Energy budgets have low priority: EE is bundled-in with more important capital decision factors
- All result in emphasis on 1st not Life-cycle costs



Principles used in developing the concrete recommendations

- A recommendation is justified when it:
  - is likely to save a large amount of energy at low cost
  - addresses existing market imperfections or barriers
  - addresses a significant gap in existing policy
  - is supported by IEA analysis and there is a high degree of

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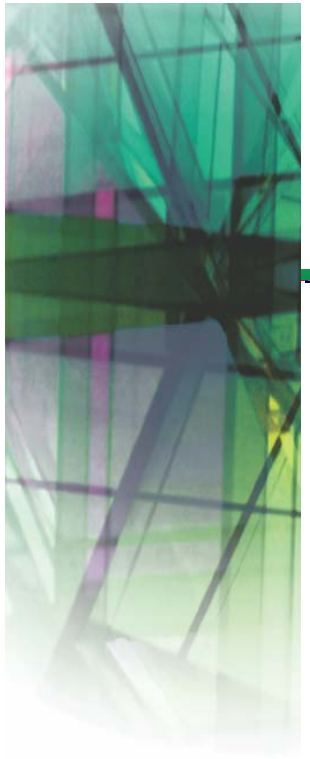

Recommendations: buildings

1. Building codes: Countries that do not currently have mandatory energy efficiency standards for new buildings in Building Codes should urgently set, enforce and regularly update such standards. Those countries that currently have mandatory energy efficiency standards for new buildings should significantly strengthen those standards. Energy efficiency standards for new buildings should be set by national or state government that aim to *minimise total costs over a 30-year lifetime*
2. Very low energy buildings: Countries should support and encourage the construction of buildings with very low or no net energy consumption (Passive Energy Houses and Zero Energy Buildings) and ensure that these buildings are commonly available in the market. Governments should set objectives for PEH and ZEB market share of all new construction by 2020. Passive Energy Houses or Zero Energy Buildings should be used as a benchmark for energy efficiency standards in future updates of building regulations

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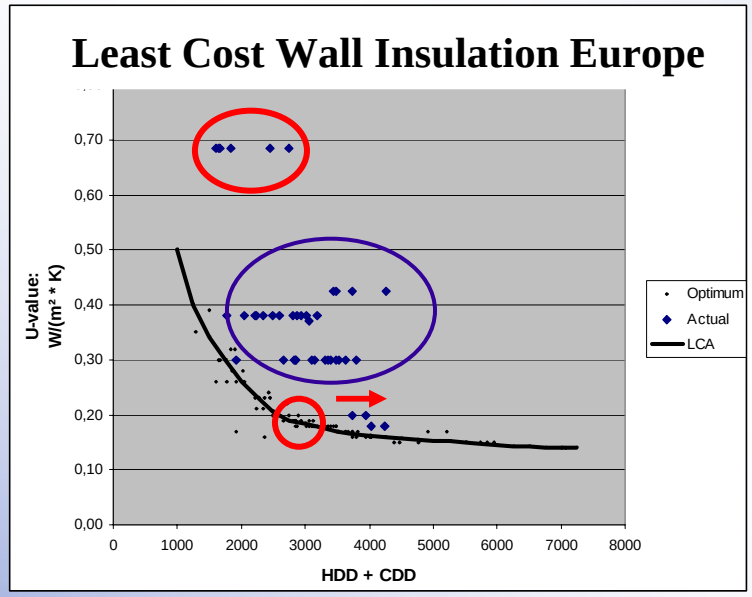
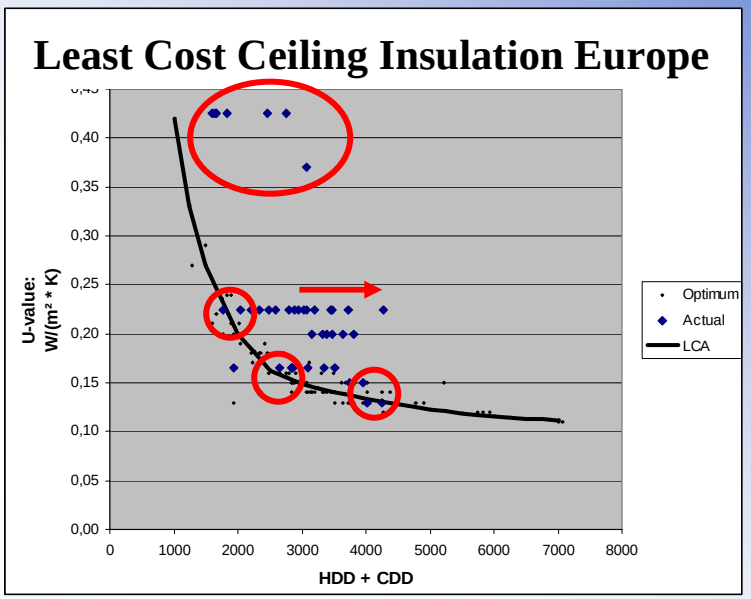
Even the most stringent codes are not cost-optimised over the building lifetime





