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Technology Challenges

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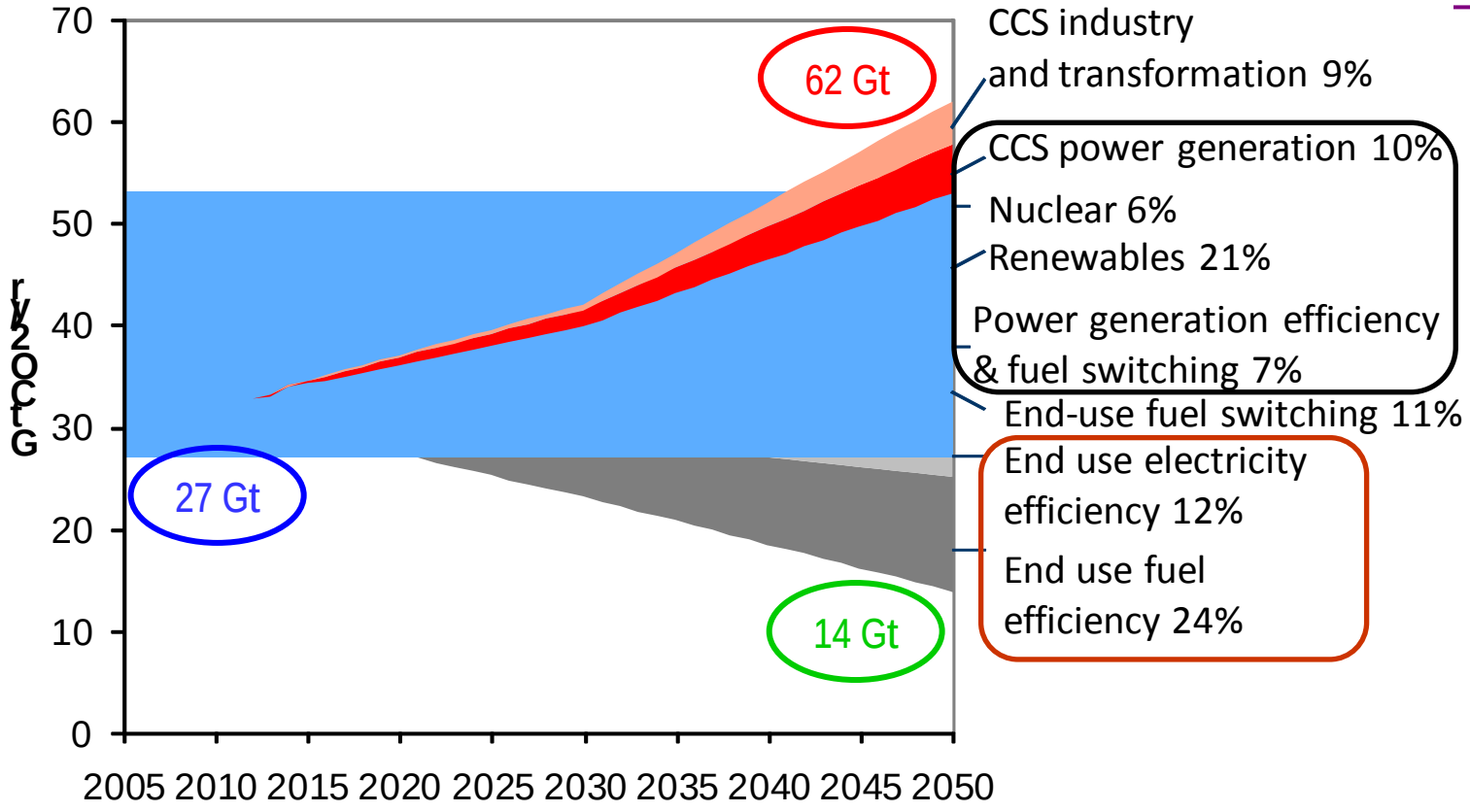
CDM Reform Towards Future Flexibility Mechanisms

CEPS, Brussels, 19 February 2009

Outline

- Viewing the technology challenge
- What are the main gaps? Focus on:
  - Energy efficiency
  - CO_2 Capture and Storage

Viewing the technology challenge



Improved efficiency and decarbonising electricity could bring emissions back to current levels by 2050.

