

Gap analysis on the issues of policy (re)design, implementation, monitoring, reporting and verification

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Preface

This report presents a gap analysis of European Union (EU) Member States' (MSs') implementation of Article 7 of the Energy Efficiency Directive (EED). It identifies areas of policy implementation that have been carried out in ways that are not always consistent with the EED, particularly around monitoring, reporting and verification (MRV) and policy (re-)design issues associated with policy measures that can deliver energy savings compliant with the EED. The report focuses on key issues, selected on the basis of stakeholder feedback and desk research, and the impacts that these could have on the achievement of Article 7 targets.

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1 | Executive Summary

This report sets out 15 gaps in the design, implementation and monitoring, reporting and verification (MRV) of energy efficiency programmes in European Union (EU) Member States. Tackling these gaps, through knowledge sharing, the development of tailored resources and tools and in-house assistance will be central aspects of the European Union Horizon 2020 ENSMOV (Enhancing the Implementation and Monitoring and Verification practices of Energy Saving Policies under Article 7 of the Energy Efficiency Directive [Article 7 EED]) project.

Since the introduction of the EED in 2012 (European Union, 2012) energy efficiency policy frameworks have been developed across EU Members States. In order to meet the Article 7 EED energy savings obligation, energy efficiency programmes have been (re)designed and implemented and MRV systems put in place or further developed. Yet, as 2020 approaches, the European Union looks unlikely to meet its headline Article 3 EED energy efficiency targets (Thomas, 2018). The recast of the EED (European Union, 2018) closes a number of loopholes in the original Directive and the accompanying Guidance Note sets out ways in which Member States can comply with its requirements (European Commission, 2019a).

Against this backdrop, there is broad recognition of the need to improve various aspects of policy (re)design, implementation and MRV. Public policy officials responding to the 2019 ENSMOV survey highlighted a number of high priority topics in these domains, and these priorities underpin many of the gaps identified in this report. A wider group of stakeholders, including obligated parties (utilities obligated to deliver energy savings through EEOs), highlighted many of the same priorities as well as some other topics, most notably a gap around the involvement of stakeholders in the processes of policy design and implementation (ENSMOV, 2019). Beyond those that can be identified from ENSMOV survey results, a number of other gaps emerge from an analysis of recent policy developments.

Ensuring the sustainability of energy efficiency programmes is a key issue of concern for both those Member States with Energy Efficiency Obligation Schemes (EEOs) and those with alternative measures to meet the Article 7 EED energy savings obligation. Two gaps emerge, one focused on EEOs, where recent experience suggests that much could be learned from different approaches to changing programme rules (see for example, Di Santo and De Chicchis, 2019), and another focused on subsidy programmes, where short-term funding commitments and a proliferation of implementing authorities can undermine the development of a sustainable energy efficiency supply chain (Le Den et al, 2015).

Two distinct communications gaps related to programme sustainability also arose from the survey. One related to raising awareness amongst potential programme participants about the opportunities and benefits of energy efficiency, where the involvement of non-governmental and market actors and sub-national authorities has been highlighted as a means of reaching target participants (see for example Broc et al, 2015). The other topic related, as highlighted above, to the involvement of stakeholders in the policy design and implementation process, an issue highlighted in earlier work in this area (ENSPOL, 2016).

Technical and practical issues related to ensuring compliance with Article 7 EED were also important to survey respondents. Ensuring the additionality and materiality of programmes were revealed as policy gaps where more assistance is required, confirming earlier analysis of compliance (for example, Forster et al, 2016). Defining the technical aspects of MRV systems is another area of concern, particularly around defining sample sizes for verification, as is the designing of practical MRV guidance and tools, where experience sharing could be highly valuable (see for example SEAI, 2014).

Two cross-cutting gaps also emerge from the survey, one related to the designing in programmes to allow for their effective evaluation, confirming a gap identified in earlier work (EPATEE, 2019). The other topic relates to cost-effectiveness, a perennial concern to policy makers and one where lessons may be learnt from experiments in the United States, where pay-for-performance programmes using smart meter data are reducing the costs of MRV while improving effectiveness in terms of energy savings (Best et al, 2019).

A broader analysis of energy efficiency policy design and implementation reveals further gaps. Transportation is underrepresented in terms of energy savings reported for Article 7 EED (Forster et al, 2016), while taking account of energy poverty is now a requirement of the recast EED and Member States could learn from experience in other jurisdictions (see for example, BEIS, 2019a). Recent increases in the reporting of energy savings from energy taxation give rise to concerns over both the effectiveness of such measures, if implemented in isolation from a broader set of energy efficiency policies, and the ways in which savings are being calculated (Rosenow and Scheuer, 2019). Energy efficiency auctions have delivered relatively few energy savings towards Article 7 EED targets but are of growing interest to policy makers in many Member States. Sharing the lessons from pilot projects (for example Langreder et al, 2019) could be highly valuable as new programmes are developed. Finally, as energy efforts are ramped up over the coming decade, the issue of mobilising private investment is becoming more acute. Sharing experience of blending EEOs and alternative measures with innovative financing models (see for example PACENation, 2019) will be important in this respect.

2 | Introduction

2.1 Purpose of this report

This report is produced within the scope of the European Union Horizon 2020 ENSMOV (Enhancing the Implementation and Monitoring and Verification practices of Energy Saving Policies under Article 7 of the Energy Efficiency Directive [EED]) project. It provides input to the implementation phase of the project by analysing gaps in the implementation of Article 7 EED based on responses to the ENSMOV survey carried out in summer 2019, issues raised in previous analyses and an analysis of 2019 Annual Reports setting out progress towards meeting the EED. The results of the survey, this gap analysis and an exercise mapping existing tools against the findings of the survey and the gap analysis will inform the design of the interventions undertaken over the three cycles of the implementation phase of the ENSMOV project.

2.2 The ENSMOV project

ENSMOV is a European Commission Horizon 2020 project, aiming to provide support to Member States and their stakeholders to implement energy efficiency policies. Over the course of three years, the project will help Member States to monitor, revise, improve and implement their energy efficiency policies by developing resources on practical and strategic issues arising from Article 7 EED.

Building on previous knowledge and results developed from two influential Horizon 2020 projects that have helped to shape Member States' policies to address requirements of Article 7 EED — [ENSPOL](#) and [MULTEE](#) — the ENSMOV consortium aims to:

- facilitate and expand sharing of knowledge and experience amongst Member States (MS) for the implementation of policies under Article 7 EED;
- develop a suite of tailored resources and tools for the implementation of Article 7 EED to address the specific needs of Member States; and
- assist national authorities' in-house monitoring, reporting and verification (MRV) schemes with a view to ensuring they have robust data and insight to inform the (re)design of policies towards 2030.

ENSMOV is primarily supporting public authorities and key stakeholders in 14 Member States represented by its consortium (Austria, Belgium, Bulgaria, Croatia, France, Germany, Greece, Hungary, Italy, Lithuania, Netherlands, Poland, Romania and the UK). However, support will also be extended to other Member States and Accession Countries.

2.3 Article 7 of the Energy Efficiency Directive

The EED entered into force in 2012, setting goals of reducing EU primary and final energy consumption by 20% by 2020, compared to baseline projections. In 2018, the Energy Efficiency Directive was amended, setting goals of reducing EU primary and final energy consumption by at least 32.5% by 2030, compared to the same baseline projections. To support the achievement of these goals, Article 7 EED requires Member States to achieve yearly energy savings through an energy efficiency obligation scheme (EEOS) or alternative measures.

Article 7 of the 2012 EED (2012/27/EU) requires each Member State to achieve an annual reduction of 1.5% in national energy sales in each of the years from 2014 to 2020 inclusive. Annex V of the EED set out methodological options for the calculation of energy savings; principles to apply to the calculation of additionality to European Union law and the materiality of the activities of obligated, participating or entrusted parties; a requirement to ensure that quality standards for energy efficiency measures are introduced and maintained; and a methodology for the notification of energy efficiency measures to the European Commission.

2.3.1 Changes to the Energy Efficiency Directive

The amending Directive on Energy Efficiency (2018/2002) extends the Article 7 EED energy savings obligation beyond 2020 to 2030 but impacts on both the 2014–2020 and the 2021–2030 obligation periods, with the bulk of the changes affecting the later period. Amongst the changes agreed, the EED as amended:

- **changes the definition of energy savings and the rate at which they must be achieved:** for the period 2021 to 2030, Member States¹ must achieve **new savings each year equivalent to 0.8% annual final energy consumption** averaged over the most recent three-year period prior to 1 January 2019;
- **treats energy efficiency obligations schemes and alternative measures equally** in terms of their ability to generate energy savings, for example there are no additional benefits to taking action early using a particular type of policy measure;
- **elevates the issue of energy poverty** by requiring Member States to implement some energy efficiency policy measures as a priority amongst vulnerable households;
- **clarifies the requirements regarding the lifetimes of measures and additionality** when calculating energy savings; and
- emphasises the importance of **monitoring and verification** in ensuring that policy measures achieve their objectives.

The European Commission guidelines on transposing the energy savings obligations under the Energy Efficiency Directive provide support to Member States in setting up eligible policy measures and correctly reporting energy savings, dealing in detail with the issues set out above and providing examples of how to implement them (European Commission, 2019b).

¹Malta and Cyprus have a derogation that requires them to achieve new savings equivalent to 0.24% of annual final energy consumption.

3 | Gap analysis overview

3.1 Methodology

This report builds on two ENSMOV surveys: the initial survey carried out during the proposal stage of creating the ENSMOV project in summer 2018, and the main ENSMOV survey carried out in summer 2019. The aim of both surveys was to provide an up-to-date gap analysis of the implementation of Article 7 EED since 2014, complementing it by looking at the level of policy strategy. It makes best use of the survey by expanding on the issues raised by stakeholders with independent desk research on actual policy implementation to date compared to the requirements in Article 7 EED. In addition, the desk research highlights some issues not raised by stakeholders, perhaps owing to a lack of awareness of the requirements in Article 7 EED and international best practices.

The report is deliberately not exhaustive, focussing on (1) the key priorities raised in the ENSMOV survey and the impacts that these issues have on target achievement; and (2) other relevant issues based on previous work and a review of recent Member State reporting.

3.2 Key priorities raised by the ENSMOV survey

The ENSMOV survey was carried out in summer 2019 to identify the needs for knowledge exchange in the areas of (1) policy implementation and (re)design and (2) monitoring, reporting and verification (MRV) for Article 7 of the EED. The survey was directed at a main target group consisting of public policy makers and a second group of wider stakeholders, including obligated parties and market actors. Of the 125 responses received, 42% came from public authorities. Survey respondents were asked to rank issues identified with Energy Efficiency Obligation Schemes (EEOs) and alternative measures in terms of their relevance for experience sharing. A report detailing the survey methodology and results can be found in Annex I of this report, providing tables detailing the key priority issues as ranked by stakeholders from public authorities, the main target group.

An analysis of survey responses reveals 10 themes worthy of further exploration in the implementation phase of the ENSMOV project. The following sections set out these themes, drawing on the survey responses and focusing in the main on those that received the most scores of 4 or 5 ('important' or 'very important'). [Section 4](#) of this report puts the themes in the broader context of other relevant research and recent developments.

3.2.1 Policy implementation and (re)design

The survey asked respondents to rate, for each of 26 topics, the level of experience sharing, and capacity building needed in their country. A rating of 5 indicated that a lot assistance is required, while a score of 1 indicated that no assistance is needed and a score of zero indicated no opinion or involvement in the topic.

The 26 topics were grouped in seven categories:

- policy measure preparation (four topics);
- legal/political aspects (five topics);
- organisation of policy implementation (two topics);
- communication (four topics);
- capacity building (one topic);
- financial aspects (five topics); and
- technical/practical aspects (five topics).