e.g. U-values in European Building codes compared to Least Cost over 30 years

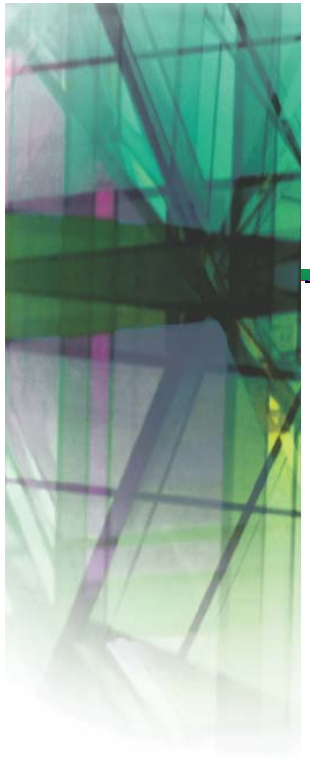
Most building codes are far from the level that would ensure the lowest life cycle cost over the buildings lifetime

Frankfurt/M Germany Sophienhof
FAAG/ABG Frankfurt Architect Fuessler

E.g. Passive-house flats

160 dwellings
14 767 m²
Passive House Technology

Extra building cost =
3-5% of the total cost

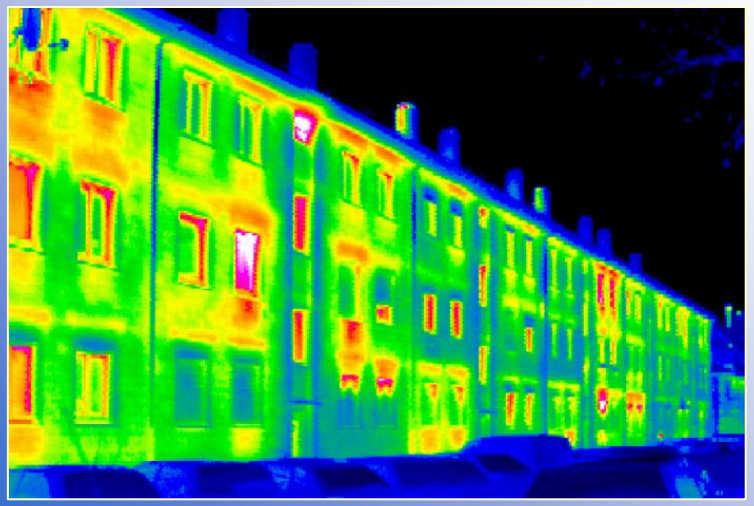


Recommendations: buildings

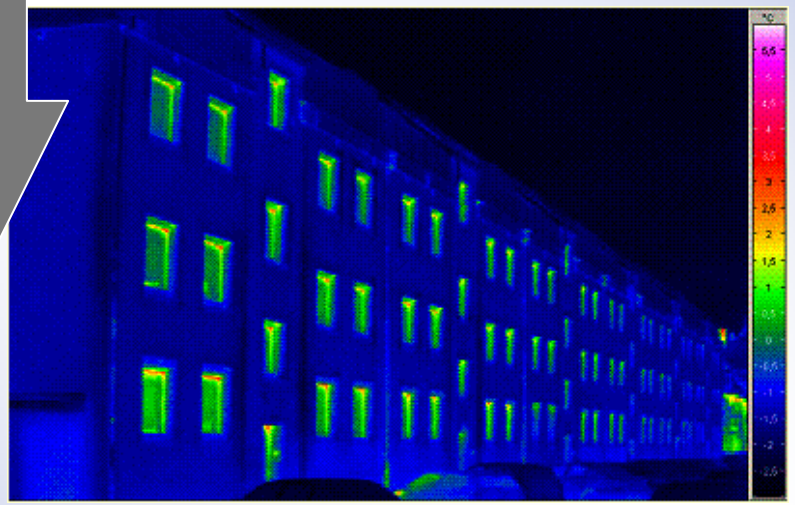
3. Existing buildings:

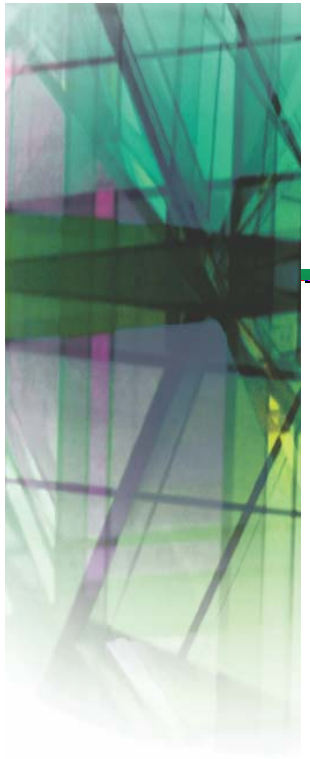
- Governments should systematically collect information on energy efficiency in existing buildings and on barriers to energy efficiency
- Standardised indicators should also be calculated for energy efficiency in buildings for international comparison, monitoring and selection of best practices
- Based on this information governments should construct a package of initiatives to address the most important barriers to energy efficiency in buildings
- This package should set standards to ensure that energy efficiency improvements are achieved during the refurbishment of all buildings
- Also, the package should increase awareness of efficiency in the building sector and raise the market profile of a buildings' energy performance

Potential for existing Buildings – e.g. Frankfurt Refurbishment using Passive House Technology



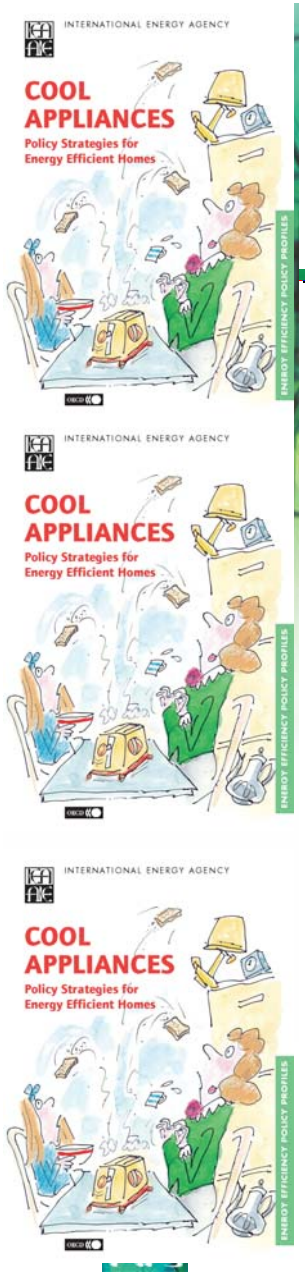
87%





Recommendations: appliances

4. Standards and labels: All countries should adopt mandatory energy performance requirements and, where appropriate, comparative energy labels across the spectrum of appliances and equipment at a level consistent with international best practices. Adequate resources should be allocated to ensure that stringency is maintained and that the requirements are effectively enforced
5. Standby power: adopt a common 1W limit for standby power but consider allowing negotiated exceptions when merited
6. Set top boxes: adopt minimum efficiency standards for digital television adaptors
7. Low power modes: adopt policies which require electronic devices to enter low power modes automatically after a reasonable period when not being used. Countries should ensure that network-connected electronic devices minimise energy consumption, with a priority placed on the establishment of industry-wide protocols for power management