Energy efficiency is essential to the viability of the mitigation strategy, i.e. to keep energy supply costs as low as possible

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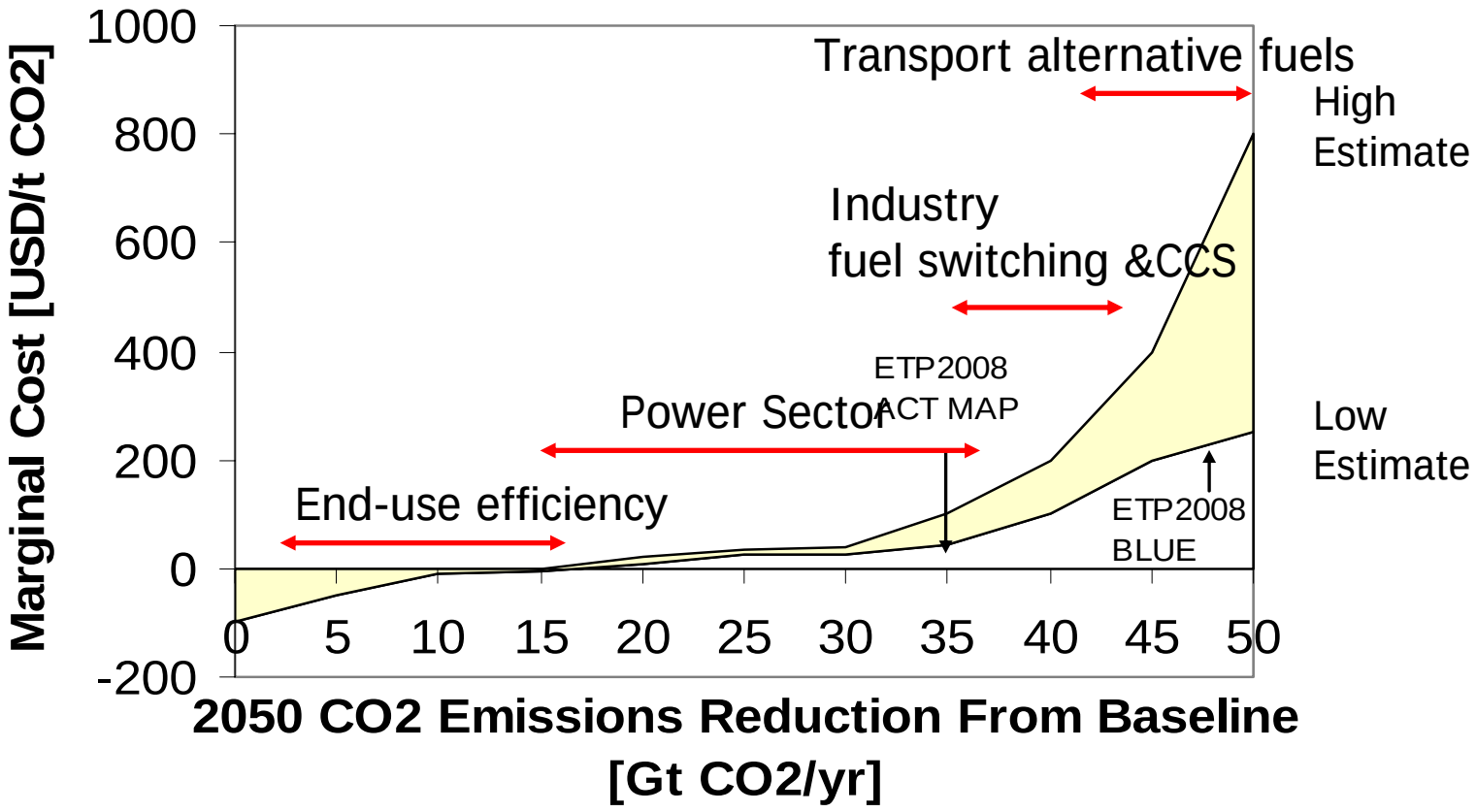
Marginal cost of CO_2 reductions