Not all the categories and topics are examined in this report, which focuses, in this section, on the top priorities identified by survey participants. In focusing on those topics ranked by the number of important (4) or very important (5) scores, some topics with relatively high average ratings are not highlighted in this report. In particular, ‘ensuring that state subsidies are used effectively (*e.g.*, preventing double funding in the case where it is not allowed)’ ranked sixth in the average ranking or policy implementation topics and ‘coordination with other policies/initiatives in order to reach the defined objectives in the most efficient way’ ranked seventh amongst the same topics. This does not mean, however, that these issues will not feature in the ENSMOV project. Both issues are fundamental to good policy (re)design and implementation and are related to other topics that have been identified as gaps, for example, ‘ensuring additionality,’ ‘ensuring the sustainability of subsidy programmes’ and ‘designing and implementing policy measures to deliver savings in the transport sector’ where coordination with broader transport policy is crucial. For a full analysis of the main ENSMOV survey, please see the Stakeholder Needs Assessment for the Implementation of Article 7 EED (ENSMOV, 2019).

The 10 gaps emerging from the analysis of the survey are set out in the remainder of Section 3.2 below. The order in which they appear should not be considered as a ranking.

3.2.1.1 Financial aspects ranked high

All five of the financial aspects were amongst the 12 topics that ranked highest in terms of their priority — they had a high percentage of scores of 4 or 5 (see Annex 1). ‘Ensuring the sustainability of the EEO scheme/alternative measures(s) in terms of re-financing (*e.g.*, through cost recovery for obligated parties)’ was the top priority based on this ranking. ‘Designing the policies in order to minimize the costs for all parties involved’ ranked fourth. ‘Understand[ing] the investment capacity and financial needs of [participants] ... to design [policy measures] to their possibilities’ ranked sixth. ‘Ensuring that state subsidies are used effectively’ ranked 10th and ‘[gaining] budget commitment for the EEO scheme/alternative measures(s)’ ranked 12th.

Two themes emerge from an analysis of the survey responses:

1. Ensuring the sustainability of energy efficiency obligation schemes

Recent experience in many Member States highlights the vulnerability of EEOs to reductions in ambition (and therefore the costs allowed to be passed through to consumers via energy prices) or outright abolition, as well as the need to manage transitions between obligation periods. Rule changes have also put strains on supply chains as they adapt. Good quality monitoring, reporting and verification can flag issues earlier than full evaluation reports, providing timely information for policy makers planning new obligation periods.

2. Ensuring the sustainability of subsidy programmes

A number of factors affect the long-term sustainability of subsidy programmes. Funding may be tied to annual fiscal decisions. Many different implementing authorities may have some responsibility in implementation. Using subsidy programmes to leverage participant and third-party finance may also improve their sustainability. This issue, while not an explicit focus of the main ENSMOV survey, is addressed in [Section 3.3 Gaps identified outside the survey](#).

A third theme emerging from this category relates to cost-effectiveness. This is dealt with in [Section 3.2.2](#) on MRV as respondents referred to the need for cost-effective MRV regimes as opposed to cost-effective policy making in its broader cost-benefit analysis sense.

3.2.1.2 Policy measure preparation

The topic of ‘assessing the side-effects ... (*e.g.*, rebound effect, free ridership, etc.)’ ranked second in the policy makers’ priority list, while ‘assessing the needs for control/evaluation’ ranked eighth.

The rebound effect is the increase in energy consumption that offsets part (or in extreme cases all) of the energy savings brought about by a technical energy efficiency improvement. The direct rebound effect occurs because energy efficiency reduces the cost of the energy services being consumed. All other things being equal, a reduction in cost would be expected to lead to an increase in consumption of energy services (*e.g.*, more thermal comfort, larger refrigerators, etc.), reducing the energy savings implied by a static analysis of technical efficiency gains. The indirect rebound effect is the increase in energy consumption brought about by increases in disposable income or profits resulting from energy efficiency. Technical efficiency gains enable energy consumers to spend less on energy for a given level of energy services, freeing up disposable income to spend on other goods and services, each with their own energy footprint. The resulting offsetting increase in energy consumption is the indirect rebound effect. To estimate the rebound effect is to reduce the energy saving benefits associated with energy efficiency policy. However, such an assessment should also be accompanied by an estimate of the welfare benefits associated with the additional energy consumption (*e.g.*, in terms of the comfort of those previously unable to adequately heat their homes).

Free ridership refers to the extent that programme participants would have undertaken the energy efficiency actions supported by the programme in its absence. Accounting for free ridership will most likely reduce the energy savings directly attributable to a policy. However, such an assessment should also be accompanied by an estimate of the spill-over effects of the policy, whereby the take-up of energy efficiency measures by programme participants leads others to make similar investments without its direct support.

Two other topics in this category, ‘creating feedback loops’ and ‘assessing obstacles’, did not score so highly (both appeared in the bottom four places of the ranking).

The theme emerging from the survey is the need to focus on building evaluation into programme design:

3. Designing evaluation-ready programmes

Programme evaluation relies upon good data, which in turn requires that evaluation needs are factored into policy design, implementation and MRV so that issues such as the rebound effect and free ridership can be properly assessed. The ENSMOV project will support the data gathering required to enable effective evaluation. Stakeholders interested in evaluation should refer to the tools and case studies of the [EPATEE](#) project.

3.2.1.3 Technical and practical issues

Amongst the five topics featured in this category, ‘ensuring additionality’ and ‘ensuring materiality’ ranked third and fifth in the policy makers’ priority list. This is not surprising, as these are two of the key concepts related to the eligibility of energy savings under Article 7 EED. The issue of materiality was also a key concern for the wider stakeholder group, many of whom need assurance that the savings associated with their actions will be counted as material to the generation of energy savings. ‘Mitigating the risk of fraud’ and ‘setting up a robust MRV scheme’ also featured in the top half of the ranking, at 11th and 13th, respectively, with the issue of robust MRV schemes also being a key concern of the wider stakeholder group. These issues are explored in the next section of this report, dealing with survey responses on MRV issues. ‘Taking into account market transformation and technical development’ was not such a high priority, ranking in 19th place.

4. Ensuring additionality

Ensuring additionality is central to all good programme design, and in the context of Article 7 EED, particular care is needed to account for European Union law (*e.g.*, minimum average performance standards for appliances, minimum energy taxation rates and average new vehicle emission standards) to avoid counting savings attributable to these pan-European policies. More broadly, the savings reported from one particular programme, must be additional to the savings of other policies targeting the same energy efficiency measures. This second element of additionality can either be addressed through programme design, avoiding overlap in the first place, or through *ex post* analysis to allocate savings to programmes, that is avoiding double counting. Even in the absence of other programmes, policy design should ensure that savings are additional to those that would have been delivered by the market in any case. This third aspect is related to the principle of materiality, discussed below.

5. Ensuring materiality

Ensuring materiality is another key principle behind policy making for Article 7 EED and is related to additionality in that individual energy efficiency actions need to have been supported or triggered by the activities of national public authorities or obligated parties; that is, they must be additional to what would have happened anyway. For Article 7 EED, these activities must have contributed to the individual actions and had more than a minimal effect. Although this concept can appear to be difficult to evaluate, there are a number of ways in which Member States can better establish materiality, for example, through requirements for criteria to be met or contracts

to be concluded prior to the commencement of the implementation of measures. However, strictly speaking, materiality can only be fully determined *ex-post* through programme evaluation.

3.2.1.4 Communication

Only one of the four topics in the communication category ranked high (seventh) on policy makers' priorities: 'Raising awareness about the opportunities for and the benefits of energy efficiency'. This issue was also deemed to be very important by the wider stakeholder group, for whom non-energy impacts, such as comfort, health and property values, are often at least, if not more important than energy savings (IEA, 2014).

The wider stakeholder group attached more importance to other communication topics. The need to 'involve the relevant stakeholders in the policy (re)design process' was their fourth most important issue, while 'creating feedback loops for the inclusion of knowledge from different actors ... for policy (re)design' was their second most important topic and providing 'the obligated parties with sufficient information' also ranked relatively high (10th place). While there is always likely to be a difference between the perceptions of public policy officials and wider stakeholders, this suggests that there may be a blind spot on the appropriate level of public consultation and information provision.

Two themes emerge:

6. Raising awareness about the opportunities for and the benefits of energy efficiency

Getting the balance right between programme spending on raising awareness and direct subsidisation is a key concern to both obligated parties, looking to minimise their costs of meeting targets, and governments, aiming to improve the net present value of their energy efficiency policy portfolios. Many different aspects of policy design and implementation are relevant to this issue, including the segmentation of target audiences and working with the right messengers to maximise impact.

7. Involving wider stakeholders in the policy design and implementation process

The wide disparity in rankings of topics related to stakeholder engagement between public policy officials and the wider stakeholder group suggests that this issue may be a blind spot for policy redesign and implementation. Setting up open, transparent and timely evidence-based consultations on programme design and implementation processes enables programmes to operate more effectively and the building of a broad support base for their sustainability.

3.2.2 Monitoring, Reporting and Verification (MRV)

The survey asked respondents to rate, for each of 14 topics, the level of experience sharing, and capacity building needed in their country. A rating of 5 indicated that a lot of assistance is required, while a score of 1 indicated that no assistance is needed and a score of zero indicated no opinion or involvement in the topic.

The 14 topics were grouped in five categories:

1. Organisation of MRV (two topics);
2. Legal and political aspects (three topics);
3. Capacity building (one topic);
4. Financial aspects (one topic);
5. Technical and practical aspects (seven topics).

3.2.2.1 Technical and practical issues dominate

Five of the top seven priorities of policy makers on MRV related to technical or practical aspects — they had a high percentage of scores of 4 or 5 (see Annex 1). ‘Defining the sample size and the parameters for representative MRV’ was the topic with the highest priority ranking. ‘Providing clear and specified guidelines on MRV for Article 7 EED’ ranked second, ‘providing tools for MRV schemes’ ranked third and ‘guidelines for verification requirements’ ranked fifth. ‘Defining data requirements for reporting to national authorities on MRV’ ranked sixth, and ‘defining the parameter[s] for the controlling of energy efficiency measures (individual actions) to [ensure compliance]’ ranked seventh.

Two broad themes emerge, one technical, the other practical:

8. Defining the technical aspects of MRV systems

The updated EED emphasises the importance of MRV systems and clarifies many of the technical aspects, including the requirement to check a statistically representative sample of measures. The design of MRV systems is essential to making judgements on materiality, additionality and quality. Understanding how to set up such a system requires an analysis of the mechanism by which energy savings are expected to be generated and the characteristics of the population receiving measures.

9. Designing practical MRV guidance and tools to ensure programme integrity

It is not enough simply to define an MRV system. It should be supported by clear guidance to ensure that it is implemented correctly and by tools that help it to be implemented consistently. For both public policy officials and wider stakeholders, clarity of guidance and appropriate reporting tools are key practical aspects to get right. Stakeholders interested in bottom-up measurement techniques across the EU should refer to the MultEE project bottom-up assessment guidebook (Jamek et al, 2016).

3.2.2.2 Financial aspects

The one topic tested in this category — ‘Cost-efficient provision of MRV’ — was ranked fourth in terms of priority by the policy maker group and fifth by the wider stakeholder group. This cross-cutting topic’s importance was also echoed in the responses given by respondents in the policy design and implementation part of the survey, where the issue of cost-effective MRV provision was also raised.