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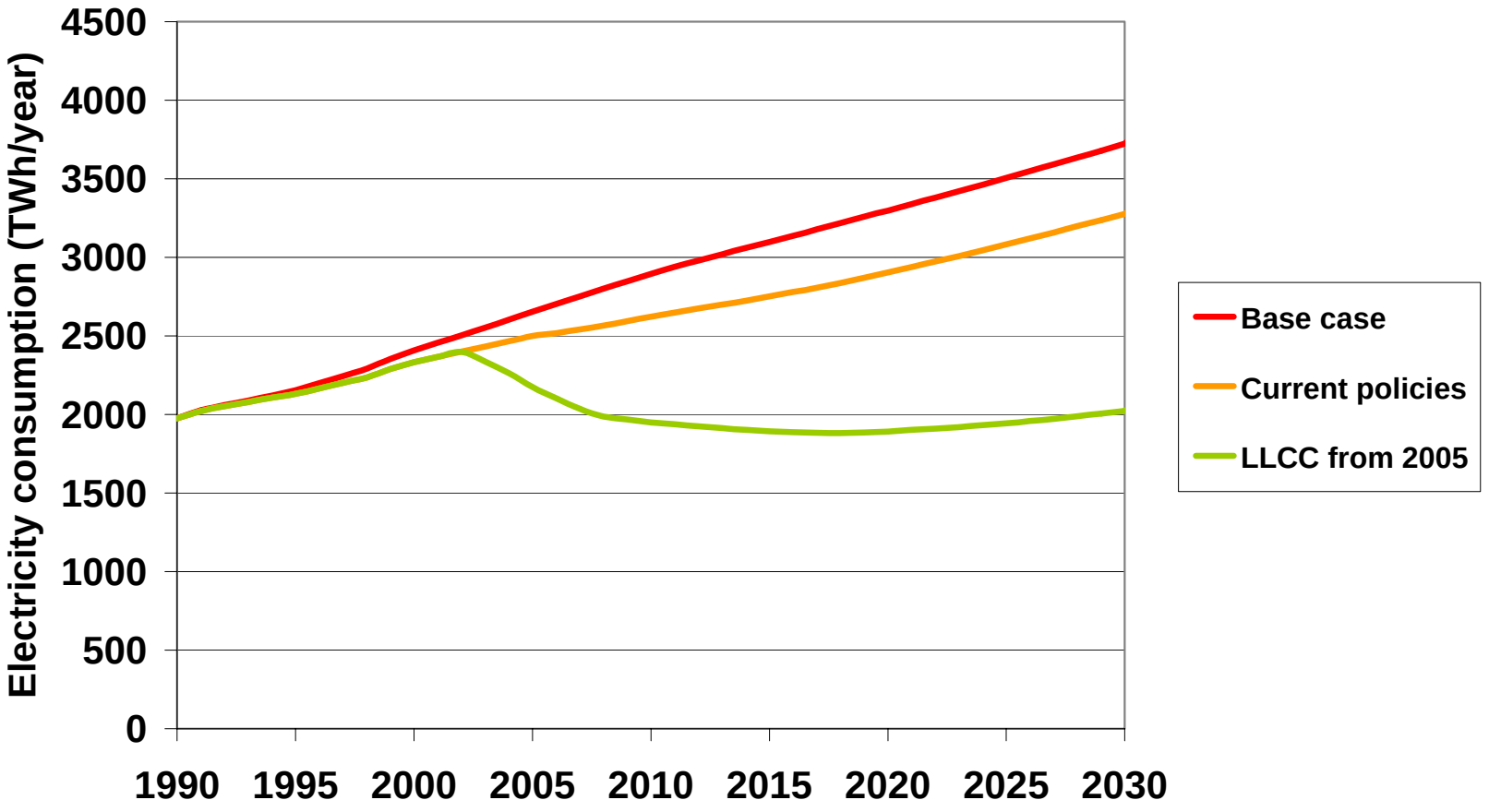
Potential to save household electricity demand in IEA[1]



[1]findings from 2003 study of IEA countries

Recommendations: lighting

8. Comprehensive policy package: Countries should adopt an objective of attaining best-practice in lighting energy efficiency and develop a comprehensive policy package aimed at achieving it across all lighting usage sectors
9. Incandescent lamps: Governments should move to phase out the most inefficient incandescent bulbs as soon as commercially and economically viable