Reducing emissions by 50% implies a price tag of $200-$500/tCO$_2$
Trading instruments are one way to diffuse the needed price signal
Most of the EE potential is at negative* overall *cost

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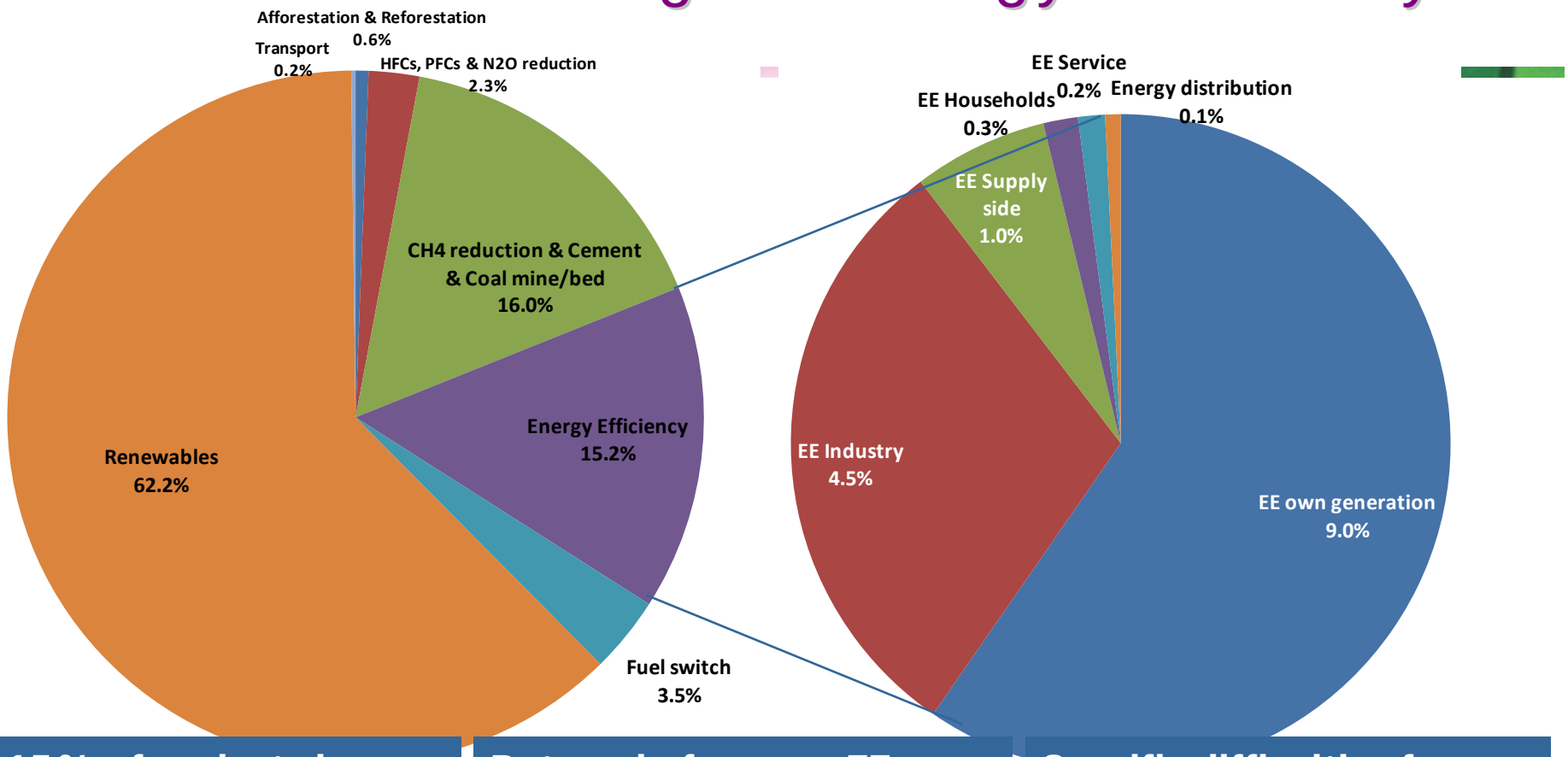
Where are implementation gaps? Can flexibility mechanisms help?

