The Coalition for ENERGY SAVINGS

European Commission
Directorate-General Climate Action
Unit A.4 – Strategy and Economic Assessment

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Directorate General Energy
Unit A1 – Energy Policy

CLIMA-ENERGY-GREEN-PAPER-2030@ec.europa.eu

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2030 framework for climate and energy policies
Green Paper consultation

First contribution from the Coalition for Energy Savings

The Coalition for Energy Savings brings together business, professional, local authorities, trade unions and civil society associations with the purpose to make 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, 2 million employees and 1,000 cities and towns in 30 countries in Europe.

Members of the Coalition for Energy Savings

Architects' Council of Europe (ACE)

Building Performance Institute Europe (BPIE)

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)

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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

Regulatory Assistance Project (RAP)

Royal Institute of Chartered Surveyors (RICS)

WWF

The Coalition for Energy Savings is a registered organisation on the Joint Transparency Register, ID number 72911566925-69.

Note:

The Coalition is in the process of developing a position on setting an energy savings target for 2030, which is expected to become available in the coming months.

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Summary

The Coalition for Energy Savings believes that the Commission's consultation on its Green Paper for the 2030 framework for climate and energy policy is an important opportunity to re-emphasise the importance of energy savings as an essential building block of a coherent and consistent policy framework.

The Coalition calls for energy savings to be treated as an objective in its own right in the 2030 policy framework, supported by a target for after 2020, as anticipated by the Energy Efficiency Directive. Given Europe's economic, job and social crises, this is a bare necessity for a viable, acceptable and stable climate and energy policy. It is urgently needed to maintain and step up actions and investments to improve energy efficiency, which will deliver jobs, growth and competitiveness, while reinforcing the other objectives of the framework.

Realising Europe's cost-effective energy savings potentials would achieve over €239 billion in annual net savings in 2030 and around €500 billion in 2050 on the EU's energy bill[1]. Empirical evidence shows that energy efficiency programmes and actions across Europe have already delivered substantial net benefits for households and industry via reduced energy bills. Public budgets have also been helped through increased income and the creation and maintenance of significant amounts of local jobs (see Annex).

Europe has the world's largest energy trade deficit of €423 billion in 2012[2], which substantially impacts Europe's competitiveness, energy security and investment capacities, and underlines its geo-political and economic vulnerability while dangerously exposing its ability to control energy prices. Reducing energy demand is therefore a strategic deliverable for the European Union as was recently re-confirmed in the IEA 2012 World Energy Outlook.

Energy efficiency is the largest clean-tech market worth €720 billion globally in 2010 and growing by 10% annually[3]. Stepping up energy efficiency investment in the EU is a pre-condition to expand in this market.

We believe that a 2030 energy savings target should be based on a bottom-up assessment of the cost-effective savings potentials per sector[4] and linked to a 2050 perspective. The time is ripe to set a target. The Energy Efficiency Directive (EED)[5] sets an important framework out to 2020 but urgently needs to be built upon and to be given certainty beyond 2020 through a dedicated target. The main lesson from the past is that the barriers to energy savings are numerous, and voluntary commitments or market-based instruments and pricing mechanisms alone can rarely remove them. Therefore the EU needs a stronger legislative framework that establishes a commitment expressed by mandatory national targets followed by broad range of regulatory requirements and direct support schemes that will leverage private financing.

An energy savings target will improve implementation of the EU acquis for energy efficiency and therefore contribute to the harmonisation of the regulatory environment, which is essential for attracting investments into Europe's energy system and further completing the internal market.

The transition to a demand driven energy system, by putting energy savings first, is a compelling opportunity. Several EU Member States are recognising this[6] and would benefit from a common EU policy and longer-term vision.

[1] Fraunhofer ISI, Concrete Paths of the European Union to the 2ºC Scenario, 2012.
[2] Eurostat, News release - January 2013, Euro area international trade, 18th March 2013.
[3] German Federal Ministry for the Environment, GreenTech made in Germany 3.0, 2012.
[4] The most detailed bottom up modeling available comes from Fraunhofer ISI 2012, which suggests that the EU has a cost-effective energy savings potential of 41% by 2030 compared to the PRIMES 2009 reference. The Coalition is validating the result with a view of proposing a target for 2030.
[5] Directive 2012/27/EU
[6] See for example German Energiewende, French Transition Energétique and UK Green Deal.

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Responses to Green Paper Questions:

4.1. General

Which lessons from the 2020 framework and the present state of the EU energy system are most important when designing policies for 2030?