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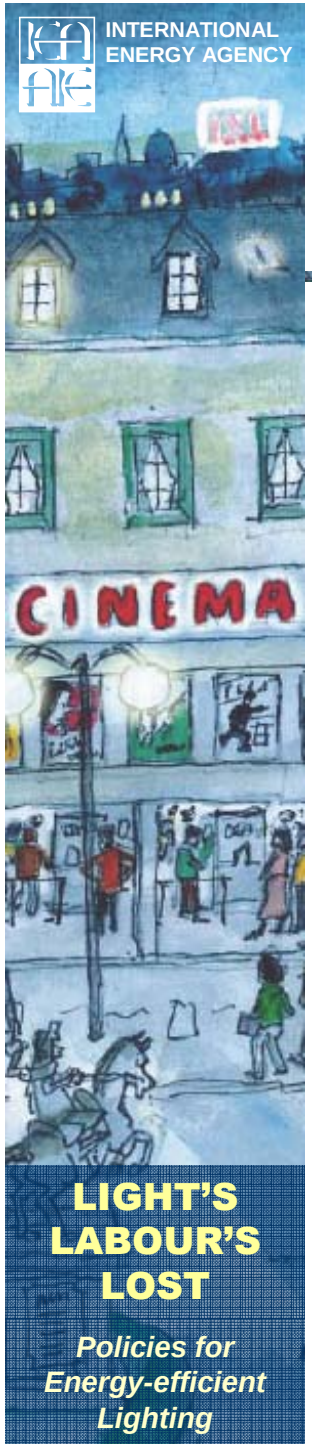
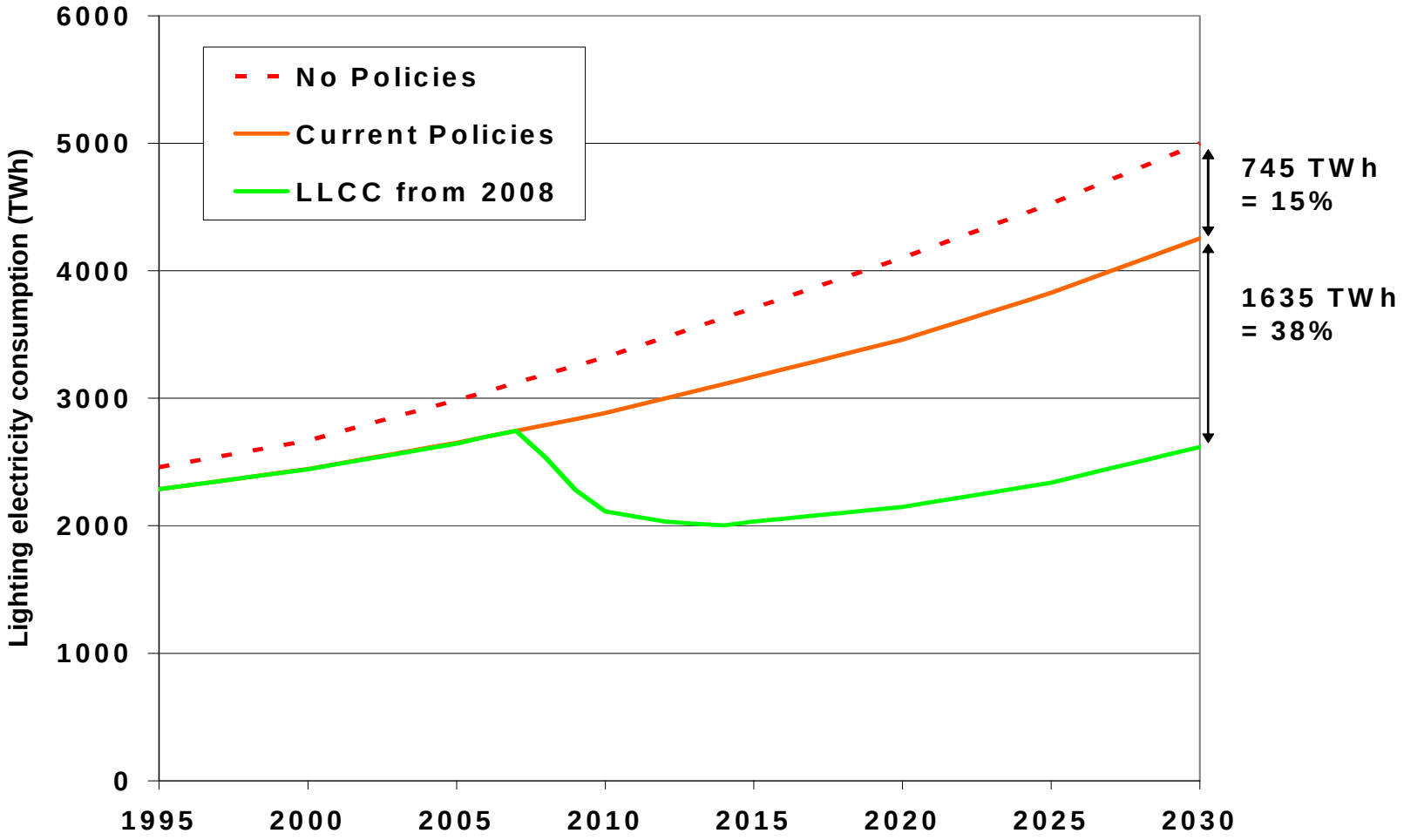
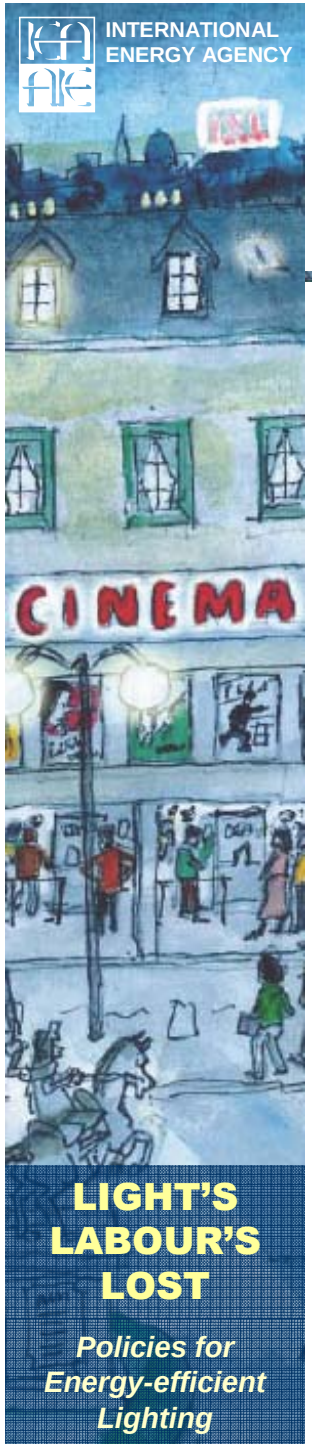


