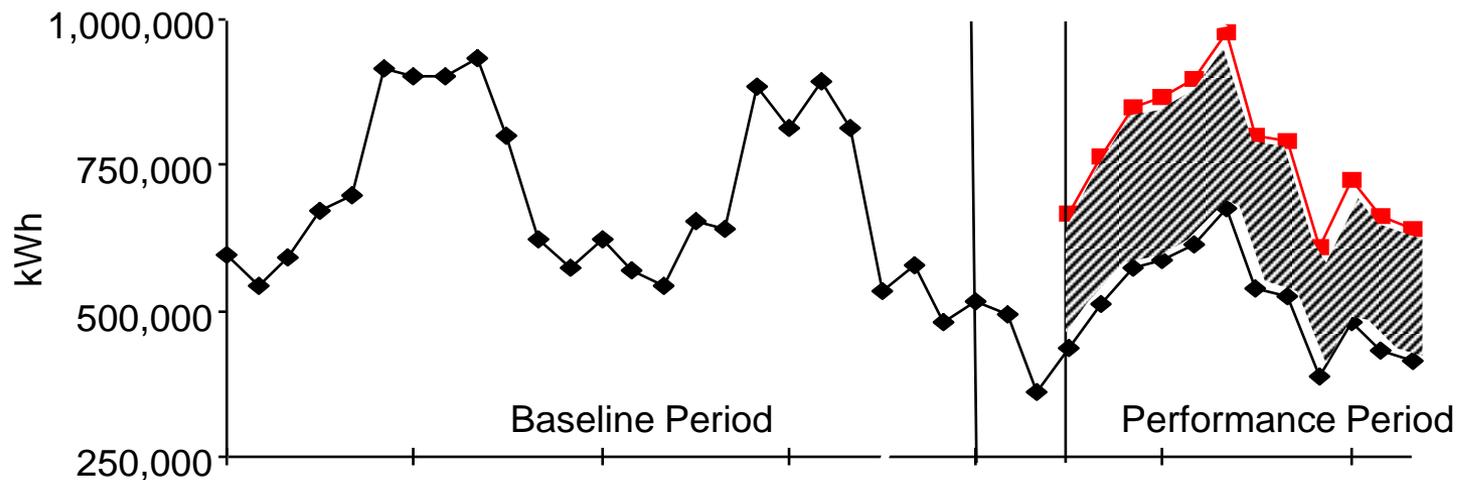


Monitoring Progress towards Energy Savings Policies

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