

# ENERGY SAVINGS 2020

HOW TO TRIPLE THE IMPACT OF  
ENERGY SAVING POLICIES IN EUROPE

EXECUTIVE SUMMARY

## ● CONTEXT

The EU has a primary energy savings target of 20% below the 2007 projections for 2020. Following the recognition that the EU could cut 20% of current energy use in a cost effective manner<sup>1</sup>, the Commission proposed this energy savings target in the 2006 Energy Efficiency Action Plan (EEAP). In 2007 the European Parliament and Council confirmed and supported it. In 2010 European Heads of State and Government (the European Council) reconfirmed the 20% target as part of the 'Europe 2020' strategy.

This 20% energy savings target is one of the EU's three energy and climate headline targets, together with the 20% reduction in greenhouse gas (GHG) emissions target and the 20% of gross final energy consumption to come from renewable sources target, all to be achieved by 2020. Whereas GHG and renewables targets are binding and are split amongst Member States (MS) which are legally obliged to achieve their share, the energy savings target is voluntary.

There is, however, a general understanding and acknowledgement of the fact that the EU is not on track to achieve its 20% energy savings target by 2020. The European Commission itself estimated that legislation and programmes already adopted and currently in the pipeline would only deliver 11% energy savings by 2020<sup>2</sup>. Many actors have therefore been calling for more ambitious policies and programmes and for the energy savings target to become legally binding.

Furthermore, discussions around the EU's long-term objective of 80-95% reduction in GHG emissions by 2050 and recent analysis on pathways to achieve it have all reinforced the crucial role energy savings must play. In addition to being the lowest cost means of reducing carbon emissions in the economy, energy savings are essential to ensure power system reliability and security of supply, to cut the required amount of new generation capacity, transmission and delivery infrastructure, and to keep the cost of the transition to a low-carbon energy sector economically viable.

With the 2020 deadline only 10 years away, and in view of upcoming EU energy and energy saving policy framework reviews such as the Energy Action Plan 2011-2020 and the Energy Efficiency Action Plan, the European Climate Foundation together with the Regulatory Assistance Project commissioned this Energy Savings 2020 report from Ecofys and Fraunhofer ISI in November 2009. The scope and structure of the report were defined, and the analysis conducted, in consultation with a wide range of industry, civil society and policy stakeholders. The report provides a clear assessment of the state of play on energy saving and prospects for improvements of the EU energy saving policy framework.

1. COM (2005) 265 final, Green Paper on Energy Efficiency or Doing More With Less.  
2. COM (2008) 772 final, Communication from the Commission, Energy efficiency: delivering the 20% target.

## ● OBJECTIVES

The Energy Savings 2020 study aims to provide the fact base for a constructive discussion on EU energy efficiency and energy saving policy. To that end, the objectives of the study are threefold:

### 1. ASSESS PROGRESS TOWARDS ACHIEVING THE 20% TARGET

This first part of the study should quantify the distance to the target in order to verify other findings and strengthen the evidence base for further actions. The results of measuring progress towards achieving a target depend on how this target is interpreted. The original proposal for a 20% primary energy savings target by 2020 was defined in relation to a baseline, but it was left open as to whether that baseline should be fixed or not. But the Commission's evaluation from 2008 suggests a fixed baseline, which has not been contested by the other EU institutions and has been used in this report as a useful and measurable target. In order then to assess progress towards achieving the target, the impact of EU energy and climate policies has to be measured. To that end, this study looks at all factors impacting energy use and calculates the effect of actual policy as opposed to other factors, such as the 2008 economic recession.

### 2. PROVIDE AN OVERVIEW OF EXISTING ENERGY SAVINGS POTENTIAL ACROSS EUROPE

Having established the scale of the shortfall, the report then considers existing energy saving potential that is cost-effective. These are savings which can be achieved by increasing the energy efficiency whereby the total financial investment costs are lower than the financial savings resulting from the reduced energy

consumption. This requires a careful examination of available energy efficiency measures in all sectors of the economy and their related energy efficiency improvement potential and cost compared to the business-as-usual scenario. Doing so will also give an indication of how ambitious the 20% target is, how realistic it is by 2020, and how much it will save the European economy.

### 3. LOOK INTO POLICY DESIGN CRITERIA AND FEATURES FOR CAPTURING THE EXISTING COST-EFFECTIVE SAVINGS POTENTIAL AND ACHIEVING THE 20% TARGET

With the scale of the gap and the potential to fill it established, the debate then moves on to the policy level. Policies must be designed in such a way as to capture as a minimum the cost-effective energy savings potential contributing to the target. The target itself needs to ensure sufficient commitment, accountability and mobilisation of complementary policies. The report looks into key EU policy design criteria and features to inform that debate.

