Energy Efficiency: Towards our 2020 Climate Goals

Philippe Benoît
Head of Energy Efficiency & Environment (Climate) Division, IEA

IEA Side Event
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Portfolio of decarbonising measures

Emissions Reductions (Gt CO₂)

- Nuclear 8% (8%)
- End-use fuel switching 12% (12%)
- CCS 14% (17%)
- Renewables 21% (23%)
- Power generation efficiency and fuel switching 3% (1%)
- End-use fuel and electricity efficiency 42% (39%)

Emissions with 2DS
Emissions with 6DS
Portfolio of decarbonising measures

Emissions Reductions (Gt CO₂)

- **Emissions with 6DS**
- **Emissions with 2DS**

- Power generation efficiency and fuel switching 3% (1%)
- End-use fuel and electricity efficiency 42% (39%)
Energy efficiency: a huge opportunity going unrealised

Two-thirds of the economic potential to improve energy efficiency remains untapped in the period to 2035
Market failures impede EE investment

- Principal-Agent Problems
  - Moral Hazard
  - Split Incentives

- Split Incentives

- Asymmetric Information
  - Moral Hazard
  - Adverse Selection

- Imperfect Information

- Energy Market Failures (Externalities)

- Behavioural Failures (Bounded Rationality)
25 EE Policy Recommendations

Cross-sectoral
1. Energy efficiency data collection and indicators
2. Strategies and action plans
3. Competitive energy markets with appropriate regulation
4. Private investment in energy efficiency
5. Monitoring, enforcement and evaluation of policies and measures

Buildings
6. Mandatory building energy codes and minimum energy performance requirements;
7. Aiming for net zero energy consumption in buildings
8. Improving the energy efficiency of existing buildings
9. Building energy labels or certificates
10. Improved energy performance of building components and systems

Appliances and Equipment
11. Mandatory MEPS and labels for appliances and equipment
12. Test standards and measurement protocols for appliances and equipment
13. Market transformation policies for appliances and equipment

Lighting
14. Phase-out of inefficient lighting products and systems
15. Energy efficient lighting systems

Transport
16. Mandatory vehicle fuel efficiency standards
17. Measures to improve vehicle fuel efficiency
18. Fuel-efficient non-engine components
19. Improved vehicle operational efficiency through Eco-driving and other measures
20. Transport system efficiency

Industry
21. Energy Management in industry
22. High efficiency industrial equipment and systems
23. Energy efficiency services for small and medium enterprises
24. Complementary policies to support industrial energy efficiency

Utilities and end-use
25. Energy Utilities and end-use energy efficiency
Climate policies to address market failures

Price of CO₂
€/tCO₂e

MtCO₂

Carbon pricing mechanisms

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Market failures require policies

Effective policies are key . . .

. . . but is more needed?
Scaling-up EE

Three ‘non-conventional’ strategies for scaling up EE

i. ...

ii. ...

iii. ...
i. ‘Multiple benefits’ of EE

Energy efficiency improvement

Sector-wide
- Energy provider benefits
- Asset values
- Disposable income
- Poverty alleviation
- Health & wellbeing
- Energy savings
- Climate change mitigation

National
- Enterprise productivity
- Public budgets
- Macro impacts
- Job creation
- Energy security
- Development

International
- Resource management
- Energy prices
- Energy security
- Resource management
- Enterprise productivity
- Public budgets
- Macro impacts
- Job creation
- Energy security
- Development

Individual
- Energy efficiency improvement

Public budgets
- Public budgets
- Macro impacts
- Job creation
- Energy security
- Development
- Resource management
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- Enterprise productivity
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- Energy efficiency improvement

Individual
- Energy efficiency improvement

National
- Energy efficiency improvement

International
- Energy efficiency improvement

Sector-wide
- Energy efficiency improvement

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‘Different strokes for different folks’

**Benefits vs. Co-Benefits ➔ Multiple Benefits**

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<tr>
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<th>Country or Stakeholder A</th>
<th>Cty/Stk B</th>
<th>Ctry/Stk C</th>
<th>Etc.</th>
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<tbody>
<tr>
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<td>Co-Benefit</td>
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<td>Primary</td>
<td>Co-Benefit</td>
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<td><strong>Poverty Alleviation and Development</strong></td>
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<td>Primary</td>
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<td><strong>GHG Emissions</strong></td>
<td>Primary</td>
<td>Co-Benefit</td>
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<td><strong>Job Creation</strong></td>
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<td><strong>Local pollution</strong></td>
<td>Primary</td>
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<td>Co-Benefit</td>
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Scaling-up EE

Three ‘non-conventional’ strategies for scaling up:

i. ...

ii. Facing up to the Fuels Competition

iii. ...
EE keeps producing . . .

We need to keep measuring EE “output” year after year after year and make this more apparent.
Hypothetical energy use had there been no energy efficiency improvements

Avoided energy equal to 65% of 2010 TFC

Total final Consumption (TFC)

IEA EEMR 2013
EE: largest resource in 2010 (in IEA 11)
Energy efficiency is . . . a domestic fuel
(‘the home-grown fuel’)
Three ‘non-conventional’ strategies for scaling up:

i. ...

ii. ...

iii. (Not) Just another IEA fuel market report
Sustained scaling up of EE requires:

strong Policies

+ 

stronger Public & Stakeholder support
Impact of supply- and demand-side improvements on US oil import needs

- 2011 net oil import level
- Projected net imports
- Reductions due to:
  - Demand-side efficiency
  - Biofuels use in transport
  - Natural gas use in transport
  - Increased oil supply

mb/d

2011 2015 2020 2025 2030 2035

mb/d

0 2 4 6 8 10

2011 net oil import level
Projected net imports

Reductions due to:
- Demand-side efficiency
- Biofuels use in transport
- Natural gas use in transport
- Increased oil supply
Thank You

Philippe Benoit
Head of Energy Efficiency & Environment (Climate) Division, IEA