

A binding energy savings target for 2030:

The cornerstone for mutually supporting climate and energy policies

Position Paper, 11 October 2013

Only a 40% binding energy savings target can deliver the EU's competitiveness, energy and climate objectives

Research by Fraunhofer Institute for Systems and Innovation Research (Fraunhofer ISI), on behalf of the Coalition for Energy Savings, has shown that the EU has a 41% cost-effective end-use energy savings potential for 2030. Tapping this potential would imply a reduction of primary energy consumption of between 46% and 50% compared to the 2009 baseline or 2005 levels¹ and leads to a reduction of 49% to 61% of greenhouse gas (GHG) emissions in 2030² compared to 1990 levels. Conversely, a single EU GHG emissions target coupled with trading would fail to trigger additional energy savings or stop wasteful energy use and spending. This shows that energy efficiency is the key to mutually supporting energy and climate policies and must therefore come first in the design of the policy framework.

Why the EU needs to tap its savings potential: to strengthen competitiveness, reduce energy costs, create jobs and fight climate change

In today's difficult economic and social context, it is more relevant than ever for the EU to act convincingly on both immediate concerns (employment, economic development and a safe and secure energy policy) and long-term challenges (climate protection). An ambitious energy efficiency policy is the only cost-effective, immediately available way to do that.

Realising untapped cost-effective energy savings potentials in the EU would:

- Boost competitiveness, due to lower energy costs, increased industrial efficiency and stronger demand for domestic products and services. Households and industry would receive net benefits of over €239 billion annually by 2030 in lower energy bills³;
- Increase net employment by 400,000 jobs by 2020⁴ and improve public budgets through increased revenues and reduced unemployment costs⁵; and
- Reduce GHG emissions by between 49 and 61% compared to 1990 levels⁶, enabling the EU to step up its fight against climate change.

Capital outflow: The EU's energy trade deficit reached €423 billion in 2012, the largest in the world, and is set to continue to grow. Such an untenable capital outflow substantially impacts competitiveness and investment capacities, and underlines the EU's geo-political and economic vulnerability, as well as its high exposure to volatile energy prices. Reducing energy demand is therefore a strategic deliverable for the European Union, as emphasised by the International Energy Agency's 2012 *World Energy Outlook*.

Future markets: Energy efficiency is the largest clean-tech market worth €720 billion globally in 2010 and growing by 10% annually (see IEEP, *Review of costs and benefits of energy savings*, 2013). Further expanding the EU market is conditional to stepping up investment in energy efficiency and providing clarity to investors and customers.

¹ Assuming similar efficiency improvements in the energy generation, transmission and distribution sectors, and a renewable energy share of between 35% and 48%

² Assuming high and low economic growth 2030 scenarios

³ Fraunhofer ISI, *Concrete Paths of the European Union to the 2°C Scenario*, 2012.

⁴ European Commission, *Impact Assessment – EU Energy Efficiency Directive*, SEC (2011)779.

⁵ Existing programmes created or maintained between 13 and 17 jobs per million Euro total invested (on average a multiplier effect of ten is achieved per Euro of public support) in energy efficiency measures related to retrofitting buildings (see Institute for European Environmental Policy, *Review of costs and benefits of energy savings*, 2013).

⁶ See page 4 and Fraunhofer ISI, *Analysis of a European Reference Target System for 2030*, 2013.

Why a binding target is needed: to make energy efficiency policies work

Despite benefits being recognised, not enough is being done to exploit the existing savings potential and help households and businesses to stop wasting huge amounts of energy and money. This practice will neither secure achievement of the EU's 20% headline target for energy efficiency⁷, nor put the EU on track to meet its 2050 goals.

Many energy efficiency policies are in place, including the Energy Performance in Buildings Directive (EPBD), the Ecodesign Directive, CO₂ standards for transport vehicles and the Energy Efficiency Directive (EED). However, there is little to ensure a high level of commitment and accountability from Member States to achieve the EU's 20% target for energy savings. Even the 1.5% annual binding savings target in the EED is somewhat limited because of excessive exemptions⁸. The other two EU targets for 2020 for renewable energy and GHG emissions are binding, thus given priority and on track to be met.

A legally binding target for energy efficiency is needed to ensure a high level of ambition and effort in Member States, and to allow sufficient flexibility for the mix of tools and instruments to be tailored at national level.

Furthermore, the EU flagship climate policy, the EU-Emissions Trading Scheme (EU-ETS), will not help to realise cost-effective energy savings potentials⁹, and was not designed for that purpose. Many of the barriers to energy efficiency improvements are non-economic, and thus not effectively dealt with by economic instruments like the EU-ETS. The majority of cost-effective savings potentials are concentrated in sectors (like transport and residential buildings) that are not covered by the EU-ETS.