- In comparison with its expected contribution, energy efficiency has a poor track record in the Clean Development Mechanism

- Emissions from electricity should be addressed as a matter of urgency
  - The largest, fastest growing source of GHG
  - Includes end-use efficiency (see above)
  - What about power generation?

A snapshot on number of projects
What is CDM doing for energy efficiency?



~ 15% of projects in pipeline to June 2008 are related to energy efficiency; expected to deliver 12% - or 0.3 GtCO2e – of cumulative CERs up to 2012

But: main focus on EE measures in industry; ~ 5.4% of total issued credits belong to energy efficiency projects; of which more than 97% are related to industry

Specific difficulties for demand-side EE projects outside industry; And: scale –13 GtCO2 emitted by developing countries (energy, 2006)

Source: UNEP Risoe, June 2008

How to best support energy efficiency internationally?

- **Project scale is inadequate (disproportionate transaction costs)**

- **Focus on direct policy support**
  - **Energy efficiency usually carries a *negative* overall cost**
  - **But need active policy undertaking to trigger potential**
  - **See IEA 25 Concrete Recommendations**
  - **What would it take to get them off the ground in major developing countries?**
    - **A discussion to be engaged with these countries.**

CCS in Emerging Economies

- China, India, Brazil, Russia and S. Africa must be key partners in CCS
  - IEA sees their coal use rising dramatically in the next two decades
- China, Brazil (Petrobras) actively developing pilot projects
- The high cost of CCS makes it a difficult proposition for other countries
- Projects must be accompanied by policies
  - Monitoring & verification
  - Remediation
  - Liability frameworks

CCS Technology Transfer Framework

- CCS has faced barriers in the CDM
  - Resistance by a small number of countries
- Paths forward
  - Approve a pilot phase of CCS in the CDM
    - Limited # of projects, required to provide transparent monitoring data
  - Develop a targeted mechanism to finance CCS technology (and knowledge) transfer post-2012
  - Development bank financing for portions of projects
    - E.g., CO_2 storage site prospection

➔ A carbon price is a prerequisite for CCS – but much more needed on 'enabling environment'

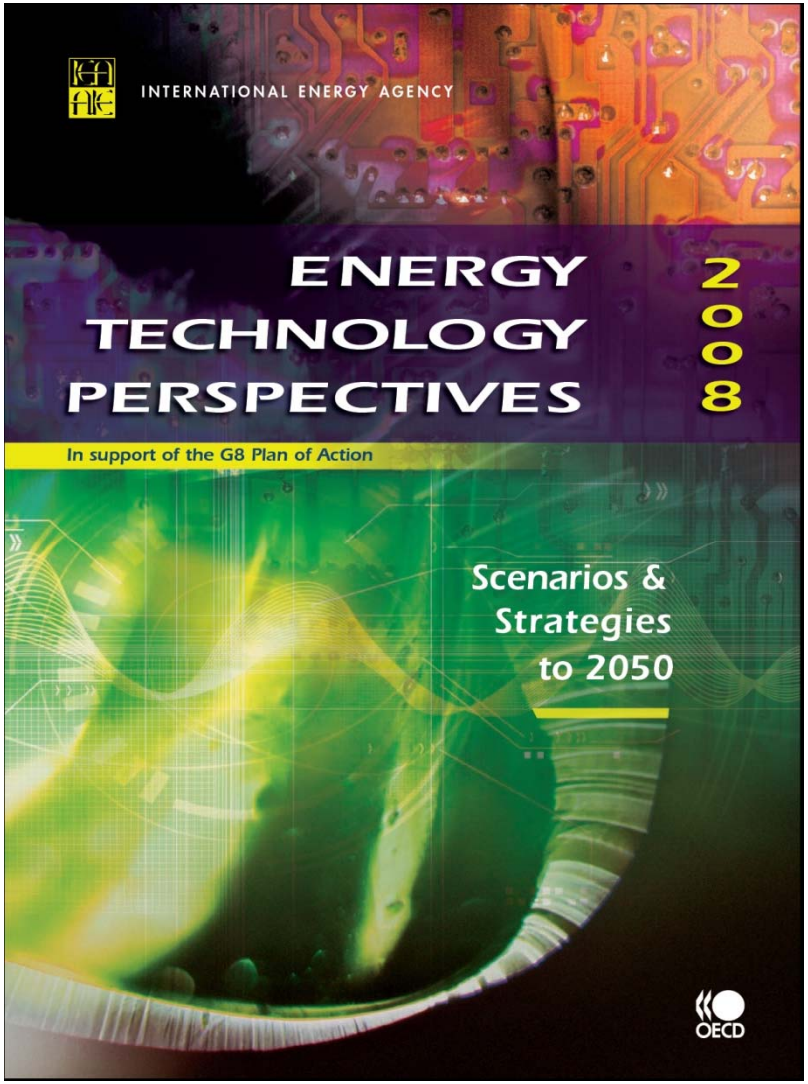
Sectoral crediting?
Sectoral CDM, no-lose target, etc.