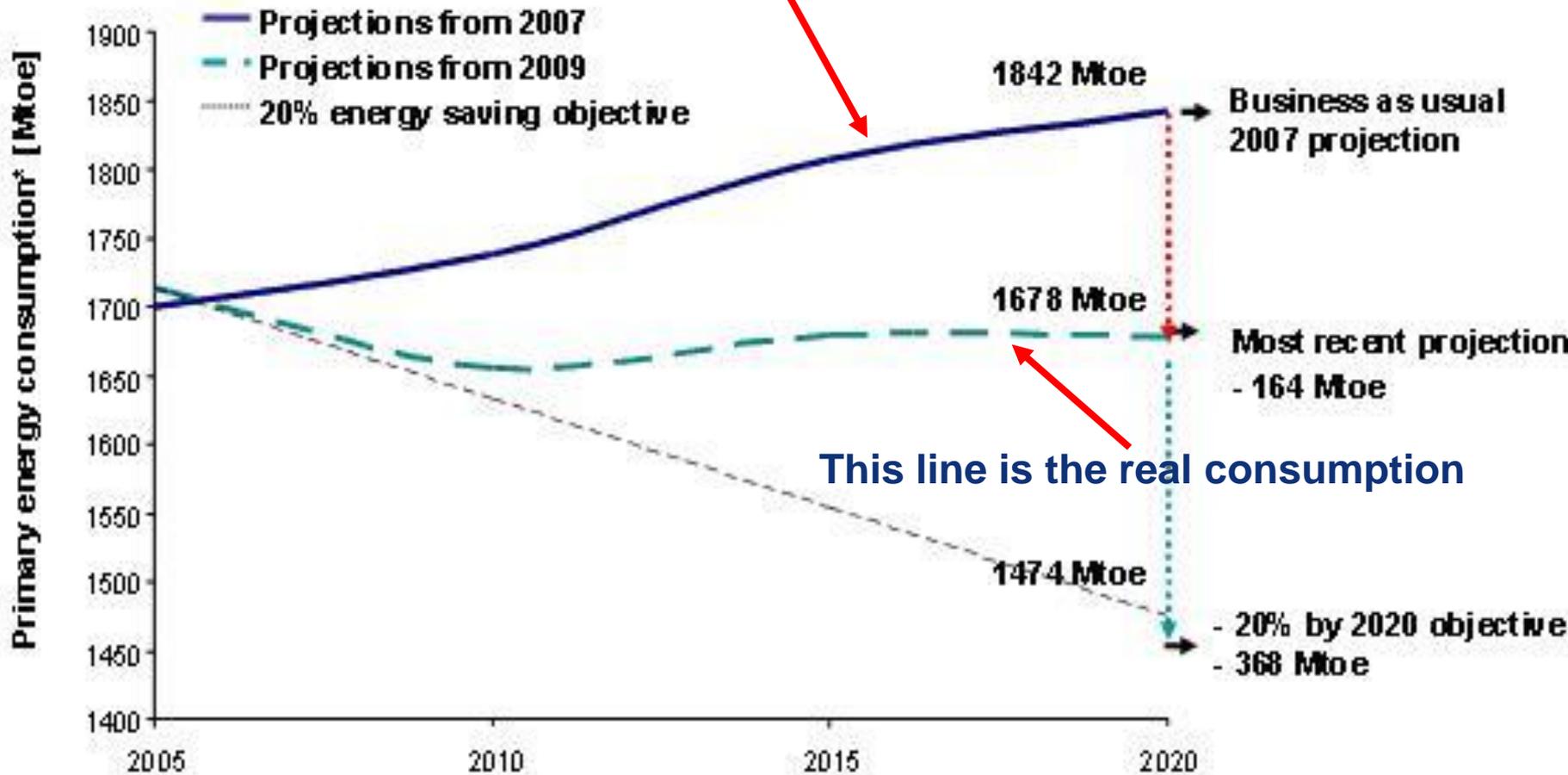
Measuring energy savings is one of the most challenging tasks. Example at micro level (project level)