The 2030 policy framework has to learn from these lessons: voluntary targets are more likely to be missed than binding ones and energy efficiency is not sufficiently driven by climate policies alone.

How to reach 40% energy savings

The Coalition's proposal for a 40% energy savings target is supported by the detailed bottom-up assessment of cost-effective potentials in the different economic sectors realised by Fraunhofer ISI and refers therefore to commercially available and economically justified actions¹⁰. This is an appropriate starting point to share efforts among Member States, track national and sector progress in grasping the specific available savings potentials and to provide regular assessments in order to further improve regulatory interventions.

A binding 40% savings target will be essential in stepping up and strengthening existing efficiency programmes and measures at EU and national level. Symbolic of a strong political commitment, it will encourage Member States to ambitiously transpose, implement and extend to 2030 existing energy efficiency legislation and set the EU on track to its 2050 goals.

For example, an ambitious application of the EED's 1.5% annual energy end-use savings requirement, without using any exemptions, could deliver 26% savings by 2030. This comes in addition to energy savings delivered by EU product and building standards.

A target would also secure support for Member States, regions and local actors to set up aggregators for financing energy efficiency improvement measures. These public and

⁷ Coalition for Energy Savings, *Policy Brief - Why the EU cannot afford to leave behind energy savings*, 2013.

⁸ Based on the bottom-up measurement and verification methodology set out in Annex V of the EED.

⁹ This is due to several factors including the low price elasticity of demand for energy, the remote and limited indirect effects of the EU-ETS on sectors with vast energy savings potentials such as the residential building and transport sectors, and the many other barriers that exist for energy efficiency investments. Factors such as the lack of availability of upfront financing, the 'hassle' factor or split incentives between those making investments and those paying energy bills will not be overcome by pricing alone. Therefore, tailored energy efficiency programmes and policies are needed.

¹⁰ See annex on page 5.

private bodies would aim at putting together the many funding opportunities for energy efficiency potentially available: European or national grants, public loans, upfront investment by energy service companies, revenues from carbon markets and low-carbon bonds backed by the EIB, to name a few.

The cornerstone for 2030 policy

The Coalition’s proposed binding energy savings target would be achieved by first carrying out cost-effective energy efficiency improvement measures targeting sectors offering the highest potentials, including the residential and transport sectors. These measures would reduce energy consumption for the EU as a whole compared to business as usual and to 2005. This provides a predictable outlook for energy efficiency policy and investment decisions and helps the EU and Member States to reap the co-benefits resulting from such investments, including the achievement of significant GHG emission reductions at a low cost¹¹ (see scenario A below).

On the other hand, a GHG emissions target on its own would be more expensive¹², provide no predictability for energy efficiency policies and investments and require very limited, if any, energy savings (see scenario B below).

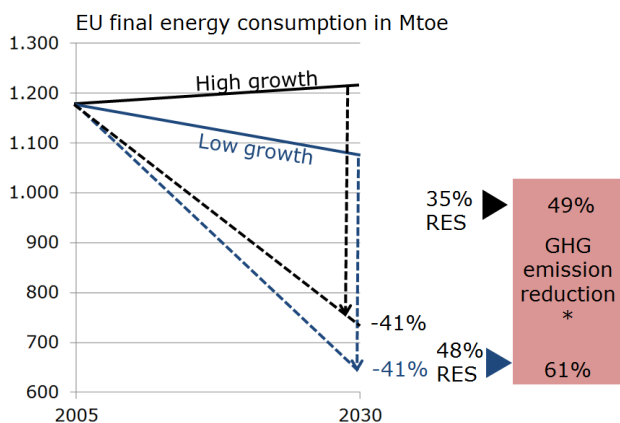
The interaction between energy savings and GHG emission reductions are illustrated by the following scenarios¹³:

Scenario A

Full realisation of 41% energy savings potentials with:

- High growth and 35% renewable energy share
- Low growth and 48% renewable energy share

⇒ **Results in at least 49-61% GHG emissions reductions compared to 1990**



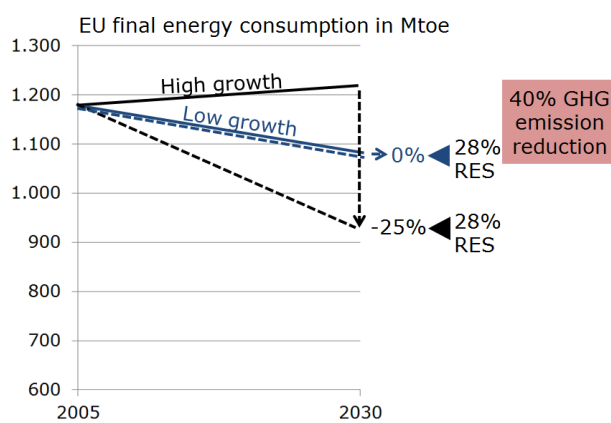
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Scenario B