The following cost-cutting theme warrants further exploration:

10. Designing and implementing cost-effective MRV systems

MRV systems require resources that could otherwise be spent directly supporting the installation of energy efficiency measures. The challenge for policy makers is to find the most cost-effective ways of meeting Article 7 EED requirements and going beyond these where the benefits (*e.g.*, in terms of increased actual energy savings) warrant the additional costs. Peer learning offers opportunities to learn from other jurisdictions, including from the United States, where the use of smart meter data is revolutionising the MRV of energy efficiency programmes focused on electricity and natural gas in some States.

3.3 Gaps identified outside the survey

Five other gaps, in addition to those raised in survey responses, emerge from recent developments in policy implementation and the recast of the EED (European Union, 2018), which are further analysed in [Section 4](#). Three are policy or sector specific, and two are cross-cutting policy issues. Of the policy specific issues, taxation is included, given its growing importance in the portfolio of measures reported on by Member States; auctions are included, owing to the increasing interest from Member States and the relative lack of experience in design and implementation; and transport is included because of the continuing lack of policy development for energy savings in that sector. The cross-cutting topic of mobilising private finance is included given the step up in ambition required to meet climate goals;

subsidies can only deliver a small proportion of what is needed. The cross-cutting topic of energy poverty is included given the requirement for it to be considered in the recast of the EED and the ongoing need to address distributional issues in energy efficiency policy; in some MSs, there remains no official definition of energy poverty, meaning that some countries are starting from a very low base on this topic. For all of these additional gaps, considering the MRV implications from the start of policy design will be important.

11. Designing and implementing energy taxation measures as part of an efficiency policy framework

Energy taxation is becoming an increasingly popular policy measure in Member States' energy efficiency policy portfolios for meeting Article 7 EED. As a part of a coherent policy package, energy taxation can play a key supporting role in driving energy efficiency gains, as it increases the returns to investment through raising the financial value of energy savings. However, as a stand-alone policy, taxation only addresses one of the market failures affecting energy efficiency and can have significant distributional implications if not implemented alongside other supporting measures; and as a policy, its impacts require significant analytical efforts to estimate. As more countries report savings from taxation measures, it will be beneficial to share information on how to embed it in policy frameworks and to analyse its impacts.

12. Designing and implementing energy efficiency auctions

Following the success of the Swiss ProKilowatt auction, a number of Member States have begun, or are developing, pilots for energy efficiency auctions whereby governments ask for bids to achieve energy savings and auction winners are ranked by the price at which they are willing to accept subsidies to deliver those savings. Thus far, pilot results have been mixed in the EU; it would be valuable if Member States shared their experiences in auction design and how they have fitted such measures into their energy efficiency policy portfolios.

13. Designing and implementing policy measures to deliver savings in the transport sector

One-third of EU final energy consumption is in the transport sector, and yet energy efficiency policies rarely focus on this sector for energy savings, with only 6% of Article 7 EED savings reported to be from the transport sector (Forster et al 2016). Broadening stakeholder engagement on energy efficiency within Member States, to ensure that transport, climate and energy policy is joined up, would help to broaden the pool of cost-effective energy efficiency opportunities.

14. Designing policies that are effective at mobilising private resources to invest in energy efficiency

Leveraging private investment is essential if final energy consumption is to be reduced in line with climate goals. In meeting more robust energy efficiency targets, subsidies will be increasingly

rationed, putting the onus more on policies that are able to access participant funds, for example, through on-bill financing or funding from other parts of the economy that benefit from energy efficiency, (e.g., the energy and health care systems). Designing policies that are able to access investment based on that value will be crucial, as will scalability, which could enable financial markets to provide funding, lowering financing costs. In this respect, the considering the combination of regulatory, taxation, subsidy and enabling measures will be crucial to driving scale.

15. Taking account of the need to alleviate energy poverty

In the amended EED, Member States are required, as far as appropriate, to implement as a priority a proportion of energy efficiency measures, taking into account the need to alleviate energy poverty. Some Member States are already meeting this requirement, while others have not actively considered this issue before. Across all Member States, there will be benefits in sharing best practices in how to design and implement programmes that target vulnerable households, including those affected by energy poverty, and, where appropriate, social housing. Collaboration with the Horizon 2020 project [SocialWatt](#) could be valuable in this respect.

As these five themes do not follow directly from the survey, it will be important to test them with ENSMOV stakeholders and adapt the project if necessary. Other gaps may become more apparent as policy redesign and implementation takes shape.

4 | 15 Gaps to be addressed

The 15 gaps identified can be categorised by whether they address EEOs or alternative measures and policy (re)design and implementation or MRV. Table 1 illustrates some of the gaps that cut across all four domains.

Table 1: Focus of gaps

Gap	EEOs	Alternative Measures	Policy design / implementation	MRV
Ensuring the sustainability of energy efficiency obligation schemes	X		X	
Ensuring the sustainability of subsidy programmes		X	X	
Designing and implementing energy efficiency auctions		X	X	(X)
Designing and implementing energy taxation measures as part of an efficiency policy framework		X	X	
Designing and implementing policy measures to deliver savings in the transport sector	X	X	X	(X)
Raising awareness about the opportunities for and the benefits of energy efficiency	X	X	X	
Designing evaluation-ready programmes	X	X	X	X
Involving wider stakeholders in the policy design and implementation process	X	X	X	X

Gap	EEOs	Alternative Measures	Policy design / implementation	MRV
Designing policies that are effective at mobilising private resources to invest in energy efficiency	X	X	X	X
Taking account of the need to alleviate energy poverty	X	X	X	X
Ensuring additionality	X	X	X	X
Ensuring materiality	X	X	X	X
Defining the technical aspects of MRV systems	X	X		X
Designing practical MRV guidance and tools to ensure programme integrity	X	X		X
Designing and implementing cost-effective MRV systems	X	X		X

4.1 Ensuring the sustainability of energy efficiency obligation schemes

4.1.1 Synopsis

EEOs are long-lived policy instruments that run-in phases. A new phase is an opportunity to learn from the previous period’s successes and areas for improvement, to address new policy objectives and to take account of changes in markets and technologies. It is also a chance for vested interests to argue for changes that benefit them, putting a premium on good evidence. Rule changes — for example, to the level of ambition, sector focus or savings calculation methodology — need to be signalled well in advance to ensure that market actors are able to adapt. If issues are not addressed with each phase, problems may build up, putting the integrity of the scheme at risk.

4.1.2 ENSMOV survey evidence

The initial ENSMOV survey, performed in the proposal stage of the project in 2018, identified ‘ensuring the sustainability of the scheme’ as a key policy implementation priority, with 72% of respondents marking it in the top two priority rankings. Only ‘optimising scheme administration’, ‘getting political support’ and ‘policy budget commitments’ had a greater proportion of top priority scores (4s and 5s on a scale of 1 to 5) amongst the scheme preparation, finance, legal, political and organisational topics. Indeed, one could argue that political support and budget commitments are essential elements to the sustainability of any programme.

In the main and more comprehensive ENSMOV survey performed in 2019, public policy officials placed ‘ensuring sustainability’ at the top of the list of implementation priorities, with 58% of respondents marking this topic as either a 4 or 5 (on a scale of 1 to 5). A lower proportion of these respondents ranked this as a priority for EEOs as opposed to alternative measures. This perhaps reflects the placement of this question in the financial aspects section of the survey and the inclusion of the example related to cost recovery through obligated parties. Owing to the way in which they are funded, EEOs tend to face fewer financial sustainability issues than programmes funded through general taxation. However, they tend to face broader sustainability issues of a political nature and require lobbying by interested parties.

This is also an important topic for the wider stakeholder group of respondents who placed ‘ensuring sustainability’, meaning stability or durability, third on the list of implementation priorities, with 66% of respondents marking this topic as either a 4 or 5.

4.1.3 Broader evidence

Recent experience with EEOSs provides some useful lessons for Member States preparing for new EEOS phases.

In Denmark, lack of political support has caused the government to plan to close down the programme. The main criticisms levied at the scheme included the incorrect counting of savings; cross-subsidisation of measures in the industry sector by households; and profit-making by companies affiliated with obligated parties without strong incentives for those obligated parties to reduce costs. Policy reform could be designed to tackle these issues; however, once political support for the scheme was lost, plans were put in place to replace the programme with an auction-based approach (Bach, 2019).

In the United Kingdom, changes to scheme rules, reducing the availability of different types of measures to obligated parties, meant that costs rose. At the same time (2013), rising energy prices weakened political support for programmes funded through energy prices. The result was a weakening in the ambition of the programme (Rosenow and Eyre, 2015).

In Italy, changes to scheme rules have made it harder to gain white certificates for energy efficiency interventions. The resulting reduction in supply has caused certificate prices to triple. Subsequent interventions by the regulatory authorities to supply white certificates to the market that are not based on energy efficiency actions have acted to lower the ambition of the programme, at least temporarily (Di Santo and De Chicchis, 2019).

In France, White Certificate prices have also risen significantly following the introduction of an additional energy poverty focused target for suppliers, both increasing ambition and creating a new category of savings that require more programme expenditure to deliver. The introduction of the energy poverty obligation reduced the supply of classic certificates, since those that qualify can command a higher price in the energy poverty market (IEA, 2017a).

4.2 Ensuring the sustainability of subsidy programmes

4.2.1 Synopsis

Subsidy programmes tend to be more vulnerable than EEOs to changes in funding. The sustainability of funding may be tied to annual fiscal decisions, political support or decisions made by external funding bodies. Many Member States run programmes where European cohesion funds are the main source of funding. Often there are many different Operational Programmes, which include energy efficiency projects amongst a range of other projects. This can mean that many implementing authorities and bodies have some responsibility in implementation, often distributed across different levels of government, for example, national agencies, regional authorities and municipalities. Bringing coherence to this fragmented picture and ensuring that energy efficiency objectives can be funded on an ongoing basis are priorities in this situation.

4.2.2 ENSMOV survey evidence

The initial ENSMOV survey in 2018 identified ‘ensuring the sustainability of the scheme’ as a key policy implementation priority, with only ‘optimising scheme administration’, ‘getting political support’ and ‘policy budget commitments’ having a greater proportion of top priority scores (4s and 5s on a scale of 1 to 5). Both political support and budgetary commitments are essential elements to the sustainability of subsidy programmes.

In the main ENSMOV survey in 2019, public policy officials placed ‘ensuring sustainability’ first on the list of implementation priorities, with 58% of respondents giving this topic a score of 4 or 5. In this context, sustainability refers to the ability of programmes to continue operating beyond an initial phase or funding allocation. A higher proportion of respondents ranked this as a priority for alternative measures than for EEOs, reflecting perhaps the more stable nature of EEOs (the most mature European EEOs are more than 10 years’ old) compared to subsidy programmes, in terms of their funding and regulatory position. This is also an important topic for the wider stakeholder group of respondents, who placed ‘ensuring sustainability’ third on the list of implementation priorities, with 66% of respondents marking this topic as either a 4 or 5.

4.2.3 Broader evidence

The [ENSPOL project](#) identified uncertainty of financing as a risk in the policy design and implementation of alternative measures, citing the example of Italy, where the future of programmes was uncertain as a result of reduced tax revenues (UPRC *et al.*, 2015, 2016). This type of risk is endemic to programmes funded from general taxation. Even large and long-running subsidy programmes, such as the German CO₂-Building Rehabilitation Programme (CBRP), run by the German Reconstruction Credit Institute (KfW), have seen instability in funding over time, which can lead to negative effects on markets. Concerns over public sector debt led to reductions in tax-payer funds for the CBRP in 2011. To help fill the gap, new funding from an Energy and Climate Fund was released; the funding came from energy suppliers who were obliged to pay into the fund as a result of windfall gains made, in part, from the allocation of free EU Emissions Trading System (ETS) allowances (Rosenow, 2012).