The 2030 climate and energy policy framework is being developed in a dramatically different economic, social and environmental context than the 2020 framework, which makes delivering energy efficiency and saving objectives a necessity instead of just an option. The growing importance of energy security (i.e. reducing the energy trade deficit and dependency) and competitiveness/affordability (i.e. reducing energy costs), coupled with the growing urgency of climate change, requires stepping up energy savings objectives and policies, especially as these are the most effective measures for which the EU has a strong basis to act.

The 2020 framework is missing a mandatory overall target for energy efficiency, which would help prioritising investments in energy efficiency improvements. Out of the three targets for 2020 (energy efficiency, renewable energy and greenhouse gas emissions), the 20% energy efficiency target is the only one that is not binding and also the only one not yet on track to being achieved. Although latest reference projections indicate energy demand reductions for 2020 and that the target gap is reducing, this is only partially due to energy savings stemming from increased energy efficiency and far off from realising the cost-effective energy savings potentials.

An important lesson from the three headline targets for 2020 is that a coherent and stable policy cannot be developed if one uses only projections which systematically underestimate energy efficiency, do not address the combined effect of high energy efficiency and renewable energy deployment and ignore the uncertainty in economic growth projections.

It is therefore essential that appropriate expectations of energy efficiency are built into a new climate and energy framework from the outset. The setting of 2030 targets should commence with a bottom-up approach to assess the cost-effective energy savings potentials from the main sectors linked to a 2050 perspective. This will result in much lower energy consumption than projected in the Commission's 2050 Energy Roadmap and contribute to reducing greenhouse gas emissions and increasing renewable energy shares. This will significantly support the viability, acceptability and predictability of renewable and climate policies[7]. A reference figure for energy consumption for 2030 that has been assessed in such a way should therefore be an integral part of the Commission's preliminary proposals for the 2030 framework.

At the same time, it is evident that the current greenhouse gas related policies (the 2020 target, EU-ETS and effort sharing directive) are insufficient to tap energy saving potentials. This is because the main barriers are neither economic nor market based specific regulatory and financial support instruments are required to overcome them. It is therefore vital that dedicated targets and policies be put in place to deliver energy efficiency – in order to ensure that reductions in consumption are achieved thanks to structural investments that improve the energy efficiency of infrastructure and practices, rather than simply downturns in economic activity. Without this, once economic growth picks up, energy insecurity, energy trade deficit and environmental challenges that Europe faces will become even larger.

[7] IEA, Summing up the parts – combining policy instruments for least-cost climate mitigation strategies, 2011

4.2. Targets

Which targets for 2030 would be most effective in driving the objectives of climate and energy policy? At what level should they apply (EU, Member States, or sectoral), and to what extent should they be legally binding?

An ambitious and forward looking 2030 climate and energy policy framework needs to have a legally binding target for energy savings to drive energy efficiency improvements and address all EU energy and climate objectives. Energy savings, besides being an increasingly important EU objective on its own right, provide the most cost-effective, inexpensive and easiest solution to achieve reductions in greenhouse gas emissions and facilitate renewable energy deployment by reducing energy demand and increasing efficiency. Therefore, the suite of targets must be mutually supportive, built on the basis of the energy savings delivered through realising the cost-effective savings potential.

The EU target should be established by considering the available cost-effective potentials in the main energy-using sectors for 2030 linked to a 2050 perspective. The effort to reach the target should be shared, considering the national potentials, amongst Member States. At national level the contribution from different sectors should be guided by cost-effective potentials, taking into account other macro-economic impacts when applicable.

The most detailed bottom-up modeling available comes from Fraunhofer ISI 2012, which suggests that the EU has a cost-effective potential to reduce end-use energy by 41% by 2030 compared to the PRIMES 2009 reference. The Coalition is validating the result with a view of proposing a target for 2030.

Have there been inconsistencies in the current 2020 targets and if so how can the coherence of potential 2030 targets be better ensured?

Targets for 2020 were consistent with the projections used. However, the projections systematically underestimated the potential of energy efficiency and the combined effect on greenhouse gas emissions of renewable energy and reduced consumption, and ignoring the impacts of different GDP developments.

In light of this, the approach to setting 2030 targets must be improved. It has to commence with a bottom-up approach to assess the cost-effective energy savings potentials from the main sectors linked to a 2050 perspective and analyse their contribution to reducing greenhouse gas emissions and increasing renewable energy shares. This assessment together with a binding energy savings target will increase predictability for climate and renewable policies[8] and help achieving a set of coherent and mutual reinforcing targets.

