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Abstract

This report provides the final results from a study that has assessed the progress of the implementation of Article 7 (and the related Annex V) of the Energy Efficiency Directive (EED) by European Union (EU) Member States. Member States had to submit their national notifications setting out how they intended to transpose Article 7 of the Directive by 5 December 2013. Further information on Article 7 implementation was notified by Member States in April 2014 as part of their National Energy Efficiency Action Plans (NEEAPs). In addition, some Member States provided additional information in response to structured dialogues with the Member States through the EU Pilot information system, which was launched to improve implementation. Drawing upon this information the study provides a quantified assessment of expected energy savings from national policy measures notified by Member States under Article 7, and the expected contribution of these measures towards the EU's 2020 energy efficiency target. As part of the study specific provisions of Article 7 and Annex V were also analysed to assess whether the current requirements allow the achievement of the required end-use energy savings effectively. A number of areas of improvement were identified and specific options were developed for possible legal revisions and/or amendments of Article 7 and Annex V of the EED. An assessment was then performed of the potential impact of these options on the energy savings from Article 7 if the requirements were extended to 2030.

Ce rapport fournit les résultats finaux d'une étude qui a évalué le progrès de la mise en œuvre par les États Membres de l'Union européenne (UE) de l'article 7 (et son annexe V) sur la directive relative à l'efficacité énergétique (Energy Efficiency Directive EED). Les États Membres devaient soumettre leurs notifications nationales précisant la façon dont ils ont eu l'intention d'implémenter l'article 7 de la directive du 5 Décembre 2013. De plus amples informations sur la mise en œuvre de l'article 7 ont été notifiées par les États Membres en Avril 2014 dans le cadre de leur plan national en matière d'efficacité énergétique (National Energy Efficiency Action Plans PNAEE). De plus, certains États Membres ont fourni des informations supplémentaires en réponse à des dialogues structurés avec les États Membres par le biais du système pilote d'information de l'UE, qui a été lancé pour supporter la mise en œuvre de la directive. Basée sur ces informations, l'étude fournit une évaluation chiffrée des économies d'énergie résultant des mesures nationales notifiées par les États Membres en vertu de l'article 7, et la contribution de ces mesures à l'objectif de l'UE sur l'efficacité énergétique à l'horizon 2020. Dans le cadre de l'étude, les dispositions spécifiques de l'article 7 et son annexe V ont aussi été analysées afin de déterminer si les exigences actuelles permettent la réalisation de façon efficace des économies d'énergie finales. Un certain nombre de domaines d'amélioration ont été identifiés ainsi que des options spécifiques ont été développés pour les révisions et / ou des modifications légales de l'article 7 de la directive EED et de son annexe V. L'évaluation de l'impact potentiel de ces options d'économie d'énergie de l'article 7 a été donc réalisé dans le cas où les exigences sont prolongées à 2030.

Executive summary

Directive 2012/27/EU (EED, Energy Efficiency Directive) addresses one of the three key pillars identified in the EU 20-20-20 strategy - a 20% reduction of energy consumption by 2020. Article 7 of the Directive is expected to deliver more than half of the required energy savings. Therefore, it is a key Article in terms of its contribution to the 20% reduction target.

This report provides the final results from a study that has assessed the progress made by Member States in the implementation of Article 7 (and the related Annex V) of the EED. Member States had to submit their national notifications setting out how they intend to transpose Article 7 of the Directive by 5 December 2013. Further information on Article 7 implementation was submitted by Member States in April 2014 as part of their National Energy Efficiency Action Plans (NEEAPs) and in updated Article 7 notifications. In addition, some Member States provided further responses as part of the structured dialogue between the Commission and the Member State via EU Pilots¹, which were also analysed as part of the study.

The study provides a quantified assessment of expected energy savings from national policy measures notified by Member States as being used to achieve their energy savings target under Article 7, and the overall contribution of Article 7 to the EU 2020 energy efficiency target. Various aspects and provisions of Article 7 and Annex V have been analysed to assess whether the established framework allows the effective achievement of the required end-use energy savings. The study has further explored the need for legal revisions and/or amendments to Article 7 and/or Annex V, to address any issues with current implementation. Based on the analysis the study makes a number of recommendations for potential improvements to Article 7 and Annex V, and puts forward a potential policy package to deliver the recommended improvements.

Current state of implementation

An analysis was performed of the current state of play with respect to the implementation of Article 7 by Member States. The analysis built upon previous work to synthesise the progress made by Member States in the implementation of Article 7 (Ricardo-AEA et al, 2015²), to provide an updated assessment of the current status in implementation.

Information was compiled and then analysed on the overall energy saving targets that have been notified by Member States, and the main policy measures that have been notified by Member States to deliver these targets. The updated assessment was based on the following information submitted by Member States:

- Article 7 notifications that were due by 5 December 2013, and any subsequent updates;
- the relevant additional information on Article 7 provided in the National Energy Efficiency Action Plans that were due by 30 April 2014;
- information and data on progress as regards Article 7 implementation, provided in the Annual Reports that were due by 30 April 2015;
- information received through the structured dialogues with the Member States requesting additional information on Article 7.

The results are therefore based on the self-reporting by Member States. The analysis includes all information submitted by Member States up to a cut-off date of 5 October 2015. It therefore does not capture any information notified after this date.

The main conclusions from the analysis are:

- When calculating the energy savings target, the exclusion relating to transport energy consumption has been well used by Member States. In total, 27 of the 28 Member States excluded final energy consumption of transport from their baseline. The exemptions have also been well used, with 24 Member States using the full 25% exemption provision.

¹ This is a scheme designed to quickly resolve compliance problems without having to resort to infringement procedures, for the benefit of citizen and business.

² Ricardo-AEA, CE Delft, REKK (2015) Study evaluating the national policy measures and methodologies to implement Article 7 of the Energy Efficiency Directive.

- Allowing for these exclusions and exemptions, the total cumulative energy savings target over the 2014-2020 period, as notified by the Member States, amounts to 230 Mtoe.
- To deliver their energy savings targets Member States plan to use a range of policies. A total of 477 policy measures have been notified. In some cases, the planned savings are provided by the Member State for a group of policy measures.
- The most important types of policy instrument (in terms of the energy savings) are energy efficiency obligation schemes (EEOS), which are expected to contribute a total of 34% of the planned savings. 16 Member States notified EEOS, and four of these Member States notified EEOS as the only policy option (Bulgaria, Denmark, Luxembourg and Poland).
- Other important policies are 'Financial schemes and fiscal incentives' (19% of planned savings), 'Energy or CO₂-taxes' (14%) and 'Regulations or voluntary agreements' (11%). In combination with the EEOS, these four types of policy options are responsible for 79% of the cumulative notified energy savings.
- The sum of the notified planned savings is 250.3 Mtoe, which is 9% larger than the sum of the notified targets. Thus, the expected energy savings notified by the Member States are sufficient to deliver the notified energy saving targets.
- The notified energy savings targets and the savings from policy measures are 10% and 1% lower respectively than the earlier estimate of the energy savings from Article 7 made by the Commission, based on the final EED text. The difference between the notified savings targets and the Commission's earlier estimate can be explained by differences in the baseline that was used to calculate the targets³. The early savings estimate was also based on the average savings target of the existing energy efficiency obligation schemes of that time⁴.
- A critical assumption in the assessment of performance is that Member States will deliver the policy measures that have been notified, and that these policies will deliver the required level of energy savings. The first year for which energy savings from measures can be counted towards the Article 7 target is 2014. The first complete overview of the actual realised energy savings in 2014 will become available when Member States submit their Annual Reports in April 2016.
- It is recommended that the Commission looks closely at the actual savings notified in the 2016 Annual Reports, and compares these with the planned savings, to identify any policies that are performing below expectations. Attention should also be given to the methodologies that are used by Member States to quantify their savings ex-post, as this will present different challenges to those covered by the notifications under Article 7 to date – which have been much more focused on the expected (ex-ante) savings.
- Although most Member States have implemented monitoring and verification (M&V) systems and allocated responsibilities to the relevant authorities there are gaps in the M&V systems, such as checking a statistically representative sample for all policy measures, audit protocols and penalties. The additional information provided in response to the structured dialogue with the Member States provides additional details on those aspects but there are still instances where all of the requirements of Article 7 may not have been met fully.

Quantitative assessment of expected energy savings from Article 7

A quantitative analysis has been performed of the expected energy savings from the policy measures notified by Member States under Article 7.

The analysis has examined the potential contribution of the policies notified under Article 7 to the EU's 2020 energy efficiency target, but also the contribution toward the 2030 objective. This considers the fact that actions taken to deliver the energy savings target in 2020 will continue to deliver energy savings beyond the target period, since the lifetime of the actions extends beyond 2020. When assessing the potential energy savings post 2020, the analysis assumes that Article 7 will not continue beyond 2020. The analysis is therefore based on savings from the policy measures that Member States currently plan

³ The Commission's estimate was based on the expected final energy consumption, using 2010 data as a reference, whereas the notified savings are based on actual consumption during the reference period (2010-2012). The Commission's estimate was also based on final energy consumption, whereas the notified savings are based on final energy sales (in accordance with Article 7(1)), so are adjusted to take into account energy generation for own use.

⁴ Annex VII of the 2011 IA EED: Explanation and analysis of Options C1-C5 on energy savings obligations

to deliver to fulfil their Article 7 target in 2020, and not from additional actions in response to new policies.

To perform the analysis it was necessary to make some adjustments to the data notified by Member States and to address gaps in information. This included, for some policies, making assumptions on the lifetimes of the energy savings from the individual policy measures, and on the delivery profile of the energy savings over the 2014-2020 assessment period.

In addition, an assessment was made of the potential credibility of the energy savings estimates, and therefore the risk of non-delivery of the notified energy savings. The assessment of credibility was based on whether the requirements of Article 7 and Annex V were implemented correctly in relation to the specific policy measures.

The main conclusions from the analysis are:

- Energy saving actions that are planned to be taken over the period 2014-2020, in response to the notified policy measures, will also result in energy savings beyond 2020, and will therefore make a positive contribution to the 2030 objectives. Indeed, the actions taken in the 2014-2020 period with the longest lifetimes will continue to deliver savings until at least 2046⁵.
- The cumulative energy savings from the notified policy measures in 2020 are 250.3 Mtoe. The contribution of these policy measures in 2030, in terms of cumulative energy savings, could be more than 750 Mtoe⁶; the total lifetime cumulative savings may amount to over 1,000 Mtoe.
- Due to data limitations only 57% of the notified savings could be directly attributed to lifetime categories. However, of this 57%, a relative portion of 27% was attributed to actions with long lifetimes (23-30 yrs), 51% to medium-long lifetimes (10-23 yrs), 10% to medium lifetimes (3-10 yrs) and 11% to short lifetimes (1-3 yrs). This suggests that, based on current expectations, Article 7 will stimulate a range of energy savings actions, with a large proportion having long-lifetimes.
- For some policy measures there continues to be some credibility issues in relation to the eligibility, additionality, materiality and double counting of notified savings. It is not possible to quantify the impact of these issues on the overall energy savings to be delivered, but the presence of these issues does suggest there could be a risk to the delivery of the expected energy savings for some policy measures.
- The process of the structured dialogue with the Member States has led to an improvement in the completeness and the quality of information from the Member States on their notified policy measures. The clarifications provided as part of the structured dialogue process have also helped to reduce issues relating to the credibility of the energy savings. In particular, following the structured dialogue with the Member States there was greater confidence that some of the issues relating to the eligibility of the measures, the additionality of the energy savings, and the risk of double counting have been considered by Member States when calculating the energy savings from their notified measures.
- It is recommended that the Commission continues to seek clarifications from Member States on their Article 7 process. In addition to improving the completeness of information that is notified, the process itself may also have helped Member States to understand the requirements of Article 7 and Annex V better.

Analysis of the specific policy measures types

Article 7 allows Member States to meet their energy savings targets using different types of policy instruments. The characteristics of the policy instruments differ, and also present different challenges for Member States in the calculation of the energy savings from the measures.

To explore this further, a more in-depth assessment was performed of Member States' experiences to date in implementing the requirement of Article 7 at the policy level. Four separate policy types were examined: Energy Efficiency Obligation Schemes (EEOS), financing schemes or fiscal incentives, energy or CO₂-taxes, regulations or voluntary agreements. Collectively, these four policy types represent 79% the total notified cumulative energy savings in the EU in 2020.

⁵ Based on the detailed standardized lifetimes for energy efficiency actions provided by CEN – for measures affecting the building fabric this is a conservative estimate of lifetimes.

⁶ Savings post-2020 are more approximate due to the assumptions that were made on assumed lifetimes of the notified measures

The main conclusions from the analysis are:

- There is a large diversity of policies that are planned to be used by Member States to meet their Article 7 targets.
- Even within a policy type, there is diversity in the characteristics of the notified policies. They differ regarding, for example:
 - the level of ambition (e.g. of the energy efficiency targets for EEOS and voluntary agreements, the level of fiscal incentives or energy taxes);
 - the target sectors of the measures (some measures target a specific end-use sector such as transport or industry, other measures have a much wider scope targeting multiple sectors);
 - the stage of implementation (some measures have been in place for many years, others are still in the planning phase).
- There has also been a large variability in the approach taken by Member States to demonstrate in their notifications that the requirements of Article 7/Annex V have been met (e.g. calculation methodology, quality standards, monitoring and verification of savings).
- A number of best practices examples were identified. We recommend that these are further explored and potentially developed into future guidance to improve implementation across all Member States.

Analysis of the effectiveness of the individual requirements and provisions of Article 7 and Annex V

An analysis was performed of the effectiveness, efficiency, coherence, relevance and EU added value for each of the individual provisions within Article 7 and Annex V. Drawing upon the information included by Member States in their Article 7 notifications an assessment was made as to whether the individual requirements had been implemented as expected, as well as whether any issues were encountered with implementation.

The analysis of individual provisions was carried out early in the study, and was based on the Article 7 notifications submitted by Member States up to the 1st May 2015. To provide some validation of the findings, a comparison was made with the draft conclusions from a workshop hosted by the European Commission's Joint Research Centre on the methods and principles for calculating energy savings under Article 7.

There are a number of areas where the implementation of Article 7 and Annex V can be improved. The areas of improvement can be broadly grouped into the following problem areas:

- **Time perspective of the obligation period** - Article 7(1) lays down the date by which the cumulative end-use energy savings target should be achieved by (31 December 2020), as well as the period over which the target should be calculated (new savings each year from 1 January 2014 to 31 December 2020). As a result of this cut-off date, at the end of the obligation period Member States might prioritise measures that deliver short term energy savings (e.g. behavioural measures), over longer term actions (e.g. building fabric measures). Ultimately, this could mean that measures implemented in response to Article 7 may be shorter-term, and make a weaker contribution toward the 2030 energy efficiency target. Evidence from Member States' notifications suggests that the cut-off date does not appear to prioritise short-term measures currently, with a reasonable proportion of the actions stimulated by Article 7 associated with measures that have a long lifetimes⁷. This suggests the problem is not currently large. However, this situation may change towards the end of the assessment period, particularly if Member States existing policies do not deliver the expected savings, so further 'quick wins' are required for them to deliver their cumulative energy saving target in 2020. Moreover, Article 7(1), as currently defined, will only stimulate new policies up to 2020, and therefore the level of savings will decline quickly after this date, and will be a much less than the 1.5% additional annual savings experienced over the 2014-2020 period.
- **Exclusions and exemptions are potentially too generous** - Article 7(1) provides the flexibility for Member States to exclude transport energy consumption from their baseline, when calculating

⁷ While data was only available for just over 50% of the energy savings, of this proportion 28% of the savings were estimated to arise from measures with lifetimes of over 20 years, and a further 15% of this proportion from measures with lifetimes over 10 years.

their energy savings targets. Likewise, Article 7(2) allows Member States to make certain exemptions, with limited restrictions, when calculating their energy savings target. The fact that most Member States have made use of this flexibility does not present a risk to the delivery of the required level of energy savings from Article 7 – since this was allowed for in the initial target setting. Even so, there does not appear to be a strong justification for its continued use as a mechanism to protect Member States with a disproportionate level to transport energy consumption from being unfairly disadvantaged. While the exemptions relating to Emissions Trading System (ETS) industry energy use, supply side savings, and early actions have conditions which reflect national circumstances, the use of the lower annual savings rate has no such conditions, and was used extensively by Member States. As a result of these exclusions and exemptions individual Member States are able to set less ambitious energy savings targets, which may ultimately result in a lower level of final energy savings at the EU level.

- **Energy saving target is based on final energy sales** - Member States' energy savings targets are calculated on the basis of final energy sales⁸. This means that energy generation for own use, which is not sold by energy distributors or retailers, is not included in the baseline that is used to set the energy savings target. This includes, for example, wood fuel supplied from private woodlands for own use, domestic energy production from solar PV or coal from mines that are owned by industry. 14 Member States have chosen to take into account energy generation for own use when defining their baselines⁹, and for some own energy generation represents a reasonable proportion of final energy consumption¹⁰. As a result, for some Member States, the overall energy savings targets are lower than would be the case if they were calculated on the basis of final energy consumption.
- **Clarity and understanding of Article 7/Annex V** - Implementation of Article 7 and Annex V to date suggests that Member States have an incomplete understanding of all of the implementation requirements. This may in part be a result of a lack of clarity with the implementation requirements, or poorly specified requirements. However, even where the requirements are well specified, there may still be a lack of understanding of these requirements within Member States. This in particular relates to the requirements in Annex V. Since these requirements are designed to ensure that the energy savings that are calculated by Member States are robust and credible, the consequence of the incomplete implementation of the requirements may be that the notified energy savings may not be as robust, and might not deliver the expected level of savings in practice.
- **Calculation methods** - Member States adopt different approaches to calculate their energy savings, and report on their methodologies in different ways. This may be well justified, since some calculation approaches are better suited to some policies than others. However, as a result of this flexibility, the energy savings that are notified by Member States, and the information reported on methodologies, are not fully consistent or comparable at an EU level. This inconsistency presents uncertainty about whether the EU is on track to deliver its target, and reduces the integrity of the savings that are claimed at an EU level.
- **Reporting on methodologies** - Member States report on their methodologies in different ways. This is because, in most cases, Article 7 does not specify clearly what information Member States are required to notify, and instead only provides general requirements (e.g. Annex V (4)). In some cases, Member States are required to follow a certain approach, but it is not clear how they should demonstrate (in their notifications) that this approach has been followed. The consequence is that the information notified by Member States is inconsistent, and may not provide sufficient information to determine that the requirement has been met. This ultimately reduces the comparability of information and reduces the integrity of the savings that are claimed at an EU level.
- **Eligible actions** - Annex V (4)(e) requires Member States to notify as part of their detailed methodology the eligible measures categories. A clear definition of what is meant by eligible is not

⁸ The directive requires that the target shall be at least equivalent to achieving new savings each year from 1 January 2014 to 31 December 2020 of 1.5 % of the annual energy sales to final customers of all energy distributors or all retail energy sales companies by volume, averaged over the most recent three-year period prior to 1 January 2013.

⁹ The other 12 Member States have instead calculated their targets based on final energy consumption.

¹⁰ For most Member States energy production for own use is less than 10% of the total consumption. However, for one Member State it represents 28% of final energy consumption. For the EU as a whole (i.e. across all 28 Member States) the volume of energy production for own use that was taken into account by the Member State in the calculation of its target (14 Member States, of which quantitative data was available for 12) represents approximately 4% of final energy consumption.

provided. Eligibility may be defined in relation to whether the policy measures and/or the associated actions satisfies a number of conditions¹¹, specifically end use energy savings (Article 7(4)), additionality (Annex V(2)(a)), and materiality (Annex V(2)(c)). Given that some Member States included individual actions within their notifications that are not expected to trigger end use energy savings (like renewable energy measures¹², or measures associated with energy distribution and transmission¹³), include measures which are not primarily intended to target energy efficiency (e.g. road tolls) it can be concluded that there may be some potential problems with the interpretation of eligibility by Member States.

- **Monitoring and verification** - Member States are required to put in place appropriate monitoring, control and verification systems for their energy efficiency improvement measures and set specific requirements for the associated systems. At least some monitoring and verification systems have been implemented by the Member States, in accordance with Article 7, and that the monitoring and verification is undertaken independently from the obligated parties. However, on the specific details of the systems (e.g. significantly significant sample and audits) the effectiveness of the provision is less certain, largely due to lack of information in notifications.

Concrete suggestions for legal revisions and/or amendments of Article 7 and Annex V

Following the analysis of the individual provisions, and the identification of the problem areas, a number of recommended areas of improvement were identified. These included minor changes (e.g. change in wording to improve consistency or completeness of implementation but no change in substance), major changes (e.g. removal of provision, or major change in substance), and additional guidance (e.g. where provision is evaluated favourably, but implementation has not been consistent across Member States).

A long list of potential revisions were identified. It was not practical, or proportionate, to assess each of the individual revisions. Instead, the revisions were grouped together in relation to the main problem areas and then formulated into specific policy options to address the problem. Each of the options was then screened to identify the most promising option/options for addressing each of the problem areas.

The policy options can be combined into different policy packages. Six different policy packages were suggested, taking into account the review requirements listed of in Article 24(9). The suggested policy packages entail a different level of legislative intervention – from a ‘no change’ scenario to ‘substantial legislative change’. The policy packages are as follows:

- (a) no change;
- (b) additional guidance;
- (c) extension of the obligation period to 2030 and minor streamlining of Article 7 and Annex V provisions;
- (d) extension of the obligation period to 2030, removal of the exemptions and minor streamlining of Article 7 and Annex V provisions;
- (e) extension of the obligation period to 2030, removal of the exemptions and exclusions, use of EEOS only and minor streamlining of Article 7 and Annex V provisions;
- (f) extension of the obligation period to 2030, removal of the exemptions and use of EU wide White Certificates Scheme.

Any changes are expected to improve the completeness and consistency of implementation of Article 7 and Annex V by Member States, and ultimately reduce the risk that the measures taken will not deliver the required level of energy savings.

It is recommended that these options are explored further as part of the EED review, and further feedback is sought from Member States on the potential costs and benefits, together with any barriers to implementation.

¹¹ The policy measures need to be designed to achieve 'end-use energy savings' which are 'among final customers'. This wording excludes policy measures that are primarily intended to support policy objectives other than energy efficiency or energy services as well as policies that trigger end-use savings that are not achieved among final customers (Commission Guidance).

¹² The Commission clarified specific aspects of Article 7 of the EED in the EED Committee (16/09/2015) by stressing in general renewable energy measures targeting the primary energy consumption do not achieve the energy savings (so are not eligible). Where Member States consider a renewable energy measure to be eligible they should prove that the measure generates end-use energy savings in line with the definition provided in Article 2(18) (19) and it leads to verifiable and measurable or estimable energy efficiency improvements.

¹³ A Member State can use the possibility provided in Article 7(2)(c) and count certain energy savings from energy transformation and transmission sectors towards the required amount of savings to be reached over the period. However, this amount must not be more than 25% i.e. the limit on exemptions (Commission Guidance).

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1 Introduction

This report is the final deliverable prepared by Ricardo Energy & Environment, in collaboration with CE Delft and REKK, as part of a study to evaluate progress of implementation of Article 7 of the Energy Efficiency Directive (EED). The report has been prepared for Directorate General (DG) Energy of the European Commission.

1.1 Study background

Directive 2012/27/EU (EED, Energy Efficiency Directive) establishes a framework of measures to ensure the achievement of one of the three key pillars identified in the EU 20-20-20 strategy - a 20% reduction of projected primary energy consumption by 2020.

Article 7 of EED requires Member States to establish either energy efficiency obligation schemes (EEOS) or alternative policy measures to achieve new energy savings each year over the 2014-2020 period, amounting to 1.5% of the baseline annual energy sales to final customers. The Member States had to notify to the Commission by 5 December 2013 their detailed plans to reach the energy savings target under Article 7. These plans included, inter alia, the policy measures that Member States plan to adopt and their implementation methodology.

As with any policy, it is good practice to evaluate experiences with its implementation to identify areas where adjustments to the policy may lead to the more effective or efficient delivery of the overall policy objectives. Article 24(9) of the EED requires the Commission to submit a report to the European Parliament and the Council by 30 June 2016 on the progress of the implementation of Article 7. If necessary, this report shall be accompanied by a legislative proposal for one or more of the following purposes:

- (a) to change the final date laid down in Article 7(1);
- (b) to review the requirements laid down in Article 7(1), (2) and (3);
- (c) to establish additional common requirements, in particular as regards the matters referred to in Article 7(7).

This study will support the Commission in preparing for the Article 24(9) review by providing an evaluation and analysis of the implementation of Article 7 to date.

In addition to the implementation experiences, it is important to understand the potential contribution that the policy measures notified under Article 7 could make to energy savings beyond 2020: in particular the contribution to the 2030 policy framework¹⁴ for climate and energy, as proposed by the European Commission in January 2014 and the Commission Communication on the contribution of energy efficiency to the 2030 framework. This study also analyses these policy impacts.

1.2 Study objectives

The overall objectives of the study are:

- to provide a quantified assessment of progress of the national policy measures used for achieving the energy savings target under Article 7, and its share towards the overall EU 2020 energy efficiency target;
- to analyse the various aspects and provisions of Article 7 and Annex V to assess whether the established framework allows achieving the required end-use energy savings;
- to explore need for legal revisions and/or amendments of Article 7 and Annex V of the EED;
- To provide recommendations for necessary improvements for implementation of Article 7 and Annex V.

To deliver these objectives the study has been organised into four discrete tasks. Task 1 is concerned with the quantitative assessment of the expected energy savings from national policy measures that Member States intend to use to achieve their energy savings targets. Task 2 has involved an

¹⁴ The EED review will provide a more detailed assessment of energy savings from a 2030 perspective

assessment of the main policy measures that have been notified, and the characteristics which influence their effectiveness. Task 3 provides an analysis of the effectiveness of the various requirements and provisions of Article 7 and Annex V. The final task concerns the options for potential revisions and/or amendments of Article 7 and Annex V (Task 4).

1.3 Structure of the report

In addition to this introductory section, the report has the following sections:

- **Section 2:** Progress with implementation. This section describes the current progress of implementation of Article 7 by Member States, including a summary of the main notified information.
- **Section 3:** Quantitative assessment of the expected energy savings from the policy measures notified by Member States under Article 7 of the EED. This section describes the effectiveness of the Article in delivering its overall energy saving objective.
- **Section 4:** Analysis of the effectiveness of policy measures. This section provides a more in-depth analysis of the effectiveness of the different policy measures notified by Member States under Article 7.
- **Section 5:** Analysis of the effectiveness of the various requirements and provisions of Article 7 and Annex V. This section analyses each of the individual provisions and draws conclusions as to how effectively Article 7 has been delivering its desired objectives to date.
- **Section 6:** Concrete suggestions for legal revisions and/or amendments of Article 7 and Annex V. This section assess the current problems associated with Article 7/Annex V and different options for revisions to address the problems.
- **Section 7:** Conclusions and recommendations. This section sets out the conclusions from the study, followed by recommendations for future actions.

2 Current state of implementation

This chapter describes the current state of play with respect to the implementation of Article 7 by Member States. The analysis builds upon previous work to synthesise the progress made by Member States in the implementation of Article 7¹⁵, to provide an updated assessment of the current status in implementation.

The aim of this section is to provide a high level summary of the overall energy saving targets that have been notified by Member States, and the main policy measures that have been notified by Member States to deliver their targets. A more in-depth assessment of the implementation of Article 7 by Member States is provided in later sections of the report. Specifically, section 3 provides an analysis of the expected energy savings delivered by Article 7 in more detail, Section 4 explores the different types of policy instruments that are planned, and Section 5 examines the effectiveness of each of the individual provisions within Article 7/Annex V.

The updated assessment is based on the following information submitted by Member States:

- Article 7 notifications that were due by 5 December 2013, and any subsequent updates;
- the relevant additional information on Article 7 provided in the National Energy Efficiency Action Plans that were due by 30 April 2015;
- information and data on progress as regards Article 7 implementation, provided in the Annual Reports that were due by 30 April 2015;
- information and data of Article 7 provided as part of the structured dialogue between the Commission and the Member State¹⁶.

The analysis includes all information submitted by Member States up to the cut-off date of 5 October 2015. Additional information submitted beyond this date is not included in the analysis.

Since the assessment is based on the information submitted by Member States in their notifications the analysis represents the expectations e.g. on energy savings, of Member States themselves. Whilst some checks have been performed on whether the requirements of Article 7/Annex V have been implemented correctly as part of the review of implementation, no checks have been performed on the calculated energy savings themselves. For the purpose of this study the notified energy savings are therefore assumed to provide a realistic representation of the expected energy savings from Article 7 at an EU level.

2.1 Calculation of the baselines

The energy savings targets adopted by Member States are calculated using a baseline for final energy consumption. Recognising the importance of a robust baseline calculation, the EED defines the baseline very clearly: Article 7(1) of the EED specifies that Member States need to define an energy savings target based on 'annual energy sales to final customers of all energy distributors or all retail energy sales companies by volume, averaged over the most recent three-year period prior to 1 January 2013. The sales of energy, by volume, used in transport may be partially or fully excluded from this calculation'.

In addition, according to the Guidance Note B1 para 7 'energy volumes transformed on site and used for own-use, and those that are used for the production of other energy forms for non-energy use, are excluded' from the baseline. Thus, energy generated by energy end-users for their own use can be excluded from the calculation of the baseline.

2.1.1 Transport

Only Sweden stated that it does not exclude final energy use for transport from the baseline. All other Member States stated that they fully exclude final energy use for transport from the baseline, which

¹⁵ Ricardo-AEA, CE Delft, REKK (2015) Study evaluating the national policy measures and methodologies to implement Article 7 of the Energy Efficiency Directive

¹⁶ This is a scheme designed to quickly resolve compliance problems without having to resort to infringement procedures, for the benefit of citizen and business.

may include the sales of electricity used for electric cars. Of these, Bulgaria, and The Netherlands did not specify the value of the energy use that was excluded.

2.1.2 Energy production for own use

Of the 28 Member States, 14 stated they had excluded energy produced for own use when calculating their baseline¹⁷ (see Table 1).

¹⁷ The directive requires that the target shall be at least equivalent to achieving new savings each year from 1 January 2014 to 31 December 2020 of 1.5 % of the annual energy sales to final customers of all energy distributors or all retail energy sales companies by volume, averaged over the most recent three-year period prior to 1 January 2013. However, national statistics, along with those that are reported by Eurostat, are based on final energy consumption. Therefore, to calculate final energy sales, the volume of energy generation for own use (which is not sold by energy distributors or retailers) has to be subtracted from the final energy consumption statistics. The Eurostat statistics do though already exclude deliveries for transformation and/or own use of the energy producing industries, as well as network losses.

Table 1: Notified baseline calculations for each Member State^{18, 19}

Member State	Final energy consumption (ktoe)	Adjusted baseline (ktoe)*	Transport excluded (ktoe)	Energy production for own use, if excluded (ktoe)
Austria	26,570	16,508	8,565	1,497
Belgium	30,171	21,940	8,231	yes, but not specified for all regions
Bulgaria	not provided	6,167	yes, but not specified	-
Croatia	6,148	4,112	2,036	-
Cyprus	1,863	767	1,023	73
Czech Republic	26,228	14,491	5,864	3,219
Denmark	15,086	10,113	4,973	-
Estonia	2,872	1,938	787	146
Finland	25,535	13,373	4,939	7,222
France	154,843	97,060	49,380	9,393
Germany	215,845	133,324	61,192	21,329
Greece	18,335	10,580	7,328	427
Hungary	15,850	11,675	4,170	5
Ireland	11,295	6,873	4,422	-
Italy	121,962	80,961	41,001	-
Latvia	3,970	2,702	1,109	159
Lithuania	4,744	3,188	1,556	-
Luxembourg	4,267	1,636	2,631	-
Malta	451	179	272	-
Netherlands	37,045	36,591	yes, but not specified	454
Poland	64,610	47,040	17,570	-
Portugal	not provided	8,038	6,903	2,629
Romania	22,752	17,495	5,257	-
Slovakia	9,466	7,252	2,214	-
Slovenia	4,910	2,999	1,911	-
Spain	85,965	50,727	35,239	-
Sweden	27,438	27,438	-	yes, but not specified
UK	142,132	88,392	53,740	-
Total	1,080,353 **²⁰	723,559²¹	332,313**	46,552**

* Adjusted means the value after subtracting 'energy use by transport' and 'production for own use', where relevant.

** Not specified by all Member States.

¹⁸ Values for some Member States are expected to be updated.

¹⁹ Values in the table are notified values, expressed as average annual values (over 2010 to 2012). Some Member States have notified values based on Eurostat statistics, others have notified values based on own national statistics (which may differ in some cases to the Eurostat data). The relevant Eurostat statistics for final energy consumption are already corrected for non-energy use and for own energy use in the transformation sector. Member States' national statistics may have a different structure. Where Member States have notified data on energy consumption in transport the values are reported in the column 'transport excluded'. Where Member States have notified data on own energy production the values are reported in the column 'energy production for own use, if excluded'.

²⁰ For comparison: The total final energy use (average 2010-2012, all 28 Member States) according to Eurostat is 1,123,535 ktoe/yr.

²¹ For comparison: The adjusted final energy use (average 2010-2012, all 28 Member States), according to Eurostat, with energy use by transport fully excluded and without exclusion of energy production for own use, is 764,588 ktoe/yr.

2.2 Energy saving targets

Member States are required to provide information on the calculation that has been used to derive their cumulative energy savings targets for the period 2014-2020. This calculation is based on a savings rate of 1.5% per year of the final energy sales as expressed by the (adjusted) baseline. However, the total energy savings target may be lower than this savings rate if exemptions under Article 7(2) are used by the Member State.

2.2.1 Article 7(2) exemptions

Four different exemptions may be used (Article 7(2)) with the possibility of using a combination of all four exemptions subject to the provision of Article 7(3), whereby the maximum threshold of the exemptions should not exceed 25% of the target, based on the 1.5% per year saving rate. These exemptions are:

- phasing in of the energy savings (1% for 2014 and 2015; 1.25% for 2016 and 2017; and 1.5% for 2018, 2019 and 2020);
- exclude final energy use in the ETS industry;
- supply-side energy savings (efficient energy production and distribution); and
- early actions (since 31 December 2008).

If no exemptions are used, the cumulative energy savings over the period 2014-2020 should amount to 42% of the adjusted final energy sales as calculated in the baseline, as shown in Table 2.

Table 2: Cumulative energy savings from targets in the period 2014-2020, calculated for the situation where the adjusted baseline final energy sales is 100 Mtoe per year

Year	Energy savings [Mtoe]							Total
2014	1.5							1.5
2015	1.5	1.5						3.0
2016	1.5	1.5	1.5					4.5
2017	1.5	1.5	1.5	1.5				6.0
2018	1.5	1.5	1.5	1.5	1.5			7.5
2019	1.5	1.5	1.5	1.5	1.5	1.5		9.0
2020	1.5	1.5	1.5	1.5	1.5	1.5	1.5	10.5
TOTAL								42.0

If the 25% exemptions are fully used, the cumulative energy savings, in the example above, would drop from 42.0 Mtoe to 31.5 Mtoe.

2.2.2 Overview of the use of exemptions by Member States

Of the 28 Member States, 24 use the maximum 25% of target exemption. The only exceptions are Portugal (no exemptions used), Denmark, which uses a much lower percentage of target exemption (equivalent to 3%), and Romania and Sweden which both use 21% exemptions. See Table 3 for more details.

21 Member States stated that they use exemption option (a), 15 Member States use option (b), 5 Member States use option (c) and 13 Member States use option (d) (see Table 3). Since the total amount of exemptions is capped to 25%, Member States in general use option (a) for the main part of the exemptions, and subsequently use the other options to add up to 25%.

Table 3: Notified cumulative energy savings target (2020) and exemptions used

Member State	Cumulative energy savings target (ktoe)	% exemptions used	Exemptions used (Article 7.2)			
			(a)	(b)	(c)	(d)
Austria	5,200	25%				y
Belgium	6,911	25%	y	y		y
Bulgaria	1,943 *	25%			y	y
Croatia	1,295	25%	y	y		
Cyprus	242	25%	y	y		
Czech Republic	4,564	25%	y			y
Denmark	4,130	3%			y	
Estonia	610	25%	y	y		y
Finland	4,213	25%	y	y		y
France	30,570	25%		y		y
Germany	41,989	25%	? ²²			y
Greece	3,333	25%	y	y		
Hungary	3,396	25%	y	y	y	
Ireland	2,164	25%	y	y		
Italy	25,502	25%	y			y
Latvia	851	25%	y	y		
Lithuania	1,004	25%	y		y	y
Luxembourg	515	25%	y	y		
Malta	56	25%	y			y
Netherlands	11,512	25%	y	y		
Poland	14,818 *	25%		y		y
Portugal	3,376	0%	n/a	n/a	n/a	n/a
Romania	5,817	21%	y			
Slovakia	2,284	25%	y			y
Slovenia	945	25%	y		y	
Spain	15,979	25%	y	y		
Sweden	9,114	21%	y			
UK	27,859	25%	y	y		
Total			21	15	5	13

* Target not explicitly notified, value is derived from the submitted information by the Member State.

The sum of the individual exemptions notified by Member States is equivalent to 24% of the target at an EU level (if exemptions were used at the maximum allowed level it would be 25%). As a result of the notified exemptions, the sum of the notified cumulative energy savings targets drops from 302,888 to 230,195 ktoe (i.e. reduction with 72,693 ktoe). Of this reduction, 45% (33,149 ktoe) comes from

²² It is not clear whether this exemption is used.

exemption 7(2)(a), 21% (15,180 ktoe) from exemption 7(2)(b), 1% (621 ktoe) from exemption 7(2)(c) and 33% (23,743 ktoe) from exemption 7(2)(d).

2.3 Overview of the policy measures

To deliver their energy savings targets, Member States can either implement an energy efficiency obligation scheme (Article 7(1)) and/or propose alternative policy measures (Article 7(9)) that should generate at least the same amount of cumulative end-use energy savings.

2.3.1 Types of policy measures chosen

Table 4 provides an overview of Member States that have opted for an energy efficiency obligation scheme and/or for alternative policy measures. The table provides the number of notified policy measures per Member State per type of policy measure. The heading of the table follows the wording used in Article 7(9). The numbers in the table reflect the number of notified policy measures per category.

Table 4: Overview of Member States that opt for an energy efficiency obligation scheme and/or for alternative policy measures (number of notified policy measures per type)

	Energy efficiency obligation scheme	Energy Efficiency National Fund	Energy or CO ₂ taxes	Financing schemes or fiscal incentives (including grants)	Regulations or voluntary agreements	Standards and norms mandatory and applicable in MS under EU law ²³	Energy labelling schemes	Training and education in reducing end-use energy consumption	Any other policy measures, and/or category not clear	Total number of policy measures
Austria	1	0	1	4	1	1	0	0	1	9
Belgium	0	1	0	14	4	3	0	0	0	22
Bulgaria	1	0	0	0	0	0	0	0	0	1
Croatia	1	0	0	9	0	0	0	1	0	11
Cyprus	0	0	0	3	0	0	0	0	2	5
Czech Republic	0	0	0	23	0	0	0	0	0	23
Denmark	1	0	0	0	0	0	0	0	0	1
Estonia	1	0	1	1	0	0	0	0	0	3
Finland	0	0	1	3	2	1	0	0	1	8
France	1	0	0	1	0	0	0	1	0	3
Germany ²⁴	0	1	2	26	3	0	1	13	66	112
Greece	0	0	0	17	1	1	0	1	0	20
Hungary	0	0	0	3	0	0	0	0	0	3
Ireland	1	0	0	2	0	4	0	1	2	10
Italy	1	0	0	2	0	0	0	0	0	3
Latvia	1	0	0	4	1	0	0	0	1	7
Lithuania	1	0	0	1	0	7	1	3	2	15
Luxembourg	1	0	0	0	0	0	0	0	0	1
Malta	1*	0	0	12	19	0	0	0	0	35*
Netherlands	0	0	2	3	4	3	1	1	15	29
Poland	1	0	0	0	0	0	0	0	0	1
Portugal	0	0	0	2	3	2	3	1	13	24
Romania	0	0	0	18	1	0	0	2	7	28
Slovakia ²⁵	0	0	0	21	1	0	0	0	44	66
Slovenia	1	1	0	0	0	0	0	0	0	2
Spain	1	1	1	9	0	0	0	2	0	14
Sweden	0	0	1	0	0	0	0	0	0	1
UK	3**	0	1	5	6	3	0	0	2	20
Total [number of policy measures]	21	4	10	183	46	25	6	26	156	477
Total [number of MS]	16	4	8	22	12	9	4	10	12	28

²³ NB: only savings above minimum EU-levels may be counted towards the target.²⁴ Germany notified 65 policy measures that are implemented by the German States (Länder).²⁵ Slovakia provided savings per group of policy measures, targeted to a specific sector; not savings per individual policy measure.

* Malta notified 4 measures labelled as EEOS (which are individually included in the total of 35 measures for Malta). In practice these are four separate measures that form part of a single obligation scheme, so this represents just one policy measure. This is recorded as a single EEOS, but as 4 measures in the total column

** The UK notified three EEOS. Two of the schemes ran from 2010-2012 and are now expired, so only one scheme is planned to be operational over the 2014 to 2020 savings period.

2.3.2 Expected energy savings from the policy measures

The Member States are required to notify the expected savings that will be delivered by their policy measures. An overview of the notified policy measures and associated savings is provided in Appendix 3. Table 5 provides an overview of the sum of the expected savings, together with the percentage that is notified for EEOS for each Member State, where applicable. For ease of comparison, the notified savings targets are shown again. The sum of expected savings (without Hungary) is 9% larger than the sum of notified targets, indicating some Member States plan to over-deliver on their targets.

Table 5: Notified sum of expected savings (and percentage to be delivered by EEOS) for each Member State (all values in ktoe cumulative savings, 2020)²⁶

Member State	Notified target (ktoe)	Notified sum of expected savings (ktoe)	Percentage to be delivered by EEOS (%)
Austria	5,200	9,146	42%
Belgium	6,911	7,155	
Bulgaria	1,943 *	1,943	100%
Croatia	1,295	1,295	41%
Cyprus	242	243	
Czech Republic	4,564	5,170	
Denmark	4,130	4,130**	100%
Estonia	610	611	5%
Finland	4,213	8,819	
France	30,574	31,130	87%
Germany	41,989	44,484	
Greece	3,333	3,333	
Hungary	3,396	***	
Ireland	2,164	2,243	48%
Italy	25,502	25,830	62%
Latvia	851	851	65%
Lithuania	1,004	1,044	77%
Luxembourg	515	515	100%
Malta	56	67	14%
Netherlands	11,512	11,270 ****	
Poland	14,818 *	14,818	100%
Portugal	3,376	3,408	
Romania	5,817	5,863	
Slovakia	2,284	2,287	
Slovenia	945	945	33%
Spain	15,979	14,361 *****	44%
Sweden	9,114	11,513	
UK	27,859	37,799	21%
Total	230,195	250,274	34%

²⁶ Values for some Member States are expected to be updated.

* Target not explicitly notified, value is derived from the submitted information by the Member State.

** Danish obligations under the energy policy agreement are considerably higher than required by Article 7, with savings expected from the obligations by 2020 of 7,908 ktoe. Thus, the savings stated represent an underestimate of the total savings from this policy.

*** Hungary did not yet notify savings for its policy measures.

**** The Netherlands notified ranges of savings for (groups of) policy measures.

***** Excludes 1,619 ktoe of savings notified by Spain in related taxation measures, as these arise in 2013, so cannot count towards the 2014 - 2020 saving period.

2.3.3 Savings by policy measure type

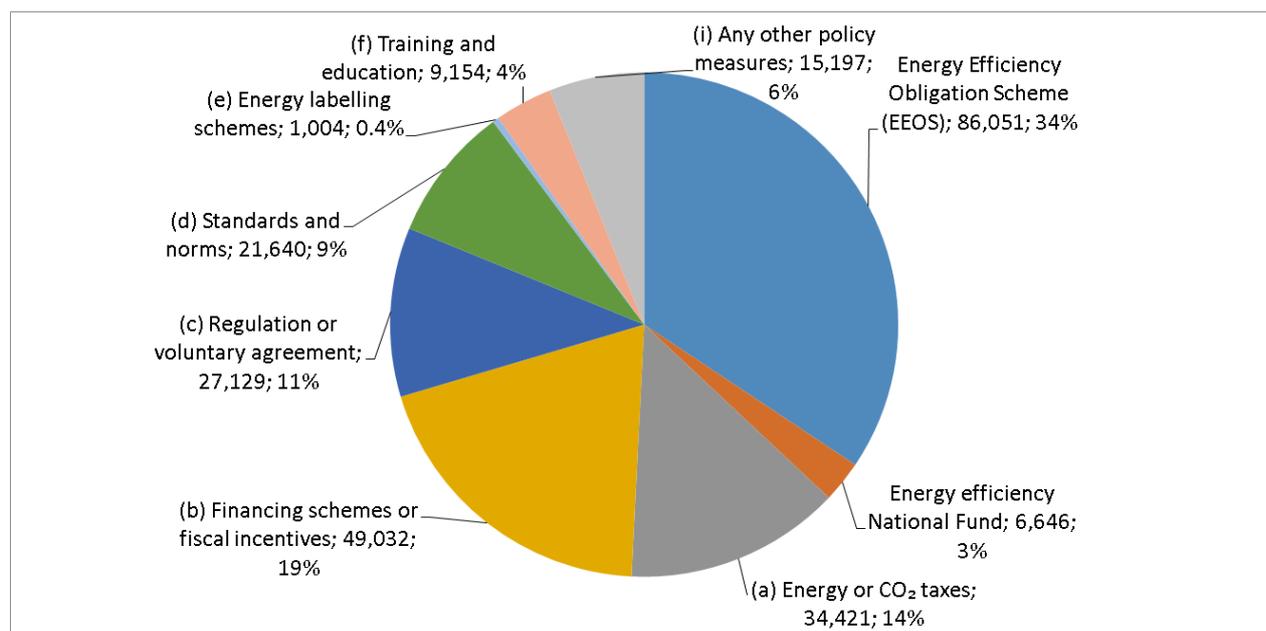
The four most dominant policy measures (in terms of notified cumulative energy savings) are:

- Energy Efficiency Obligation Schemes (EEOS) (34%)
- financial schemes or fiscal incentives (19%)
- energy or CO₂ taxes (14%)
- regulations or voluntary agreements (11%) (see Figure 1).

Together, these four policy options are notified to deliver 79% of the savings.

This information provides the basis for the selection and in-depth analysis of selected policy instrument types (see Chapter 4).

Figure 1: Breakdown of energy savings, based on notified savings by type of policy measure²⁷ (figures in ktoe)



2.3.3.1 Energy efficiency obligation schemes (EEOS)

Energy efficiency obligation schemes are the most important type of policy measure adopted by Member States in terms of energy savings – 34% of the expected cumulative energy savings across all Member States are expected to be generated from the implementation of EEOS, far more than any other type of policy measure.

EEOS are planned by six Member States and have already been implemented by a further 10 (see Table 5). Of these 16 Member States, the six that have not yet have implemented EEOS are Croatia, Estonia, Latvia, Lithuania, Malta, and Spain. The 10 Member States that already have EEOS in place are Austria, Bulgaria, Denmark, France, Ireland, Italy, Luxembourg, Poland, Slovenia and UK. Austria

²⁷ Only Hungary did not notify the savings per policy measure. The policy measures from Hungary are therefore not taken into account in the figure.

implemented a voluntary scheme in 2009 which was replaced with a mandatory scheme. Also Ireland has changed its voluntary agreement to a mandatory obligation scheme.

Bulgaria, Denmark, Luxembourg and Poland are the only countries that notified EEOS as the only policy measure to reach the required savings under Article 7, (see also Table 4 and Table 5). All other Member States mentioned above that use EEOS, notified a combination of EEOS and alternative policy measures.

2.3.3.2 Alternative policy measures

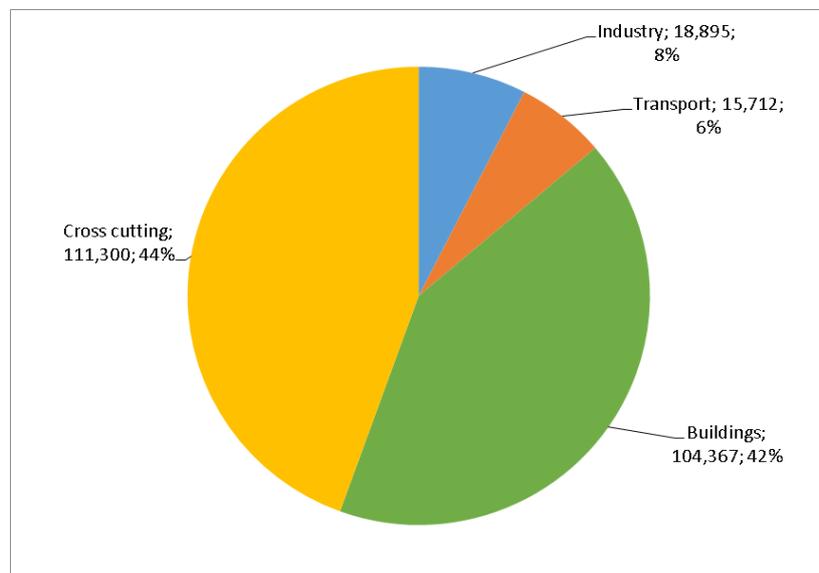
Alternative policy measures under Article 7(9) contribute 66% of the total savings proposed. All other Member States propose the use of alternative policy measures.

See also Table 4 for an overview of which Member States notified which categories of policy measure, and how many Member States use each category in the notifications.

2.3.4 Sectoral split of savings

An update of the sectoral split of the savings has been carried out. This provides an indication of the sectors that the savings are likely to come from. It should be noted that Member States do not have to provide a sectoral split of the expected savings in their notifications, and therefore in a number of cases the sectors had to be inferred by checking each of the notified policy measures. Figure 2 shows that most of the savings (44%) come from measures that are cross cutting across more than one sector, including transport and/or industry (such as taxes and financial incentives applying to multiple sectors), and without further information to allow for a calculation of the split of the savings over the sectors. 42% of the savings are expected by the Member States to be delivered in buildings. This is in line with the large potential for energy efficiency improvements in buildings. Apart from the category 'cross cutting', the direct contribution from industry is much smaller (8%), and transport smaller still (6%).

Figure 2: Breakdown of savings by sector



2.4 Comparison of the notified savings with the 2020 target

The energy savings targets that have been notified by Member States, along with expected energy savings from the notified policy measures, can be compared with the European Commission's earlier estimate of the energy savings that Article 7 will deliver, which was made based on the EED final text.

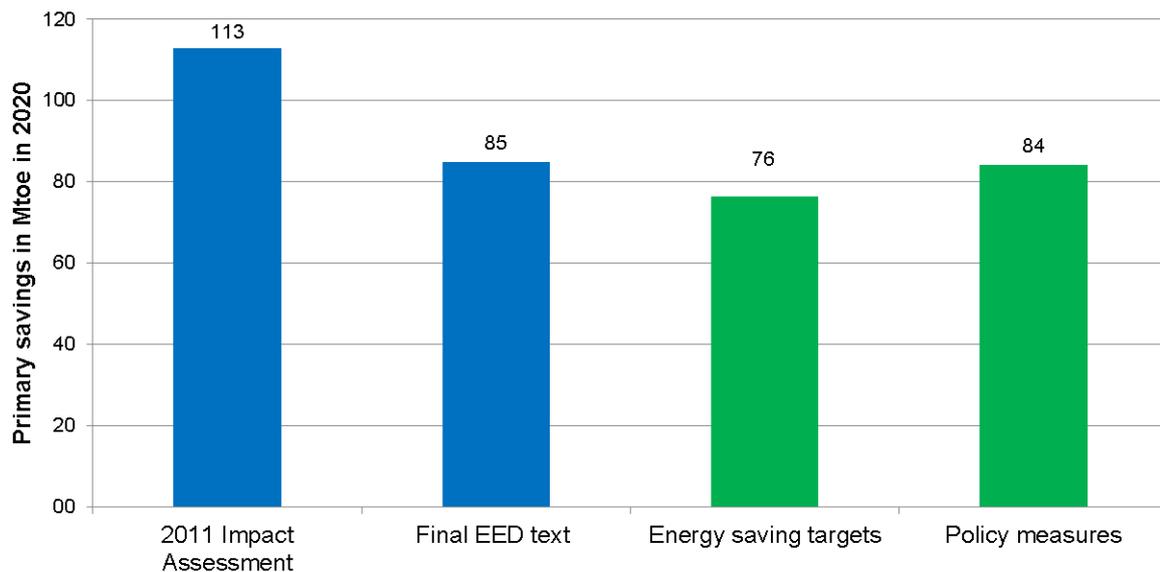
To make this comparison some adjustments were required to the data, including converting Member States' estimates into **primary energy savings**, as described in Box 1 below. Following this conversion, we derived a primary energy savings for the EU in 2020 of **76.4 Mtoe**, based on the targets notified by Member States. If we use the estimated energy savings from the notified policy measures, which are expected to deliver additional savings beyond the sum of the notified targets, the primary energy savings for the EU in 2020 increase to **84.2 Mtoe**.

Analysis by the European Commission, based on the EED final text, estimated that Article 7 of the EED would deliver annual energy savings in 2020 of **84.8 Mtoe** (primary energy)²⁸. This estimate allowed for a reduction of the initial ambition level by 25% – assuming the take up of all exemptions under Article 7(2), but does account for the possible overlaps with other measures.

Therefore, in comparison with the Commission's earlier estimate, the **notified targets are 10% lower**²⁹ and the **energy savings from the notified policy measures are 1% lower**. This comparison is shown in the figure below.

The difference between the notified targets and the Commission's earlier estimate can be explained by variances in the baselines that have been used to calculate the targets. This arises in part because Member States have calculated (in accordance with Article 7(1)) their energy saving targets based on final energy sales (i.e. taking into account energy production for own use) whereas the Commission's earlier estimate was based on final energy consumption. This can explain more than half of the difference (i.e. 6% of the 10% difference, see Table 1 for the volume of own energy generation, in final energy terms). The remaining difference is a result of variances in the baseline energy consumption used for the target calculation. The targets notified by Member States are based on the actual energy consumption during the reference period (2010-2012), whereas only 2010 data was available at the time the Commission's estimate was prepared. The sum of final energy consumption in the EU28 for both 2011 and 2012 was 5% lower than for 2010, which can explain the remaining difference. A further factor is that the earlier analysis was based on the average savings target of the existing energy efficiency obligation schemes of that time.

Figure 3: Comparison of notified targets and energy savings from policy measures to the expected impact under Article 7 of the EED



²⁸ The likely savings generated by Article 7 have been estimated in the impact assessment SEC(2011) 779 produced in 2011 and are based on the PRIMES model run using 2009 data and the E3ME model. The Impact Assessment assumed that, by 2020, annual savings in primary energy of 108-118 Mtoe per year will be delivered by Article 7. This figure was based on the Commission's proposal and does not include exemptions and policy overlaps. See Impact Assessment accompanying the document Directive of the European Parliament and of the Council on energy efficiency and amending and subsequently repealing Directives 2004/8/EC and 2006/32/EC (COM(2011) 370 final) (SEC(2011) 780 final). Online: http://ec.europa.eu/energy/efficiency/eed/doc/2011_directive/sec_2011_0779_impact_assessment.pdf page 32.

²⁹ The savings and targets are significantly lower than the 2011 Impact Assessment estimate, but this estimate did not include exemptions.

Box 1: Approach taken to compare the energy savings notified in Member States' notifications with the Commission's estimate

The Commission's estimate of the energy savings from Article 7 can be compared with the individual energy saving targets and policy savings calculated by Member States, as set out in their notifications. However, a number of adjustments are necessary to allow this comparison:

- 1) **Account for missing data.** Data on the energy savings from notified policy measures in Hungary were not available. We have therefore assumed that Hungary will deliver savings equal to its notified target.
- 2) **Convert to annual savings.** The figures provided by Member States are cumulative energy savings by 2020 and need to be converted to annual energy savings in 2020. We have assumed the linear delivery of savings from 2014 to 2020 (that is, the same additional savings are generated every year).
- 3) **Convert from final to primary energy savings.** The Commission's estimate of the energy savings from Article 7 was expressed in primary energy terms. The energy savings notified by Member States are in final energy terms. We have converted the energy savings from final energy to primary energy. To do this we have:
 - calculated the share of electricity of the total final energy consumption, which is 21.8% based on Eurostat³⁰ data (the other fuels used are already included as primary energy in the final energy consumption figures);
 - assumed that the savings would be proportionate according to the share of fuels of final energy consumption (there may be a discrepancy as Member States do not provide a breakdown of the savings according to fuel);
 - applied a conversion factor of 2.5 to convert electricity to primary energy (this factor is in line with Annex IV of the Energy Efficiency Directive which states that when converting primary to final energy for savings in kWh electricity Member States may apply a default coefficient of 2.5).

2.5 Data limitations

In the previous analysis of Article 7 implementation (Ricardo-AEA et al, 2015³¹) a number of information gaps were identified in relation to the approaches taken by Member States to implement the requirements. This included gaps relating to the calculation of baselines, the calculation of the energy savings targets and notification of policy measures.

Recent information received from the structured dialogue with the Member States has allowed a number of these information gaps to be filled, particularly in relation to the baseline calculations and energy savings targets. For example, Member States' replies to the structured dialogue were analysed for Austria, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and UK. Furthermore, the additional information and explanation provided in the responses by Member States, including clarifications and corrections, has improved confidence in the accuracy of the information provided. However, there is still room for further improvement. In particular, there remains some gaps related to the calculation of the energy savings from the notified policy measures, and the approaches taken to ensure the credibility of these savings.

Furthermore, the information notified by Member States on energy savings to date still represents (ex-ante) expectations of future savings. There is only very limited information available on the delivered (ex-post) savings by Member States as the 2015 Annual Reports contain quantitative information from two years earlier (i.e. the year 2013). Some Member States presented data on actual savings delivered in 2014 in their 2015 Annual Reports. Estonia, Italy, Slovenia, Sweden and the UK reported 2014 savings for all policy measures, whereas Czech Republic, Greece, Malta and Spain reported 2014

³⁰ Eurostat 2010-2012: 21.8% of the final energy consumption in the EU28 is electricity. The conversion factor for electricity is 2.5 to convert from final to primary energy consumption.

³¹ Ricardo-AEA, CE Delft, REKK (2015) Study evaluating the national policy measures and methodologies to implement Article 7 of the Energy Efficiency Directive.

savings for some policy measures only. The first complete dataset on the actual savings (in 2014) delivered by all Member States' policy measures, implemented in accordance with Article 7, will become available in 2016 Annual Reports. This will provide an opportunity to assess if savings are being delivered in line with expectations. Since the targets are expressed as cumulative savings 2014-2020, the actual energy savings realised in 2014, and the lifetimes of the action taken, are very important to check that the EU is on track to deliver its 2020 target.

2.6 Monitoring and verification systems

To ensure that the energy savings actions that are implemented in response to Article 7 deliver the expected savings in practice, it is necessary for Member States to have in place robust systems to monitor and verify the savings.

All Member States except two have established Monitoring and Verification (M&V) systems for the purpose of monitoring the performance of alternative measures. All but two Member States have notified details of their M&V systems for the monitoring of EEOS; the remaining two Member States are in the process of setting up their M&V systems. The sections below provide a high-level summary of the existing systems in place, at the time of analysis.

2.6.1 Authorities responsible for M&V

For the alternative measures in one case it is not clear which authority is responsible for M&V and for a further four cases the Member State does not state which authority is responsible for M&V.

For EEOS, 13 Member States have ensured that the authority responsible for M&V is fully independent and two Member States are currently in the process of establishing their M&V systems. Independence will need to be reviewed once these systems are implemented. For one Member State there are concerns around the independence of the authority responsible for M&V.