The use of ETS revenues is one possible way of providing funding for energy efficiency programmes. Reforms to the ETS have led to a fourfold increase in carbon prices between 2017 and 2019, with Member State auction receipts projected to total 165 billion euros over the coming decade (Sunderland and Cowart, 2019).

In the EU-13, lack of funding is not necessarily the main issue. The Energy Efficiency Watch 3 project identified the need to ensure that energy efficiency programmes are set up in a sustainable way to take advantage of financing options for energy efficiency measures, particularly from Structural Funds. The project recommended ‘increasing technical assistance to potential project developers and applicants in combination with financial instruments by mobilising the amount of money earmarked for technical assistance in the structural funds’ (Thomas *et al.*, 2016).

The European Commission–funded evaluation of the use of Cohesion Policy programmes for energy efficiency in public and residential buildings (2007–2013) found that investments made through programmes were rarely integrated into wider energy efficiency strategies. Amongst the policy implications, both the need for technical assistance and the importance of placing operational programmes within the wider context of national and regional funding support mechanisms was identified (Le Den *et al.*, 2015).

4.3 Designing evaluation-ready programmes

4.3.1 Synopsis

Programme evaluation is an integral part of good policy making and is essential to the reporting of energy savings under Article 7 EED. Although the ENSMOV project will not deal with evaluation techniques specifically, its scope does include the design and implementation of programmes to ensure that key evaluation considerations can be assessed and acted upon. The message coming out of the survey was that policy makers need help in designing programmes so that issues such as the rebound effect and free ridership can be properly assessed. In some cases, the lack of prior experience with evaluation makes this issue more acute.

4.3.2 ENSMOV survey results

The initial ENSMOV survey saw mixed views expressed on the importance of the challenges related to assessment and evaluation. ‘Assessing the need for evaluation/control’ was ranked in the top two priority categories (4 or 5 on a ranking of 1 to 5) by 61% of respondents, making this the most important topic amongst the evaluation aspects tested; other issues, such as ‘assessing side-effects’ and ‘assessing policy response’ had lower proportions of respondents marking them as priorities.

The main ENSMOV survey saw 56% of public policy makers rank ‘assessing the side effects of the EEO scheme/alternative measure(s)’ in the top two priority categories, making this the second most important topic identified by this group; it also had the top average rating across all responses from public policy makers.

The results of the main ENSMOV survey highlight the importance of evaluation to energy efficiency policy makers. For the purposes of the ENSMOV project, with its focus on MRV, policy design and implementation, this suggests that, while a broad gap exists around evaluation, a narrower focus would be appropriate on the design of policies and MRV to enable evaluation to be successfully carried out.

4.3.3 Broader evidence

Evaluating energy efficiency programmes is an essential part of the policy cycle that enables continuous improvement in policy design and implementation. The International Energy Agency Policy Pathway Series highlights the importance of evaluation throughout the policy planning, implementation and monitoring of programmes (see, for example, IEA, 2011).

The recent Evaluation into Practice to Achieve Targets for Energy Efficiency (EPATEE) project reviewed evaluation practice in EU Member States. Amongst the types of support suggested by respondents surveyed during the project, two needs were identified related to the preparation of evaluations: ‘advice of steps to take to ensure evaluation is considered at the policy design stage’ and ‘guidance to prepare specifications’ (Bini *et al.*, 2018).

The need to build evaluation into policy design is a critical point, recognised in many previous studies (*e.g.*, HM Treasury, 2011; Giorgi, 2017). Only considering evaluation at the end of programme phases can cause many problems in the policy (re)design process. For example, information is often needed quickly, making it difficult to set up data collection in time, and some data may be impossible to obtain or may be of lower quality, unless their collection has been designed into the programme in the first place.

The EPATEE project established this issue as a gap in EU Member States. Stakeholders to the project confirmed that taking into account future evaluation needs when designing or revising a policy is not yet common practice. The project identified a set of actions that, if followed, would ensure that evaluation is considered throughout the policy cycle (Broc *et al.*, 2019).

4.4 Ensuring additionality

4.4.1 Synopsis

Additionality is perhaps the most important concept associated with programme design, the calculation of impacts and the MRV system set up to enable energy savings to be calculated. Energy savings must be additional to what would have taken place without the programme — the counterfactual. Energy savings must be additional to European Union law (e.g., minimum average performance standards for appliances under Ecodesign and average new vehicle emission standards). The principle of additionality also applies to the reporting of savings relative to other national policies. Programmes can be designed to avoid overlap or, where overlap is desirable or unavoidable, *ex post* analysis can allocate savings between programmes. Realistic assumptions about the point at which equipment would have been replaced and the efficiency of those replacements must also be used. Ensuring that policies are designed with the additionality requirements of the EED in mind increases the likelihood that savings will be eligible.

4.4.2 ENSMOV survey evidence

In the initial ENSMOV survey, 33% of respondents ranked ‘ensure additionality’ as a top priority (a score of 5 on a scale of 1 to 5), and 61% of respondent ranked this issue as having a score of 4 or 5. This placed the issue of additionality in the top half of the list of topics to be addressed in the ENSMOV project.

The main ENSMOV survey saw public policy makers place ‘ensuring additionality’ third on the list of top priorities, with 53% of respondents ranking the issue as important (4) or very important (5) and fourth when ranked by the average rating per topic.

4.4.3 Broader evidence

Additionality was identified as a particular area of concern in an *ex ante* evaluation of Article 7 EED. The evaluation focussed on additionality in relation to European Union law, in particular minimum standards and the requirements of the Energy Performance of Buildings Directive (EPBD), as well as other risks to energy savings related to eligibility, non-delivery and double counting. Amongst these

issues and indicators, additionality was the most concerning, with only 43% of notified energy savings rated as fully additional (Rosenow *et al.*, 2016).

A study evaluating progress in the implementation of Article 7 EED highlighted the lack of clarity as to which EU wide policies should be considered when assessing additionality (Forster *et al.*, 2016). This is likely to have been a contributory factor in explaining why stakeholders to the ENSMOV project ranked this topic as a high priority.

The recently published guidance published to support transposition of the energy savings obligation under the amended EED provides clearer recommendations to Member States on the issue of additionality. The amended EED clarifies that the additionality requirement means that energy savings should be additional to those that would have been secured in any event without the policy measures, taking into account factors such as ‘free riders’, market effects and the impact of existing policies, that is, avoiding double counting. This clarification does introduce new complexity, however. The new guidance sets out how additionality should be considered in relation to various elements of EU law, including other elements of the EED (Articles 5 and 8), the EPBD, the Ecodesign Directive, the Clean Vehicle Directive, Directive 2014/94/EU on the deployment of alternative fuels infrastructure, Council Directive 2003/96/EC restructuring the Community framework for the taxation of energy products and electricity and Council Directive 2006/112/EC on the common system of value added tax (European Commission, 2019a). These clarifications close some loopholes in the Directive and make it harder to meet additionality criteria in some sectors, for example in relation to the savings from national level new vehicle policies.

4.5 Ensuring materiality

4.5.1 Synopsis

Materiality is related to the concept of additionality, focussing on the causal role of Member State public authorities or obligated parties in implementing policy measures that lead to energy savings. One survey respondent noted the vague definition of materiality in most cases, which has led to some unspecified ‘creative solutions’. Financing schemes and EEOs need to pay particular attention to the materiality requirement given the potential for energy savings to be claimed for measures that have already been installed. Designing and implementing programmes in a way that ensures an audit trail can overcome this issue, mitigating the risks of immateriality and fraud. Lessons from practice in different Member States can help policy makers in redesigning their programmes in a way that addresses these issues cost effectively.

4.5.2 ENSMOV survey evidence

In the initial ENSMOV survey, 44% of respondents ranked ‘ensure materiality’ as a top priority (a score of 5 on a scale of 1 to 5), and 83% of respondent ranked this issue as having a score of 4 or 5. This placed the issue of materiality top of the list of topics on this metric.

The main ENSMOV survey saw public policy makers place ‘ensuring materiality’ fifth on the list of top priorities, with 47% of respondents ranking the issue as important (4) or very important (5). The wider stakeholder group also ranked this topic relatively highly, with 62% of respondents giving the issue a score of 4 or 5, placing it seventh on the priority list. The issue of materiality scored lower when ranked by the average rating per topic — 13th by public policy makers and 12th by the wider stakeholder group — suggesting that this topic is much more important in some jurisdictions than others.

4.5.3 Broader evidence

Materiality was identified as an area of concern in the *ex-ante* evaluation of Article 7 EED described in Section 4.5 on additionality. After additionality, the issue of ‘risk of non-delivery’ was the most concerning, with 57% of notified energy savings rated as low risk (Rosenow *et al.*, 2016). Although there are a number of factors influencing non-delivery, the key risk was owing to possible materiality

issues. Many of the materiality concerns identified in the study evaluating progress in the implementation of Article 7 EED stemmed from a lack of clarity in Member State reporting — for some 24% of savings it was not possible to assess whether there was a risk of non-materiality (Forster *et al.*, 2016).

The fact that ENSMOV survey respondents contained both significant numbers who felt that materiality was a key issue and a similar proportion for whom materiality was not a concern suggests that there may be benefits from the sharing of best practices in this area. A number of Member States have built materiality requirements into their EEOs. In France, parties applying for white certificates must prove a direct contribution prior to the installation of measures. The programme also recognises that, when the works are carried out as part of an Energy Performance Contract, savings are likely to be more sustainable and material; as such they benefit from an enhanced level of certificates. In Denmark, energy savings cannot be generated before the related contract is issued, and obligated parties can only claim savings that can be traced to their direct involvement (ENSPOL, 2016).

4.6 Raising awareness about the opportunities for and the benefits of energy efficiency

4.6.1 Synopsis

Raising awareness through government-funded action can help to increase the take-up of energy efficiency measures, supporting other programmes and/or reducing the costs to obligated parties and help with the targeting of hard-to-reach energy users. Obligated parties and their agents are also important in this aspect, particularly as many transform their business models from energy supply to energy service provision. Involving the right stakeholders can help with the targeting of messages to particular groups, while the collection of the right monitoring data can enable policy makers to show evidence of the benefits experienced by programme participants.

4.6.2 ENSMOV survey evidence

In the initial ENSMOV survey, 66% of respondents ranked both ‘raise awareness about energy savings benefits’ and ‘raise awareness about energy savings opportunities’ as priority topics (a score of 4 or 5 on a scale of 1 to 5), while 82% of respondents ranked ‘raise awareness about the policy’ as having a score of 4 or 5. This placed the more general issue of raising awareness high on the list of needs identified.

The main ENSMOV survey saw public policy officials place ‘raising awareness about the opportunities for and the benefits of energy efficiency’ seventh on the list of priority topics, with 43% of respondents marking the issue as important (4) or very important (5). When ranked by average rating per topic, ‘raising awareness’ was fifth on the list of issues to address.

4.6.3 Broader evidence

Lack of awareness of the opportunities for energy efficiency and the benefits it can bring is a fundamental barrier to the take-up of energy efficiency measures. It is also one of the key drivers for the introduction of EEOs (ESNPOL, 2016a). Obligated parties, faced with limited awareness, particularly in the residential sector, would be expected to choose a combination of awareness raising and financial incentives to meet their obligations at least cost. For energy suppliers, awareness raising

may also coincide with the transformation of their business models from energy suppliers to energy service providers (Energy Efficiency Watch 3, 2016b). Nevertheless, Member States might be well placed to supplement this effort in order to achieve policy goals at lower overall cost. In the United Kingdom, the evaluation of the EEOs in place between 2008 and 2012 concluded that local authorities were critical partners in the successful delivery of area-based energy efficiency schemes (DECC, 2014). Involving trusted messengers and those with important local information about those in most need of energy efficiency interventions may be beneficial in increasing interest and identifying target groups, such as those in energy poverty or with health conditions.