- Certainly scope for support to cleaner generation technology in power generation
  - Intensity goals in tCO_2/MWh (although hard caps are technically easier…)
  - (SCM in generation won't support end-use efficiency)
- Political dimension: ambition of baselines
  - Potentially huge impact on carbon market
  - Baseline ambition needed to share the mitigation effort more adequately across countries
    - In particular: move away from pure offset mechanism (CDM)
  - How to orchestrate the negotiation over baselines?
- Work needed on domestic implementation issues
  - How to get the carbon price to entities?

Future flexibility mechanisms

- **Not fitted to the energy efficiency challenge?**
  - **Market barriers abound in energy efficiency**
  - **Policies needs specific support**
- **A carbon cost is a prerequisite to curb global CO_2 trends**
  - **Need to expand the scope of flexibility mechanisms**
  - **Sectoral crediting**
    - **Negotiating baseline / domestic implementation issues**
- **Technology expertise reveals other challenges (regulatory, legal…)**
- **Efforts to address both policy side and carbon market side of mitigation in developing countries**

Thank You



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BACK-UP SLIDES

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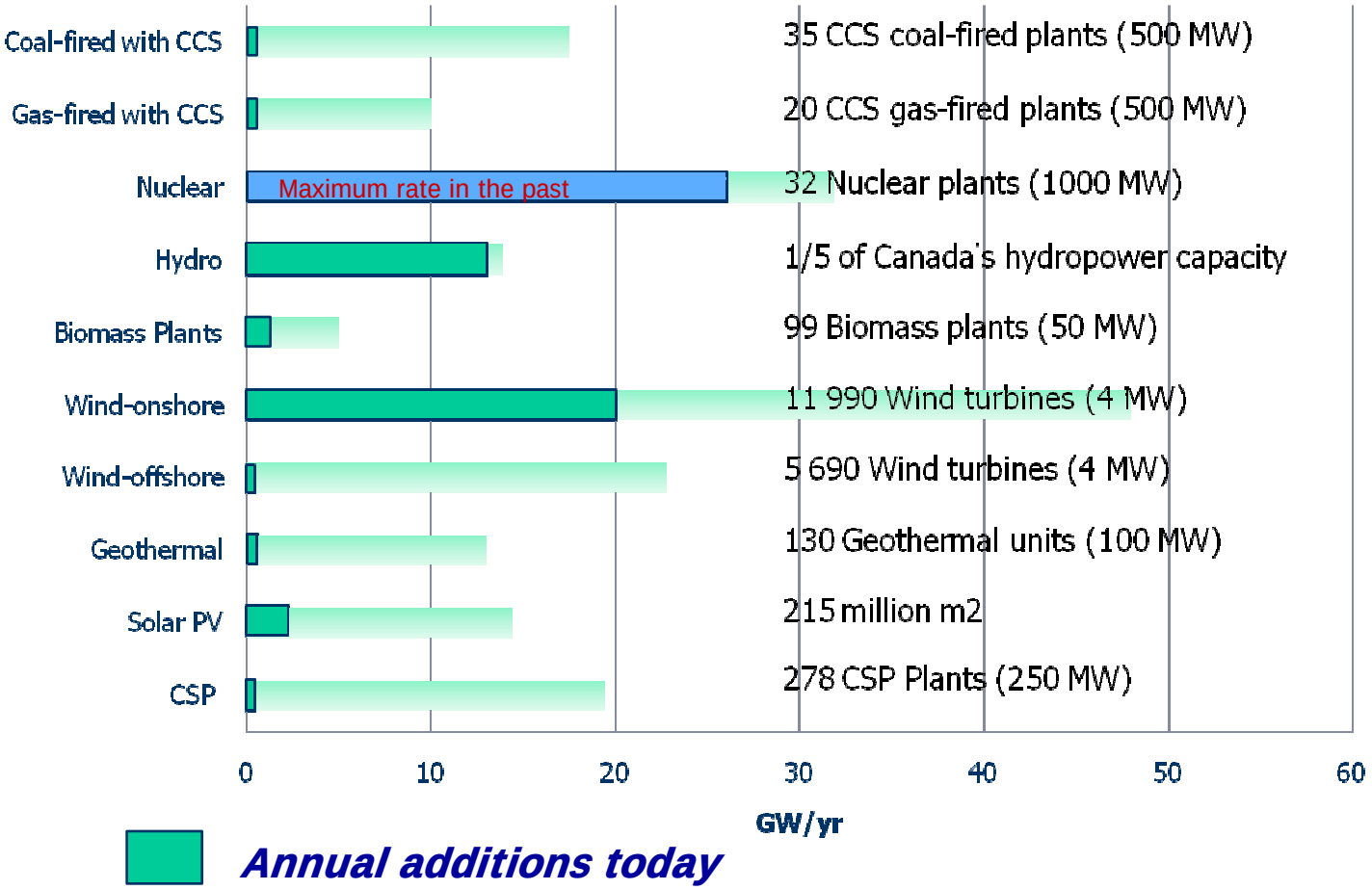
Annual Power Generation Capacity Additions in the BLUE Scenario (-50% Reduction)