2.6.2 Statistically representative sample

For alternative measures, the use of statistically representative samples is not clear, or not stated, for all measures, for thirteen Member States. In many cases, sampling is mentioned but not explicitly that a statistically representative sample will be analysed. For a further four Member States the use of statistically representative samples is not clear for some measures. Two countries explicitly state that they do not intend to use a statistically representative sample.

For EEOS, 10 Member States have confirmed that a statistically representative sample is used. Four Member States did not state explicitly that a statistically representative sample is part of the M&V process. The two Member States which are in the process of establishing the M&V systems did not confirm yet whether or not a statistically representative sample will be used.

2.6.3 Audit protocols

Audit protocols are established for all policy measures in six Member States. Eight Member States do not specify audit protocols for all policy measures or it is not clear whether audit protocols are in place or not for all measures. Audit protocols are not addressed by nine Member States for alternative measures.

For EEOS, seven Member States have confirmed that audit protocols are in place, two Member States did not state whether or not audit protocols have been implemented yet. Five Member States do not provide sufficient detail that would allow concluding that audit protocols are in place. Two Member States are still in the process of developing their M&V systems.

2.6.4 Penalties

Only three Member States confirm that penalties are in place for all policy measures. For 15 Member States it is not clear or not stated whether penalties have been put in place for alternative measures. Three countries do not state whether penalties are in place for all policy measures or not. Two countries have no penalties in place for alternative measures.

For EEOS, 10 Member States have specified penalties for non-compliance. In one case penalties are in place but it is not clear how high they are. Two Member States are in the process of determining their penalty regimes. Three Member States have no penalties in place.

2.7 Conclusions

When calculating the energy savings target, the exclusions related to transport energy consumption and energy production for own-use have been well used by Member States. In total, 27 of the 28 Member States excluded final energy consumption of transport from their baseline. 24 Member States used the full 25% exemption provision. The resulting total cumulative savings target for 2014-2020 as notified by the Member States amounts to 230 Mtoe.

To deliver their energy savings targets Member States have opted to use a range of policies. A total of 477 policy measures have been notified. In some cases, the planned savings are provided by the Member State per group of policy measures. The most important policy instrument (in terms of the energy savings) are EEOS, with a total of 34% of the planned savings. 16 Member States notified EEOS, and four of these Member States as the only policy option (Bulgaria, Denmark, Luxembourg and Poland). Other important policies are 'financial schemes and fiscal incentives' (19%), 'energy or CO₂-taxes (14%) and 'regulations or voluntary agreements' (11%). These four types of policy options are notified to deliver 79% of the cumulative savings in 2020. The sum of the notified planned savings is 250.3 Mtoe³², which is 9% higher than the sum of the notified targets. Thus, the expected energy savings notified by the Member States are sufficient to deliver the notified energy saving targets.

Our analysis of the data from Member State notifications shows that the energy savings targets and the savings from policy measures are 10% and 1% lower respectively than the expected impact, based on the final EED text.

There is no overview available yet on the actual savings delivered by policy measures notified by Member States. The first complete overview of realised savings in 2014 becomes available in the Annual Reports of the Member States in April 2016.

It is recommended that the Commission look closely at the actual savings notified in the 2016 Annual Reports, and compare these with the planned savings to identify any policies that are performing below expectations. Attention should also be given to the methodologies that are used by Member States to quantify their savings ex-post, as this issue was not elaborated in detail in most notifications as the focus was instead on expected (ex-ante) savings.

³² In this number, Hungary is not included since Hungary did not yet notify the savings of the policy measures.

3 Quantitative assessment of expected energy savings from Article 7

3.1 Overview

This chapter concerns the quantitative assessment of the expected energy savings from the policy measures notified by Member States under Article 7 of the EED. It therefore describes the 'effectiveness' of the Article in delivering its overall energy saving objective. The savings have been calculated on the basis of the policies that Member States notified to deliver their energy saving target, and the associated energy savings. The energy savings targets are notified as cumulative energy savings in the period 2014 to 2020.

Some of the actions taken to deliver the energy savings target in 2020 will continue to deliver energy savings beyond the target period, since the lifetimes of the actions extend beyond 2020. These impacts have been considered in the analysis. Thus, an assessment is first made of the notified energy savings from actions implemented in response to Article 7 up to 2020; a further assessment is then made of the savings that may result from these actions beyond 2020.

Section 3.2 describes the analysis methodology. It includes, a description of the database of notified policy measures that has been developed for this study (Section 3.2.1), the methodology that has been used to determine the lifetimes of the different types of energy saving actions and the approach that was used to determine the confidence in the energy savings (both in Section 3.2.2.3).

The results from the analysis are shown in Section 3.3. These results are:

- an overview of confidence levels of the notified energy savings in 2020;
- an estimate of the cumulative energy savings of Article 7 beyond the year 2020.

For the post 2020 savings, the analysis assumes that Article 7 will not continue beyond 2020. The analysis is therefore based on savings from the policy measures that Member States currently plan to implement to fulfil their Article 7 target in 2020. It does not include savings from additional actions in response to new policies implemented after 2020.

Please note that the information is based upon the information included within the Article 7 notifications and our expert judgements of this information. It has not been possible in this project to validate or cross check the information from the Member States against other sources.

Please note also that the savings considered are *planned* savings. The first overview of realised savings in the period 2014-2020 will become available with the Annual Reports in 2016, which will contain quantitative information on savings realised in 2014.

3.2 Methodology

In this section, we first describe the database of policy measures that has been developed for use in the analysis. The database captures quantitative and semi-quantitative details (like policy measure types, lifetime categories and confidence levels) of the individual policy measures that have been notified by Member States.

Secondly, we describe the methodologies that have been used to attribute lifetimes and confidence levels to the notified policy measures and their corresponding energy savings.

3.2.1 Database of policy measures

A database was developed as a tool to help answer the research questions of the study. Even though the analysis is focused on the energy savings at the EU28 level, it was necessary to carry out the data collection at the level of individual policy measures of the Member States. This allows an assessment of the compliance of the data provided by the Member States with the requirements of Article 7. In addition, it enables, for example, a more detailed analysis of the energy savings per target sector or per type of policy measure. The data collection was focused on quantitative data, but also included more qualitative information concerning the approach used to estimate the energy savings.

The database has been prepared based on information within the notifications submitted by Member States prior to the agreed cut-off date of 5 October 2015. For each of the individual policy measures, we extracted information on the main characteristics and other information relevant to the calculation of the energy savings of the actions.

The database was populated by the country experts in the project team using a single template per Member State. The field structure for the database is provided in Appendix 3.

For each of the individual policy measures, the following information was captured:

- policy instrument type
- expected cumulative energy savings in the period 2014-2020
- target sector(s)
- lifetimes of the energy savings.

In addition, the templates were used to capture information related to certain specific requirements within Article 7 and Annex V, which concern the calculation of the energy savings. Specifically, information was gathered on the following aspects:

- eligibility
- additionality
- (risk of) non delivery (due to possible materiality issues)
- (risk of) double counting.

For Member States that notified savings for a group of policy measures (rather than for each individual policy), the template has been completed at the level of the policy group. In all other cases the template has been completed for the individual notified policy measure.

3.2.2 Modelling of energy savings to 2020 and beyond

Drawing upon the information within the policy database, an assessment was made of the expected energy savings from the individual policy measures at EU level. The analysis considered two separate timeframes:

1. assessment of the projected energy savings over the 2014-2020 period;
2. assessment of the projected energy savings beyond 2020.

However, prior to performing this assessment it was necessary to modify the data provided by Member States in their notifications.

As described above, the database includes information on the expected energy savings from the individual policy measures included in Member State notifications. The energy savings were frequently notified in terms of the cumulative energy savings over the period 2014-2020 (i.e. following the requirements of Article 7). However, for some policies the energy savings were stated in terms of a sum of new annual energy savings instead of cumulative energy savings, or as sums of new annual savings over sub periods like 2014-2016 and 2017-2020. To accommodate the different formats of data reported, it was necessary to modify some of the data so it was in a consistent format.

Likewise, it was not always clear for the individual policies or policy packages what the expected time profile was for the delivery of the energy savings in the 2014-2020 period. This meant, for example, that in some notifications only a figure was provided for the cumulative energy savings in 2020. In those cases, it was not clear if the delivery of the savings is expected to be spread evenly over the savings period, or more heavily weighted towards the earlier or later years. The time profile for the delivery of new savings over the 2014-2020 period is important for the assessment of the post-2020 savings (see paragraph 3.2.2.1).

Also, in those cases where information was lacking on the expected lifetime of the savings, it was not clear if the energy savings would only be delivered within the 2014-2020 period, or whether savings would continue to be delivered beyond 2020 and for how long. Since one of the objectives of the modelling was to assess the projected energy savings beyond 2020, it was necessary to look more closely at the individual energy savings actions that were expected to be taken in response to the notified policy measures – and to approximate the potential lifetimes of the energy savings based on the assumed mix of actions (see paragraph 3.2.2.2).

Finally, the energy savings included within the policy database were based on the estimates provided by Member States in their notifications. However, it is necessary to consider whether these estimates of the energy savings are realistic and credible in all cases, and can be considered additional to what would have happened in the absence of the EED. In some cases, for example, Member States may have notified measures which are not eligible for meeting the Article 7 target. To address this, we assessed some of the risk factors associated with the expected energy savings, as described in Section 3.2.2.3.

3.2.2.1 Complementing missing time profiles 2014-2020

To be able to assess until which year a specific energy saving action will deliver savings, it is necessary to know in which year the action is implemented and to attribute a lifetime to the action. The latter step is explained in the next subsection. For the alternative policy measures related to Article 7(9), the requirements are that at least two intermediate periods with intermediate targets should be notified. For some of the notified policy measures complete information was provided on the projected delivery of the energy savings over the period 2014-2020. In all other cases the time profile was missing, so we assumed the policy measure would have a linear annual delivery of new energy savings for each notified intermediate period. This also takes into account the fact that some policy measures do not start delivering savings in 2014 but in a later year in the 2014-2020 period, or end before 2020.

3.2.2.2 Determination of the lifetime of the energy savings from the individual policy measures

A policy measure implemented in the context of Article 7 of the EED will typically target either energy saving behaviours or investments in energy saving technologies. The cumulative energy savings achieved by the policy measure as a whole will therefore depend on the lifetime of the individual actions that are stimulated. In some cases, the energy savings associated with the actions will only last a few years, for example, where the policy stimulates behavioural actions, such as more efficient driving. However, other actions may result in annual savings over many years, for example, where the action concerns investments in new technologies such as a more efficient heating system. Therefore, the energy savings that can be ascribed to individual policy measures are directly related to the specific energy saving actions that the policy measure stimulates.

Member States notified information on the projected cumulative energy savings of their notified policy measures for the 2014-2020 period. Ideally, this estimate of the energy savings would be accompanied by information on the mix of the energy savings actions that is expected to deliver the savings attributed to the policy measure, along with the lifetimes of the individual actions. However, what was notified in most cases was just the total energy savings associated with each policy measure.

In the absence of any more detailed information in the notifications, the relative contributions of the individual actions to the overall energy savings, and the associated lifetime of these energy savings, has been estimated based on the expert judgement of the project team. This judgement took into account any information that was available on sectors that were targeted by the measure (e.g. buildings and industry) and the types of actions that would be stimulated (e.g. technical measures and behavioural actions). However, in some cases there was limited evidence to inform the judgement.

To help ensure a consistent approach when approximating the lifetime of the savings of each policy measure, a set of default factors were used to represent the different types of energy saving actions. This categorised different types of action, and then ascribed typical lifetimes to each category. In estimating the energy savings it was therefore necessary to approximate the percentage of the energy savings that were expected to fall into each category. This approach is necessarily simplistic, but does ensure a degree of consistency in the assessment, and in the absence of better data enables a first approximation of the potential lifetimes associated with each of the individual policy measures.

The default lifetime categories were based on the detailed standardised lifetimes for energy efficiency actions provided by CEN³³. The CEN lifetimes were chosen since they provide the best available generally accepted overview of lifetimes of energy efficiency actions. They have been subject to an independent review by relevant experts and are impartial. Every three years, the CEN norms are evaluated on actuality. Some Member States have developed their own catalogue of savings and

³³ CEN, 2007: Saving lifetimes of energy efficiency improvement measures in bottom-up calculations, CWA 15693.

NB: CEN evaluates every three years whether the norm should be updated. This has happened twice since the publication in 2007. Both times, the outcome of the evaluation was that there was no need yet for an update of the lifetimes.

associated lifetimes which may be more applicable to their national circumstances, but may be less applicable to the circumstances in other Member States. In practice, the lifetimes the Member States use for measures are in most cases very similar to the CEN-lifetimes as they draw upon similar datasets.

The five different lifetime categories and the lifetime assumed for each lifetime category are shown in Table 6 below. The attribution of lifetime categories to the CEN measures is provided in Appendix 2.

Table 6: Lifetime categories as used in the analyses, based on CEN-values

Lifetime category	Range (years)	Example	Lifetime used in the analyses (years)
Long lifetimes	23-30	Investments in building envelope	27
Medium long lifetimes	10-23	Investments in building installations	15
Medium lifetimes	3-10	Consumer electronics	5
Short lifetimes	1-3	Behavioural changes	2
Unclear	N/A	N/A	Average per policy measure category, based on attributed lifetime categories to the policy measures that were not 'unclear'.

In cases where the information in the notification on a policy measure was insufficient to even approximate the relative share of the different categories (i.e. no information available on the energy savings actions that would be stimulated by the specific policy measure), the category 'lifetime unclear' was attributed. In these cases the lifetime savings were assumed to be the same as the average lifetimes for similar policy measures types for which it was possible to approximate the lifetimes.

As explained above, most notified policy measures target more than one energy savings action, and part of the energy savings notified (and achieved) with that policy measure may arise from actions with short lifetimes, whereas others may arise from action with much longer lifetimes. For example, a Member State may use a policy measure that targets energy efficiency in buildings with a long list of eligible energy saving actions and a large variability in their individual lifetimes. These may include investments in the building envelope, investments in building installations and energy efficient lighting. These would fall into three different lifetime categories. In cases where the data provided by the Member State did not provide any evidence on the distribution of the savings over these different types of measures (and the associated lifetime categories), we assumed an even split of savings over the relevant categories. In this specific example, this would result in the assumption that the notified savings for this policy measure would be equally split over three lifetime categories (i.e. long, medium long and medium) and their associated lifetimes.

To ensure a uniform and harmonised approach in the assessment, the lifetimes given in Table 6 were used throughout the analysis. This was also the case even in the few occasions where the notified information made it possible to establish a 1:1 connection between a notified policy measure and the targeted energy saving action. To illustrate this with an example: if a Member State notified a policy measure targeting insulation of cavity walls in existing buildings and notified a lifetime of 25 years, we attributed all the savings of the policy measure to lifetime category 'long', and used a lifetime of 27 years in the analyses (see Table 6, lifetime category 'long'). The benefit of this is a consistent approach across all notified savings.

3.2.2.3 Assessment of the confidence in the notified savings per policy measure

In addition to assessing the lifetime of the energy savings, our analysis also explored the degree of confidence that the notified policy measures would deliver the Article 7 target. As described above, the policy database has been populated based on the information presented in Member States' Article 7 notifications. However, there may be cases where these notified savings cannot be claimed as contributing towards the Article 7 target, for example because they are not additional, or promote ineligible measures. Likewise, where Member States have not clearly demonstrated that all of the

requirements of Annex V have been met, there could be a risk that the savings estimates are less robust.

The confidence level of the notified energy savings was assessed using a uniform methodology, which could be applied equally to each of the different policy measures. Confidence was assessed by exploring the answer to four evaluation questions for each policy measure, as explained in Table 7. Each of these questions was related to characteristics which may have a direct influence on the amount of savings that will be delivered by the policy measures, and each related to the requirements of Article 7 and Annex V (i.e. eligibility, additionality, actual delivery (including materiality), overlaps and double counting).

Table 7: Evaluation questions (criteria) for evaluation of confidence of the notified projected savings

Evaluation question (criterion)	Influence on energy savings	Is this criterion used in the evaluation?
Are the savings eligible (e.g. is the main objective of the policy measure to target end-use energy efficiency in line with the definition of Article 2(18) and (19) and is it in line with the overall scope of Article 7(1)?	Projected energy savings that are notified by Member States but are <i>not</i> eligible under Art.7 may not be counted towards the target for Art.7.	YES
Are the savings additional to existing EU minimum requirements (referred to in Annex V (2)(a) and Annex V (3)(a))?	Projected energy savings that are notified by Member States but are not additional to these existing EU minimum requirements may not be counted towards the target for Art.7.	YES
Is there a risk on non-delivery of the full amount of notified savings, for example because of materiality issues (related to Annex V part (2)(c)) or issues with the calculation of the savings (according with Annex V part (4)(c))?	The notified projected energy savings may be unrealistically high, in which case they will not be delivered by the policy measure in 2020. The policy measure might also have an issue with materiality, for example in cases where the budget for a subsidy scheme is much too low for the projected actions. Also in this case, the projected savings will not be delivered in 2020.	YES
Is there a risk on overlap/double counting of the savings with other notified policy measures (according to Annex V (2)(d))?	In cases where there is overlap between the notified projected savings of two policy measures, or in cases where savings might be claimed by more than one party, the full amount of notified projected savings will not be delivered.	YES
Are the systems for Monitoring, Reporting and Verification (MRV) of the energy savings from policy measure in accordance with the requirements of Article 7(6)?	In case the MRV systems are not according to the requirements, there might be a gap between the amount of realised savings in reality, and the amount of savings that are reported by the Member State (ex-post). This criterion is therefore relevant for evaluation of ex-post reported savings, but not for evaluation of ex-ante projected savings.	NO

In an ideal situation, all information that is required to answer these evaluation questions would be available in Member State notifications. In this case, we would be able to assess, for each individual policy measure, whether any issues were identified which may put the overall energy savings expected

to be delivered by Article 7 at risk. However, for several of the policy measures, the required information is either partially or completely lacking not only the quantitative information but also the qualitative information³⁴. For example, in some cases it was not possible to assess the risk of non-additionality of a policy measure, due to a lack of information on how the Member State has addressed this requirement.

It is also important to note that this assessment of confidence has drawn exclusively on the requirements within Article 7 and Annex V of the EED, and does not include wider factors which may also influence the potential delivery of the savings, like for example changes in energy prices or technical innovations. Therefore, the assessment of the risk of non-delivery has been based entirely upon whether Member States have implemented the requirements within Annex V (e.g. whether the Member State has demonstrated the materiality of the incentive provided by the policy measure to the investment in energy efficiency improvements). Since the requirements in Annex V are specifically designed to ensure that Member States use robust methodologies, and ensure that the energy savings estimates can be counted towards the Article 7 targets, then assessing the confidence of the energy savings in relation to those criteria is a logical approach. However, at the same time it needs to be recognised that Annex V does not include requirements for *all* possible factors which may influence the confidence in the savings estimates. Therefore, using the requirements within Annex V can only be considered a partial assessment of the risk of non-delivery. Nevertheless, the use of these criteria does ensure that the approach is consistent with the specific requirements of Article 7 and Annex V and can be performed on the basis of the information in Member States' notifications without the need for further research.

To implement the assessment framework, we assessed each notified policy measure, and answered each of the four evaluation questions. Depending on the answer to the question, each policy measure was allocated a colour code to indicate any potential issues that may present a risk to the delivery of the stated energy savings: green, orange, red or grey. To ensure consistency between different experts and policy measures, these colour codes were attributed to each policy measure using the template that is provided in Appendix 3 and according to the following set of instructions:

- Green: no (or only very minor) issues regarding the evaluation question.
- Orange: minor issues regarding the evaluation question, but according to our expert judgement more than 50% of the notified savings of the policy measure are not at risk (in cases where concerns have been identified but we could not distinguish whether these are minor or major, we have chosen to attribute the red colour code).
- Red: major issues regarding the evaluation question; according to our expert judgement, 50% or more of the notified savings of the policy measure are at risk.
- Grey: potential issues regarding the evaluation question, but not enough information available to assess whether it should be assessed as green, orange or red.

A more detailed description of how these colour codes apply to each of the individual evaluation questions along with a specific example is shown in Table 8. These examples illustrate that while in some cases it can be clearly stated what proportion of the savings will be eligible, additional, or without delivery risks, in other cases the proportion is less certain, or unclear. In these instances it is not possible to make a proper objective assessment with clearly defined parameters; instead the assessment has relied upon the expert judgement of the project team. In making the judgement, we have drawn upon experiences from similar types of policy instruments in other Member States, where relevant to the assessment.

³⁴ The country reports that were provided as part of this study contain detailed information on the lack of information, but this report focuses on a more aggregated level of analysis.

Table 8: Application of assessment criteria to evaluation questions

Evaluation question	Green	Orange	Red	Grey
Are the savings eligible (e.g. has the policy measure a main objective to target end-use energy efficiency in line with the definition of Article 2(18) and (19) and is it in line with the overall scope of Article 7(1)?	All energy savings are eligible. <i>Example: the policy targets end-use energy savings only.</i>	Most of the energy savings are eligible, but a small proportion, and certainly less than 50%, may be ineligible. <i>Example: energy savings will largely be delivered by eligible action, such as building renovations, but a proportion (less than 50%) of the savings arise from ineligible measures (e.g. wind energy or CHP/district heating)</i>	There is a risk that more than 50% of the energy savings are ineligible. <i>Example: all of the energy savings will be delivered by wind energy or by district heating.</i>	Not enough information available to make the assessment.
Are the savings additional to existing EU minimum requirements (referred to in Annex V (2)(a) and Annex V (3)(a))?	All energy savings are additional to existing EU minimum requirements. <i>Example: it is clearly stated that only savings have been claimed from the proportion of energy tax which is additional to the level required by the Energy Taxation Directive (2003/96/EC).</i>	Most of the energy savings are additional, but a small proportion, and certainly less than 50%, may not be additional. <i>Example: energy savings will be delivered by a range of more efficient energy technologies. For some of these technologies it was not clear that the savings allowed for performance improvements arising from the Ecodesign Directive (2009/125/EC).</i>	There is a risk that more than 50% of the energy savings are not additional. <i>Example: the policy measure is a building code targeting energy efficient new buildings, with energy efficiency parameters that are not more ambitious than according to the cost optimal methodology that is laid down in the EPBD (2010/31/EU).</i>	Not enough information available to make the assessment.
Is there a risk of non-delivery of the full amount of notified savings, for example because of materiality issues (related to Annex V part (2)(c)) or issues with the calculation of the savings (according with Annex V part (4)(c))?	All energy savings have a low risk of non-delivery, and targets are not exaggerated. <i>Example: an implemented Energy Efficiency Obligation Scheme with realistic targets for the obliged parties and a well-designed non-compliance regime.</i>	Most of the energy savings have a low risk of non-delivery, but a small proportion, and certainly less than 50%, may not be delivered <i>Example: a well-designed Energy Efficiency Obligation Scheme with realistic targets for the obliged parties and a well-designed non-compliance regime, but which is not implemented yet and needs formal</i>	There is a serious risk that more than 50% of the savings may not be delivered. <i>Example: the policy measure is a subsidy scheme, but there is no budget notified to demonstrate materiality.</i>	Not enough information available to make the assessment.

Evaluation question	Green	Orange	Red	Grey
		<i>approval by the State Council.</i>		
Is there a risk of overlap/double counting of the savings with other notified policy measures (according to Annex V (2)(d))?	<p>All energy savings have low risk of double counting issues.</p> <p><i>Example: there is only one policy measure (an implemented energy efficiency obligation scheme), and also no risk that several parties might claim the same individual action.</i></p>	<p>Most of the energy savings have a low risk on double counting, but a small proportion, and certainly less than 50% does.</p> <p><i>Example: besides an implemented energy efficiency obligation scheme, there is also a relatively small (in terms of target and budget) subsidy scheme notified, that targets the same sector as the energy efficiency obligation scheme, and it is not made clear in the notifications how possible double counting is avoided.</i></p>	<p>There is a serious risk that more than 50% of the savings may be double counted.</p> <p><i>Example: besides an implemented energy efficiency obligation scheme, there are also large (in terms of targets and budgets) subsidy schemes notified, targeting the same sectors as the energy efficiency obligation scheme, and it is not made clear in the notifications how possible double counting is avoided.</i></p>	<p>Not enough information available to make the assessment.</p>

This system of four colour codes results in quite large ranges: for example, the category 'orange' includes all measures where between 50% and 100% of the notified savings are in compliance with the indicator. A more detailed categorisation was, however, not deemed feasible as there is such a wide range of data gaps, which meant a more detailed assessment was not possible in most cases. It was furthermore recognised that these instructions leave some room for interpretation by the country experts. For example, it was not feasible to further quantify the term 'only very minor' in category green, and its practical interpretation was left to the expert.

The result of this exercise was that four colour codes were allocated to each policy measure, one for each of the four indicators (eligibility, additionality, actual delivery and overlap/double counting). These colour codes indicate the level of confidence in the projected energy savings, or more specifically for which policies there is a greater risk that the energy savings may not be used to deliver the Article 7 targets in 2020.

The next step of the assessment was to present the proportion of the projected savings that fall into each colour code, with 'red' codes representing a very high risk that the notified projected energy savings may not be used to deliver the target in 2020, and 'green' codes representing very low to zero risk.

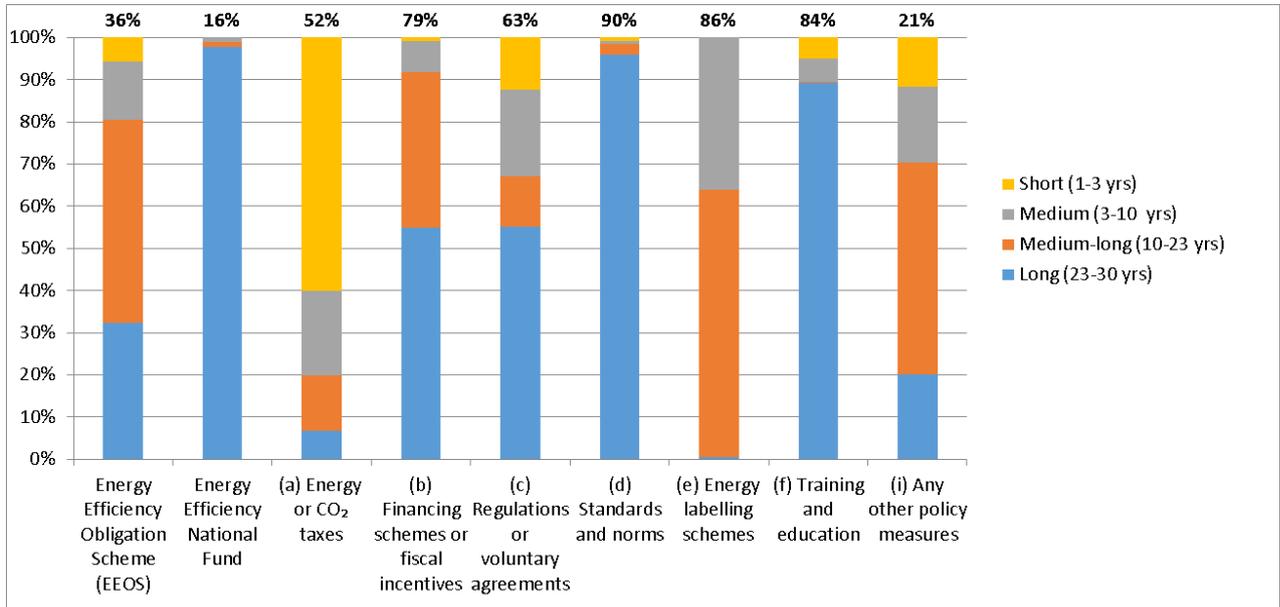
3.3 Results

3.3.1 Energy savings in 2020

As described in Chapter 2, the sum of cumulative energy savings in 2020, from the policies and measures notified by Member States in accordance with Article 7, are equal to 250.3 Mtoe. A third of the energy savings are expected to be delivered by EEOS, and the remainder delivered by alternative measures.

The distribution of the notified cumulative savings 2020 per lifetime category per policy measure type is shown in Figure 4. Above each column, the percentage of the savings where there was sufficient information notified for the respective policies to be attributed a lifetime category is provided.

Figure 4: Distribution of lifetime categories per policy measure type (notified cumulative savings 2020, EU28 level). Above each column, the percentage of the savings where there was sufficient information notified for the respective policies to be attributed a lifetime category is provided



The policy measure types where the contribution of measures with long and medium lifetimes to the overall share of energy savings is greatest are ‘standards and norms’, ‘financing schemes’, and ‘fiscal incentives’. The large portion of long lifetimes for the category ‘training and education’ stems from the German advice programmes focusing on long term measures promoted by loan and grant schemes. The lifetimes of the policy measure category ‘energy efficiency national fund’ are largely unknown, but make a small contribution to the total cumulative savings (3%). Taxes are the policy measure type that show the largest portion of short lifetimes, indicating these policy measures are targeting a large extent behaviour change.

Of specific relevance for further modelling are the distribution of the savings by lifetime category for each sector, the distribution of savings by target sectors for each policy type, and the distribution of the savings by lifetime categories of the new savings in 2020. The distribution of lifetimes by target sector is provided in Figure 5, the distribution of policy measures by target sector in Figure 6, and the distribution of yearly savings in lifetime categories in 2020 is presented in Figure 7.

Figure 5: Distribution of savings by lifetime categories for each sector (notified cumulative savings 2020, EU28 level. Above each column, the percentage of the savings with attributed lifetime categories is provided)

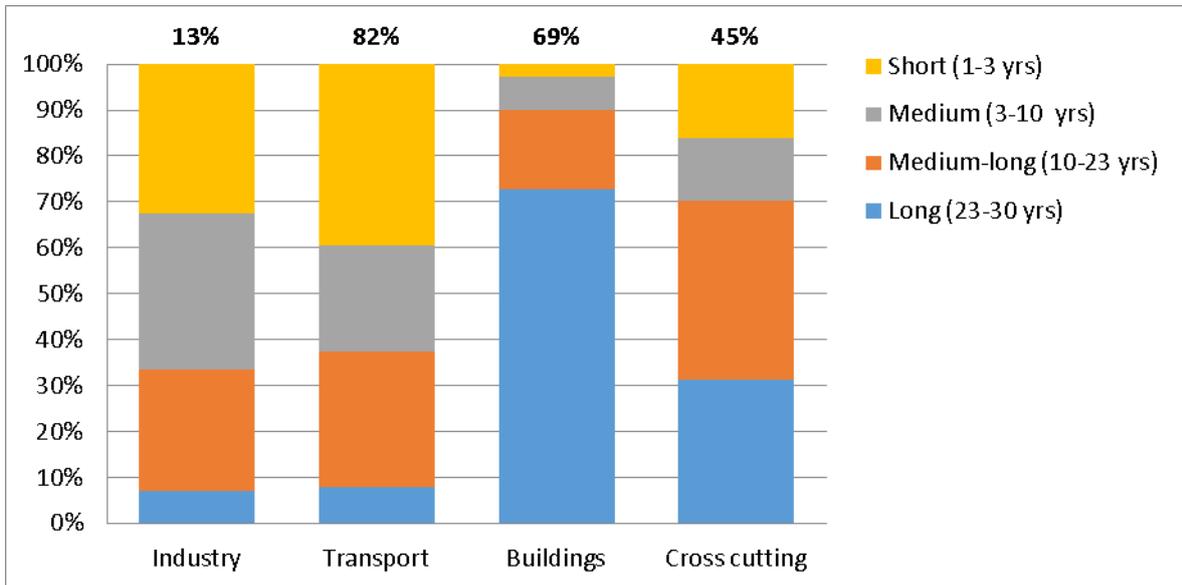


Figure 6: Distribution of savings by target sector for each policy measure type (notified cumulative savings 2020, EU28 level)

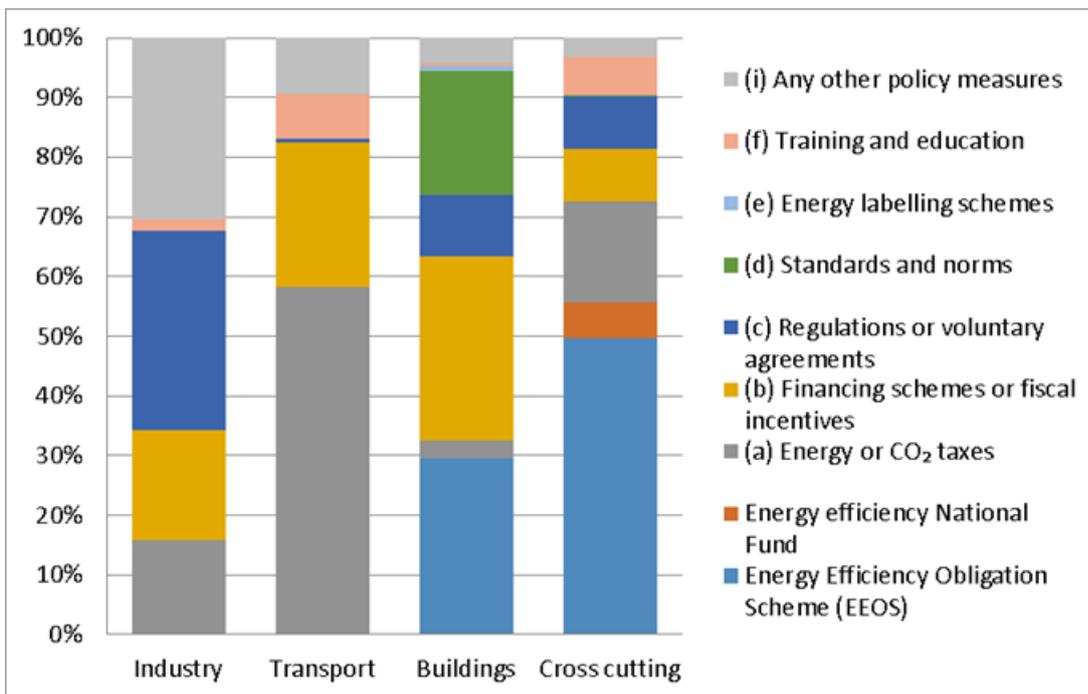
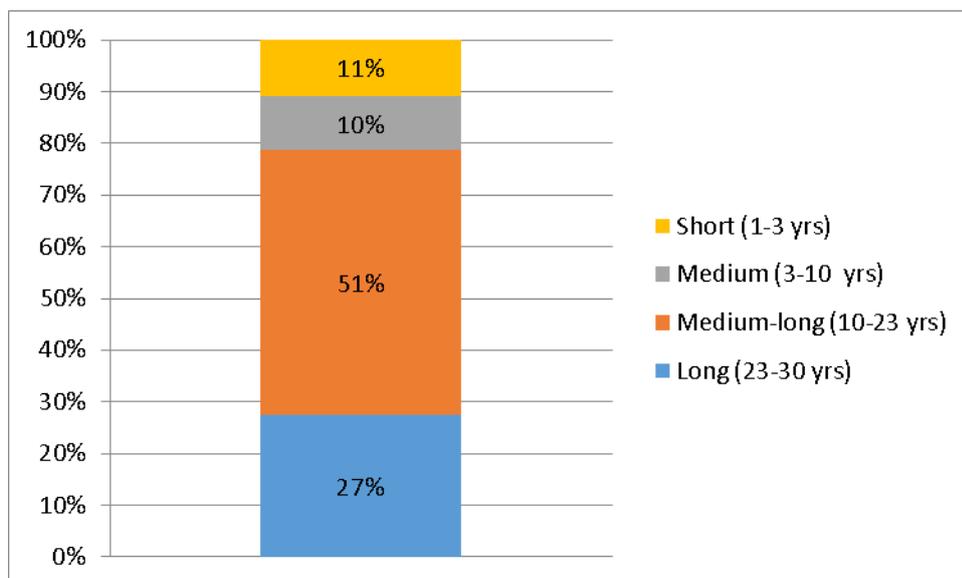


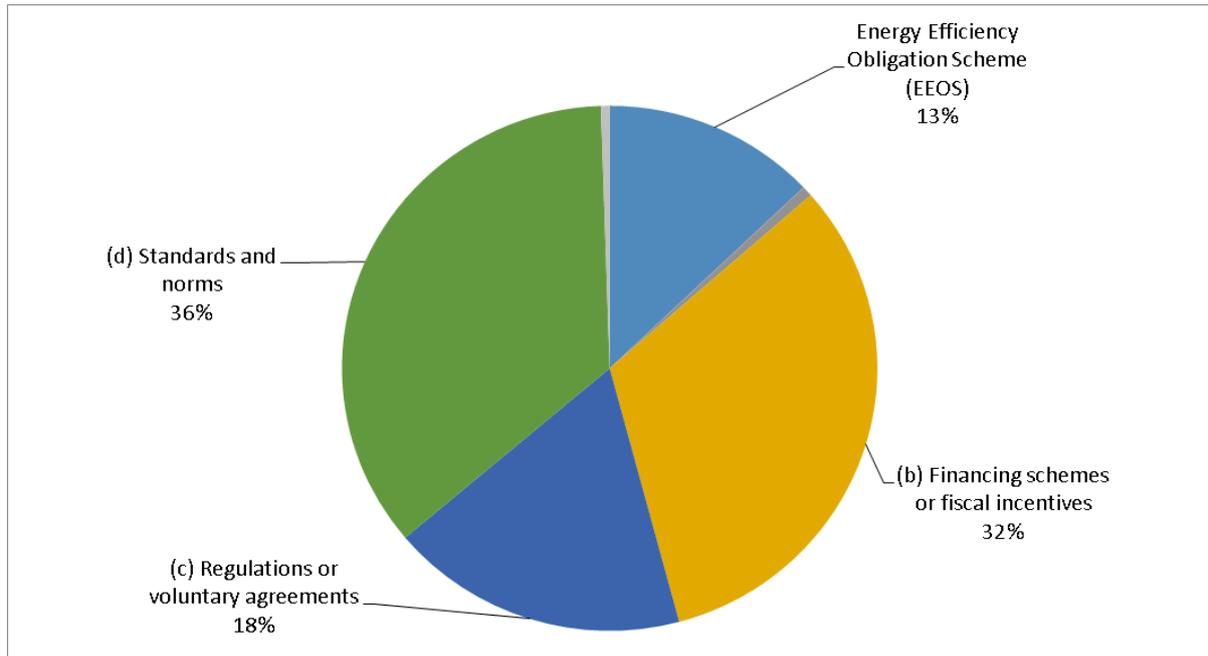
Figure 7: Distribution of yearly savings in 2020 by lifetime categories (EU28 level)

The analysis of lifetime categories can also provide some information on the types of energy savings actions that Article 7 is expected to stimulate. For example, the renovation of buildings is a major target of the policy measures that are notified by the Member States for Article 7. This includes measures, such as financial incentives, to encourage the earlier renovation of building.

It is not possible to calculate directly the effect of Article 7 on the renovation rate of buildings (i.e. the number of buildings that is renovated each year) because this type of information is not provided by the Member States in their notifications. However, some insights can be provided by the policy database. Specifically, when we look at the target sector 'buildings' in the database, and select 'long lifetimes'³⁵, we can extract the distribution of policy measures that target savings with long lifetimes in the target sector 'buildings'. This distribution is shown in Figure 8, and is based on those policy measures that we were able to assign to a lifetime category.

Note that for a relatively large proportion of these savings, the Member States have to provide additional information to prove that the savings as notified are additional to the EPBD (2010/31/EU) (see Section 3.3.2).

³⁵ Renovation action will typically fall into the lifetime category 'long', with lifetimes in the range of 23-30 years.

Figure 8: Distribution of policy measures that target savings with long lifetimes in target sector buildings³⁶

3.3.2 Confidence of the energy savings

In this section, we provide the results of the analysis of the confidence levels. We present the outcome of the colour coding of notified cumulative 2020 savings for each of the four indicators identified in Section 3.2.2.3. The analysis is based upon the database described above, and based on information notified by Member States up to the agreed cut-off date of 5 October 2015. As explained in Section 3.2, the analysis was carried out at the level of the individual policy measures as notified by the Member States, but we present only the aggregated results at EU28 level as this is the scope of this study.

The analysis also provided evidence that was used to assess the different provisions of Article 7 and Annex V in Section 5.

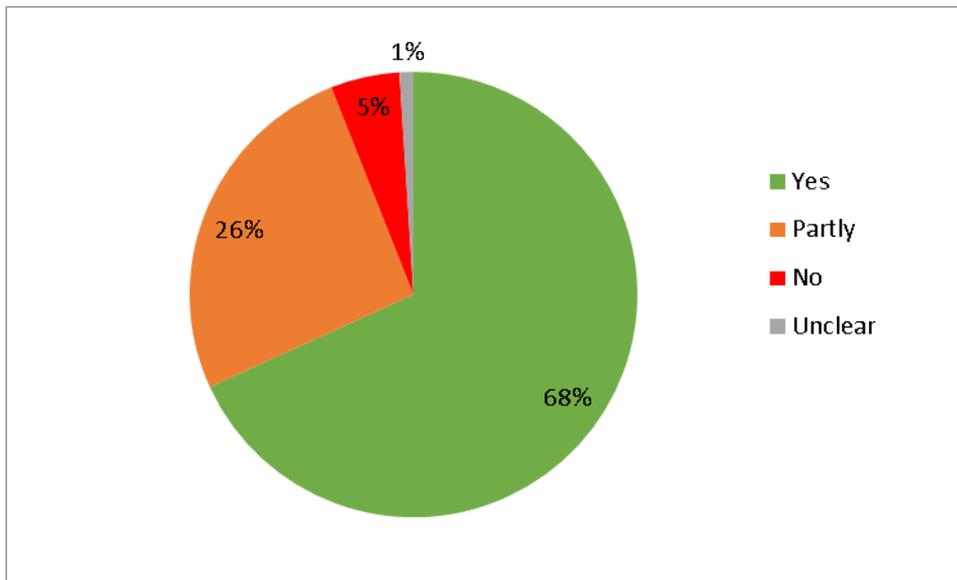
Eligibility

This indicator is concerned with the purpose of the policy measure, such as the issue of whether the measure is indeed mainly targeting end-use energy savings, as required by Article 7 of the EED, or whether it mainly targets other objectives (e.g. CO₂-emission reduction or large scale renewables deployment³⁷). The results of the assessment are depicted in Figure 9, which shows that 68% of the notified savings are assessed as fully eligible, whereas only 5% is assessed as fully non-eligible (corresponding to 12.3 Mtoe cumulative savings in 2020).

³⁶ NB: The labels of the policy measure categories 'Energy Efficiency National Fund', 'Energy or CO₂ taxes', 'Energy Labelling Schemes' and 'Training and educations' are hidden because they are non-existent or too small.

³⁷ The Commission clarified specific aspects of Article 7 of the EED in the EED Committee (16/09/2015) by stressing, in general, renewable energy measures targeting the primary energy consumption do not achieve the energy savings (so are not eligible). Where Member States considers a renewable energy measure to be eligible they should prove that the measure generates end-use energy savings in line with the definition provided in Article 2(18) (19) and that it leads to verifiable and measurable or estimable energy efficiency improvements.

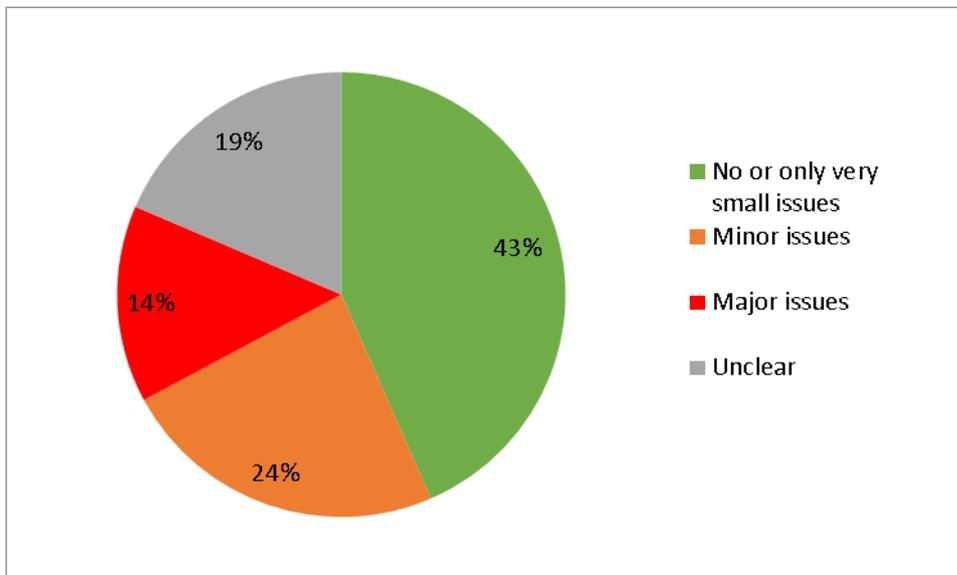
Figure 9: Split of savings per eligibility category (EU28 level, cumulative savings 2020)



Additionality

This indicator is concerned with the additionality of the policy measures to minimum EU standards, as required by Annex V (2)(a) and (3)(a). The results of the assessment are shown in Figure 10. It shows that 43% of the savings are assessed as having no or only very small issues with additionality, and 14% of the savings having major issues. The category ‘minor issues’ is 24%, and the category ‘unclear’ is rather large with 19%, despite the information received from the structured dialogues with the Member States. The issues arise mainly in relation to additionality to the EPBD (2010/31/EU). Member States should provide further information in their notifications about additionality of the savings to the EPBD.

Figure 10: Split of savings per additionality category (EU28 level, cumulative savings 2020)



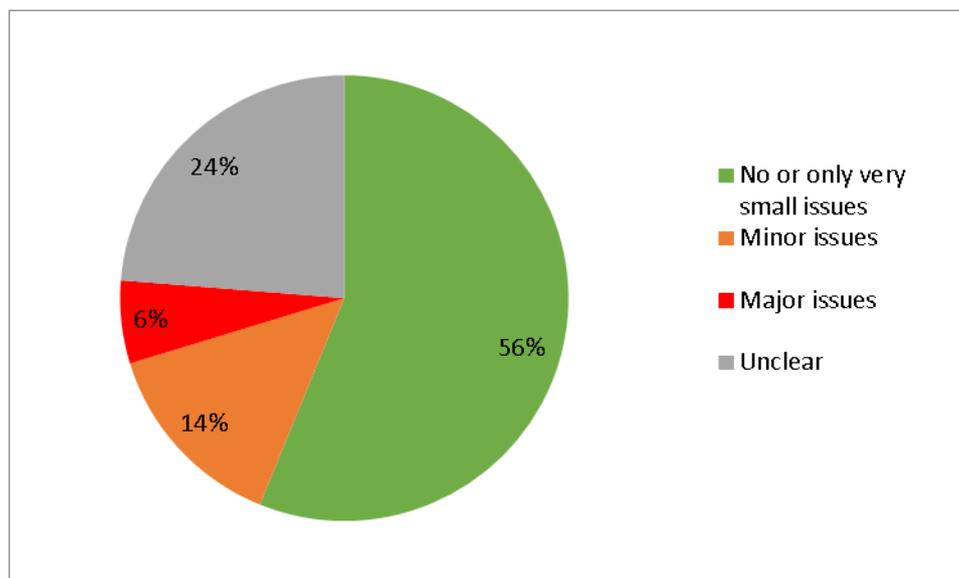
Risk of non-delivery

This indicator is concerned with the risk on non-delivery of the notified amount of savings. This might be related to materiality issues of the policy measure (according to Annex V (2)(c)), and/or to an over-estimation of the amount of notified savings. The different reasons for potential non-delivery have been

aggregated into one indicator here as the underlying reasons are not relevant for the quantitative assessment of the savings.

The results of this assessment are presented in Figure 11. The figure shows that 56% of the savings are assessed as having no or only very small issues with 'delivery', and 6% of the savings having major issues. The categories 'minor issues' is 14%, and the category 'unclear' is 24%.

Figure 11: Split of savings per category of risk of non-delivery (EU28 level, cumulative savings 2020)

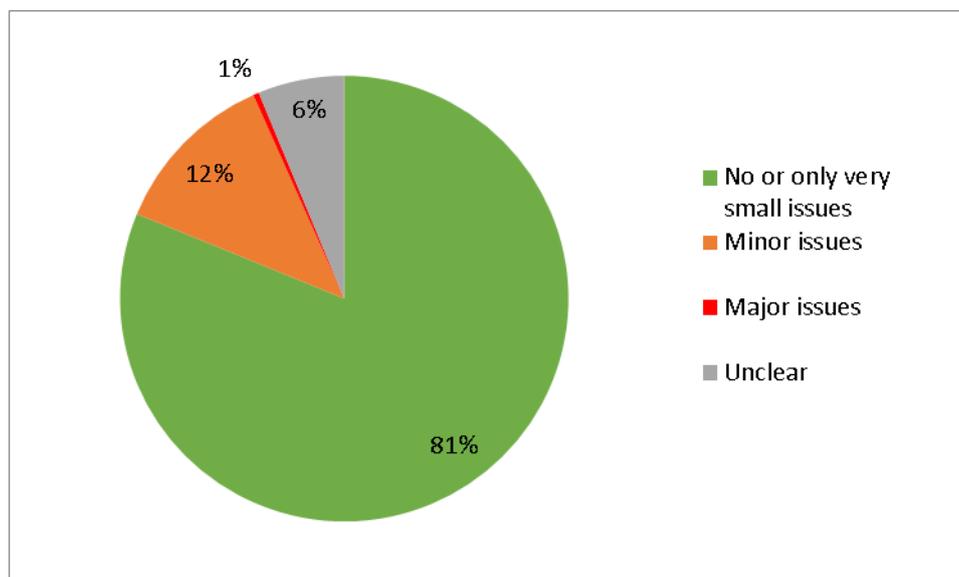


The rather large category 'unclear' stems from the fact that materiality of the expected savings is not always very well described, especially for the alternative policy measures. In the case studies (described in Chapter 4) best practice examples of how Member States have demonstrated the materiality of their energy savings are discussed further.

Risk of double counting

This indicator is concerned with the risk on double counting or overlap between notified policy measures, as required by Annex V (2)(d).

The results of the assessment are shown in Figure 12. The results show that 81% of the savings are assessed as having no or only very small issues with 'counting', and only 1% of the savings having major issues. The categories 'minor issues' is 12%, and 'unclear' is 6%.

Figure 12: Split of savings per category of risk on double counting/overlap (EU28 level, cumulative savings 2020)

Improvement of the quality of information over time

The project started in early 2015. Initially, the database of policies and measures was populated with information in the then available notifications of the Member States. Over the course of the project, until the cut-off date for taking into account new information (5 October 2015), additional information from the Member States was used to update the database. This includes, for example, the Annual Reports 2015 and replies by Member States to the structured dialogues with them.

By comparing the analyses of the confidence levels of the notified savings from early 2015 with the latest analysis, as described above, we are able to show how the notified information has improved over time.

An overview of the quality enhancements in the notified information is shown in Table 9. Further analysis of how Member States' submissions have improved due to the structured dialogue with the Member States is provided in Section 5.2. Note that only for the indicator 'Eligibility' the coding 'red' means that the savings cannot be counted towards the target of Article 7. Also, the assessment has been carried out based on the information provided in Member States' plans and is not based on results. The first complete overview of actual results will become available with the Annual Reports 2016, which will report the realised savings in 2014. For the first time, data will be reported ex-post - this will present different challenges to those covered by the notifications under Article 7 to date, which have been much more focused on the expected (ex-ante) savings. A similar analysis will be needed to assess the degree to which the ex-post savings can be assumed to be compliant with Article 7.

Table 9: Improvement of the quality of information over time

Indicator	Values early 2015 (before the structured dialogue with the Member States)	Values 5 October 2015
Eligibility		
Yes (green)	51%	69%
Partly (orange)	34%	25%
No (red)	3%	5%
Unclear	12%	1%
Additionality		
Green	29%	43%
Orange	33%	24%
Red	3%	14%
Unclear	35%	19%
Delivery (Risk of non-delivery)		
Green	39%	56%
Orange	15%	14%
Red	7%	6%
Unclear	39%	24%
Counting (Risk of double counting)		
Green	39%	81%
Orange	44%	12%
Red	2%	1%
Unclear	15%	6%

The table above shows that:

- the category 'unclear' has become smaller due to the fact that missing information was provided and questions were answered;
- the category 'major issues' has become relatively small for each indicator (only for 'additionality' this category is still relatively large, indicating that this aspect needs additional attention).

Since the sum of notified savings is 9% larger than the sum of the notified targets, the 5% non-eligible savings indicates that the target is within reach, provided the issues with the partly eligible policy measures and with the other indicators will be solved over time. Should those issues remain unresolved the actual savings could potentially turn out to be much smaller than the reported savings.

While we can indicate the savings at risk, we do not have any evidence to determine if/how the quantified savings should be discounted to reflect this risk. For example, if a Member State has not addressed additionality in the quantification of the energy savings, we cannot say if this will present a risk of overestimating the savings by 0%, 5%, 20% etc. Such an assessment would involve looking at the detailed methodology that has been used for each individual policy, and then exploring the uncertainty in the estimates. Even for a single policy, or small group of policies, this is a large task. Furthermore, Member States notifications do not provide the information required (in most cases) to

even understand the main parameters and assumptions that have determined the level of energy savings. Thus additional data gathering is required to understand the calculation of the original savings, before an adjustment can be attempted.

3.3.3 Post-2020 savings

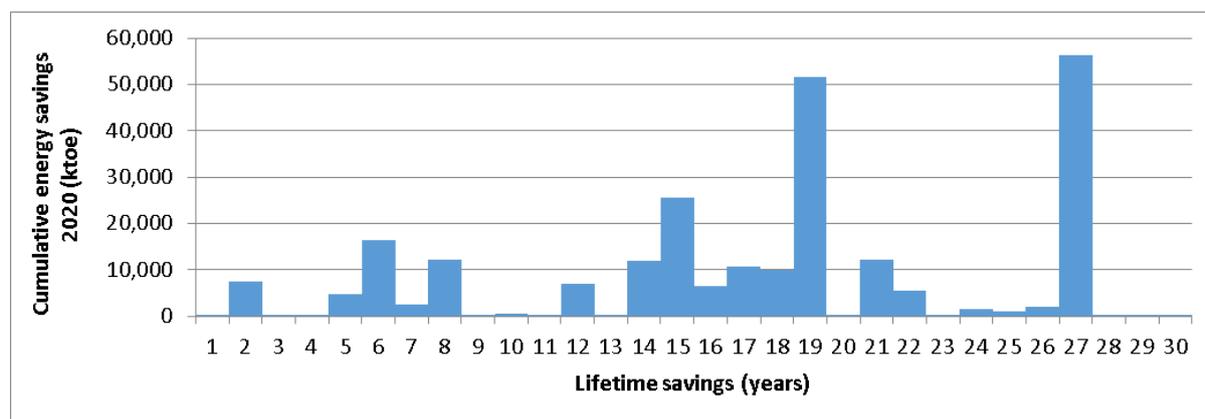
In this section we provide the results of the analysis of the post-2020 energy savings arising from measures implemented in response to Article 7.

The analysis assumes that Article 7 will not continue beyond 2020. The analysis is therefore based on savings from the policy measures that Member States currently plan to deliver to fulfil their Article 7 target in 2020, and not from additional actions in response to new policies.

The analysis is based on the notified yearly savings per policy measure and the assigned lifetimes based on CEN-values. As described previously (see Section 3.2.2.2) this method was chosen because the savings are notified by the Member States at the policy measure level, based on a mix of energy saving actions with different lifetimes, and not split out per type of energy saving action.

The notified data provided by the Member States enabled an attribution of 57% of the savings to one of the four lifetime categories: with relative contributions of 27% long, 51% medium long, 10% medium and 11% short. The notifications did not provide the information needed to attribute the remaining 43% of the notified savings to the lifetime categories, so assumptions had to be made using the methodology described in Section 3.2.2.2. This resulted in the distribution shown in Figure 13.

Figure 13: Distribution of notified savings over the lifetimes of the savings (cumulative savings in 2020)



Subsequently, we combined the notified savings and their attributed lifetimes to calculate the distribution of the savings over time. This is shown in Figure 14 in terms of yearly savings, and in Figure 15 in terms of cumulative savings, with the savings accumulation starting in 2014. Both figures are at the EU28 level, and include a split per type of policy measure.

The results as presented in Figure 14 and Figure 15 show that the policy measures notified to achieve the target under Article 7 for 2020 will continue to deliver savings up to 2046. As shown in Figure 14, the annual energy savings in 2020 are 61,060 ktoe. From 2020, the annual energy savings from Article 7 will decline, as the EED Article 7 will no longer provide a stimulus for *new* annual savings. However, some savings will continue to be delivered in 2030 as a result of measures already taken up to 2020. The value of these annual energy savings in 2030 is estimated to be 48,844 ktoe.

Energy savings can also be described in cumulative terms (see Figure 15). In 2020, the cumulative savings are estimated to be 250.3 Mtoe, and in 2030 the cumulative savings are estimated to be 782 Mtoe i.e. an additional Mtoe of cumulative energy savings are expected to be delivered between 2020 and 2030. The total cumulative savings, taking into account the full lifetime of all measures, are estimated to reach 1,141 Mtoe in 2046, based on notified savings.

Figure 14: Yearly savings notified for Article 7, taking their lifetimes into account (per type of policy measure, EU28 level)

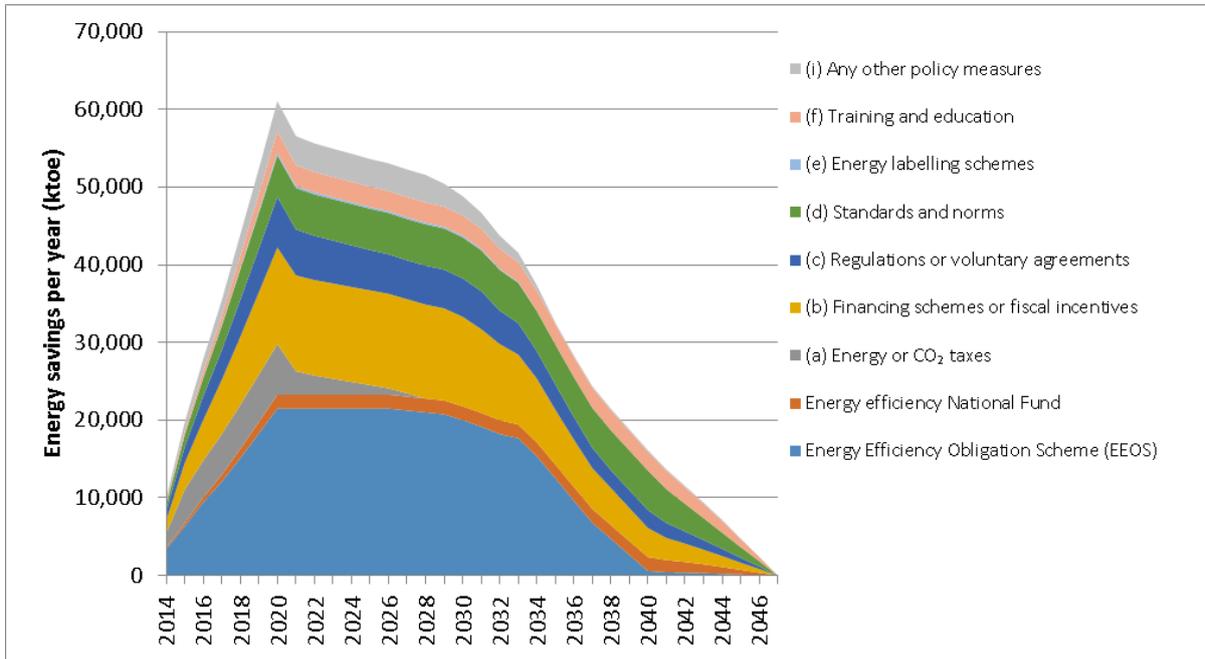
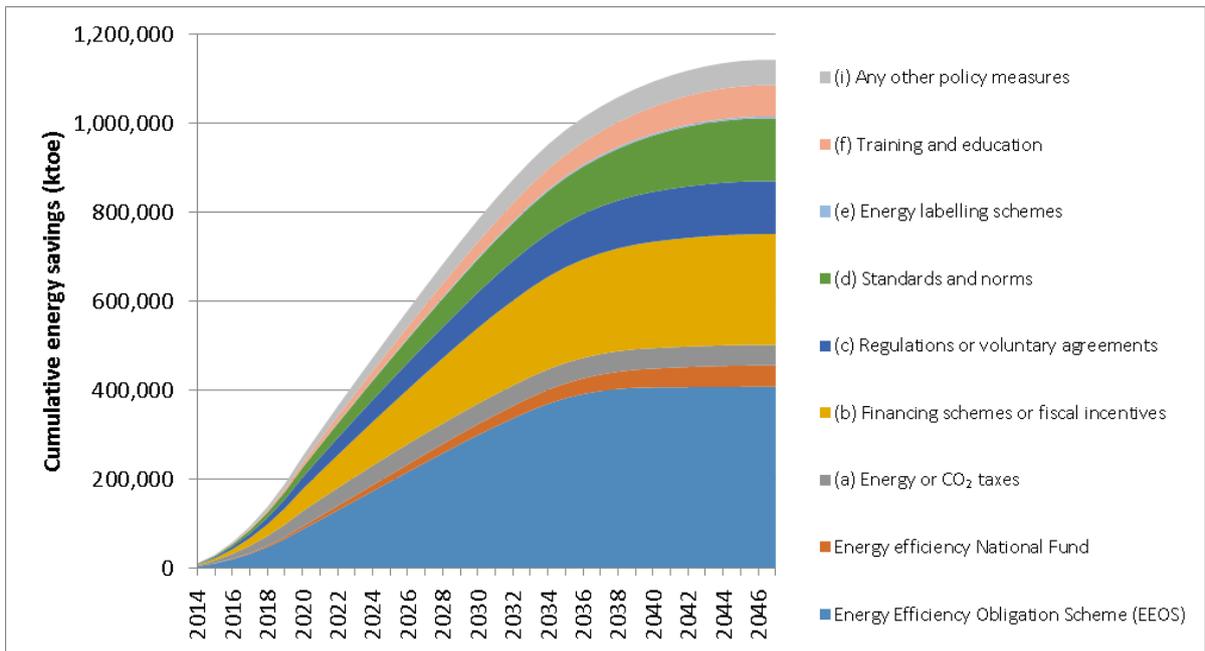


Figure 15: Cumulative savings notified for Article 7, taking their lifetimes into account (per type of policy measure, EU28 level)



3.4 Conclusions

The cumulative energy savings from the notified policy measures in 2020 are 250.3 Mtoe. The contribution of these policy measures in 2030, in terms of cumulative energy savings, could be more than 750 Mtoe; the total lifetime cumulative savings may amount to over 1,000 Mtoe.