Alternative measures with no regulated quantity of energy savings to achieve are more likely than EEOs to suffer from poor take-up. The German CO₂-Building Rehabilitation Programme (CBRP), run by the German Reconstruction Credit Institute (KfW), uses a variety of methods to increase awareness, including through local banks. When local customers contact them about financing a 'regular' renovation project, they are able to recommend KfW loans and grants. The German Energy Agency (DENA) also has a key role in creating a favourable climate for the take-up of KfW products. DENA runs campaigns and other information activities as well as initiating partnerships between professional organisations (architects, engineers, building professionals and energy advisors), energy suppliers, renovation suppliers and research institutes (Broc *et al.*, 2016). The involvement of local banks was not easy to set up, however. It took KfW many years to develop the relationships it now has with the wider banking sector, including training bank staff and finding the right level of compensation for managing the loans (Energy Efficiency Watch 3, 2016a).

The involvement of nongovernmental and market actors as well as subnational authorities in policy design and implementation was highlighted more generally as a way to develop markets for energy efficiency and broaden the coalition of support for energy efficiency (Energy Efficiency Watch 3, 2016b).

The focus of messages aimed at making energy efficiency gains should also be considered. A meta-study of energy efficiency information campaigns found that energy savings were not forthcoming when consumers were given pecuniary feedback, as opposed to appealing to altruistic tendencies, such as environmental concerns (Delmas *et al.*, 2013).

4.7 Involving wider stakeholders in the policy design and implementation process

4.7.1 Synopsis

Open, consultative processes enable programmes to be designed in an evidence-based way that should improve outcomes. Consultation needs to be handled carefully to ensure that those interests that are most organised and well funded do not dominate. Providing timely and sufficient information to stakeholders affected by programmes (*e.g.*, obligated parties) is essential to their success.

4.7.2 ENSMOV survey evidence

The initial ENSMOV survey did not specifically ask about stakeholder engagement; however, the topic ‘ensure satisfaction of stakeholders’ scored moderately high as a priority, with 61% of respondents ranking this as either 4 or 5 (on a scale of 1 to 5).

In the main ENSMOV survey, public policy officials ranked ‘involve the relevant stakeholders in the policy (re)design process’ and ‘creating feedback loops for the inclusion of knowledge from different actors ... for the policy (re)design’ near the bottom of the priority list — in 21st and 24th positions out of 26 topics when ranked by proportion of 4s and 5s (29% and 26% respectively) and in 22nd and 24th place when ranked by average score. On the other hand, the wider stakeholder group placed both of these topics in the top four issues when ranked according to average rating and the proportion of scores of 4 or 5. While one might expect the wider stakeholder group to rate these topics more highly than the public policy group, the marked contrast between the responses of the two groups suggests that this may be a blind spot in some jurisdictions.

4.7.3 Broader evidence

The ENSPOL project highlighted the importance of stakeholder consultation in the policy design process, particularly around the selection of the MRV parameters. The project reported that consultation processes have been identified as success factors in some cases, but that overall, stakeholder consultation has not been very effective (ENSPOL, 2016).

4.8 Defining the technical aspects of MRV systems

4.8.1 Synopsis

The EED requires that MRV systems include documented verification on at least a statistically significant proportion and representative sample of energy efficiency improvement measures. In addition, MRV systems can provide the information needed to inform judgements on the materiality and additionality of energy savings and ensure the quality of individual installations, when paired with sufficiently strong compliance mechanisms. The exact parameters of any MRV system compliant with the EED will depend on the nature of the energy efficiency programme and the characteristics of the population receiving measures.

4.8.2 ENSMOV survey results

In the initial ENSMOV survey ‘difficulty with data/verification requirements’ was the topic with the most top priority rankings amongst the MRV issues, with 44% of respondents giving it a top score of 5 (on a ranking of 1 to 5). Altogether, 66% of respondents marked it as either a 4 or 5, making it the second highest scoring topic amongst the MRV topics on this metric.

In the main ENSMOV survey, ‘defining the sample size and the parameters for representative monitoring, reporting and verification for Art. 7 EED’ was the topic that public policy respondents attached most importance to, with 57% of this group rating it with a 4 or 5 (on a scale of 1 to 5). It was also the topic with the highest average rating across the 14 MRV topics tested. ‘Defining the data that shall be made available to national authorities for MRV’ and ‘defining the parameters for the controlling of the energy efficiency measures (individual actions) to make sure they are compliant with the current energy policy in place’ also featured in the top half of the MRV topics, using both ranking methods.

4.8.3 Broader Evidence

The MultEE project identified areas for improvement in monitoring and verifications mechanisms in nine EU Member States. The nine countries were split into five groups, based on the types of improvements needed. The issues identified included the lack of any M&V scheme at one end of the spectrum, through the need for more formalisation of procedures or development of schemes, to the

need for better integration across different geographical localities and more finely grained tweaks to improve system parameters (Kjaer *et al.*, 2016).

The study evaluating progress in the implementation of Article 7 EED concluded that, although most Member States have implemented monitoring and verification (M&V) systems, there are significant gaps in many of them. These relate to issues such as checking a statistically representative sample for policy measures and setting out audit protocols (Forster *et al.*, 2016). The study also found a wide variability in the approach to the M&V of savings and recommended that best practices be further explored and potentially developed into future guidance to improve implementation across all Member States (Forster *et al.*, 2016).

An *ex ante* evaluation of Article 7 EED also picked up on the lack of consistency of approach to M&V across EU Member States, recognising both that there may be justifications for different approaches to the calculation of energy savings for different policy types and that this inconsistency reduces the ability to track savings at the EU level (Rosenow *et al.*, 2016). The evaluation pointed to the M&V guidance developed by the U.S. Environmental Protection Agency as an example that could be followed with a similar document in the EU context (EPA, 2019).

The recently published guidance supporting the amended EED includes an appendix that provides helpful information on some of the technical aspects of M&V, including what could constitute a significant statistical proportion and a representative sample (European Commission, 2019a). This provides a basis on which to build systems at the national level.

4.9 Designing practical MRV guidance and tools to ensure programme integrity

4.9.1 Synopsis

It is insufficient merely to define the technical aspects of an MRV system well. It is important that it is implemented well too. A vital aspect in this respect is the setting out of clear, practical guidance for all actors involved. Secondly, providing online reporting tools enables the collation of all data related to energy efficiency improvements in one easily searchable database. Such a database can become a record of the results and achievements of those responsible for delivering energy efficiency, which public authorities can then access and use to define verification strategies. This database, when paired with other data (*e.g.*, on the characteristics of buildings and meter point data), can also provide useful information on energy efficiency potential and for evaluation purposes. The provision of guidance and tools was also an important issue for the wider stakeholder group, for whom understanding how to comply with programme requirements is often a key concern. More broadly, getting MRV systems right ensures both compliance with the EED and a better functioning energy efficiency policy framework.

4.9.2 ENSMOV survey results

In the initial ENSMOV survey, the issue of ‘lack of monitoring tools’ divided opinion, with 22% of respondents assigning it a 1 rating and a further 22% assigning it a 5 rating (on a scale of 1 to 5). Overall, 55% of respondents gave this topic a high priority rating (of either 4 or 5). Similarly, 55% of respondents gave the topic ‘lack of MRV guidelines’ a high priority rating, making these the fourth and fifth most important issues amongst MRV topics.

In the main ENSMOV survey, public policy officials ranked ‘providing clear and specified guidelines on MRV for Article 7 EED’ and ‘providing tools for MRV schemes’ second and third amongst the MRV aspects. ‘Guidelines for the verification requirements’ was ranked fifth, making the set of issues around guidance and tools a clear policy need. The same three topics were also ranked in the top five MRV issues by the wider stakeholder group. This analysis holds for both the average rating and the rating based on the proportion of 4 and 5 ratings.

4.9.3 Broader evidence

At the Member State level, different approaches to MRV offer scope for collaboration to improve systems and tools and to inform common guidance. The EPATEE project highlighted a number of examples from both EEOs and alternative measures, including databases in Finland and Austria, which are used by both those inputting monitoring data and those using it for verification and report purposes. The project also explored the possible joining up of related online platforms in Croatia and the guidance provided to proponents of the French programme of White Certificates (Maric *et al.*, 2018). Other Member States, for example Ireland, have put in place extensive guidance and online database tools to enable their EEOs to operate smoothly, obligated parties and other relevant parties to check progress and view relevant housing stock data, and public policy officials to target verification procedures (SEAI, 2014).

4.10 Designing and implementing cost-effective MRV systems

4.10.1 Synopsis

MRV systems can be made more cost-effective, with peer learning offering opportunities to learn from other jurisdictions. MRV systems need resourcing, and all other things being equal, more MRV requirements mean both higher costs and more benefits. Getting the balance right so that, at the margin, the value delivered by additional MRV warrants the additional costs, while ensuring compliance with the EED, is not simple to judge. Public authorities, concerned with combating the risk of fraud, may put a relatively high value on additional verification check; whereas obligated parties, needing to take on additional staff to comply with MRV requirements, may worry that the additional costs are too high. In even the most mature programmes, MRV systems can be made more cost-effective, with peer learning offering opportunities to learn from other jurisdictions, including from the United States, where the use of smart meter data is revolutionising the MRV of energy efficiency programmes, with a greater emphasis on metered savings. While smart meters will never be able to provide the data required to address all the issues policy makers might wish to see evaluated, the ability to align the incentives facing the energy efficiency supply chain with policy objectives, holds out the possibility of increasing the effectiveness of energy efficiency programmes, while the remote reading of meters offers the chance to reduce costs. The [SENSEI](#) project is examining the potential for these pay-for-performance programmes in the EU, along with their MRV requirements.

4.10.2 ENSMOV survey results

In the initial ENSMOV survey, the cost-effectiveness of MRV systems was not explicitly tested. However, ‘complexity of MRV requirements/administrative burden’ scored the highest proportion of 4 or 5 rankings (on a scale from 1 to 5), with 67% of respondents marking it in this category. ‘Lack of staff’, with 61% of scores in the 4 or 5 rankings, was the third highest ranked issue, suggesting that cost-effectiveness improvements could help to ease this pressure.

In the main ENSMOV survey, public policy makers ranked ‘cost-efficient provision of monitoring, reporting and verification for Art. 7 EED’ fourth amongst MRV topics, based on the proportion of 4 or

5 scores. The same group placed this topic sixth according to the average rating. The issue of cost-efficient MRV was rated third amongst MRV topics, based on the proportion of 4 or 5 scores, by the wider stakeholder group, and fourth according to the average rating.

Amongst the policy design and implementation topics, ‘designing the policies in order to minimise the costs for all parties involved’ was a clear priority, ranking fourth amongst public policy officials, according to the proportion of respondents rating the topic as important (4) or very important (5), and third according to the average rating. The wider stakeholder group ranked this topic first using both methods, with 68% of respondents rating it as either a 4 or 5. A key way of improving scheme cost-effectiveness is by improving MRV systems in ways that both streamline costs and improve outcomes.

4.10.3 Broader evidence

The issue of cost-effectiveness is linked to the issues already discussed around guidance and tools. The [MultEE](#) project noted that good practice countries have centralised databases, which bring together programme data, potentially with other relevant data from national statistics offices and other sources, for example on building characteristics. The United Kingdom is a good example of this approach. Programme data are housed in the ECO Register database owned by the energy regulator (Ofgem), which can be accessed by obligated energy suppliers and those in the supply chain. These data are then linked to data on energy consumption, building and household characteristics in anonymised form in the National Energy Efficiency Dataframework, which can then be used to analyse impacts and inform policy design, for example on deemed savings scores (BEIS, 2019b).