Are targets for sub-sectors such as transport, agriculture, industry appropriate and, if so, which ones? For example, is a renewables target necessary for transport, given the targets for CO2 reductions for passenger cars and light commercial vehicles?

In order to capture the full energy savings potentials while recognising uncertainties of future sector developments, an overall binding energy savings target is most appropriate to allow for flexibility and to avoid double counting. Setting 2030 targets must include a bottom-up approach to assess the cost-effective energy efficiency potentials, alongside their contribution to reducing greenhouse gas emissions and increasing renewable energy shares. Thus sector specific energy savings potentials serve as an important coordination and integration function.

[8] IEA, Summing up the parts – combining policy instruments for least-cost climate mitigation strategies, 2011

How can targets reflect better the economic viability and the changing degree of maturity of technologies in the 2030 framework?

Targets based on the cost-effective energy savings potentials include the maturity and current application of today's technology, and to a limited extent future improvement and learning curves of current technologies. This means that the potentials are in general conservative, and thus economically viable, with the potential to be stronger from the outset.

How should progress be assessed for other aspects of EU energy policy, such as security of supply, which may not be captured by the headline targets?

Other aspects of EU energy policy, and particularly security of supply, are captured by an energy savings target. For example, if the 20% energy saving target is achieved in 2020, this effectively means an increase in security of supply by 20%. This can be accurately measured in both energy volume and in Euros.

4.3. Instruments

Are changes necessary to other policy instruments and how they interact with one another, including between the EU and national levels?

- Public procurement – There should be rules and requirements to ensure all products and services purchased by public sectors organisations have high energy efficiency performance.
- Earmarking of EU budget for energy efficiency programmes, alongside energy efficiency as a condition of EU funding, and of revenues from auctioning of EU ETS allowances.
- Setting ambitious minimum energy performance criteria for granting EU funding and other public funding and financing
- Public deficit accounting - Interpretations of accounting rules on public debt and deficit[9] need to be modified so that investments in energy efficiency under energy service contracts are not necessarily counted as deficits in national and public accounts. This includes the so-called "on-balance sheet" obstacle that hampers the wider use of energy performance contracting in the public sector.

How should specific measures at the EU and national level best be defined to optimise cost-efficiency of meeting climate and energy objectives?

Optimising the cost-efficiency of meeting climate and energy objectives requires tapping the full cost-effective energy saving potentials. An overall energy savings target should be based on an assessment of cost-effective potentials a bottom up approach to assess the cost-effective energy savings potentials from each sector. Life-cycle cost analysis (LCCA) should be used to measure the impacts of the measures. This calculation should take full account of the societal and other benefits of energy efficiency, including improved air quality, health, employment, etc.

How can fragmentation of the internal energy market best be avoided particularly in relation to the need to encourage and mobilise investment?

[9] EUROSTAT rules on public debt and deficit: http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-42-02-585

A binding 2030 target will encourage Member States to improve implementation of the EU acquis for energy efficiency, thereby contributing to the harmonisation of the regulatory environment. This is essential for attracting investments into Europe's energy system and helping to complete the internal market. Harmonisation of calculation methods and standardisation around energy efficiency will also add to this.

Energy savings and efficiency have been shown to be very difficult to mobilise using only market mechanisms. A target based approach will allow member states to implement standards and measures as the best option for positive payback (and life-cycle cost analysis) results for steering investment.

Which measures could be envisaged to make further energy savings most cost effectively?

In order to realise the cost-effective energy saving potentials it is necessary to overcome and remove the remaining non-market barriers to energy efficiency. The Energy Efficiency Directive takes the first step to doing this, and is estimated to be worth €200 billion net savings per year for households and businesses[10], but strong and ambitious implementation and vision for 2030 and beyond is needed.