Due to data limitations only 57% of the notified savings could be directly attributed to lifetime categories. However, relative to this 57%, 27% was attributed to actions with long lifetimes (23-30 years), 51% to medium-long lifetimes (10-23 years), 10% to medium lifetimes (3-10 years) and 11% to short lifetimes (1-3 years). This suggests that, based on current expectations, Article 7 will stimulate a range of energy savings actions, with a large proportion having long-lifetimes.

The process of the structured dialogue with the Member States has resulted in additional information from the Member States, filling the earlier information gaps, and reducing the amount of savings that were found to be at risk at the beginning of the project. However, there are still two main areas of concern that are showing relatively large portions of missing information (i.e. the savings are at risk). The first area is additionality, where, based on the notified information by 5 October 2015³⁸, only 43% of the planned savings was found to have no issues or only very minor issues, and for 19% of the savings it was not possible to assess whether there is a risk of non-additionality, based on the provided information. The major concern here is about additionality to the EPBD (2010/31/EU) for existing buildings. The other area is materiality ('risk of non-delivery'), where 56% of the planned savings was found to have no issues or only very minor issues, and for 24% of the savings it was not possible to assess whether there is a risk of non-materiality, based on the provided information. For some policy measures there also continue to be risks in relation to eligibility and double counting of notified savings. There is, however, no evidence that would allow the determination of if or how the quantified savings should be discounted to reflect this risk. However, the assessment indicates that, if not resolved, a significant part of the savings might not be additional. This could ultimately mean that the required amount of savings would not be achieved.

It is recommended that the Commission continues to seek clarifications from Member States on the Article 7 implementation. In addition to improving the completeness of information notified, we assume that the process itself might also have helped Member States to improve their understanding of the requirements of Article 7 and Annex V.

Energy saving actions that are planned to be delivered over the period 2014-2020 will also result in energy savings beyond 2020, and will therefore make a positive contribution to the 2030 objectives. Indeed, the actions implemented in the 2014-2020 period with the longest lifetimes will continue to deliver savings until 2046.

³⁸ 5 October 2015 was agreed as the cut-off date for this analysis

4 Analysis of the effectiveness of policy measures

The previous section explored the overall energy savings from the policy measures included by Member States in their notifications. This section provides a more in-depth analysis of the different types of policy instruments.

Since Article 7 allows Member States to meet their energy savings targets through the implementation of different types of policy instruments, the requirements within Article 7/Annex V need to be sufficiently broad to address the different characteristics of the policy types and sufficiently flexible to not disadvantage Member States that choose a certain policy mix.

It is therefore important to explore how Member States have implemented the requirements of Article 7/Annex V at the policy level, for different types of policy instruments. To ensure a balanced and representative assessment, this analysis has been carried out for four types of policy, focussing on the most successful policy types in terms of their expected contribution to the overall savings of Article 7.

4.1 Methodology

In this chapter, the four types of policy measures under Article 7 that are expected to deliver the highest amount of energy savings towards the Article 7 targets are analysed. To select these policy measures we performed a two-step process:

Step 1: To select the four policy measures that contribute most to the target, we used two different types of indicators. First, we looked into the distribution of notified expected savings over the different types of policy measures as defined in Article 7(9), plus EEOS, and selected the four types of policy measures that are expected to deliver most of the savings *at EU level*. However, since this approach is based on absolute energy savings, it would result in an implicit tendency towards policy measures in the larger Member States (i.e. with the highest final energy consumption and therefore with the highest energy saving targets). Therefore, to address that potential bias, we also carried out an alternative approach, using the average percentage contribution of the policy measure types to the total savings *per Member State*. Based on the outcome of these two different approaches, four types of policy measure were selected for further analysis in this chapter of the report³⁹.

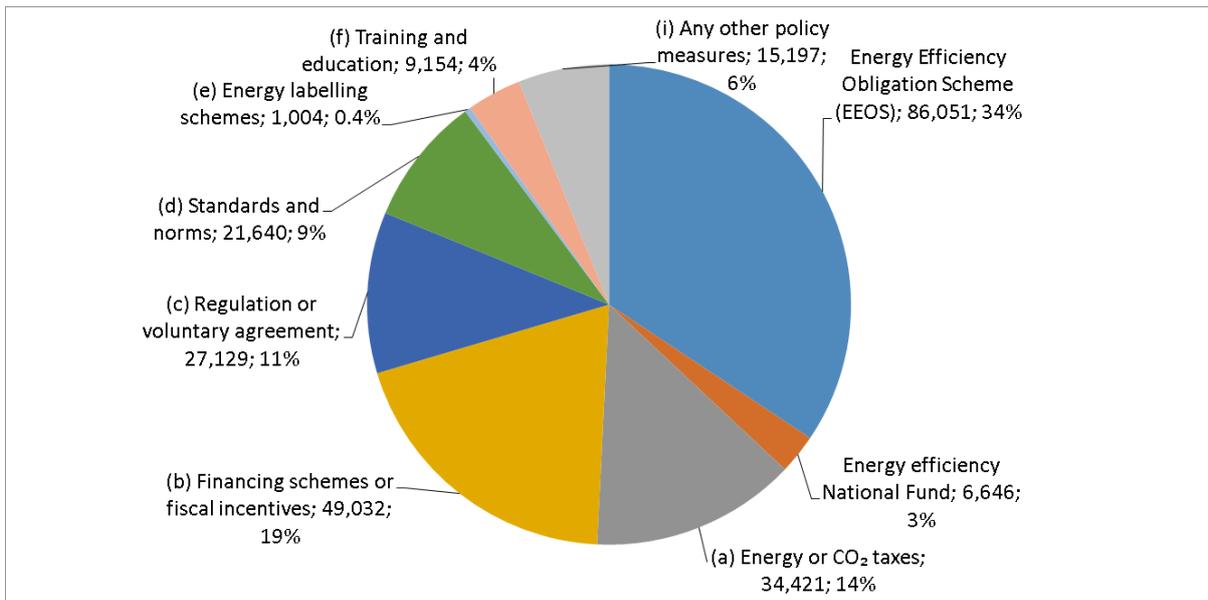
Step 2: As a second step in the analysis, we looked at the best practices examples of how Member States have demonstrated in their notification how they have met the requirements of Article 7, for each of the four policy types identified in Step 1. Here 'best practice' means that the submitted description of the policy measure is in line with one or more of the specific requirements of Article 7 and Annex V, like eligibility, additionality, double counting, delivery issues (e.g. materiality, and can be considered best practice). In view of the differences between policy measures, some of these best practices may be valid for all policy measure types, whereas others may be more specific to the different types of policy measure.

4.2 Which types of policy measures contribute most to the target?

The distribution of savings over the types of policy measures is shown in Figure 16, in line with the terminology used in Article 7. The graph shows sums of notified cumulative savings in 2020 at EU28 level.

³⁹ It was decided in consultation with the Commission to use this approach to select the 'most successful' policy measures. Other indicators could also be considered relevant, for example savings achieved per Euro or actual versus expected savings, but these could not be determined reliably on EU-scale due to the limited availability of data.

Figure 16: Savings per policy measure type (cumulative savings 2020, as notified by 5 October 2015)

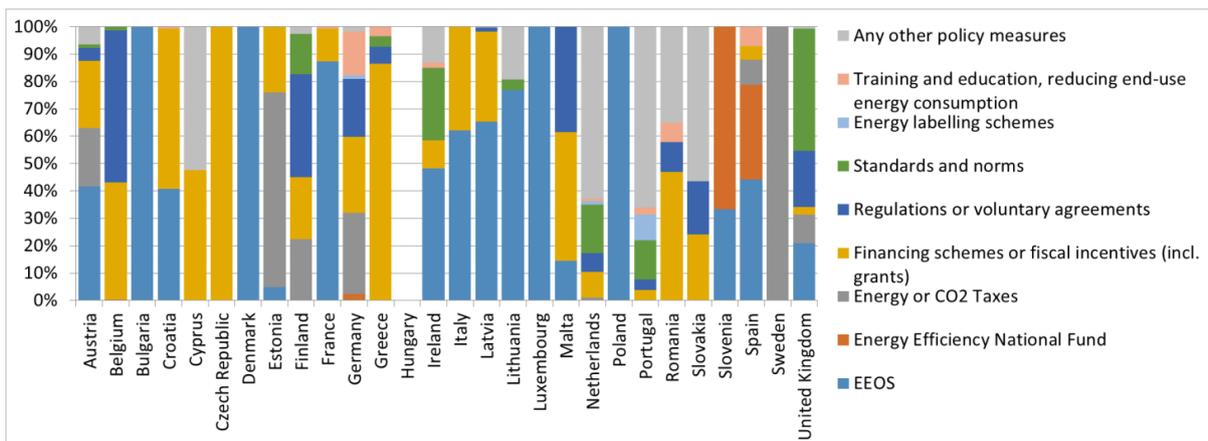


From this graph, it can be concluded that the four types of policy measures that are expected to contribute most to the notified cumulative savings in 2020 at EU level are:

1. Energy Efficiency Obligation Schemes
2. financing schemes or fiscal incentives
3. energy or CO₂ taxes
4. regulation or voluntary agreements.

The analysis using absolute savings at the EU28 level might, however, be biased towards policy measure types from Member States with a larger final energy consumption and therefore a higher energy savings target. Therefore, as an alternative approach, we also analysed the split of percentages of the energy savings per type of policy measure per Member State. These results are provided in Figure 17.

Figure 17: Split of the notified savings (%) per type of policy measure per Member State (cumulative savings 2020, as notified)



NB. Hungary did not notify the expected savings per policy measure.

When averaged across the Member States, the alternative analysis presented in Figure 17 shows that the types of policy measures that make the largest contribution are the same as based on absolute savings on the EU28 level.

We therefore conclude on the basis of analysis of Step 1 that the four policy measure types that contribute most to the EU and Member State targets are:

1. Energy Efficiency Obligation Schemes
2. Financing schemes or fiscal incentives
3. Energy or CO₂-taxes (above EU minimum levels)
4. Regulations or voluntary agreements.

Together, these four types of policy measures account for 79% the total cumulative savings in the EU in 2020.

4.3 In-depth analysis of the selected policy measures

These four types of policy measures were assessed in detail, resulting in the identification of best practices of notified policy measures.

In the following, the methodology of this analysis is outlined, followed by an overview of the most important findings of the case studies. The detailed results of this analysis can be found in separate case study reports, one for each policy type, in Appendix 4.

4.3.1 Description of the in-depth analysis

These case studies all follow the same format:

- the policy measure is introduced, and the experiences and cost-effectiveness of these types of policy measures are discussed based on a literature review;
- an overview is provided on how Member States used these policy measures to meet their target of EED Article 7;
- best practices are identified regarding the Member States' implementation and notifications of these measures, in the context of the Article 7 and Annex V requirements;
- general conclusions are drawn.

As was shown in the selection process above, EEOS is clearly the policy measure type with the largest expected savings EU-wide (34%); the other three result in 19%, 14% and 11% respectively. It was therefore decided to put most effort into the EEOS case study, resulting in a more detailed discussion and assessment compared to the other three.

4.3.2 Key findings

The details (including references) of the case studies can be found in Appendix 4. This section provides an overview of the key findings of these reports, focussing on the main conclusions regarding their use in the Member States, cost-effectiveness of these policy measures and best practices regarding implementation of the Article 7 and Annex V requirements.

4.3.2.1 Use of policy measures in the Member States

Energy efficiency obligation schemes (EEOS) are mandatory schemes, established by a Member State, that place an obligation on energy providers to achieve savings amongst final consumers (Commission guidance). EEOS have been notified by Austria, Bulgaria, Croatia, Denmark, Estonia⁴⁰, France, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Slovenia, Spain and the UK. Bulgaria, Denmark, Luxembourg and Poland have EEOS as the only policy measure to meet the Article 7 target. In the other Member States EEOS are expected to contribute to the target with varying degrees (ranging from 5% in Estonia to 87% in France). There is long-term experience with EEOS in only a few EU Member States such as the UK and Denmark. Most of the EEOS notified for the purpose of Article 7 have only recently started or are about to start.

Many different types of **financing schemes and fiscal incentives (FTFI)** are notified by Member States, with the common characteristic that energy savings are induced by monetary and/or fiscal support provided from public sources. The support can take various forms such as a non-refundable grant, preferential loan, bank guarantee and tax concession. They can also target different sectors. The main target of these measures – both in terms of the number of policy measures and the expected

⁴⁰ Expected to start in 2018.

savings – is the modernisation of buildings, followed by FTFI measures that provide impetus for a quicker replacement of energy consuming equipment (including vehicles). Support schemes have been employed in the majority of Member States, especially in relation to buildings.

Energy and CO₂ (carbon) taxes refer to policy instruments which apply a tax on the energy and/or carbon content of fuels. This tax increases the price of the fuels at the point of purchase, which increases the cost of consumption of these fuels – and thereby incentivises fuel saving. The tax rate may be applied equally to all fuels, for example on the basis of a fixed rate per unit of energy or carbon. However, tax rates may also vary from one fuel to the next, and therefore offer a differing level of incentivisation for reducing energy consumption. For example, carbon taxes do not typically apply to biofuels, biogas and bioliquids as they are considered as having zero CO₂ emissions. This definition of energy and CO₂ taxes does not include other types of financial instruments (described above) which can also provide a financial stimulus to energy efficiency investments through the taxation system, such as tax rebates for building renovation. Energy and CO₂ taxes were included in the notifications and submissions of nine Member States.

Regulations and voluntary agreements (VA), accounting for about 11% of the EU's expected Article 7 energy savings, are also a diverse category of policy measures. 11 Member States have notified eligible policy measures of the type 'regulations and voluntary agreements' in the context of Article 7. The United Kingdom notified both regulations and voluntary agreements. Belgium, Finland, Latvia, Malta, the Netherlands and the Slovakia notified voluntary agreements but no regulations, and Germany, Greece, Portugal and Romania notified regulations but no voluntary agreements. Three Member States, Belgium, Finland and Malta, rely for more than 30% of their Article 7 savings on this type of policy measure - on voluntary agreements, to be specific. Voluntary agreements have been arranged with industry, but also with government-owned industries, municipalities and distribution companies. Regulations are also used for a variety of end users, with some aimed at ensuring energy savings in new or existing buildings, while others may target transport fleet owners, or private and public organisations.

4.3.2.2 Cost-effectiveness of the policy measures

Cost-effectiveness of the measures has been explored through a review of published literature on the measures types in general and is not specific to the instruments notified in accordance with Article 7.

A recent review of **EEOS** in France, Italy and the UK systematically analysed the cost-effectiveness of the schemes and showed that all three systems are highly cost-effective with the benefits in the form of energy cost savings by far outweighing the surcharge on energy bills. The effectiveness of EEOS depends on the level of the energy savings target (i.e. how ambitious the target is in terms of required energy savings) and whether or not compliance is ensured. Generally, EEOS can be highly effective as they set a mandatory target that has to be delivered, in contrary to incentives where the outcome is uncertain. However, this is only the case if compliance is ensured through a robust monitoring and verification system and penalties. The notifications and NEEAPs do not contain data that allow for a comparison of EEOS with alternative measures regarding their cost-effectiveness as cost data is not reported on by Member States. The literature on the cost-effectiveness of energy efficiency policy measures provides some data that indicates that previous EEOS have been highly cost-effective but equally this is the case for alternative policy measures⁴¹. Analysis by RAP using the energy efficiency obligation scheme in Britain as an example suggests that EEOS deliver seven to nine times more savings from each Euro spent in a well-managed efficiency programme (in MWh and resulting GHG emissions) than it will through generalised, across-the-board price increases achieved through taxation measures⁴². However, the same is likely to be the case for effective alternative measures.

Regarding **financing schemes or fiscal incentives (FSFI)**, the literature on previously operating support schemes show the difficulty to assess the cost-effectiveness of energy efficiency programmes. While costs are relatively easy to estimate – either if limited to the public funds involved or total investments considered – there are wide variations in calculating potential and/or actual benefits in terms of energy savings and other benefits such as health, comfort and employment. A quantified comparison of the cost-effectiveness of different financing and fiscal measures is thus not feasible. The literature does suggest, however, that from the point of view of national budgets, benefits tend to exceed

⁴¹ See a recent review of the cost-effectiveness of energy efficiency schemes: Rosenow, J., Porter, F. (2015): A Comparative Review of Housing Energy Efficiency Interventions. A report for ClimateXChange. Ricardo-AEA, Harwell, UK.

⁴² Cowart, R. (2011): Prices and policies: Carbon caps and efficiency programmes for Europe's low-carbon future. In Proceedings of the 2011 eceee Summer Study, pp. 503-515.

costs if additional tax revenues and positive employment effects are also taken into account. FSFI can be very effective, but the savings achieved depend on the specific measure, for example, on the available funds and fiscal benefits, the coverage of the scheme and administrative conditions. Because of the wide-reaching benefits that can be potentially reaped from such programmes, it can be argued that effective policies should encourage deep renovations.

While the administrative costs of **energy and CO₂ taxes** are generally modest in relation to the revenues generated, there is a range of factors which need to be considered when assessing their effectiveness, such as the level at which the tax is set in comparison to the cost of energy or CO₂ reduction, and exemptions granted. Results are therefore context specific, and studies have reached very different conclusions on cost-effectiveness of energy and CO₂ taxes. In some cases, very low cost-effectiveness is found, while other studies report very high cost-effectiveness.

Determining the cost-effectiveness of **regulations and voluntary agreements** is equally difficult and context-specific. The literature review indicates that the administrative cost of the measures is relatively limited, and lower for voluntary agreements than for regulations. However, cost to governments may increase when these policy measures are combined with other policies, such as tax reductions or other types of financial support. These combinations are quite common, especially with voluntary agreements, where support may be offered to participants to encourage their acceptance of the conditions of the agreement. Ex-post evaluations of voluntary agreements have resulted in comprehensive conclusions and recommendations on how to ensure that VAs are effectively designed and implemented. VAs can achieve relatively large savings when they are applied to a range of sectors including the energy-intensive industry, as they then cover a significant share of countries' energy consumers. The actual effectiveness of the VA depends, however, on the level of the target or the specific action agreed on, compared to business as usual (and taking into account overlapping policies such as the Eco-design Directive).

4.3.2.3 Best practices in the implementation of the EED Article 7 requirements

In the case studies, best practices were sought for each of the Article 7 requirements, such as for eligibility, on the various aspects of the calculation of energy savings (for example additionality, measurement method, lifetime of savings), and for monitoring, reporting and verification. Some of these best practices relate to the policy implementation itself (e.g. implementing adequate monitoring, reporting and verification can be crucial to ensuring an effective implementation of voluntary agreements), whereas others are more concerned with the notification requirements (e.g. it is not sufficient to state that additionality with the EPBD (2010/31/EU) is taken into account, but Annex V(4) requires details about the methodology with which this is calculated). These best practices will not be repeated here, they can be found in the Annex. The following does contain a number of general conclusions that can be drawn from the case study assessment.

While each **energy efficiency obligation scheme** is different, the analysis concludes that a number of key principles regarding best practices apply to all schemes. Those Member State who are about to implement new EEOS are advised to build on the practices established over many years in the Member States with long-running EEOS. The analysis furthermore shows that for each design element that needs to be considered there is at least one example of good practice. Not surprisingly, most of the strongest examples have been drawn from EEOS that have existed for some time and where policy learning has led to the establishment of sound procedures.

Regarding **FSFI**, the assessment of information submitted by the Member States on the implementation of Article 7, there are good practices in the Member States relating to the various requirements that can be shared and applied in other Member States. These can be found in the detailed case study in the Annex. Especially for wide-ranging instruments, which may incentivise a broad range of energy savings actions.

As recognised in Article 7 and Annex V, when implementing (and notifying) the requirements for **energy or CO₂ tax measures**, special attention should be given to the approach for quantifying the savings from these measures, as it is different to almost all other types of measure. Specifically, the price signal that is provided by taxes is, in most cases, technology/measure neutral, so a range of energy saving behaviours and/or technologies can be encouraged. Therefore, energy taxation measures cannot easily be assessed bottom-up. Instead, they are quantified on the basis of price elasticities, which represent the responsiveness of energy demand to price changes. Member States have adopted different approaches to address this, particularly when it comes to *demonstrating* that the requirements have been met. In some cases Member States have simply stated that the requirements have been met. I

other cases Member States have clearly demonstrated how the requirements have been met. The latter approach represents best practice.

The analysis of **regulations and voluntary agreements** also leads to the conclusion that there are significant gaps in the information on how the various requirements of Article 7 and Annex V are met, however a number of best practices could be identified that can illustrate how the requirements can be met in practice. Addressing the requirements for additionality and materiality require specific attention, as many of the regulations and voluntary agreements include energy savings measures that are also addressed with other policies such as the Ecodesign Directive (2009/125/EC). Double counting due to policy overlaps needs to be prevented in many cases, especially with cross-cutting regulations and voluntary agreements. Adequate monitoring, reporting, verification and compliance are paramount to ensure that expected savings are achieved in reality. Many notifications lack detail on these issues, but some Member States have comprehensive schemes in place.

4.4 Conclusions

When looking at the expected savings from different policy measures, four types of policy measures were identified that contribute most to the Member States Article 7 targets:

1. Energy Efficiency Obligation Schemes
2. financing schemes or fiscal incentives
3. energy or CO₂-taxes (above EU minimum levels)
4. regulations or voluntary agreements.

Together, they account for 79% of the total cumulative savings in the EU in 2020, as expected in the Member States notifications.

An in-depth analysis for these four types of policy measures resulted in an overview of their use in the Member States, as well as their cost-effectiveness and best practices regarding implementation of the Article 7 and Annex V.

These findings provide insight into the diversity of policy measure types that are used to meet the Article 7 targets, with significant differences between Member States. For example, where some countries (Bulgaria, Denmark, Luxembourg and Poland) have EEOS as the only policy measure to meet the Article 7 target and Sweden only uses taxes, others rely strongly on voluntary agreements (Belgium, Finland) or financing schemes of fiscal incentives (for example, the Czech Republic, Greece and Croatia).

Furthermore, the results illustrate the diversity of implemented policy measures within the various categories. For example, they differ regarding:

- the level of ambition (e.g. of the energy efficiency targets for EEOS and voluntary agreements, the level of fiscal incentives or energy taxes);
- the target sectors of the measures (some measures target a specific end-use sector such as transport or industry, others have a much wider scope);
- the stage of implementation (some measures have been in place for many years, others are still in the planning phase);
- the details provided in the Member State notifications regarding the various requirements of Article 7/Annex V (e.g. calculation methodology, quality standards, monitoring and verification of savings).

The effectiveness and cost-effectiveness of these policy types have been analysed using recent literature on experiences with similar policies in the past. In all four cases, both effectiveness and cost-effectiveness was seen to vary significantly, depending on the specific measures and their implementation. A number of key drivers for effectiveness are identified in the detailed case study reports (see Appendix 4). A significant difference between EEOS and most alternative measures is that EEOS set a firm energy savings target that has to be reached. This means that the certainty of achieving the expected energy savings is higher than for most alternative measures, such as financial incentives. There is some evidence that EEOS are more effective in delivering energy savings than taxation measures but the jury is still out on whether or not EEOS are more cost-effective than alternative measures.

The case studies also showed that implementation of the Article 7/Annex V requirements set specific challenges depending on the specific policy measure and circumstances. Best practices were identified for the various requirements to support policy makers in policy design and notification.

5 Analysis of the effectiveness of the individual requirements and provisions of Article 7 and Annex V

For any policy, it is good practice to evaluate how effectively its provisions have been implemented, and therefore how well the policy is delivering against its desired objectives. There are a number of specific provisions in Article 7 and Annex V which place different requirements on Member States. Each of these provisions, either individually or collectively, contributes towards the overall objective of the Energy Efficiency Directive.

In this chapter, we analyse each of the provisions, and draw conclusions as to how effectively Article 7 has been delivering its desired objectives to date. Following this, recommendations have been made for potential revisions to improve the effectiveness and efficiency of the provisions. These recommendations are summarised in the next chapter.

The analysis presented in this chapter and Appendix 5 is based on the Article 7 notifications submitted by Member States up to the 1 May 2015. The findings are therefore based on the analysis performed by the project team on the information notified by Member States up to this date. To provide some validation of the findings, a comparison has also been made with the conclusions from a workshop hosted by the European Commission's Joint Research Centre on the methods and principles for calculating energy savings under Article 7⁴³.

Update in response to new data from the EU pilots⁴⁴

A review of the validity of the conclusions provided in this chapter was done in light of the new information submitted by Member States by the cut-off date 5 October 2015 (due to the 2015 Annual Reports and the structured dialogue with the Member States). While, as described in Section 3.3.2 the additional information submitted in response to the process of structured dialogue with the Member States meant that a larger number of Member States were able to demonstrate that they met the requirements of Article 7, this does not necessarily mean the requirements of Article 7 and Annex V are themselves more effective. Put another way, just because compliance is better, does not mean that the requirements themselves are more effective. Indeed, it has taken the structured dialogue with the Member States, with its targeted questions and explanations to the Member States, to stimulate some Member States to notify the required information.

Also, as discussed in Section 3.2.20, the credibility issues within Member States' approaches remain after the structured dialogue with the Member States process, although a decreasing share of savings are being associated with risks. On the other hand there are a number instances where increased compliance does mean increased effectiveness, but this should not be assumed in all cases. To reflect this issue a separate text box has been included after the main results to indicate if and how the results have changed in light of the additional information available in the 2015 Annual Report and the structured dialogue with the Member States. On the whole, the conclusions are largely unchanged by the new information.

5.1 Methodology

The analysis begins with a review of the rationale for the inclusion of the provisions in Article 7, and what the expected response to the provisions was at the outset. We then review the actual response to the provisions by Member States, and evaluate the overall effectiveness, efficiency, relevance, coherence and EU added value of the requirements.

⁴³ Report on Common Methods and Principles for Calculating the Impact of Energy Efficiency Obligation Schemes or Other Policy Measures under Article 7 of the Energy Efficiency Directive. Draft 30/09/2015.

<http://publications.jrc.ec.europa.eu/repository/bitstream/JRC99698/report%20on%20eed%20art%207%20-%20publishable.pdf>

⁴⁴ Structured dialogue between the Commission and the Member State concerned is carried out via 'EU Pilot'. This is a scheme designed to quickly resolve compliance problems without having to resort to infringement procedures, for the benefit of citizen and business.

5.1.1 Development of the evaluation template

It is important that each of the provisions is analysed using a consistent set of criteria. To ensure this a standardised evaluation template was developed. The template has four parts:

- Part 1: rationale, and the expected and actual outturn of the provision
- Part 2: effectiveness, efficiency, relevance, coherence and EU added value of the provision
- Part 3: conclusions
- Part 4: recommendations.

The template was developed by the project team, in consultation with the European Commission. The template was then piloted on three individual provisions, and then further refined. The template was then completed for each of the individual provisions.

5.1.1.1 Assessment of the rationale, expected and actual outturn for provisions

Part 1 of the template is provided in Figure 18 below. The aim of this part of the template is to define the initial rationale for including the provisions in Article 7/Annex V, and the expected outcome (when the legal text was first devised). It therefore provides a benchmark against which the actual outcome can be evaluated (i.e. did the provision perform as expected).

It is important to note that the initial rationale for the inclusion of each provision is not something that is documented anywhere, at least not for each specific provision, and had instead to be inferred by the project team. In most cases we have reasonable confidence that the inferred rationale is a realistic representation of the actual rationale. However, this cannot be assured in all cases, and there may be alternative explanations of the rationale for certain provisions. Since it is not possible to check that we have made the correct interpretation, by stating the rationale clearly in each template we are fully open and transparent on the assumptions that have been made.

Figure 18: Assessment template for use in the review of the provisions: Part 1

Item	Description
Reference	Reference to the specific Article provision.
Theme	Thematic areas e.g. exemptions.
Provision	Text of the Directive for provision.
Description	A more extended description of the provision (if the wording from the Directive does not make this clear).
Implementation requirement	What Member States are required to do, and notify to the Commission, in response to the provision (taking into account the guidance).
Rationale and expected outcome	The rationale for including the provision in the Article, and the expected outcome (in terms of Member States implementation) of the provision. It requires an interpretation by the project team.
Actual outcome	Factual description of the implementation, based on the notifications. It describes what the nature and extent of the different implementation approaches (and evaluation of the consequences of this approach is provide in Part 2 of the template).

5.1.1.2 Assessment of strengths and weaknesses

Part 2 of the template is concerned with the strengths and weaknesses associated with the current provisions. It is important that this analysis provides a robust basis for justifying potential revisions to the provisions.

Some of the problems associated with the implementation of Article 7 and Annex V to date may relate to how the provisions are performing relative to initial expectations. For example, if the actual outcome from the provision is very different from the expected outcome, this may mean the provision is less effective than initially intended. For other provisions the initial rationale for including the provision may no longer be as relevant as when the Directive was first devised, which may provide an argument for

modification. Finally, for some provisions, practical experiences with implementation may provide an argument for simplification, for example, if more efficient approaches to deliver the same outcome can be identified.

Therefore, following our initial evaluation of the rationale and outcomes related to the individual provisions in Part 1 of the template, we then perform a secondary assessment of the strengths and weaknesses of the individual provisions.

The assessment used a consistent set out evaluation criteria, so that all provisions are treated equally. These criteria are **effectiveness, efficiency, relevance, coherence** and **EU added value**, which are the criteria required to be used for evaluation studies by the Commission's Better Regulation Guidelines⁴⁵. For each of the criteria we have developed specific definitions for use in the assessment.

Our approach is primarily concerned with the performance of the individual provision. However, we recognise that is also important to consider these criteria at the level of the overall Article (i.e. evaluation of the overall effectiveness of Article 7). To capture this, the template includes a consideration of how individual provisions contribute to the effectiveness and efficiency of the Article as a whole. This will identify those provisions that have a more important contribution towards the overall effectiveness of Article 7, as well as its overall cost-efficiency.

Associated with each of the evaluation criteria are a series of questions. These questions seek to understand the factors which influence the performance of the provision in relation to the respective criteria. These are described in Table 10 below.

Table 10: Assessment template for use in the review of the provisions: Part 2

Evaluation of performance	
Effectiveness	Effectiveness can be described both in terms of the contribution of the provision to the overall objective of Article 7 (i.e. delivering energy savings) but also in terms of its effectiveness in relation to the specific aims of the individual provision. Evaluation of the former is valuable to understand the overall role of the provision in delivering the objectives of Article 7, but the latter is important for understanding the specific issues concerned with the provision as it currently implemented.
<i>To what extent did the provision deliver the expected outcome?</i>	This is concerned with whether the provision performed as expected i.e. its effectiveness in delivering against its specific objective. The actual outcome of the provision is compared to the expected outcome.
<i>What factors (both positive and negative) have influenced the effectiveness? What implementation challenges existed?</i>	This question explores the reasons (both success factors and barriers to delivery) that may have influenced the outcome. For example, the absence of clear guidance may have influenced the outcome that was achieved.
<i>How effectively does the provision contribute to the overall achievement of the overall objective of Article 7?</i>	The final question is concerned with the role and influence of this provision on the overall effectiveness of Article 7. It therefore looks at the effectiveness at a macro level, and helps to understand how changes to this provisions will influence the overall objectives of Article 7. Another way of phrasing this question is <i>'What would be the impact on Article 7 of removing this provision – based on current implementation - or of changing it?'</i>

⁴⁵ Better Regulation Guidelines (2015). Commission Staff Working Document. COM(2015) 215 final, SWD(2015) 110 final.

Evaluation of performance	
Efficiency	Efficiency encompasses the overall cost of delivering the objectives. This includes administrative costs as well as transaction costs. This would also include barriers, which means the requirements cannot be delivered more efficiently. For example having an overly complex methodology or requiring an extensive amount of data.
<i>What is the level and nature of the effort required to deliver the objectives? Is the effort involved appropriate or is it too onerous?</i>	This concerns the effort that is required from Member States to implement the provision. This is concerned with the scale of the effort, and if it may be considered onerous relative to the overall outcome (i.e. cost-benefit ratio).
<i>What are the factors that influence efficiency of delivering the objective? Do these vary between the Member States?</i>	This explores the factors which may influence the overall efficiency of the provision.
<i>How efficient is the provision in meeting its objective?</i>	This explored overall how efficiently the provisions is meeting its objective.
Relevance	Relevance is concerned with the extent to which the requirement continues to be relevant. Relevance may be reduced because the outputs and impacts are no longer needed, due to other policy developments, or in the case of exceptions, Member States have not used the provision.
<i>Have any circumstances changed to make the provision less relevant?</i>	This looks at changes in circumstances which may affect the relevance of the provision.
<i>Is the provision still relevant in the context of the 2030 ambition? Does it have a cut-off date?</i>	Specifically, is the provision still relevant in the context of the 2030 ambition – for example, if it has a cut-off date prior to 2030.
Coherence	Coherence, as defined in the Impact Assessment Guidelines, encapsulates a much wider range of issues such as potential trade-offs in the economic, environmental, and social domain. It is an important criterion because the EED directly interacts with other EU Directives, for example the EPBD (2010/31/EU) and the Ecodesign Directive (2009/125/EC). To avoid an inconsistent European policy landscape it is paramount that potential overlaps are addressed.
<i>How coherent is the provision with the other provisions in Article 7, and the EED as a whole?</i>	This question is concerned with the coherence of this provision in the context of the overall Article.
<i>Is it coherent with the current policy landscape, including national policies?</i>	This is concerned with the coherence of the requirements with the overall policy landscape, including the national framework.
EU added value	What is the additional value resulting from the EU intervention(s), compared to what could be achieved by Member States acting at national and/or regional levels?

Evaluation of performance	
What has been the EU added value of the intervention?	This is concerned with the overall added-value of taking an EU level perspective

5.1.1.3 Conclusions and recommendations

It is next necessary to consider to what extent it is valuable to amend or even delete the provisions to improve the overall effectiveness, efficiency, relevance, coherence or EU added value of Article 7. For each of the templates we developed key conclusions and then recommendations on the potential actions that could be performed to improve the individual provisions. These are likely to fall into 4 groups:

- 1) **no change** – no major issues have been identified that warrant attention;
- 2) **minor change** – issues have been identified that may warrant a minor change (e.g. change in wording to improve consistency or completeness of implementation but no change in substance);
- 3) **major change** – issues have been identified that may warrant a major change (e.g. removal of provision, or major change in substance);
- 4) **additional guidance** – issues have been identified but it is suggested that these may best be dealt with not through a change in provision but through supporting guidance e.g. where the provision is evaluated favourably, but implementation has not been consistent across Member States.

Parts 3 and 4 of the templates are shown below in Table 11 and Table 12 respectively.

Table 11: Assessment template for use in the review of the provisions: Part 3

Conclusions
Summary of the main conclusions from the analysis in terms of the overall effectiveness, efficiency, relevance, coherence and EU Added value.
Summary of the main problems, and the causes of the problems.

Table 12: Assessment template for use in the review of the provisions: Part 4

Recommendations
Recommendations to address the problems:
No change/Minor change/Major change/Additional guidance

5.1.2 Determining the level of analysis at which the provisions are analysed

As described above there are a large number of individual provisions and associated requirements in Article 7 and Annex V. While all of these provisions contribute, either individually or collectively, to the overall objective of Article 7 each has a different role and purpose. At the same time, a number of the individual provisions are also closely linked.

In principle, the provisions could be analysed at different levels. For example the assessment could be provided at the level of the individual paragraph, for example:

- Article 7(2) allows Member States to reduce the required energy saving target by up to 25% through the use of exemptions.

Alternatively the assessment could be carried out for specific provisions associated with the respective paragraph. For Article 7(2), these are:

- Slow start: Member States can calculate the required target by using values of 1% in 2014 and 2015; 1.25 % in 2016 and 2017; and 1.5 % in 2018, 2019 and 2020.
- Exclude parts of the EU ETS sector: Member States can exclude energy used in industrial activities listed in Annex I to Directive 2003/87/EC.

- Supply side savings: Member States can count energy savings achieved in the energy transformation, distribution and transmission sectors.
- Early action: Member States can count savings from measures implemented after 31 December 2008 that continue to have an impact in 2020.

In the former case, the assessment would analyse the rationale for, and the use of, the 25% exemption. In the latter case, the assessment would analyse the rationale for, and use of, for example, supply side savings to meet this exemption.

In practice, an assessment at both of these levels is of value to the Commission, since problems can be associated with the general principle reflected in the paragraph, but also the specific provisions.

Therefore, following an initial screening of Article 7/Annex V, a hierarchy of templates was agreed, as described below. The list of templates follows the structure of Article 7 and Annex V in the EED text. This ensures that all aspects of the Article are captured by the review, and allows a quick read across from the text of the Directive to the respective evaluation templates.

This segmentation of Article 7/Annex V means that the level of information available, and level of analysis that was possible, varied by provision – and not all provisions could be assessed in the same level of detail. In practice, this means that some of the templates have more detail than others, but each follows a consistent template.

Table 13: Hierarchy of templates

Provision	Detail	Reference
Target		
Energy saving target and its calculation	That target shall be at least equivalent to achieving new savings each year from 1 January 2014 to 31 December 2020 of 1.5% of the annual energy sales to final customers of all energy distributors or all retail energy sales companies by volume, averaged over the most recent three-year period prior to 1 January 2013.	7(1)
Exclusion from the calculation energy generation for own use	[energy volumes transformed on site and used for own-use, and those that are used for the production of other energy forms for non-energy use, are excluded]	7(1)
Exclusion from the calculation transport energy consumption	The sales of energy, by volume, used in transport may be partially or fully excluded from this calculation.	7(1)
Phasing of savings	Member States shall decide how the calculated quantity of new savings [...] is to be phased over the period.	7(1)
Exemptions		
	Subject to paragraph 3, each Member State may:	7(2)
Use of lower annual saving rate	(a) carry out the calculation required by the second subparagraph of paragraph 1 using values of 1 % in 2014 and 2015; 1,25 % in 2016 and 2017; and 1,5 % in 2018, 2019 and 2020;	7(2)
Energy use of Emission Trading Scheme (ETS) industry	(b) exclude from the calculation all or part of the sales, by volume, of energy used in industrial activities listed in Annex I to Directive 2003/87/EC	7(2)
Supply side actions	(c) allow energy savings achieved in the energy transformation, distribution and transmission sectors, including efficient district heating and cooling infrastructure, as a result of the implementation of the requirements set out in Article 14(4), (b) of Article 14(5) and Article 15(1) to (6) and (9) to be counted towards the amount of energy savings required under paragraph 1	7(2)
Early actions	(d) count energy savings resulting from individual actions newly implemented since 31 December 2008 that continue to have an impact in 2020 and that can be measured and verified, towards the amount of energy savings referred to in paragraph 1.	7(2)
Level of exemption	The application of paragraph 2 shall not lead to a reduction of more than 25 % of the amount of energy savings referred to in paragraph 1.	7(3)

Provision	Detail	Reference
Notification of use of exemptions	Member States making use of paragraph 2 shall notify that fact to the Commission by 5 June 2014, including the elements listed under paragraph 2 to be applied....	7(3)
Calculation of impact on use of exemptionsand a calculation showing their impact on the amount of energy savings referred to in paragraph 1.	7(3)
Obligated parties (relevant for the EEOS)		
Obligated parties	Without prejudice to the calculation of energy savings for the target in accordance with the second subparagraph of paragraph 1, each Member State shall, for the purposes of the first subparagraph of paragraph 1, designate, on the basis of objective and non-discriminatory criteria, obligated parties amongst energy distributors and/or retail energy sales companies operating in its territory and may include transport fuel distributors or transport fuel retailers operating in its territory. The amount of energy savings to fulfil the obligation shall be achieved by the obligated parties among final customers, designated, as appropriate, by the Member State, independently of the calculation made pursuant to paragraph 1, or, if Member States so decide, through certified savings stemming from other parties as described in point (b) of paragraph 7.	7(4)
Savings required by obligated parties	Member States shall express the amount of energy savings required of each obligated party in terms of either final or primary energy consumption. The method chosen for expressing the required amount of energy savings shall also be used for calculating the savings claimed by obligated parties. The conversion factors set out in Annex IV shall apply.	7(5)
Measurement		
Measurement methods	Member States shall ensure that the savings stemming from paragraphs 1, 2 and 9 of this Article [...] are calculated in accordance with Annex V(1) and (2).	7(6)
	<p>1. Methods for calculating energy savings for the purposes of Article 7(1) and (2), and points (b), (c), (d), (e) and (f) of the second subparagraph of Article 7(9), and Article 20(6).</p> <p>Obligated, participating or entrusted parties, or implementing public authorities may use one or more of the following methods for calculating energy savings:</p> <ul style="list-style-type: none"> a) deemed savings, by reference to the results of previous independently monitored energy improvements in similar installations. The generic approach is termed 'ex-ante'; b) metered savings, whereby the savings from the installation of a measure, or package of measures, is determined by recording the actual reduction in energy use, taking due account of factors such as additionality, occupancy, production levels and the weather which may affect consumption. The generic approach is termed 'ex-post'; c) scaled savings, whereby engineering estimates of savings are used. This approach may only be used where establishing robust measured data for a specific installation is difficult or disproportionately expensive, e.g. replacing a compressor or electric motor with a different kWh rating than that for which independent information on savings has been measured, or where they are carried out on the basis of nationally established methodologies and benchmarks by qualified or accredited experts that are independent of the obligated, participating or entrusted parties involved; d) surveyed savings, where consumers' response to advice, information campaigns, labelling or certification schemes, or smart metering is determined. This approach may only be used for savings resulting from changes in consumer behaviour. It may not be used for savings resulting from the installation of physical measures. 	Annex V (1)

Provision	Detail	Reference
Additionality	<p>2. In determining the energy saving for an energy efficiency measure for the purposes of Article 7(1) and (2), and points (b), (c), (d), (e) and (f) of the second subparagraph of Article 7(9), and Article 20(6) the following principles shall apply:</p> <p>a) credit may only be given for savings exceeding the following levels:</p> <p>i. Union emission performance standards for new passenger cars and new light commercial vehicles following the implementation of Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO₂ emissions from light-duty vehicles (1) and Regulation (EU) No 510/2011 of the European Parliament and of the Council of 11 May 2011 setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to reduce CO₂ emissions from light-duty vehicles (2), respectively;</p> <p>ii. Union requirements relating to the removal from the market of certain energy related products following the implementation of implementing measures under Directive 2009/125/EC;</p>	Annex V (2)(a)
Climatic variations	b) to account for climatic variations between regions, Member States may choose to adjust the savings to a standard value or to accord different energy savings in accordance with the temperature variations between regions;	Annex V (2)(b)
Materiality	c) the activities of the obligated, participating or entrusted party must be demonstrably material to the achievement of the claimed savings;	Annex V (2)(c)
Double counting	d) savings from an individual action may not be claimed by more than one party;	Annex V (2)(d)
Lifetime of savings	e) calculation of energy savings shall take into account the lifetime of savings. This may be done by counting the savings each individual action will achieve between its implementation date and 31 December 2020. Alternatively, Member States may adopt another method that is estimated to achieve at least the same total quantity of savings. When using other methods, Member States shall ensure that the total amount of energy savings calculated with these other methods does not exceed the amount of energy savings that would have been the result of their calculation when counting the savings each individual action will achieve between its implementation date and 31 December 2020. Member States shall describe in detail in their first National Energy Efficiency Action Plan according to Annex XIV to this Directive, which other methods they have used and which provisions have been made to ensure this binding calculation requirement; and	Annex V (2)(e)
Measures with aim to result in lasting transformation	f) actions by obligated, participating or entrusted parties, either individually or together, which aim to result in lasting transformation of products, equipment, or markets to a higher level of energy efficiency are permitted; and	Annex V (2)(f)
Quality standards	g) in promoting the uptake of energy efficiency measures, Member States shall ensure that quality standards for products, services and installation of measures are maintained. Where such standards do not exist, Member States shall work with obligated, participating or entrusted parties to introduce them.	Annex V (2)(g)
Measurement, control and verification systems	They shall put in place measurement, control and verification systems under which at least a statistically significant proportion and	7(6)

Provision	Detail	Reference
	representative sample of the energy efficiency improvement measures put in place by the obligated parties is verified.	
Independent measurement, control and verification	That measurement, control and verification shall be conducted independently of the obligated parties.	7(6)
EEOS		
	Within the energy efficiency obligation scheme, Member States may:	7(7)
Social aim	(a) include requirements with a social aim in the saving obligations they impose, including by requiring a share of energy efficiency measures to be implemented as a priority in households affected by energy poverty or in social housing;	7(7)
Energy service providers	(b) permit obligated parties to count towards their obligation certified energy savings achieved by energy service providers or other third parties, including when obligated parties promote measures through other State-approved bodies or through public authorities that may or may not involve formal partnerships and may be in combination with other sources of finance. Where Member States so permit, they shall ensure that an approval process is in place which is clear, transparent and open to all market actors, and which aims at minimising the costs of certification;	7(7)
Banking	(c) allow obligated parties to count savings obtained in a given year as if they had instead been obtained in any of the four previous or three following years.	7(7)
Publishing of savings	Once a year, Member States shall publish the energy savings achieved by each obligated party, or each sub-category of obligated party, and in total under the scheme.	7(8)
	Member States shall ensure that obligated parties provide on request:	
Customer information	(a) aggregated statistical information on their final customers (identifying significant changes to previously submitted information); and	7(8)
Customer consumption	(b) current information on final customers' consumption, including, where applicable, load profiles, customer segmentation and geographical location of customers, while preserving the integrity and confidentiality of private or commercially sensitive information in compliance with applicable Union law.	7(8)
	Such a request shall be made not more than once a year.	
Alternative policy measures		
Use of alternative policy measures	As an alternative to setting up an energy efficiency obligation scheme under paragraph 1, Member States may opt to take other policy measures to achieve energy savings among final customers, provided those policy measures meet the criteria set out in paragraphs 10 and 11. The annual amount of new energy savings achieved through this approach shall be equivalent to the amount of new energy savings required by paragraphs 1, 2 and 3. Provided that equivalence is maintained, Member States may combine obligation schemes with alternative policy measures, including national energy efficiency programmes.	7(9)
Notification of alternative policy measures	Member States shall notify to the Commission, by 5 December 2013, the policy measures that they plan to adopt for the purposes of the first subparagraph and Article 20(6), following the framework provided in Annex V(4), and showing how they would achieve the required amount of savings.	7(9)
	In the case of the policy measures referred to in the second subparagraph and in Article 20(6), this notification shall demonstrate how the criteria in paragraph 10 are met.	7(9)
	In the case of policy measures other than those referred to in the second subparagraph or in Article 20(6), Member States shall explain how an equivalent level of savings, monitoring and verification is achieved. The Commission may make suggestions for modifications in the three months following notification.	7(9)
Criteria for policy measures		

Provision	Detail	Reference
	Without prejudice to paragraph 11, the criteria for the policy measures taken pursuant to the second subparagraph of paragraph 9 and Article 20(6) shall be as follows:	7(10)
Intermediate periods	(a) the policy measures provide for at least two intermediate periods by 31 December 2020 and lead to the achievement of the level of ambition set out in paragraph 1;	7(10)
Responsibilities	(b) the responsibility of each entrusted party, participating party or implementing public authority, whichever is relevant, is defined;	7(10)
Determination of energy savings	(c) the energy savings that are to be achieved are determined in a transparent manner;	7(10)
Amount of energy savings	(d) the amount of energy savings required or to be achieved by the policy measure are expressed in either final or primary energy consumption, using the conversion factors set out in Annex IV;	7(10)
Energy saving methods and principles	(e) energy savings are calculated using the methods and principles provided in Annex V(1) and (2);	7(10)
	(f) energy savings are calculated using the methods and principles provided in Annex V(3);	7(10)
Annual report	(g) an annual report of the energy savings achieved is provided by participating parties unless not feasible and made publicly available;	7(10)
Monitoring	(h) monitoring of the results is ensured and appropriate measures are envisaged if the progress is not satisfactory;	7(10)
Control system	(i) a control system is put in place that also includes independent verification of a statistically significant proportion of the energy efficiency improvement measures;	7(10)
Annual trend	(j) data on the annual trend of energy savings are published annually.	7(10)
Calculation of energy savings of tax measures - additionality	3. In determining the energy saving from policy measures applied under point (a) of the second subparagraph of Article 7(9), the following principles shall apply: (a) credit shall only be given for energy savings from taxation measures exceeding the minimum levels of taxation applicable to fuels as required in Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity (1) or in Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax (2);	7(11) Annex V (3)(a)
Calculation of energy savings of tax measures - elasticities	a) recent and representative official data on price elasticities shall be used for calculation of the impact; and	Annex V(3)(b)
Calculation of energy savings of tax measures – accompanying taxation policy instruments	b) the energy savings from accompanying taxation policy instruments, including fiscal incentives or payment to a fund, shall be accounted separately.	Annex V(3)(c)
Policy overlaps		
Policy overlaps	Member States shall ensure that when the impact of policy measures or individual actions overlaps, no double counting of energy savings is made.	7(12)

For each of the provisions listed above, we have completed a new assessment template. When compiling the results we considered issues relevant to the respective 'cluster' of related templates. This reflects the fact that some of the individual provisions are closely related to each other, and have a similar rationale and objective. It therefore makes sense that some of these provisions are grouped together in a cluster.

5.1.3 Limitations and uncertainties

The findings presented below are based on the analysis provided by the project team of the notifications that have been submitted by Member States in relation to Article 7. Whilst we are confident that the conclusions and recommendations represent an accurate representation of the analysis that has been

carried there are some limitations, and uncertainties associated with the analysis, and the results should be viewed in this context. The main limitations and uncertainties are:

- **Notified evidence** – the analysis has only taken into account the information that has been notified by Member States, and has not taken into account information that was not notified. It is possible that if wider sources of evidence were drawn upon the conclusions may differ. This is particularly the case for those issues where there were large information gaps.
- **Reconstructed rationale** – for several provisions, it has been necessary for the project team to infer the rationale for the provisions, as this was not documented anywhere. In most cases we have reasonable confidence that the inferred rationale is a realistic representation of the actual rationale. However, this cannot be assured in all cases, and there may be alternative explanations of the rationale for certain provisions.
- **Preliminary findings** - the findings and overall conclusions presented in this chapter⁴⁶ are based on analysis of notifications submitted by Member States up to 1 May 2015. The analysis is based largely on the Article 7 notifications that were due by 5 December 2013, and relevant additional information on Article 7 provided in the National Energy Efficiency Action Plans that were due by 30 April 2014. The analysis has not been updated to take into account further information provided by Member States more recently, for example as part of the process of the structured dialogue with the Member States. However the validity of the overall results were reviewed in the light of the additional information submitted by the cut-off date of 5 October 2015 (through the 2015 Annual Report and the structured dialogue with the Member States). Even the number of Member States providing insufficient information or inadequate information reduced, no change to the conclusions of the present chapter were however identified by the project team (i.e. the issues with implementation still exist). A text box has been added to indicate the validity of the conclusions after analysis of each of the provisions in the next section.

5.2 Results

In this section we distil the results from the detailed analysis of each provision, which is found in Appendix 6. These results complement those presented in Section 3 which described the overall expected energy savings from Article 7, and those presented in Section 4 and Appendix 4 which described the implementation issues relating to specific policy instruments.

We have sought to answer each of the specific study questions that were set out in the Terms of Reference. These questions broadly map onto the different provisions within Article 7, as well as considering some cross cutting issues which are applicable to several provisions (e.g. harmonisation of requirements). The questions therefore explore the effectiveness of the most important requirements within Article 7/Annex V, to understand if the provisions have been implemented as expected, and to identify where opportunities may exist to improve future implementation.

The analysis is focused on the implementation of Article 7 itself. However, some of the findings also relate to the monitoring of implementation. Where data is lacking to effectively monitor the implementation of the different requirements, this provides a barrier to understanding how well the requirements have actually been implemented. Hence it is necessary to address issues with monitoring, so that evidence is available to assess the effectiveness of implementation more easily in the future.

5.2.1 Should the possibility for Member States to choose between establishing energy efficiency obligations schemes and/or alternative approach under Article 7(9) be retained?

Supplementing or substituting EEOS with alternative policy measures allows Member States to employ the mix of policies that best suit their national circumstances. This helps Member States to keep their implementation costs to a minimum and achieve the energy savings target in the most cost-effective way. It also allows Member States to continue to use the more 'traditional' energy efficiency policy instruments that they have greater experience with. In particular, those Member States with considerable amounts of EU funding (cohesion countries) for energy efficiency programmes can count the energy savings from these programmes towards their target.

⁴⁶ This is not the case for the analysis in Section 2, 3 and 4 which includes information notified by Member States more recently, up to the 5 October 2015.

However, the use of multiple instruments can also present some difficulties, both in terms of the additional complexity associated with the implementation and enforcement of the different instrument types, and the accounting of the impacts and verification of the savings (i.e. dealing with policy overlaps).

Conclusion: Use of alternative measures offers flexibility to Member States in how they deliver their energy savings, and a large number of Member States have taken up this flexibility. However, this also increases the complexity⁴⁷ associated with meeting the requirements of Article 7, as each of the alternative measures has different requirements that have to be met, so notifications involving multiple different types of measures are more complex to prepare than notifications involving a single policy type.

The structured dialogue with the Member States confirms the conclusion – as indicated in Section 2.3.3, alternative policy measures under Article 7(9) contribute 667% of the total savings proposed. Bulgaria, Denmark, Luxembourg and Poland are the only countries that notified EEOs as the only measure to reach the savings target under Article 7. All other Member States propose the use of alternative policy measures. In total 477 policy measures were proposed by 28 Member States.

5.2.2 What could be the potential consequences (risk/benefits) for reaching the energy savings target of keeping Article 7(1) - flexibilities (excluding transport sector or energy generation for own use from the baseline)?

All but one Member State have excluded energy consumption from transport when calculating their energy savings target⁴⁸. This is broadly consistent with the original Impact Assessment of the Energy Efficiency Directive⁴⁹ which assumed that all Member States would exclude transport energy consumption when calculating their energy savings targets. As a result, the fact that most Member States have made use of this flexibility does not present a risk to the delivery of the required level of energy savings from Article 7 – since this was allowed for in the initial target setting.

The main benefit of keeping the flexibility is that it protects those Member States with a disproportionate level to transport energy consumption from being unfairly disadvantaged. However, these Member States would only be disadvantaged if i) energy savings from transport were not allowed to contribute to the delivery of the target (this is not the case) and, ii) if it were more difficult to deliver energy savings in the transport sector than for other energy end-use sectors (this could be questioned). In addition, the exclusion of transport has not been restricted to just those Member States with a disproportionate level of transport energy consumption. On this basis, we consider there is only a weak rationale for allowing the continued use of this flexibility.

Article 7(1) requires that Member States calculate their energy saving targets on the basis of a baseline level of final energy sales. The amount of final energy sales is less than final energy consumed as it does not include energy generation for own use which is not sold by energy distributors or retailers. Defining the target based on energy sales means that those countries with high or disproportionate levels of energy generation for own use are not unfairly disadvantaged. This may be the case if it was more difficult to influence energy savings by end users who generate energy for own use than for end users who purchase all of their energy from energy companies. In practice, this assumption could be questioned. In addition, own energy use is not captured as a separate field in the Eurostat statistics⁵⁰ and Member States have not calculated and/or reported their estimated own energy use consistently. This makes it more difficult to check that the correct level of final energy sales has been used.

⁴⁷ For example, Article 7 and Annex V include some requirements that are specific to some policy instrument types both not others (see for example the requirements relating to additionality in Section 5.2.4.2). Also the calculation methodologies are more applicable to some actions than other (See Section 5.2.4.1). Therefore, allowing a range of alternative policy types can increase the complexity of the notification requirements as it requires each of the individual requirements for each of the different types of policies to be met. It also makes the correct implementation of other requirements more important (for example, double counting - Section 5.2.4.4).

⁴⁸ This does not take into account the two Member States that have not provide information on whether they exclude transport or not.

⁴⁹ The likely savings generated by Article 7 have been estimated in the impact assessment SEC(2011) 779 produced in 2011 based on the PRIMES model run using 2009 data and the E3ME model. The Impact Assessment assumed that, by 2020, annual savings in primary energy of between 108 Mtoe and 1 Mtoe per year will be delivered by Article 7. This figure was based on the Commission's proposal and does not include exemptions and policy overlaps. See Impact Assessment accompanying the document Directive of the European Parliament and of the Council on energy efficiency and amending and subsequently repealing Directives 2004/8/EC and 2006/32/EC (COM(2011) 370 final) (SEC(2011) 780 final). Online: http://ec.europa.eu/energy/efficiency/eed/doc/2011_directive/sec_2011_0779_impact_assessment.pdf page 32.

⁵⁰ The Eurostat statistics already exclude deliveries for transformation and/or own use of the energy producing industries, as well as network losses.

Conclusion: the fact that most Member States have made use of this flexibility does not present a risk to the delivery of the required level of energy savings from Article 7 – since this was allowed for in the initial target setting. Even so, there does not appear to be a strong justification for its continued use as a mechanism to protect Member States, with a disproportionate level of transport energy consumption and/or energy generation for own use, from being unfairly disadvantaged.

As indicated in Section 2.1.1, all but one Member States has excluded energy consumption from transport when calculating its energy savings target and half of the Member States exclude energy generation for own use.

5.2.3 What could be the potential consequences (risk/benefits) for reaching the energy savings target of keeping Article 7(2) – exemptions?