In the United States, the increasing use of metered savings, as opposed to deemed savings, in utility obligation programmes holds out the hope for more cost-effective MRV. By paying for performance — the difference between metered energy consumption and counterfactual energy consumption, as calculated using an agreed method — installers are incentivised to undertake better quality energy efficiency actions, increasing the benefits of installing energy efficiency measures. And by being agnostic about the technologies that deliver the savings, the costs of evaluation, measurement and verification can be reduced, with the key issue being the availability of accurate and timely meter data. Moving to a pay-for-performance system requires a number of conditions to be satisfied: smart meters to provide the data, an agreed method of calculating counterfactual energy consumption and a supply chain, including aggregators, that has been brought up to speed with the system. The key, and non-trivial requirement is the development of an agreed method for calculating counterfactual energy consumption. In the United States, pilots have been in place in a number of states (Best *et al.*, 2019).

4.11 Designing and implementing energy taxation measures as part of an efficiency policy framework

4.11.1 Synopsis

Energy and carbon dioxide taxation are becoming increasingly popular as a means of complying with the EED energy savings obligation. Two issues related to taxation have emerged from recent experience: (1) ensuring that taxation measures are effective in delivering savings as part of a wider energy efficiency policy framework; and (2) reporting savings on the basis of robust estimates of price elasticities of demand.

4.11.2 ENSMOV survey results

The ENSMOV survey did not test respondents on specific types of alternative measures.

4.11.3 Broader evidence

In 2013, nine Member States notified the Commission that they would be using energy tax measures as part of their package of measures to demonstrate delivery against the Article 7 energy savings obligation. Of those Member States, eight reported savings from tax measures, with the Netherlands explaining that the impacts of taxation measures are captured in their assessment of policy packages. Since then, Czechia, Latvia and Lithuania have reported savings from energy taxation measures, and a number of others have expressed interest in this policy option.

Energy and carbon dioxide taxes can be an important part of an energy efficiency policy portfolio — pushing up the price of energy makes energy efficiency investments more attractive. However, in isolation, their impacts on investment are much lower than when combined with other energy efficiency policy instruments that act to address the market failures affecting energy efficiency (Rosenow and Scheuer, 2019). This finding is also reflected in the Energy Efficiency Watch 3 expert survey, where in 21 countries, over 30% of experts saw energy taxation as not effective, making it the worst performing policy measure amongst the 12 assessed (Thomas *et al.*, 2016). The approach taken in the Netherlands and Sweden is to explicitly consider taxation measures as integral parts of the policy mix. In their notifications, taxation measures are considered to be part of a suite of policies delivering

savings, and impacts are not calculated separately: in the Netherlands, savings are attributed to packages; in Sweden, all the savings are attributed to the taxation measures. However, this coordinated approach is not the norm across Member States.

The level of analysis underpinning estimates of what taxation measures are likely to be delivering varies amongst Member States. Some Member States have undertaken academic studies using long-run data on prices, consumption and a range of other explanatory variables to estimate price elasticities of demand for energy products, along the lines set out in the updated European Commission guidance (European Commission, 2019a). Other Member States have used elasticity estimates from these studies and applied them to their own energy prices and consumption without much justification for their choices. Indeed, different member states have used the same third country studies and used different elasticity estimates in their own analysis. More broadly, the impacts of energy taxation deserve further attention if such policy measures are to be used to meet energy efficiency targets. Question worthy of focus include how they interact with supporting policies, how their impacts scale with their level and how their introduction and evolution over time affect savings. Understanding better the impacts of energy taxation on energy savings will be crucial, not just to the achievement of Article 7 EED targets but to the wider decarbonisation and energy goals set out in the Climate and Energy Framework (European Union, 2014).

4.12 Designing and implementing energy efficiency auctions

4.12.1 Synopsis

Energy efficiency auctions are relatively new to the energy efficiency policy environment, with pilots having taken place in some Member States in recent years. Other Member States are developing plans for auctions, and still others have mentioned them in their NEEAPs. Auctions, whereby programme participants can bid to receive compensation for achieving energy savings or implementing energy efficiency measures, are seen as alternatives to EEOs in some Member States, in that they can deliver savings across sectors and favour the most cost-effective energy saving measures. In other Member States, auctions are expected to work alongside EEOs.

4.12.2 ENSMOV survey results

The ENSMOV survey did not test respondents on specific types of alternative measures.

4.12.3 Broader evidence

Energy efficiency auctions are not widely used amongst EU Member States. In 2019, Germany instituted a pilot technology-neutral auction for energy saving projects. There is a fixed budget: a maximum of €5m funding per project with up to 50% of investment costs covered; payback to participants, in the absence of funding, must take longer than four years; projects are ranked by CO₂ savings per euro funded and paid as bid until the budget is exhausted. The current pilot auction has performed well so far, having been redesigned after the first pilot programme, which began in 2016, did not garner enough bids to force a competition in any of its six calls (Langreder *et al.*, 2019). Because all sectors and enterprises have the possibility to participate, there was no need to submit to DG Competition a notification under the Funding Guideline under Article 107 of the Treaty on the Functioning of the European Union, which defines state aid. The auction runs alongside Germany's main energy efficiency funding instruments and is quite small in comparison. However, given the interest of other Member States in auctions and the general lack of knowledge around auction design for energy efficiency, it could be useful to share lessons from Germany's experience.

Portugal runs a tender programme for electricity efficiency that has some similarities to the German auction, although there are some differences. Running since 2007, the programme has six funding pots for different sectors, including behavioural/intangible measures, to attract different types of bidders, and some pots exclude electricity utilities. Bidders get paid as bid, subject to a merit order determined by an evaluation of many factors and the budget ceiling (ERSE, 2019).

Denmark and Greece are actively considering auction design issues now, and a number of other Member States have included energy efficiency funds in their NEEAPs. These funds will need to be disbursed, with auctioning being one possible method.

The UK also piloted an auction for electricity demand reduction focused on reducing peak demand in 2015 as a way of procuring energy efficiency instead of supply side electricity capacity. In the United States, energy efficiency competes directly against supply side alternatives in the PJM and New England Independent System Operators' auctions, with most of the energy efficiency bids also drawing funding from utility obligation programmes (IEA, 2017). As capacity markets become more prevalent in the EU, the opportunities for energy efficiency to compete in auctions is likely to increase.

4.13 Designing and implementing policy measures to deliver savings in the transport sector

4.13.1 Synopsis

Relatively little of Member States' energy savings obligations has been delivered in the transport sector so far. Member States often need to work across ministries and departments to design and implement policies in this area. Although a wider array of stakeholders need to be involved in the policy design and implementation process, this broader involvement makes it more difficult in many cases to bring forward proposals. Nevertheless, with one-third of EU final energy consumption coming from the transport sector, much potential remains untapped.

4.13.2 ENSMOV survey results

The ENSMOV survey did not test respondents on specific sectoral actions.

4.13.3 Broader experience

The study evaluating progress in the implementation of Article 7 EED estimated that only 6% of energy savings notified were in the transport sector, making it the least represented sector, the others being buildings (42%) and industry (8%). The remaining 44% of savings were estimated to come from cross-cutting measures, such as taxes and financial incentives applied to multiple sectors (Forster *et al.*, 2016).

The relatively small amount of savings in the transport sector reflects the views of energy efficiency experts surveyed for the Energy Efficiency Watch 3 project. When asked in which sector they saw the most important gap in energy efficiency policies in their respective countries, transport ranked highest, with 38%. There was virtually no change in these perceived gaps (averaged across the EU) compared to the survey three years previously. Nevertheless, the project did identify more than 300 transport-related policy activities across EU member states, including planning instruments, regulatory instruments, economic incentives, information and advice and R&D support. This suggests some room for the potential sharing of best practice policy design and implementation amongst countries (Thomas *et al.*, 2016).

In some cases, the causes of the lack of policy action on energy efficiency in the transport sector may stem from the tendency of governments to organise themselves in ways that split energy efficiency strategy and transport between separate ministries or departments. In France, this reasoning does not hold: the EEOS covers all sectors and, while 29 of the 199 standardised eligible measures are in the transport sector (15%), the majority of actions are in other sectors, with only 5% occurring in the transport sector (Ministère de la Transition écologique et solidaire, 2019).

4.14 Designing policies that are effective at mobilising private resources to invest in energy efficiency

4.14.1 Synopsis

Given the impossibility to provide enough resources to meet the EED energy savings obligation through incentives, it is essential to create the conditions to facilitate third-party financing. Lessons can be learned from policies that have successfully driven private investment, as well as ways in which financing programmes have been linked with subsidy regimes to leverage public investment.

4.14.2 ENSMOV survey evidence

The initial ENSMOV survey did not ask a question directly related to this topic. However, ‘ensuring attractiveness to targeted actors’ secured the highest percentage of priority scores amongst the implementation issues in the capacity, technical, practical and communication topics. Attractiveness is clearly linked to the willingness of private actors to invest in energy efficiency. Amongst the other implementation topics, ‘understanding the investment capacity of target groups’ scored relatively highly, but ‘identifying complementary financing solutions or opportunities’ did not.

The main ENSMOV survey did not ask a question directly focused on this issue either. However, ‘understanding the investment capacity and financial needs of the target groups and obligated parties’ ranked seventh highest amongst the implementation topics. In the qualitative responses, there were some indications from respondents concerning the importance of this topic. For example, one respondent noted that green finance instruments to leverage energy efficiency investments should be paid more attention to. Another mentioned that the mobilization of new financial instruments through funds and refinancing tools should be assessed. A further respondent said that best practice examples in relation to accessing and managing EU funding have been considered to be helpful.

4.14.3 Broader evidence

The International Energy Agency (IEA) recognises the importance of more diverse finance sources for energy efficiency, highlighting some positive trends. The share of energy efficiency and low-emissions transport in global green bank investment grew by more than 50% between 2012 and 2017. In 2017,

bonds issued for energy efficiency rose to USD 47 billion, representing 29% of the global green bond market. Nevertheless, to meet climate targets, substantially more third-party financing will be required (IEA, 2018). The Energy Efficiency Financial Institutions Group (EEFIG) was set up in 2013 to address this issue in the European Union, highlighting, amongst other things, the need for energy efficiency to be able to communicate effectively with the financial sector (European Union, 2015). A toolkit for financial institutions was produced to enable the sector to better engage with energy efficiency investment opportunities and the De-risking Energy Efficiency Platform (DEEP) showcases the results of more than 7 000 energy efficiency projects (EEFIG, 2017).

Amongst the innovative financing models currently on the market, Property Assessed Clean Energy (PACE) loans, which are tied to properties and collected alongside local property taxation, have funded USD 6.7 billion in energy efficiency measures, mostly in the United States, by November 2019 (PACENation, 2019). These types of repayment schemes — other programmes use energy bills as the repayment mechanism — offer scope for the provision of relatively low-cost third-party financing, given the low default rates associated with property taxation and energy bills and the ability to scale up and refinance through the green bond market. The EuroPACE project is piloting the concept in the European Union through a Horizon 2020 project (EuroPACE, 2019).

4.15 Taking account of the need to alleviate energy poverty

4.15.1 Synopsis

In the amended EED, Member States are required, as far as appropriate, to implement as a priority a proportion of energy efficiency measures, taking account of the need to alleviate energy poverty. Some Member States are already meeting this requirement, while others have not actively considered this issue before. Across all Member States, there will be benefits in sharing best practices designing and implementing programmes that target vulnerable households, including those affected by energy poverty and, where appropriate, in social housing.

4.15.2 ENSMOV survey results

In the initial ENSMOV survey, respondents were not asked a question specifically related to energy poverty. However, the topic ‘tackling distributive effects’ did not score highly as a priority, garnering scores of 4 or 5 (on a scale of 1 to 5) from 39% of the respondents. While this suggests that it is a priority for a fair proportion of stakeholders, all other topics scored more highly on this metric.

