

How much energy could we save through compliance?

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No global study to assess the energy lost through non-compliance with S&L programmes

Standards and labelling programmes:

- **In countries accounting for >80% of world's population**
- **Include China, EU, India, Japan, USA, and many more**
- **Typical energy savings attributed to existing programmes are from 5 to 15% of final energy use in sectors covered**
- **Mostly target the residential sector, but also commercial sector and motor-driven electrical loads in the industrial sector**

Compliance

- **Limited amount of data reported on non-compliance to date**
- **Interpreting results is complex because:**
 - **Compliance results are often not in the public domain**
 - **the estimated degree of compliance with energy performance requirements is seldom reported in a comprehensive or consistent way**
 - **Assessing the energy lost through non-compliance with labelling display requires a model of the energy that would have been saved were full compliance achieved**

Interpretation of energy verification tests from one programme to the next is complicated

Interpreting energy check-test results is also complex because:

- Energy performance verification tests sometimes target suppliers of whom there is reason to think are less likely to comply, therefore there may be sample bias**
- The frequency of check tests is highly irregular in most cases (small sample sizes)**
- Usually only address limited product types i.e. they do not account all product-types covered by the S&L programme**
- The manner of non-compliance is not always measured or reported in a consistent way**
- Many programmes do not check compliance with non energy performance factors e.g. clothes washing performance, even though these can be correlated with energy use**

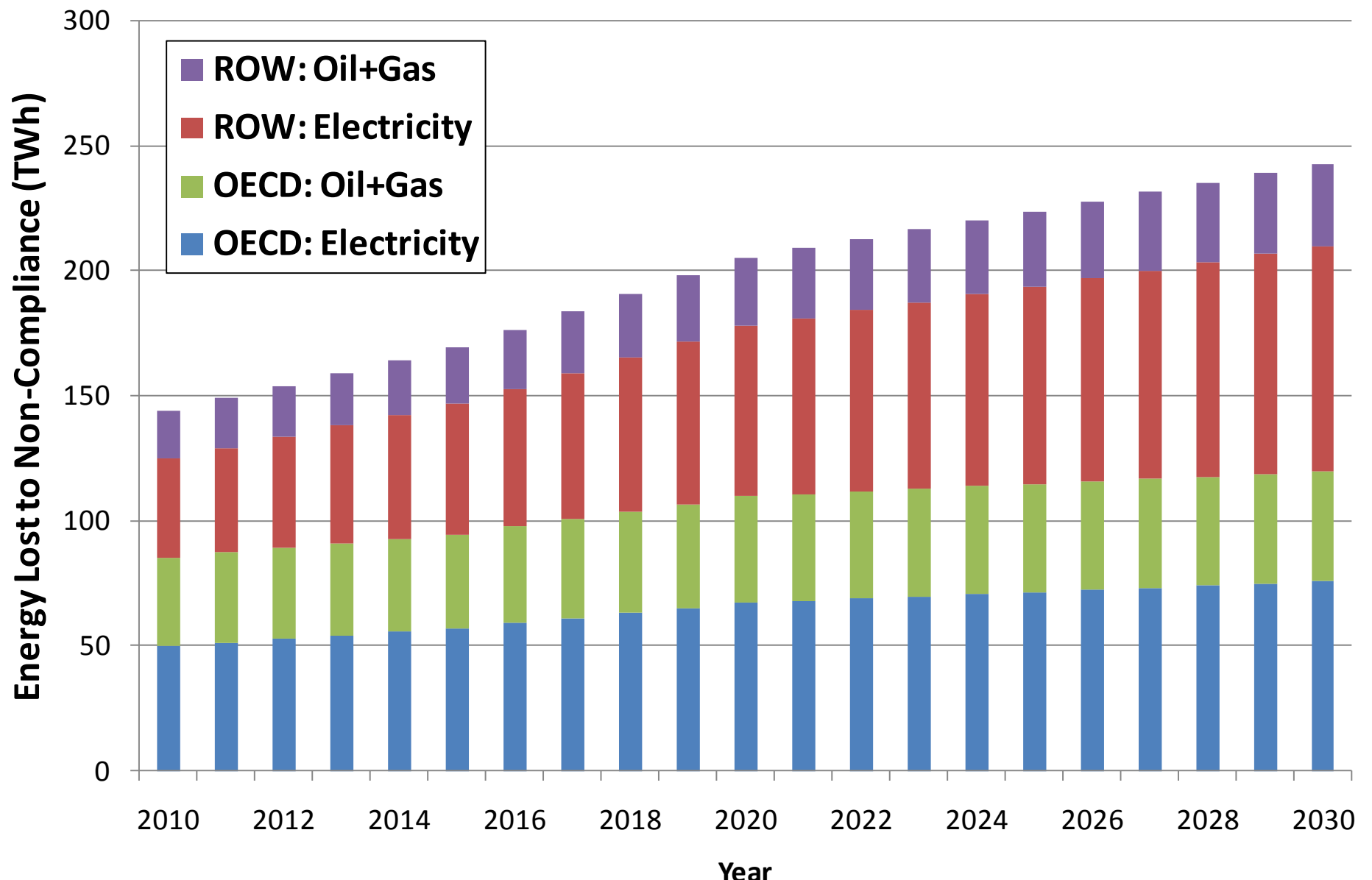
Assumptions made in the following rough analysis