The exemptions have been used extensively by almost all Member States, with most (24) using exemptions up to the 25% limit. This outcome is broadly consistent with the original Impact Assessment of the Energy Efficiency Directive which assumed that all Member States would use the full 25% exemptions. As a result, the fact that most Member States have made use of this flexibility does not present a risk to the delivery of the required level of energy savings from Article 7 – since this was allowed for in the initial target setting.

The initial rationale for including these exemptions in Article 7 is that it provides some flexibility to Member States so that specific national circumstances are not penalised. Specifically:

- lower annual savings rate: allows time for the development of national energy efficiency markets;
- ETS industry energy use: countries are not penalised for having larger shares of ETS industries in their overall final energy use;
- supply side savings actions: countries are not penalised for taking supply side actions which reduce the level of final energy consumption;
- early actions: countries are not penalised for already taking significant actions to reduce energy consumption from 1 January 2009.

Whilst the rationale for the inclusion of these exemptions remains valid, in practice the use of exemptions has not necessarily followed expectations. In particular, use of the exemptions has been made by almost all Member States⁵¹. Furthermore, the use of specific exemptions appears to relate more to the effort involved in the use of the exemption, rather than the national circumstances of the Member States. For example, the use of a lower annual savings rate was used extensively by Member States, including those Member States with already well established energy efficiency markets. On this basis the exemptions appear to have been used as a means of reducing the overall energy savings target, rather than as an exemption for any specific national circumstances.

Whilst conditions are applied to all of the individual exemptions, the collective use of the different exemptions means that it is not difficult for most Member States to justify exemptions up to the full 25% limit. Indeed, the use of the lower annual savings rate alone results in an exemption of just under 21%, and there are no conditions associated with this exemption that reflect any specific national circumstances (unlike the other exemptions).

Conclusion: The exemptions reduce the target considerably (by around 24%). However, since this was allowed for in the initial target setting, this does not present a risk to the delivery of the required level of energy savings from Article 7. At the same time, the exemptions do not in all cases appear to have been used as originally expected. While the exemptions relating to ETS industry energy use, supply side savings, and early actions have conditions which reflect national circumstances, the use of the lower annual savings rate has no such conditions, and was used extensively by Member States.

The structured dialogue with the Member States confirms the conclusion. The analysis in Section 2.2.2 shows that even after the structured dialogue with the Member States, 24 Member States use the full 25% limit for exemptions, while three other Member States use the exemptions, but below the 25% limit. Only one Member State has decided to make no use of the exemptions. The use of lower

⁵¹ While this is consistent with the assumption that was made in the calculation of the energy savings in the impact assessment it is not necessarily consistent with the original sentiment of the exemptions.

annual savings is still extensively used by Member States – 21 Member States have reported this, including those Member States with already well established energy efficiency markets (like UK, Ireland and Italy). The exemptions reduce the target considerably by around 24% in total.

5.2.4 Are provisions of Article 7 and Annex V properly defined for allowing Member States to set their national methodologies? What are the shortcomings for them being properly put in place at national level?

Article 7(6) requires that Member States ensure that the savings stemming from the notified policy measures are calculated in accordance with the points (1) and (2) of Annex V. Annex V sets out a number of methods and principles for calculating the impact of EEOS or alternative policy measures. Our conclusions from our analysis of the main requirements are set out below.

5.2.4.1 Measurement methods – Annex V(1)

The overall rationale for this group of requirements is to help ensure that the savings calculated by Member States are robust and based on credible methodologies. It stipulates the methods themselves, which *may* be used, as well as certain **requirements** associated with the methodologies:

- for **deemed savings** – that the values are based on the results of previous independently monitored energy improvements in similar installations;
- for **metered savings** – that savings *take due account* of certain factors which can lead to differences in the level of savings from one application to the next (e.g. occupancy levels);
- for **scaled savings** – the savings are estimated on the basis of nationally established methodologies and benchmarks by qualified or accredited experts;
- for **surveyed savings** - only be used for savings resulting from changes in consumer behaviour.

There is insufficient information in the notifications submitted by Member States to determine if the requirements associated with Annex V(1) have been effective. This does not mean, necessarily, that the provision has been ineffective and the savings calculated using the methods are not robust and credible – there is insufficient information to determine this either way. However, what is more clear is that the requirements have not been effective in stimulating Member States to be open and transparent in how they calculated their savings (or planned to calculate their savings) using the respective measurement methods. For example, of the nine Member States that notified that they had applied a scaled savings approach, all nine failed to notify information on how the requirements associated with the methods were met (e.g. how the energy savings estimates were based on nationally established methodologies and benchmarks by qualified or accredited experts). However, this may reflect how the notification requirement is defined: ‘Member States are required to include *details on their calculation methodology*’. Annex V does not specify though what these details should be. The JRC (2015)⁵² report shares this analysis and proposes to provide Member States with ‘a definition of the main correction factors to be considered to pass from gross to net energy savings under top-down and bottom-up methodologies’.

The potential shortcomings with the provisions as currently defined are:

- The provision currently specifies certain requirements associated with the different measurement methods which are designed to improve the robustness of the estimates derived from these methods. However, these requirements, could arguably be better specified in places to more effectively ensure the credibility of the savings.
- The provisions, as currently worded, do not provide clarity on the characteristics that need to be described by Member States when specifying the measurement methods that are used, including, for example, the values for energy savings. As a result there is a lack of transparency provided in Member States’ notification on the methods that they have used.
- Annex V lists four possible measurement methods, some of which can be used for ex-ante savings estimates, some for ex-post estimates, and some for both. The deemed approach and scaled approach can be used for both ex-ante and ex-post savings estimates, whereas the metered

⁵² JRC (2015): Report on Common Methods and Principles for Calculating the Impact of Energy Efficiency Obligation Schemes or Other Policy Measures under Article 7 of the Energy Efficiency Directive.

approach is only for ex-post savings estimates. The surveyed approach is typically ex-post, although previous results could also be used to inform an ex-ante estimate. It is not always clear from Member States notifications if the measurement methods have been used to calculate ex-ante savings, or are intended for use to calculate savings ex-post (or both). This can lead to inconsistency in Member States notifications. For example, where a Member State notifies that it has used a deemed approach, it is not always clear whether it is notifying the method it *has used*, to estimate its *expected savings*, or the methods it *will use* to calculate *delivered* savings in the future⁵³. This may become more clear when Member States report the actual savings from measures in their Annual Reports, although it will still be necessary to differentiate between the methods that have been used to calculate the actual (ex-post) savings, and the methods used to estimate future expected savings (ex-ante).

Conclusion: there is scope for the provisions to be more clearly specified to reduce ambiguity, enhance overall effectiveness, and increase the transparency of the approaches used. This may include providing technical guidance on the use of the different approaches.

The structured dialogue with the Member States confirms the conclusion. The analysis of the replies provided to the structured dialogue with the Member States shows that information gaps within Member States' measurement methodologies remain – the data on measurement methods was analysed per policy measure and the results in the database indicate that even after the structured dialogue with the Member States, the requirements of the Annex V(1) have not been sufficiently described by the Member States.

5.2.4.2 Additionality - Annex V (2)(a) and (3)(a)

The rationale for including the provision in Article 7, is to ensure that the savings notified by Member States are stimulated by national actions, and are additional to existing EU policies. This ensures that the reported savings from Member States are credible.

Article 7(6) and Annex V(2)(a) and (3)(a) require that when calculating energy savings, only the savings that go beyond the minimum requirements originating from specific EU legislation can be counted as contributing towards the energy savings target.

These laws are:

- For products – the requirements established by implementing measures under the Ecodesign Directive (2009/125/EC).
- For new passenger cars and light commercial vehicles – the emission performance standards established by Regulations 443/2009 and 510/2011.
- For taxes – the minimum levels of taxation applicable to fuels as required in Council Directive 2003/96/EC on restructuring the Community framework for the taxation of energy products and electricity or in Council Directive 2006/112/EC on the common system of value added tax.

In addition, the Directive imposes additional limitations with regards to the counting of savings from certain alternative measures. Specifically:

- Standards and norms that aim at improving the energy efficiency of products and services, including buildings and vehicles, except where these are mandatory and applicable in Member States under Union law.
- Energy labelling schemes, with the exception of those that are mandatory and applicable in the Member States under Union law.

According to the Commission guidance *'The qualification related to 'mandatory and applicable in Member States under Union law' means that, when concrete energy performance levels or labelling schemes are laid down in EU legislation, then the energy savings stemming from individual actions that result from automatic transposition of these levels cannot be counted as an alternative policy measure. It is only if the nationally established levels are more ambitious than those required at EU level – as far as this is legally possible – that the difference between the mandatory EU levels and the concretely established levels can be counted'*.

⁵³ In this respect there are synergies with other requirements under Annex V. Specifically, as part of Annex V part 4(j) and (k) Member States are required to provide information on monitoring and verification of savings.

Thus, as currently defined, the treatment of additionality is based on:

- Conditions relating to specific EU laws e.g. Ecodesign Directive (2009/125/EC).
- Conditions relating to specific types of policy measure e.g. Standards and norms.
- Conditions relating to both EU laws and specific policies e.g. Energy and CO₂ taxes and the energy taxation directive (2003/96/EC).

In this context, it would perhaps not be surprising if Member States are confused as to what EU laws and/or policy instruments additionality is concerned with. This is also a conclusion of the JRC report⁵⁴ on calculation methods in the context of Article 7 which states that 'a definition of additionality and more guidance on how additional energy savings can be estimated could be provided to Member States'.

This may, in part, explain the actual outcome: there is a risk that a large share of the savings will not be additional – the analysis in Section 3.3.2 illustrates that 14% of the savings are at a high risk of not being additional with a further 24% being at a moderate risk of not being additional. There was insufficient information available in the notifications submitted by Member States to determine if the provisions have been effective in ensuring that only savings additional to minimum EU requirements on energy performance are accounted for. The risk assessment carried out in Section 3.3.2 shows that for 19% of the total savings it is unclear whether or not additionality has been ensured.

On the other hand, Member States have more clearly described their approach in the case of energy and CO₂ taxes. While in part this may relate to the calculation methodology, where it is relatively easy to address additionality to the Council Directive 2003/96/EC. Because in this case both the policy instrument and the EU law are clearly specified, it reduces any ambiguity to Member States as to what is required.

The potential shortcomings with the provisions as currently defined are:

- **Uncertainty or ambiguity about the policies that need to be considered when assessing additionality**

The provisions, as currently defined, are not clear as to which EU wide policies should be considered when assessing additionality. The provisions list some specific policies, however, it is unclear how overlaps with other EU policies should be dealt with. For example, how to account for the EPBD (2010/31/EU) when assessing policies targeting the building sector⁵⁵, or how to deal with savings from the EU Emissions Trading System. This is a complex issue, and to help provide some clarity on the issue the Commission provided clarification⁵⁶ to members of the EED Committee. However, further clarity and guidance for Member States would ensure a more consistent and comparable treatment of the issue by Member States.

A further complication may arise when looking to 2030⁵⁷, since the policy landscape has developed further still. Therefore, determining what the additional fraction of savings should be delivered by Article 7 will require further work.

- **Treatment of free riders**

In addition to savings brought about by EU policies, it is also important to consider what energy savings actions would have happened anyway, and to what extent the estimated savings include these free-riders. It is important to note that this issue is similar to that of materiality – since this requires Member States to demonstrate that the policy has had a material impact on the take up of the measures.

In considering free riders it is once again useful to reflect on the original target setting for the energy savings from Article 7. In this target setting it is reasonable to assume that in the absence of any further policy interventions a certain level of 'autonomous' energy savings would have happened anyway – since a number of energy efficiency measures deliver net financial savings, which provides an incentive for take up even without policies. On this basis, when the original target was set for the savings that need to be delivered by Article 7, it can be assumed that these were additional to any 'autonomous' energy savings. On this basis it is important that free riders are taken into account, and the savings are

⁵⁴ JRC (2015): Report on Common Methods and Principles for Calculating the Impact of Energy Efficiency Obligation Schemes or Other Policy Measures under Article 7 of the Energy Efficiency Directive.

⁵⁵ The Commission has recently provided some further clarification on this issue. On the 16 of September 2015 the Commission provided a clarification of specific aspects of Art. 7 EED to the Members of the EED Committee, which included how to deal with the issue of additionality when assessing savings from building codes.

⁵⁶ Clarification of specific aspects of Art. 7 EED provided to the Members of the EED Committee, 16/09/2015.

⁵⁷ The EED review will consider more fully energy savings from a 2030 perspective.

'additional' to what would have happened anyway. However, Article 7/Annex V, as currently formulated, does not adequately address the issue of free riders.

- **Calculation of correction for additionality**

Even with greater clarity on the above methodological aspects, this would not address the question of how to correctly address additionality in the calculation of the energy savings. Further guidance may be required to address this point, including specific examples of how to take it into account. This would also emphasize those policy measures where it is relevant (and those where it is not).

Conclusion: there is scope for the provisions to be more clearly specified to reduce ambiguity, enhance overall effectiveness, and increase the transparency of the approaches used. This would include clarifying which specific EU policies need to be considered in relation to additionality, as well as providing clarity on the need to account for free-riders.

The structured dialogue with the Member States confirms the conclusion of the provision and its shortcomings. Even though, as indicated in Section 3.3.2 the information gaps related to Member States' approaches in addressing additionality have reduced due to the structured dialogue with the Member States process, these remain in regards to a large number of Member States and their policy measures. For example, there are still six Member States that provide no information or almost no information on additionality, and further 13 Member States only state that additionality to minimum EU requirements will be ensured (without however providing any further information how this is done). Moreover, only four Member States mentioned in their notifications that free-riders will be taken into account, other providing no information.

The analysis further identified that even after the structured dialogue with the Member States process, only 6 Member States have specified how they plan to address additionality in the savings calculations. Other Member States provide no information on calculation approaches. This shows, as concluded before, that further guidance may be required how to correctly address additionality in the calculation of energy savings.

5.2.4.3 Materiality - Annex V (2)(c)

The requirement was introduced to ensure that the activities of the party in question have contributed to the realisation of the specific individual action, and that the subsidy or involvement of the obligated, participating or entrusted party has not had what is clearly only a minimal effect in the end user's decision to undertake the energy efficiency investment. The provision therefore provides greater confidence that the energy savings have actually arisen from the specific notified policy interventions.

Initial screening of Member States' notifications showed that 13 Member States provided no information on materiality or insufficient information to allow materiality to be assessed. For 24% of the energy savings it is not clear whether there is a risk of non-materiality (see Section 3.3.2. Lack of information therefore limits the scope of the assessment of how effective the provision has been in practice. That said, where information was provided, there are no grounds to believe that the provision was not effective – only minor issues with materiality were identified and only 6% of the savings are at risk of non-delivery due to potential materiality issues (see Section 3.3.2).

The potential shortcomings with the provisions as currently defined are:

- The requirement to demonstrate materiality is applicable to all measures (except for energy and CO₂ taxes). However, the relevance of the materiality criterion differs between measure types. Where the materiality criterion is most relevant is for financing schemes and instruments, fiscal incentives, energy labelling schemes, and training and education programmes. In each of these cases though the approach to demonstrate materiality may differ. In all cases, whether an action is material or not is a subjective judgement, and therefore whilst the requirement may stimulate Member States to consider the issues of materiality, having certainty that actions truly are material is more ambitious and Member States seem to have problems in demonstrating the requirement.

Conclusion: The implementation of the provision can be improved by more clearly specifying in what specific circumstances it is applicable and how the materiality requirement could be demonstrated in each of the circumstances.

The structured dialogue with the Member States confirms the conclusion. As indicated in Section 0, this process has somewhat clarified Member States' approaches on materiality, however information gaps remain. Specifically, there are still five Member States that have not provided information on materiality for any of their policy measures, with a further three Member States stating that materiality will be taken into account (without providing any further information). While overall Member States have sufficiently demonstrated materiality in regards to the financing schemes, no Member States attempted to demonstrate materiality in regards to energy labelling schemes and training and education programmes. For regulations and voluntary agreements and standards and norms, Member States either provide no information, state that it is not applicable or describe the mandatory nature of these measures. Therefore the implementation of the provision can be further improved by more clearly specifying in what specific circumstances it is applicable and how the materiality requirement could be demonstrated in each of the circumstances.

5.2.4.4 Double counting – Article 7(12), Annex V (2)(d)

The provisions requires Member States to ensure that when the impact of policy measures or individual action overlaps, no double counting of energy savings is made. However, there is no specific requirement to notify how overlaps/double counting is addressed.

We therefore consider that the provisions were partly effective in raising awareness on the potential for double counting of savings due to policy overlap. Even though most Member States indicated that they were aware of the need to prevent double counting due to policy overlap, they did not provide enough information for all notified policy measures on how they ensure that savings were not double counted. 15 of the 28 Member States provide evidence that gave confidence that double counting due to policy overlap was prevented for all of the notified savings.

The potential shortcomings with the provisions as currently defined are:

- The requirement is to ensure policy overlaps are considered, but not to demonstrate or report how this is done, or planned to be done. It is therefore extremely difficult to monitor and enforce the implementation of the provision. Including a requirement for Member States to demonstrate how they will ensure overlaps are considered would allow better monitoring of the effectiveness of the provision. Whether this would lead to a more effective outcome (i.e. in terms of actually addressing overlaps) is less clear.

Conclusion: It is not clear how effective the provision has been in practice. Revisions to require Member States to state more clearly their approach will improve understanding, but the overall outcome in terms of credibility of savings may not be greatly affected.

The structured dialogue with the Member States clarified Member States' approaches on double counting.

5.2.4.5 Lifetimes - Annex V (2)(e)

As several energy saving actions continue to generate savings beyond 2020, this requirement was introduced to help differentiate between savings that will be achieved within the 2014-2020 period, and those that will be achieved beyond 2020. This will reduce the likelihood of Member States claiming that all energy savings will be achieved within the 2014-2020 period, and ensure that all energy savings notified by Member States will contribute to their Article 7 target.

The rationale for offering the 'straightforward method' as the default method is its simplicity, however the flexibility of choosing other methods is retained (e.g. for countries that have their EEOS – using other calculation methods – in operation before the EED).

Overall, we conclude the provision was effective in inducing Member States to use justifiable/realistic lifetimes but not effective in stimulating Member States to provide sufficiently detailed information on lifetimes. This, in case of some Member States, may be a consequence of the lack of any list of individual savings actions with standardised lifetimes.

The main reasons for the failure to define exact lifetimes for each individual actions are assumed to be the misbelief by Member States that:

- lifetimes can be stated in general terms ('for most measures it is...');

- reference to EU guidelines is sufficient;
- reference to the use of lifetimes without actually defining them for each action is sufficient.

In addition, lack of information of lifetimes is a direct consequence of the failure of defining the list of individual actions (i.e. a consequence of the insufficient implementation of another provision).

Conclusion: The provision is effective in providing flexibility to those Member States who do not use the straightforward method, and encouraging the use of justifiable lifetimes. However, the level of information was insufficient to assess the overall impacts.

5.2.4.6 Requirement to notify methodology - Annex V(4)

Annex V(4) requires Member States to notify their detailed methodology for the operation of the EEOS and/or alternative policies. It specifies a number of features of the methodology where details need to be provided, including target sectors, obligated parties and eligible measures categories. However, the annex simply lists the different features, without providing any further information on the information that is expected from Member States in their *description* of these features, to satisfy the requirements. For some of these features (e.g. target sector), the required information can be considered relatively self-explanatory, which generally led to a more complete and consistent level of reporting on this feature by Member States. For example, most Member States that notified an energy tax on motor fuel were able to identify the target sector as the transport sector. However, other features of Annex V(4) are less self-explanatory, such as the requirement to describe the calculation methodology, including how additionality and materiality are to be determined and which methodologies and benchmarks are used for engineering estimates. This feature is about the methodologies for calculating energy savings as well as the treatment of specific issues (additionality and materiality) in the calculations. Some Member States responded to this requirement by providing detailed descriptions of their methodologies for each individual policy, some Member States described general methodologies that were applied to all policies, and some Member States provided very little or no information on their methodologies.

This outcome can in part be put down to the fact that Annex V(4) does not set out clear requirements on what information needs to be notified by Member States to demonstrate that they have fulfilled the requirements. As a result, Member States have notified very different information on their methodologies, both in terms of the content and form of the information. This makes it difficult for the Commission to assess the credibility of the methodologies that have been adopted by Member States (and the associated energy savings). It also potentially leads to unnecessary administrative burden with some Member States reporting information that is not required, while at the same time failing to provide information that would demonstrate that other requirements have been met.

Conclusion: Annex V does not specify sufficiently clearly what information Member States are required to notify, or in what format, to demonstrate that the requirements have been fulfilled. This in turn can lead to inconsistent information on the methodologies that have been used, and potentially also unnecessary effort for Member States on the notification of information that is not required.

The structured dialogue with the Member States confirms that the issue still persists even though more clarity on Member States' approaches has been obtained.

5.2.5 Are existing provisions satisfactory in terms of setting the scope for eligible measures under Article 7?

Annex V (4)(e) requires Member States to notify as part of their detailed methodology the eligible measures categories. A clear definition of what is meant by eligible is not provided.

However, it can be interpreted that for a measure to be eligible it needs to satisfy the necessary conditions set out in the Directive. Thus, following the specified definitions:

'Individual action' means an action that leads to verifiable, and measurable or estimable, energy efficiency improvements and is undertaken as a result of a policy of measure (Article 2(19)).

'Policy measure' means a regulatory, financial, fiscal, voluntary or information provision instrument formally established and implemented in a Member State to create a supportive framework, requirement of incentive for market actors to provide an purchase energy services and to undertake other energy efficiency improvement measures.

Eligibility may be defined in relation to whether the policy measures and/or the associated actions satisfies a number of conditions, including:

- energy savings to final consumers (i.e. end use energy savings (Article 7(4))
- additionality (Annex V(2)(a))
- materiality (Annex V(2)(c))

Using this definition, eligibility of actions can be assessed in relation to whether these conditions are met (e.g. whether the action trigger energy savings to final consumer are material and additional). This implies that policy measures, and the associated energy saving actions that do not meet these requirements are not eligible.

One area of uncertainty is with respect to the eligibility of notified measures that have the effect of reducing final energy consumption, but may not have this as the primary policy objective. For example, some policies may have been implemented to deliver one policy objective, such as reduce road congestion, but may, as a result, also deliver end-use energy savings. In line with the Article 7, only those measures that are primarily intended to support end-use energy efficiency are eligible. However, some Member States have still notified such measures.

In the case of renewable energy the Commission's additional clarification of specific aspects of Article 7 of the EED, provided to the Members of the EED Committee (16/09/2015), stated that, in general, renewable energy measures targeting the primary energy consumption do not achieve the energy savings (so are not eligible). Where Member States consider a renewable energy measure to be eligible they should prove that the measure triggers end-use energy savings in line with the definition provided in Article 2(18) (19) and it leads to verifiable and measurable or estimable energy efficiency improvements.

Specific examples of issues with eligibility were discussed further in Chapter 3.

Conclusion: There is scope for the eligibility requirement to be defined much more clearly. In particular, clarification is required in relation to measures that may not have been implemented specifically to deliver end use energy savings, but do still deliver energy savings.

The structured dialogue with the Member States process confirms the relevance of the conclusion (as analysis in Section 3.3.2 shows that still 5% of the policy measures suggested by Member States under Article 7 can be considered ineligible and a further 25% as partly ineligible).

5.2.6 Are the provisions of Article 7 and Annex V feasible, effective and defined accurately enough as regards putting in place proper monitoring, verification, and control systems, and are compliance systems and mechanisms put in place for proper implementation of Article 7?

The provisions have been somewhat effective in ensuring that Member States put in place some monitoring and control systems. All Member States except two have established Monitoring and Verification (M&V) systems for the purpose of monitoring the performance of alternative measures. All but two Member States have notified details of their M&V systems for the monitoring of EEOS; the remaining two Member States are in the process of setting up their M&V systems.

However, there were information gaps in all Member States' notifications. One aspect where the provision could have been more effective is requesting Member States to provide full information on their monitoring and control systems.

An area that performed better was:

- the provision can be considered to be effective in ensuring that measurement, control and verification is conducted independently of the obligated parties (with all of the Member States that have set up the systems notifying this);
- for EEOS, 10 Member States have specified penalties for non-compliance. In one case penalties are in place but it is not clear how high they are. Two Member States are in the process of determining their penalty regimes. Three Member States have no penalties in place.

Specific issues are in the following areas:

- For alternative measures, the use of statistically representative samples is not clear for six Member States as sampling is mentioned but it is not explicitly stated that a statistically representative sample will be analysed. Eight Member States did not state whether or not a statistically representative sample is checked and two Member States do not state that this is the case for all policy measures. Two countries explicitly stated that they did not intend to use a statistically representative sample.
- Audit protocols are established for all alternative policy measures in eight Member States only. For EEOS seven Member States have confirmed that audit protocols are in place.
- Only two countries confirm that penalties are in place for all alternative policy measures. For 14 countries it is not clear or not stated whether penalties have been put in place for alternative measures. Three countries do not state whether penalties are in place for all policy measures or not. Four countries have no penalties in place for alternative measures.
- In regards to the lack of information, it is not clear why Member States have not provided full information on measurement, control and verification systems. It can only be assumed that:
 - Member States have not fully understood the necessary measurement, control and verification requirements, including what is a statistically significant proportion and representative sample.
 - When providing information Member States have, mostly, only strictly followed the notification requirements in Annex V part 4(j) and (k) that require information on monitoring and verification and audit protocols and the independence of these from obligated parties.

Conclusion: The provision has been effective in ensuring that at least some monitoring and verification systems are implemented by the Member States, and that the monitoring and verification is undertaken independently from the obligated parties. However, on the specific details of the systems (e.g. independent verification of a statistically significant sample or audits) the effectiveness of the provision is less certain, largely due to lack of information in notifications.

The structured dialogue with the Member States confirms the conclusion (as analysis in Section 2.6 shows many Member States still do not provide evidence that all of the M&V requirements are being implemented).

5.2.7 Does the overall structure and architecture of Article 7 support the effective and efficient implementation of the requirements?

Article 7 allows a wide range of policy measures to potentially be used by Member States to deliver their energy savings target. The characteristics of these instruments are different. Consequently, for Article 7 to best ensure that the energy savings that are calculated for each of these instruments are credible, a number of specific provisions and requirements have been included for individual measure types.

This leads to the following structural issues:

- some of the provisions/requirements are specific to EEOS;
- some of the provisions/requirements are specific to alternative measures;
- some of the provisions/requirements are specific to individual types of alternative measures (e.g. Annex V(3) and energy and CO₂ taxes).

In some places Article 7 includes requirements that are specific to one particular instrument (e.g. Article 7(7) and EEOS), and in other places Article 7 includes requirements that are relevant to all instrument types, and then cites the exclusions (e.g. Article 7(11)).

Other requirements within Article 7 and Annex V are not related to specific instruments types, even though the requirements may be less applicable to certain types of measures (e.g. audit protocols are less relevant to energy and CO₂ taxes).

The requirements are also spread over different paragraphs within Article 7 and Annex V. A lack of any specific reporting template also potentially contributes to there being a lack of any single place in Article 7/Annex V that brings all of the requirements together.

Taken together these factors may lead to confusion amongst Member States as to which requirements are applicable to which types of instruments, and under which circumstances the requirements do not

need to be fulfilled. This may explain why there were a number of information gaps in the notifications, although this has not been tested.

Conclusion: The structure of Article 7/Annex V does not make it easy for Member States to understand the specific requirements, and is potentially detrimental in the efficient implementation of the requirements by lacking clarity, and creating confusion. Reorganising the structure so that all requirements relating to a specific issue (e.g. additionality are in one place), and providing clarification on which requirements are specific to a give measure type would be beneficial

5.2.8 What could be the potential consequences of amending the option to include social aims within EEOS (Article 7(7)(a))?

Article 7(7)(a) provides Member States with the option to include provisions within their EEOS to allocate a certain share of the savings to households in fuel poverty or social housing. As the EEOS case study shows (see Appendix 4) most Member States have opted against including such provisions at this stage. Given that Article 7(7)(a) only provides Member States with this option but does not require them to include social aims its withdrawal from Article 7 would not affect existing provisions for social aims.

Conclusion: The current provision is unlikely to lead to an increasing share of EEOS with social aims and removing it is unlikely to have a significant impact either.

5.2.9 What could be the potential consequences of amending the option to permit obligated parties to count towards their obligation certified energy savings achieved by energy service providers or other third parties, within EEOS (Article 7(7)(b))?

Article 7(7)(b) provides Member States with the option to permit obligated parties to count towards their obligation certified energy savings achieved by energy service providers or other third parties. All existing EEOS are being delivered through a range of actors, including third parties and energy service providers. Removing this provision would not change this.

Conclusion: the current provision is unlikely to lead to an increased uptake of energy savings delivered by energy service providers and third parties. Its withdrawal is unlikely to have a significant impact either.

5.2.10 What could be the potential consequences (risk/benefits) for reaching the energy savings target of keeping Article 7(7)(c) – carry-over of savings from EEOS?

The overall effectiveness of Article 7 (i.e. the savings realised at the EU28 by 2020, is not affected by the flexibility provided by the carry over provision. This is because borrowing is only allowed within the obligation period. However, some Member States misinterpreted this. For example, the UK indicated in their notification that it counted savings for the 2020-2023 period.

However, it is worth noting that even though banking and borrowing within the 2014-2020 period does not affect the total savings, it might increase the risk of non-compliance as extensive borrowing (in many EEOS and by many obligated parties) allows a delay of savings actions and increases the risk of failing to make up the borrowed savings in the final years of the 2014-2020 period. At the current level of take-up of this provision it does not constitute a major risk for the achievement of Article 7 savings target. Considering the lack of current information regarding possible borrowing in 12 EEOS, it is not possible to assess adequately the extent of this potential risk and/or estimate the potential reduction in savings should excessive borrowing take place.

Conclusion: High levels of borrowing may increase the risk of non-compliance with the targets.

5.2.11 What could be the potential consequences of changing the final date laid down in Article 7(1)?

Article 7(1) lays down the date by which the cumulative end-use energy savings target should be achieved (31 December 2020), as well as the period over which the target should be calculated (new savings each year from 1 January 2014 to 31 December 2020).

Extending the final date would promote additional energy savings beyond 2020, assuming the amount of new annual energy savings would remain the same (i.e. 1.5 % of the annual energy sales to final customers). This would stimulate energy reductions that would contribute directly towards the 2030 target. We illustrate the potential impacts of changing the final date to 2030 in Section 6.3.1.

Leaving aside for now the level of new annual energy savings that may be required to deliver the 2030 target, if the final data laid down in Article 7(1) was updated in this way, it is worth considering what the implications would be for the other provisions within Article 7. We have reviewed each of the provisions in this context and the results are provided in Table 14. The provisions which would be strongly affected by a change are highlighted red, and those affected to a moderate extent are highlighted orange.

Table 14: Implication for each of the provisions of an extension of the final data in Article 7(1) until 2030

Provision	Detail	Reference
Target		
Energy saving target, and its calculation	This is the provision that will be changed.	7(1)
Exclusion from the calculation energy generation for own use	The importance of energy generation for own use is not expected to change greatly post-2020.	7(1)
Exclusion from the calculation transport energy consumption	The importance of transport consumption not expected to change greatly post-2020. However, the increased level of electric vehicles may mean it is more important to be able to identify this consumption.	7(1)
Phasing of savings	The rationale of the provision and the provision itself will also be relevant post-2020.	7(1)
Exemptions		
Use of lower annual saving rate	The provision will be less relevant post-2020. By this point all Member States should have well developed energy efficiency markets, so should not require the flexibility to the same extent.	7(2)
Energy use of Emission Trading Scheme (ETS) industry	The rationale of the provision and the provision itself will also be relevant post-2020.	7(2)
Supply side actions	The rationale of the provision and the provision itself will also be relevant post-2020.	7(2)
Early actions	The provision is about actions implemented prior to 2014, some of these might deliver savings after 2020. Also, actions implemented in the period 2014-2020 might deliver savings after 2020. Both might be taken into account in case an exemption like Article 7(2) (d) is to be used for the post-2020 period. In that case, the wording of the provision needs to be updated.	7(2)
Level of exemption	The rationale of the provision and the provision itself will also be relevant post-2020.	7(3)
Notification of use of exemptions	The rationale of the provision and the provision itself will also be relevant post-2020.	7(3)
Calculation of impact on use of exemptions	The rationale of the provision and the provision itself will also be relevant post-2020.	7(3)
Obligated parties (relevant for the EEOS)		
Obligated parties	Annex V (4) would need to be amended with a new date by which the Member States would need to provide information on obligated parties.	7(4)
Savings required by obligated parties	The rationale of the provision and the provision itself will also be relevant post-2020.	7(5)
Measurement		
Measurement methods	Annex V part 4 would need to be amended with a new date by which the Member States would need to provide information on the calculation methodology.	7(6)
	Deemed and scaled savings – over time Member States may develop more complete datasets on the savings from different actions, which may reduce the need for these to be specified.	Annex V (1)

Provision	Detail	Reference
Additionality	In a post 2020 context the list of policies which may need to be taken into account when demonstrating additionality may need to be revised e.g. to take into account any new EU wide polices Annex V (4) would need to be amended with a new date by which the Member States would need to provide information how additionality is to be determined.	Annex V (2)(a)
Climatic variations	Annex V (4) would need to be amended with a new date by which the Member States would need to provide information on the use of climatic correction in their savings calculations.	Annex V (2)(b)
Materiality	Annex V (4) would need to be amended with a new date by which the Member States would need to provide information on how materiality is to be determined.	Annex V (2)(c)
Double counting	Annex V (4) would need to be amended with a new date by which the Member States would need to provide information on how materiality is to be determined.	Annex V (2)(d)
Lifetime of savings	Annex V (4) would need to be amended with a new date by which the Member States would need to provide information on the use of climatic correction in their savings calculations.	Annex V (2)(e)
Measures with aim to result in lasting transformation	The provision also continues to be relevant in the context of the 2030 ambition.	Annex V (2)(f)
Quality standards	Annex V (4) would need to be amended with a new date by which the Member States would need to provide information on the quality standards.	Annex V (2)(g)
Measurement, control and verification systems	Annex V (4) would need to be amended with a new date by which the Member States would need to provide information on the monitoring and verification and audit protocols.	7(6)
Independent measurement, control and verification	Annex V (4) would need to be amended with a new date by which the Member States would need to provide information on the monitoring and verification and audit protocols.	7(6)
EEOS		
Social aim	The rationale of the provision and the provision itself will also be relevant post-2020.	7(7)
Energy service providers	The provision remains relevant in the 2030 context. Moreover, the involvement of many actors in exploiting energy savings options becomes even more important as the available savings potential reduces due to the fact that the number of involved actors increases the cost efficiency of the scheme.	7(7)
Carry over	The provision remains relevant in the 2030 context. Once a new savings target is defined for 2030, allowing the banking of savings from the pre- to the post-2020 period is advisable. Informing the obligated parties on this banking possibility will encourage them to bring forward savings actions as much as possible (do not delay action to 2021) which make their efforts continuous.	7(7)
Publishing of savings	The rationale of the provision and the provision itself will also be relevant post-2020.	7(8)
Customer information	The rationale of the provision and the provision itself will also be relevant post-2020.	7(8)
Customer consumption	The rationale of the provision and the provision itself will also be relevant post-2020.	7(8)
Alternative policy measures		
Use of alternative policy measures	The rationale of the provision and the provision itself will also be relevant post-2020.	7(9)
Notification of alternative policy measures	The rationale of the provision and the provision itself will also be relevant post-2020.	7(9)
Criteria for policy measures		
Intermediate periods	Article 7(10) (a) would need to be amended so that it concerns intermediate periods up to 2030. Also Annex V (4) would need to be amended with a new date by which the Member States need to	7(10)

Provision	Detail	Reference
	provide information on the expected savings to be achieved in intermediate periods and the duration of the intermediate periods.	
Responsibilities	Annex V (4) would need to be amended with a new date by which the Member States need to provide information on the participating or entrusted parties or implementing public authorities.	7(10)
Determination of energy savings	The provision also continues to be relevant in the context of the 2030 ambition.	7(10)
Amount of energy savings	The provision also continues to be relevant in the context of the 2030 ambition.	7(10)
Calculation of energy savings of tax measures - additionality	Any revisions to the existing Energy Taxation Directive (2003/96/EC) appear unlikely in the short term. If the Directive was revised then this may require some modifications to the provision – although the basic principle of additionality would still hold	Annex V (3)(a)
Calculation of energy savings of tax measures - elasticities	The provision also continues to be relevant in the context of the 2030 ambition.	Annex V(3)(b)
Calculation of energy savings of tax measures – accompanying taxation policy instruments	The provision also continues to be relevant in the context of the 2030 ambition.	Annex V(3)(c)
Annual report	The provision also continues to be relevant in the context of the 2030 ambition.	7(10)
Monitoring	Annex V (4) would need to be amended with a new date by which the Member States would need to provide information on the monitoring and verification and audit protocols.	7(10)
Control system		
Annual trend	The provision also continues to be relevant in the context of the 2030 ambition.	7(10)
Policy overlaps		
Policy overlaps	The rationale of the provision and the provision itself will also be relevant post-2020	7(12)

In conclusion, assuming no change in the level of stringency, we consider the following provisions would potentially be affected by a change in the date set out in Article 7(1):

- provisions which are explicitly related to the sunset clause:
 - 7(1) Energy saving target, and its calculation
 - 7(1) Intermediate periods
- provisions which are related to existing policies, which may be revised or repealed:
 - Annex V (2)(a) additionality
 - Annex V (3)(a) additionality
- provisions which may become more or less relevant post 2020, simply because of the changing context:
 - 7(1) Exclusion from the calculation transport energy consumption
 - 7(2) Use of lower annual saving rate
 - 7(2) Early actions
 - 7(7) Carry over and Energy Service Providers under EEOS
 - Annex V (1) Measurement methods

5.2.12 What level of harmonisation of provisions would be needed (if relevant) to allow the effective and proper implementation of Article 7 (to achieve the needed energy savings)?

Article 7 and Annex V currently specify certain requirements for Member States. However, at the same time the provisions allow a certain degree of flexibility in terms of how Member States implement the requirements. A consequence of this flexibility is that Member States have adopted different approaches when implementing Article 7. In some cases, this reduces the comparability of information submitted by Member States in relation to the same provisions. It also presents problems when assessing the impacts of Article 7 at an EU 28 level.

One way to improve the comparability of information between Member States is to introduce more harmonised requirements into Article 7 and Annex V. In Table 15 we identify areas where further harmonisation of the requirements may be beneficial to achieve greater comparability at an EU 28 level.

The benefits of any harmonisation need to be compared to the costs associated with the reduced flexibility to Member States. It has not been possible with the scope of the current project to assess these potential costs, and further work is required to assess these more fully⁵⁸. Likewise, any relevant experience using default values under the Energy Service Directive (ESD, Directive 2006/32) should be reviewed. For example, the EMEES project draws some conclusions on experiences relating to the harmonisation of calculation methodologies under the ESD⁵⁹.

Table 15: Potential areas of harmonisation

Provision	Detail	Reference
Target		
Energy saving target, and its calculation	Member States could be required to calculate their energy savings targets using Eurostat data, with justification required where alternative statistics are used.	7(1)
Exclusion from the calculation energy generation for own use	N/A	7(1)
Exclusion from the calculation transport energy consumption	Member States could be required to calculate their energy savings targets using Eurostat data, with justification required where alternative statistics are used. Further harmonisation of the approach to calculate savings from electric vehicles may be important, particularly in a 2030 context.	7(1)
Phasing of savings	This provisions are not about reporting of the phasing, but some harmonisation of the reported phasing of savings between EEOS and alternative measures would provide a more consistent data set.	7(1)
Use of lower annual saving rate	N/A	7(2)
Energy use of Emission Trading Scheme (ETS) industry	N/A	7(2)
Supply side actions	N/A	7(2)
Early actions	N/A	7(2)
Level of exemption	N/A	7(3)
Notification of use of exemptions	N/A	7(3)
Calculation of impact on use of exemptions	A specific calculation template/table could be specified to ensure all Member States calculate the impacts of the use of exemption correctly.	7(3)
Obligated parties (relevant for the EEOS)		

⁵⁸ A similar conclusion is reached in the JRC (2015) report on common methods and principles for calculating the impact of Energy Efficiency Obligation Schemes or other policy measures under Article 7 of the Energy Efficiency Directive.

⁵⁹ Measuring and reporting energy savings for the Energy Savings Directive – how it can be done. Wuppertal Institute (2009). http://www.evaluate-energy-savings.eu/emeees/en/publications/reports/EMEEES_Final_Report.pdf

Provision	Detail	Reference
Obligated parties	A default list of ineligible measure categories or additional guidance on eligibility of individual actions could be provided to the Member States. Where Member States includes measures that might be ineligible, justification of how the measures deliver end use energy savings should be provided.	7(4)
Savings required by obligated parties	We would recommend the consider deleting the option of expressing savings targets both for obligated parties and for alternative policy measures in primary energy to increase the consistency of savings calculation targeting end-use.	7(5)
Measurement		
Measurement methods		7(6)
	A default list of values for energy savings from specific measures could be developed for use in a deemed or scaled approach. Where Member States include values that fall outside of this range, a requirement could be introduced for justification of why the values are applicable.	Annex V (1)
Additionality	The list of EU policies that should be considered in the context of additionality could be harmonised, with associated guidance, to provide clarity to Member States as to which policies need to be considered. Also in case of standards and norms and energy labelling schemes, direct references to relevant EU legislation could be provided to the Member States.	Annex V (2)(a)
Climatic variations	Some further guidance could be provided by the Commission on which measures this requirement is applicable to (and which measures it is less applicable to).	Annex V (2)(b)
Materiality	Some further guidance could be provided on which measures this requirement is applicable to (and which measures it is less applicable to).	Annex V (2)(c)
Double counting	N/A	Annex V (2)(d)
Lifetime of savings	The harmonisation of the lifetimes for individual actions common to many Member States could be considered. Where Member States includes values that fall outside of this range, a requirement could be introduced for justification for why the values are applicable. Experience under the Energy Service Directive (2006/32) with default values should be reviewed.	Annex V (2)(e)
Measures with aim to result in lasting transformation	N/A	Annex V (2)(f)
Quality standards	N/A	Annex V (2)(g)
Measurement, control and verification systems	The Commission could provide further guidance to clarify some of the specific requirements. This may include providing guidance on how Member States may go about determining what may represent a statistically representative sample. This could also include guidance on which measures the measurement, control and verification systems are applicable to (and which measures it is less applicable to).	7(6)
Independent measurement, control and verification	N/A	7(6)
EEOS		
Social aim	N/A	7(7)
Energy service providers	N/A	7(7)
Carry over	N/A	7(7)
Publishing of savings	N/A	7(8)
Customer information	N/A	7(8)
Customer consumption	N/A	7(8)
Alternative policy measures		
Use of alternative policy measures	N/A	7(9)

Provision	Detail	Reference
Notification of alternative policy measures	N/A	7(9)
Criteria for policy measures		
Intermediate periods	N/A	7(10)
Responsibilities	N/A	7(10)
Determination of energy savings	N/A	7(10)
Amount of energy savings	Consider deleting the option of expressing savings targets both for obligated parties and for alternative policy measures in primary energy to increase the consistency of savings calculation targeting end-use.	7(10)
Calculation of energy savings of tax measures - additionality	N/A	7(10)
	N/A	7(10)
	N/A	Annex V (3)(a)
Calculation of energy savings of tax measures - elasticities	The elasticities that are used by Member States could be harmonised, or at least bounded, to provide a more consistent assessment of the energy savings from taxation measures. When values used by Member States deviate from this range, a requirement could be introduced for this to be justified.	Annex V(3)(b)
Calculation of energy savings of tax measures – accompanying taxation policy instruments	N/A	Annex V(3)(c)
Annual report	N/A	7(10)
Monitoring	N/A	7(10)
Control system	Providing default figures for statistically representative samples that needs to be verified could be considered.	7(10)
Annual trend	N/A	7(10)
Policy overlaps		
Policy overlaps	N/A	7(12)

5.3 Conclusions

5.3.1 Overall performance

5.3.1.1 Effectiveness

As described in Section 3, based on the policy measures that have been notified by Member States, Article 7 is expected to deliver cumulative energy savings of the order of 250.3 Mtoe by 2020 – just below (-1%) the target of the negotiated EED text. This indicates that overall Article 7 is expected to perform well in relation to its overall objective of delivering final energy savings.

The article has also been effective in stimulating the establishment of new energy efficiency obligation schemes (EEOS) and alternative policy measures⁶⁰. Namely, EEOS have been notified by 16 Member States (six Member States have not yet implemented EEOS) and 34% of the expected cumulative energy savings across all Member States are expected to be generated from the implementation of EEOS. In addition, the provision on the use of alternative policy measures offers flexibility to Member States in delivering their energy savings in accordance with their national circumstances and 24 Member States have used this possibility.

However, while the overall performance appears to be on track, this does not mean there are no areas of improvement, which can enable the overall objectives to be delivered more efficiently or effectively, or any requirements that are no longer relevant.

Firstly, Article 7(1) provides the flexibility for Member States to exclude transport energy consumption from their baseline when calculating their energy savings target. Likewise, Article 7(2) allows Member

⁶⁰ Of the 335 alternative policy measures where information was available, 109 were new measures and 226 were already existing.

States to make certain exemptions, with limited restrictions, when calculating their energy savings target. Member States have extensively made use of both of the provisions – 27 Member States use the exemptions (which reduce the target by around 24%) and all Member States (except Sweden) exclude final energy use for transport from the baseline. As a result of these exclusions and exemptions individual Member States are able to set less ambitious energy savings targets, which ultimately may result in a lower level of final energy savings at the EU level. This outcome is, however, broadly consistent with the original Impact Assessment of the Energy Efficiency Directive which assumed that all Member States would exclude transport energy consumption when calculating their energy savings targets and would make use of the full 25% of the exemptions. The provisions can therefore be said to be performing as expected.

There are also a number of specific provisions in Article 7 and Annex V which place different requirements on Member States relating to the design of their energy efficiency measures to ensure that the savings are credible and robust (for example, requirements to ensure additionality and materiality of savings, avoiding double counting and ensuring robust monitoring and verification systems). Each of these provisions, either individually or collectively, contribute towards the overall objective of the Energy Efficiency Directive and were therefore analysed for effectiveness, efficiency, coherence, relevance and EU value added. The detailed analysis of the provisions has been provided in the previous Section 5.2 and Appendix 5.

The analysis showed that the requirements of Article 7 and Annex V have not always been implemented fully, or at least Member States have not demonstrated that the requirements have been met fully in their notifications. For some Member States several rounds of structured dialogue with targeted questions have been required to clarify their plans. As discussed in Section 3.3.2, the additional information requests that the Commission has made to Member States via the structured dialogue with the Member States process have been effective in increasing the completeness and clarity of the information notified. However, the fact that the structured dialogues with the Member States has been required to achieve this implies that Article 7 and Annex V, along with the Commission's guidance, have not been fully effective. Moreover, even with the additional information provided as part of the structured dialogue with the Member States process there still remains some areas where information is lacking (see Section 3.3.2).

5.3.1.2 Efficiency

Analysis into the efficiency of the provisions of Article 7 and Annex V was undertaken which considered the relationship between the resources used by the provisions and the changes generated. No data on the actual costs were analysed, however the efficiency was considered qualitatively by the project team. The analysis identified that the provisions of Article 7 and Annex V place a certain amount of effort on Member States in, for example, calculating their energy savings targets, designing policy measures, calculating the energy savings according to the provisions of Annex V, setting up monitoring, verification and control systems. The effort required may vary between Member States depending on whether the notified policy measures were already existing or were new, and also in relation to the number and mix of policy measures notified.

It is also notable that much of the effort to date relates to one-off activities, and the level of effort will reduce in future years. For some of the activities, for example the requirements relating to Annex V, there is likely to be a trade-off between the level of effort and the credibility of the savings – it is important to deliver credible energy savings across all EU28. Moreover the efficiency of the provisions is improved by providing flexibility for Member States in approaches that they apply – the provisions indeed only stipulate the basic requirements and leave choices for Member States on how to implement them, allowing Member States to reduce the costs as relevant. For example, Article 7(9) allows Member States to use alternative measures to deliver their energy savings requirement. This allows Member States to take into account their particular national circumstances and choose the policy mix most relevant to the country or specific sector. Indeed, 24 Member States used alternative policy measures, alone or in combination with EEOS, to deliver the required amount of energy savings. In theory, this flexibility helps Member States to keep their implementation costs to a minimum and achieve the energy savings target in the most cost-effective way.

Overall, it could therefore be argued that Article 7 allows the cost-effective delivery of energy savings. However the analysis identified that on occasions the administrative effort associated with implementation of Article 7 and Annex V requirements could be reduced further (e.g. through simplification). Suggestions for potential areas of improvement are provided in Table 16. These include

a range of potential modifications including, for example, providing additional guidance to the Member States on which measures the materiality requirements is applicable to or removing the use of early action as an exemption and thereby its associated notification requirements.

5.3.1.3 Relevance

While the majority of provisions of Article 7 and Annex V continue to be relevant, the analysis identified that certain provisions are no longer relevant, or not relevant in all the cases. For example, Annex V(2)(c) requires Member States to demonstrate the materiality of their actions. However, for some measures, such as energy and CO₂ taxes, the materiality of the actions is implicit in the calculation methodology, by the use of price elasticities⁶¹. The continued inclusion of these requirements can create unnecessary administrative burden for Member States as they attempt to interpret requirements that are not relevant for these types of measures.

Further, in the context of the 2030 ambition, it may be necessary to change the final date stipulated in Article 7(1) and the period over which the calculation is made.

5.3.1.4 Coherence

The analysis identified that the objectives of Article 7 and Annex V are coherent with overall EU climate and energy goals. Also, a coherent approach has been taken in the EED in regards to other EU energy efficiency policies – only savings that complement other EU interventions with similar objectives can be counted towards their energy savings target under Article 7 by Member States. Namely, Article 7(6) and Annex V (2)(a) and (3)(a) require that when calculating energy savings, only those savings that go beyond the minimum requirements originating from specific EU legislation can be counted as contributing towards the energy savings target.

The coherence with other EU policies, which are not primarily aimed at energy efficiency (such as EU ETS, ESD and RED) is less clear. In accordance with the definition in Article 2(18), national 'policy measures' need to create a supportive framework, requirement or incentive for market actors to provide and purchase energy services and to undertake other energy efficiency improvement measures. Likewise, 'individual action' means (as defined in Article 2(19)) an action that leads to verifiable, and measurable or estimable, energy efficiency improvements and is undertaken as a result of a policy measure. This implies that policies measures that do not meet these requirements are not eligible. The analysis identified (see Section 5.2.5) that further guidance might need to be given to the Member States for a more consistent application of the eligibility requirements.

5.3.1.5 EU value added

The main EU value added by Article 7 is that it requires additional energy savings to be delivered by all Member States, and the full transparency of the target for each Member State. This will ensure that all Member States play their roles in delivering the EU wide target. The article provides consistency across Member States, ensuring the credibility and robustness of savings accounted for the Article 7 savings target. As a result, Member States' policy actions are more comparable.

The analysis presented above has reviewed how the individual provisions with Article 7/Annex V are performing. The analysis was carried out a very detailed level, assessing performance in relation to the specific rational of the individual provisions. This has allowed a very thorough and comprehensive assessment of the performance of Article 7/Annex V to date, at the level of the individual requirements. It also allowed the identification of a number of areas where there was scope for improvement.

5.3.2 Overview of additional information arising from the structured dialogue with the Member States

As part of the structured dialogue with the Member States clarification was sought from Member States with respect to specific elements of their notifications under Article 7. The content of the pilots was specific to the Member State in question, and the areas of their notifications that required clarification, and therefore the responses to the structured dialogue with the Member States also varied by Member States.

Overall, the structured dialogue with the Member States were very effective in achieving clarity over the issues raised. The process led to clarification on all aspects of Article 7, including important clarifications

⁶¹ The elasticities represent the effect of the change of price on the change and demand, so unless the elasticity is zero, the effect must be material.

around the notified energy saving targets, and the expected energy savings. As described in Chapter 3, the additional information that was obtained as a result of the structured dialogue with the Member States process also provided increased confidence that the requirements of Annex V had been correctly implemented, and thereby reducing the amount of savings that were considered to be at risk of non-delivery.

The structured dialogue with the Member States were particularly effective in seeking clarity over issues relating to the following issues:

- **calculation of energy targets (Article 7(1))** – for example, of how the Member State had taken into account energy generation for own use when calculating their baseline energy consumption;
- **use of exemption (Article 7(2) and (3))** – for example, of which exemptions had been applied;
- **notified policy measures (Article 7(9))** – for example, on which specific policies were being notified to deliver the target;
- **monitoring and verification (Article 7(6))** – for example, on the monitoring and verification systems that will be applied;
- **double counting (Annex V (2)(d))** – for example, how policy overlaps have been accounted for in the calculation of the energy savings.

For some other areas the structured dialogue with the Member States were successful in achieving clarity, but not in all cases, and in some cases some uncertainties remained. This included the following requirements:

- **monitoring and verification (Article 7(6))** – for example, on statistically representative sample;
- **eligibility of policies (Article 7(6))** – for example, on how the policy measure can be considered eligible;
- **additionality (Annex V(2)(a) & (3)(a))** – for example, how free riders had been dealt with;
- **materiality (Annex V(2)(c))** – for example, how materiality was demonstrated.

It cannot be stated with certainty why some issues still remained in relation to these areas following the structured dialogue with the Member States process. However, it is expected that this may in part be because Member States are less clear on what is required to meet the requirements, or because Member States have adopted a different interpretation of the requirements (e.g. in relation to the additionality to the EPBD).

5.3.3 Suggested areas for review

The areas of improvement can be defined at different scales, and may relate to the policy (EED) as a whole, specific Articles (Article 7) or even specific provisions (e.g. Article 7(1)). While each of these different levels are related, in practice the problems at the level of the overall policy are more general, and at the level of the individual provision are very specific. Thus the problems associated with specific provisions may not translate fully when looking at the more general level.

To help describe the different problems in a coherent way a problem tree has been developed which maps out the current problems associated with Article 7, and the drivers of these problems. This is presented in Figure 19. The specific provisions of Article 7 and Annex V that are associated with the different problems have been indicated.

The problems are diverse, both in the nature of the problem, but also in terms of the different provisions which the problem relates to. However, in general terms, the problems can be grouped into a few broad areas. These are discussed below.

5.3.3.1 Short term perspective of the obligation period

Article 7(1) lays down the date by which the cumulative end-use energy savings target should be achieved by (31 December 2020), as well as the period over which the target should be calculated (new savings each year from 1 January 2014 to 31 December 2020). As a result of this cut-off date, at the end of the obligation period Member States might prioritise measures that deliver short term energy savings (e.g. behavioural measures), over longer term actions (e.g. building fabric measures) as there would be no stimulus to deliver energy savings beyond 2020. Therefore Article 7, in its current form, will only make a limited contribution towards the EU's 2030 climate and energy targets.

5.3.3.2 Exclusions and exemptions are potentially too generous

As described above, the exclusions and exemptions allow individual Member States to set less ambitious energy savings targets, which ultimately result in a lower level of final energy savings at the EU level.

5.3.3.3 Incomplete understanding of the implementation requirements

Implementation of Article 7 and Annex V to date suggests that Member States have an incomplete understanding of the implementation requirements. This may, in part, be a result of a lack of clarity with the implementation requirements, or poorly specified requirements. However, even where the requirements are well specified, there may still be a lack of understanding within Member States of these requirements. This in particular relates to the requirements in Annex V. For example, as discussed in Section 5.2.4.2, the analysis of Annex V(2)(a) of additionality suggests that there are potential shortcomings in Member States' implementation of the provision. Indeed, there are major issues with the additionality requirement in regards to 14% of the policy measures and minor issues in regards to further 24% policy measures. Further, analysis shows that even with the structured dialogue with the Member States process 5% of the policy measures are targeting actions that could not be eligible under Article 7 and a further 25% could qualify as partially eligible. There are also major concerns over the risk of double-counting in relation to 1% of the policy measures, and minor issues in relation to 12% of the policy measures notified.

5.3.3.4 Member States have flexibility in the calculation approach that they can apply when quantifying energy savings

Member States adopt different approaches to calculate their energy savings and report on their methodologies in different ways. This may be well justified, since some calculation approaches are better suited to some policies than others. For example, energy savings associated with the renovation of buildings envelopes would not typically be quantified using a surveyed savings approach. Likewise, the values that are used for a given calculation approach (e.g. deemed savings), need to be representative of similar installations. However, as a result of this flexibility, the energy savings that are notified by Member States, and the information reported on methodologies, are not fully consistent or comparable at an EU level. This inconsistency presents uncertainty about whether the EU is on track to deliver its target, and reduces the integrity of the savings that are claimed at an EU level.

5.3.3.5 Article 7 does not specify the level of information Member States need to report to demonstrate compliance with the requirements

Member States report on their methodologies in different ways. This is because, in most cases, Article 7 does not specify clearly what information Member States are required to notify, and instead only provides general requirements (e.g. Annex V(4)). For some of these features (e.g. target sector), the required information is considered relatively self-explanatory, which generally led to a more complete and consistent level of reporting on this feature by Member States. In other cases, however, Member States are required to follow a certain approach, but it is not clear how they should demonstrate (in their notifications) that this approach has been followed. For example, Annex V(1) provides specific requirements for methods for calculating the savings. The notification requirement in Annex V(4) for the Member States, however, states that '*Member States shall ... notify ... of calculation methodology*', without clearly setting out what information needs to be notified by Member States to demonstrate that they have fulfilled the requirements. The consequence is that the information notified by Member States is inconsistent, and may not provide sufficient information to determine that the requirement has been met. Indeed the structured dialogue with the Member States process has been undertaken to clarify Member States plans and approaches in relation to Article 7 and Annex V.

Unclear notification requirements ultimately reduce the comparability of information, and the integrity of the savings that are claimed at an EU level.

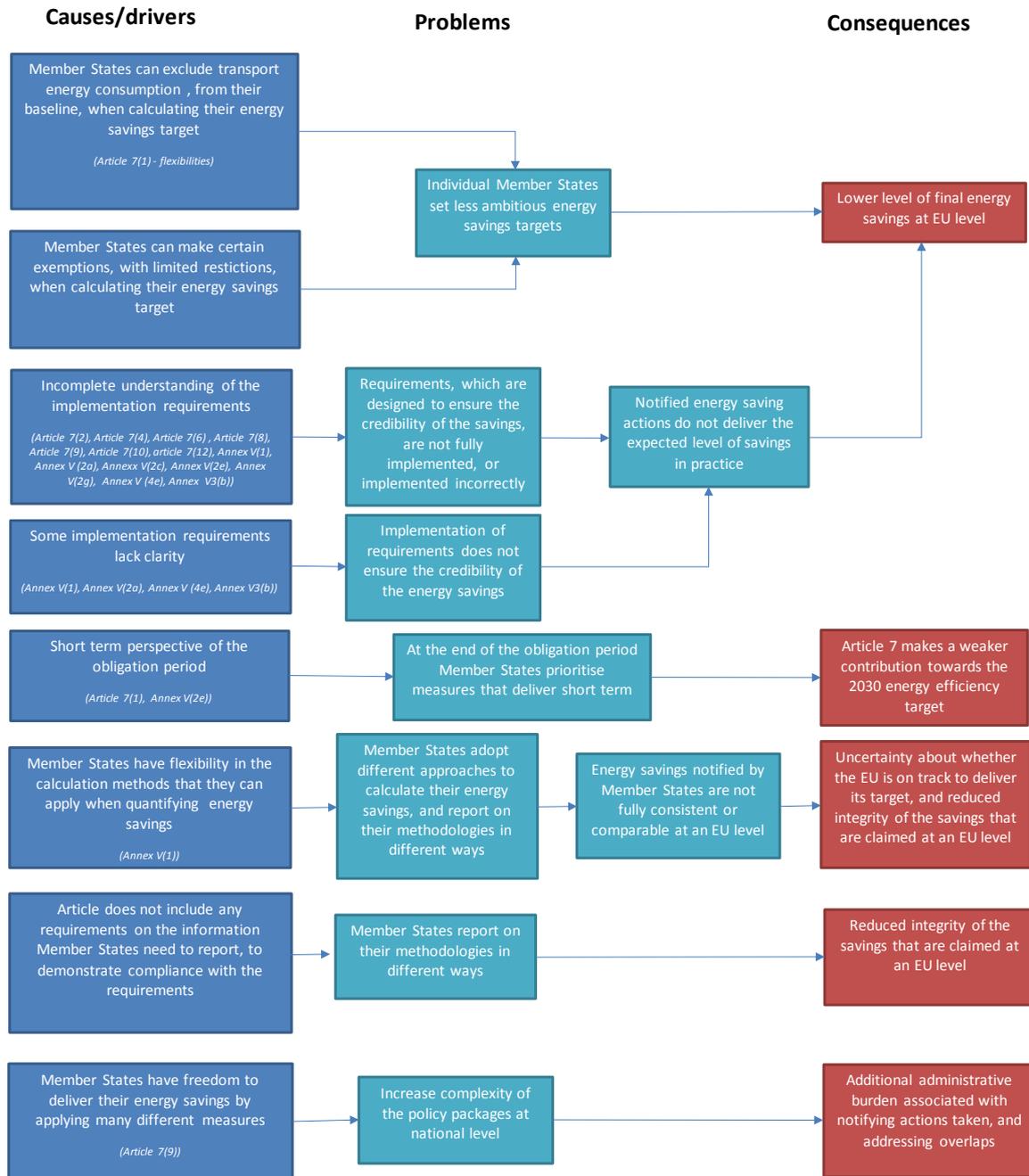
5.3.3.6 Certain provisions are no longer relevant or not relevant in all cases

Certain provisions are no longer relevant, or not relevant in all the cases. For example, Annex V(2c) requires Member States to demonstrate the materiality of their actions. However, for some measures, such as energy and CO₂ taxes, the materiality of the actions is implicit in the calculation methodology, which uses price elasticities. The continued inclusion of these requirements can create unnecessary administrative burden for Member States as they attempt to interpret requirements that are not relevant for these types of measures.