In the main ENSMOV survey, public policy officials did not rate ‘ensuring equity/tackling distributive effects (e.g., reducing energy poverty)’ particularly highly as a priority. It was ranked 15th out of 26 (re)design and implementation priorities (based on the proportion of 4 and 5 scores on a scale of 1 to 5) and 12th based on the average rating. In the qualitative feedback, survey respondents recognised that tackling energy poverty increased the costs of delivering energy savings, and in some Member States, this was not considered to be a priority given other more pressing issues to address in programme implementation.

4.15.3 Broader evidence

While the survey does not highlight energy poverty as a gap, the broader evidence suggests that may be a blind spot. The amended EED requires Member States, as far as appropriate, to implement as a priority a proportion of energy efficiency measures, taking into account the need to alleviate energy poverty (European Union, 2018). This goes some way to addressing the concerns expressed in the Energy Efficiency Watch 3 project that ‘without specific rules in Article 7 focusing on energy poverty,

most energy efficiency projects will go to the building owners who are able to take on additional debt' (Thomas *et al.*, 2016).

According to the *Fourth report on the State of the Energy Union*, energy poverty is an issue for almost 50 million people in the EU (European Commission, 2019b). Yet, the study evaluating progress in the implementation of Article 7 EED found that only four out of the 17 Member States had notified the use of EEOs (Forster *et al.*, 2016). The ENSPOL project noted the higher risk of energy poverty in central, eastern and Mediterranean Member States, noting that the issue of energy poverty is crucial to address when designing and implementing EEOs (ENSPOL, 2016). Although EEOs have a direct impact on energy costs, through the pass-through of programme costs by obligated parties, making the issue of addressing energy poverty more acute, alternative measures aimed at improving the energy performance of buildings could also be targeted more effectively at those most in need. If more Member States pursue taxation policies to meet Article 7 targets without increasing their focus on tackling energy poverty, the issue could become more acute. Indeed, assuming that energy taxation revenues can be hypothecated, this offers a potential revenue stream to fund energy efficiency programmes aimed at alleviating energy poverty (Rosenow and Scheuer, 2019).

Recent experience in the United Kingdom offers the potential for useful experience sharing. The UK's Energy Company Obligation has a strong focus on energy poverty and has introduced innovative methods to help to identify those most in need and reduce the costs to obligated parties, for example by encouraging energy suppliers to work with local authorities (LAs) through the ability to meet 25% of their obligations under the LA-Flex option (BEIS, 2019a). The Horizon 2020 project [SocialWatt](#), which began in September 2019, is focused on utility efforts to alleviate energy poverty and offers the potential for some joining up between policy makers and utilities on this issue.

5 | References

Bach, P. (2019). *Moving from obligations to a competitive tender scheme*. Presentation at Energy efficiency first: Expanding markets through obligations, ECEEE event, Paris. Retrieved from https://www.eceee.org/static/media/uploads/site-2/Events/2019-04-25%20GEO%20PLC%20event/peter_bach.pdf

BEIS. (2019a). *Energy Company Obligation: ECO2, 2018-22 flexible eligibility guidance*. London, UK: Department of Business, Energy & Industrial Strategy. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/776540/energy-company-obligation-3-LA-flexible-eligibility-guidance_.pdf

BEIS. (2019b). *National Energy Efficiency Data-Framework (NEED): Summary of Analysis, Great Britain, 2019*. London, UK: Department of Business, Energy & Industrial Strategy. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/812561/National_Energy_Efficiency_Data_Framework_NEED_report_summary_of_analysis_2019_.pdf

Best, C., Fisher, M., and Wyman, M. (2019). *Policy pathways to meter-based pay-for-performance*. IEPEC 2019 conference presentation. Retrieved from <https://www.scribd.com/document/424319983/Policy-Pathways-to-Meter-Based-Pay-for-Performance>

Bini, V., D'Ambrosio, S., and Di Santo, D. (2018). *Report on the second EPATEE survey: Synthesis report*. EPATEE. Retrieved from https://epatee.eu/sites/default/files/2018-06_epatee_second_survey_report_v1.6_0.pdf

Broc, J.-E., Oikonomou, V., and Dragovic, M. EPATEE. (2019). *Guidelines on how to integrate evaluation into the policy cycle: Report D4.2*. EPATEE. Retrieved from https://epatee.eu/system/tdf/epatee_integrating_evaluation_into_policy_cycle.pdf?file=1&type=node&id=54&force=1

Broc, J.-E., Trauchessec, E., and Milin, C. (2015). *Revisiting the KfW and Green Deal programmes: It's not all about finance!* ECEEE Summer Study, Presqu'île de Giens, Toulon/Hyères, France. Retrieved from <https://hal.archives-ouvertes.fr/hal-01402774/document>

DECC. (2014). *Evaluation of the Carbon Emissions Reduction Target and Community Energy Saving Programme*. Research undertaken for DECC by Ipsos MORI, CAG Consultants, UCL and Energy Saving Trust. London, UK: Department of Energy & Climate Change. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/350722/CERT_CESP_Evaluation_FINAL_Report.pdf

Delmas, M. A., Fischlein, M., and Asensio, O. I. (2013). Information strategies and energy conservation behavior: A meta-analysis of experimental studies from 1975 to 2012. *Energy Policy* 61: 729–739. DOI: 10.1016/j.enpol.2013.05.1. Retrieved from 09.<https://www.sciencedirect.com/science/article/pii/S0301421513004643>

Di Santo, D., and De Chicchis, L. (2019). *White certificates in Italy: Will it overcome the huge challenges it has been facing in the last three years?* ECEEE Summer Study peer-reviewed conference paper. Retrieved from https://www.dariodisanto.com/wp-content/uploads/2019/07/3-59-19_Di-Santo.pdf

Energy Efficiency Watch 3. (2016a). *Energy Efficiency Policies in Europe: Case Study; KfW Programme—Germany*. Retrieved from http://www.energy-efficiency-watch.org/fileadmin/eew_documents/EEW3/Case_Studies_EEW3/Case_Study_KfW-programmes_Germany_final.pdf

Energy Efficiency Watch 3. (2016b). *Key policy conclusions: From the Energy Efficiency Watch 3 Project*. Retrieved from http://www.energy-efficiency-watch.org/fileadmin/eew_documents/EEW3/Key_Policy_conclusions_EEW3/Key_Policy_conclusions_FINAL.pdf

ENSMOV (2019), *Stakeholder Needs Assessment for the Implementation of Article 7 EED* Retrieved from https://ensmov.eu/wp-content/uploads/2019/10/D-2.1-Stakeholder-needs-assessments-for-the-implementationof-Art.-7-EED_final.pdf

ENSPOL. (2016). *Energy saving policies and Energy Efficiency Obligation Scheme: D5.2: Guidelines and recommendations for EEOs and alternative policies and critical risks*. Retrieved from <http://enspol.eu/sites/default/files/results/D5.2%20Guidelines%20and%20recommendations%20for%20EEOs%20and%20alternative%20policies%20and%20critical%20risks.pdf>

EPA. (2019). *Guidebook for energy efficiency evaluation, measurement, and verification: A resource for state, local, and tribal air & energy officials*. Washington, DC: Environmental Protection Agency.

Retrieved from https://www.epa.gov/sites/production/files/2019-06/documents/guidebook_for_energy_efficiency_evaluation_measurement_verification.pdf

ERSE. (2019). PPEC: Consumption Efficiency Promotion Plan. Lisbon, Portugal: Entidade Reguladora Dos Servicos Energéticos. Retrieved from www.erse.pt/eng/engefficiency/Paginas/default.aspx

EuroPACE. (2019). Integrated home renovation platform [Website]. Retrieved from <https://www.europace2020.eu/>

European Commission. (2019a). *Annex to Commission Recommendation on transposing the energy savings obligations under the Energy Efficiency Directive*. C(2019) 6621 final. Brussels, Belgium: Author. https://ec.europa.eu/energy/sites/ener/files/documents/c_2019_6621_-_annex_com_recom_energy_savings.pdf

European Commission. (2019b). *Report from the Commission: To the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank; Fourth report on the State of the Energy Union*. COM(2019) 175 final. Brussels, Belgium: Author. Retrieved from https://ec.europa.eu/commission/sites/beta-political/files/fourth-report-state-of-energy-union-april2019_en_0.pdf

European Union. (2012). Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC Text with EEA relevance. *Official Journal of the European Union*. EUR-Lex: Access to European Law. <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1399375464230&uri=CELEX:32012L0027>

European Union. (2014). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A policy framework for climate and energy in the period from 2020 to 2030 /* COM/2014/015 final */. *Official Journal of the European Union*. EUR-Lex: Access to European Law. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52014DC0015>

European Union. (2018). Directive (EU) 2018/844 of the European Parliament and of the Council of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency (Text with EEA relevance). *Official Journal of the European Union*.

EUR-Lex: Access to European Law. https://eur-lex.europa.eu/legal-content/EN/TXT/?toc=OJ%3AL%3A2018%3A156%3ATOC&uri=uriserv%3AOJ.L_.2018.156.01.0075.01.ENG

Forster, D., Kaar, A.-L., Rosenow, J., Leguijt, C., and Pato, Z. (2016). *Study evaluating progress in the implementation of Article 7 of the Energy Efficiency Directive: Final report*. Report for DG Energy (Directorate-General for Energy of the European Commission). Prepared by Ricardo Energy & Environment. Retrieved from https://ec.europa.eu/energy/sites/ener/files/documents/final_report_evaluation_on_implementation_art.7_eed.pdf

Giorgi, S. (2017). *How to improve the evaluation of complex systems to better inform policymaking: Learning from evaluating Defra's Reward & Recognition Fund*. Fellowship Report. Guildford, UK: Centre for the Evaluation of Complexity across the Nexus, University of Surrey. Retrieved from <https://www.cecan.ac.uk/sites/default/files/2018-01/Guidance%20Report%20-%20RRF%20Fellowship%20Final.pdf>

HM Treasury. (2011). *The Magenta book: Guidance for Evaluation*. London, UK: Her Majesty's Treasury. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220542/magenta_book_combined.pdf

IEA. (2012). *Joint public-private approaches for energy-efficiency finance 2012: Policies to scale-up private sector investment*. Paris, France: OECD/International Energy Agency. Retrieved from <https://webstore.iea.org/joint-public-private-approaches-for-energy-efficiency-finance-2012>

IEA. (2014). *Capturing the Multiple Benefits of Energy Efficiency*. Paris, France: OECD/International Energy Agency. Retrieved from <https://webstore.iea.org/capturing-the-multiple-benefits-of-energy-efficiency>

IEA. (2017a). *Energy Efficiency 2017*. Paris, France: OECD/International Energy Agency. Retrieved from <https://webstore.iea.org/download/direct/160>

IEA. (2017b). *Market-based Instruments for Energy Efficiency*. Insight series 2017. Paris, France: OECD/ International Energy Agency. Retrieved from <https://webstore.iea.org/insights-series-2017-market-based-instruments-for-energy-efficiency>

IEA. (2018). *Energy Efficiency 2018: Analysis and outlooks to 2040*. Paris, France: OECD/International Energy Agency. Retrieved from <https://www.iea.org/efficiency2018/>

Jamek, A., Pickl, N., Tretter, H., and Böck, E. (2016). *Document with general formulae of bottom-up methods to assess the impact of energy efficiency measures*. MultEE. Retrieved from https://multee.eu/system/files/D2.1_Document%20with%20general%20formulae%20of%20bottom-up%20methods.pdf

