

**Energy Efficiency Obligation in The Netherlands:
Can the implementation be improved?**

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M.Sc. thesis Sustainable Development - Earth System Governance

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45 ECTS

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Preface

'But don't get depressed. I was very cynical and depressed about it, but then I noticed how passionate the future generation is about sustainability. And that gives me hope that it will be okay'

- Interview 20

The master Sustainable Development enabled me to study some of the most pressing problems that society faces today. It has delighted and motivated me to work on contributing to a better tomorrow. However, you can't do it on your own. Regarding this master thesis, the feedback of my supervisor, Hens Runhaar, helped me to create structure, demarcate, and create more structure. Thanks for that. I also want to thank my friends Léon and Hester, for endless feedback sessions, and continuously asking: *but what is it you are actually trying to say?* Subsequently, to all governmental officials that have been willing to answer my questions regarding this topic, sometimes for over an hour: a major thank you.

Summary

On European as well as national levels, governments have committed to mitigate CO₂ emissions, among others by means of energy efficiency strategies (2030 Climate and Energy Framework, n.d.; Fawcett, Rosenol & Bertoldi, 2018). However, what happens when these strategies are implemented?

This research aims to analyze barriers and opportunities for the implementation of sustainability legislation, and to generate recommendations for improved implementation. It does so by using an evaluative framework. This framework combined the Institutional Framework for Policy Analysis and Design (Polski & Ostrom, 1999) with the framework on indicators for policy implementation of Sabatier and Mazmanian (1980). The framework was used to analyze the case study of the energy efficiency obligation in the Netherlands. This legislation was implemented in 1993, and has been adapted throughout the years. It therefore provides an interesting case for assessing implementation and its effect on policy outcomes. The main research question was: *How is the energy efficiency obligation of the environmental law articles 2.14c and 2.15 implemented in The Netherlands, and what are the barriers and opportunities for improved implementation?*

A literature review was executed and twenty interviews with officials from the national government, municipalities, and environmental offices were conducted. Using the newly created framework, the policy goals were assessed. Subsequently, the implementation indicators were assessed. By comparing policy goals to policy outcomes, and assessing how implementation indicators contribute to the outcomes, an evaluation of implementation could be made.

The key implementation variables that were found include the operationalization of policy, the relation between the scale of the policy problem and the government level responsible for implementation, and the way a policy is funded. Recommendations include providing additional and structural funding for energy efficiency law enforcement. Additionally, either the role of municipalities in the execution of the legislation should be limited, or the municipalities should work closer together with the environmental offices. This depends on the way that the legislation evolves in the coming years.

1. Introduction

1.1 Background

In order to mitigate climate change, CO₂ emissions need to be reduced (Rogelj et al., 2016). Energy saving is one of the ways CO₂ can be reduced. On European as well as national levels, governments have committed to do so (2030 Climate and Energy Framework, n. d.; Fawcett, Rosenol & Bertoldi, 2018). To achieve this, public policies are operationalized by activities, programs or projects, the so called policy instruments (Khan & Khandaker, 2016). In the domain of energy policy, they take the form of financial measures like subsidies, or taxes, legal requirements, organizational measures like voluntary agreements and certificates or tradable agreements (Oikonomou & Jepma, 2008).

An example of a legal requirement that has been incorporated in Dutch law is the energy efficiency obligation. The legislation applies to companies that do not need an environmental permit and use more than 25.000 KWh, or 50.000 M³ of gas per year. The instrument obliges companies to implement the energy saving measures that could be recouped within five years because of lowered energy bills. The instrument was introduced in 1993 and has been adapted throughout the years. Although the legislation is national legislation, jurisdictional authority is placed on the municipal level (PBL, 2019; TNO, 2021)

Research on the effects of the legislation has shown that better enforcement of the legislation is needed in order to achieve maximum energy efficiency (SER, 2013; ECN, 2017; PBL, 2019; PBL, 2020). This raises the question: why has this legislation still not achieved its desired outcomes? This is an important question for social scientists, in order to enhance understanding about the conditions needed for successful sustainability policies (Hess, Mai, Brown; 2016).

Research shows progress regarding the achievement of policy goals is dependent on policy design and implementation (Hudson, Hunter & Peckman, 2019; Harmelink, Harmsen & Nilsson, 2008). Policy design refers to the way policies or policy instruments are constructed so that they produce the desired outcomes (Tosun & Treib, 2018). Policy implementation regards “the way policies and policy instruments are put into practice by administrative actors and to what extent they affect the behavior of societal target groups” (Tosun & Treib, 2018). This is related to the extent to which policy goals are achieved (Khan & Kandaker, 2016).