5.3.3.7 Complexity arising from the possibility of applying multiple policies and measures

Article 7(9) allows Member States to use alternative measures to deliver their energy savings targets. This allows Member States to take into account the particular national circumstances and choose the policy mix most relevant to the country or specific sector. Indeed, the option has been extensively used by the Member States, as discussed in Section 2.3, 24 Member States use alternative policy to deliver their energy savings target under Article 7 (except Bulgaria, Denmark, Luxembourg and Poland that only use EEOS), proposing 477 policy measures in total. For example, Germany proposes 112 policy measures, Romania 28 and Slovakia 66. However, the use of multiple instruments can also present some difficulties, both in terms of additional complexity associated with the implementation and enforcement of the different instrument types, as well as accounting for the impacts (e.g. dealing with policy overlaps). As a result it may lead to additional administrative burden associated with notifying actions taken, and addressing potential overlaps.

Figure 19: Problem tree



6 Concrete suggestions for legal revisions and/or amendments of Article 7 and Annex V

As described in the previous section, we have analysed each of the individual and groups of provisions to identify potential areas of revision, and made some initial recommendations on the nature of the revisions. In this section we assess the different options in more detail.

Specific attention is given to options relating to the requirements described in Article 24(9) of the EED, namely:

- to change the final date laid down in Article 7(1);
- to review the requirements laid down in Article 7(1), (2) and (3);
- to establish additional common requirements, in particular in regard to the matters referred to in Article 7(7).

However, the problems associated with the current implementation of the requirements of Article 7 and Annex V are more broad-ranging than just the areas identified in Article 24(9). Therefore, when identifying options we have adopted a broad perspective and looked at options relating to all aspects of Article 7 and Annex V.

6.1 Recommendations for improvement

Following the analysis of the individual provisions, and the identification of the problem areas, a number of recommended areas of improvement have been identified. A summary of the main recommendations are presented below (Table 16).

These recommendations have been made at the level of individual provisions. Three types of recommendation have been made, these are:

- **minor change** – issues have been identified that may warrant a minor change (e.g. change in wording to improve consistency or completeness of implementation but no change in substance);
- **major change** – issues have been identified that may warrant a major change e.g. removal of provision, or major change in substance;
- **additional guidance** – issues have been identified but it is suggested that these may best be dealt with not through a change in provision but through supporting guidance e.g. where provision is evaluated favourably, but implementation has not been consistent across Member States.

It is important to note that the options are not mutually exclusive. That is to say that, for example, providing additional guidance does not necessarily replace a minor change. Indeed in a number of instances the options are supportive of each other. Furthermore, there can also be interlinkages between the different recommendations. For example, a major change to one provision, may have an impact upon the other related provisions, and there leave other recommended changes redundant. It has not been possible within the scope of the analysis to explore each of these individual interactions.

Where additional guidance has been identified as a specific solution to overcome the issues identified above it could serve to provide the following:

- A solution to the problem in its own right, for example, by providing greater clarity on the requirements of Article 7. This would result in the notification by Member States of more complete and consistent information in relation to the specific requirement.
- A solution to the problem in combination with other changes. For example, if a change to Article 7(1) was made which required Member States to use Eurostat data when calculating their energy savings target, additional guidance could also be provided on how to report this information in notifications.

The full list of recommendations is provided in Table 16.

Table 16: List of potential areas for the reviewing provisions of and providing guidance for Article 7

Provision	Major changes	Minor changes	Additional Guidance	Reference
Target				
<p>Amount of energy savings and its calculation</p>	<p>In the context of the 2030 ambition, and conditional upon the outcomes of the EED review, it may be necessary to change details of this provision, specifically the final date and the period over which the calculation is made. This may involve extending the final date to 2030. The level of new annual energy savings may also need to change (from 1.5%) depending upon the level of additional cumulative savings required to deliver the 2030 target. Further work will need to be carried out to assess the level of annual energy savings that will be required to deliver the 2030 target.</p> <p>A requirement could be introduced for Member States to use Eurostat data in the calculation of their energy savings target, or for the Commission to specify the targets based on Eurostat data. The latter case would be similar to the process that is used to set Member States' targets under the Effort Sharing Decision, where the Decision sets out how the targets will be calculated, and the Commission performs the calculations and specifies the targets in an Implementing Decision.</p> <p>The benefit of this change would be to improve the consistency of the reporting. However, Member</p>		<p>Provide Member States with a simple spreadsheet tool for the target calculation. This would include the correct data from Eurostat, and the Member State would only need to change data if it does not agree with Eurostat. This would also describe what explanation Member States need to provide if they opt not to use the Eurostat data. Use of the tool would ensure that consistent and comparable data is available for all Member States.</p>	<p>7(1)</p>

Provision	Major changes	Minor changes	Additional Guidance	Reference
	<p>States may not like being told what data sources should be used. Also, as described below, some Member States will need to adjust their data for energy consumption for own use. Standardising the statistical data source, will not solve this issue. An alternative option would be to require Member States to justify the use of non-Eurostat data, and to explain the differences with Eurostat data. This will allow flexibility to Member States, but also allows a better understanding of the main differences.</p>			
<p>Energy savings target based on final energy sales</p>	<p>Remove the flexible use of the exclusion altogether. Alter the text of Article 7(1) from ‘..1,5 % of the annual energy sales to final customers of all energy distributors or all retail energy sales companies by volume...’, into: ‘...1,5 % of the annual final energy use...’. However, the removal of the provision would also remove the flexibility it provides, which may be important for some Member States, and in practice will deliver a negligible reduction in administrative burden.</p> <p>An alternative may be to provide some restrictions on when the exclusion can be applied, which would continue to provide the flexibility to those requiring it, but limit the overall level of exclusion. However, this may add additional complexity and administrative burden.</p>	<p>Require Member States to specify the value of energy generation for own use that has been excluded when calculating the energy savings target. This should be consistent with the overall energy consumption statistics that are used to derive the target, to ensure the exclusion is not made twice.</p>	<p>Guidance for Member States on the reporting of the value of the energy generation for own use, and the sources of the data that should be used, would increase the completeness of reporting on this information, and provide greater confidence in the calculations that have been made. This could be accompanied by a requirement for this information to be stated, with the guidance clarifying the format of the information required.</p>	<p>7(1)</p>

Provision	Major changes	Minor changes	Additional Guidance	Reference
Exclusion from the calculation transport energy consumption	<p>Remove the flexible use of the exemption altogether, and exclude transport related energy use from the baseline calculation in all cases. This will lead to a similar outcome in terms of the energy saving – since all but one of Member States used the flexibility, whilst simplifying the Article. However, the removal of the provision would remove the flexibility it provides, which may be important for some Member States, and in practice will deliver a negligible reduction in administrative burden.</p> <p>An alternative may be to provide some restrictions on when the exclusion can be applied, which would continue to provide the flexibility to those requiring it, but limit the overall level of exclusion. However, this may add additional complexity and administrative burden, since it will require the definition of criteria relating to the restrictions, and for Member States to demonstrate eligibility against the criteria.</p>	Require Member States to specify the value of transport energy consumption that has been excluded when calculating the energy savings target. This should be consistent with the overall energy consumption statistics that are used to derive the target, to ensure the exclusion is not made twice.	Guidance for Member States on the reporting of the value of the energy savings from transport, and the sources of the data used, would increase the completeness of reporting on this information, and provide greater confidence in the calculations that have been made.	7(1)
Phasing of savings				7(1)
Exemptions				
Use of lower annual saving rate	Remove this, and all other exemptions, since most Member States have used the exemptions to the maximum allowable extent, so the removal of all exemptions would lead to a similar outcome, with a simplification in notification			7(2)

Provision	Major changes	Minor changes	Additional Guidance	Reference
	<p>requirements. A large number (21) of Member States used this exemption, and its use was responsible for 45% of the total effect of exemptions, so the removal of just this exemption would have a large effect.</p> <p>Remove just this exemption, since there are no conditions applied to when it can be used (unlike the other exemptions), and its use alone allows just under 21% exemption. This means it does not address the original rational of providing flexibility to those Member States whose national circumstances may mean they are unfairly disadvantaged.</p> <p>Alternatively, conditions could be added for when the exemption can be used. There may be alternative ways to provide flexibility to those Member States that have less well-developed energy efficiency markets, while not also allowing other Member States to take advantage of a lower energy savings target. However, in practice, it might be difficult to agree appropriate conditions.</p> <p>Another option, could be to reduce the level of annual savings rate.</p>			
Energy use of Emission Trading Scheme (ETS) industry	Remove this, and all other exemptions, since most Member States have used the exemptions to the maximum allowable extent, so the removal of all exemptions would lead to a similar outcome,		Guidance could be included which provides further clarity on how the exemption should be applied. This would specify what information needs to be reported to demonstrate that the exemption has been applied correctly.	7(2)

Provision	Major changes	Minor changes	Additional Guidance	Reference
	<p>with a simplification in notification requirements.</p> <p>Only 15 Member States used this exemption, and it was responsible for 21% of the total effect from exemptions, so the effect of the removal of just this exemption would be moderate.</p>			
Supply side actions	<p>Remove this, and all other exemptions, since most Member States have used the exemptions to the maximum allowable extent, so the removal of all exemptions would lead to a similar outcome, with a simplification in notification requirements.</p> <p>Only five Member States used this exemption, and it was responsible for 1% of the total effect from exemptions, so the effect of the removal of just this exemption would be limited.</p>		<p>Guidance on what information is required from a Member State in the notifications when it uses the exemption under 7(2)(c) is very limited, both concerning the notification and concerning the monitoring and reporting. We recommend more clear guidance. This would specify more clear what actions are considered supply side actions, what information is required on these actions for the calculation of the exemption, and a worked example of how to apply the exemption.</p>	7(2)
Early actions	<p>Remove this, and all other exemptions, since most Member States have used the exemptions to the maximum allowable extent, so the removal of all exemptions would lead to a similar outcome, with a simplification in notification requirements.</p> <p>Almost half of the Member States (13) used this exemption, and it was responsible for 33% of the total effect from exemptions, so its removal alone would have a large effect.</p>			7(2)

Provision	Major changes	Minor changes	Additional Guidance	Reference
Total level of exemption allowed	<p>Since at least 24 of the 28 Member States notified that they want to use the full 25% of exemptions, it might be simpler to lower the energy savings ambition level for all Member State (e.g. by 25%). This would make the implementation more straightforward, and would remove any administrative burden connected to the use of exemptions. Ambitious Member States might still set a more ambitious energy saving target. The overall impacts of this change would be small in energy terms since a large number of Member States have already opted to apply 25% exemptions.</p> <p>Alternatively, given that Article 7 is expected to deliver less energy savings than initially expected a reduction of the 25% limit could be considered. For example, it could be reduced to 20% or 15%. This would keep the principle of the flexibilities, but would reduce the negative impact on the overall energy savings.</p>			7(3)
Notification of use of exemptions				7(3)
Calculation of impact on use of exemptions				7(3)
Obligated parties (relevant for the EEOS)				
Information on Obligated parties		Where it is valuable for the Commission to receive more information from the Member States in regards to the design of their EEOS to further assess the	Given that the criteria of achieving end use energy savings has remained unclear for some of the Member States, it might be	7(4)

Provision	Major changes	Minor changes	Additional Guidance	Reference
		compliance, Annex V (4) notification requirements may be amended to include, for example, the requirement to notify the amount of energy savings amongst final customers that has been obligated.	useful for the Commission to issue further guidance to the Member States on the eligible measures. Delivering end use energy savings is a complicated issue which depends on case-by-case basis and on particular circumstances. Therefore amending the provision might not result in the best results and can overly burden the directive.	
Savings required by obligated parties	Remove the option of allowing Member States to express the savings targets both for obligated parties and for alternative policy measures in primary energy terms. This can be considered due to the issues with the effectiveness and coherence of delivering the aims of Article 7. This would interfere with the approach used by two Member States (on the basis of reviewed documentation). In case of expressing the savings associated with alternative measures, this entails simply the translation of primary to final energy terms.			7(5)
Measurement				
Measurement methods		Minor change to Annex V part 4 notification requirements might be considered, specific notification requirements might help the Member States in notifying sufficient information, for example by requiring the Member States to notify the sample size. This option might however overly burden Annex V, also the Member States might refrain from providing other relevant information where notification requirements are very specific.	Member States appear to have problems in demonstrating that they have implemented robust measurement, control and verification protocols. We therefore recommend providing further guidance to Member States on the appropriate monitoring, verification and auditing requirements for implementation of EEOS.	7(6)
		Deemed savings - the provision could make reference to default values for Member States to use in their calculations for specific actions. However,	Deemed savings - the provision of additional guidance might help with the implementation issues. This may	Annex V (1)

Provision	Major changes	Minor changes	Additional Guidance	Reference
		<p>this would require work to establish these values, and may create problems for those Member States who already have existing datasets which they use in their policy appraisals. Such values would also need to reflect national circumstances such as climatic conditions, and difference in building stock, which may make the use of reference values prohibitive.</p> <p>Metered savings - the wording of the provision is that Member States 'may' use the metered approach, and in relation to what need to be notified Annex v(4f) requires Member States to provide 'details of the calculation methodology'. This could be strengthened to require more specific information on the calculation methodology, such as the procedure for calculating the savings, and any corrections that have been made for external factors.</p>	<p>demonstrate more clearly to Member States exactly how to implement the requirement (to reduce any misunderstanding) as well as clarifying what is meant by 'previous independently monitored energy improvements in similar installations'. Reference could be made to existing data sources where they exist to aid understanding.</p> <p>Metered savings - the provision of additional guidance might help with the implementation issues. This may demonstrate more clearly to Member States exactly how to implement the requirement (to reduce any misunderstanding) as well as clarifying what is meant by details of the calculation methodologies. Reference could be made to existing good practice examples, to illustrate what a good notification looks like.</p>	
		<p>Scaled savings - the wording of the provision currently allows Member States to use engineering estimates where establishing robust measured data for a specific installation is difficult or disproportionately expensive OR where the engineering estimates are carried out on the basis of nationally established methodologies and benchmarks by qualified or accredited experts that are independent of the obligated, participating or entrusted parties involved. The effectiveness of the provisions could be increased by changing this to an AND statement, so all scaled savings have to be based on nationally established methodologies and benchmarks by qualified, accredited and independent experts.</p> <p>Surveyed savings - the wording of the provision is that Member States 'may' use the surveyed approach, and in relation to what need to be notified</p>	<p>Scaled savings - the provision of additional guidance might help with the implementation issues. This may demonstrate more clearly to Member States exactly how to implement the requirement (to reduce any misunderstanding) as well as clarifying what is meant by 'nationally established methodologies and benchmarks by suitably qualified or accredited experts that are independent of the obligated, participating or entrusted parties involved'. Reference could be made to existing data sources where they exist, to aid understanding.</p> <p>Surveyed savings - the provision of additional guidance might help with the implementation issues. This may demonstrate more clearly to Member States exactly how to implement the requirement</p>	

Provision	Major changes	Minor changes	Additional Guidance	Reference
		Annex V(4f) requires Member States to provide 'details of the calculation methodology'. This could be strengthened to require more specific information on the calculation methodology, such as the representativeness of the survey, the level of uncertainty in the estimate, and where the results from surveys of other measures are used, how applicability to the current instrument is ensured.	(to reduce any misunderstanding) as well as clarifying what is meant by details of the calculation methodologies. Reference could be made to existing good practice examples, to illustrate what a good notification looks like.	
Additionality	The provision could be revised to more clearly define the conditions (i.e. EU laws and policy types) where aspects should be taken into account to ensure additionality of savings. It might however be difficult to draw up requirements/definitions applicable to all cases and measures.	Given that Article 7(9) (d) and (e) simply refer to levels 'mandatory and applicable in the Member States under Union law', the requirements could be further defined to help Member States to implement the provision. Where this cannot be done without excessive burden on Article 7 or Annex V itself, additional guidance on the relevant EU levels should be preferred.	<p>The provision of additional guidance on additionality might help with the implementation issues. This may demonstrate more clearly to Member States what is required by the provision and exactly how to ensure the additionality of savings (to reduce any confusion). Guidance on the following aspects could be included:</p> <ul style="list-style-type: none"> • Mandatory EU requirements relevant for standards and norms and energy labelling schemes • The criterion of additionality, including free-ridership • How additionality can be corrected for, including worked examples. This would demonstrate examples of how to correct for additionality correctly, as well as how to demonstrate in the notification that additionality has been dealt with. This may need to include different examples to cover the combinations of different policies and sectors. 	Annex V (2)(a), Annex V (3)
Climatic variations			The provision of additional guidance (possible best practice) on how climatic variation can be incorporated in the savings calculation ('approach taken') so that those countries that wants to use this option can provide sufficient information to be in compliance with the reporting requirement of	Annex V (2)(b)

Provision	Major changes	Minor changes	Additional Guidance	Reference
			Annex V (4)(h). The guidance note does not discuss this issue	
Materiality		The wording could be modified to exclude regulations and voluntary agreements, or standards and norms from the requirement, as materiality is not relevant in these cases, assuming enforcement and compliance is strong. However, this may add more complexity, and in practice will not actually change the action that is taken to improve the credibility of the savings	An alternative option would be to provide further guidance to Member States on materiality and how it could be met for different policy measures to improve its effectiveness and efficiency of implementation between the Member States. The focus should be on how Member States can ensure their policies are material, so is focus on the outcome i.e. making a material difference, rather than the reporting of the action taken	Annex V (2)(c)
Double counting				Annex V (2)(d)
Lifetime of savings		Annex V (2)(e) would need to be amended with a new cut-off date (change from 31 December 2020 to 31 December 2030) ⁶² .	To achieve the provision of an all-encompassing information on lifetimes by all Member States a collection of the most common individual actions and associated lifetimes could be prepared as further guidance on the ground that a great portion of actions are similar in the various Member States – lifetimes applied in other countries can be used.	Annex V (2)(e)
Measures with aim to result in lasting transformation				Annex V (2)(f)
Quality standards		Minor change to Annex V (4) notification requirements might be considered, specific notification requirements might help the Member States in notifying sufficient information, for example by requiring the Member States to notify specific quality standards and protocols for monitoring quality standards. Too specific and long requirements might	Member States seem to have problems in demonstrating that they are maintain quality standards. While the cause of the problems is unclear, it might well be due to lack of understanding within the Member States of the notification requirement or requirements for maintaining quality standards. We	Annex V (2)(g)

⁶² In case the final date is extended – subject to the EED Review

Provision	Major changes	Minor changes	Additional Guidance	Reference
		however overly burden Annex V, also the Member States might refrain from providing other relevant information where notification requirements are very specific.	therefore recommend providing further guidance to Member States on the appropriate requirements for maintaining quality standards.	
Measurement, control and verification systems			The analysis identified that some Member States might have misunderstood the essence of the measurement, control and verification requirements. The Commission could therefore issue further guidance for the Member States on appropriate monitoring and control systems. That should facilitate the Member States in implementing the provisions and also provide further detail on the systems in their notifications. Given however that the identified issues with the implementation related to few isolated occasions and overall the provisions were implemented as expected, where information was provided in the notifications, a change in the provisions themselves can be considered unnecessary at this moment.	7(6)
Independent measurement, control and verification				7(6)
Eligibility			Annex V (4)(e) requires Member States to notify as part of their detailed methodology the eligible measures categories. A clear definition of what is meant by eligible is not provided. There is scope for the eligibility requirement to be defined much more clearly through additional guidance.	Annex V(4)(e)
Reporting			The notification requirement in Annex V(4) for the Member States states that ' <i>Member States shall ... notify ... of calculation methodology</i> ', without clearly setting out what information needs to be notified by Member States to demonstrate that they	Annex V(4)

Provision	Major changes	Minor changes	Additional Guidance	Reference
			have fulfilled the requirements. Further guidance may help to ensure more consistent reporting of information.	
Specific requirements for the EEOS				
Social aim	The inclusion of social aims could be made mandatory and Article 7(7)(a) could even specify the share of energy savings to be allocated to households in fuel poverty. The consequence of this would be that the cost of the delivery of the energy efficiency obligation scheme (assuming the same amount of energy savings) would increase – an analysis of the costs of delivering energy savings to fuel poor households shows that per unit of energy saved the costs are higher as for the able to pay sector. This is because households in fuel poverty typically make a smaller or not contribution to the investment cost of the energy efficiency measure whereas the able-to-pay sector covers a higher share of the cost. ⁶³			7(7)a
Energy service providers	Making the involvement of third parties and energy service providers mandatory would terminate all direct installations of energy efficiency actions by the obligated parties. However, whilst this may increase the cost of delivery (for example where obligated parties established capabilities to deliver energy	The wording of the provision could be simplified to express: <ul style="list-style-type: none"> • option to include third parties (every actor beside the obligated parties) • non-discriminatory nature of the involvement • savings should always be certified. 		7(7)b

⁶³ Rosenow, J., Platt, R., Flanagan, B. (2013): Fuel poverty and energy efficiency obligations. The case of the Supplier Obligation in the UK. Energy Policy

Provision	Major changes	Minor changes	Additional Guidance	Reference
	efficiency measures in-house and then have to contract the same service using third parties but for a higher price), there would not be any impact on the amount of energy savings delivered (assuming the targets remain the same).			
Carry over				7(7)c
Publishing of savings				7(8)
Customer information	Delete the provision as the requirement for Member States to ensure non-discriminatory designation is already included in Art 7(4).	Generalise the requirement and substitute 'statistical information on their final customers' with 'statistical information on the parameter(s) on which the designation of obligated parties is/are based'.		7(8)
Customer consumption				7(8)
Specific requirements for the alternative policy measures				
Use of alternative policy measures		Require the Member States to notify of the category of the alternative policy measure with reference to Article 7(9) (a)-(f). This would help the Commission with the compliance assessment in understanding the requirements applicable for the measures.		7(9)
Criteria for policy measures				
Intermediate periods				7(10)
Responsibilities				7(10)
Determination of energy savings	Remove the provision in its current form. Suggested alternative options that can be considered for			7(10)

Provision	Major changes	Minor changes	Additional Guidance	Reference
	<p>reducing the risk of non-compliance, apart from the monitoring of annual realised savings on the basis of Annual Reports:</p> <ul style="list-style-type: none"> • benchmarking of expected savings from similar policy measures across Member States • comparing savings ambitions with past experiences 			
Amount of energy savings	Remove the option of expressing savings targets both for obligated parties and for alternative policy measures in primary energy. This can be considered due to the issues with the effectiveness and coherence of delivering the aims of Article 7. This would interfere with the decision of 2 Member States (on the basis of reviewed documentation). In case of expressing the savings associated with alternative measures, this entails simply the translation of primary to final energy terms.			7(10)
Calculation of energy savings of tax measures - additionality			Additional guidance around the reporting of information required by Member States may help ensure that all Member States are implementing the requirements correctly. This would illustrate what good practice might look like in demonstrating additionality to the energy taxation directive (2003/96/EC)	Annex V (3)(a)
Calculation of energy savings of tax measures - elasticities		Refinement of the criteria in Annex V might improve the credibility, although this might be better addressed through better explanation of the existing criteria (see additional guidance).	Additional guidance on what would be consistent with <i>recent, relevant and official data</i> . This would help ensure that Member States were adopting a consistent approach when selecting elasticities. It might also	Annex V(3)(b)

Provision	Major changes	Minor changes	Additional Guidance	Reference
			provide guidance on when it is appropriate to perform new research, which might be based on the principle of proportionality. Finally, further guidance on what might be considered as sufficient information to include in the notification to demonstrate this requirements has been met.	
Calculation of energy savings of tax measures – accompanying taxation policy instruments				Annex V(3)(c)
Annual report				7(10)
Monitoring and control systems		Annex V (4) could be amended with more detailed requirements for the notifications, like the sample size to be verified and also measures taken where the progress is unsatisfactory. It should, however, be noted that the further detail could burden the Annex.	Further guidance could be prepared on appropriate monitoring and control systems. This would facilitate Member States in implementing the provisions and also provide further detail on the information on their systems that needs to be provided in the notifications. However, given that the identified issues with the implementation related to few isolated occasions and overall the provisions were implemented as expected, where information was provided in the notifications, a change in the provisions themselves can be considered unnecessary at this moment.	7(10)
Annual trend				7(10)
Policy overlaps				
Policy overlaps		Further information can be requested from the Member States on policy overlaps and the safeguards implemented by the Member States to avoid policy overlaps to assist with compliance assessment. Notification requirements in Annex V (4) would need to be amended in this regards.	Additional guidance on how Member States can demonstrate to the Commission that they have guaranteed that in the calculation of the savings no double counting occurs due to overlap in policy measures.	7(12)

It is also important to note that further work is required to develop the options further. Taking as an example the minor change that would require Member States to specify more clearly how they have taken into account the requirement to verify a statistically representative sample, this would require further assessment of how this may be done. An illustration is provided in Box 2.

Box 2: Determining a statistically representative sample

Article 7 requires Member States to put in place measurement, control and verification systems under which at least a statistically representative proportion and representative sample of the energy efficiency improvement measures is verified. The size of the sample that needs to be verified must be determined by the monitoring authority.

The size of the sample depends on the targeted accuracy and confidence levels. For a population of around 5,000, and by using the most commonly used values for the parameters reflecting the 'reliability' of the estimation (confidence level: 95%, margin of error: +/- 5%, standard deviation: 50%) the required sample size is around 400. The sample size increases if we increase the confidence level or reduce the margin of error or both. The sensitivity of the sample size to these parameters can be illustrated by the fact that the required sample at 99% confidence level and 3% margin of error would be 1,850. The formula that gives the size of the sample is:

$$SS = \frac{Z^2 * p * (1 - p)}{c^2}$$

Where SS is the sample size, Z is the Z score (1.96 for 95% confidence level)⁶⁴, p is the standard deviation (default of 0.5) and c is the margin of error (e.g. 0.04 for +/- 4%).

These values are valid only if the population size, in our case the number of executed same energy efficiency actions, is large. If the number of executed energy efficiency actions is not large (less than approximately 3000), then the following equation should be used which includes a term 'N' for population size.

$$Sample\ size = \frac{\frac{Z^2 * p * (1 - p)}{c^2}}{1 + \frac{Z^2 * p * (1 - p)}{c^2 N}}$$

Where N is the population size, c is the margin of error, and Z is the Z-score (1.96 if the confidence level is 95%; 1.65 if confidence level is 90%)⁶⁵. This is a standard statistical equation used to determine the sample size required to calculate a proportion with an acceptable level of precision.

It is important to note that the percentage of the sample compared to statistical population is not fixed: if the number of savings action to be monitored is only 100 then the required sample to be verified is as high as 80 (at 95% and 5% values).⁶⁶ This means that in the case of such actions a large share of reported actions needs to be verified to achieve the confidence levels.

It is also important to note that other issues may need to be considered when determining the sample necessary to verify energy savings. For example, it may be necessary to conduct a stratified sample if the action is relevant across a range of building types; this approach would ensure that the number of buildings sampled in each category is proportional to the number of buildings in that category. If there is reason to believe that an action results in a wide range of savings in different types of buildings, it may be appropriate to sample each category separately using the equation above to calculate the necessary sample size.

⁶⁴ Each confidence level has a corresponding Z score.

⁶⁵ Townend, J. (2002). *Practical statistics for environmental and biological scientists*. Chichester: Wiley.

⁶⁶ Calculators can correct the sample size in case of small population (e.g.: <http://www.surveysystem.com/sscalc.htm>)

6.2 Development of the analytical approach

As described above, a range of potential amendments have been identified for how the specific requirements in Article 7 and Annex V could be improved. These revisions aim to address, through minor changes, major changes, or additional guidance, the different problem areas described in Chapter 5. The outcome is a large number of potential options for improvement.

It is not practical, or proportionate, to assess each of the individual revisions. Instead, the revisions have been grouped together in relation to the main problem areas. Therefore, for each of the problem areas a number of options have been defined which represent specific revisions, or groups of revisions, which are designed to address the specific problem.

Each of these options has then been screened to identify the most promising options/options for addressing each of the problem areas. Finally, the most promising options were packaged together into policy packages.

6.2.1 Screening of the options

In accordance with Tool 14 of the Commission's Better Regulations toolbox, each of the options has been screened in qualitative terms in relation to its effectiveness (in overcoming the specific problem described) its efficiency in doing so, together with any issues of coherence or feasibility. This provides a high-level assessment of the most promising options.

The scoring has used a 5 point scale, based on expert judgement. The scores are designed to describe the performance of the options relative to each other (i.e. to show the most/least effective, efficient, coherent and feasible options,) and do not represent absolute estimates (e.g. the energy savings or costs associated within the options). However, to the extent possible the scores do aim to reflect the expected magnitude of the impacts on the relevant criterion. Therefore, the scoring is made by firstly reviewing the performance of all options against the criteria, and then scores are assigned which reflect the relative performance of the options (so those options that are expected to have a greater impacts will receive a higher score) but also the magnitude of the impact (so those options that have a very large impact are more likely to be given a score at the upper or lower range). Thus, for example, an option which is expected to reduce administrative burden would receive a better relative score in relation to efficiency than an option that has no impact on administrative burden, and if the option involved a large reduction in cost then the score would be at the higher end of the range (i.e. 4 or 5). While this approach is rather subjective, the aim at this stage is simply to screen out those options which are most effective, efficient, coherent and feasible from those that are least. A more in-depth assessment of the impacts can then be performed on the most effective, efficient, coherent and feasible options, as described below.

6.3 Assessment of the options

In the following section each of the options has been screened against the scoring criteria. Options have been defined in relation to each of the problem areas described in the previous chapter. In each case a specific policy objective has been defined, which reflects the problem that needs to be addressed (i.e. delivery of the policy objective should help to overcome the problem identified). The different options have then been developed to address the specific policy objective, and the evaluation score reflects the expected performance of the option against the policy objective.

Each of the main problem areas, and the associated options, are discussed below.

6.3.1 Target date may incentivise short-term energy savings

As described above, Article 7(1) lays down the date by which the cumulative end-use energy savings target should be achieved by (31 December 2020).

As a result of the target date that is set out in Article 7(1), at the end of the obligation period Member States might prioritise measures that deliver short term energy savings (e.g. behavioural measures), over longer term actions (e.g. building fabric measures). Ultimately, this could mean that measures implemented in response to Article 7 may be shorter-term, and deliver less energy savings by 2030, so make a weaker contribution toward the 2030 climate and energy targets. Also, changing the sunset clause to a later date would result in significantly higher savings (our initial analysis in Section 5.2.11

suggests that an additional 148% of energy savings could be delivered in total and 60% more savings by 2030 if the sunset clause was extended to 2030 compared to the status quo).

To ensure that the policy options address this problem area, the following policy objective has been used to assess the performance of the options:

- To ensure that the actions taken by Member States are sufficient to deliver the EU's 2020 target, while also contributing positively towards to EU's 2030 ambitions.

In relation to this policy objective, one option was identified, alongside the do nothing baseline.

- **1a - Do nothing.** In this case the provisions would be unchanged.
- **1b - Extend the sunset clause.** In this option the final date by which the (cumulative) energy savings target would need to be achieved would be extended. This would keep the level of new annual energy savings at the same level (i.e. 1.5% of the baseline energy consumption, cumulatively, per year), but the provision would also promote energy savings beyond 2020. This would stimulate energy reductions that would contribute more directly towards the 2030 target.

Policy option	Effectiveness	Efficiency	Coherence	Feasibility	Comment
1a - Do nothing	3	4	3	5	<p>Effectiveness: The current provisions already stimulate a range of energy savings measures, including long-term savings. However, towards the end of the period the focus may shift to shorter-term measures, which make a weaker contribution towards the 2030 objectives.</p> <p>Efficiency: Target is based on cumulative energy savings of the assessment period which allows Member States to implement savings at a rate that suits their national circumstances.</p> <p>Coherence: Strong coherence with 2020 energy saving target, but less coherence with the 2030 objective.</p> <p>Feasibility: Represents current approach and no obvious concerns from Member States, so feasibility is strong.</p>
1b - Extend the sunset clause	4	4	3	4	<p>Effectiveness: Would encourage more long term measures by not restricting eligible energy savings to those delivered by 2020, but there may be a slight risk of not delivering required savings by 2020 (depending on phasing – if Member States back-load their savings and thereby deliver less by 2020).</p> <p>Efficiency: Target is based on cumulative energy savings of the assessment period which allows Member States to implement savings at a rate that suits their national circumstances. Overall level of annual savings assumed to be the same as in the do nothing scenario.</p> <p>Coherence: Coherence with the 2030 target.</p> <p>Feasibility: Will require agreement of a target post-2020. Assuming that the overall level of annual savings remains at 1.5%.</p>

Key: 1 = Low, 5 = High. For example 5 = highly effectively at delivering the objective, 1 = low level of effectiveness.

While Option 1b will address the problem by providing greater stimulus for longer term action than Option 1a (do nothing), there is a risk that Member States may put back action until later, which may

put at risk the delivery of the 2020 target⁶⁷. This could be mitigated by establishing an intermediate target as part of Article 7(1).

Overall both the do-nothing option and Option 1b perform well. In part this is because, based on the analysis presented in Chapter 3, a reasonable proportion of the actions stimulated by Article 7 are associated with measures that have a long lifetimes⁶⁸. This suggests, at least based on current evidence, that the energy saving target as currently defined does not appear to prioritise short-term measures (i.e. the problem is not large). However, this situation may change towards the end of the assessment period, particularly if Member States existing policies have not performed as well as expected, so further 'quick wins' are required for them to deliver their cumulative energy saving target in 2020.

Where Option 1a is clearly limited is that it doesn't incentivise new energy saving actions post 2020. Article 24(9) of the EED requires the Commission to review the need for a change in the final date laid down in Article 7(1). It can be concluded that extending the date would more effectively stimulate energy saving beyond 2020. Extending the date of the obligation period would effectively mean an increase in the cumulative energy savings (although not the annual ambition level), which would need to be negotiated with Member States. This will be considered as part of the EED review.

An illustration of the potential savings from extending the obligation period to 2030 is provided in Section 6.4.3.

6.3.2 Use of exclusions and exemptions is not sufficiently limited

The use of exclusions and exemptions has a direct impact on the overall energy savings target. Therefore changes to these provisions can have a clear and direct impact on the overall energy savings from Article 7. At the same time the exclusions and exemptions provide flexibility to Member States, so that they are not disadvantaged because of their national circumstances (e.g. high level of transport energy consumption). However, due to insufficient limits on their use, the exclusions and exemptions have been used extensively by almost all Member States, and not just those where national circumstances warrant the use of the flexibility.

To ensure that the policy options address this problem area, the following specific policy objective has been used to assess the performance of the options:

- To ensure that Member States' targets are set at a level that is sufficient to deliver the EU's 2020 target, and contributes to the 2030 objectives, while also reflecting the different national circumstances of Member States.

In relation to this policy objective, we identified three broad options, alongside the do nothing baseline.

- **2a - Do nothing.** In this case the provisions would be unchanged.
- **2b - Removal of exclusions/exemptions – exclude/exempt in all cases.** This option would involve the removal of the flexibilities and instead the energy saving target calculation will use a baseline that excludes transport energy consumption in all cases. Likewise the option would involve the removal of the use of exemption, and instead a reduction in the energy saving target of 25% would be applied to all Member States when calculating the target.
- **2c - Removal of exclusions/exemption – no exemptions/exclusions allowed.** This option would involve the removal of the flexibility and effectively would not allow the exclusion of transport energy consumption. Likewise, no exemptions under Article 7(2) would be allowed (i.e. 0%).
- **2d - Add additional conditions on situations where flexibility can be used.** In this option further restriction would be applied to the exclusions/exemptions. This might relate, in particular, to the use of a lower annual saving rate. Under this option the flexibilities would still apply, but would be restricted to only those Member States that were strongly disadvantaged without the use of the flexibilities.

⁶⁷ However, the use of a cumulative energy saving target helps to mitigate this as it stimulates Member States to continually take action, as it is difficult to make up a cumulative shortfall in savings in later years.

⁶⁸ While data was only available for just over 50% of the energy savings, of this proportion 28% of the savings were estimated to arise from measures with lifetimes of over 20 years, and a further 15% of this proportion from measures with lifetimes over 10 years.

Policy option	Effectiveness	Efficiency	Coherence	Feasibility	Comment
2a - Do nothing	3	4	4	5	<p>Effectiveness: Existing provisions provide some limits on the use of exclusions and exemptions, which largely ensures that Member States' targets are in-line with the EU's 2020 target, but they may be overly generous in some cases.</p> <p>Efficiency: Flexibilities allow Member States to adjust their targets to reflect national circumstances in a range of areas. This reduces the costs of delivery. However, the use of exemptions/exclusions involves some administrative burden.</p> <p>Coherence: The Impact Assessment of the EED allowed for a reduction of the initial ambition level by 25% – assuming the take up of all exemptions under Article 7(2), and also assumed that all Member States would exclude transport energy consumption. Current usage of exclusions and exemptions is therefore largely in-line with the EED requirements. Also by reflecting Member States national circumstances it is coherent with the national context.</p> <p>Feasibility: Represents current approach and no obvious concerns from Member States, so feasibility is strong.</p>
2b - Removal of exclusions/exemption – exclude/exempt in all cases.	4	4	3	5	<p>Effectiveness: Removes the problem by taking away exclusions and exemptions, while still (largely) delivering the 2020 target. However, the targets would not reflect national circumstances beyond the target being based on the (aggregate) baseline level of final energy consumption.</p> <p>Efficiency: Would remove the element of flexibility, although the targets would be unchanged for most Member States. Therefore costs of delivery would be unchanged. Would also reduce some administrative burden.</p> <p>Coherence: Outcome would not be too dissimilar to the Commission's Impact Assessment of the EED which assumed that all Member States would use the full 25% exemptions, and would exclude transport energy consumption.</p> <p>Feasibility: Since targets will largely be unchanged for most Member States, and involves simplification in procedures, feasibility is good.</p>
2c - Removal of exclusions/exemption – no exemptions/exclusions allowed	5	2	2	2	<p>Effectiveness: Removes the problem by taking away the exclusions and exemptions. However, this will remove the flexibilities for Member States to adjust their targets to reflect their national circumstances. This option would be effective in meeting the target, and would even exceed it.</p> <p>Efficiency: Would remove the element of flexibility, and targets would increase for Member States which is likely to increase costs of delivery. Would though reduce some administrative burden through simplification.</p> <p>Coherence: Will result in greater energy savings. Full removal of flexibilities will go beyond the level of energy savings assumed in the Commission's impact assessment.</p>

					Feasibility: Involves simplification in procedure, but since it will effectively increase the target then it would be difficult to get agreement from Member States.
2d – Add additional conditions on situations where flexibility can be used	4	3	3	3	<p>Effectiveness: Principle for setting targets unchanged, so level of savings is in line with EU targets, along with principle of providing flexibility to Member States to reflect national circumstances.</p> <p>Efficiency: only allow flexibility to be used by those in most need, so efficiency is still good. However, challenges in implementing the restrictions may add some additional administrative burden.</p> <p>Coherence: Will allow 2020 to be met, but depending on the conditions may also deliver additional energy savings in excess of the do nothing scenario.</p> <p>Feasibility: Adding further conditions is feasible but may add complexity, and require further negotiation with Member States.</p>

Key: 1 = Low, 5 = High. For example 5 = highly effectively at delivering the objective, 1 = low level of effectiveness.

Several of the options receive similar scores against the criteria. Option 2b and Option 2c address the problem by removing the flexibilities altogether, whereas Option 2d addresses the problem by including additional conditions where they can be applied. As a result Options 2b and 2c provide some simplification, which may reduce administrative burden whilst Option 2d is expected to increase complexity and the associated administrative burden. In contrast, Option 2b and 2c perform less well in ensuring that the targets reflect national circumstances, whereas option 2d performs better in this area. Both Option 2b and 2d are likely to result in a level of energy savings that is similar to the do nothing scenario (Option 2a), and the level of energy savings would be consistent with the Commission’s Impact Assessment of Article 7. However, by not allowing the use of any exclusions/exemptions, Option 2c would lead to an increased energy saving targets for Member States, which may not be politically acceptable.

It is also notable that Option 2a, the do nothing scenario, scores quite well against most criteria. This is because Article 7(1) and 7(2) already include a number of limits or conditions on the use of the exclusions and exemptions, and the use of these flexibilities was already allowed for in the Commission’s impact assessment, so the savings are consistent with the delivery of the 2020 target⁶⁹. On this basis it can be concluded that the scale of the current problem with these provisions is perhaps smaller than the detailed review of implementation first suggested, at least in relation to performance against the defined policy objectives.

Article 24(9) of the EED requires the Commission to review the requirements laid down in Article 7(1), (2) and (3). It can be concluded that the current provisions have led to Member States notifying energy savings targets which are largely consistent with the levels required for the EU to meet its 2020 targets, and have, at the same time, provided flexibility to Member States to take into account national circumstances. The current requirements could be simplified by removing the exclusions and exemptions, and instead requiring Member States to take a lower energy savings target. This would lead to some administrative simplification, but would remove the principle of flexibility for national circumstances, and the outcome in relation to the energy savings target at EU level will be little different. In contrast, further conditions could be applied in relation to the use of the flexibilities, which would add some further complexity, but maintain the principle of flexibility for national circumstances, and may lead to a slight increase in the energy savings targets for some Member States. There does not appear to be a strong case for any one of these options being particularly better than the others from a 2020 perspective. However, since Option 2b would add simplicity, without changing the overall outcome in relation to the energy savings target then it could be considered preferable. The main weakness of this option is that it less well reflects the national circumstances of Member States. However, as discussed in Section 5.2.2, the current limits on use means that the most Member States can use, and largely

⁶⁹ It is not possible to say if the use of exclusions and exemptions are consistent with the delivery of the 2030 objectives until the targets are more clearly defined.

have used, the full exemptions, without needing to demonstrate special national circumstances, so the rationale to keep this aspect is less strong.

6.3.3 Member States are able to deliver their energy savings by applying many different policies and measures

Article 7(9) allows Member States to use alternative measures to deliver their required amount of energy savings. This allows Member States to take into account the particular national circumstances and choose the policy mix most relevant to the country or specific sector. However, the use of multiple instruments can also present some difficulties, both in terms of the additional complexity associated with the implementation and enforcement of the different instrument types, as well as accounting for the impacts (e.g. dealing with policy overlaps).

To ensure that the policy options address this problem area, the following policy objective has been used to assess the performance of the options:

- To ensure that Member States' put in place robust and credible policy measures to deliver their energy savings targets, which delivers the EU target at least cost

In relation to this problem area, we identified 3 broad options, alongside the do nothing baseline.

- 3a - Do nothing.** In this case the provisions would be unchanged.
- 3b - Restrict Article 7 to just one instrument (e.g. EEOS).** In this case, Member States would only be able to apply a single instrument to meet their energy savings target.
- 3c- Restrict the number of instruments that can be used.** In this case a restriction would be placed on the instrument types that could be used to meet Article 7 (e.g. EEOS and energy and CO₂ taxes).

Policy option	Effectiveness	Efficiency	Coherence	Feasibility	Comment
3a - Do nothing	4	4	3	5	<p>Effectiveness: Current requirements are effective in stimulating Member States to put in place credible policy measures to deliver the required energy savings, and also provide flexibility to Member States in the measures they can use to reduce compliance costs.</p> <p>Efficiency: Allowing multiple instruments may impose additional complexity and administrative burden, but the flexibility allows compliance costs to be limited.</p> <p>Coherence: On one hand the current requirements are very coherent with current action at Member State level. However, it can lead to different policies being implemented in different Member States, which can lead to different market conditions across the EU.</p> <p>Feasibility: Represents current approach and no obvious concerns from Member States about use of alternative instruments, so feasibility is strong.</p>
3b - Restrict Article 7 to just one instrument e.g. EEOS	2	1	2	2	<p>Effectiveness: Restricting Article 7 to just one instrument may help to ensure that the policies implemented are robust and credible, but is less able to reflect national circumstances which may increase compliance costs.</p> <p>Efficiency: In theory, the use of a single instrument would reduce admin burden under Article 7. However, it would impose additional costs for Member States (e.g. requiring changes to the existing policy architecture), and might not provide the optimal mix of instruments to overcome all market failures.</p> <p>Coherence: Low coherence with existing national policies in some countries, as it would require replacing existing policies with an energy efficiency obligation</p>

					<p>scheme. However, it may increase coherence in markets across the EU, depending on the requirements.</p> <p>Feasibility: It would be difficult to get buy-in from Member States to move towards a single policy instrument.</p>
3c - Restrict the number of instruments that can be used	3	2	2	3	<p>Effectiveness: Restricting Article 7 to just a small number of instruments may help to ensure that the policies implemented are robust and credible, but less so than Option 3b. Likewise, this option may better reflect national circumstances, but less so than Option 3a.</p> <p>Efficiency: In theory, the limitation on the number of instruments may reduce admin burdens under Article 7. However, it may still impose additional cost for Member States, and might not provide the optimal mix of instruments to overcome all market failures.</p> <p>Coherence: Low coherence with existing national policies in some countries, but better than Options 3b. However, may increase coherence in markets across the EU, depending on the requirements.</p> <p>Feasibility: Would be more feasible than restricting to a single instrument type, but would still face some opposition.</p>

Key: 1 = Low, 5 = High. For example 5 = highly effectively at delivering the objective, 1 = low level of effectiveness.

Option 3a, the do-nothing option, provides a high level of flexibility to Member States. In contrast, Option 3b, restricting Article 7 to just one instrument (e.g. EEOS) would reduce flexibility considerably, which is likely to increase the cost if implementation, particularly where national policy frameworks need to change. The level of energy savings will also be unchanged, since the savings are defined by the target only, and not by the policy type.

The effect of restricting Article 7 to just EEOS might though include the following:

- The four Member States that use EEOS as the only policy measure in period 2014-2020 have to make policy arrangements to extend the EEOS to 2030.
- The 12 Member States that use EEOS in combination with alternative policy measures have to make policy arrangements to extend the energy efficiency obligation scheme to 2030, and also enhance the target of the schemes in terms of yearly savings to be delivered.
- The 12 Member States that decided not to use EEOS as a policy option will need to develop and implement an energy efficiency obligation scheme for the period 2021-2030. They have the possibility to make use of the experiences of the Member States that already have an operational energy efficiency obligation scheme.

One modification of Option 3b would be to extend the option to include EU wide trading in white certificates, which in principle could deliver cost efficiencies by allowing energy savings to be delivered in the most cost-effective areas. However, previous research has identified a number of barriers to implementation of such as system, which reduces its feasibility. Further discussion is provided in Box 3.

Box 3: EU wide white certificate trading scheme

White certificates are tradable amounts of standardized energy savings. They can be used in combination with an energy efficiency obligation scheme, with the aim of achieving the more cost-effective delivery of the energy savings by allowing trading of certificates.

The 2011 Impact Assessment⁷⁰ briefly discusses the potential benefits and challenges of introducing an EU-wide white certificates scheme. The document recognises that introducing such a scheme would require significant harmonisation regarding the targeted consumption sectors and companies, common rules for counting the savings and their verification and rules for trading.

The potential benefits and challenges associated with setting up an EU wide certificate trading scheme have also been discussed in previous research (Bertoldi and Rezessy 2009⁷¹, Duplessis et al. 2007⁷², Labanca 2006⁷³ and Mundaca 2008⁷⁴) and can be summarised as following:

Benefits:

- An EU wide scheme would potentially reduce the administrative burden for Member States to plan and design EEOS.
- Alignment with an overall change in business models among energy suppliers in the EU, which are increasingly operating on a cross-border basis.
- Act as a driver towards the commercial provision of energy services increasing the market for energy efficiency market actors, such as energy service companies.
- Increase the number of obliged and eligible parties within the scheme which would increase market liquidity and reduce the risk of market power because a high concentration of the obligation in only a few market parties is less likely.
- Allow obliged market actors that face problems in fulfilling energy saving targets (e.g. due to increasing costs in their customer base or country) to implement projects elsewhere and certify savings or to import white certificates generated elsewhere.

Challenges:

- Unequal potential for cost-effective energy savings across EU Member States may lead to some Member States receiving a much larger share of the savings under an EU-wide scheme (where the cost-effective potential is largest, this is likely to be found in Eastern Europe primarily).
- All consumers pay for the scheme but not all benefit from it – in countries with low remaining potential for low-cost savings fewer savings will occur (but everyone in those countries has to pay the cost even if they receive little or no benefits in terms of energy savings). This results in equity concerns – why should consumers in one country pay for energy savings achieved in another country?
- The methodologies used to measure/estimate energy savings (currently) differ across the EU which means the same measure will be allocated different savings in different Member States. It follows that there is an incentive for Member States to artificially inflate savings from specific measures in their calculations to get a larger share of the savings.
- Introducing a standardised calculation methodology could address this but it will be very difficult to define a methodology that takes into account the differences regarding the existing building stock, industrial processes etc. across the EU.
- Risk of overlap with other EU-wide measures – an EU-wide white certificate scheme could potentially overlap with other EU policies if not designed carefully.⁷⁵ Without sound policy design,

⁷⁰ EC (2011). Impact Assessment accompanying the document Directive of the European Parliament and of the Council on energy efficiency and amending and subsequently repealing Directives 2004/8/EC and 2006/32/EC {COM(2011) 370 final} {SEC(2011) 780 final}.

⁷¹ Bertoldy, B, Rezessy, S. (2009). Energy Saving Obligations and Tradable White Certificates. European Commission, Joint Research Centre, Brussels.

⁷² Duplessis, B., J. Adnot, P. Moura, and N. Lablanca (2007). Simulating a European-wide white certificates scheme: design issues and main lesson. Proceedings of eceee Summer Study.

⁷³ Labanca, N. (2006). Interaction and integration of White Certificates with other policy instruments - Recommendations & guidelines for decision makers. EuroWhiteCert Project.

⁷⁴ Mundaca, L. (2008). Markets for energy efficiency: Exploring the implications of an EU-wide 'Tradable White Certificate' scheme. Energy Economics 30, pp. 3016-304.

⁷⁵ This particular challenge has been analysed by: Harrison, D., Sorrell, S., Radov, D., Klevnas, K., & Foss, A. (2005). Interactions of the EU ETS with Green and White Certificate Schemes. Report to the European Commission Directorate-General Environment by NERA Economic Consulting.

there is a risk that the objectives of one scheme will be compromised by offsetting effects in another scheme.

Article 7 has the potential to address some of the challenges, for example, through the requirements it introduces on calculation methodologies. However, the reality is, based on the 16 EEOS notified by Member States to date, that there are a number of differences in the schemes, particularly regarding the calculation of the energy savings and monitoring and verification. Harmonisation of these differences to allow a well-functioning market will require substantial changes to Article 7. Furthermore, the equity impacts of an EU-wide scheme pose a major barrier to the political feasibility of such a scheme. This means that an EU-wide scheme would be very difficult to implement.

Depending on the scope, Option 3c may provide some merits by continuing to provide some flexibility to Member States, but also limiting the scope of policy measures that can be used. However, to secure agreement with Member States this may need to be accompanied by a reduction in the associated targets. As indicated in Chapter 3, the policy types EEOS, energy or CO₂ taxes, financing schemes or fiscal instruments and regulations or voluntary agreements are collectively responsible for almost 79% of the savings but represent 261 (55%) of the implemented measures, of which 181 are 'financing schemes or fiscal instruments'. There could therefore be an argument for restricting the policies to these measures only, as this would provide some simplification while also ensuring that a large majority of the current savings would be covered.

Therefore, on balance, there is not a strong case for Option 3b, due to issues with feasibility and the associated costs. Option 3c may be more feasible and lower cost; however, this option does not score as well as the do-nothing option (Option 3a). Therefore, the preferred option is Option 3a – do nothing (i.e. no change in policy measures). Instead, since the main problem that is associated with this option relates to the complexity of the requirements there may be alternative ways to address this, for example through harmonisation of approaches, or clarification of requirements. These alternative approaches are discussed below.

6.3.4 Member States have some specific requirements that need to be fulfilled in calculating their energy savings, but also have some flexibility in the calculation methods

Article 7 and Annex V include a range of requirements that Member States must meet in relation to their notified policy measures. The aim of these requirements is to ensure that the savings notified by Member States are credible. For some policy measures, for example energy and CO₂ taxes, specific requirements are defined in relation to the calculation methods that are used. However, for other policy measures, Article 7 and Annex V allow greater flexibility in the approaches Member States can use to calculate their energy savings. As a result of this flexibility, the energy savings that are notified by Member States, and the information reported on these methodologies, are not fully consistent or comparable at an EU level.

To ensure that the policy options address this problem area, the following policy objectives have been used to assess the performance of the options:

- To ensure that Member States' estimates of the energy savings from policy measures are robust, credible and consistent at the EU level.

In relation to this objective, we identified three broad options, alongside the do nothing baseline.

- **4a - Do nothing.** In this case the provisions would be unchanged.
- **4b - Harmonise fully the calculation methodologies.** This option would require Member States to use harmonised methodologies when calculating their energy savings.
- **4c - Harmonise the reporting requirements.** This option would not change the flexibility in the calculation methods, but would require Member States to provide consistent information on the approaches that have been used, which would aid comparisons.
- **4d - Additional guidance on calculation methods and reporting.** This would involve the provision of additional guidance on the methods which could be applied, with the aim of ensuring more harmonised approaches. It would also cover reporting.

Policy option	Effectiveness	Efficiency	Coherence	Feasibility	Comment
4a - Do nothing	2	2	3	4	<p>Effectiveness: Current provisions specify certain requirements that need to be met, but still allow a high level of flexibility to Member States which can lead to a lack of consistency at EU level.</p> <p>Efficiency: Current requirements do not always appear to be understood fully by Member States, which can lead to misinterpretation and unnecessary administrative effort.</p> <p>Coherence: Some Member States are applying methods developed to support the Energy Services Directive (2006/32) but it is not clear how compatible these methods are with Article 7/Annex V.</p> <p>Feasibility: Member States had some challenges implementing these requirements so may prefer some modifications to the arrangements.</p>
4b - Harmonise fully the calculation methods	5	1	2	1	<p>Effectiveness: This would ensure that the calculation methods are based on robust approaches/values, and enable more consistent and harmonised information at EU level.</p> <p>Efficiency: It would impose restrictions on Member States, which may add cost. In addition, work will be required to develop the evidence to support the harmonised values.</p> <p>Coherence: Methods may differ from those used already by Member States.</p> <p>Feasibility: Harmonising the methods fully would be a very difficult challenge, as it may require agreement of specific calculation parameters.</p>
4c - Harmonise the reporting requirements	3	3	3	3	<p>Effectiveness: This would improve the effectiveness in terms of understanding the approaches used, but would not harmonise the methods.</p> <p>Efficiency: May require some additional costs to current reporting requirements, but at the same time would reduce the risk of reporting unnecessary information.</p> <p>Coherence: Allows Member States to continue to use existing methods.</p> <p>Feasibility: Agreement of reporting requirements will be more feasible than for the calculation methods.</p>
4d - Additional guidance on calculation methods and reporting	3	4	3	4	<p>Effectiveness: This would increase the effectiveness, but since it would be voluntary then it would be less effective than other options.</p> <p>Efficiency: Member States would still have flexibility in their approaches, so efficiency is not strongly changed.</p> <p>Coherence: Allows Member States to continue to use existing methods.</p> <p>Feasibility: No major challenges developing additional guidance apart from the work involved to develop the guidance.</p>

Key: 1 = Low, 5 = High. For example 5 = highly effectively at delivering the objective, 1 = low level of effectiveness.

The options relating to harmonisation concern two needs. The first is about ensuring the energy savings notified by Member States are robust in their own right and the second is about ensuring the energy savings are comparable, and can be used to track progress against the EU target. The current requirements associated with Option 4a, the do nothing scenario, are only partly effective against this objective currently.

The other policy options score more strongly. At one extreme Option 4b would involve the harmonisation of the methodologies that Member States would need to adopt. This would be effective in ensuring that the calculation would be based on robust and credible approaches, but would leave Member States with less flexibility, may involve greater cost in implementation, and may be less coherent with Member States current approaches. It is also not clear how feasible this option would be, particularly if it required harmonisation of key parameters.

The analysis presented in Chapter 5, identified a long list of potential areas where harmonisation could be considered. The main areas where the harmonisation of calculation methodologies might be the preferred solution are as follows:

- **7(1) Energy saving target, and its calculation** - Member States could be required to calculate their energy savings targets using Eurostat data, or have the target calculated by the Commission, with justification required where alternative statistics are used.
- **7(1) Exclusion from the calculation transport energy consumption** - Member States could be required to calculate their energy savings targets using Eurostat data, with justification required where alternative statistics are used. Further harmonisation of the approach to calculate savings from electric vehicles may be important, particularly in a 2030 context.
- **7(3) Calculation of impact on use of exemptions** - A specific calculation template/table could be specified to ensure all Member States calculate the impacts of the use of exemptions correctly.
- **Annex V (1) Measurement methods** - A default list of values for energy savings from specific measures could be developed for use when calculating energy savings using a deemed or scaled approach. Where Member States includes values that fall outside of this range, a requirement could be introduced for justification for why the values are applicable.
- **Annex V (2)(e) Lifetime of savings** - The harmonisation of the lifetimes for individual actions common to many Member States could be considered for use in calculating lifetimes. Where Member States includes values that fall outside of this range, a requirement could be introduced for justification for why the values are applicable. Experience under the Energy Services Directive ((2006/32) with default values should be reviewed.
- **Annex V(3)(b) Calculation of energy savings of tax measures – elasticities** - The elasticities that are used by Member States could be harmonised, or at least bounded, to provide a more consistent calculation of the energy savings from taxation measures. When values used by Member States deviate from this range, a requirement could be introduced for this to be justified.

Option 4c is concerned with the harmonisation of reporting. This aims to ensure that the Commission has the information it requires to understand the robustness of the methods used, while not specifying what the methods must be. It is therefore less effectiveness, as it would not actually influence the methods used. However, it would ensure that more consistent information and knowledge of outlier values is available at the EU level, so the overall confidence in the reliability of the energy savings would be greater. It would also involve less cost, would have less issues with coherence with existing approaches, and would be more feasible to implement.