Kjaer, T., Andersen, J., Jamek, A., Pickl, N., Iatridis, M., Tourkolias, C., Kudrenickis, I. *et al.* (2016). *Identifying areas of improvements of Monitoring and Verification schemes and Coordination Mechanisms*. MultEE. Retrieved from https://multee.eu/system/files/Report_D3.1_Identifying_areas_of_improvements_of_MV_schemes_and_Coordination_Mechanisms.pdf

Langreder, N., Seefeldt, F., Chmella, T., and Brischke, L.-A. (2019). STEP up! The competitive efficiency tender in Germany—step by step towards an effective new instrument for energy efficiency. ECEEE Summer Study proceedings paper. Retrieved from https://www.eceee.org/library/conference_proceedings/eceee_Summer_Studies/2019/3-policy-and-governance/step-up-the-competitive-efficiency-tender-in-germany-step-by-step-towards-an-effective-new-instrument-for-energy-efficiency/

Le Den, X., Riviere, M., Lessmann, F., Herms, S., Nesbit, M., Paquel, K., and Illes, A. (2015). *Energy efficiency in public and residential buildings: Final report work package 8; Ex post evaluation of Cohesion Policy programmes 2007–2013, focusing on the European Regional Development Fund (ERDF) and the Cohesion Fund (CF)*. Brussels, Belgium: European Commission. Retrieved from https://ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/expost2013/wp8_final_report.pdf

Maric, L., Thenius, G., Gynther, L., and C. Guermont. (2018). *Linkage between M&V tools (data collection) and evaluation (complementary analysis)*. EPATEE study. Retrieved from https://epatee.eu/sites/default/files/files/epatee_topical_case_study_linkage_between_monitoring_and_evaluation.pdf

Ministère de la Transition écologique et solidaire (2019). *Comité de pilotage CEE*. Presentation to DGEC on 15 October 2019. https://www.ecologique-solidaire.gouv.fr/sites/default/files/2019-10-15%20COPIL%20CEE%20pr%C3%A9sentation%20DGEC_VFinale.pdf

- PACENation. (2019). PACENation is the national nonprofit association that advocates for PACE financing [Website]. Retrieved from <https://pacenation.org/>
- Rosenow, J. (2012). The politics of the German CO₂-Building Rehabilitation Programme. *Energy Efficiency* 6:219–238. Retrieved from http://eng.janrosenow.com/uploads/4/7/1/2/4712328/rosenow_2013_the_politics_of_the_german_co2_building_rehabilitation_programme.pdf
- Rosenow, J., and Eyre, N. (2015). Re-energising the UK's approach to domestic energy efficiency. ECEEE Summer Study, Presqu'île de Giens, Toulon/Hyères, France. Retrieved from https://www.eceee.org/library/conference_proceedings/eceee_Summer_Studies/2015/2-energy-efficiency-policies-8211-how-do-we-get-it-right/re-energising-the-uk8217s-approach-to-domestic-energy-efficiency/2015/2-001-15_Rosenow.pdf/
- Rosenow, J., Leguijt, C., Pató, Z., Eyre, N., and Fawcett, T. (2016). An ex-ante evaluation of the EU Energy Efficiency Directive: Article 7. *Economics of Energy & Environmental Policy* 5(2). Retrieved from http://eng.janrosenow.com/uploads/4/7/1/2/4712328/eed_paper_final.pdf
- Rosenow, J., and Scheuer, S. (2019). *Closing the loopholes: Assessment of the potential impact of tax measures on energy savings claimed under Article 7 of the EED*. Brussels, Belgium: Regulatory Assistance Project. Retrieved from www.stefanscheuer.eu/wp-content/uploads/2019/10/201914-EED-Article-7-and-energy-taxes-RAP-STS-study.pdf
- SEAI. (2019). Energy Efficiency Obligation Scheme (EEOS) [Webpage]. Sustainable Energy Authority of Ireland. Retrieved from <https://www.seai.ie/business-and-public-sector/business-grants-and-supports/energy-efficiency-obligation-scheme/>
- Sunderland, L., and Cowart, R. *Carbon revenues for a just transition*. Montpelier, VT: Regulatory Assistance Project. Retrieved from <https://www.raponline.org/knowledge-center/carbon-revenues-for-a-just-transition/>
- Thomas, S. (2018). *Drivers of recent energy consumption trends across sectors in EU28*. Report prepared for the European Commission under the contract ENER/C3/2018-447/04/SI2.782400. Retrieved from https://ec.europa.eu/energy/sites/ener/files/energy_consumption_trends_workshop_report-september_2018.pdf
- Thomas, S., Suerkemper, F., Adisorn, T., Hauptstock, D., Schäfer-Sparenberg, C., Tholen, L., Vondung,

F. et al. (2016b). *Feedback Loop Report: Progress in energy efficiency policies in the EU Member States*. Findings from the Energy Efficiency Watch 3 Project 2016. Retrieved from

http://www.energy-efficiency-watch.org/fileadmin/ew_documents/EEW3/EEW3_Feedback_Loop_Report_20170302.pdf

UPRC, CRES, JIN, FIRE, AEA, SEI, ADEME, and OUCE. (2015, updated 2016). *Energy saving policies and Energy Efficiency Obligation Scheme: D3.1: Report on alternative schemes to Energy Efficiency Obligations under Article 7 implementation*. Prepared by University of Piraeus Research Center for

ENSPOL. Retrieved from

<http://enspol.eu/sites/default/files/results/D3.1%20Report%20on%20Alternative%20schemes%20to%20Energy%20Efficiency%20Obligations%20under%20Article%207%20implementation.pdf?v=3>

Annex I: Priority ranking from ENSMOV survey

Within the scope of the ENSMOV project, a survey was carried out to identify the needs for knowledge exchange in the two central areas of policy implementation and (re)design and monitoring, reporting and verification (MRV) for Article 7 EED.

The survey was directed to two main stakeholder groups:

- Target group I: Ministries or public authorities/policy makers and national agencies/implementing bodies for Art. 7 EED; and
- Target group II: Energy and environmental associations, industrial/trade/consumers' associations, market operators, universities/research centres/NGOs, think tanks involved in energy policies, banks/financial institutions and others.

Of the respondents, 42% were public authorities (target group I) and 58% were market parties, experts, obligated parties, etc. (target group II).

Priority ranking for policy implementation

According to the rating important (4) or very important (5) from the perspective of the primary stakeholder group (policy makers and implementing bodies), the subtopics were ranked from 1 to 26.

Rank	Priority	Subtopic	Main focus
1	57,8	Ensuring the sustainability of the EEO scheme/alternative measure(s) in terms of re-financing (e.g., through cost recovery for obligated parties)	Financial aspects
2	56,0	Assessing the side effects of the EEO scheme/alternative measure(s) (e.g., rebound effect, free ridership, etc.)	Preparation of the scheme
3	53,1	Ensuring additionality of the energy efficiency savings	Technical/practical aspects
4	47,9	Designing the policies in order to minimize the costs for all parties involved	Financial aspects
5	47,1	Ensuring materiality of the energy efficiency savings	Technical/practical aspects

Rank	Priority	Subtopic	Main focus
6	45,8	Understand the investment capacity and financial needs of the target group(s), obligated parties in order to design the obligations to their possibilities	Financial aspects
7	43,1	Raising awareness about the opportunities for and the benefits of energy efficiency	Communication
8	42,0	Assessing the needs for control/evaluation of the EEO scheme/alternative measure(s)	Preparation of the scheme
9	42,0	Keeping the administrative burden deriving from the EEO scheme/policy low for the obligated parties	Organisational aspects
10	41,3	Ensuring that state subsidies are used effective (<i>e.g.</i> preventing double funding in the case it is not allowed)	Financial aspects
11	40,8	Mitigating the risks of fraud (<i>e.g.</i> overestimation of energy savings, false statements)	Technical/practical aspects
12	40,4	Budget commitment for the EEO scheme/alternative measure(s)	Financial aspects
13	38,8	Setting up a robust MRV scheme	Technical/practical aspects
14	37,5	Coordination with other policies/initiatives in order to reach the defined objectives in the most efficient way	Legal/political aspects
15	37,0	Ensuring equity / tackling distributive effects (<i>e.g.</i> , reducing energy poverty)	Legal/political aspects
16	34,7	Knowledge provision for professionals in the field of energy efficiency actions and energy advice	Capacity building
17	33,3	Identifying relevant sectors for the EEO scheme/alternative measure(s) tailoring it/them according to the specific energy saving targets	Legal/political aspects
18	32,7	Getting support for the implementation of the EEO scheme/alternative measure(s)	Legal/political aspects
19	32,6	Taking into account market transformation and technical development for the (re)design of the EEO scheme/alternative measure(s)	Technical/practical aspects
20	30,6	Provide the obligated parties with sufficient information in order to fulfill their obligations	Communication

Rank	Priority	Subtopic	Main focus
21	29,2	Involve the relevant stakeholders in the policy (re)design process for the EEO scheme/alternative measure(s)	Communication
22	29,2	Support the exchange of knowledge between professions of different roles/skills for the EEO scheme/alternative measure(s) within your organisation	Communication
23	28,0	Assessing the obstacles for the implementation of the EEO scheme/alternative measure(s)	Preparation of the scheme
24	26,0	Creating feedback loops for the inclusion of knowledge from different actors (<i>e.g.</i> , obligated parties, market actors, etc.) dealing with the EEO scheme/alternative measure(s) for the policy (re) design	Preparation of the scheme
25	18,8	Specifying objectives and keeping track of the defined objectives from political side	Legal/political aspects
26	16,7	Defining the roles of different stakeholders (<i>e.g.</i> , national authorities, obligated parties) and the corresponding responsibilities	Organisational aspects

Priority ranking for monitoring, reporting and verification

According to the rating important (4) or very important (5) from the perspective of the primary stakeholder group (policy makers and implementing bodies), the subtopics were ranked from 1 to 14.

Rank	Priority	Subtopic	Main focus
1	56,5	Defining the sample size and the parameters for representative monitoring/reporting and verification for Art. 7 EED	Technical/practical aspects
2	51,4	Providing clear und specified guidelines on monitoring/reporting and verification for Article 7 EED	Legal/political aspects
3	48,6	Providing tools for monitoring/reporting and verification schemes (e.g., web applications, calculation guidelines/tools, etc.)	Technical/practical aspects
4	47,2	Cost-efficient provision of monitoring/reporting and verification for Art. 7 EED	Financial aspects
5	45,7	Guidelines for the verification requirements (e.g., energy consumption before/after measure was carried out)	Technical/practical aspects
6	44,4	Defining the data that shall be made available to national authorities for monitoring/reporting and verification	Technical/practical aspects
7	43,5	Defining the parameter for the controlling of the energy efficiency measures (individual actions) to make sure they are compliant with the current energy policy in place	Technical/practical aspects
8	34,3	Lack of political support for the implementation and (re)design of the monitoring/reporting and verification scheme	Legal/political aspects
9	33,3	Creating feedback loops for the inclusion of knowledge from different actors (e.g., obligated parties, market actors, etc.) dealing with the monitoring, verification and reporting of the EEO scheme/alternative measure(s) EEO for the policy (re) design	Organisational aspects
10	32,4	Lack of trained staff in the field of monitoring/reporting and verification for Art. 7 EED	Capacity building
11	28,6	Assuring compatibility between different data management tools (e.g., public tools and tools from the private sector)	Technical/practical aspects
12	27,3	Missing or not specified areas of responsibilities among different national authorities	Organisational aspects

Rank	Priority	Subtopic	Main focus
13	21,9	Lack of penalties (or lack of imposed penalties) for obligated parties not complying with the legal regulations according to Art. 7 EED	Legal/political aspects
14	0,0	Defining the process in case of miscalculation or default of the energy efficiency measures (individual actions) by obligated parties	Technical/practical aspects