Global lighting electricity demand: What can be saved cost-effectively?





Cumulative benefits of the lighting *LLCC from 2008* scenario (to 2030)

- **Avoids 28000 TWh of electricity use (almost 6% of all global electricity demand over the same timeframe)**
- **Total costs of lighting are US$2.6 trillion (1000 billion) lower**
- **Avoids 16 Gt of CO_2 emissions**
- **Net cost of avoided CO_2 emissions are negative at: -US$161 per tonne of CO_2**

Recommendations: transport

10. **Vehicle fuel economy standards:**

- adopt mandatory fuel efficiency standards for new light-duty vehicles. If such standards already exist, increase their stringency

11. **Fuel efficient tyres:** Governments should adopt new international test procedures to measure the rolling resistance of tyres and use them to set maximum rolling resistance limits and to display tyre energy labels. In addition, all governments, in cooperation with international organisations, including UNECE, should make the fitting of tyre-pressure monitoring systems on new road vehicles mandatory

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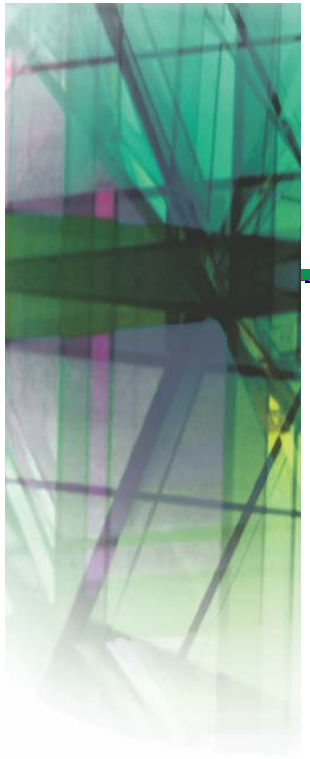

Recommendations: industry & cross-sectoral

12. <u>Industry:</u> Governments should support the IEA's energy efficiency indicator work that underpins critical policy analysis by ensuring that accurate energy intensity time series data for industrial sectors is regularly reported
13. <u>M&V, Fiscal, Finance:</u>

- adopt, and publicise to the private sector, a common energy efficiency savings' verification and measurement protocol, to reduce existing uncertainties in quantifying the benefits of energy efficiency investments and stimulate increased private sector involvement
- review current subsidy and fiscal incentive programmes to create more favourable conditions for private energy efficiency investments
- collaborate with the financial sector to establish public-private instruments to facilitate energy efficiency financing

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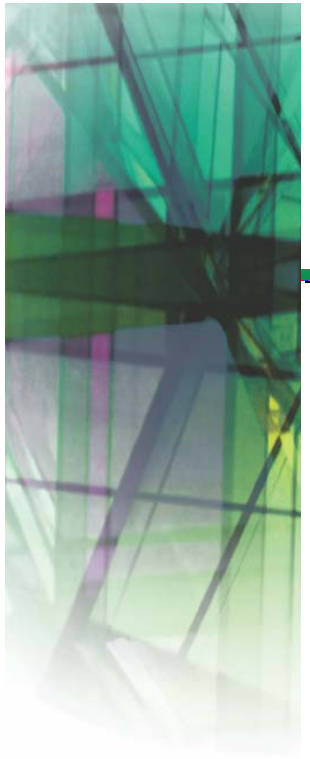

Recommendations: cross-sectoral

14. National plans: All countries should set goals and formulate action plans for improving energy efficiency in each sector of their domestic economies. Energy efficiency policy agencies should be adequately resourced. Best practice action plans should:
    - assess energy consumption by end-use in all sectors
    - identify the economy's energy savings potentials
    - establish objectives and adequate methods for evaluating the success of the plan
15. Reporting progress: Governments should agree to track progress in implementing each of the concrete recommendations and to provide the IEA with regular updates. The IEA will then present an assessment of progress to the 2008 G8 Summit in Japan