For each of the options described above in relation to the harmonisation of calculation approaches, an alternative option would be to require the harmonised reporting of the approaches taken. This would require, for example, Member States to report values for the lifetime of measures in a harmonised way (e.g. inventory of measures with the assumed lifetimes). In this case Member States could use different lifetimes, but the information on the lifetimes would be clearly stated, and therefore more easily benchmarked.

The analysis presented in Chapter 5 also identified some specific areas of harmonisation that related to reporting. These were:

- **7(1) Phasing of savings** - Harmonisation of the *reporting* of the phasing of savings between EEOS and alternative measures would provide a more consistent data set.

- **7(10) Amount of energy savings** - Consider deleting the option of expressing savings targets both for obligated parties and for alternative policy measures in primary energy to increase the consistency of savings calculation targeting end-use.

The final options (Option 4d) is concerned with the harmonisation of approaches through the development of additional guidance. Therefore, in this case the specific requirements of the Article would not be changed, but guidance would be prepared to encourage more complete and consistent implementation of the requirements. This option would be least costly, and would be coherent with existing approaches. Furthermore, as the requirements would be voluntary it would have a high feasibility. However, as the use of the guidance would be voluntary it is likely to be less effective than options 4b and 4c.

The areas where guidance can improve the completeness and consistency of calculation, and also reporting are the same areas that were described for Option 4b and 4c above. However, in this case the requirements would be part of voluntary guidance, rather than the specific requirements of the Article.

In addition, the analysis in Chapter 5 identified the following additional areas of harmonisation that specifically related to the development of new guidance and the clarification of existing requirements:

- **Annex V (2)(a) Additionality** - The list of EU policies that should be considered in the context of additionality could be harmonised, with associated guidance, to provide clarity to Member States as to which policies need to be considered. Also in case of standards and norms and energy labelling schemes, direct references to relevant EU legislation could be provided to the Member States. This would though need to be updated as new policies are introduced.
- **Annex V (2)(b) Climatic variations** - Some further guidance could be provided by the Commission on which measures this requirements is applicable to (and which measures it is less applicable to).
- **Annex V (2)(c) Materiality** - Some further guidance could be provided on which measures this requirements is applicable to (and which measures it is less applicable to).
- **7(4) Obligated parties** - A harmonised list of ineligible measure categories or additional guidance on eligibility of individual actions could be provided to the Member States.

The options described above offer alternative approaches to address the problem from the harmonisation of the calculation approaches, through to the development of voluntary guidance. The content of the options is similar in all cases (i.e. what needs harmonising) but differs in that Option 4b and 4c concern a mandatory requirement and Option 4d concerns a voluntary approach.

Further examination of the specific actions suggests that the best options to address the problem may vary from one requirement to the next. Put another way, for some provisions the development of new guidance might be the best solution, whereas for other provisions the harmonisation of calculation approaches might be the best option. On this basis, it is difficult to state very clearly what the best option is. However, experience in other policy areas (for example reporting of green house gas policies under the Monitoring Mechanism Decision) suggests that the development of voluntary tools and guidance is a useful first step towards more mandatory harmonisation, and provides flexibility where the relevant tools need to be refined or developed further. Subsequently, and once proven, these tools can then be included within the relevant legal acts.

On this basis, Option 4d - additional guidance on calculation methods and reporting - is considered to be the preferred option. These changes will all improve the completeness and consistency of implementation by Member States, and ultimately provide confidence to the Commission that the measures taken will deliver the required level of energy savings.

6.3.5 Member States have flexibility in the approaches they can use to monitor and verify their energy savings

Annex V includes a requirement for Member States to notify their monitoring and verification protocols. This requirement is included to ensure that the claimed savings are credible. The approaches notified by Member States vary greatly, which makes it difficult to aggregate and monitor savings at the EU-level.

Article 24(1) requires Member States to report annually on the progress achieved towards national energy efficiency targets. The different approaches that Member States have notified to monitor and verify their energy savings, may limit the comparability of information reported in the annual reports.

To ensure that the policy options address this problem area, the following policy objective has been used to assess the performance of the options:

- To ensure that Member States' estimates of the energy savings from policy measures are robust, credible and consistent at the EU level.

In relation to this objective, we identified three broad options, alongside the do nothing baseline.

- **5a - Do nothing.** In this case the provisions would be unchanged.
- **5b - Harmonise fully the monitoring and verification protocols.** This option would require all Member States to use the same harmonised protocols for the monitoring and verification of energy savings.
- **5c - Harmonise the reporting requirements.** This option would not change the flexibility in the monitoring and verification approaches, but would require Member States to provide consistent information on the approaches that have been used.
- **5d - Additional guidance on monitoring and verification protocols and reporting.** This would involve the provision of additional guidance on the methods which could be applied, with the aim of ensuring more harmonised approaches. It would also cover reporting.

Policy option	Effectiveness	Efficiency	Coherence	Feasibility	Comment
5a - Do nothing	2	2	3	4	<p>Effectiveness: Current provisions specify certain requirements that need to be met, but still allow a high level of flexibility to Member States which can lead to a lack of consistency at EU level.</p> <p>Efficiency: Current requirements do not always appear to be understood by Member States, which can lead to misinterpretation and unnecessary administrative effort.</p> <p>Coherence: Methods employed are assumed to be coherent with current approaches used by Member States.</p> <p>Feasibility: Member States had some challenges implementing these requirements so may prefer some modifications to the arrangements.</p>
5b - Harmonise fully the monitoring and verification protocols	5	1	2	1	<p>Effectiveness: This would ensure that the monitoring and verification protocols are based on robust approaches, and enable more consistent and harmonised information at EU level.</p> <p>Efficiency: It would impose restrictions on Member States, which may add cost. In addition work will be required to develop the evidence to support the harmonised methods.</p> <p>Coherence: Methods may differ from those used already by Member States.</p> <p>Feasibility: Harmonising the methods fully would be a very difficult challenge, as it may require agreement of specific protocols for different policy types and energy saving actions.</p>
5c - Harmonise the reporting requirements	3	3	3	3	<p>Effectiveness: This would improve the effectiveness in terms of understanding the approaches used, but would not harmonise the methods.</p>

					<p>Efficiency: May require some additional costs to current reporting requirements, but at the same time would reduce the risk of reporting unnecessary information</p> <p>Coherence: Allows Member States to continue to use existing methods.</p> <p>Feasibility: Agreement of reporting requirements will be more feasible than for the calculation methods</p>
5d - Additional guidance on monitoring and verification protocols and reporting	3	4	3	4	<p>Effectiveness: This would increase the effectiveness, but since it would be voluntary then less effective than other options.</p> <p>Efficiency: Member States would still have flexibility in their approaches, so efficiency is not strongly changed.</p> <p>Coherence: Allows Member States to continue to use existing methods.</p> <p>Feasibility: No major challenges developing additional guidance apart from the work involved to develop the guidance.</p>

Key: 1 = Low, 5 = High. For example 5 = highly effectively at delivering the objective, 1 = low level of effectiveness.

The options relating to harmonisation concern two needs. The first is about ensuring the energy savings notified by Member States are robust in their own right and the second is about ensuring the energy savings are comparable, and can be used to track progress against the EU target. The current requirements associated with Option 5a, the do nothing scenario, are only partly effective against this objective currently.

The other policy options score more strongly. At one extreme Option 5b would involve the harmonisation of the methodologies that Member States would need to adopt. This would be effective in ensuring that the monitoring and verification protocols have robust and credible approaches. However it would leave Member States with less flexibility, may involve greater cost in implementation, and may be less coherent with Member States' current approaches. At the other extreme, Option 5d aims to achieve the same objective through voluntary means, specifically through the development of additional guidance. This would be less effective, as the requirements would be voluntary, but would provide flexibility to Member States, and therefore limit and additional cost burden.

The following additional areas could be considered, which specifically relate to the development of new guidance and the clarification of existing requirements:

- **7(6) Measurement, control and verification systems** - The Commission could provide further guidance to clarify some of the specific requirements. This may include providing guidance on how Member States may go about determining what may represent a statistically representative sample. This could also include guidance on which measures the measurement, control and verification systems are applicable to (and which measures it is less applicable to).
- **7(10) Control system** - Providing default figures for statistically representative samples that need to be verified could be considered.

It is difficult to state very clearly what the best option is. However, experience in other policy areas (for example reporting of GHG policies under the Monitoring Mechanism Decision) suggests that the development of voluntary tools and guidance is a useful first step towards more mandatory harmonisation, and provides flexibility where the relevant tools need to be refined or developed further. Subsequently, and once proven, these tools can then be included within the relevant legal acts.

On this basis, Option 5d - additional guidance on calculation methods and reporting - is considered the preferred option. These changes will all improve the completeness and consistency of implementation by Member States, and ultimately provide confidence to the Commission that the measures taken will deliver the required level of energy savings.

6.3.6 Incomplete understanding of the requirements

The review of implementation identified a number of instances where the requirements of Article 7 were not implemented correctly to Member States. Whilst the exact cause of this problem is not known for certain, it is expected to relate to an incomplete understanding of the requirements by Member States, which in turn arises from a lack of clarity in the requirements, or poorly specified requirements. Some of these options relate to this issues discussed above in relation to harmonisation, but not all.

This problem captures a range of provisions including:

- Article 7(2) – how the exemptions should be applied
- Annex V(1) – measurement methods
- Article 7(10) – monitoring and control systems for alternative measures
- Article 7(12), Annex (2)(d) – double counting
- Annex V(2)(a) – additionality
- Annex V(2)(c) – materiality
- Annex V(2)(e) – lifetime of savings
- Annex V(2)(g) – quality standards
- Annex V(3)(a)(b) – calculation of energy savings of tax measures.

To ensure that the policy options address this problem area, the following policy objective has been used to assess the performance of the options:

- To ensure that Member States' estimates of the energy savings from policy measures are robust, credible and consistent at the EU level.

However, unlike the options relating to harmonisation described above, the issues here are more about Member States not following the requirements, rather than the actual methods that were used (e.g. calculate the savings). Nevertheless, the issues are similar to those described in relation to harmonisation above.

In relation to this problem area, we identified three broad options, alongside the do nothing baseline.

- **6a - Do nothing.** In this case the provisions would be unchanged.
- **6b - Improve the wording of the provisions.** This option would involve changes to the wording of the provisions to make the requirements clearer and less ambiguous. It would also prescribe more clearly the requirement and therefore reduce some of the flexibility that Member States currently have in how they interpret the requirements.
- **6c - Improve the wording of the provisions, and also provide additional guidance.** This option would involve some or all of the changes to the provisions described above, but this would be supplemented with additional guidance on how to implement the requirements.
- **6d - Additional guidance only.** In this option only additional guidance would be provided. The wording of the provisions would remain the same, but voluntary guidance would be developed to provide further clarity to Member States on how to meet the requirements.

Policy option	Effectiveness	Efficiency	Coherence	Feasibility	Comment
6a - Do nothing	2	3	3	3	<p>Effectiveness: Current provisions are partially effective, where implemented correctly, but not all provisions have been implemented correctly.</p> <p>Efficiency: The current approach within Article 7 is to define specific requirements to ensure the robustness of the methods. However, in some cases the requirement may be over-prescriptive and in other cases not prescriptive enough, which can create confusion, and unnecessary work from Member States.</p>

					<p>Coherence: The requirements are not always internally consistent within Article 7.</p> <p>Feasibility: Member States had challenges implementing the requirements so may be looking for changes rather than keeping the current requirements.</p>
6b - Improve the wording of the provisions	4	3	4	2	<p>Effectiveness: Would be more effective in improving implementation.</p> <p>Efficiency: However, by prescribing more clearly the requirements, may be more costly.</p> <p>Coherence: Improving wording could enhance coherence but may not solve all issues.</p> <p>Feasibility: It could be difficult to agree changes with Member States, although it is likely they would acknowledge the benefits of simplification.</p>
6c - Improve the wording of the provisions, with additional guidance	5	3	4	2	<p>Effectiveness: Would be much more effective, as would provide clarity on requirements, and guidance on how to implement them.</p> <p>Efficiency: However, it may also impose cost, and only if Member States would continue to have some flexibility would efficiency be maintained.</p> <p>Coherence: Improving wording could enhance coherence but may not solve all issues.</p> <p>Feasibility: it could be difficult to agree changes with Member States, although it is likely they would acknowledge the benefits of simplification.</p>
6d - Additional guidance only	3	4	3	4	<p>Effectiveness: Would be less effective as guidance would still be voluntary and allow different approaches from Member States, but would be more efficient.</p> <p>Efficiency: would be least effort, but would still require basic guidance to be developed.</p> <p>Coherence: would improve coherence less.</p> <p>Feasibility: easy to implement.</p>

Key: 1 = Low, 5 = High. For example 5 = highly effectively at delivering the objective, 1 = low level of effectiveness.

Compared to the do-nothing scenario (Option 6a), the improvement of wording of the provisions, with additional guidance (Option 6c), achieves the best score. However, this will depend on the nature of the changes, and the extent to which Member States still have flexibility over their approach. Additional guidance only (Option 6d) would improve effectiveness, but to a lesser extent. However, it would be more feasible to implement Option 6d as it would not require agreement over changes in the wording of the requirements.

All options will all improve the completeness and consistency of implementation by Member States, and ultimately reduce the risk that the measures taken will not deliver the required level of energy savings. The main cost associated with the changes will be the development of the additional guidance. Cost savings will be associated with reduced administrative burdens to Member States as a result of them having an improved understanding of the requirements. Therefore, it is likely that Member States would welcome some changes. However, there may be a preference for additional guidance only first (Option 6d) prior to any specific changes in the wording (Option 6c).

6.3.7 Article 7 does not provide clear requirements on the information Member States need to report to demonstrate compliance with the requirements

Member States report on their methodologies in different ways. This is because, in most cases, Article 7 does not specify clearly what information Member States are required to notify, and instead only provides general requirements (e.g. Annex V (4)). In some cases, Member States are required to follow

a certain approach, but it is not clear how they should demonstrate (in their notifications) that this approach has been followed. The consequence is that the information notified by Member States is inconsistent, and may not provide sufficient information to determine that the requirement has been met.

To ensure that the policy options address this problem area, the following policy objective has been used to assess the performance of the options:

- To ensure that Member States' estimates of the energy savings from policy measures are robust, credible and consistent at the EU level.

In relation to this problem area, we identified three broad options, alongside the do nothing baseline.

- **7a - Do nothing.** In this case the provisions would be unchanged.
- **7b - Mandatory reporting requirements.** This option would make the reporting of certain information mandatory. This may require Member States, as part of their compliance with the implementation of Annex V, to complete all fields of a reporting template.
- **7c - Voluntary reporting requirements.** This would use the same template as part of the mandatory option, but in this case the template would be part of the Commission's guidance, so its implementation would be voluntary.

Policy option	Effectiveness	Efficiency	Coherence	Feasibility	Comment
7a - Do nothing	2	3	3	3	<p>Effectiveness: Current provisions specify certain requirements, but are less effective in demonstrating how to meet the requirements and demonstrating they have been met in the notifications.</p> <p>Efficiency: The current approach within Article 7 is to define specific requirements to ensure the robustness of the methods, but it is not clear how the implementation of the requirements needs to be demonstrated. This leads to Member States providing incorrect, and sometimes unnecessary information. . However, in some cases the requirement may be over-prescriptive and in other cases not prescriptive enough, which can create confusion, and unnecessary work for Member States.</p> <p>Coherence: Current approach leads to inconsistent reporting by Member States and poor comparability of information.</p> <p>Feasibility: Current approach, but might be expected that Member States would welcome some refinements.</p>
7b - Mandatory reporting requirements.	4	3	4	3	<p>Effectiveness: This would ensure fully consistent information, but would not itself affect the credibility of the information.</p> <p>Efficiency: May increase reporting requirements, but at the same time should reduce unnecessary reporting.</p> <p>Coherence: Would significantly increase comparability of information.</p> <p>Feasibility: It may be difficult to agree a mandatory reporting format but this may depend on the extent of the requirements.</p>

7c - Voluntary reporting requirements	3	3	3	4	<p>Effectiveness: This would ensure fully consistent information, but would not itself affect the credibility of the information.</p> <p>Efficiency: May increase reporting requirements, but at the same time should reduce unnecessary reporting.</p> <p>Coherence: Would increase comparability of information.</p> <p>Feasibility: Would be easier to agree voluntary reporting templates.</p>
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Key: 1 = Low, 5 = High. For example 5 = highly effectively at delivering the objective, 1 = low level of effectiveness.

Both the mandatory (Option 6b) and voluntary (Option 6c) options score higher than the do-nothing scenario. A further option would be to make certain requirements mandatory, and leave others as voluntary (i.e. for those that have the information available). Both options would need to be supported by a reporting template.

Since it may be difficult to agree a reporting template the preferred option at this point is a voluntary reporting requirement (Option 6c) with a view to making this mandatory in the future.

6.3.8 Certain provisions are no longer relevant or not relevant in all cases

Certain provisions are no longer relevant, or not relevant in all the cases. For example, Annex V(2c) requires Member States to demonstrate the materiality of their actions. However, for some measures, such as energy and CO2 taxes, the materiality of the actions is implicit in the calculation methodology, which uses price elasticities. The continued inclusion of these requirements can create unnecessary administrative burden for Member States as they attempt to interpret requirements that are not relevant for these types of measures.

To ensure that the policy options address this problem area, the following policy objective has been used to assess the performance of the options:

- To ensure that Member States’ estimates of the energy savings from policy measures are robust, credible and consistent at the EU level.

In relation to this problem area, we identified three broad options, alongside the do nothing baseline.

- **8a - Do nothing.** In this case the provisions would be unchanged.
- **8b - Removal of provisions that are no longer relevant.** In this case the provisions that are no longer relevant, or less relevant, would be removed.

Policy option	Effectiveness	Efficiency	Coherence	Feasibility	Comment
8a - Do nothing	1	2	3	5	<p>Effectiveness: Requirements are current not providing valuable information.</p> <p>Efficiency: Requiring effort that is not necessary, although not a major admin burden.</p> <p>Coherence: Requirements relate to other provisions, but not critically important.</p> <p>Feasibility: Current approach.</p>
8b - Removal of provisions that are no longer relevant	4	4	3	3	<p>Effectiveness: Overall outcome is unchanged.</p> <p>Efficiency: Removes admin burden.</p> <p>Coherence: No change.</p> <p>Feasibility: Will require agreement of change in wording.</p>

Key: 1 = Low, 5 = High. For example 5 = highly effectively at delivering the objective, 1 = low level of effectiveness.

Removal of provisions that are no longer relevant is the preferred option as it reduces administrative burden without any loss in effectiveness.

6.4 Development of the policy package

As described above, each of the policy sub-options has been devised to address each of the specific problems associated with implementation, along with the associated policy objectives. These policy options can be combined into different policy packages, entailing different level of change – from no change to major changes in Article 7 and Annex V.

The next sub-sections provide a list of possible policy packages with different levels of legislative intervention. The policy packages have been suggested taking into account the priority provisions stipulated in Article 24(9), the implementation of which requires the Commission needs to submit a report to the European Parliament and Council. That report shall be accompanied, if appropriate, by a legislative proposal. The priority provisions are the following:

1. to change the final date laid down in Article 7(1);
2. to review the requirements laid down in Article 7(1), (2) and (3);
3. to establish additional common requirements, in particular as regards the matters referred to in Article 7(7).

Equally, however, the analysis provided in Section 5 has been taken into account in defining the policy packages, which suggested that the requirements of Article 7 and Annex V could be more effective.

In the following sub-sections we start by re-stating the expected energy savings under the current policy package i.e. no changes change to Article 7/Annex V (Option 1). We then assess the change in energy savings that might arise from the alternative policy packages (Options 2 – 6). In each case we assess the change in energy savings compared to the 'non change' scenario.

The analysis of energy savings has only explored the effect of major changes to the energy saving target, for example, as a result of changes in the obligation period, and in the treatment of exemptions and exclusions. The policy options also include elements which aim to improve the credibility of the energy savings e.g. additional guidance. These changes would not affect the level of energy savings (so do not affect the energy savings shown in the scenarios) but would help address issues with credibility of the savings, so provide greater confidence that the notified energy savings will deliver the required level of energy savings.

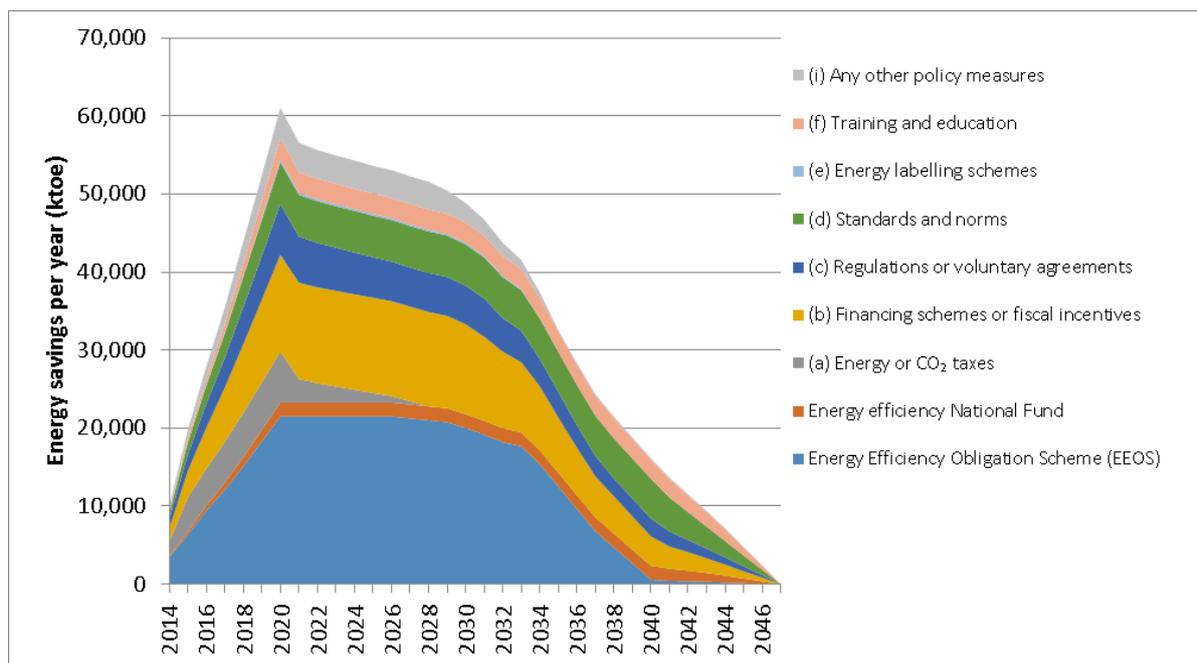
6.4.1 Option 1: No change

This option reflects the current policy package (i.e. there are no changes to Article 7 and Annex V).

As discussed in Section 6.3.1, the current provisions already stimulate a range of energy saving actions, including some long-term actions that will continue to deliver energy savings in 2030 and beyond. However, as shown in the figure below, the highest amount of savings will be delivered in 2020, after which Article 7 will no longer provide a stimulus for new energy saving actions, and the annual energy savings will decline⁷⁶.

Thus under this policy option Article 7 will deliver some energy savings in 2030, from the actions taken up to 2020. However, the level of savings will decline over time and will be much less than the 1.5% additional annual savings experienced over the 2014-2020 period. The annual energy savings in 2030 are estimated to be 48,844 ktoe.

⁷⁶ Annual savings are from energy savings actions implemented during the period 2014-2020, of which some action will continue to deliver energy savings beyond 2020.

Figure 20: Energy savings per year under Option 1: No change scenario

6.4.2 Option 2: Additional guidance

This policy package entails no change to the provisions of Article 7 and Annex V and is therefore similar to the 'no change' policy package. However, to address some of the problems with implementation this option also includes the development of additional guidance for Member States. The additional guidance may cover a range of issues including measurement methods, monitoring and verification protocols and other requirements of Article 7 and Annex V (such as materiality, additionality etc.). A long list of suggestions where additional guidance was considered to be useful for Member States is provided in Table 16 above.

This policy option is expected to increase the effectiveness of Article 7 compared to the 'no change' option, as it would increase the completeness of implementation and harmonise the approaches used by Member States. Therefore, it would not affect the level of energy savings target associated with Article 7, but would help to address issues with credibility, and provide greater confidence that the notified energy savings will deliver the required level of energy savings.

As discussed in Section 6.3, as the guidance would be voluntary in nature it may be less effective than a mandatory approach. However, experience in other policy areas (for example reporting of GHG policies under the Monitoring Mechanism Decision) suggests that the development of voluntary tools and guidance is a useful first step towards more mandatory harmonisation, and provides flexibility where the relevant tools need to be refined or developed further. Subsequently, and once proven, these tools can then be included within the relevant legal acts.

Lastly, as the requirements would be voluntary, it would have a high feasibility.

6.4.3 Option 3: Extension of the obligation period to 2030 and minor harmonisation of Article 7 and Annex V provisions

This policy package would entail a change to Article 7(1) in that the final date by which the (cumulative) energy savings target would need to be achieved would be extended to 2030. This option would keep new annual energy savings at the same level (i.e. 1.5% of the baseline energy consumption, cumulatively, per year) and current exclusions and exemptions as stipulated in Article 7(1) and 7(2). The policy package would also entail minor changes to the requirements of Article 7 and Annex V to harmonise the implementation requirements.

By extending the obligation period but keeping the other elements of Article 7 and Annex V largely the same, this option would essentially see a continuation of Article 7 to 2030, including a similar level of ambition. The potential savings that could be delivered from this option are discussed further in Box 4.

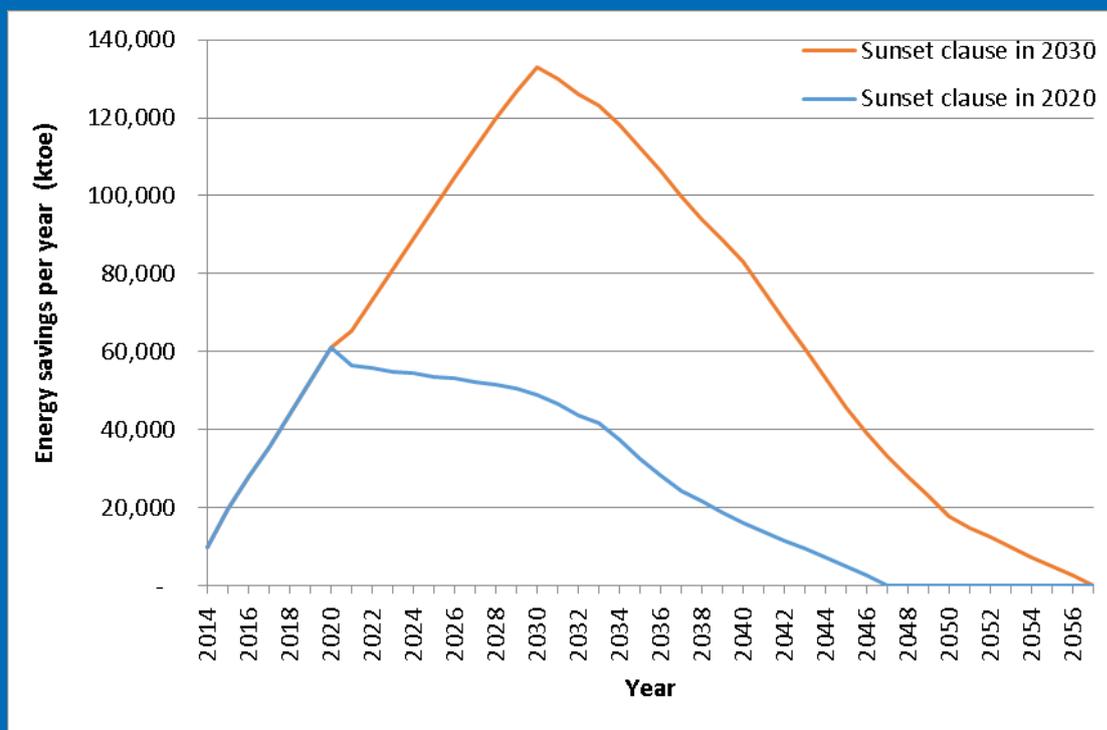
Box 4: Extension of the sunset clause to 2030

The energy savings arising from a shift of the sunset clause from 2020 to 2030 was modelled assuming that:

- the Member States will deliver the savings up to 2020 as notified i.e. their plans will not change for energy savings to 2020, even if the cumulative energy saving target moves back to 2030;
- the level of additional savings delivered in the year 2020 is assumed to continue be added each year, as additional new savings, over the period 2021-2030 (with the same distribution over policy measure types and lifetime categories as in 2020).

The results are provided in the figure below. The blue line shows the current situation with the sunset clause in 2020. The orange line presents the expected savings with the sunset clause in 2030.

Figure 21: Comparison of the annual energy savings under Option 1: no change scenario and Option 3: Extension of the obligation period to 2030 and minor harmonisation of the Article 7 and Annex V provisions



The cumulative savings in 2020 are the same in both scenarios. In the scenario where the final date is changed to 2030 (with current exclusions and exemptions unchanged) the cumulative savings up to 2030 are 60%⁷⁷ higher than the cumulative savings in 2030 with the current situation (sunset clause, exclusions and exemptions all unchanged). This is because the shift in the sunset clause is assumed to stimulate additional savings in the period 2021-2030. The total lifetime savings for the scenario with a 2030 sunset clause are 148%⁷⁸ higher than for the scenarios with the 2020 sunset clause.

The energy savings can also be expressed as annual savings in the target year. Under the current situation (with sunset clause in 2020) the annual savings are estimated to be 61,060 ktoe/yr in 2020, and 48,844 ktoe/yr in 2030. In contrast, under the scenario with the sunset clause extended to 2030, the annual savings increase to 133,060 ktoe/yr in 2030.

Further harmonisation of Article 7 and Annex V requirements could include harmonisation of savings calculation methodologies, monitoring and verification protocols and other requirements (such as

⁷⁷ The cumulative savings increase from 782 to 1,253 Mtoe (difference of 471 Mtoe, i.e. +60%).

⁷⁸ From 1,141 to 2,830 Mtoe (difference of 1,688 Mtoe, i.e. +148%).

additionality and materiality etc.). A full list of suggestions for further harmonisation has been provided in Table 16 above.

As discussed in Section 6.3, the harmonisation of some Article 7 and Annex V provisions would improve completeness and consistency of implementation by Member States and could reduce the risk that the measures taken will not deliver the required level of energy savings. It would, however, leave Member States with less flexibility, and may be less coherent with Member States' current approaches – which may incur costs where approaches need to be changed. This will however depend on the nature of changes, and the extent to which Member States still have flexibility over their approach.

For some Member States it has taken the process of structured dialogue to clarify how Article 7 has been implemented. It could therefore be assumed that Member States would welcome some changes. However, harmonising the methods fully could be a very difficult challenge, as it may require agreement of specific parameters.

6.4.4 Option 4: Extension of the obligation period to 2030, removal of the exemptions and streamlining of Article 7 and Annex V provisions

This policy package has similar elements as the policy package described in Section 6.4.3, however in this case the exemptions in Article 7(2) and (3) are removed.

As discussed in section 2.2.1, the exemptions have been extensively used by the Member States – 27 Member States use the exemptions (24 to a full extent) - that effectively reduces the energy savings target by 24%. Under this policy package the energy savings were modelled from a shift of sunset clause from 2020 to 2030 and the removal of all exemptions. The results are discussed in Box 5.

Box 5: Extension of the sunset clause to 2030 and removal of all exemptions

The effect on the yearly and cumulative final energy savings was modelled for four policy scenarios. All scenarios assume that the sunset clause will be extended from 2020 to 2030 but vary in regards to exclusion of transport energy consumption and/or exemptions. The four scenarios are presented in the table below.

The assumption in all of the scenarios is that there is no change to Article 7 until 2020 i.e. the current situation with 1.5% ambition level, exclusion of transport final energy use⁷⁹ and the 25% exemptions will remain until the sunset clause in 2020. In the current situation, this leads to the notified savings and their lifetimes, as presented in Figure 14 and Figure 15. The corresponding yearly savings (EU28) in 2020 and 2030 are 61 and 49 Mtoe/yr, respectively, in this no change scenario.

We then assumed that in 2020 the sunset clause will be extended to 2030 and four scenarios for different combinations of exclusions and exemptions were modelled. Further, to be able to calculate the effects of the scenarios in terms of yearly and cumulative savings, we assumed that the new yearly savings that will be required to deliver the 2030 energy saving target will have the same distribution of energy savings actions (and therefore lifetimes) as in 2020. The results are provided in the graph below, expressed in terms of final energy savings.

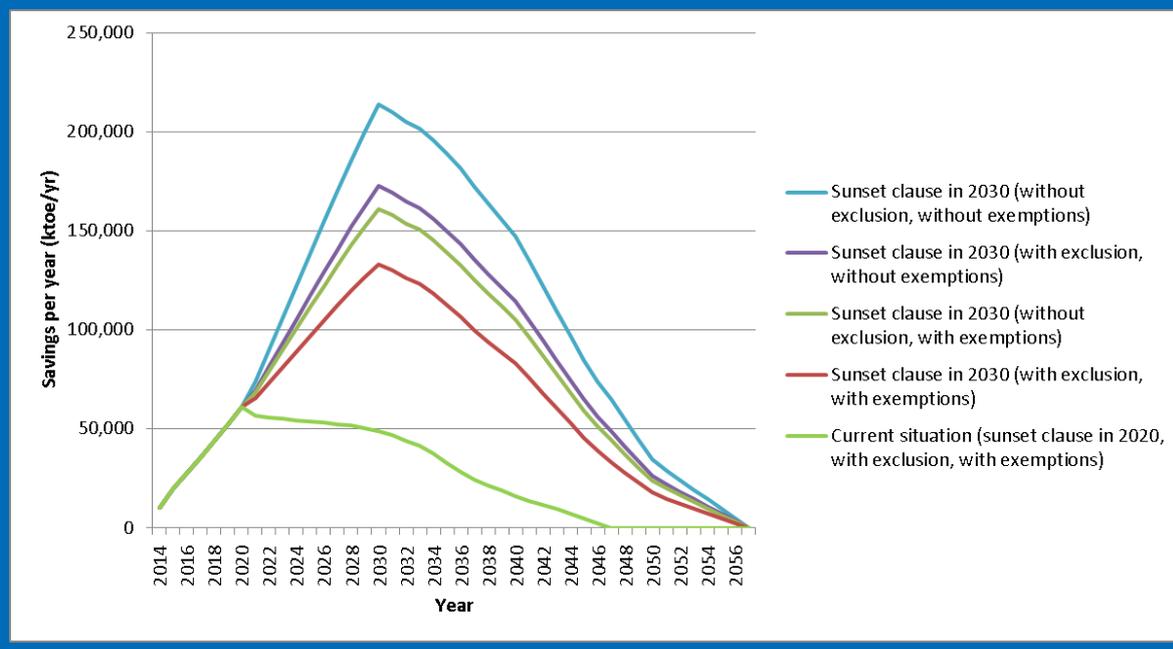
The estimated savings are expressed as additional savings, over and above any savings that will be delivered by measures implemented over the period 2014-2020 anyway, as a result of the current Article 7 targets for 2020.

⁷⁹ The final energy use of transport is 32% of the total final energy use in the EU28.

Table 17: Four scenarios with additional yearly savings in 2030 compared to the current situation (i.e. 49 Mtoe/yr in 2030) and cumulative savings 2030 compared to the current situation⁸⁰ (i.e. 782 Mtoe in the period 2014-2030)

	Scenario	Additional yearly savings 2030	Additional cumulative savings by 2030
1	Sunset clause extended to 2030, with exclusion of transport, with 25% exemptions	+ 172% (+ 84 Mtoe)	+60% (+ 417 Mtoe)
2	Sunset clause extended to 2030, without exclusion of transport, with 25% exemptions	+ 230% (+ 112 Mtoe)	+80% (+ 628 Mtoe)
3	Sunset clause extended to 2030, with exclusion of transport, without 25% exemptions	+ 254% (+ 124 Mtoe)	+89% (+ 693 Mtoe)
4	Sunset clause extended to 2030, without exclusion of transport, without 25% exemptions	+ 339% (+ 165 Mtoe)	+118% (+ 923 Mtoe)

Figure 22: Comparison of the annual energy savings under all policy options



However, removal of exemptions will remove the flexibilities for Member States to adjust their targets to reflect their national circumstances. Also by not allowing the use of any exemptions, Member States' energy saving targets would increase, which may not be politically acceptable. Therefore it may be difficult to get an agreement from Member States to the policy option that fully removes the use of exemptions.

⁸⁰ In the current situation, the baseline is as notified by the Member States, see Table 1.

6.4.5 Option 5: Extension of the obligation period to 2030, removal of the exemptions and exclusions, use of EEOS only and streamlining of Article 7 and Annex V provisions

This policy package has similar elements as the package described in Section 6.4.4, but goes even further by restricting the eligible policy measures to just the use of the EEOS, and also removing the exclusion of transport from the calculation of the energy saving target.

The assumed energy savings to be delivered through this approach were discussed in Section 6.4.4. (represented by Option 4: sunset clause extended to 2030, without exclusion of transport, without 25% exemptions). The full removal of the transport energy consumption and exemptions would trigger +118% more energy savings as compared to the 'no change' option. However such sharp rise in savings might not be accepted by Member States.

This policy package also foresees that Member States would only be able to apply a single instrument in meeting their energy savings target – EEOS. As discussed in Section 6.3.3, using the EEOS may help to ensure that the implemented policies are robust and credible. However this would reduce considerably the flexibility for Member States to deliver the savings with policy measures most coherent with their national circumstances. This is however likely to increase the cost of implementation, in particular where national policy frameworks need to be changed. Given that 12 Member States use EEOS in combination with alternative policy measures and 12 Member States use alternative policy measures only, it could be difficult to get buy-in from Member States to move towards a single policy instrument.

6.4.6 Option 6: Extension of the obligation period to 2030, removal of the exemptions and exclusions and establishment of the EU wide White Certificates Scheme

This policy package is similar to that discussed in Section 6.4.4 in that it foresees a change to Article 7(1) so that the final date by which the (cumulative) energy savings target would need to be achieved is extended to 2030, and also changes to Article 7(2) and (3) so that the exemptions are removed. All energy savings will however be delivered through an EU-wide White Certificates Scheme.

Quantitative assessment of energy savings in 2030 by the policy package was provided in Section 6.4.4. (represented by Option 4: sunset clause extended to 2030, without exclusion of transport, without 25% exemptions). However, further consideration is required of the feasibility and cost (or cost savings) of implementing a white certificates scheme, as this option would not deliver additional energy savings. A detailed analysis of the scheme is provided in Section 6.3.3. The analysis shows that there are a number of barriers to establishing such an EU wide system, which reduces its feasibility.

7 Conclusions and recommendations

The four objectives of this study were:

- to provide a quantified assessment of progress of the national policy measures used for achieving the energy savings target under Article 7, and its share towards the overall EU 2020 energy efficiency target;
- to analyse the various aspects and provisions of Article 7 and Annex V to assess whether the established framework allows achieving the required end-use energy savings;
- to explore need for legal revisions and/or amendments of Article 7 and Annex V of the EED;
- to provide recommendations for necessary improvements for implementation of Article 7 and Annex V.

The main findings on each of the four objectives are outlined below.

7.1 Expected contribution of Article 7 towards the overall EU energy efficiency target

Based on the information notified by Member States up to the 5 October, the notified policy measures are expected to deliver a total cumulative energy savings, over the period 2014-2020, of 250.3 Mtoe. This is 9% larger than the sum of the notified energy savings targets (i.e. collectively Member States are expected to over-deliver the sum of the national targets).

To deliver their energy savings targets Member States plan to use a range of policies. A total of 477 policy measures have been notified. In some cases, the planned savings are provided by the Member State for a group of policy measures.

The most important types of policy instrument (in terms of the energy savings) are energy efficiency obligation schemes (EEOS), which are expected to contribute a total of 34% of the planned savings. 16 Member States notified EEOS, and four of these Member States notified EEOS as the only policy option (Bulgaria, Denmark, Luxembourg and Poland).

Other important policies are 'financial schemes and fiscal incentives' (19% of planned savings), 'energy or CO₂-taxes (14%) and 'regulations or voluntary agreements' (11%). In combination with the EEOS, these four types of policy options are responsible for 79% of the cumulative notified energy savings in 2020.

The sum of the notified planned savings is 250.3 Mtoe, which is 9% larger than the sum of the notified targets. Thus, the expected energy savings notified by the Member States are sufficient to deliver the notified energy saving targets. The analysis of the data from Member State notifications shows that the energy savings targets and the savings from policy measures are 10% and 1% lower respectively than the earlier estimate of the energy savings from Article 7 made by the Commission, based on the final EED text.

The difference between the notified targets and the Commission's earlier estimate can be explained by variances in the baselines that have been used to calculate the targets. This arises in part because Member States have calculated (in accordance with Article 7(1)) their energy saving targets based on final energy sales (i.e. taking into account energy production for own use) whereas the Commission's earlier estimate was based on final energy consumption. This can explain more than half of the difference (i.e. 6% of the 10% difference, see Table 1 for the volume of own energy generation, in final energy terms). The remaining difference is a result of variances in the baseline energy consumption used for the target calculation. The targets notified by Member States are based on the actual energy consumption during the reference period (2010-2012), whereas only 2010 data was available at the time the Commission's estimate was prepared. The sum of final energy consumption in the EU28 for both 2011 and 2012 was 5% lower than for 2010, which can explain the remaining difference. A further factor is that the earlier analysis was based on the average savings target of the existing energy efficiency obligation schemes of that time.

The first year for which energy savings from measures can be counted towards the Article 7 target is 2014. The first overview of the actual realised savings in 2014 will become available when Member States submit their Annual Reports in April 2016.

It is recommended that a check is performed of the 2016 Annual Reports in relation to how the policies are performing against initial expectations, and what this might mean for the overall 2020 target. Attention should also be given to the methodologies that are used by Member States to quantify their savings ex-post, as this will present different challenges to those covered by the notifications under Article 7s to date – which have been focused on the expected (ex-ante) savings.

For some policy measures there continues to be credibility issues in relation to the eligibility, additionality, materiality and double counting of notified savings. It is not possible to quantify the impact of these issues on the overall amount of energy savings to be delivered, but their presence suggests that there could be a risk to the delivery of the expected energy savings for some policy measures.

The structured dialogue with the Member States process has led to an improvement in the completeness and the quality of information from the Member States on the notified policy measures. The clarifications provided as part of this have also helped to reduce issues relating to the credibility of the energy savings.

It is recommended that the Commission continues to seek clarifications from Member States on their Article 7 process. In addition to improving the completeness of information that is notified, the process itself may also have helped Member States to understand the requirements of Article 7 and Annex

7.2 Effectiveness of provisions and associated requirements

While at face value the notifications from Member States include sufficient energy savings to deliver the 2020 target, the actual delivery of the targets will require the effective implementation of the notified energy efficiency policies, and the delivery of the energy efficiency actions, to reduce final energy consumption. It will also require, in some cases, the design and implementation of new policy instruments, and the implementation of robust and credible energy saving actions. Article 7 and Annex V include requirements which help to deliver this outcome.

A review has been performed of the implementation of the individual provisions to date. The focus of the review was on potential areas of improvement, which can enable the overall objectives of Article 7 to be delivered more efficiently or effectively, as well as to identify any requirements that are no longer relevant. The key findings of this study regarding the effectiveness of the existing provisions are listed below.

- **Time perspective of the obligation period:** Article 7(1) lays down the date by which the cumulative end-use energy savings target should be achieved (31 December 2020), as well as the period over which the target should be calculated (new savings each year from 1 January 2014 to 31 December 2020). As a result of this cut-off date, at the end of the obligation period Member States might prioritise measures that deliver short term energy savings (e.g. behavioural measures), over longer term actions (e.g. building fabric measures). Ultimately, this could mean that measures implemented in response to Article 7 may be shorter-term, and make a weaker contribution toward the 2030 energy efficiency target. Evidence from Member States' notifications suggests that having the cut-off date in place does not appear to have led to Member States prioritising short-term measures, with a reasonable proportion of the actions stimulated by Article 7 associated with measures that have a long lifetimes⁸¹. This suggests that the problem is not currently large. However, this situation may change towards the end of the assessment period, particularly if Member States existing policies do not deliver the expected savings, so further 'quick wins' are required for them to deliver their cumulative energy saving target in 2020. Moreover, Article 7(1), as currently defined, will only stimulate new policies up to 2020, and therefore the level of savings will decline quickly after this date, and will be much less than the 1.5% additional annual savings experienced over the 2014-2020 period.

⁸¹ While data was only available for just over 50% of the energy savings, of this proportion 28% of the savings were estimated to arise from measures with lifetimes of over 20 years, and a further 15% of this proportion from measures with lifetimes over 10 years.

- **Exclusions and exemptions are potentially too generous:** Article 7(1) provides the flexibility for Member States to exclude transport energy consumption from their baseline, when calculating their energy savings target. Likewise, Article 7(2) allows Member States to make certain exemptions, with limited restrictions, when calculating their energy savings target. The fact that most Member States have made use of this flexibility does not present a risk to the delivery of the required level of energy savings from Article 7 – since this was allowed for in the initial target setting. Even so, there does not appear to be a strong justification for its continued use as a mechanism to protect Member States, with a disproportionate level to transport energy consumption from being unfairly disadvantaged. While the exemptions relating to ETS industry energy use, supply side savings, and early actions have conditions which reflect national circumstances, the use of the lower annual savings rate has no such conditions, and was used extensively by Member States. As a result of these exclusions and exemptions individual Member States are able to set less ambitious energy savings targets, which ultimately may result in a lower level of final energy savings at the EU level.
- **Energy saving target is based on final energy sales:** Member States' energy saving targets are calculated on the basis of final energy sales⁸². This means that energy generation for own use, which is not sold by energy distributors or retailers, is not included in the baseline that is used to set the energy savings target. This includes, for example, wood fuel supplied from private woodlands for own use, domestic energy production from solar PV or coal from mines that are owned by industry. 14 Member States have chosen to take into account energy generation for own use when defining their baseline⁸³, and for some own energy generation represents a reasonable proportion of final energy consumption⁸⁴. As a result, for some Member States, the overall energy savings target is lower than would be the case if it were calculated on the basis of final energy consumption.
- **Clarity and understanding of Article 7/Annex V:** Implementation of Article 7 and Annex V to date suggests that Member States have an incomplete understanding of the implementation requirements. This may in part be a result of a lack of clarity with the implementation requirements, or poorly specified requirements. However, even where the requirements are well specified, there may still be a lack of understanding within Member States of these requirements. This in particular relates to the requirements in Annex V. Since these requirements are designed to ensure that the energy savings that are calculated by Member States are robust and credible, the consequence of the incomplete implementation of the requirements may be that the notified energy savings may not be as robust, so may not deliver the expected level of savings in practice.
- **Calculation methods:** Member States adopt different approaches to calculate their energy savings, and report on their methodologies in different ways. This may be well justified, since some calculation approaches are better suited to some policies than others. For example, energy savings associated with the renovation of buildings envelope would not typically be quantified using a surveyed savings approach. Likewise, the values that are used for a given calculation approach (e.g. deemed savings, need to be representative of similar installations). However, as a result the energy savings that are notified by Member States, and the information reported on methodologies, are not fully consistent or comparable at an EU level. This inconsistency presents uncertainty about whether the EU is on track to deliver its target, and reduces the integrity of the savings that are claimed at an EU level. There is scope for the provisions to be more clearly specified to reduce ambiguity, enhance overall effectiveness, and increase the transparency and comparability of the approaches used.
- **Reporting on methodologies:** Member States report on their methodologies in different ways. This is because, in most cases, Article 7 does not specify clearly what information Member States are required to notify, and instead only provides general requirements (e.g. Annex V (4)). In some cases, Member States are required to follow a certain approach, but it is not clear how they should demonstrate (in their notifications) that this approach has been followed. The consequence is that

⁸² The Directive requires that the target shall be at least equivalent to achieving new savings each year from 1 January 2014 to 31 December 2020 of 1.5 % of the annual energy sales to final customers of all energy distributors or all retail energy sales companies by volume, averaged over the most recent three-year period prior to 1 January 2013.

⁸³ The other 12 Member States have instead calculated their target based on final energy consumption.

⁸⁴ For most Member States energy production for own use is less than 10% of the total consumption, however, for one Member States it represents 28% of final energy consumption. For the EU as a whole (i.e. across all 28 Member States) the volume of energy production for own use that was taken into account by the Member State in the calculation of its target (14 Member States, of which quantitative data was specified for 12) represents approximately 4% of final energy consumption.

the information notified by Member States is inconsistent, and may not provide sufficient information to determine that the requirement has been met. This ultimately reduces the comparability of information, and reduces the integrity of the savings that are claimed at an EU level.

- **Eligible actions:** Annex V (4)(e) requires Member States to notify as part of their detailed methodology the eligible measures categories. A clear definition of what is meant by eligible is not provided. Eligibility may be defined in relation to whether the policy measures and/or the associated actions satisfy a number of conditions⁸⁵, specifically end use energy savings (Article 7(4)), additionality (Annex V(2)(a)), and materiality (Annex V(2)(c)). Given that some Member States included individual actions within their notifications that are not expected to trigger end use energy savings (like renewable energy measures⁸⁶, or measures associated with energy distribution and transmission⁸⁷) or included measures which are not primarily intended to target energy efficiency (e.g. road tolls) it can be concluded that Member States have differently interpreted the eligibility criterion.
- **Monitoring and verification:** Member States are required to put in place appropriate monitoring, control and verification systems for their energy efficiency improvement measures and set specific requirements for the associated systems. At least some monitoring and verification systems have been implemented by the Member States, in accordance with Article 7, and that the monitoring and verification is undertaken independently from the obligated parties. However, on the specific details of the systems (e.g. significantly significant sample and audits) the effectiveness of the provision is less certain, largely due to lack of information in notifications.

7.3 Proposed changes to Article 7 and Annex V

Following the analysis of the individual provisions, and the identification of the problem areas, a number of recommended areas of improvement were identified. These included minor changes (e.g. change in wording to improve consistency or completeness of implementation but no change in substance), major changes (e.g. removal of provision, or major change in substance), and additional guidance (e.g. where provision is evaluated favourably, but implementation has not been consistent across Member States). The detail of the proposed changes is described in Table 16 of this study.

A long list of potential revisions were identified. It was not practical, or proportionate, to assess each of the individual revisions. Instead, the revisions were grouped together in relation to the main problem areas and were formulated into specific policy options to address the problem. Each of the options was then screened to identify the most promising option/options for addressing each of the problem areas.

The policy options can be combined into different policy packages. Six different policy packages were suggested, taking into account the priority provisions as stipulated in Article 24(9). The suggested policy packages entail a different level of legislative intervention – from 'no change' scenario to 'substantial legislative change'. The policy packages are as follows:

- no change;
- additional guidance;
- extension of the obligation period to 2030 and minor harmonisation of Article 7 and Annex V provisions;
- extension of the obligation period to 2030, removal of the exemptions and minor harmonisation of Article 7 and Annex V provisions;
- extension of the obligation period to 2030, removal of the exemptions and exclusions, use of EEOS only and minor harmonisation of Article 7 and Annex V provisions;

⁸⁵ The policy measures need to be designed to achieve 'end-use energy savings' which are 'among final customers'. This wording excludes policy measures that are primarily intended to support policy objectives other than energy efficiency or energy services as well as policies that trigger end-use savings that are not achieved among final customers (Commission Guidance).

⁸⁶ The Commission clarified specific aspects of Article 7 of the EED in the EED Committee (16/09/2015) by stressing in general renewable energy measures targeting the primary energy consumption do not achieve the energy savings (so are not eligible). Where Member States considers a renewable energy measure to be eligible they should prove that the measure generates end-use energy savings in line with the definition provided in Article 2(18) (19) and it leads to verifiable and measurable or estimable energy efficiency improvements.

⁸⁷ A Member State can use the possibility provided in Article 7(2)(c), and count certain energy savings from energy transformation and transmission sectors towards the required amount of savings to be reached over the period. However, this amount must not be more than 25% i.e. the limit on exemptions (Commission Guidance).

-
- (f) extension of the obligation period to 2030, removal of the exemptions and use of EU wide White Certificates Scheme.

Any changes are expected to improve the completeness and consistency of the implementation of Article 7 and Annex V by Member States, and ultimately reduce the risk that the measures taken will not deliver the required level of energy savings.

It is recommended that these options are explored further as part of the EED review, and further feedback is sought from Member States on the potential costs and benefits, together with any barriers to implementation.

Appendices

Appendix 1: Database structure

Appendix 2: Lifetimes as used in the analysis

Appendix 3: Summary of policy instruments

Appendix 4: Policy case studies (separate report document)

Appendix 5: Analysis of individual provisions, and clusters of provisions

Appendix 1 – Database structure

1 Data block: general

This block contains information to keep track of whether the database contains the most recent information.

Name of Member State
Responsible person for Member State in project team
Last version country report
Is this excel file updated with last version country report?
5-12-2013 notification (y,n,n/a)
Updated notification (y,n,n/a)
NEEAP (y,n,n/a)
Legal transposition (y,n,n/a,?)
Annual progress report 2015 (y,n,n/a)
Any additional information used for the country report? (y,n)

2 Block: about notified baseline and target

This block contains the information concerning the notified baseline and target.

Does the Member State use Eurostat data? (y,n)
Total final energy consumption as notified (ktoe)
Excluded percentage of final energy use transport (0-100%)
Final energy use of transport as notified (ktoe)
Energy production for own use (i.e. not sold) (ktoe)
Adjusted baseline as notified (ktoe)
Percentage exemptions (0-25%) as notified
Exemption a (slow phasing) (y,n)
Exemption b (ETS) (y,n)
Exemption c (supply side) (y,n)
Exemption d (early actions) (y,n)
Resulting cumulative target as notified (ktoe)
Quality codings baseline and target:
Adjusted baseline (green, orange, red, grey)
Notified cumulative target (green, orange, red, grey)

3 Block: policy measures (input per policy measure)

This block contains the detailed information on all notified policy measures (or groups of policy measures).

Policy measure (or group) #1 (etc)
Name of the policy measure or group of policy measures (as notified)
Number of separate policy measures in this group (1,2,3...)
Short description of the policy measure (as notified)
Type of the policy measure
(Notified) cumulative energy savings by end of 2014 (ktoe)
(Notified) cumulative energy savings by end of 2015 (ktoe)
(Notified) cumulative energy savings by end of 2016 (ktoe)
(Notified) cumulative energy savings by end of 2017 (ktoe)
(Notified) cumulative energy savings by end of 2018 (ktoe)
(Notified) cumulative energy savings by end of 2019 (ktoe)
(Notified) cumulative energy savings by end of 2020 (ktoe)
Realised savings by end of 2014 (from annual progress report; ktoe)
New or already existing policy measure?
Percentage of 2020-savings in target sector: Industry (%)
Percentage of 2020-savings in target sector: Transport (%)
Percentage of 2020-savings in target sector: Households (%)
Percentage of 2020-savings in target sector: Services (%)
Percentage of 2020-savings in target sector: Target sectors not clear (%)
Percentage of 2020-savings in target sector: Cross cutting (%)
Percentage buildings (%)
Percentage taxes (%)
Is the policy measure targeting eligible actions?
Is the policy measure additional to EU minimum levels?
Is there risk of double counting/overlap with other policy measures?
Is there risk of non-delivery (for example: materiality issue)?
Is the calculation methodology described as required?
Are savings in intermediate periods provided, as required for alt. measures?
Are the categories of actions described, as required?
Are the lifetimes of savings provided, as required?
Is Monitoring/Verification/Control/Compliance described, as required?
lifetime of the savings as notified by Member State, if any! (yrs)

Percentage of savings in lifetime category A (%)
Percentage of savings in lifetime category B (%)
Percentage of savings in lifetime category C (%)
Percentage of savings in lifetime category D (%)
Percentage of savings where lifetime completely unknown (%)
Does the Member State account for free riders in the expected savings?
Is there an old ESD-approach used at the measurement methods?

Appendix 2 - Lifetimes as used in the analysis

CEN provided a detailed overview of saving lifetimes of energy efficiency improvement measures⁸⁸. We used this overview to map the lifetimes of the measures targeted by the policy measures of the Member States as notified to Article 7 of the EED. We used four categories, as listed below, with lifetimes that were adopted from the ranges as found in the CEN overview.

Lifetime (yr) as used in the analyses	Category	Range of lifetimes as derived from the CEN categories
27	A: Long (e.g. investments in building envelope)	23-30 yrs
15	B: Medium long (e.g. building installations)	10-23 yrs
5	C: Medium (e.g. consumer electronics)	3-10 yrs
2	D: Short (e.g. behavioural changes)	1-3 yrs

		CEN: Recommended lifetime (yr)	CEN: Default lifetime (yr)	Mapping to categories
Household sector – Technical measures or programmes				
1a	Insulation: building envelope — cavity wall and other insulation (solid, wool, etc.)	30		A
1b	Insulation: building envelope — loft/roof and floor insulation	25		A
2	Draught proofing: Material that fills gaps around doors, windows etc. to increase the air-tightness of buildings		5	A
3	Windows/glazing with low U value	30		A
4	New hot water storage tank with foam insulation	15		B
5	Insulation of hot water pipes, with material on unexposed hot water pipes	20		B
6	Heat reflecting radiator panels: Insulation material installed between radiators and the wall to reflect heat back into the room	18		B
7	Small boilers up to 30 kW output	20		B
8	Large boilers above 30 kW output		25	B
9	Heating control: timing devices, thermostats and radiator valve thermostatic controls		10	B
10	Heat recovery systems for recovering and recirculation of heat	17		B
11	Hot water saving faucets with flow restrictors	15		B
12a	Heat pumps: air to air	10		B
12b	Heat pumps: exhaust air to water	15		B
12c	Heat pumps: ground source	25		B
13	Energy efficient (class A or above) room air-conditioner	15		B
14	New or upgraded district heating	30		A
15	Solar thermal collectors for hot water supply	20		B
16	Energy efficient (class A or above) cold appliances (e.g. refrigerators, freezers)	15		B

⁸⁸ Comité Européen de Normalisation (CEN), 2007: Saving lifetimes of energy efficiency improvement measures in bottom-up calculations, CWA 15693, April 2007.