The 2020 Energy Saving Target

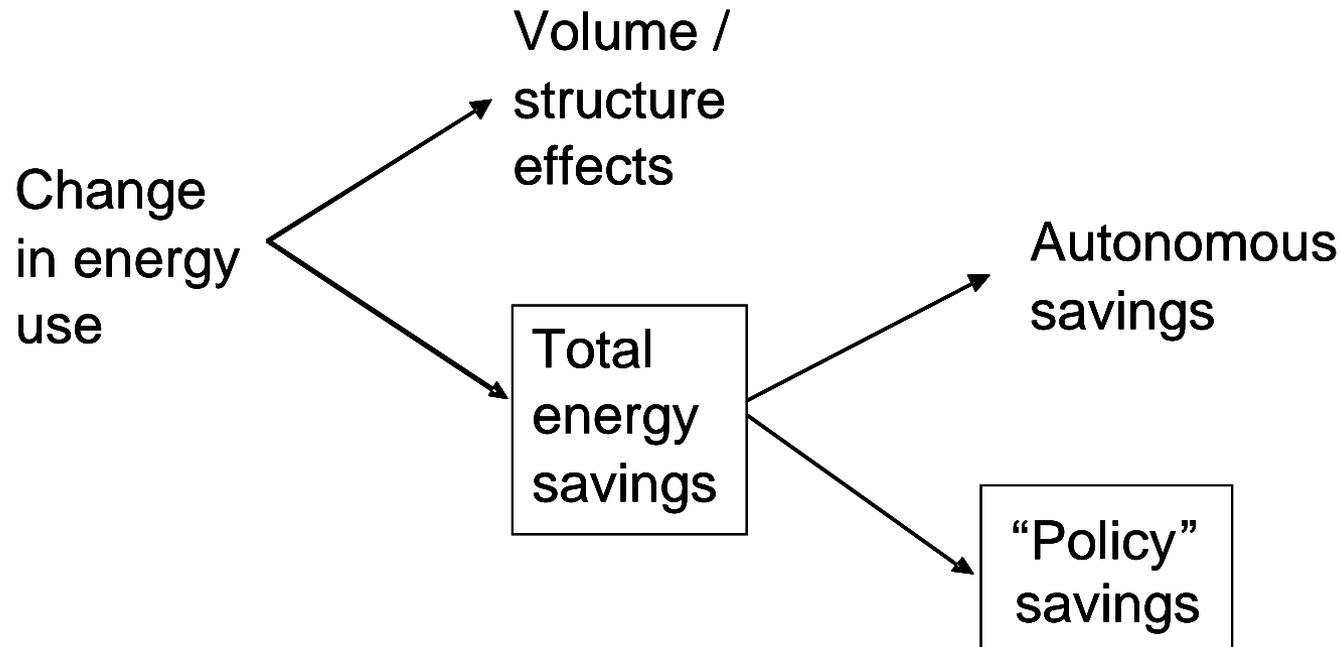


This line does not exist, it is created with modelling



* Gross inland consumption minus non-energy uses

Which energy savings we would like to monitor and evaluate?



Source: Piet Boonekamp

ESD: Improving energy efficiency in the EU

Directive 2006/32/EC:

- Defines indicative energy savings targets for MS
- Non-binding savings target measured as 9% of 2001-2005 average annual energy use
- Savings to be determined using harmonised calculation model combining TD and BU methods
- Each MS required to submit NEEAP every 3 years describing measures and assessing achieved and forecast savings
- Establishes legal and institutional frameworks to remove barriers
- Promotes development of a market for energy services

ESD Recommended Energy Saving Calculation Methods

Two different approaches used to assess energy savings and energy efficiency progresses

- Top-down indicators for monitoring trends in energy efficiency
- Bottom-up formulae for calculating energy savings due to individual policies/programmes

Overall context – Directive 2006/32/EC

The harmonised measurement framework is an implementing measure required by Dir 2006/32/EC. It should take into consideration the following:

- Minimize administrative burden and cost on Member States;
- Capture the overall improvement in energy efficiency;
- Ascertain the impact of individual measures;
- Use data which are already routinely provided by Eurostat and/or national statistical agencies.

ESD: Evolution of harmonised measurement framework

2007-2009: EMEEES project developed sets of TD and BU indicators with case applications of each
TD indicators based on Odyssee

2010: EC circulated set of recommended indicators

- TD indicators: 14 preferred (P), 8 minimum (M)
- BU formulas for EE in buildings covering replacement, retrofitting and addition of new buildings and equipment

ESD: Evolution of harmonised indicators

TD methods

- Use Eurostat or national statistics to give overview of EE trend in a sector
- Low data requirements
- Relatively easy to use
- Incorporate autonomous effects, e.g. energy prices, hidden structural changes, etc.

BU methods

- Measure-specific evaluation of savings at level of energy consumer
- More data-intensive
- Potential for double-counting
- Difficult to apply to some measures

Combination of TD and BU can give view of success of measures and of their influence on energy trends

Top-down energy efficiency indicators in the scope of Directive 2006/32/EC

Top down indicators 1/3

- Designed to reflect overall final energy consumption **trends** rather than **savings** resulting from specific energy efficiency improvement measures or programmes;
- Implicitly reflect **all energy savings** (as opposed to policy-induced savings only) and capture savings from horizontal measures and programmes, soft measures as well as developments in industrial cogeneration;

Top down indicators 2/3

Recommended to set a starting reference year for the comparison (usually a year when data is available);

Three types of harmonised energy efficiency indicators.