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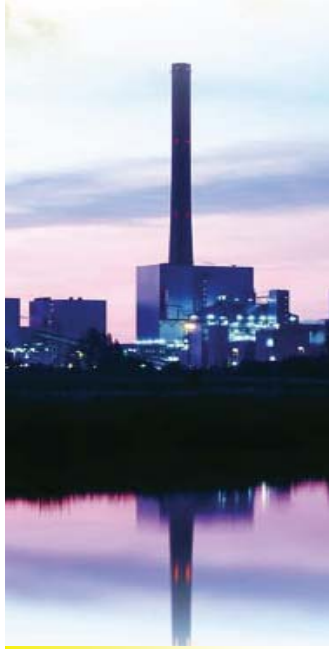

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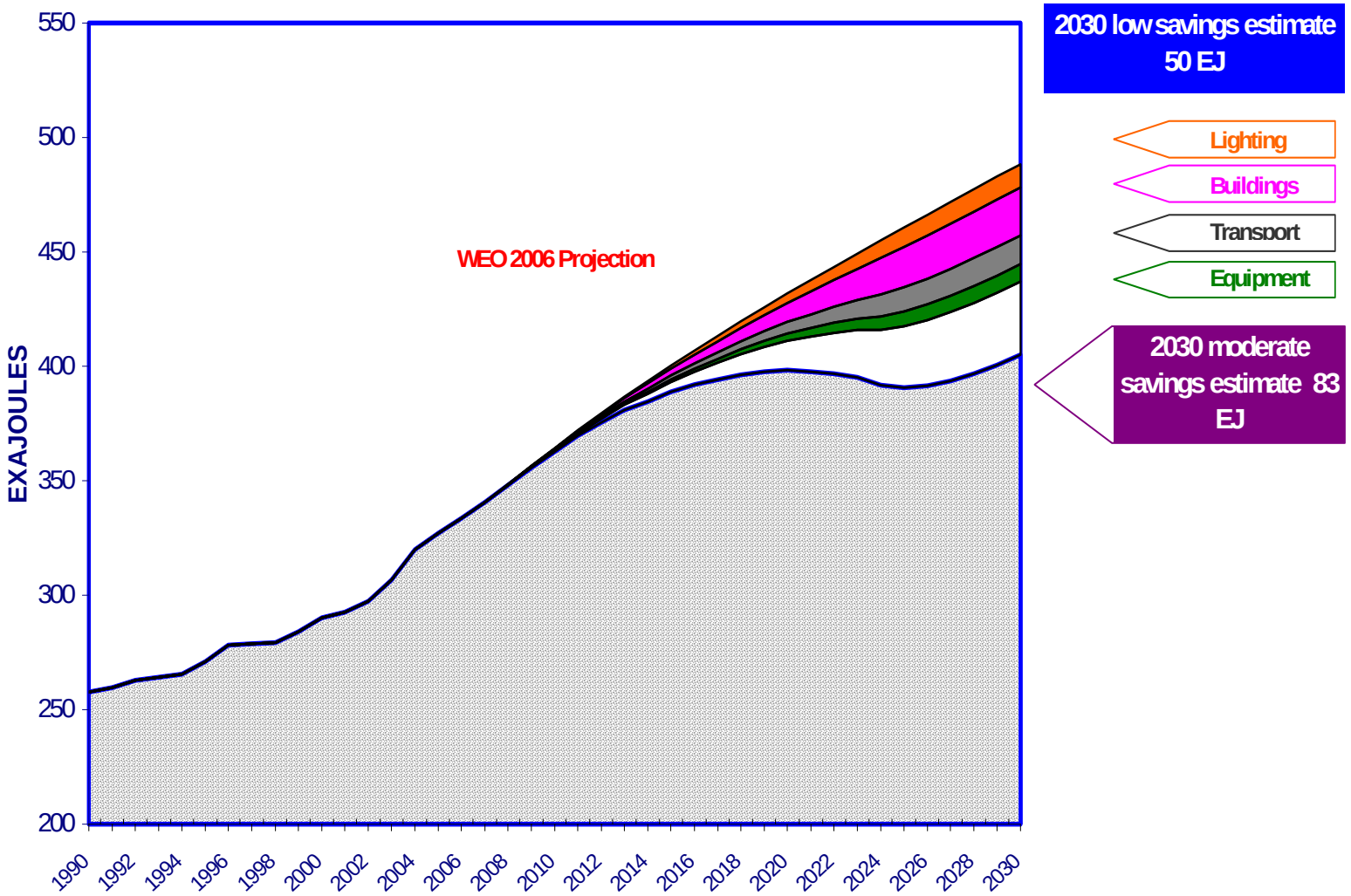
Estimated impact of full implementation of IEA G8 policy recommendations on world energy demand[1]



