Energy Efficiency: at the center of the climate change challenge

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efficient

The little engine that could ...
Prologue
“Getting to the top is optional. Getting down is mandatory.”

Ed Viesturs
Our mitigation story
Portfolio of actions to reduce energy sector emissions

Source: ETP 2014
Portfolio of actions to reduce energy sector emissions

- Nuclear: 7%
- Renewables: 30%
- Power generation efficiency and fuel switching: 2%
- End-use fuel switching: 9%
- CCS: 14%
- End-use fuel and electricity efficiency: 38%

Source: ETP 2014
EE provides largest contribution to abatement at 40%
Energy efficiency investment: bigger than you might think

Investments in various fuels

USD Billion

- Energy efficiency*
- Renewable power**
- Fossil fired power***
- Upstream oil, gas and coal****

Big . . . but not big enough . . .

Cumulative Investment in the New Policies and 450 Scenarios, 2014-2035

Spending on energy efficiency in the 450 (2DS) scenario needs to top over $600 billion/yr
Potential for energy efficiency scale-up is there ...

Energy efficiency potential used by sector in the WEO 2012 New Policies Scenario

Two-thirds of the economic potential to improve energy efficiency remains untapped in the period to 2035
Energy efficiency: the gift that keeps on giving . . . in so many ways
Energy efficiency: more ‘productive’ that we give it credit for

EE keeps producing:

Energy Efficiency

1999

2004

2015

1999

2004

2015
EE’s avoided consumption in IEA topped 22 EJ (520 Mtoe) in 2014

- Avoided consumption generated by energy efficiency increased by 10% in 2014

IEA countries avoided more consumption in 2014 than the TFC of Korea and Japan combined
EE is saving household, business and government consumers billions each year

- IEA countries saved USD 550 billion in TFC in 2014 as a result of energy efficiency investments since 1990

Avoided expenditure in IEA countries from energy efficiency investments made since 1990

Annual savings are greater than the EU’s fuel import bill
A clean energy source: efficiency reduces emissions

- Without energy efficiency investments, estimated IEA member country emissions would have been 870 Mt CO\textsubscript{2} higher in 2014.

IEA emissions from fossil fuel combustion and emissions savings from energy efficiency investments since 1990.

Energy efficiency has helped to make the 2 degrees target more achievable by lowering emissions to date.
The multiple benefits of EE

Energy efficiency improvement

- Asset values
- Energy savings
- GHG emissions
- Energy security
- Energy delivery
- Energy prices
- Macro-economic impacts
- Industrial productivity
- Poverty alleviation
- Health and well-being
- Employment
- Local air pollution
- Resource management
- Public budgets
- Disposable income
Dirty air prompts free public transport in Paris

Public transportation in the capital will be "gratuit" from Friday morning to Sunday night, as officials battle against a spike in "dangerously" poor air quality. Velib' rental bikes and the car-sharing Autolib' scheme are also on the house.

Shifting to more efficient transport to fight air pollution
Energy Efficiency: now showing around the World
The measures in the Bridge Scenario apply flexibly across regions, with energy efficiency & renewables as key measures worldwide.

Over 95% of the projected growth in energy demand between now and 2035 happens outside the OECD (NPS)

Source: based on World Energy Outlook 2014
Changing Geography: OECD and non-OECD action for a low-emissions future

- Other OECD 9%
- United States 13%
- European Union 7%
- Other non-OECD 15%
- Other emerging economies 14%
- India 13%
- China 29%

Emissions with 6DS
Emissions with 2DS
Changing Geography: OECD and non-OECD action for a low-emissions future

About 70% of the decarbonization actions need to take place in non-OECD countries.
EE: Decoupling GDP from Energy
EE: Decoupling GDP from Energy

![Graph showing decoupling GDP from energy consumption.](https://example.com/energy_graph.png)
EE: Decoupling GDP from Energy
Energy efficiency
for many emerging economies:
from
“doing more with less”
to
Energy efficiency for many emerging economies: from “doing more with less” to ”doing even more with more” raising standards of living and promoting prosperity
IEA messages to COP21

To shift the energy sector onto a low-carbon path *that supports* *economic growth & energy access:*

1. Take 5 key actions, led by energy efficiency & renewables, to peak then reduce global energy emissions
2. Use the Paris Agreement to drive short-term actions consistent with long-term emission goals
3. Accelerate energy technology innovation to make decarbonisation easier and even more affordable
4. Enhance energy security by making the energy sector more resilient to climate change impacts
'Et après Paris?'
Beyond INDCs: the need for more

"Room" for further policies promoting energy efficiency
Epilogue
Below 2°C vs 4°C
the little engine that can ... beat climate change