Preferred, alternative and minimum indicators:

- Preferred energy efficiency indicators show savings at the sub-sectoral level;
- Alternative energy efficiency indicators needed when a lack of data impedes the use of the preferred energy efficiency indicators;
- Minimum energy efficiency indicators when the preferred and alternative indicators cannot be applied;
- **Eurostat data is available for all minimum indicators provided.**

Top down indicators 3/3

- The quality of the estimation of top-down savings **decreases** with the level of aggregation of statistical data;
 - By disaggregating, structural effects are removed from the assessment of energy savings
- Build upon the Odyssee indicators (www.odyssee-indicators.org)
- The ESD context: 24 indicators

ESD: Evaluation methods in the NEEAPs (1)

To calculate declared interim savings

- 14 MS use TD methods
- 13 MS use BU methods

TD methods generally in line with EC recommendations.

BU methods generally national, measure-specific methods based on:

- Metered savings
- Modelled savings
- Expert estimates
- Unspecified approaches

ESD: Evaluation methods in the NEEAPs (2)

Diversity of approaches used to determine savings

- Some MS use exclusively TD
- Some use exclusively BU or measure-specific
- Some declare TD savings and provide BU values for some measures
- Some declare BU savings and verify with TD
- Some combine BU and TD to determine total savings
- Some use TD for interim and BU for future savings
- 4 MS provide savings in primary energy equivalent
- Differing approaches to handling negative savings
- Some provide no detail about how savings were calculated
- Problems/difficulties with early actions

ESD: Using NEEAPs to assess EU progress: Challenges

- Using NEEAPs to assess overall progress requires harmonised approach calculating savings
- Accuracy of TD methods may vary across MS due to quality of data, short calculation timeframe (2008-2010), and effects of recession
- Difficult to assess the equivalence of BU methods using the NEEAPs
- Diversity of approaches makes it difficult to assess overall EU progress

EED: Looking to the future...

- EED Objective: EU 20% primary energy savings target to be achieved by EE measures
- 20% savings target based on 2007 PRIMES forecast-368 Mtoe
- Each MS to set its own target expressed as absolute level of consumption, taking into account the EU 20% target (draft EED)
- EC to assess in 2014 if 2020 target likely to be reached
- Additional targets
- 1.5% of annual energy sales through EEOs (draft EED)
- 3% annual building renovation for public bodies (draft EED)

EED: Assessing 2020 savings targets in the NEEAPs

What can current NEEAPs tell us about 2020 targets?
2020 target figures given for some MS

However, various targets expressed in terms of

- Primary energy savings (e.g. RO)
- Primary energy consumption (e.g. DE)
- Final energy savings (e.g. SK)
- Final energy consumption (e.g. ES, FI, IT)
- Energy intensity (e.g. SE)
- Sector-level or technological targets (e.g. installed CHP)
- 9 MS provide ESD-related savings in 2020 for each documented measure

EED: Measuring EU energy efficiency progress

How do we measure 20% savings?

- Energy intensity
 - What level indicates achievement of EU target?
 - Effects of prolonged recession?
 - Effort sharing?
- Energy consumption
 - PRIMES 2007: 1,473 Mtoe?
 - Does it reflect EE efforts?
 - Effort sharing?
- Additional / alternative indicators
 - Sum up declared/ forecast savings in national reports?
 - Harmonised national indicators using Annex XIV data?
 - Supplementary indicators of EE activity?

Final remarks

- Top-down indicators are designed to reflect overall final energy consumption **trends!**
- They do not necessarily establish a causal relationship between **savings** reported and specific energy efficiency improvement measures or programmes.

Conclusions

- Energy efficiency indicators are useful to monitor trends in energy efficiency and to calculate energy savings; they can contribute to monitor the ESD target.
- Although the indicators are cleaned from various factors not linked to energy efficiency, it is still difficult in some sectors (e.g. services) to sort out what is linked to technical and non technical factors with the data currently available.
- Surveys combined to interpolation through modeling, as currently done in countries with comprehensive end-use data, can help fill data gaps by sector

Thank you for your attention

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<http://re.jrc.ec.europa.eu/energyefficiency>