[1]provisional estimates for final energy

Leaders at the G8 Summit in Heiligendamm committed to take IEA concrete recommendations forward

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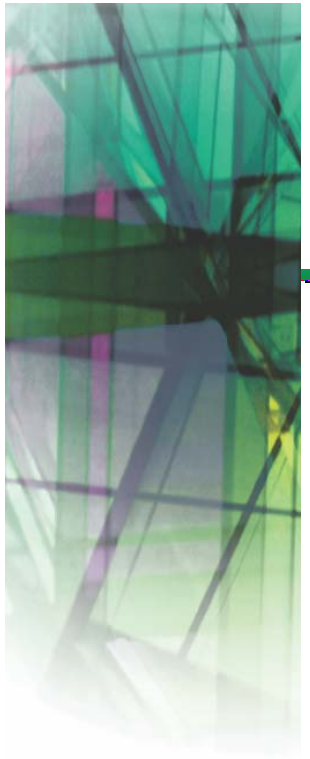

Progress to date

- Many countries have adopted or are planning major increases in the stringency of building energy codes and more countries are introducing mandatory codes
- Several countries have set targets or requirements for the construction of very low energy/carbon buildings
- Many economies are introducing 1W limits for standby power modes
- Over 80% of the gloabl population is in economies applying standards and labels: the end-use coverage of mandatory schemes is continuing to grow
- Most OECD economies have adopted or are planning to adopt mandatory light duty vehicle fuel economy standards. Many are also planning measures for tyres
- Almost all OECD economies are introducing regulatory measures to phase-out inefficient incandescent lamps, many non-OECD economies are doing the same and most other major economies are scaling-up support for high efficiency lighting
- Many economies are developing national EE plans including additional financial support and incentives

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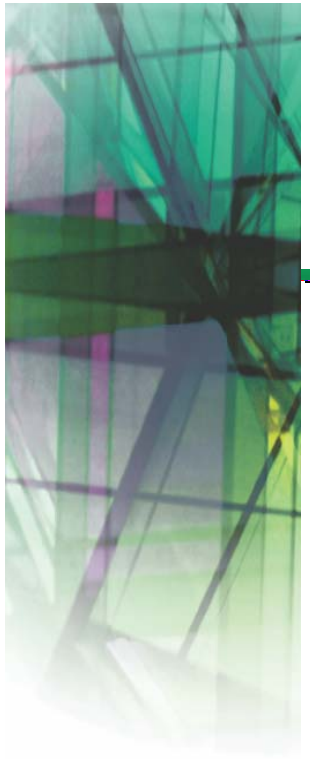

IEA supporting actions

- Establishing a global network on sustainable buildings for policy makers, researchers & industry
- Launching a new international implementing agreement concerning policy cooperation for energy efficient electrical end-use equipment
- Exploring options for a new high level International Platform on Energy Efficiency
- Providing technical and policy support for the international phase-out of incandescent lamps
- Reviewing progress with current policy recommendations and developing new ones

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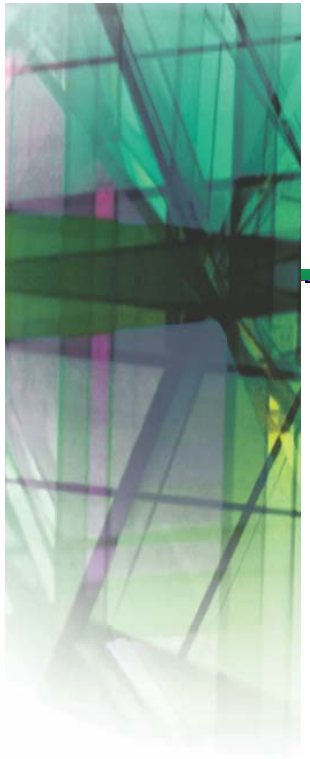

Conclusions

- Energy efficiency presents a vast under-exploited and cost-effective GHG saving opportunity
- It merits being the single greatest focus of GHG abatement strategies in the near and medium-term
- A carefully designed, well implemented and soundly evaluated portfolio of measures is needed to address all barriers
- IEA recommendations support this and are being extended

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