The simple analysis presented here made some rough assumptions to quantify impacts for the BAU case:

- On average S&L programmes would save between 3 and 12% of business as usual energy use for the sectors/end-uses they are applied to were there to be full compliance**
- The average share of energy savings lost due to non-compliance is between 10 and 15% in the end-uses concerned**
- Typical programmes apply to 70% of residential and commercial energy use and 70% of industrial electricity use**

These assumptions draw on miscellaneous reported findings from various S&L programmes, however, they are far from definitive and a proper investigation would be needed to produce results with acceptable error margins. They are intended to give a conservative estimate of the global compliance potential. A more rigorous assessment is likely to increase the resulting estimates of energy savings lost due to non-compliance

Initial guesstimates of energy losses from non-compliance with S&L programmes (BAU)



***Guesstimates of cumulative losses from
non-compliance from 2010-2030
(BAU S&L programmes, BAU compliance)***

OECD:

- Final energy losses of 2200 TWh
- Final energy value of US278\$ billion

Non-OECD :

- Final energy losses of 1940 TWh
- Final energy value of US155\$ billion

**Global losses in CO₂ emissions savings of
2240 Mt (= 112 Mt CO₂/year)**

***Guesstimates of cumulative losses from
non-compliance from 2010-2030
(Worlds Best MEPS, BAU compliance)***

OECD:

- Final energy losses of 3480 TWh
- Final energy value of US435\$ billion

Non-OECD :

- Final energy losses of 7790 TWh
- Final energy value of US624\$ billion

**Global losses in CO₂ emissions savings of
6760 Mt (= 338 Mt CO₂/year)**

Avoiding 1 billion tonnes of CO₂ per year

Coal	Replace 300 conventional, 500-MW coal power plants with “zero-emission” power plants, or ...
CO₂ Sequestration	Install 1000 Sleipner CO₂ sequestration plants
Wind	Install 200 x US wind generation in lieu of unsequestered coal
Solar PV	Install 1300 x current US solar generation in lieu of unsequestered coal
Nuclear	Build 140 1-GW power plants in lieu of unsequestered coal plants
Efficient lighting	Replace all inefficient lamps with efficient ones (CFLs, LEDs, Plasma, Metal Halide)

***Guesstimates of cumulative losses from
non-compliance from 2010-2030
(BAU S&L programmes, BAU compliance)***

For an OECD economy of 100m people:

- **Annual final energy losses of 9TWh**
- **Annual energy value of US\$1100 billion**

**Among good OECD economies current
average compliance expenditure is
US\$1.9m per 100m people per year**

**This is one 50th of the estimated value of
the energy losses from non-compliance**