## ● FINDINGS

### 1. A TRIPLING OF POLICY IMPACT IS REQUIRED TO MEET THE EU'S 20% ENERGY SAVINGS TARGET

Achieving the 20% energy savings target requires around 394 million tons of oil equivalent (Mtoe) of energy savings by 2020<sup>3</sup>. In addition to energy efficiency

improvements already included in the baseline, latest calculations estimate that the 2008 economic recession will have reduced EU primary energy consumption by about 70 Mtoe by 2020, while new policies adopted since the 2006 EEAP are expected to have an impact of 115 Mtoe<sup>4</sup>. This leaves the EU with a savings gap of 208 Mtoe by 2020, requiring a tripling of policy impact to achieve the target.

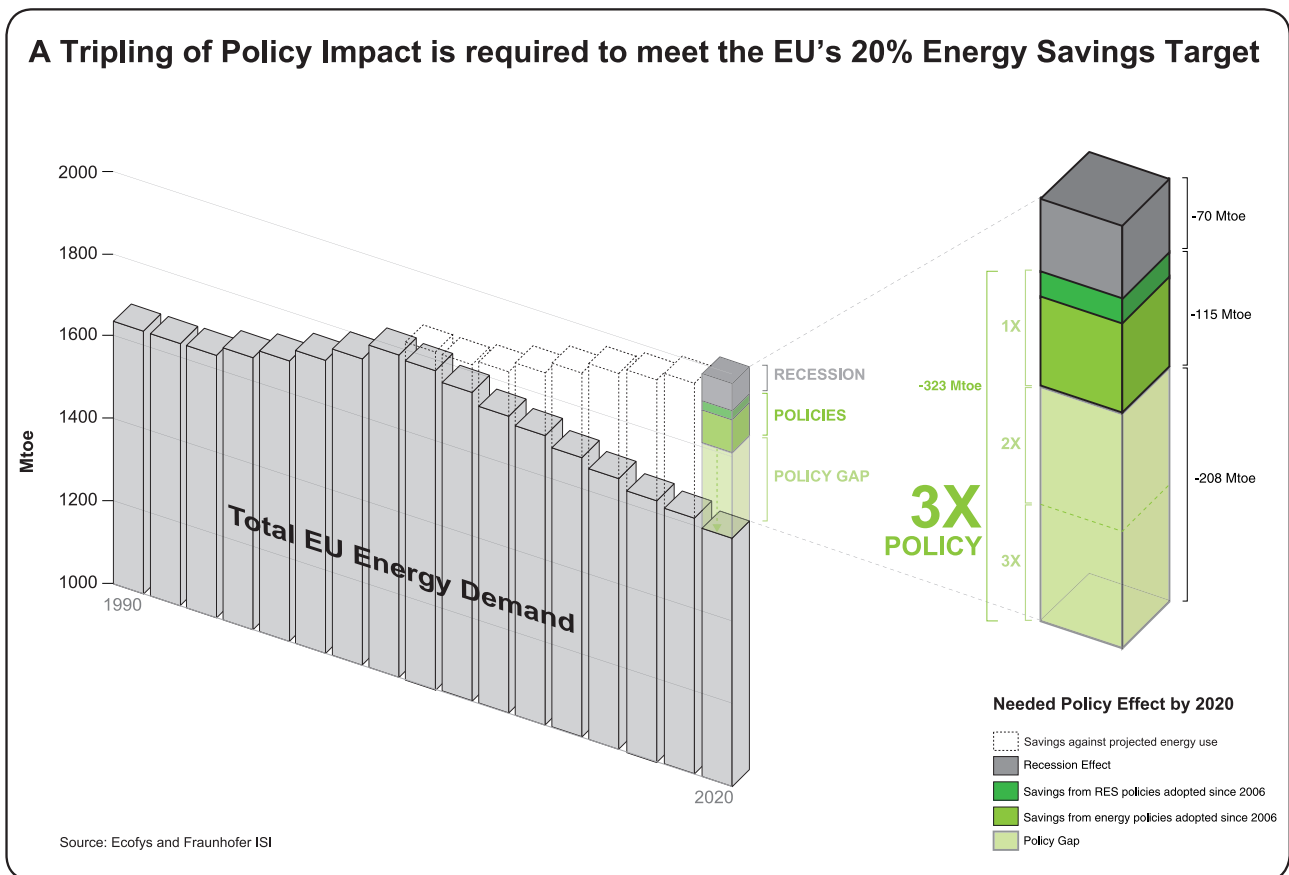


Figure 1 EU energy demand comparing baseline projections with the 20% energy savings target. Even taking into account the impact of the recession and new policies (since the adoption of the 2006 EEAP), meeting the 20% energy savings target by 2020 will still require a three-fold increase in policy impact.