(average, 2010 – 2050)



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IEA energy efficiency policy recommendations (1/3)

1. **Cross sectoral:**
   - 1.1 Measures for increasing investment in energy efficiency;
   - 1.2 National energy efficiency strategies and goals;
   - 1.3 Compliance, monitoring, enforcement and evaluation of energy efficiency measures;
   - 1.4 Energy efficiency indicators;
   - 1.5 Monitoring and reporting progress with the IEA's energy efficiency recommendations themselves.

2. **Buildings:**
   - 2.1 Building codes for new buildings;
   - 2.2 Passive Energy Houses and Zero Energy Buildings;
   - 2.3 Policy packages to promote energy efficiency in existing buildings;
   - 2.4 Building certification schemes;
   - 2.5 Energy efficiency improvements in windows.

IEA energy efficiency policy recommendations (2/3)

3. **Appliances and equipment:**
   - 3.1 Mandatory energy performance requirements or labels;
   - 3.2 Low-power modes, including standby power, for electronic and networked equipment;
   - 3.3 Televisions and "set-top" boxes;
   - 3.4 Energy performance test standards and measurement protocols.

4. **Efficient lighting:**
   - 4.1 Best practice lighting and the phase-out of incandescent bulbs;
   - 4.2 Ensuring least-cost lighting in non-residential buildings and the phase-out of inefficient fuel-based lighting.