Reducing GHG emissions by 40% compared to 1990 levels with:

- High growth and 28% renewable energy share
- Low growth and 28% renewable energy share

⇒ **Requires no additional energy savings and leads to increasing energy wastage**



25% savings are delivered by existing policies; 0% savings would mean decreasing energy efficiency and increasing energy wastage

¹¹ Tapping the energy savings potentials can lower the overall cost of achieving GHG emission reductions in two ways: 1. Some higher-cost policies and measures will no longer be needed to meet the emissions reduction target. 2. Since the carbon price is set by the marginal cost, including lower- (or negative)-cost emission reductions, the carbon price across the board is stabilised. See International Energy Agency, *Summing up the parts*, 2011.

¹² Without the energy efficiency improvements, tightening the GHG emission cap under the EU-ETS would drive up energy bills. See ECN, *Investing EU-ETS auction revenues into energy savings*, 2013.

¹³ In these scenarios high growth is 1.83% per annum and low growth is 1.46% per annum. Latest available EU projections published by ECFIN estimate a growth of 1.5-1.6% per annum until 2030. See European Commission, *The 2012 Ageing Report: Economic and budgetary projections for the 27 EU Member States (2010-2060)*, 2012.

Who is asking: A multi-stakeholder platform representing a variety of sectors and economic and social interests

The Coalition for Energy Savings unites business, professionals, local authorities, trade unions and civil society associations in making the case for a European energy policy that places a much greater, more meaningful emphasis on energy efficiency and savings. Coalition members represent more than 400 associations, 150 companies, 15 million supporters, more than 2 million employees, 1,000 cities and towns in 30 countries in Europe.

Members of the Coalition are the Architects' Council of Europe (ACE), ClientEarth, Climate Action Network Europe (CAN-Europe), COGEN Europe, E3G, Energy Cities, European Alliance of Companies for Energy Efficiency in Buildings (EuroACE), European Alliance to Save Energy (EU-ASE), European Association of Polyurethane Insulation Manufacturers (PU Europe), European Climate Foundation, European Committee of Domestic Equipment Manufacturers (CECED), European Copper Institute, European Council for an Energy Efficient Economy (eceee), European Environmental Bureau (EEB), European Federation for Intelligent Energy Efficiency Services (EFIEES), European Federation of Building and Woodworkers (EFBWW), European Insulation Manufacturers Association (Eurima), European Federation of Public, Cooperative & Social Housing (CECODHAS Housing Europe), European Partnership for Energy and the Environment (EPEE), Friends of the Earth Europe, Glass for Europe, LightingEurope, Royal Institute of Chartered Surveyors (RICS) and WWF, as well as advisory members Buildings Performance Institute Europe (BPIE) and Regulatory Assistance Project (RAP).

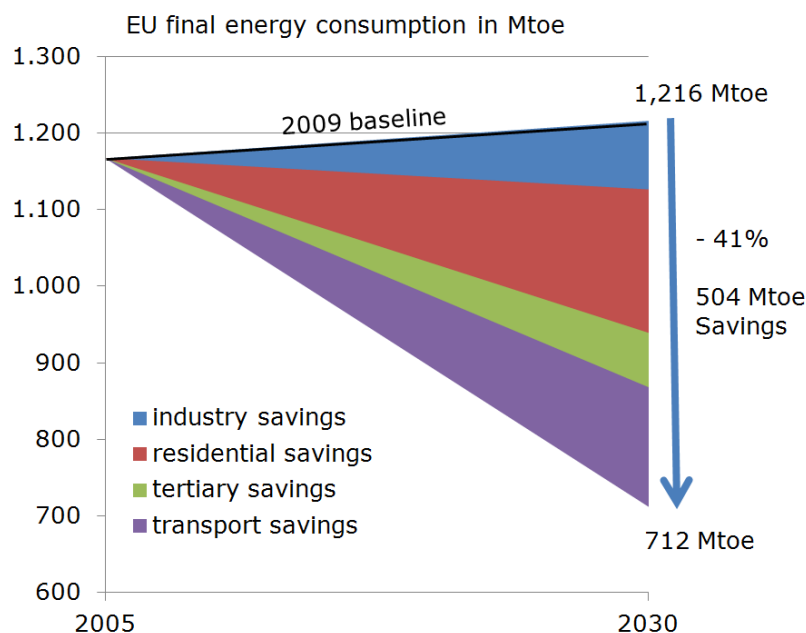
ANNEX: What is the cost-effective energy savings potential?