While current EU energy and climate legislation cover 90% of EU energy use<sup>5</sup>, some policies are performing better than others. The ratio between estimated policy impact and the cost-effective energy savings potential covered by these policies varies from 1/4 for the regulation setting CO<sub>2</sub> standards for passengers cars and 1/3 for the Energy End-use Efficiency and Energy Services Directive to 1/2 for the Energy

Performance of Buildings Directive, Ecodesign and Labelling Directives (combined). An assessment of GHG emissions policies, such as the EU Emissions Trading Scheme, found inconclusive evidence on the impact of carbon price incentives on energy savings. A mix of complementary policies, thus, will be required to overcome the market barriers associated with price signals and private sector investment expectations.

3. From projected 1968 Mtoe under the baseline scenario to 1574 Mtoe with the 20% energy savings target. This is an absolute reduction from measured 1800 Mtoe in 2005.

4. 95 Mtoe for energy saving policies and 20 Mtoe for renewable energy policies.

5. The remaining 10% currently not covered by EU policies are freight transport and losses during transmission and distribution of electricity and heat.

## 2. THE 20% ENERGY SAVINGS TARGET CAN BE MET COST- EFFECTIVELY

Realising all cost-effective end-use energy savings measures (like building insulation, top performing lighting

in homes and electric motors in industrial installations) is sufficient – in conjunction with the energy savings impact of meeting the EU's renewable energy target<sup>6</sup> – to close the gap and achieve the 2020 target. Doing so would save EU consumers €78 billion annually by 2020 and reduce EU energy import dependency.

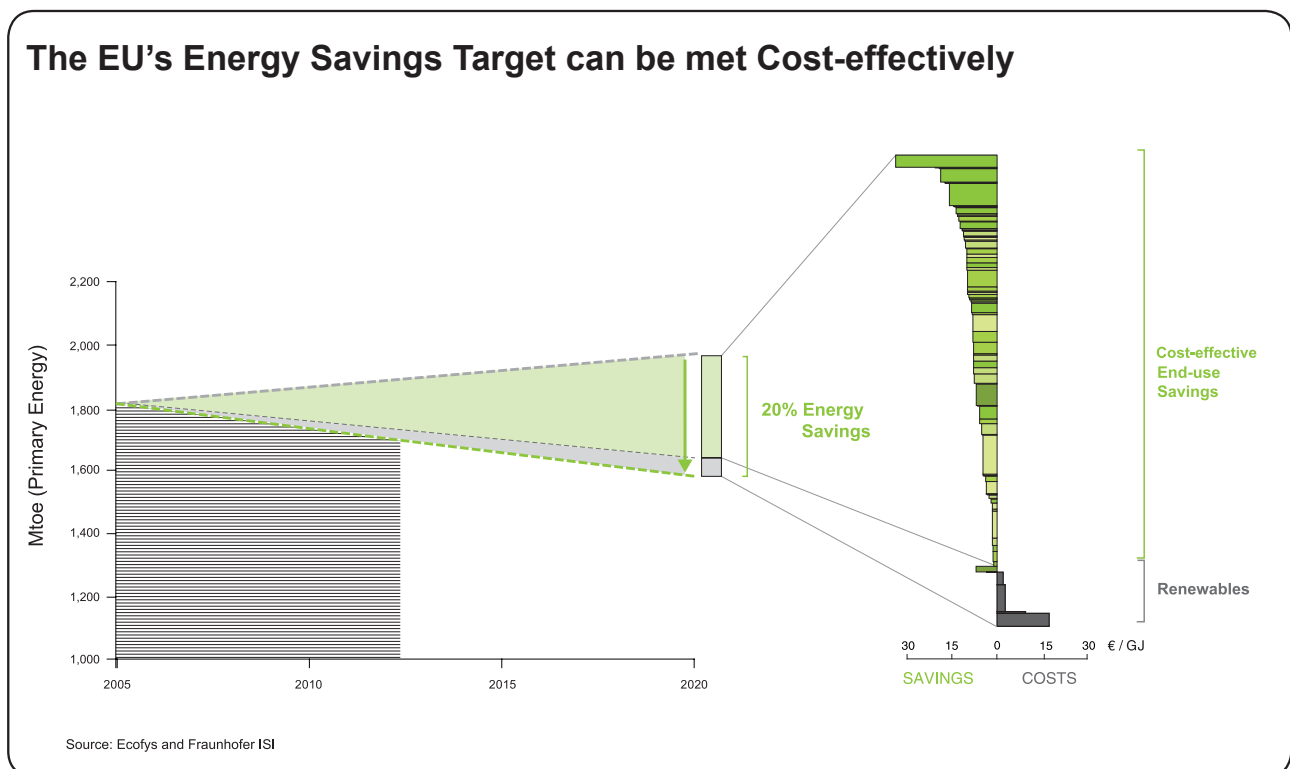


Figure 2 EU energy demand in the baseline and the potential of cost-effective end-use energy savings to meet the 20% energy savings target. The remaining energy savings gap is filled by fully implementing the 20% renewable energy target.