This vision should continue to build on the savings achieved through the strong implementation of the Energy Efficiency Directive[11], which includes the following actions:

1. National energy efficiency targets reflect increasing ambition, lead to new actions to reach national energy saving potentials in 2020 and beyond and contribute a fair share to the EU 20% target.
2. An annual 1.5% energy end-use saving target is put in place by end of 2013, securing at least 10.5% savings in the year 2020, and the use of exemptions is kept to an absolute minimum.
3. The methodology for calculating the impact of energy efficiency measures to achieve the binding 1.5% annual end-use energy savings target does not exaggerate claimed savings. It counts only the savings that are realised during the period 2014-2020, deliver savings until at least the end of 2020 and are additional to a baseline, thus excluding savings from EU product or building standards.
4. The only savings counted in the target result from policy measures that explicitly aim to improve energy efficiency (no general taxation, like VAT, for example) and whose impact is verified. Double counting is avoided.
5. Obligation schemes are put in place and are an integral part of the mix of national energy efficiency measures.
6. The costs of obligation schemes to end-use customers and potential market players are made transparent and the value of longer lived energy efficiency measures is fully reflected in the accounting and target design of the energy efficiency obligation schemes.
7. The public sector undertakes a comprehensive and accurate inventory of its own building stock, including energy performance and other relevant energy data that will serve as a starting point for renovations and as a model for an equivalent inventory of the national building stock.
8. The public sector leads by example and implements well-planned, high-quality deep renovations (including staged deep renovations) in all of its buildings. This

[10] Ecofys, Saving energy – bringing down Europe's energy prices for 2020 and beyond, 2012.
[11] See Coalition Guidebook for a Strong Implementation of the Energy Efficiency Directive: http://energycoalition.eu/guidebook-strong-implementation-0

activity should prepare and stimulate the entire market for the long-term deployment of such renovations, as part of the national renovation strategies.

9. Additional energy efficiency criteria in public procurement are set in a sufficient level of detail to avoid misunderstandings in their implementation.
10. Energy audits that meet the financial and economic criteria and demands of so-called investment grade audits are promoted. They are based on life-cycle cost analysis and provide guidance for future investments and maintenance.
11. SMEs and households are given clear and strong incentives to undertake audits and implement the recommended measures that result from these audits.
12. Interpretations of accounting rules on public debt and deficit are modified so that investments in energy efficiency under energy service contracts are not necessarily counted as deficits in national and public accounts.
13. Energy performance contracts and other types of overall energy service contracts are included as justified cases in public procurement, to ensure that public bodies are not obliged to divide contracts into separate lots when a holistic approach is more cost-effective and brings more energy efficiency improvements.
14. Spatial planning rules are linked to national comprehensive assessments of the potential for the application of high-efficiency cogeneration and efficient district heating and cooling to ensure an "integrated approach" to energy supply and demand.
15. Cost-benefit analyses for efficient heating and cooling options, particularly those at installation level for power plants and industries, are done in a transparent and participatory manner and explicitly include socioeconomic costs.
16. Distribution and transmission system tariffs are set in a transparent manner and to empower consumers, and those incentives are removed which are detrimental to improving energy efficiency activity, in particular demand response and energy efficiency obligations carried out by energy companies.
17. Clear provisions are provided for demand response actors and those able to provide other energy efficiency services to be included in market design in a non-discriminatory fashion to improve overall network efficiency.
18. National building renovation strategies are in place and aim at an 80% energy consumption reduction target for the country's entire building stock, to be achieved through the gradual and systemic improvement of the energy performance of all buildings by 2050.
19. The multiple benefits arising from deep renovations are integrated into a policy framework to stimulate deep renovation (including staged deep renovations) of the building stock.
20. Energy Efficiency Funds that are capable of blending various streams of financing and backing high quality national energy efficiency investment programmes are in place.

How can EU research and innovation policies best support the achievement of the 2030 framework?

A larger share of the EU Research budget should be earmarked for programmes that help identify and remove all types of barriers to the rapid deployment of new, energy-efficient technologies and techniques.

4.4. Competitiveness and security of supply

Which elements of the framework for climate and energy policies could be strengthened to better promote job creation, growth and competitiveness?

Competitiveness is not served well by addressing it through the narrow prism of energy prices. "*Competitiveness is defined by the productivity with which a nation utilizes its human, capital and natural resources.... Productivity depends both on the value of a nation's products and services – measured by the prices they can command in open markets – and by the efficiency with which they can be produced"*[12].

Energy efficiency is therefore one of the central elements deciding competitiveness. It can help to address the EU's crises - the economic and financial crisis, the climate crisis and the unemployment crisis - by boosting competitiveness, creating jobs and protecting the environment.

Commitment to energy efficiency also aids the development of European industry to support this commitment with the development of new products and services. This in turn leads to innovation and growth of industries, creation of new jobs, and economic growth, including new export industries. There is evidence that companies that introduce energy-saving products on the market enjoy higher sales generated by product innovation compared to conventional product innovators. This may also reflect an important competitive advantage [13]. Furthermore, energy efficiency is the largest clean-tech market worth €720bn in 2010 and growing by 10% annually[14].