17	Energy efficient (class A or above) wet appliances (e.g. dish washers, washing machines and tumble driers)	12		B
18a	Consumer electronic goods (e.g. DVD player, set-top box, home computer)		3	C
18b	Televisions		5	C
19	Energy efficient compact fluorescent light bulbs for household use		6,000 hours	C
20	Luminaries with ballast systems (lighting units with dedicated efficient lamp fittings)	15		B
21	Energy efficient architecture (e.g. optimisation of the thermal properties of building materials, orientation of building to natural light and heat sources, use of natural ventilation)	25		A
22	Micro-CHP		15	B
23	Photovoltaic solar panels	23		A
Household sector – Organisational measures or programmes				
24	Hydraulic balancing of heating adjusting household heating system so that hot water for heat is distributed between rooms in an optimal balance		10	B
Household sector – Behavioural measures or programmes				
25	Electricity savings (e.g. switching off lights in empty rooms, turning off electronic devices)		2	D
26	Heat savings (e.g. turning heating off or down in rooms not in use)		2	D
27	Smart meters providing information on energy consumption		2	D
Commercial/Public sector – Technical measures or programmes				
28	Windows/glazing with low U value	30		A
29	Insulation: building envelope (cavity wall and solid insulation on wall loft/roof insulation and floor)	25		A
30	Heat recovery systems	20		B
31	Energy efficient architecture (e.g. optimisation of the thermal properties of building materials, orientation of building to natural light and heat sources, use of natural ventilation)	25		A
32a	Heat pumps: air to air	10		B
32b	Heat pumps: exhaust air to water	15		B
32c	Heat pumps: ground source	25		B
33	Energy efficient central air-conditioners and chillers	17		B
34	Efficient ventilation systems (mechanically controlled system extracting foul air for ventilation, and supplying new preheated air in the principal parts by means of blowing inlets)	15		B
35	Commercial refrigeration		8	B
36	Energy efficient office appliances (e.g. desktop or laptop computers, printers, photocopiers, fax machines)		3	C
37a	Combined heat and power below 5 MW		15	B
37b	Combined heat and power above 5 MW		20	B
38	Motion detection light controls switching off lights when nobody is present	10		B
39	Energy efficient lighting systems in new or renovated offices	12		B
40	Energy efficient lighting systems for public spaces (e.g. roads)	15		B
41	Boilers with an output larger than 30 kW	25		B
Commercial/Public sector – Organisational measures or programmes				
42	Energy Management System (e.g. monitoring, ISO)		5	C

Transport sector – Technical measures or programmes				
43	Energy efficient vehicles consuming low amounts of primary energy for distance travelled	10,000 km		B
44	Low rolling resistance tyres for cars	50,000 km		C
45	Low rolling resistance tyres for trucks	10,000 km		C
46	Side boards on trucks (aerodynamic additions for heavy goods vehicles)	50,000 km		C
47	Automatic tyre pressure monitoring devices for trucks	50,000 km		C
Transport sector – Organisational measures or programmes				
48	Modal shift: change of transport mode to a more energy efficient one (e.g. change from car to bicycle, from trucks to freight trains)		5	C
Transport sector – Behavioural measures or programmes				
49	Econometer: Fuel consumption feedback device for cars and trucks designed to increase fuel efficient driving style		2	D
50	Optimal tyre pressure		2	D
51	Eco-driving		2	D
Industry sector (in scope of ESD) – Technical measures or programmes				
52	Combined heat and power		15	B
53	Waste heat recovery		15	B
54	Efficient compressed air systems:		15	B
55	Efficient electric motors and variable speed drives		12	B
56	Efficient pumping systems in industrial processes		15	B
57	Efficient ventilation systems for industrial buildings		15	B
Industry sector (in scope of ESD) – Organisational measures or programmes				
58	Good energy management & monitoring		5	C

Appendix 3: Summary of policy instruments

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
Austria Total			number of policy measures per policy type (#)	1		1	4	1	1			1
			cumulative energy savings per policy type (ktoe)	3,798		1,789	2,412	430	119			597
Austria	1	EEOS		3,798								
	2	Grants for building retrofits and energy efficient new buildings					1,744					
	3	Grants for environmental management in companies (UFI)					263					
	4	Feed-in tariff for small scale renewable electricity					239					
	5	Regulations for district heating						430				
	6	Advancement of building regulations							119			
	7	Energy taxes				1,789						
	8	Other measures										597
	9	Tolls for trucks					167					
Belgium Total			number of policy measures per policy type (#)		1		14	4	3			
			cumulative energy savings per policy type (ktoe)		34		3,058	3,963	99			
Belgium	1	Companies operating under VER (verifiable emission reduction)						2,288				
	2	Companies not operating under VER						579				

Country	Policy measure #	Name of policy measure	Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	3	New grants supporting exiting EEO scheme called RUE: grant for roof insulation				1,178					
	4	New grants supporting exiting EEO scheme called RUE:: grant for wall insulation				131					
	5	New grants supporting exiting EEO scheme called RUE: grant for floor insulation				20					
	6	New grants supporting exiting EEO scheme called RUE: grant for high efficiency glazing				255					
	7	Branche agreements 2					253				
	8	New voluntary agreements					843				
	9	UREBA ordinaire				77					
	10	UREBA exceptionnel				20					
	11	ECO PACKS FLFNW and SWCS AGW 26/01/2012				67					
	12	Energy renovation of houses including rental sector				236					
	13	Energy grants for citizens				713					
	14	Energy grants for industry				12					
	15	Call for exemplary building practices (BATEX)				5					
	16	Local action plan for energy saving (PLAGE)						31			
	17	Periodic inspection of boilers						38			
	18	Energy audits						30			
	19	Energy house				16					
	20	Energy grants				295					
	21	Passing the costs of occupancy				33					

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	22	Obligation for heating oil suppliers			34							
Bulgaria Total			number of policy measures per policy type (#)	1								
			cumulative energy savings per policy type (ktoe)	1,943								
Bulgaria	1	EEOS		1,943								
Croatia Total			number of policy measures per policy type (#)	1			9				1	
			cumulative energy savings per policy type (ktoe)	529			757				9	
Croatia	1	EEOS		529								
	2	Program for energy reconstruction of family houses					102					
	3	Program for energy renovation of apartment buildings					183					
	4	Introduction of individual measurements of thermal energy					58					
	5	Program for energy renovation of public buildings (2014 -2015)					30					
	6	Program for energy renovation of public buildings (2016 -2020)					43					
	7	Program for energy renovation of commercial non-residential buildings					219					
	8	'Energy-efficient public lighting'					54					

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	9	Financial incentives for energy efficient vehicles					38					
	10	Promoting eco-driving									9	
	11	Special tax on motor vehicles based on CO2 emissions					30					
Cyprus Total			number of policy measures per policy type (#)				3					2
			cumulative energy savings per policy type (ktoe)				116					128
Cyprus	1	Energy efficiency investments and use of RES in public buildings					5					
	2	Energy efficiency investments and use of RES by businesses					68					
	3	Energy efficiency investment and use of RES in homes					43					
	4	Installation of PV systems (Net-metering in the residential sector and auto-production by tertiary sector)										69
	5	Installation of an integrated AMI system with 500 000 smart meters										59
Czech Republic Total			number of policy measures per policy type (#)				23					
			cumulative energy savings per policy type (ktoe)				5,170					
Czech Republic	1	Regeneration of tenement houses -Program PANEL respectively. NEW PANEL					108					
	2	New Green Savings in 2013					74					

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	3	New Green Savings 2014 - 2020					1,117					
	4	Jessica Program					6					
	5	Integrated Regional Operational Program					645					
	6	Joint program for the replacement of boilers					55					
	7	Operational Program Environment 2007 -2013					232					
	8	Operational Program Environment 2014 -2020					381					
	9	State programs to promote energy savings and the use of RES (EFFECT) -investment subsidies					31					
	10	Operational Program Prague pole of growth					9					
	11	Operational Program Enterprise Eko-energy					602					
	12	Operational Program Enterprise Innovation					1,911					
Denmark Total			number of policy measures per policy type (#)	1								
			cumulative energy savings per policy type (ktoe)	4,130								
Denmark	1	EEOS		4,130*								
Estonia Total			number of policy measures per policy type (#)	1		1	1					
			cumulative energy savings per policy type (ktoe)	30		435	146					
Estonia	1	EEOS		30								

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	2	Energy and CO2 taxes				435						
	3	Financing schemes and instruments					146					
Finland Total			number of policy measures per policy type (#)			1	3	2	1			1
			cumulative energy savings per policy type (ktoe)			1,979	1,991	3,317	1,300			233
Finland	1	Energy efficiency agreement activities						2,589				
	2	Transport fuel taxation/road traffic				1,979						
	3	Energy audit activities										233
	4	Energy efficiency agreements/Action plan for energy services and Hoyla-III customers						728				
	5	Heat pumps for single family houses, terraced houses					1,015					
	6	Boiler house investments					349					
	7	Energy efficiency regulations for renovation and start-up assistance for building renovation					626					
	8	Energy efficiency regulations for new construction							1,300			
France Total			number of policy measures per policy type (#)	1			1				1	
			cumulative energy savings per policy type (ktoe)	27,212			3,702				217	
France	1	certificats d'économies d'énergie (CEE)		27,212								

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	2	Fonds de garantie					3,702					
	3	Renovation passports (passports rénovations)									217	
Germany Total			number of policy measures per policy type (#)		1	2	26	3		1	13	66
			cumulative energy savings per policy type (ktoe)		1,020	13,184	12,378	9,446		549	7,153	752
Germany	1	Energy Savings Ordinance (new built)						2,173				
	2	Energy Savings Ordinance (existing buildings)						6,771				
	3	Renewable Energies Heat Act						502				
	4	KfW programmes for energy-efficient construction and renovation					5,255					
	5	KfW investment programmes in municipalities and social facilities					192					
	6	Investment support in companies					2,943					
	7	Combined Heat and Power Act					110					
	8	National Climate Protection Initiative — market incentive programme to promote the use of renewable energies in the heating market (BAFA part)					573					
	9	National Climate Protection Initiative — further programmes at national level to promote investments in energy efficiency:					74					
	10	Other investment programmes to promote energy efficiency which will expire during the period 2009–2013					0					
	11	Federal Advisory Programmes									1,256	

Country	Policy measure #	Name of policy measure	Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	12	Promotion of energy management systems (EMS) under the Energy Efficiency Fund								21	
	13	Promotion of municipal concepts and networks								55	
	14	Energy efficiency loans from agricultural pension bank				32					
	15	Measures implemented by states (Länder)									717
	16	Energy tax			12,205						
	17	Truck toll				502					
	18	Air traffic tax				693					
	19	EU ETS			979						
	20	Quality assurance and improvement of the existing energy advice								227	
	21	Up-scaling of the KfW programmes for energy-efficient construction and renovation				705					
	22	Introduction of a competitive energy efficiency tender system		1,020							
	23	Promotion of contracting (including guarantee contracting)				398					
	24	Up-scaling of KfW programmes for energy efficiency (service and industry sector)				903					
	25	Initiative energy efficiency networks								2,818	
	26	Energy audits for companies (excl. SMEs)								2,759	
	27	National energy performance label for heating systems							549		

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	28	Heating system audits									17	
	29	Support of waste heat recovery										36
Greece Total			number of policy measures per policy type (#)				17	1	1		1	
			cumulative energy savings per policy type (ktoe)				2,882	210	126		115	
Greece	1	'Save Energy at Home' Programme					545					
	2	'Save' Programme					25					
	3	'Save II' Programme					50					
	4	Energy Upgrade of Residential Buildings					714					
	5	Energy Upgrade of Public Buildings					39					
	6	Energy Upgrade of Commercial Buildings					95					
	7	Implementing ISO 50001 standard							126			
	8	Energy upgrade of commercial buildings through Energy Service Companies					153					
	9	Education and training actions for tertiary sector staff									115	
	10	Developing smart metering systems for final electrical energy consumption					145					
	11	Replacing old public and private light trucks					35					
	12	Replacing old private passenger vehicles					159					
	13	LPG passenger vehicles					43					
	14	Environmental & Sustainable Development activities					90					

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	15	Thessaloniki Metro development					64					
	16	Extension of Athens metro					205					
	17	Off-setting fines with energy upgrading					521					
	18	Energy Managers in the state and general public buildings						210				
Hungary Total			number of policy measures per policy type (#)				3					
			cumulative energy savings per policy type (ktoe)				0					
Hungary	1	energy audit					0					
	2	green load program					0					
	3	loans for ESCO activities					0					
Ireland Total			number of policy measures per policy type (#)	1			2		4		1	2
			cumulative energy savings per policy type (ktoe)	1,081			232		594		44	292
Ireland	1	EEOS		1,081								
	2	SME programme										71
	3	Large Industry Energy Network										221
	4	2008 Part L of Building Regulations Conservation of Fuel and Energy-Dwellings							238			
	5	2011 Part L of Building Regulations Conservation of Fuel and Energy Dwellings							129			
	6	2015 Building Regulations Part L Framework Dwellings							30			

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	7	EE boiler regulation for replacement boilers							197			
	8	Smart Meters									44	
	9	Accelerated Capital Allowances (ACA)					173					
	10	VRT/Motor tax					59					
Italy Total			number of policy measures per policy type (#)	1			2					
			cumulative energy savings per policy type (ktoe)	16,030			9,800					
Italy	1	White Certificates		16,030								
	2	Tax reductions					3,920					
	3	The Thermal Account					5,880					
Latvia Total			number of policy measures per policy type (#)	1			4	1				1
			cumulative energy savings per policy type (ktoe)	555			280	13				3
Latvia	1	Energy Efficiency Obligation Scheme (EEOS)		555								
	2	National Development Plan 2020 (NDP 2020)					145					
	3	EU Infrastructure and Services					90					
	4	Agreements on energy efficiency						13				
	5	Modernisation of trains										3
	6	Climate Change Financial Instrument (CCFI)					33					

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	7	Open tender 'Reduction of greenhouse gas emissions in the public territories lighting infrastructure of municipalities' phase 3					11					
Lithuania Total			number of policy measures per policy type (#)	1			1		7	1	3	2
			cumulative energy savings per policy type (ktoe)	803			0		0	0	0	201
Lithuania	1	EEOS		803								
	2	Alternative policy measures (Programme for the renovation of multi-apartment buildings. Financed from the National budget and EU Structural Funds; Public building renovation programme. Financed from the National budget and EU Structural Funds utilizing financial instruments; Modernization of street lighting infrastructure. Financed from the National budget and EU Structural Funds utilizing financial instruments).										201
	3	Long-term buildings strategy for renewal of the National Fund (draft)										0
	4	STR 2005: 2.05.01 'Thermal technology of building partitions'							0			
	5	STR 2013: 2.05.01 'Energy performance of buildings design'							0			
	6	STR 2005: 2.09.02 'Heating, ventilation and air-conditioning'							0			
	7	STR 2005: 2.01.09 'Energy performance of buildings. Energy performance certification'							0			
	8	Energy efficiency of heating systems, verification of compliance with requirements							0			
	9	Air conditioning systems of buildings energy efficiency requirements for verification of conformity							0			
	10	The environmental pollution tax relief					0					

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	11	Labelling of energy-related products								0		
	12	Eco-design (eco-design)							0			
	13	Information, educational and training activities									0	
	14	Qualification and certification schemes									0	
	15	Energy audits and energy management systems									0	
Luxembourg Total			number of policy measures per policy type (#)	1								
			cumulative energy savings per policy type (ktoe)	515								
Luxembourg	1	Energy Efficiency Obligation Scheme (EEOS)		515								
Malta Total			number of policy measures per policy type (#)	4**			12	19				
			cumulative energy savings per policy type (ktoe)	10			31	26				
Malta	1	EEOS		10								
	2	Street Lighting Retrofitting						5				
	3	Retrofitting of Energy Efficiency Measures in Public Buildings						3				
	4	Installation of Cogeneration Plants						1				
	5	Initiatives in Government-Owned Industries						16				
	6	Incentive Schemes for Building Envelope Improvement (2 measures)					0					

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	7	Solar Water Heater Incentive Scheme					1					
	8	Energy Efficiency in Low Income Houses in MED Grant Scheme					0					
	9	Scheme for the Installation of Heat Pumps					0					
	10	Grant Schemes to Improve Vehicle Fleet Efficiency (2 measures)					19					
	11	Cogeneration Plants in private sector					10					
	12	Installation of 37 Solar Thermal Water Heaters					0					
	13	Scheme for the installation of heat pumps of industrial use					0					
	14	Tax Incentive Scheme for Industry for the Improvement of its Energy Consumption for Air Conditioning					0					
	15	Tax Credit Scheme to Shift to More Energy Efficient Lighting					0					
Netherlands			number of policy measures per policy type (#)			2	3	4	3	1	1	15
			cumulative energy savings per policy type (ktoe)			114	1,063	776	1,992	139	96	7,091
Netherlands	1	Buildings (households): EPC=0,6							1,163			
	2	Buildings (households): Voluntary agreements, existing buildings						621				
	3	Buildings (households): Other policy, including energy taxation and SDE supplement										1,149
	4	Buildings (households): Further than Ecodesign								139		

Country	Policy measure #	Name of policy measure	Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	5	Buildings (utility): EPC and other national policy						549			
	6	Buildings (utility): Other policy									143
	7	Buildings (households): Owner-occupier sector									239
	8	Buildings (households): (Social) rental sector									728
	9	Buildings (utility): Social and other real estate									1,256
	10	Industry: Combined impact of existing policy									3,153
	11	Industry: Energy Investment Allowance (EIA)				368					
	12	Industry: Long-term voluntary agreement on energy efficiency, ETS companies (MEE)					41				
	13	Industry: Enforcement, MJA3					21				
	14	Industry: Enforcement, other industry					93				
	15	Industry: Enforcement, building-related consumption, industry						279			
	16	Horticulture: Direct use of solar heat									5
	17	Horticulture: LED lighting									41
	18	Horticulture: Avoidance of summer heating									43
	19	Horticulture: Het Nieuwe Telen [Ecocultivation]									48
	20	Horticulture: Better insulation									5
	21	Horticulture: Private system, greenhouse horticulture									239
	22	Transport: Construction of loading docks for inland waterway transport									10

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	23	Transport: Increase in duty on diesel by 3 ct./l in 2014				105						
	24	Transport: Increase in duty on LPG by 7 ct./l in 2014				9						
	25	Transport: Electric cars					169					
	26	Transport: Modal split in freight traffic through port policy										33
	27	Transport: Electric bicycles with 10% car replacement (or autonomous)										0
	28	Transport: Continuation of more fuel-efficient driving among new drivers									96	
	29	Transport: Continuation of incentives for fuel-efficient cars					525					
Poland Total			number of policy measures per policy type (#)	1								
			cumulative energy savings per policy type (ktoe)	14,818								
Poland	1	EEOS		14,818								
Portugal Total			number of policy measures per policy type (#)				2	3	2	3	1	13
			cumulative energy savings per policy type (ktoe)				131	131	490	316	88	2,252
Portugal	1	Green Taxes					39					
	2	Mobi.E										21
	3	Mini-bus										6
	4	Taxi Management										149

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	5	Soft Modes										11
	6	RGCE TRP						97				
	7	Nitrogen in tyres										25
	8	Fleet Management									88	
	9	Efficient Equipment								80		
	10	Efficient Lighting								232		
	11	Efficient Windows								3		
	12	Efficient Insulation										3
	13	Green Heat										404
	14	Residential Certification							96			
	15	Services Certification							394			
	16	Solar Residential										201
	17	Solar Services					92					
	18	Transversal measures										322
	19	Sectorial measures										322
	20	Other Sectors										322
	21	Energy Certification for State Buildings and Energy Performance Contracts										418
	22	Public Administration Energy Efficiency Action Plans - ECO.AP										49
	23	More efficient State sector transport						9				
	24	Efficient Public Lighting						25				
Romania Total			number of policy measures per policy type (#)				18	1			2	7

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
			cumulative energy savings per policy type (ktoe)				2,749	641			420	2,053
Romania	1	National Investment Plan					424					
	2	Reduction of internal technological consumption in the distribution network										80
	3	Reduction of internal technological consumption in the transmission network										9
	4	Smart metering					15					
	5	The promotion of highly efficient co-generation										240
	6	Continuing the 'Heating 2006-2015 heat and comfort' programme					202					
	7	Energy efficiency in the EU-ETS industry										980
	8	Energy audit and energy management									350	
	9	Thermal renovation of multi-dwelling buildings					544					
	10	Thermal renovation of single-family dwellings					356					
	11	Procurement of high-performance electrical equipment					462					
	12	Energy audit and energy management									70	
	13	Thermal renovation of government buildings					23					
	14	Procurement of electrical equipment for governmental buildings					10					
	15	Thermal renovation of public buildings, town halls, schools etc.)					81					

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	16	Procurement of electrical equipment for public buildings					40					
	17	Public lighting renovation					48					
	18	Renovation of public water supply systems					4					
	19	Thermal renovation of buildings (office space, commercial properties etc.)					209					
	20	Procurement of highly efficient electrical equipment for the service sector					23					
	21	Development of energy services/the ESCO market						641				
	22	Car fleet renewal (cars and freight vehicles)										294
	23	Urban public transport modernisation					137					
	24	Bucharest underground extension					53					
	25	Rail transport modernisation					114					
	26	Waterway transport modernisation					4					
	27	Air transport modernisation										5
	28	Alternative Mobility										445
Slovakia Total			number of policy measures per policy type (#)				21	1				44
			cumulative energy savings per policy type (ktoe)				549	445				1,294
Slovakia	1	Policy measures targeting building and construction sector					549					
	2	Policy measures targeted on industry sector										611

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	3	Policy measures targeted on public sector										355
	4	Policy measures targeted on transport sector										168
	5	Policy measures targeted on electric appliances										160
	6	voluntary agreements						445				
Slovenia Total			number of policy measures per policy type (#)	1	1							
			cumulative energy savings per policy type (ktoe)	314	631							
Slovenia	1	EEOS		314								
	2	Eko Sklad			631							
Spain Total			number of policy measures per policy type (#)	1	1	1	9				2	
			cumulative energy savings per policy type (ktoe)	6,356	4,961	1,328	704				1,012	
Spain	1	EEOS		6,356								
	2	Energy efficiency national fund			4,961							
	3	MOVELE					11					
	4	Pive					501					
	5	Pareer					43					
	6	Jessica Fund					33					
	7	Information campaigns									12	
	8	Pima Air					57					
	9	Pima Sol					59					

Country	Policy measure #	Name of policy measure		Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	10	Tax measures				1,328						
	11	Eco-driving									1,000	
Sweden Total			number of policy measures per policy type (#)			1						
			cumulative energy savings per policy type (ktoe)			11,513						
Sweden	1	Energy and CO2 Tax				11,513						
United Kingdom Total			number of policy measures per policy type (#)	3		1	5	6	3			2
			cumulative energy savings per policy type (ktoe)	7,928		3,912	1,049	7,730	16,879			301
United Kingdom	1	Carbon Emissions Reduction Target (2010-2012)***		5,417								
	2	Community Energy Savings Programme (2010-2012)***		241								
	3	Energy Company Obligation***		2,270								
	4	Green Deal - domestic					34					
	5	Private and Social Sector Regulation (Scotland)							129			
	6	Building Regulations - domestic							11,247			
	7	Home Energy Efficient Programmes (Scotland)					456					
	8	Sustainable Energy Programme (Northern Ireland)					112					
	9	Building Regulations - non-domestic							5,503			
	10	Smart metering (Non-domestic)						1,161				

Country	Policy measure #	Name of policy measure	Energy Efficiency Obligation Scheme	Energy efficiency National Fund	(a) Energy or CO2 taxes	(b) Financing schemes or fiscal incentives	(c) Regulations or voluntary agreements	(d) Standards and norms	(e) Energy labelling schemes	(f) Training and education	i) Any other policy measures
	11	CRC Energy Efficiency Scheme					2,734				
	12	Energy Savings Opportunity Scheme					1,350				
	13	Climate Change Levy			3,912						
	14	Climate Change Agreements					2,201				
	15	Salix public sector finance				146					
	16	Re:Fit					52				
	17	Greening Government Commitment					232				
	18	Rail electrification									301
	19	Low Emission Vehicle policies					301				
	20	Private Rented Sector Regulation (England & Wales) - domestic									0

* Danish obligations under the energy policy agreement are considerably higher than required by the Directive, with savings expected from the obligations by 2020 of 7,908 ktoe. Thus, the savings assumed here represents an underestimate of the total savings from this policy.

** Malta notified 4 measures labelled as EEOS (which are individually included in the total of 35 measures for Malta). In practice these are four separate measures that form part of a single obligation scheme, so this represents just one policy measure. This is recorded as 4 measures in accordance with the notification.

*** The UK notified three EEOS. Two of the schemes ran from 2010-2012 and are now expired.

Appendix 4: Policy case studies

The Appendix 4 policy case studies have been moved to a separate document.

Appendix 5: Analysis of individual provisions, and clusters of provisions

The analysis presented in this appendix is based on the Article 7 notifications submitted by Member States **up to the 1 May 2015**. The findings are therefore based on the analysis performed by the project team on the **information notified by Member States up to this date**.

More recent information notified by Member States beyond this date has not been taken into account. As a result some of the details on the situation of specific Member States will be out of date. Nevertheless, the overall conclusions from the analysis are considered to be still valid, and representative of the original notifications from Member States.

Article 7(1) energy savings target

Article 7(1) is an extremely important part of Article 7 as it concerns the target for the energy savings that Member States are required to deliver through the implementation of EEOS or alternative measures. There are a number of separate requirements within Article 7(1) including:

Target		
Energy saving target, and its calculation	That target shall be at least equivalent to achieving new savings each year from 1 January 2014 to 31 December 2020 of 1.5 % of the annual energy sales to final customers of all energy distributors or all retail energy sales companies by volume, averaged over the most recent three-year period prior to 1 January 2013	7(1)
Exclusion from the calculation energy generation for own use	[energy volumes transformed on site and used for own-use, and those that are used for the production of other energy forms for non-energy use, are excluded]	7(1)
Exclusion from the calculation transport energy consumption	The sales of energy, by volume, used in transport may be partially or fully excluded from this calculation.	7(1)
Phasing of savings	Member States shall decide how the calculated quantity of new savings [...] is to be phased over the period.	7(1)

The first three elements concern the absolute value of the energy saving target, and its calculation. The final requirements are concerned with how the savings will be phased.

Rationale

The overall rationale for Article 7(1) is to ensure that the EU is on track to deliver its 20% energy efficiency target it is necessary to set energy efficiency targets for each of the individual Member States. Article 7 sets out the target that should be delivered by EEOS, or alternative measures. The target is defined on the basis of the cumulative energy savings by 2020, the delivery of which will contribute the Article 7 share of the EU target, while also providing some flexibility to Member States in relation to the phasing (see below).

The rationale for having a target based on cumulative energy savings is that this arguably provides stronger encouragement for Member States to implement policies early, and stimulates measure with longer lasting energy savings. This is because energy savings that are delivered in 2014 (and last until 2020 or more) counts seven times towards the cumulative target.

Article 7(1) also allows the target to be adjusted (reduced) to account for energy generation for own use and for energy use in transport. The inclusion of these provisions means that those countries with high or disproportionate levels of energy generation for own use, or energy use in transport, are not unfairly disadvantaged. This may be the case if it was more difficult to influence energy savings by end users who generate energy for own use than for end users who purchase all of their energy from energy companies, or if it was more difficult to deliver energy savings in the transport sector than for other end-use sectors. In practice, both of these assumptions could be questioned.

The final part of Article 7(1) concerns the phasing of the savings, which allows Member States to decide how the savings are to be phased over the period. Member States are thus able to phase their policies (and the associated savings) in a way that suits their national circumstances, and does not tie them to

a specific phasing set at EU level. It therefore provides Member States some flexibility in implementation.

Expected outcome

The expected outcome from Article 7(1) was that each Member State would notify an energy saving target in accordance with the criteria set out within the provision, and that they would be consistent with the level of saving required from Article 7 for the EU to deliver its 2020 target.

It might also have been expected that Member States would notify a phasing for their savings that would suit their national circumstances including, where required, allowing for the scaling up of new policies and energy efficiency markets. This may result in a higher proportion of the saving being delivered in the latter part of the period.

In relation to the exclusion of energy use in transport, and energy generation for own use, it might have been expected that those Member States where transport consumption or energy generation for own use is disproportionately larger than the EU average would exclude transport or energy generation for own use from their calculated energy saving target. However, it might also be expected that some other Member States may choose to exclude transport energy consumption, or energy generation for own use, since this will result in a lower energy savings target, and therefore make it easier for the Member States to meet their targets.

Actual outcome

All Member States presented a cumulative energy saving target over the period 2014-2020 that was consistent with the EU-wide target. However, not all Member States presented both the target before and after any adjustment for the use of exemptions. One Member State only notified the cumulative target after adjustment for the exemptions. Most Member States demonstrated in their notifications that they understood the calculation methodology, although in some notifications there was some confusion (e.g. over how to accumulate the savings to calculate the required target).

In relation to the exclusion of transport energy consumption only one Member State stated that it does not exclude final energy use for transport when calculating its energy savings target. One other Member State has not yet decided whether or not to include energy use in transport, and one further Member State did not provide sufficient information on its intentions. All other Member States (25) stated that they fully exclude final energy use for transport from the baseline. Several Member States opted to exclude transport energy use, but at the same time notified policies that would deliver savings significantly in excess of their energy savings target. In theory, these Member States could have chosen not to exclude transport energy use, and instead take on larger energy savings targets, and still be able to deliver energy savings from notified policies in excess of this target. For four Member States final energy use in the transport sector was excluded but no value was provided.

In relation to the exclusion of energy production for own use 15 Member States stated they did not exclude the production of energy for own use from the baseline. 10 Member States stated they did exclude the production of energy for own use and also provided the amount of energy generation for own use that they subtracted from the baseline. Two Member States stated that they did exclude energy generation for own use, but did not provide the actual value of energy generation for own use that they subtracted from the baseline. One Member State did not provide information about the calculation of the baseline energy consumption at all.

For most Member States the new savings were relatively evenly phased over the saving period, with no particular bias towards early or later delivery.

Effectiveness

Overall, we consider that Article 7(1) was **partially effective** in stimulating Member States to notify energy savings targets that were in-line with the savings required from Article 7 for the EU to deliver its 2020 target. However, by defining final energy use based on energy sold – and thereby excluding energy generation for own use, and energy consumption in transport, Article 7(1) resulted in a lower energy savings target being notified. Therefore, the energy savings target was based on a lower share of overall consumption, which may not deliver the required share from Article 7 to the EU's 2020 target.

In isolation, the provisions which allow the exclusion of energy generation for own use and transport energy consumption, have been effective in ensuring that those Member States with disproportionately high consumption in either of these areas have some flexibility in the target that they set. However, the

fact that the exclusions are available to all Member States, and there was a high level of take up across all Member States, means that the provision resulted in a lower baseline for most Member States (that used this option), and therefore a lower absolute energy savings target for the EU.

In relation to the phasing of the savings, the provision was effective in allowing Member States to phase the savings to suit their national circumstances. This was reflected in the different phasing profiles used by Member States.

Efficiency

The calculation of the energy savings target for a given Member State is relatively straightforward to perform, and can be carried out on the basis of the statistics which are already reported by Member States to Eurostat. Thus the effort required to calculate the target is limited. In terms of whether the requirement for Member States to set a target based on cumulative energy savings is an efficient way to ensure that the EU wide target will be met, this is unclear. There is no reason to suggest that setting the target on a different basis would be more efficient.

The effort involved in the exclusion of energy consumption from transport, or energy generation for own use, when calculating the energy savings target is minimal. In the case of transport, this simply requires the subtraction of consumption, with the required data already available from national statistics. In the case of energy generation for own use, some additional effort may be required if new research (e.g. a survey) is required to provide the necessary evidence.

Overall, we conclude that Article 7(1) was **efficient** in the delivery of its objectives.

Relevance

Article 7(1) continues to be an important provision in the context of the overall energy savings objective of Article 7. In a 2030 context, the **calculation approach continues to be relevant**. However, by allowing Member States flexibility in the phasing of the savings, and defining the target based on cumulative savings over the 2014-2020 period, the provision does not provide any incentive for measures which will deliver savings post-2020. In the context of the 2030 ambition it may be necessary to change details of this provision, specifically the final date, and the period over which the calculation is made. This would need to extend to 2030. The level of savings may also need to change (from 1.5%) depending upon the level of additional cumulative savings required to deliver the 2030 target.

The continued **relevance of the exclusion of energy generation for own use** (i.e. determining the target based on energy sales rather than consumption, could be questioned). The rationale for the inclusion of this provision appears to be underpinned by an assumption that it is more difficult to deliver energy savings from end users who generated energy for own use, than for end users who purchase energy from energy companies. While this assumption might hold for EEOS where obligated parties are responsible for the energy savings (but even this is questionable) it is no longer relevant where alternative measures are employed⁸⁹. Likewise, the provision excluding energy consumption from transport appears to be underpinned by an assumption that it is more difficult to deliver energy savings from transport. This assumption could also be questioned. However, for both energy generation for own use, and transport energy consumption, there will continue to be Member States which have a disproportionate level of consumption from these categories, so may consider this provision continues to be relevant for them.

In relation to the phasing of the savings the flexibility continues to be relevant, as it allows Member States to implement policies and deliver energy savings in accordance with their national circumstances. However, as discussed above, this does not provide an incentive for delivering any savings post-2020.

Coherence

Article 7(1) is overall **coherent with the objectives and principles of Article 7 and the EED**. However, by requiring that the energy saving target is established and calculated based on energy sold for final consumption (i.e. by excluding energy produced for own use) and allowing the exclusion of energy use from transport, Article 7(1) allows a reduction in overall energy saving target.

⁸⁹ An exception is energy taxes, which would not stimulate a reduction in energy generation for own use where the tax is applied at the point of sale.

The provision relating to the phasing of savings is **coherent with national policies** since it allows Member States to phase their savings to suit national circumstances.

EU added value

The main EU added value is that it requires action from all Member States, and the full transparency of the target for each Member State. This will ensure that all Member States play their roles in delivering the EU wide target.

Additional or missing issues

Article 7(1) does not specify the data sources that should be used by Member States in the calculation of their energy savings target. The Commission's Guidance Document (Section B) describes the different datasets that could be used in the analysis, making reference to the data collected by Eurostat according to Regulation No 1099/2008. However, in their notifications, certain Member States chose to calculate their target using alternative national statistics, and in some cases the discrepancies with the Eurostat statistics were not explained. In some cases this led to a large discrepancy in comparison to the use of Eurostat data, which in turn resulted in a reduced energy savings target.

Recommendations on provisions relating to the energy savings target

Drawing upon the above analysis we conclude that the provision has been partially effective, but there is scope for the provision to be more effective. Our recommendations for potential options to improve the functioning of the provisions are as follows:

- **The energy saving target level, its calculation and the phasing of the savings:**
 - **No change** – the provisions are largely effective as they stand and probably do not require major changes.
 - **Minor change** – in the context of the 2030 objectives, the provisions may need to change to reflect the updated energy saving target, and possibly also to provide greater incentivisation for savings that extend beyond 2020.
 - **Major change** – specifying that Member States must use Eurostat data in the calculation of their energy savings target would be a major change. The benefit would be to improve the consistency of the reporting. However, in practice, only two Member States notified energy consumption that was significantly different to the Eurostat data. An alternative could be for Member States to justify the use of non-Eurostat data.
 - **Major change** - In the context of the 2030 ambition it may be necessary to change details of this provision, specifically the final date, and the period over which the calculation is made. This would need to extend to 2030. The level of savings may also need to change (from 1.5%) depending upon the level of additional cumulative savings required to deliver the 2030 target.
- **Exclusion from the calculation energy generation for own use and transport energy consumption:**
 - **Major change** – one potential revision would be the removal of this flexibility altogether, and no longer allowing the exclusion of transport related energy use and energy generation for own use from the baseline calculation. This would lead to an increase in the overall energy savings delivered by Article 7, as almost all Member States would have a greater energy savings target as a result. However, the removal of this flexibility may not be possible since the inclusion of these flexibilities were important for agreeing the Directive in the first place, and the removal of the provision would remove the flexibility it provides, which may be important for some Member States.
 - **Major change** – an alternative revision may be to provide some restrictions on when the exclusion can be applied, which would continue to provide the flexibility to those requiring it, but limit the overall level of exclusion. However, this may add additional complexity and therefore administrative burden.
 - **Major change** – a final major change option would be to remove the exclusion as a flexibility, and instead redefine the baseline as excluding transport energy consumption for all Member States. This would effectively lead to the same energy savings target as currently in place, as all but one Member State excluded the consumption anyway, and would remove an additional calculation step. In practice though this is not much of a simplification, as the administrative burden is limited anyway. This option is also possible for energy production for own use, but

would be less suitable as further effort is required to gather the statistics to adjust the baseline, and fewer Member States have applied this exclusion so it would reduce the energy savings target further.

- **Additional guidance** – the provision of additional guidance for Member States on the reporting of the value of the energy consumption from electric vehicles and energy generation for own use, and the sources of the data to use, would increase the completeness of reporting on this information, and provide greater confidence in the calculations that have been made.

Article 7(2) and 7(3) exemptions

Several provisions relate to the use of exemptions when calculating the energy savings target including:

Exemptions		
	Subject to paragraph 3, each Member State may:	7(2)
Use of lower annual saving rate	(a) carry out the calculation required by the second subparagraph of paragraph 1 using values of 1 % in 2014 and 2015; 1,25 % in 2016 and 2017; and 1,5 % in 2018, 2019 and 2020;	7(2)
Energy use of Emission Trading Scheme (ETS) industry	(b) exclude from the calculation all or part of the sales, by volume, of energy used in industrial activities listed in Annex I to Directive 2003/87/EC	7(2)
Supply side actions	(c) allow energy savings achieved in the energy transformation, distribution and transmission sectors, including efficient district heating and cooling infrastructure, as a result of the implementation of the requirements set out in Article 14(4), Article 14(5)(b) and Article 15(1) to (6) and (9) to be counted towards the amount of energy savings required under paragraph 1	7(2)
Early actions	(d) count energy savings resulting from individual actions newly implemented since 31 December 2008 that continue to have an impact in 2020 and that can be measured and verified, towards the amount of energy savings referred to in paragraph 1.	7(2)
Level of exemption	The application of paragraph 2 shall not lead to a reduction of more than 25 % of the amount of energy savings referred to in paragraph 1.	7(3)
Notification of use of exemptions	Member States making use of paragraph 2 shall notify that fact to the Commission by 5 June 2014, including the elements listed under paragraph 2 to be applied....	7(3)
Calculation of impact on use of exemptionsand a calculation showing their impact on the amount of energy savings referred to in paragraph 1.	7(3)

These provisions are assessed individually in the templates, except for the 'calculation of impact on use of exemptions' which is combined with the other provisions on Art 7(3).

In this section we give an overall analysis of the group of provisions related to the exemptions (the four options, the overall cap associated with their use and the notification requirements).

Rationale

The overall rationale for this group of provisions is to recognise the different position of Member States with regard to their opportunities to achieve the savings target calculated in accordance with Article 7(1) and to provide a more level playing field with respect to four conditions:

- the development level of energy efficiency markets - Article 7 (2)(a);
- the share of EU ETS industry sector in final energy use as the savings due to the ETS Directive; (2003/87/EC) cannot be counted against the Article 7 target - Article 7 (2)(b);
- opportunities to save energy from supply side actions - Article 7 (2)(c);
- past energy savings effort (that has savings effect in 2014-2020 period) - Article 7 (2)(d).

As the exemptions provided by Article 7(2) have a direct, negative, and potentially considerable impact on the savings target, Article 7(3) caps their effect to 25% to limit their impact on the 'initial' savings target. Member States have to notify the information on the use of exemptions and the impact on the

'initial' target of Article 7 so that the effective savings target is known for all Member States and at an EU-28 level.

Expected outcome

The expected outcome for this group of provisions was as follows:

- lower annual savings rate would be used by those Member States with less well-developed energy efficiency markets;
- ETS industry energy use would be used by those Member States where these industries constitute a relatively large share on the overall final energy use.;
- supply side savings action would be used by those Member States with larger and cheaper energy savings potential on the supply side;
- early action would be accounted for by Member States that already had well developed energy savings policies and markets prior to 2014.

In addition, it could be reasonably expected that some countries will use these exemptions regardless of their specific position with respect to the four dimensions, simply to reduce their savings target. This is especially the case for the use of lower annual savings rate and ETS industry energy use where the reduction of the savings target only requires the use of existing statistical data, and a simple calculation.

It was also expected that Member States would adhere to the implementation requirements that are:

- notification of the choice of exemptions within the 25% limit with respect to all four exemptions;
- notification on the impact of exemptions on the savings target with respect to all four exemptions;
- notification of the energy use data of ETS industrial sector with respect to Article 7 (2) (b);
- notification that the calculation (defined in Annex V(1) and (2) and monitoring (Article 7(6)) requirements of supply side actions are respected with respect to Article 7 (2) (c) and (d).

Actual outcome

All but one Member State notified that they would make use of the exemptions provided for in Article 7(2). The most popular exemptions were 7(2a) lower annual savings, 7(2b) EU ETS industry energy use and 7(2d) early action. The use of supply side action 7(2c) was much less popular. It should be noted, however, that supply side actions were frequently notified in relation to specific policy measures rather than as part of the exemptions, and these savings were therefore non-eligible savings against the Article 7 savings target.

Further information on the use of the exemptions is shown in the table below. This also shows the number of cases where the full implementation requirements are met, and those cases where no information is provided. The core group of countries providing no information consists of Bulgaria, Romania and Hungary, which are accompanied by one or two other countries depending on the exemption.

As far as the implementation/notification requirements are concerned, there appears to be a link between the level of effort required to implement the requirements, and the completeness of implementation. Whereas the calculation of the exemption of lower annual savings rate can be made relatively easily using existing data, at the other end, using the supply side action exemption requires more information on the energy savings achieved in the energy transformation, distribution and transmission sectors.

Exemption	Number of Member States ⁹⁰		
	using the exemption	from which implementation requirements are met	no information provided
a	19	19	3
b	14	9	4
c	4	0	5

⁹⁰ For a more up to date assessment of the exemptions that have been notified by Member States, please see section 2.2.1.

d	10	2	4
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With the exception of two Member States that did not notify the amount of the exceptions they planned to use, all other Member State notified the use of exemption with the 25% limit. Specifically:

- 23 Member States notified that they use the full 25% of exemptions;
- one Member State notified that it will not use exemptions at all (i.e. 0%);
- two Member States will use a lower percentage of exemptions than the full allowance.

Effectiveness

Overall, this group of provisions can be considered effective in providing the flexibility to Member States to reduce their energy saving target, taking due account of their national circumstances. The majority of Member States used the exemptions, it is only Portugal that is not planning to use any exemptions at all.

This group of provisions was also effective in limiting the extent of the exemptions on the savings target to 25%. Even though no analysis has been conducted on the correlation between the initial position of Member States regarding the four conditions behind the rationale of the exemptions and the actual choice of Member States, some evidence suggests that the exemptions were less effective at targeting the flexibility to just those Member States that were most in need. In other words, it may not have been treated as a flexibility as such, and simply a default step when calculating their energy savings target. Since a number of Member States notified energy savings from policies that were in excess of their energy saving target, this suggests there was scope for Member States to not use the exemptions.

The provisions were much less effective in relation to the implementation/notification requirements apart from the notification on the choice of exemptions. Apart from the use of lower annual savings rate, the notification requirements were not met by a considerable share of Member States (in case of supply side action: none). The reasons for this cannot be substantiated.

Efficiency

Overall, this group of provisions was efficient in meeting its objective and required virtually no effort concerning the notification the choice of exemptions, and the use of lower annual savings rate and the reduction of energy use by ETS industry. The use of supply side measures require more substantial administrative effort, but this effort is considered proportionate to secure the credibility of savings.

Relevance

Overall, this group of provisions remains relevant up to 2020 as it has been extensively used by the Member States. If the scheme of exemptions and the associated cap on their use remains then only the use of lower annual savings rate loses its relevance as the rationale (i.e. different level of energy efficiency markets) will be less strong as all Member States will have more well-developed energy efficiency markets in response to meeting the requirements for 2020. The other exemptions and the setting of a limit to their use remain relevant (even early action dated before 2014 can have savings effect post 2020).

Coherence

This group of provisions are incoherent to the rest of Article 7 only to the extent that they provide concession to the amount of savings required (reduce the effective savings target), to the end use nature of savings (supply side actions) and to the timing of savings (pre 2014). No other instances of incoherence are identified. The consideration of EU ETS industry energy use explicitly accommodates for other relevant EU legislation (ETS Directive 2003/87/EC).

EU added value

Overall, this group of provisions provides the general added value of consistency across Member States and - by attaching the similar calculation requirements to all notified supply side actions than to end use savings – guaranteeing the credibility and robustness of savings accounted for the Article 7 savings target. The limit to the use of exemptions applies to all Member States as a percentage of their savings target.

Additional or missing issues

No additional issues were identified that need to be considered in the evaluation of this group of requirements.

Recommendations on provisions relating to the energy savings target

Considering the impact of these provisions on the savings target of Art 7 we recommend the followings:

Use of lower annual saving rate

- **Major change** - the use of lower annual savings rate was also used by Member States that have mature energy efficiency markets and was not effective in targeting Member States and consequently the definition of alternative ways of targeting could be considered.
- **Minor change** - changing of the dates in the text of the provision in case of early actions ('continue to have an impact in 2020') and the notification requirement of Art 7(3) (minor change).

Energy use of Emission Trading Scheme (ETS) industry

- **No action**

Supply side actions

- **Additional guidance** - further guidance for supply side action to tackle the problems identified with the notification requirement.

Level of exemption

- **Major change** - the whole exemption plus cap system could be reconsidered. Since at least 23 of the 28 Member States notified that they want to use the full 25% of exemptions, it might be simpler to lower the energy savings target for all Member States by 25%. This would make the implementation more straightforward, and would eliminate administrative burdens connected to the use of exemptions. Ambitious Member States might still apply for a higher target. The change is major in terms of provisions in Article 7, but might be considered minor in terms of the overall energy savings target.

Articles 7(4) and 7(5) obligated parties (in relation to EEOS)

Articles 7(4) and (5) concern specific requirements for the design of EEOS, by setting criteria for the obligated parties and their obligations.

According to Article 7(5), Member States are required to designate obligated parties amongst energy distributors and/or retail energy sales companies and may include transport fuel distributors and retailers (obligated parties). The obligated parties are required to achieve their obligation, an amount of energy savings amongst final customers, which can be expressed in either final or primary energy consumption (Article 7(5)). Final customers is defined as natural or legal persons who purchase energy for own end use, according to Article 1(23).

Rationale

Article 7 is meant to drive end use energy efficiency among final customers. To guarantee the aim of Article 7, the obligation to achieve the savings and also the subjects and the objects of the obligation must be clearly set. Only in the case of clearly set obligation, would the obligated parties know against which and how to perform when carrying out energy efficiency improvement measures. Also, where the progress is unsatisfactory compliance and enforcement actions could only be initiated against clearly set obligations.

The rationale for offering a choice to Member States as to whether to express the obligation in terms of either final or primary energy consumption could have been to provide similar flexibility to Member States that in the case of the national energy efficiency target (Article 3 of the EED): using primary energy can account for savings achieved at transformation and distribution (processes before end use).

The reason for using the same metrics for target definition and savings calculations allows for the straightforward compliance assessment at the end of the compliance period of the energy efficiency obligation scheme.

Expected outcome

Member States were expected to set up EEOS by clearly defining the obligated parties amongst energy distributors and/or retail energy sales companies and their specific obligations to achieve energy savings amongst final customers to ensure the realisation of the energy savings target. The obligation was expected to have been expressed in either final or primary energy consumption. However, given that Article 7 aims at end use energy savings that refers to savings in final energy consumption, Member States were expected to be inclined to use the final energy consumption metrics. Member States were expected to use the conversion factors set out in Annex IV to convert primary energy consumption to final and vice versa.

In regard to notification, Member States were expected to notify the Commission of the obligated parties and the level of the expected savings to be achieved over the obligation period, and also eligible measure categories to inform on the eligibility of the measures. There is however no specific notification requirement in regards to specific obligations of the obligated parties. Nevertheless, it could have been expected that Member States would describe this in their notifications.

Actual outcome

As the provision sets the requirements in regards to EEOS, only 17 Member States that have decided to implement EEOS had to implement the provision. The assessment of the Member States' notifications showed that the majority of the Member States had designated obligated parties as per Article 7(4) (see below). Only four Member States did not notify the Commission of the obligated parties, however all of the countries are still in the process of designing their energy efficiency obligation scheme.

- in seven Member States the obligated parties are energy suppliers;
- in three Member States the obligated parties are energy distributors;
- three Member States put the obligation on both energy distributors and energy suppliers.

There is limited information provided in the notifications on the obligation/responsibility of the obligated parties; nine Member States state that the obligated parties need to achieve their individual energy savings target, the remaining Member States have however not provided enough information to assess whether the obligation of the obligated parties to achieve the amount of energy savings is clearly set. Also the majority of the Member States have not provided sufficient information on which actions the obligated parties are required to undertake to achieve the energy savings, five Member States however allowing energy savings in amongst non-final consumers to be counted.

Further, there is also lack of information whether the energy savings required from the obligated parties are expressed in terms of final or primary energy consumption, with 9 Member States providing no clarity on this point. Six Member States state the obligation in terms of final energy consumption and two Member States in terms of primary energy consumption.

Effectiveness

The provision has been effective in requiring the Member States to designate the obligated parties amongst energy distributors and/or retail energy sales companies. The four Member States that did not notify the obligated parties are still in the process of designing their EEOS.

There is, however, insufficient information to assess the effectiveness of the provision in requesting Member States to clearly define the responsibility/obligation of the obligated parties. Also there is lack of information on the means the obligated parties are required to meet their obligations, which limits any conclusions that can be drawn on these aspects. The reason for lack of information is unclear, however there is no notification requirements in regards to the obligation of obligated parties, which might have limited the information provided on this aspect. However, given that eight of the Member States that have provided the information on the eligible actions allow accounting non-end use energy savings towards their targets, indicates some inefficiency related to the provision. This also hinders the effectiveness of the provision in contributing towards the overall Article 7 objective.

Article 7(5) performs as expected as the energy savings have been expressed by the Member States both in terms of final and primary energy savings. Final energy metrics have been used by the majority of the Member States.

Efficiency

The implementation of the provisions causes administrative burden in regard to designing the EEOS, including designating obligated parties based on objective and non-discriminatory criteria, and defining the obligations of the obligated parties (which might include, for example, developing relevant benchmarks) and enacting relevant legislative acts. The level of effort associated with the provision might vary between the Member States, depending on whether the Member States have implemented an energy efficiency obligation scheme before the EED.

The provision, however, allows Member States flexibility in how to implement the requirement and therefore limit the costs. Also the effort associated with the design of the energy efficiency obligation scheme is so-called 'one-off effort' that will cease to exist once the energy efficiency obligation scheme has been set up. Therefore no issues with efficiency were identified.

Relevance

Article 7(4) continues to be relevant – it is important in the context of the 2020 and 2030 targets that Member States design robust EEOS to achieve the energy savings target. Article 7(5) provisions also remain relevant as long as Member States opt to express the energy savings in primary energy.

Coherence

No issues with incoherence were identified in regards to Article 7(4). However it is questionable that Article 7(5) is coherent with Article 7 in part that allows expressing of the obligation in primary energy savings – primary energy includes non-end use energy which is not compatible with the aim of Article 7 to trigger end use energy savings. On the other hand, the provision is coherent with the national policy landscapes as they incorporate the existing practices of Member States expressing savings in primary energy.

EU added value

There is an EU added value in that the provisions help all Member States to put in place robust EEOS that ensure the implementation of the energy savings target. The provisions also ensures that Member States' policy actions are more comparable.

Additional or missing issues

No additional issues were identified that need to be considered in the evaluation of this provision.

Recommendations on provisions relating to the energy savings target

Based on the analysis above the following actions could be considered in regards to the provisions stipulated in Articles 7(4) and (5):

- **Minor change** – only limited number of Member States provide information on obligation of obligated parties in their notifications, which does not allow assessment of whether the responsibility of the obligated parties is clearly defined to achieve the energy savings target. Where the Commission wishes to receive more information from the Member States in regards to the design of their energy efficiency obligation scheme to further assess the compliance, Annex V(4) notification requirements may be amended to include a requirement to notify of the obligation of the obligated parties.
- **Additional Guidance** – Given that the criteria of achieving energy savings among final customers as stipulated in Article 7(4) has remained unclear for some of the Member States, it might be useful for the Commission to issue further guidance to the Member States on which measures are likely to result in end use energy savings. Delivering end use energy savings is a complicated issue which depends on case-by-case basis and on particular circumstances, therefore amending the provision might not result in the best results and can overly burden the Directive.
- **Major change** – A change in Article 7(5) could be considered by deleting the option of expressing savings targets in terms of primary energy due to its incoherence with the objectives of Article 7 as a whole. Deleting the option might have a positive effect on the energy savings target as supply side savings can no longer be counted to meet the obligation. When considering the change, however, the circumstances of the two countries using primary energy must be considered.

Annex V(1) measurement methods

Annex V(1) is concerned with the measurement method that can be used by Member States when calculating energy savings from the policy measures. Specifically, Annex V(1) states that Member States **may** use one or more of the following methods for the calculation of energy savings:

- deemed
- metered
- scaled
- surveyed.

The metered approach is concerned with the ex-post assessment of the actual savings from measures, so can only be used for calculating savings that have already been delivered. However, the results from a metered approach can be used to estimate savings from similar future installations – which is a deemed approach. A scaled approach uses engineering estimates as the basis for the calculations, and is concerned with physical measures. In contrast, a surveyed approach uses information on consumer behaviour, and is only applicable to behavioural measures.

Rationale

The overall rationale for this group of requirements is to help ensure that the savings calculated by Member States are robust and based on credible methodologies. By stipulating the methods themselves, as well as certain conditions associated with the methodologies (e.g. deemed savings should be based on previous independently monitored energy improvements in similar installations) Annex V(1) encourages Member States to use robust and credible calculation approaches.

At the same time, the requirements include a high degree of flexibility, since Member States may use the methods (or may not), and even where they choose to use the methods, they are free to use whichever combination of methods they would like. This allows Member States to tailor the approach to their national circumstances, including any existing approaches that they already use.

Expected outcome

The expected outcome for this group of requirements was that Member States would use one of the four methods to calculate their energy savings, and where they did, these calculations will be based on robust evidence (including any relevant values for any savings). It was also expected that to make robust calculations, Member States may need to carry out some further research (e.g. carry out metering or commission surveys of consumer behaviour) to derive robust estimates of the energy savings.

In the notification of their methodology (Annex V (4)(f)) Member States are required to include *details on their calculation methodology*. Annex V does not though specify what these details should include. On this basis, it might be expected that some Member States would provide detailed information on how they have calculated (or plan to calculate) their energy savings on the basis of one of the four methods, but others may provide much more limited information.

Actual outcome

The actual outcome was that Member States used a range of methods, although for a number of policies the measurement method was not clear. The usage was as follows:

- **scaled savings** - nine Member States notified the use of this method for at least one measure;
- **metered savings** - nine Member States notified the use of this method for at least one measure;
- **survey savings** - three Member States notified the use of this method for at least one measure;
- **deemed savings** - 17 Member States notified the use of this method for at least one measure.

In almost every case, the notifications submitted by Member States provided insufficient detail on the approach that was used (e.g. values applied) to determine that the methods provided a robust and credible assessment of the energy savings from the action taken. The only notable exception was the evidence provided by the UK (for its energy efficiency obligation scheme).

Effectiveness

There is insufficient information available in the notifications submitted by Member States to determine if the provision has been effective in ensuring that the methods used to calculate the savings are

credible. This is the same conclusions for all savings methods. This does not necessarily mean that the provision has been ineffective and the calculated savings are not robust – there is insufficient information to determine this either way. There is, however, sufficient evidence to determine that the provision has not been effective in stimulating Member States to be open and transparent in how they calculated (or plan to calculate) their savings. No Member State provided sufficient transparency on the details of its measurement methods, for all of its policies.

Efficiency

The use of any of the measurement methods requires a certain amount of effort. In the case of deemed savings, this method requires Member States to source values for energy savings actions that are based on previous independently monitored energy improvements in similar installations, for use in their calculations. For some Member States, and for certain actions, this information may already be available and therefore involve limited effort. For other Member States or actions, this may require further research to source the data, or in some cases new primary research. The effort may therefore be much more substantial. In the case of metered and surveyed savings, the implementation of the methods requires new research – either before-and-after monitoring, or surveys of consumer behaviour. Likewise, the scaled savings approach requires the sourcing of engineering estimates for energy savings actions that are based on nationally established methodologies or benchmarks by accredited, qualified and independent experts. This may require new estimations to be made, or the collation of existing estimates.

Therefore, overall, the use of these measurement methods to deliver credible savings estimates may entail a large amount of effort. At the same time there is likely to be a trade-off between the level of effort (e.g. source robust values, and the credibility of the estimates themselves). It could be argued that the effort may be too onerous where the savings from the specific measures are small overall. However, where specific actions represent a large proportion of the notified savings, the requirements are more proportionate. However, such an approach would not be consistent with the general principle under Article 7 where all measures are treated equally.

The efficiency of the provision is improved by allowing Member States flexibility in the measurement methods that they apply. It also allows the use of engineering estimates where the determination of measured data was too difficult or disproportionately expensive. In this way, the provision allows Member States to limit the costs of calculating their energy savings under Annex V Part 1.

Relevance

So long as Member States continue to use the different saving methodologies, and demonstrating the robustness of the savings, the provision continues to be relevant. Over time Member States may develop more complete datasets on the savings from different actions, which may reduce the need for these to be specified in the case of a deemed approach, or new estimates made in the case of scaled savings.

Coherence

These requirements are fully coherent with the other provisions within the EED, and the general principle that the energy saving estimates should be robust and based on credible evidence. The provision requires that Member States use robust values in their calculations, but does not specify the values that should be used. In this way the provision offers flexibility to Member States where they may already use existing values in their national instruments.

EU added value

The requirements add value by helping to ensure that all Member States use credible values when estimating their savings using a scaled or deemed approach, correct for external factors when using a metered approach, and only use a surveyed approach for the most appropriate types of policies. This improves the consistency of the savings estimates across Member States, and the overall credibility of the savings at an EU level.

Additional or missing issues

No additional issues were identified that need to be considered in the evaluation of this group of requirements.

Recommendations on provisions relating to the energy savings target

There is insufficient information to make firm recommendations on the need for changes to the provision. While in principle the provision continues to be relevant and coherent, and the rationale is well established, the poor level of information available on implementation may suggest that a change to the provision should be considered.

- **Minor change** – the wording of the provision on the scaled approach currently allows Member States to use engineering estimates where establishing robust measured data for a specific installation is difficult or disproportionately expensive or where the engineering estimates are carried out on the basis of nationally established methodologies and benchmarks by qualified or accredited experts that are independent of the obligated, participating or entrusted parties involved. The effectiveness of the provisions could be increased by changing this to an ‘and’ statement, so all scaled savings have to be based on nationally established methodologies and benchmarks by qualified, accredited and independent experts.
- **Major change** – the provision currently specifies certain requirements associated with the different measurement methods, which are designed to improve the robustness of the estimates derived from these methods. However, it may be possible to modify the existing requirements, or specify new requirements, which make the provision more effective in delivering robust savings estimates. Likewise, a new requirement could be introduced to require Member States to specify more clearly the characteristics that need to be described when specifying the measurement methods that are used, including the values for energy savings. This would provide greater transparency on the methods used, and better ensure the integrity of the savings estimates.
- **Additional guidance** – the provision of additional guidance might help with the implementation issues. This may demonstrate more clearly to Member States exactly how to implement the requirement (to reduce any misunderstanding) as well as clarifying what is meant by the specific requirements. In the case of scaled savings this might provide examples of ‘nationally established methodologies and benchmarks by suitably qualified or accredited experts that are independent of the obligated, participating or entrusted parties involved’. Reference could be made to existing data sources where they exist, to aid understanding, and improve harmonisation.

Annex V(2a) additionality

Annex V (2)(a) requires that when calculating energy savings, only the savings that go beyond the minimum requirements originating from the following EU legislation can be counted as contributing towards the energy savings target:

- for new passenger cars and light commercial vehicles – the emission performance standards established by Regulation 443/2009 and 510/2011;
- for products – the requirements established by implementing measures under the Eco-design Directive.

This is relevant for individual actions that are a result of EEOS, alternative policy measures, Energy Efficiency National Fund and early actions.

In regard to alternative policy measures, in particular standards and norms as stipulated in Article 7(9) (d) and energy labelling scheme as stipulated in Article 7(9) (e), the Directive imposes additional limitations as regards to the possibility to count savings from these policy measures. According to Article 7(9)(d) and (e), any standards and norms and energy labelling schemes introduced to meet the Article 7 energy savings target must be additional to those mandatory and applicable under EU law. It is only if the nationally established levels are more ambitious than those required at EU level that the difference between the mandatory EU levels and the levels set by the policy measure can be counted. Compared to Annex V (2)(a) the provision does not list any specific mandatory EU legislation. However includes, for example, EPBD (2010/31/EU) requirements for building regulations based on cost-optimal levels.

Rationale

The aim of this requirement is to ensure that Member States account only energy savings that go beyond EU requirements on minimum energy performance standards. This ensures that energy savings which would have happened anyway are not counted towards the energy savings target and the energy efficiency improvement measures implemented by the Member States actually deliver the savings.

Expected outcome

The expected outcome is that the notified savings from replacement of equipment, passenger cars and light commercial vehicles by more efficient ones and any standards and norms and energy labelling schemes would represent the additional savings from EU actions, and these savings would therefore represent the additional effort made by Member States.