However, the scale of the challenge is not to be underestimated: energy saving measures are diverse and spread across all sectors<sup>7</sup>, and will have to be

implemented quickly enough to deliver their savings potential on time.

6. In the Eurostat Primary Energy Method, hydro, wind and solar are accounted as having a 100% conversion efficiency. Therefore, the higher the share of renewable energy in the total energy mix, the more energy efficient the overall economy.

7. These measures range from insulation and more efficient electrical appliances and heating systems in the built environment, to more efficient engines, aerodynamics and rolling systems in the transport sector and process and supply optimisation and more efficient electrical motors in the industry. The study assumes no additional saving potential on the supply side to those already included in the baseline.

### 3.A BINDING ENERGY SAVINGS TARGET FOR END-USE SECTORS AT MEMBER STATE LEVEL IS THE MOST FEASIBLE TARGET DESIGN OPTION

The option of introducing a binding energy savings target for end-use sectors at Member State level is the most compatible with existing EU energy and climate policies, covers the vast majority of identified cost-effective savings potential and ensures national

commitment and accountability for achieving the target while providing maximum flexibility for implementation.

A careful survey of the possible approaches to complementary legislation, reinforcing the effectiveness of existing legal structures and achieving the targets, shows clearly that a binding energy savings target for end-use sectors at Member State level could provide a more structured and coherent framework to a mix of policy measures that will be required to fully capture the cost-effective savings potential in the timeframe concerned.



ENERGY SAVINGS 2020 IS A CONTRIBUTING STUDY TO ROADMAP 2050: A PRACTICAL GUIDE TO A PROSPEROUS, LOW-CARBON EUROPE. THE ROLE OF THIS REPORT IS TO ASSESS THE IMPACT OF CURRENT EU ENERGY AND CLIMATE POLICIES AND TO MAKE RECOMMENDATIONS ON THE DESIGN OF AN OVERARCHING ENERGY SAVING POLICY FRAMEWORK TO ACHIEVE EUROPE'S 20% ENERGY SAVINGS TARGET BY 2020 AS A VITAL STEP TO MEET ITS 2050 GHG COMMITMENT.

THE ANALYSIS WAS CONDUCTED BY ECOFYS AND FRAUNHOFER ISI IN THE PERIOD OF DECEMBER 2009 TO APRIL 2010. THE REPORT WAS COMMISSIONED BY THE EUROPEAN CLIMATE FOUNDATION (ECF) AND THE REGULATORY ASSISTANCE PROJECT (RAP).

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FOR MORE INFORMATION ON ENERGY SAVINGS 2020:  
[WWW.ENERGYSAVINGS2020.EU](http://WWW.ENERGYSAVINGS2020.EU)

## CONTRIBUTING STUDIES TO ROADMAP 2050

THE CONTRIBUTING STUDIES TO ROADMAP 2050 IS A SET OF PUBLICATIONS STRATEGICALLY ADDRESSING SOME OF THE MAIN CHALLENGES AND SHORT-TERM PRIORITIES AS IDENTIFIED BY THE ROADMAP 2050 ANALYSIS IN THE MOVE TOWARDS A LOW-CARBON ECONOMY IN EUROPE.

## ROADMAP 2050

THE MISSION OF ROADMAP 2050 IS TO PROVIDE A PRACTICAL, INDEPENDENT AND OBJECTIVE ANALYSIS OF PATHWAYS TO ACHIEVE A LOW-CARBON ECONOMY IN EUROPE, IN LINE WITH THE ENERGY SECURITY, ENVIRONMENTAL AND ECONOMIC GOALS OF THE EUROPEAN UNION.

THE ROADMAP 2050 PROJECT IS AN INITIATIVE OF THE EUROPEAN CLIMATE FOUNDATION (ECF), AND HAS BEEN DEVELOPED BY A CONSORTIUM OF EXPERTS FUNDED BY THE ECF.

THE CORE OF THE ROADMAP 2050 ANALYSIS IS CONTAINED IN THE FOLLOWING 3 VOLUMES:

- VOLUME I: TECHNICAL AND ECONOMIC ANALYSIS
- VOLUME II: POLICY REPORT
- VOLUME III: GRAPHIC NARRATIVE

FOR MORE INFORMATION ON ROADMAP 2050:  
[WWW.ROADMAP2050.EU](http://WWW.ROADMAP2050.EU)

EUROPEAN CLIMATE FOUNDATION:  
[WWW.EUROPEANCLIMATE.ORG](http://WWW.EUROPEANCLIMATE.ORG)



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**ECOFYS**

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