In addition, existing programmes showed that between 13-17 jobs were created or maintained 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[15] [16] [17].

What evidence is there for carbon leakage under the current framework and can this be quantified? How could this problem be addressed in the 2030 framework?

What are the specific drivers in observed trends in energy costs and to what extent can the EU influence them?

The development of the energy demand plays an important role in the formulation of energy costs. Energy savings resulting from cost-effective energy efficiency measures reduce energy demand and thereby reduce

- the net costs of the energy system, which leads to lower energy prices for all energy users; and
- the net energy cost for the individual who realises the energy savings.

As energy efficiency and savings are an EU Treaty objective and shared competence, the EU has a first-class instrument at hand to influence energy costs.

[12] Michael Porter, The Competitive Advantage of Nations, Harvard Business Review, March-April 1990.
[13] European Commission, European Competitiveness Report, 2012.
[14] German Federal Ministry for the Environment, GreenTech made in Germany 3.0, 2012.
[15] Ürge-Vorsatz, D. et al., Employment Impacts of a Large-Scale Deep Building Energy Retrofit Programme in Hungary" 2010.
[16] INFRAS (2007): Auswirkungen von Energieeffizienz-Massnahmen auf Innovation und Beschäftigung. Inputpaper für den Energie Trialog Workshop vom 25. Oktober 2007, Zürich, 17.Oktober 2007.
[17] Kuckshinrichs, W., Kronenberg, T., Hansen, P. (2012): Wirkungen der Förderprogramme „Energieeffizientes Bauen", „Energieeffizient Sanieren" und „Energieeffiziente Infrastruktur" der KfW auf öffentliche Haushalte: Förderjahr 2011.

How should uncertainty about efforts and the level of commitments that other developed countries and economically important developing nations will make in the on-going international negotiations be taken into account?

Energy efficiency is the no regret option in the international climate context and at the same time a necessity to support an international agreement. Even in an EU-only context, the benefits of improved energy efficiency greatly outweigh the costs. This is also true when international competitiveness is taken into account.

How to increase regulatory certainty for business while building in flexibility to adapt to changing circumstances (e.g. progress in international climate negotiations and changes in energy markets)?

An ambitious climate and energy policy framework including a binding energy savings target would provide certainty for business to invest in energy efficiency and savings. In addition energy efficiency and savings would make businesses more resistant to change, for example increased prices, within the energy market. The target would also encourage EU industry to develop its capacity to produce technology and services that can then be exported to help other countries meet their obligations.

In setting the indicative target under the Energy Efficiency Directive a modelled baseline and set of assumptions on market conditions were used, including energy pricing and CO_2 prices. This modelled approach should be continued but improved, with re-modelling at the appropriate intervals and transparency and clarity in all assumptions.

How can the EU increase the innovation capacity of manufacturing industry? Is there a role for the revenues from the auctioning of allowances?

Providing investor certainty and strengthening deployment of energy efficiency services and technologies in Europe through a target for energy savings would increase innovation capacity in Europe. Member States should at least earmark significant parts of the revenues resulting from the auctioning of ETS allowances to energy efficiency. In particular, part of these revenues could contribute to the National Energy Efficiency Funds that Member States may establish under Article 20 of the Energy Efficiency Directive.

How can the EU best exploit the development of indigenous conventional and unconventional energy sources within the EU to contribute to reduced energy prices and import dependency?

The EU's largest indigenous energy resource is energy savings. As an example, the Commission's contribution to the European Council of 22 May recognises that "meeting the EU's 20% energy efficiency target by 2020 means saving the equivalent of 1,000 coal power plants or 500,000 wind turbines"[18].

How can the EU best improve security of energy supply internally by ensuring the full and effective functioning of the internal energy market (e.g. through the development of necessary interconnections), and externally by diversifying energy supply routes?

The best way of increasing security of supply is first to reduce demand along the whole energy supply chain driven by a target for energy savings that realises the available

[18] European Commission, Energy challenges and policy, 22 May 2013.

cost-effective potential. This will also help determine the necessary size and optimal structure of the energy generation, transmission and distribution system.

4.5. Capacity and distributional aspects

How should the new framework ensure an equitable distribution of effort among Member States? What concrete steps can be taken to reflect their different abilities to implement climate and energy measures?