Member States were expected to notify the Commission of the energy savings calculation methodology, including how additionality is to be determined.

Actual outcome

The provision needs to be implemented by 27 Member States, as only one Member State has decided to implement energy and CO₂ taxation measures which do not need to adhere to the requirements of this provision (but have separate requirements relating to additionality).

The actual outcome that can be concluded in relation to this provision is, however, limited as 19 Member States did not make any mention in their notifications of the EU minimum energy performance standards. The rest of the Member States simply stated that only savings above the existing EU requirements are counted or that additionality criterion has been taken into account in calculating the savings, without providing any further information on how this is to be determined.

Effectiveness

There is insufficient information available in the notifications submitted by Member States to determine if the provisions have been effective in ensuring that only savings that exceed the levels set by EU law are accounted for. This does not necessarily mean that the provision has been ineffective and the savings are not additional – there is insufficient information to determine this either way.

One area where the provision has not been effective is stimulating Member States to be open and transparent in how they calculated the energy savings taking into account the EU requirements on minimum energy performance standards. It is however unclear why Member States have not recognised the requirement to notify the Commission of how they have determined additionality. It could have been, for example, due to the lack of understanding among the Member States of the notification requirements, the additionality requirement itself or how the calculation to take into account EU minimum levels should be made in practice. Given that Article 7(9) (d) and (e) only refer to levels that are '*mandatory and applicable in the Member States under Union law*', the lack of information could also relate to Member States' lack of understanding on the relevant mandatory EU levels.

Efficiency

There is administrative burden associated with the implementation of the provision that relate to calculating the savings exceeding the EU requirements on minimum energy performance. This could, for example, include identification of relevant EU requirements and further data analysis to isolate the minimum EU levels. However the level of effort is expected to minimise after the baseline has been established and additional savings have been identified. Further burden could relate to Article 7(9) (d) and (e), as compared to Annex V (4)(1), in identifying the relevant existing standards and norms and energy labelling schemes that derive from EU law.

Relevance

The provision continues to be relevant in the context of both 2020 and 2030 targets – only savings additional to existing minimum EU energy performance requirements should be counted to ensure the delivery of the energy savings target.

Coherence

There is strong coherence between Annex V (2)(a) and the other provisions in Article 7 – the principle that savings needs to be credible and additional to EU minimum levels is applicable to all policy measures types.

EU added value

The provision ensures that all Member States report savings on an equal basis, with transparency on the energy savings, which allows comparability of savings from national measures and the integrity of the energy savings at an EU level.

Additional or missing issues

The discussed provisions – Annex V (2)(1) and Article 7(9) (d) and (e) – relate to accounting of energy savings exceeding the minimum EU requirements for energy performance. However, there no specific requirement within Article 7 to account for free-riders, an equally important aspect of additionality.

Annex V (4)(f) requires Member States to notify the Commission of calculation methodology, including how additionality is to be determined. However, a workshop undertaken within ENSPOL⁹¹, which considered the issues of additionality, concluded that there is no homogeneity within the Member States: the criterion has been understood and implemented differently by the Member States. During the same workshop it was established that Member States understand the requirement of free-riders to be different to that of additionality. This could also be the reason why overall the Member States did not address free-rider aspects within their notifications.

A further issues relates to the potential ambiguity of which policies should be taken into account with respect to additional to EU minimum levels. This relates specifically to energy efficiency policies not mentioned in the provision, such as the Energy Performance of Building Directive, but could equally be applicable to other policies which deliver energy efficiency improvements. These include, for example, the EU Emissions Trading System.

Recommendations on provisions relating to the energy savings target

Based on the analysis above we recommend the following actions in regards to the provision:

- **Minor change** – Given that Article 7(9) (d) and (e) simply refer to levels ‘*mandatory and applicable in the Member States under Union law*’, the requirements could be further defined to help Member States to implement the provision. Where this cannot be done without excessive burden on Article 7 or Annex V itself, additional guidance on the relevant EU levels should be preferred.
- **Major change** – Given that there is no requirement within Article 7 to account for free-riders, the requirement could be added, with further specification of additionality requirement. It might however be difficult to draw up a requirement/definition applicable to all cases and measures. Where this is the case, further guidance on additionality should be provided to the Member States.
- **Additional guidance** – The provision of additional guidance on additionality might help with the implementation issues. This may demonstrate more clearly to Member States what is required by the provision and exactly how to implement it (to reduce any misunderstanding). Guidance on the following aspects could be included:
 - mandatory EU requirements relevant for standards and norms and energy labelling schemes;
 - the criterion of additionality, including free-ridership;
 - how additionality can be determined.

Annex V(2b) climatic variations

The provision relating to the consideration of climatic variations in the savings calculation is contained in Annex V (2)(b).

Rationale

Climatic conditions/outside temperatures have a direct impact on the energy savings in the case of energy efficiency measures that reduce the energy loss via the building envelope. To allow for a better representation of energy savings of such measures, Member States can choose to differentiate the savings on the basis of climatic regions within the county. The incorporation of climatic differences allows for a more realistic estimation of realised savings.

Expected outcome

The expected outcome for this provisions was that Member States stretching across several climatic zones use this option and report on it (both on whether they will use this option and how). Member States with homogeneous climatic conditions have no reason to use it, even if they have large territory.

Actual outcome

The actual outcome for this provision regarding its use was:

- 11 Member States intend to use climatic variation in its savings calculations;

⁹¹ <http://enspol.eu/sites/default/files/results/D3.2%20Report%20Workshop%20on%20Article%207%20of%20the%20Energy.pdf>

-
- nine Member States declared they would not to use this option;
 - eight Member States provided no indication whether they would take into account climatic variation in their energy savings calculations.

As far as the implementation is concerned, eight of the Member States (out of the 11) that intend to use climatic corrections provided no information on how they will incorporate climatic variation in their savings calculations. Greece has notified to use climatic correction inconsistently (not for all measures where it would be applicable).

Effectiveness

Overall, this provision was relatively effective in the sense that the majority of Member States (20) decided whether they wanted to use this option. Those Member States that decided not to use climatic correction did so justifiably: none of them had large intrastate climatic differences (probably with the exception of Italy). It is arguably the case for some countries that plans to use climatic correction (e.g. Cyprus), however, as including it in the calculation only improves the estimation of realisable savings, plus it was an unconditional option for Member States, it does not deteriorate either the overall effectiveness of Article 7 or contradicts the provision.

Member States were required to report on the 'approach taken to address climatic variations within the Member State' that would mean the choice between the use of adjusted savings or the definition of different regional savings values for the same individual actions where this aspect is relevant.

However, for most Member States the information provided stops with the statement that climatic corrections will be used (with the exception of three Member States) and fails to define how this correction will be made. In this respect the provision was not effective. The reasons for the failure to define the 'approach taken' by those Member States indicating the use of climatic corrections might have been the lack of understanding of the ways of incorporating the climate effect. It is important to note that the description of savings calculation for individual actions (where climatic correction needs to be incorporated) is a prerequisite for compliance with this provision.

Efficiency

In general, the effort required to use the provision is not considered to be disproportionate in relation to the benefit arising from a more accurate calculation of savings. Heating (and cooling) degree days can be considered publicly available information.

As climatic correction is not a mandatory requirement but only an option for the Member States, they can decide to not use it if it is considered to be inefficient under the national circumstances (the increased complexity is not compensated by the more realistic savings calculation due to little climatic variation within the territory of the Member State).

Raising the attention of Member States to the option of climatic corrections is a simple way to encourage them to use the option if deemed appropriate.

Relevance

The provision remains relevant as 11 Member States already declared that they intend to use it and some others may do so in the future (from the eight Member States not providing information on this issue). The provision remains relevant in the context of the 2030 ambition as the rationale for its application is not conditional on the time horizon.

Coherence

No issues relating to coherence were identified with this provision.

EU added value

The EU added value is that the provision calls for a voluntary action of Members States to use climatic corrections that – if applied widely – improve the correctness of the energy savings calculation at the national and EU level.

Additional or missing issues

No additional issues were identified that need to be considered in the evaluation this requirement.

Recommendations on provisions relating to the energy savings target

This provision contributes to the overall effectiveness of Art. 7 by allowing for a more accurate savings calculation in case of individual actions where the savings effect is contingent upon the climatic conditions of the location. Removing the provision would result in less accurate calculation. However, there is scope for improvement. We recommend:

- **Additional guidance** - We therefore recommend additional guidance and best practice on how climatic variation can be incorporated in the savings calculation ('approach taken') so that those countries that want to use this option can provide sufficient information to be in compliance with the reporting requirement of Annex V (4)(h).

Annex V(2)(c) materiality

Annex V (2c) requires that the energy efficiency measures must be demonstrably material to the achievement of the claimed savings. According to the Commission guidance note, the term 'material' means that the party in question has contributed to the realisation of the specific individual action (in excess of the automatic rolling out of EU legislation, or autonomous improvements because of, for example, market forces or technological developments). The term 'demonstrably' means that the Member State must be able to show that this is so.

Rationale

The requirement was introduced to ensure that the party in question has contributed to the realisation of the specific individual action, and that the subsidy or involvement of the obligated, participating or entrusted party has not had what is clearly only a minimal effect in the end user's decision to undertake the energy efficiency investment.

By requiring Member States to demonstrate materiality, the provision therefore provides greater confidence that the energy savings have arisen from the specific notified policy interventions. It should also deter Member States from notifying savings associated with measures where the policy has not been material in influencing the action taken.

Expected outcome

Member States were expected to provide explicit information, for each policy measure, demonstrating how the expected energy savings have been materially influenced by the policy measure. Overall, as a result of this requirement, it was expected that the Commission could have confidence that the policies have had a material influence on the savings notified by Member States, and therefore the savings could be counted towards the EU's overall 2020 target.

Actual outcome

One Member State proposes to use only energy and CO₂ taxes where there is not an explicit requirement to demonstrate materiality. Therefore only 27 Member States notified policies where the requirement was relevant⁹². The outcome from these Member States was as follows:

- nine Member States did not provide any information on materiality;
- a further four Member States did not provide sufficient information to allow an assessment of the Member States compliance with the materiality requirement for any of its policy measures;
- the remaining 14 Member States sufficiently demonstrated the materiality requirement for one or more policy measures:
 - 11 Member States demonstrated materiality in regards to measures stipulated in Article 7(9)(b) – financial schemes and incentives:
 - eight Member States provided information on the subsidy as a percentage of the total implementation costs;
 - two Member States provided information on the total grant funding;
 - one Member State provided information on the amount of grant per measure.
 - one Member State demonstrated materiality for voluntary agreements;
 - three Member States demonstrated materiality for EEOS.

⁹² Sweden only notified energy and CO₂ taxes.

- none of the Member States demonstrated the materiality requirements sufficiently for **all** of their policy measures

Effectiveness

It is difficult to assess the overall effectiveness of the provision as 13 Member States did not provide any information on materiality or provided insufficient information to allow an assessment of effectiveness. Therefore, one area where the provision has been less effective is in ensuring that all Member States demonstrate the materiality of their policies.

However, for those Member States that did provide sufficient information, the materiality requirement was demonstrated for one or more of their notified policy measures. Only a few cases were identified where there were doubts on the materiality of the policy measures. For example, the level of financial support was considered too low, for the measures to have a material impact.

Overall, the provision can therefore be considered **partially effective** in ensuring the materiality of the policies notified by Member States, and the respective savings.

Efficiency

Demonstrating the materiality requirement for each policy measure proposed presents an administrative burden. This may include effort to develop a robust approach to assess materiality, and then to apply this to its policy measures. The level of effort/burden is to some extent dependent on the type of policy measure proposed. For example, it is easier to demonstrate materiality for financing schemes and incentives than for EEOS. Likewise, it could be argued that for some policy types (e.g. regulations), the need to demonstrate materiality is not relevant as the regulations are a binding policy instrument.

The effort required to meet the requirement is not considered to be disproportionate in relation to the benefit from providing confidence that the notified policies have had a material influence on the energy savings claimed. Overall, requiring Member States to demonstrate that their policy measures are material is a relatively simple way to encourage Member States to consider the materiality of their policies.

However, the demonstration of materiality appears to have caused problems for some Member States, and may have required additional work to be performed.

Relevance

The provision is still relevant in the context of the 2030. However, Annex V Part 4 would need to be amended with a new date by which the Member States would need to provide information of materiality of their proposed policy measures.

Coherence

No areas of incoherence were identified.

EU added value

EU intervention ensures that all Member States will take into account materiality requirements that help to meet the 2020 and 2030 targets. This also ensures that Member States' policy actions are more comparable (since all are material).

Wider and missing issues

The requirement to demonstrate materiality is applicable to all measures (except for energy and CO₂ taxes). However, the relevance of the materiality criterion differs between measure types. For example, it could be argued that materiality is not relevant for regulations and voluntary agreements, or standards and norms, as these policy types are underpinned by binding regulations (or agreements). As such, so long as the Member State robustly enforces these regulations, then materiality is not an issue.

Where the materiality criterion is most relevant is for financing schemes and instruments, fiscal incentives, energy labelling schemes, and training and education programmes. In each of these cases though the approach to demonstrate materiality may differ. In the case of financing schemes the level of subsidy or support was typically used to demonstrate materiality. No examples were identified for the

other measures, but in general terms demonstrating the materiality of these measures in isolation is likely to be very difficult.

In all cases, whether an action is material or not is a subjective judgement, and therefore whilst the requirement may stimulate Member States to consider the issues of materiality, having certainty that actions are truly material is more ambitious.

Recommendations on provisions relating to materiality

The provision is still highly relevant in the context of Article 7 as it contributes to the overall achievement of the energy savings target by providing confidence that the notified policies have had a material influence on the energy savings claimed. However, Member States seem to have problems in demonstrating the requirement, and this varies by policy measure. To improve this, the following options could be considered:

- **Minor change:** The wording could be modified to exclude regulations and voluntary agreement, or standards and norms from the requirement, as materiality is not relevant in these cases, assuming enforcement and compliance is strong. However, this may add more complexity, and in practice will not actually change the action that is taken to improve the credibility of the savings.
- **Additional guidance:** An alternative option would be to provide further guidance to Member States on materiality and how it could be met for different policy measures to improve its effectiveness and efficiency of implementation between the Member States. The focus should be on how Member States can ensure their policies are material and on the outcome (i.e. making a material difference, rather than the reporting of the action taken).

Annex V(2d) double counting, Article 7(12) policy overlaps

Several provisions relate to the requirement that realised savings cannot be counted more than once when the aggregation per policy measures and parties achieving the savings is undertaken.

Provision	Detail	Reference
Double counting	2. In determining the energy saving for an energy efficiency measure for the purposes of Article 7(1) and (2), and points (b), (c), (d), (e) and (f) of the second subparagraph of Article 7(9), and Article 20(6) the following principles shall apply: ... d) savings from an individual action may not be claimed by more than one party;	Annex V (2)(d)
Policy overlaps	Member States shall ensure that when the impact of policy measures or individual actions overlaps, no double counting of energy savings is made.	7(12)

Rationale

The overall rationale for these provisions was that if a Member State applied several policy measures in the same target sector, the realised savings may be due to more than one measure. It is therefore necessary to make sure that the same savings are not counted more than once. Double counting of savings would result in an inflated figure of realised savings.

The same holds for a situation in which several parties are involved in the realisation of the savings. Avoiding double counting in such situations would mean that only one party can claim the savings from an individual action.

Expected outcome

Member States were expected to put forward an administrative system that prevents the double counting of savings. This can be reached either by applying a single measure at one action, or by correcting the savings for the overlaps. In the notification Member States were expected to explain how their systems prevent double counting of savings.

Actual outcome

Most Member States claimed that they will prevent double counting. For 39% of the reported savings Member States showed that double counting was not likely to occur.

- seven Member States were able to show that double counting due to overlap was prevented for all the notified savings but five of them use a single policy measure;
- nine Member States demonstrated that double counting was prevented for part of the savings ranging from 7% to 65%;
- 10 Member States provided insufficient information and could not be categorised and two Member States did not provide any information on the policy measures.

The ways of assuring that savings are not claimed by more than one party is not addressed in the notifications.

Effectiveness

Overall, there is insufficient information to draw conclusions on the effectiveness of the provisions. The provisions were not effective in triggering the required information as:

- for only 39% of the savings sufficient information was provided to make sure that no double counting due to overlap occurs when calculating the savings;
- only seven of the 28 Member States could demonstrate that double counting due to policy overlap was prevented for all of its expected savings: five of them only had one type of measure in place that excludes the possibility of policy overlap automatically;
- no Member States demonstrated in the notification that claiming savings by more than one party is avoided.

This essentially means that only two Member States managed to demonstrate the avoidance of double counting where it actually needed to be demonstrated.

Efficiency

Overall, this group of provisions was efficient. Member States have to show how they guarantee the prevention of double counting of savings. This requires additional administration and potentially some analysis, but that is proportional to the prevention of double counting.

Relevance

Overall, the provisions remain relevant both for the long term savings and for new target settings in the context of 2030 ambition, removal of this provision would reduce the credibility of savings.

Coherence

The provisions are coherent with Article 7; they explicitly create coherence among the claimed savings of the various policy measures/parties used in parallel to safeguard the effectiveness of Article 7.

EU added value

Overall, this group of provisions have EU added value because once they are implemented, they guarantee the credibility of savings and allow the Commission to check whether all Member States comply with their savings target.

Recommendations on provisions relating to the energy savings target

We therefore recommend:

- **Additional guidance** on how Member States can guarantee the avoidance of double counting of savings due to overlapping policy measures.

Annex V(2e) lifetime of savings

The provision relating to the lifetime of savings is contained in Annex V (2)(e). Member States in their calculation of energy savings are required to take into account the lifetime of savings. This may be done by counting the savings each individual action will achieve between its implementation date and 31 December 2020. Alternatively, Member States may adopt another method that is estimated to achieve at least the same total quantity of savings.

Rationale

The overall rationale for this provision is that it helps to differentiate between savings that will be achieved within the 2014-2020 period, and those that will be achieved beyond 2020. This distinction is crucial as (by default) only savings achieved in the 2014-2020 period can be accounted against the savings target. This provision reduces the likelihood of Member States claiming that all energy savings will be achieved within the 2014-2020 period, and ensures that all energy savings notified by Member States will contribute to their Article 7 target. The rationale for offering the 'straightforward method' as the default method is its simplicity, however, the flexibility of choosing other methods is retained (e.g. for countries that have their EEOS) using other calculation methods - in operation before the EED.

Expected outcome

The expected outcome for this provision was that Member States would provide explicit information, for each policy measure, on the assumed lifetime of the energy savings and use realistic assumptions in their calculations. It was expected that the majority of Member States would use the 'straightforward method' due to its simplicity. However, Member States that started their EEOS before the EED might have been expected to keep their savings calculation methods.

Actual outcome

The actual outcome for this provision was threefold:

- the information gap is considerable: 19 Member States have failed to provide sufficient information on the lifetime of (some or all of) its measures;
- Member States that have provided information of lifetimes have predominantly used realistic assumptions on lifetimes, only five Member States have reported unjustifiably long lifetimes or questionable allocation of saving over the lifetime for some of its measures;
- in line with the expectation, all Member States that has provided sufficient information on lifetimes use the 'straightforward approach' with the exception of Denmark and France.

Effectiveness

Overall, it is difficult to assess whether this provision was effective as 19 Member States did not provide sufficient information on lifetimes (in this respect it was clearly ineffective). Where sufficient information was provided, it could be concluded that the provision was partially effective in ensuring that Member States do not overestimate energy savings achieved in 2014-2020 as only a few cases were identified where the lifetimes proposed were unjustifiably long or the distribution of savings within the lifetime is questionable. The reasons for the failure of Member States to define exact lifetimes for each individual action are assumed to arise from a misunderstanding by those Member States that lifetimes can be stated in general terms rather than for each action. This may be a direct consequence of the failure of defining the list of individual actions (i.e. a consequence of the insufficient implementation of another provision).

Efficiency

Overall, demonstrating that the calculation of savings takes into account the lifetime of actions and the definition of lifetimes for each individual action entails minor administrative burden. However, it does require information on individual actions which may involve more substantial effort by the Member States. The effort depends on the range of individual actions: the more actions that are eligible to generate savings, the more lifetime values need to be defined.

The flexibility provided by the provision is an efficient solution for the accommodation of existing practices of France and Denmark.

Likewise, requiring Member States to demonstrate that only savings occurring in the period 2014-2020 are accounted for, even where the actions have longer lifetimes, is a straightforward way to encourage Member States to consider the link between the cut-off date of Article 7 and the saving proposed for each individual action.

Relevance

Overall, this provision remains relevant as two Member States used the flexibility option embodied in the provision. The provision becomes even more relevant in the context of the 2030 framework as it helps to identify the energy savings that will be delivered by Article 7 post-2020.

Coherence

No issues were identified relating to coherence. The provision explicitly accommodates existing national practices (the use of other methods by France and Denmark).

EU added value

Overall, this provision ensures that all Member States make assumptions on the lifetimes of proposed actions explicit and no savings occurring outside the 2014-2020 are accounted for.

Recommendations on provisions relating to the energy savings target

On this basis we concluded that this provision contributes to the overall achievement of the energy savings target by providing confidence that savings claimed actually materialise in the 2014-2020 period. It was effective in inducing Member States to use justifiable lifetimes but not effective in forcing Member States to provide sufficiently detailed information on lifetimes. To improve the reporting of this information, we recommend:

- **Additional guidance** – This would provide information on the most common individual actions and associated lifetimes. Furthermore, the harmonisation of the lifetimes from these common actions can lower the risk of accounting saving beyond the reasonable lifetime that increases with the longer time horizon of the savings target (2030 instead of 2020). However mandatory harmonisation is not a viable option as two Member States use other method of accounting for lifetimes of actions.

Annex V(2)(f) measures with aims to result in lasting transformation

The provision relating to measures with the aim to result in lasting transformation is contained in Annex V (2)(f). The provision permits actions by obligated, participating or entrusted parties, either individually or together, which aim to result in lasting transformation of products, equipment, or markets to a higher level of energy efficiency.

Rationale

The overall rationale for provisions is that influencing consumer choice on product/equipment purchase is likely to be a cost efficient measure as minor contributions (compared to the price of the product) can result in considerable energy savings – with an average lifetime of five years - if the measure can reach large consumer groups. The transformation of the market is enhanced by these consumer choices motivating producers to consider further energy efficiency in their design and marketing strategies.

Expected outcome

The expected outcome for this provision was that the majority of Member States will use it, especially those that have less developed markets for energy efficiency products.

Actual outcome

The actual outcome for this group of provisions was that in the framework of EEOS, seven Member States have included such measures in the list of eligible actions, and only Malta has not. For the remaining nine Member States that have or plan to have EEOS, no information is available yet about eligible measures.

As far as alternative policy measures are concerned, 11 Member States use such actions, and this number might potentially increase to 15 once all Member States decide on the details of their schemes.

Effectiveness

Overall, this provision was effective as a large number of Member States have included measures aiming at lasting transformation in their policies. Member States are free to choose from a wide variety of policy tools, many of which (tax measures, tradable white certificates, fiscal incentives) can be regarded as promoting lasting transformation in a given market. This freedom of choice has presumably had a positive effect in enabling Member States to use the option that the provision offers.

The effectiveness of the provision in fostering the market share of energy efficiency products cannot be assessed on the basis of official submission.

Efficiency

The application of these measures do not pose considerable administrative burden. The most important tasks are the ex-post assessment of their market transformation effect, the monitoring of the calculation of savings so that it includes only savings above the level required by the Ecodesign Directive (2009/125/EC) (additionality) and only those actions that are material to achieving the claimed savings.

Relevance

Overall, as the provision deals with measures aiming at lasting transformation, it is likely to remain relevant in the context of the 2030 ambition as well, even though the markets of energy efficient products will be more developed by 2020.

Coherence

No issues relating to coherence were identified with this provision. These measures are often linked to product labelling that can be used for defining the 'efficient replacement' product. As such their application is intertwined with EU legislation on product characteristics. It is also linked to the Ecodesign Directive (2009/125/EC) as only savings beyond the level prescribed by the Directive can be accounted against the Art 7 savings target.

EU added value

Overall, the provision may serve as a useful reminder for Member States to consider measures with lasting effect when drawing up energy efficiency policies. The EU added value pertains to the existence of product labelling legislation that can support the operation of these measures.

Recommendations on provisions relating to the energy savings target

On this basis we concluded that the savings realised at the EU28 level by 2020 is not affected by the take-up level of this provision. It is advisable to keep the option of using measures aiming at lasting transformation as they can contribute to the ambitions concerning long-term sustainable development and some of those actions initiated before 2020 will have savings effects beyond 2020 as well.

We therefore recommend:

- **no change** to this provision.

Annex V (2)(g) quality standards

According to Annex V (2)(g), Member States are required to maintain quality standards for products, services and installation of the energy efficiency improvement measures. This includes introducing relevant quality standards where they are absent and monitoring compliance with the standards. In all cases, monitoring should be conducted independently.

Rationale

Maintaining quality standards will help to ensure the credibility of the savings that are notified. A source of discrepancy between estimated and actual energy savings can be related to the poor quality of the installed energy efficiency measures. Sub-standard installations are unlikely to achieve the expected savings and awarding the full energy savings values for such installations is therefore not justified.

Expected outcome

Member States are expected to have introduced standards for quality and performance of the energy efficiency improvement measures. Also Member States are expected to have monitoring systems in place that ensure independent monitoring of the measures. Further requirements for the Member States in regard to the monitoring and verification protocols are discussed in the following section.

Member States were expected to notify the Commission of the prevailing quality standards and the associated monitoring systems.

Actual outcome

As according to Annex V (2) quality standards do not need to be notified for energy and CO₂ taxes, 27 Member States were required to notify the Commission of the quality standards. When assessing the Member States' notification it appeared that there was a lack of information in regard to the standards, with Member States also providing different levels of detail:

- 13 Member States did not provide any information at all on quality standards in their notifications;
- eight Member States made vague references to the requisite level of the quality;
- four Member States referred to specific document/legislation that set the quality of the technical measures, but did not describe the details of the standards;
- only two Member States fully described the applicable quality standards.

Also only limited information was provided on monitoring of the compliance. Only three Member States notified the Commission of the monitoring.

Effectiveness

Overall, it has not been possible to test the effectiveness of the provision and its impact on the quality of the energy savings, given the limited information provided by the Member States on quality standards. It is also unclear why Member States have not provided sufficient information to allow the assessment. The project team could only assume the likely reasons:

- Member States have not understood the notification requirements given the different level of detail provided by the Member States and only 11% of the Member States providing information on the monitoring. Indeed, Annex V (4)(i) vaguely requires the Member States to notify of the quality standards.
- Member States have not understood the requirements for maintaining quality standards.

Efficiency

The effort associated with the provision lies mostly on the implementing public authorities in the form of developing and introducing the quality standards and also monitoring compliance with the standards. Also some minimal administrative burden is associated with notifying the Commission of the quality standards.

The level of effort might vary between the Member States depending on whether they already had introduced quality standards and institutional framework to monitor the compliance with the standards prior to the EED. The extra effort from Member States that had not yet introduced the quality standards is however so-called one-off-effort and part of developing a well-functioning market for energy efficiency products and services and the ongoing effort is not expected to vary between the Member States.

The level of effort associated with the provision was not notified by the Member States and the Commission may wish to undertake further studies to inform on the efficiency of the provisions. However, given that the provision continues to be relevant for the achievement of the 2020 target, the effort involved is not expected to be too onerous for the aims of the provision.

Relevance

The provision is relevant in the context of both the 2020 and 2030 ambitions as it ensures the credibility of the savings and achievement of the targets.

Coherence

No incoherence with the other provision of Article 7 and the EED was identified during the study.

EU added value

There is EU added value in ensuring that all Member States maintain quality standards for products, services and installation of the energy efficiency improvement measures. There is also EU added value in that the Member States' policy actions are comparable at EU level.

Additional or missing issues

No additional issues were identified that need to be considered in the evaluation of this provision.

Recommendations on provisions relating to the energy savings target

There is insufficient information to make firm recommendations on the need for changes to the provisions. Based on the analysis of the existing information the following actions could be considered:

- **Additional guidance** – The provision is still highly relevant in the context of Article 7 as it contributes to the overall achievement of the energy savings target by providing confidence that the notified measures meet certain quality standards and the measures are delivering the expected savings. However, Member States seem to have problems in demonstrating that they are

maintaining quality standards. While the cause of the problem is unclear, it might well be due to a lack of understanding within the Member States of the requirements for maintaining quality standards. We therefore recommend providing further guidance to Member States on the appropriate requirements for maintaining quality standards. The guidance should focus on the characteristics of good quality standards (which would maximise the desired outcome) rather than just the reporting of this.

- **Minor change** – Minor change to Annex V (4) notification requirements might be considered. For example, defining specific notification requirements might help the Member States in notifying sufficient information, for example by requiring the Member States to notify specific quality standards and protocols for monitoring quality standards. However, overly specific and long requirements might burden Annex V and also the Member States might refrain from providing other relevant information where notification requirements are very specific.

Article 7(10)(h) measurement, control and verification systems

There are provisions in Article 7 that require the Member States to put in place appropriate measurement, control and verification systems for the energy efficiency improvement measures and set specific requirements for the systems. The requirements are similar in essence for EEOS, alternative policy measures and Energy Efficiency National Fund.

- Article 7(6) sets the requirements in regards to **EEOS**. In particular, the provision requires the Member States to put in place measurement, control and verification systems that ensure verification of at least a statistically significant proportion and representative sample of the energy efficiency improvement measures. The independence of the systems from the obligated parties must be ensured.
- Article 7(10) (h) and (i) stipulate that the Member States must put in place monitoring and control systems for **alternative policy measures** and **Energy Efficiency National Fund**. Similarly to EEOS, the systems must include verification of a statistically significant proportion of the measures. As further specified by Annex V (4)(j), the independence of the systems from the participating and entrusted parties must be ensured.

Rationale

The expected energy savings will only occur when the energy efficiency improvement measures are actually being implemented, in accordance with the scheme rules and delivering the savings. Therefore to ensure the credibility of the savings and the energy efficiency improvement measures, it is important to monitor that the obligated, participating and entrusted parties are performing in accordance with the rules regarding the quality of the measures and their physical installation and that the measures have actually been implemented and are delivering the savings.

The monitoring and verification would need to be carried out independently from the obligated, participating and entrusted parties to avoid any misstatements. Also to ensure the credibility it is important that at least a statistically significant proportion of the measures is verified.

Expected outcome

The Member States are expected to put in place appropriate monitoring, control and verification protocols that would ensure independent monitoring and verification of the claims of the obligated, participating and entrusted parties and verification of at least a statistically significant proportion and representative sample of the energy efficiency improvement measures. Member States were expected to notify the Commission of the protocols and how the independence of the systems is ensured.

Actual outcome

17 Member States implemented EEOS and 23 Member States implemented alternative policy measures and Energy Efficiency National Fund in which they had to put in place measurement, control and verification systems.

The information provided by the Member States on the systems was however limited, with several Member States providing no information or almost no information on the systems:

- one Member States did not provide any information on the systems for EEOS, with additional two Member States only notifying that they are in the process of developing the systems;

- six Member States provided no information or almost no information on the systems for alternative policy measures and Energy Efficiency National Fund, with further three Member States stating that the systems will be set up.

Although the rest of the Member States described the measurement, control and verification systems in their notifications, there was a lack of information on several aspects of the systems. The information gaps related to monitoring, reporting and verification protocols, the independence of the systems and the sample size. This resulted in no Member State providing full information on its systems.

However, where information was provided in the notifications, overall the requirements of the provisions were correctly implemented. Only a few occasions (two regard to the EEOS and two in regard to alternative policy measures) were identified where the notified systems might not allow appropriate monitoring and verification to ensure the credibility of the savings.

Effectiveness

The analysis identified that the provisions have been effective in ensuring that Member States put in place some measurement, control and verification systems, with 27 of the Member States implementing EEOS notifying the Commission that they had implemented or are in the process of implementing the systems, and with 20 of the Member States notifying the Commission that they have implemented or are in the process of implementing the systems in regards to the alternative policy measures and Energy Efficiency National Fund.

However, there was a lack of information on several aspects of the provisions in the notifications, with no Member State providing sufficient detail on its measurement, control and verification systems. Therefore one aspect the provisions could have been more effective is requesting further information on the systems to be provided in the notifications. It is, however, unclear why only limited information was provided by the Member States. It can be assumed that this might have been due to the lack of understanding in the notification requirements. Indeed, the notification requirements stipulated in Annex V (4)(j) and (k) are rather general in nature, requesting Member States to notify the monitoring and verification and audit protocols and how the independence of these is ensured from obligated, participating and entrusted parties.

Therefore given the lack of information the project team could not assess whether the implemented systems ensure the credibility of the savings. Where information was provided, overall the provisions were correctly implemented, which indicates that the provisions have been efficient. However, as said, few occasions were identified where the provision might have been incorrectly implemented, which might indicate some reduced effectiveness of the provisions.

Efficiency

Implementing monitoring and control systems entail administrative burden and costs for both obligated parties and implementing public authorities. For obligated parties this includes reporting and providing assistance with auditing. However the main responsibility for monitoring and verification lies with the implementing public authority that needs to develop a robust monitoring and control protocols, but also undertake the independent monitoring and verification.

The level of effort might vary between the Member States depending on whether they had implemented the systems prior to the EED. Setting up measurement, control and verification systems can, however, be considered to be a so-called one-off effort and overall the effort is expected to balance out once the systems have been set up.

It was identified during the study that the effort might vary somewhat depending on Member States' choices on the scope of the energy efficiency measures and the monitoring and verification processes. For example, one Member State's interpretation of a statistically significant sample may vary to that of another Member State. Also, standardised reporting procedures are likely to reduce the effort. The provision however provides flexibility for the Member States how to implement the provisions and reduce the associated costs, which overall improves the efficiency of the provisions.

There was no information provided in the Member States' notifications on the costs associated with the implementation. Therefore the conclusions drawn within the study are limited and the Commission might wish to undertake further studies to inform on the efficiency of the provisions. In principle, however, taking into account that the provisions continue to be relevant within the framework of the Article 7 and

they provide the flexibility for the Member States in implementation, the provisions are expected to be efficient.

Relevance

The provisions are relevant in the context of the both 2020 and 2030 targets. It is necessary that robust measurement, control and verification systems are in place to ensure the realisation of the targets.

Coherence

The provisions are fully coherent with the other provisions within Article 7 and the EED, and the general principle that appropriate monitoring and verification systems help to ensure the credibility of the energy savings and the energy efficiency improvement measures.

EU added value

EU intervention ensures that all Member States put in place robust measurement, control and verification systems that ensure the achievement of the savings. The provisions also help to ensure the consistency and comparability of the systems within the Member States.

Additional or missing issues

No additional issues were identified that need to be considered in the evaluation of this provision.

Recommendations on provisions relating to measurement, control and verification systems

There is insufficient information to make firm recommendations on the need for changes to the provisions. Based on the analysis of the existing information the following actions could be considered:

- **Additional guidance** – The analysis identified that some Member States might have misunderstood the essence of the measurement, control and verification requirements. The Commission could therefore issue further guidance for the Member States on appropriate monitoring and control systems. This should facilitate the Member States in implementing the provisions and also provide further detail on the systems in their notifications. However, given that the identified issues with the implementation related to few isolated occasions and overall the provisions were implemented as expected, where information was provided in the notifications, a change in the provisions themselves can be considered unnecessary at this moment.
- **Minor change** – The analysis identified that there might have been lack of understanding of notifications requirements amongst the Member States. Annex V (4) could therefore be amended with more detailed requirements for the notifications, like the sample size to be verified etc. It should however be noted that the further detail could burden the Annex, also the Member States might refrain from providing other relevant information where notification requirements are very specific.

Article 7(1) provisions relating to EEOS

Several provisions relate to the EEOS including:

EEOS		
	Within the energy efficiency obligation scheme, Member States may:	7(7)
Social aim	(a) include requirements with a social aim in the saving obligations they impose, including by requiring a share of energy efficiency measures to be implemented as a priority in households affected by energy poverty or in social housing;	7(7)
Energy service providers	(b) permit obligated parties to count towards their obligation certified energy savings achieved by energy service providers or other third parties, including when obligated parties promote measures through other State-approved bodies or through public authorities that may or may not involve formal partnerships and may be in combination with other sources of finance. Where Member States so permit, they shall ensure that an approval process is in place which is clear, transparent and open to all market actors, and which aims at minimising the costs of certification;	7(7)

Carry over	(c) allow obligated parties to count savings obtained in a given year as if they had instead been obtained in any of the four previous or three following years.	7(7)
Publishing of savings	Once a year, Member States shall publish the energy savings achieved by each obligated party, or each sub-category of obligated party, and in total under the scheme.	7(8)
	Member States shall ensure that obligated parties provide on request:	
Customer information	(a) aggregated statistical information on their final customers (identifying significant changes to previously submitted information); and	7(8)
Customer consumption	(b) current information on final customers' consumption, including, where applicable, load profiles, customer segmentation and geographical location of customers, while preserving the integrity and confidentiality of private or commercially sensitive information in compliance with applicable Union law.	7(8)
	Such a request shall be made not more than once a year.	

In this section we give an overall analysis of the requirements related to the above mentioned provisions. This batch of provisions defines certain voluntary characteristics that Member States can apply in their EEOS (social aim, use of energy service providers and carry over), a reporting requirement of Member States pertaining to the annual savings results of the EEOS (publishing of savings). The last two provisions in this group refer to mandatory features of EEOS that Member States have to build into their scheme designs (customer information and consumption).

Rationale

The overall rationale for the first group of provisions is to define certain EEOS features that can be used for the purposes of Article 7. These features already proved their effectiveness in various EEOS operating pre-EED. The rationale of the provisions is the following, in turn:

- to raise awareness of and encourage Member States to use EEOS as a social policy tool and hence orientate funding to tackle energy poverty;
- to provide flexibility to obligated parties to reach the required savings by allowing them to acquire certified savings from third parties and hence potentially lower compliance cost due to the increased pressure to find the most cost efficient energy savings options and sustain a SMEs sector in the field of energy efficiency;
- to provide flexibility to obligated parties by banking/borrowing and thus improve the efficiency of the scheme;
- to generate regular and reliable information to market and regulatory actors (including the European Commission) on the annual savings performance of obligated parties and the EEOS in total and to enable Member States to assess their overall performance against the planned savings under Article 7 (together with the information on the savings from alternative measures).

The rationale for the data provision requirements of obligated parties is to facilitate the non-discriminatory and efficient operation of EEOS, more specifically:

- for Member States to be able to define the group of obligated parties in an 'objective and non-discriminatory' way and at the same time exclude small energy companies the number of consumers is a potential criterion and as such need to be monitored and upgraded;
- to improve the efficiency of the EEOS by better targeted measures both for the benefit of obligated parties and for the national policy makers by requiring obligated parties to reveal what measures have been installed in certain target groups and geographic locations.

Expected outcome

The expected outcome regarding the design features was the extensive use of these options and the continuation of their use in those EEOS that started operation before the EED, as this provision facilitated the EED compatibility with these features. The expected outcomes were:

- Member States that already have experience in incorporating social aims to their EEOS and Member States where energy poverty is considered to be an important policy issue were expected to continue with this practice;

- Member States with a large number of market actors in the field of energy efficiency project (due to their pre-EED EEOS) will continue to allow the acquisition of certified saving from third parties in their EEOS;
- all Member States were expected to use the banking and borrowing option as it enables more flexible compliance for obligated parties with their annual savings target.

We were not expecting Member States to publish the savings information realised by obligated parties and the EEOS as a whole by April 2015. Aggregate energy savings achieved in 2014 by the EEOS should be included in the 2015 Annual Report to the NEEAPs.

As far as the reporting requirement of obligated parties is concerned, we expected that Member States using EEOS will use the number of consumers in the designation of obligated parties to exclude small actors and recognise the usefulness of such information and include this requirement in their EEOS regulation.

Actual outcome

Most Member States have not included requirements with a **social aim** in their EEOS. Out of the 17 Member States notifying the use of EEOS (either as a single measure or in combination with alternative measures) only four Member States have included such provision in its scheme. As energy poverty is prevalent in Europe, we expect that more Member States will use the opportunity to include a social provision in their EEOS.

Based on the official submissions, none of the Member States reported that it explicitly prohibits the use of **service providers** and eight Member States plan their use. As nine Member States provided no information on this aspect, the assessment is limited and we can expect further Member States notifying the use of this provision.

The lack of information is equally relevant in the assessment of the use of the **carry-over** provision: Member States provided no information on this feature of their EEOS. Evidence (from other sources) collected on the EEOS operating already before 2014 suggests that banking of energy savings is allowed in five Member States. Borrowing is currently only allowed in Italy and Ireland, but both countries employ restrictions. The UK counted savings from supplier obligations for the period 2010-2023 based on this provision that is a unique interpretation of the provision.

The three provisions on data could not be assessed in this report. The actual outcomes of the annual data publication provision is not known yet as these reports were not available at the time of the preparation of this report. The two data requirement provisions (from obligated parties to the Member State) is not addressed in the official submissions. These are likely to be contained in the national energy efficiency obligation scheme regulation that was not reviewed. The reporting (and update) on the number of consumers is essential information for the non-discriminatory designation of obligated parties in only two Member States: Italy and the UK.

Effectiveness

Overall, the effectiveness of the provisions offering optional design elements for the EEOS cannot be assessed fully due to the lack of information in the official submissions and possibly due to the early developmental phase of many EEOS notified under Article 7. The evidence collected suggests that only a fraction of Member States have lived with these options (social aim: four Member States service providers: eight Member States carry-over: five Member states) and most of these Member States used these flexibilities in their EEOS set up before the EED. As such, these provisions were not effective in encouraging Member States to use them. The social aim provision was not popular among Member States even though there are many countries among the other 13 Member States with considerable energy poverty (e.g. in Bulgaria and Lithuania more than 30% of the households are unable to afford to keep their home adequately warm)⁹³. The reasons for this could possibly include:

- introducing an additional target within the EEOS increase the complexity of this policy measure that is novel to these countries;
- difficulties to define target groups in an appropriate and transparent manner;

⁹³ JRC (2015): Energy Renovation: The Trump Card for the New Start for Europe
http://iet.jrc.ec.europa.eu/energyefficiency/system/tdf/eur26888_buildingreport_online.pdf?file=1&type=node&id=9069

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- those combining EEOS with alternative policy measures use these latter for dealing with energy poverty;
 - Member States tackle energy poverty via general social policy (e.g. financial support to finance utility bills)⁹⁴.

However, we should note that the current known user rate of these provisions can increase as further information is received from the Member States in their EEOS.

The provisions were implemented in accordance with the requirements of EED; only the UK seems to misinterpret the provision and use the carry over option not only within the 2014-2020 period but beyond.

The effectiveness of the data publication requirements (Art 7(8)) cannot be assessed on the basis of available information.

Efficiency

Overall, the implementation of this group of provisions does not constitute considerable administrative burden can result in tangible benefits via lower compliance costs (involvement of service providers and carry over) and co-benefits (social policy). Nevertheless, these provisions require some additional actions from the Member States:

- social aims:
 - monitoring obligated party compliance (household social status needs to be checked);
 - definition of eligible households in a clear and transparent manner.
- service providers:
 - the accreditation of third parties;
 - setting up the institutional frame work for white certificate market (even though it is not a prerequisite of the involvement of third parties).

Relevance

Overall, this group of provisions remain relevant for the rest of the period to 2020 and beyond for several reasons:

- all EEOS design options offered by these provisions have been used by some Member States;
- many Member States are at the early phase of developing the EEOSs and may still opt for their use;
- energy poverty will probably be an issue beyond 2020;
- the involvement of many actors (including third parties) in exploiting energy savings options becomes even more important as the available savings potential reduces due to the fact that the number of involved actor increases the cost efficiency of the scheme (less obvious saving options can be identified);
- once a new savings target is defined for 2030, allowing the banking of savings from the pre- to the post-2020 period and informing the obligated parties on this banking possibility will encourage them to bring forward savings actions as much as possible (to not delay action to 2021) which make their efforts continuous.

None of the provisions has a cut-off date except the carry over provision that is limited by the 2020 compliance date.

Coherence

No major issues of coherence were identified. As far as the social aim provision is concerned, Member States might have taken social policy directions to tackle energy poverty (via taxation or social transfers) but adding a new element to the policy toolbox is not foreseen to be contradictory to these general social policy tools. The carry over provision might pose some risk of compliance (extensive borrowing that will not be made up at the end of the obligation period).

⁹⁴ http://www.insightenergy.org/ckeditor_assets/attachments/51/d1_session2_ucl_steve_pye.pdf

EU added value

The inclusion of the first three provisions (from this batch) in the text of the Directive is to inform Member States about this acceptable design element that can be built in their EEOS. As such, the added value is informational and the provision of the conditions that make these options compatible with the EED. This is especially important considering that many of them have been employed already in national schemes before 2014. The reporting requirements (the last three in this batch) define the scope of data to be provided by the Member States and the obligated parties, respectively.

Recommendations on provisions relating to the EEOS

We therefore recommend the following for the provisions analysed:

- social aim: no change;
- obligated parties: minor change: the simplification of the wording to express:
 - the option to include third parties (every actor beside the obligated parties);
 - the non-discriminatory nature of the involvement;
 - that savings should always be certified.
- carry-over: no change
- publication of savings: no change;
- consumer information: major change:
 - Option A: delete the provision as the requirement of Member States to ensure non-discriminatory designation is already included in Art 7(4);
 - Option B: to generalise the requirement and substitute 'statistical information on their final customers' with 'statistical information on the parameter(s) on which the designation of obligated parties is/are based'.
- consumer consumption: no change.

Article 7(9) provisions relating to alternative policy measures

As regards to the choice of policy measures to meeting the energy savings target, the EED speaks of EEOS or other policy measures (alternative policy measures).

Article 7(9) of the EED stipulates alternative policy measures and requirements for their implementation. According the provision, the Member States may use the following alternative policy measures (the list is not exhaustive):

- energy and CO2 taxes;
- financing schemes and instruments or fiscal incentives;
- regulations or voluntary agreements;
- standards and norms, above what is mandatory and applicable under EU law;
- energy labelling schemes, above what is mandatory and applicable under EU law;
- training and education, including energy advisory programmes.

Member States may also combine EEOS with alternative policy measures, in addition to Energy Efficiency National Fund, provided that the energy savings achieved through this approach lead to achievement of the energy savings target.

Specific requirements applicable to alternative policy measures and Energy Efficiency National Fund, deriving from Article 7(10) and (11), are assessed within other sections of the report.

Rationale

Because of the diverse nature and challenges for different end-use sectors within the Member States, Member States are allowed an option in their choice of the policy measures to implement the energy savings target most relevant to their national circumstances. The option allows Member States to take into account the particular national circumstances and choose the policy options most relevant to the country or specific sector. This keeps the implementation costs minimal and therefore achieves the energy savings target in the most effective and efficient way.

Expected outcome

It was expected that some Member States might opt not to use alternative policy measures as stipulated in the article, some Member States might opt to use alternative policy measures only or a combination of EEOS and alternative policy measures. In any case Member States were expected to meet the energy savings target.

Member States that opted to use alternative policy measures, either alone or in combination with EEOS, were expected to notify the Commission of the policy measures they plan to adopt and show how they would achieve the required amount of savings.

Actual outcome

The assessment of the Member States' notifications showed that both EEOS and alternative policy measures were used by the Member States as follows:

- four Member States have decided to use EEOS only;
- one Member State has informed the Commission that it will use EEOS but has left it unclear whether it will be combined with any alternative policy measures;
- 11 Member States have planned to use only alternative policy measures;
- 12 Member States use EEOS in combination with alternative policy measures.

The Member States that have decided to implement alternative policy measures use the measures as listed in Article 7(9) (a)-(f) and Energy Efficiency National Fund as follows:

- eight Member States implement energy and CO₂ taxes;
- 19 Member States implement financing schemes and instruments or fiscal incentives;
- nine Member States use regulations or voluntary agreements;
- 10 Member States use standards and norms;
- two Member States implement energy labelling schemes;
- eight Member States use training and education measures.

12 Member States have, however, used alternative policy measures where the category of the measure with reference to Article 7(9) (a)-(f) is unclear.

Effectiveness

As at least 23 of the Member States have decided to meet their energy savings target by using alternative policy measures only or in combination with EEOS, the provision can be considered to be effective in meeting its objective of providing flexibility for Member States in meeting their energy savings target.

One Member State was not clear whether it will use alternative policy measures in combination with its EEOS and 12 Member States included alternative policy measures where the category of the measure was not clear. Consequently, one area that the provision could have been more effective is in clarity on the policies types notified by Member States.. It is not clear why so many Member States have not provided the information on the relevant category of the alternative policy measures, however this could be due to the lack of the notification requirement in this respect.

An in depth analysis of the effectiveness of various policy measures to contributing to the energy savings target will be undertaken in Task 2.

Efficiency

The effort associated with the provision mostly relates to notifying the Commission of the policy measures. This notification effort is, however, considered to be minimal. Provided that the provision allows flexible option for the Member States in selecting alternative policy measures most suitable for their national circumstances, with minimal administrative burden, the provision is expected to be efficient.

Relevance

The provision is relevant in the context of 2020 and 2030 targets as it provides the Member States the most appropriate and cost-efficient means of meeting their energy savings target.

Coherence

The provision is coherent with Article 7 and the EED. The provision is also expected to increase the coherence between Article 7 and the EED and the national policies in that it allows the Member States to implement the energy efficiency improvement measures most suited for their national circumstances and policy landscapes.

EU added value

The provision adds value by helping to ensure that all Member States have common understanding in the alternative ways they can meet the energy savings target, which improves the consistency of the policy packages across the Member States and facilitates the achievement of the energy savings target.

Additional or missing issues

According to the provision the alternative policy measures need to be designed to achieve end use energy savings. The Commission guidance (Point 21) states this wording excludes policy measures that are primarily intended to support policy objectives other than energy efficiency or energy savings. No explicit reference to this interpretation is included in the wording of the provision itself.

Recommendations on provisions relating to alternative policy measures

We therefore recommend the following:

- **No change:** The provision has been effective in achieving its aim of providing flexibility for the Member States in meeting their energy savings targets in the way that is the most coherent with their national circumstances. The suitability of the policy measures for delivering the target will be further analysed within Task 2.
- **Minor change:** The study shows that there is lack of information in the Member States' notifications in regard to the category of the alternative policy measures. While the reason for the lack of information is unclear it is likely to relate to the gap in notifications requirements that do not require the Member States to notify the specific category. A small change could therefore be considered to the notification requirements of the provision by requiring the Member States to notify of the category of the alternative policy measure with reference to Article 7(9) (a)-(f). This would help the Commission with the compliance assessment in understanding the requirements applicable for the measures.

Criteria for alternative policy measures (Article 7(10) (a) and (b))

Similarly to EEOS, Article 7 sets overall design criteria for alternative policy measures and Energy Efficiency National Fund to guarantee the achievement of the aim of Article 7 when Member States implement alternative policy measures or Energy Efficiency National Fund.

Article 7(10) (a) stipulates that the policy measures need to provide for at least two intermediate periods by 31 December 2020 and lead to the achievement of the energy savings target. The Member States were required to notify the Commission of the expected savings to be achieved over the whole and intermediate periods (Annex V (4)(c)) and the duration of the intermediate periods (Annex V (4)(d)). Similarly to the EEOS, according to Article 7(10)(d), the expected savings were to be expressed in either final or primary energy consumption (see analysis on final vs. primary energy in section 0).

Further, to ensure effective management of the policy measures and achievement of the energy savings, according to Article 7(10)(b), Member States have to define the responsibility of each entrusted party, participating party or implementing public authority, whichever is relevant. Entrusted party, participating party and implementing public authority is defined in Article 1(15)-(17). The Member States were required to notify the Commission of participating or entrusted parties or implementing public authorities (Annex V (4)(a)).

The analysis identified that, overall, Article 7(10)(a) on intermediate periods can be considered effective. While there were information gaps in regards to some Member States (17% of the Member States did not provide any information on this aspect), the majority (59%) had implemented the provision's requirements and a further 25% have partially implemented the requirements. While it is unknown why the Member States have not provided full information, it could be assumed that the Member States lacked understanding of phasing of savings over the 2014-2020 period. As no issues with efficiency, relevance and coherence were identified, we have suggested no change to the provision.

Also no change was suggested in regard to Article 7(10)(b). While there was a lack of information in the notification in regard to the responsibilities of the entrusted and participating parties and implementing public authorities, the majority of the Member States (78%) had complied with the notification requirements and provided information on the parties. This indicates that the Member States have set up institutional framework for the management of the measures. While further information can be requested from the Member States on the responsibilities of the parties, this might overly burden the Member States. No issues were identified with efficiency, relevance and coherence.

Article 7(10), Annex V(3) calculation of the energy savings from energy and CO₂ taxes

Annex V(3) describes several principles that apply where Member States are determining savings from energy or CO₂ taxes. These are:

- **Annex V(3a)** requires that when calculating savings from energy and CO₂ taxes, Member States are only able to include savings from taxation measures which exceed the minimum levels set out in the Energy Taxation Directive(2003/96/EC) and the VAT Directive (2006/112/EC).
- **Annex V(3b)** sets out certain requirements for the elasticities that Member States can use in the calculation of the savings from energy and CO₂ taxes. Specifically, that Member States are required to use recent and representative official data on price elasticities.
- **Annex V(3c)** requires that the savings from energy or CO₂ taxes are accounted for separately to other accompanying fiscal instruments (e.g. under Article 9(b)) or funds (e.g. Energy Efficiency National funds - Article 20(6)). This is relevant where the revenues from the energy or CO₂ taxes may be reinvested in other energy saving actions via other policy instruments.

Rationale

The rationale for the principles set out in Annex V(3a) and Annex V(3b) is that it is important that the savings notified by Member States in relation to energy and CO₂ taxes are additional to existing EU policies, and represent a robust assessment of the energy savings from these measures. In the absence of these requirements there would be a greater a risk that Member States would notify less credible savings estimates, and the quantified savings may not be consistent with the savings target for Article 7, which is based on additional savings.

Annex V(3c) is about ensuring that the savings notified by Member States in relation to energy and CO₂ taxes are transparent, which is important for the integrity of the savings estimate.

Expected outcome

The expected outcome was that Member States, when notifying savings from energy and CO₂ taxes would calculate the savings based on credible (defined in terms of recent and representative official data) price elasticities, and that the notified savings would represent the additional savings from national actions. Therefore these savings would represent a robust estimate of the savings from the additional efforts made by Member States.

It was also expected that those Member States that were using energy and CO₂ taxes to deliver their energy savings targets would report the savings separately to any accompanying policies.

Actual outcome

In total, nine Member States notified energy savings from energy and CO₂ taxes. Of these, six Member States demonstrated in their notifications that only additional savings beyond the EU minimum level were taken credit for. One Member State stated that the calculated energy savings are based upon the taxation levels that go beyond EU minimum levels but insufficient information was available to provide confidence that the correct calculation had been made. For the remaining two Member States no reference was made to the EU minimum levels, which may present a greater risk that the savings from these Member States were not fully additional.

In relation to the credibility of the price elasticities, only one Member State provided sufficient information to determine with confidence that the elasticities that were used in the analysis were based on recent and representative official data. In all other cases, insufficient information was provided on one or more of these characteristics.

All nine Member States reported the savings from energy and CO₂ taxes separately to any accompanying measures.

Effectiveness

Annex V(3a) can be considered partially effective in ensuring that the savings notified by Member States in relation to energy and CO₂ taxes are additional to existing EU policies. For seven out of the nine Member States notifying taxation measures, the savings were stated as additional to the EU minimum levels. With respect to the credibility of the elasticities used in the calculation of the energy savings (and the savings overall), Annex V(3b) was potentially less effective with only one Member State demonstrating sufficiently that the relevant criteria were met. However, in most cases, a lack of information presented a barrier to determining the overall effectiveness in this area. Greater confidence can be stated in the effectiveness of Annex V(3c) where all Member States notified savings from energy and CO₂ taxes separately to other related measures.

Efficiency

The effort involved in the implementation of Annex V(3a) is limited. As part of the calculation of the energy savings from energy and CO₂ taxes it is relatively easy to quantify the savings from taxation levels beyond the minimum EU levels. As a result the requirements of Annex V(3a) provide an efficient way of ensuring that the savings are additional. In contrast, the effort required to implement the requirements Annex V(3b) are potentially more onerous, although the effort varies between Member States. For some Member States, new research was commissioned to justify the credibility of the elasticities that were applied. However, for other Member States previous analysis was used as the source for the elasticities, which would involve less effort. At the same time there is likely to be a trade-off between effort and credibility. Finally, in relation to Annex V(3c) the effort involved in the implementation of the requirements is limited, and the provision is overall efficient.

Relevance

All of the principles in Annex V(3) continue to be relevant as long as energy and CO₂ taxes continue to be used by Member States. In relation to the 2030 objectives, one potential issue with extending the cut-off date will be the treatment of long-run elasticities. When considering only savings to 2020 the full long-run impact of energy and CO₂ taxes will not be realised. However, extending the cut-off date for the assessment will allow these impacts to be realised in full.

Coherence

There is strong coherence between Annex V(3) and the other provisions in Article 7 – the principle that savings needs to be credible and additional to EU minimum levels is applicable to all policy measure types.

EU added value

The provision ensures that all Member States report savings from energy and CO₂ taxes on an equal basis, with transparency on the energy savings, which allows comparability of savings from national measures and the integrity of the energy savings at an EU level.

Conclusions on provisions relating to the energy savings target

On this basis we concluded the following:

- The principles have been largely **effective** in ensuring that the savings from energy and CO₂ taxes are additional to EU minimum requirements, and to a lesser extent calculated using credible estimates for the price elasticities. However, for some Member States there was insufficient information notified to check that the provision was correctly implemented (and therefore effective in delivering its objective).
- The overall efficiency of the provision is very good. The administrative burden associated with the implementation of the provision is expected to be limited.
- The provision continues to be relevant. If there are future revisions to the Energy Taxation Directive the provision may need to be revised, although the basic principle of additionality would continue to be valid.
- The provision is coherent with the other provisions in Article 7 – the principle of additionality to EU minimum levels is applicable to all policy measures.

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- The provision adds value at an EU level by helping ensure that savings from energy and CO₂ taxes are quantified on an equal basis, and therefore support the integrity of the savings at an EU level.

Additional or missing issues

One issue that is not address in the principles is the use of long run elasticities. In contrast to short-run elasticities, long run elasticities include both behaviour responses to taxes (e.g. consumers drive less in response to a tax on diesel), and structural changes (e.g. consumer purchase more fuel-efficient cars). The use of long run elasticities has a number of specific methodological challenges. For example, this risk of overlap with other policy measures is much greater. It could be argued that these issues are adequately addressed by other provisions in Article 7 (e.g. policy overlaps).

A second issue is that some Member States notified taxation measures which were not directly applied to energy consumption. However, these measures would have the effect of reduction end use energy consumption. This is also the case with VAT.

Recommendations on provisions relating to the calculation of energy savings from energy and CO₂ taxes

We therefore recommend the following options for the different principles

- **Annex V(3a)- Additionality of savings**
 - **No change** – the provision is effective and efficient and does not require modification
 - **Additional guidance** – additional guidance around the reporting of information required by Member States may help ensure that all Member States are implementing the requirements correctly
- **Annex V(3b) – recent and relevant elasticities**
 - **Minor change** – Refinement of the criteria in Annex V might improve the credibility, although this might be better addressed through better explanation of the existing criteria (see additional guidance).
 - **Additional guidance** – Additional guidance is provided on what would be consistent with recent, relevant and official data. This would help ensure that Member States were adopting a consistent approach when selecting elasticities. It might also provide guidance on when it is appropriate to perform new research, which might be based on the principle of proportionality. Finally, further guidance on what might be considered as sufficient information for the purposes of the submission would be useful.
- **Annex V(3a) – Separate accounting to linked measures**
 - **No change** – the provision is operating effectively as intended, with limited administrative burden.



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