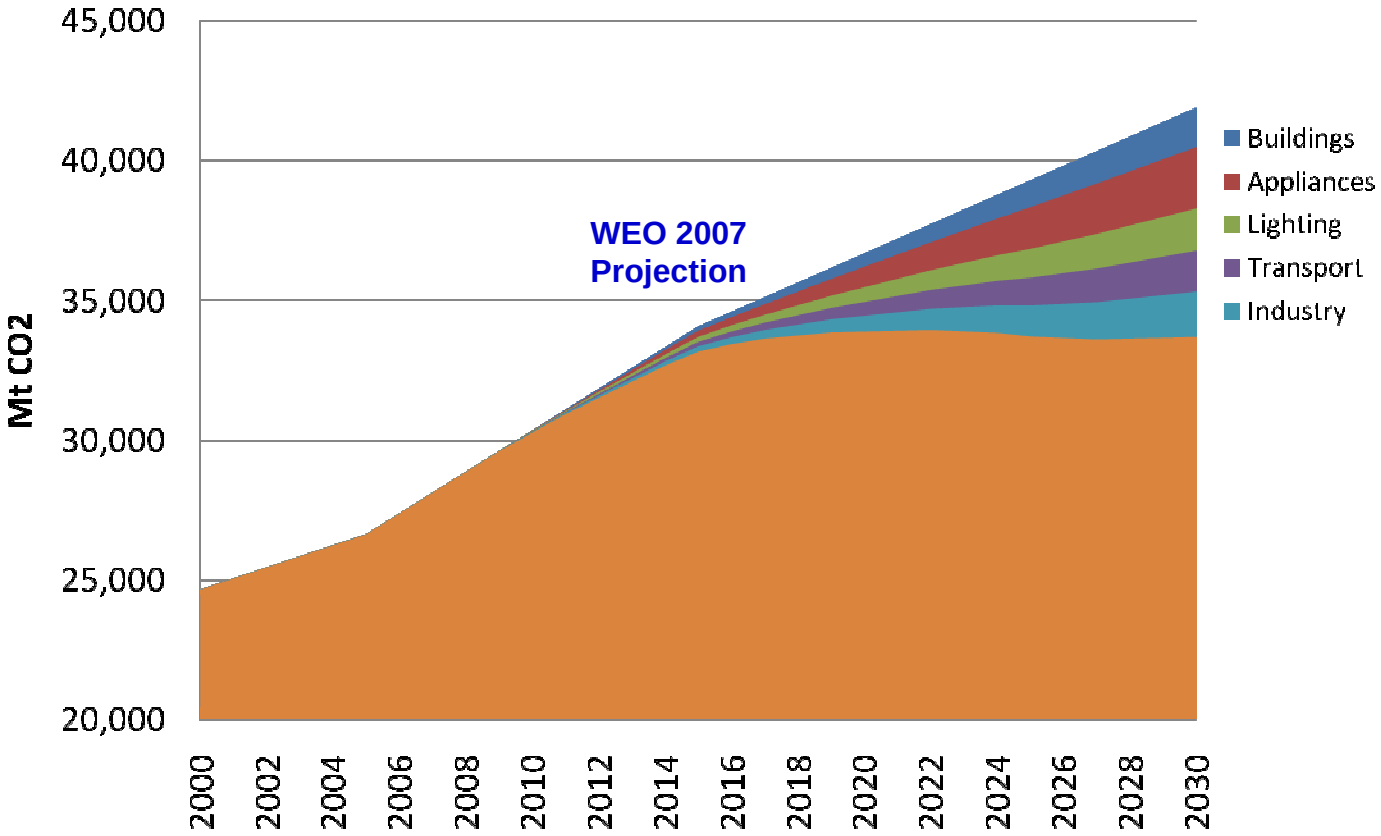
IEA energy efficiency policy recommendations (3/3)

5. **Transport:**
   - 5.1 Fuel-efficient tyres;
   - 5.2 Mandatory fuel efficiency standards for light-duty vehicles;
   - 5.3 Fuel economy of heavy-duty vehicles;
   - 5.4 Eco-driving.

6. **In order to improve energy efficiency in industry, action is needed on:**
   - 6.1 Collection of high quality energy efficiency data for industry;
   - 6.2 Energy performance of electric motors;
   - 6.3 Assistance in developing energy management capability;
   - 6.4 Policy packages to promote energy efficiency in small and medium-sized enterprises.

7. **Energy utilities:**
   - 7.1 Utility end-use energy efficiency schemes

The IEA's 25 Energy Efficiency recommendations to the G8 offer huge CO_2 savings potential



Global implementation of recommendations could save around 8.2 $GtCO_2$/yr by 2030. Equivalent to 20 % of global reference scenario energy related CO_2 emissions in 2030.