Energy savings potentials should be a important parameter in effort sharing considerations, because the expected socio-economic benefits of realising cost-effective potentials at national level should leverage acceptability and support fairness across Member States. The main issue will be the differences in financing capacities, but this should be addressed through a strong common framework for all Member States and further using and developing new and existing European financing tools. Other macro-economic factors may need to be taken into account, including education level and training, potential bottlenecks in the national labour markets, level of standardisation, available institutional frameworks, and monitoring and compliance tools. These might impact the initial uptake of energy efficiency, although they would even out in the longer term.

What mechanisms can be envisaged to promote cooperation and a fair effort sharing between Member States whilst seeking the most cost-effective delivery of new climate and energy objectives?

Energy savings targets need to be established through summing cost-effective sector and national energy savings potentials and understanding interactions with other targets. This would provide guidance on potential share of responsibility. However, an overall target is also needed with allowance for flexibility in implementation for Member States.

Are new financing instruments or arrangements required to support the new 2030 framework?

see response to previous question under 4.3:

The framework for financing needs to be strengthened and improved:

- Public procurement – There should be rules and requirements to ensure all products and services purchased by public sectors organisations have high energy efficiency performance.
- Earmarking of EU budget for energy efficiency programmes, alongside energy efficiency as a condition of EU funding, and of revenues from auctioning of EU ETS allowances.
- Setting ambitious minimum energy performance criteria for granting EU funding and other public funding and financing
- Public deficit accounting - Interpretations of accounting rules on public debt and deficit[19] need to be modified so that investments in energy efficiency under energy service contracts are not necessarily counted as deficits in national and public accounts. This includes the so-called "on-balance sheet" obstacle that hampers the wider use of energy performance contracting in the public sector.

[19] EUROSTAT rules on public debt and deficit: http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-42-02-585

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ANNEX: IEEP, Review of Costs and Benefits of Energy Savings, 2013, commissioned by the Coalition for Energy Savings

Summary of key findings of ex post evaluations reviewed for this report

Study reviewed	Scope	Key findings
Residential/buildings sector		
Prognos (2013)	Evaluation of German KfW energy efficiency programmes in the buildings sector	• Between 2006 and 2010 annual energy savings of 2.1 TWh and total investments of EUR 14 billion were achieved based on an average public budget contribution of EUR 1.4 billion • An increase of the programme budget could contribute to an average increase of GDP by 0.25%, compared to a baseline growth of 1.1%
Kuckhinrichs et al. (2012)	Evaluation of German KfW energy efficiency programmes in the buildings sector	• In 2011, using a conservative estimate on jobs and induced total investments, public budgets have a net benefit of EUR 3 billion, under an optimistic estimate net benefits are as high as EUR 10 billion
INFRAS (2007)	Evaluation of Swiss energy efficiency programme 'EnergieSchweiz'	• Net employment benefit of 2,600 person years as a result of energy efficiency measures with a total investment volume of CHF 315 million of which around CHF 32 million were public subsidies • Employment benefits were highest in the buildings sector (1,900 person years) followed by consultancy, planning and IT (820 person years).
Scheer and Motherway (2011)	Evaluation of Irish Home Energy Saving scheme	• A net benefit of five euro for each euro spent in terms of reduced energy consumptions, lower greenhouse gas emissions and less other pollution • Households that were supported by the programme are expected to save EUR 450 per year
Ürge-Vorsatz *et al.* (2010)	Employment effects of energy efficiency measures in the buildings sector	• On average, around 17 jobs created per million euro • 'deep renovations are one of the most employment intensive interventions for climate change mitigation or other economic recovery attempts' (p23)
Industrial sector		
Stenqvist and Nilsson (2013)	Evaluation of Swedish Programme for improving energy efficiency in energy-intensive industries	• Each MWh of saved electricity cost between EUR 9.3 and 13.6 compared to an average annual wholesale price of EUR 29 and 51 in the same period • The average payback period of the implemented electricity savings measures was less than 1.5 years.
Scheer and Motherway (2011)	Evaluation of Irish energy efficiency programme targeted at SMEs	• The cost of saving one kWh was estimated to be between 1.8c and 0.7c compared to average electricity cost of 8.2c per kWh
2012 Competitiveness Report of the EU	Assessment of EU competitiveness	• Companies which have introduced energy-efficient products onto the market perform on average better on innovation and gain greater sales generated by product innovation than competitors with more conventional product innovation