The cost-effective savings potential is defined as the savings that can be realised through energy efficiency improvement measures that deliver over their lifetime net financial benefits for the individual actor making the investment, in addition to many macro-economic and other societal co-benefits. The investment costs are discounted at normal rates and are calculated under the assumption that non-economic barriers to efficiency, e.g. lack of access to information and split-incentives, are removed.

The proposed energy savings target is based on the most detailed and available bottom-up assessment of the cost-effective energy savings potentials, which was developed by Fraunhofer ISI for the European Commission in 2009¹⁴ and updated in 2012 for the German government¹⁵. It takes a conservative approach to assessing the potentials by considering:

- The cost effectiveness of each type of intervention, e.g. the replacement of equipment and materials with more efficient commercially available alternatives, new industrial processes or building refurbishment;
- Removal of key market and non-economic barriers, e.g. lack of information and access to financing; and
- That investment cycles follow normal, historical patterns and drivers, and only commercially available technologies are applied.¹⁶

The overall energy end-use savings potential is 504 Mtoe, which corresponds to a 41% reduction compared to the PRIMES 2009 baseline, composed of individual sector potentials: residential (61%), transport (41%), tertiary (38%) and industry (26%)¹⁷.



Results of bottom-up modelling of cost-effective saving potentials, showing the relative contribution of different sectors to the overall target

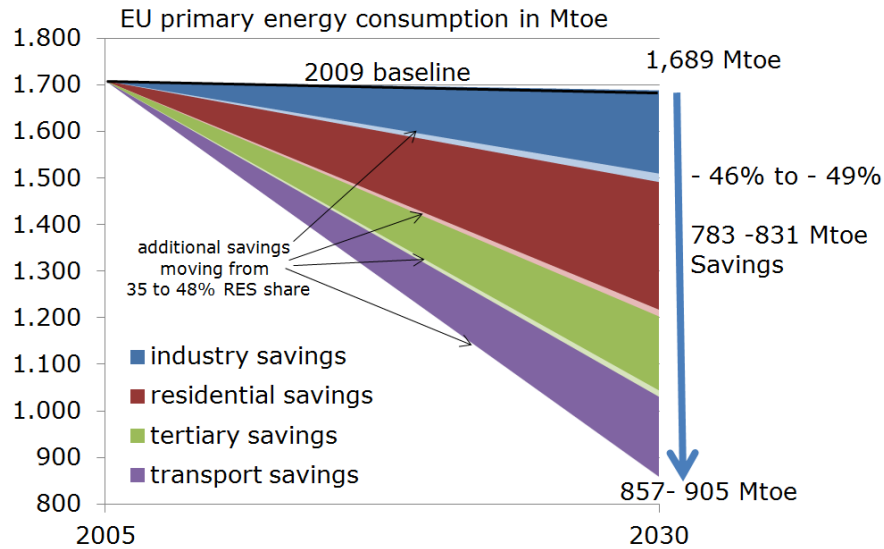
¹⁴ Fraunhofer ISI et al., *Study on the Energy Savings Potentials in EU Member States, Candidate Countries and EEA Countries*, European Commission Directorate-General Energy and Transport, 2009.

¹⁵ Fraunhofer ISI, *Policy Report: Contribution of Energy Efficiency Measures to Climate Protection within the European Union until 2050*, German Federal Ministry for the Environment, 2012.

¹⁶ Another more common approach is macro-economic or 'top-down' modelling, as done for most EU projections, which applies usually a set of equations to simulate equilibrium between demand and supply. As there is no functioning market for energy efficiency, the simulations cannot adequately handle efficiency effects, and an arbitrarily high discount rate is used to approximate non-economic barriers. The results are crude and unreliable and generally lead to an overestimation of the costs of energy efficiency measures, thus significantly lowering improvements in end-use energy efficiency.

¹⁷ Fraunhofer ISI, *Analysis of a European Reference Target System for 2030*, 2013.

41% end-use savings translates into 46-49% primary energy savings compared to the 2009 baseline and 46-50% compared to 2005 levels. It would help the EU to stay below 857-905 Mtoe primary energy consumption. This assumes efficiency improvements in the supply, transformation and distribution and reaching a 35-48% renewable energy share by 2030 while increasing the share of electricity in final demand from 25 to 38%¹⁸.



Primary energy saving potentials, depending on different assumptions of renewable energy shares

¹⁸ As the Coalition for Energy Savings does not have a collective view on the share of renewable energy, the energy savings target for 2030 is expressed in final energy.