Tosun and Treib (2018) describe a trend within policy evaluation research to focus on policy outcomes, whilst limited attention is paid to the way policy design or policy implementation influence these produced outcomes. Focusing on policy implementation could be an interesting way to shed more light on the way policy outcomes come about. In policy implementation research, a number of frameworks, identifying important variables for policy implementation, have emerged. However, specifying variables that affect policy implementation is only a first step. The subsequent, successful policy implementation needs to be defined as well. In this research, the definition of successful policy

implementation by Giacchino and Kakabadse (2003) is used. It refers to a policy implementation initiative in which the strategic action adopted by the administrative arm of government delivers the intended outcomes. The definition of improved implementation that is used in this research is derived from this, and refers to the extent to which changes in actions adopted by the administrative arm of government close the gap between policy goals and outcomes.

1.2 Research problem

Policy implementation has been extensively researched (O'Toole, 2000). However, policy implementation is very context specific, as it is dependent on social, economic, organisational and attitudinal factors. Causal factors leading to the success of policy implementation remain speculative, since previous research findings are so fragmented that no conclusive variables of importance have emerged from the literature (Khan & Kandaker, 2016). Research into the barriers of policy implementation paints the same picture. Chai and Yeo (2012) state that implementation barriers identified in implementation research are generally studied in isolation, and relationships between barriers are ignored. If the variables of importance are not integrated in a correct model, results using this model will be flawed (Mthethwa, 2012).

Research into improved implementation therefore requires an evaluative approach, as opposed to the descriptive approach that was common in previous studies. Therefore, an evaluative framework needs to be designed and operationalized to analyze policy implementation and to provide recommendations for improved implementation, while incorporating all variables of influence. This is expected to further advance implementation research.

1.3 Previous Research

Until now, research into the topic of policy for energy efficiency has been focused on the built environment or industry (Locmelis, Blumberga, Barris, 2018; Salvalai, Masera & Sesana, 2018; Liang, Li, Wu & Yao, 2007; Yao, Li & Steemers, 2005).

Geller, Harrington, Rosenfeld, Tanishima and Unander (2006) revised thirty years of energy efficiency policies in OECD countries. They show that well-designed policies can deliver significant energy saving. Doris, Cochran and Vorum (2009) provided an overview of trends at different government levels in the United States regarding energy efficiency policy. They concluded that measuring policy impact is critical, but also massively difficult, when evaluating policy effectiveness at all governmental levels.

Chai and Yeo (2012) saw the need for a new framework to identify barriers for energy efficiency in industry. There are a myriad of studies that attempt to classify barriers into categories of importance. However, those do not enable substantially new insights on the nature of those barriers. According to the systems perspective, classification of barriers into categories of importance neglects

the interconnected nature of barriers for energy efficiency policy. Therefore, Chai and Yeo (2012) created a framework that looks at the interconnected nature of these barriers. That same approach will be adopted in the design of this study. However, this study was limited to industry, whereas this research adopts a cross-sectoral approach.

In this research, a new framework will be used to analyze the case study of the energy legislation that is incorporated into the Dutch environmental law. As a case study, it particularly suits this research because it has been implemented for thirty years. Geller et al. (2006) pointed out that energy efficiency legislation needs to be implemented for over a decade in order to make accurate statements about outcomes and implementation. Subsequently, this legislation covers multiple government levels and sectors to be assessed for implementation, whereas current research is limited to a few sectors.

1.4 Research goal and research questions

This research aims to analyze barriers and opportunities for the implementation of sustainability legislation, and to generate recommendations for improved implementation. In order to do this, an evaluative framework is combined with key variables for the implementation of legislation. This framework will be applied to the case study of the energy efficiency obligation. The research question is as follows:

How is the energy efficiency obligation of the environmental law articles 2.14c and 2.15 implemented in The Netherlands, and what are the barriers and opportunities for improved implementation?

Subquestion 1: What is the goal of the energy efficiency obligation that has been adopted in the Netherlands?

Subquestion 2: How and by whom is this legislation implemented?

Subquestion 3: What are the barriers and opportunities for the implementation of these energy targets within the governmental institutions responsible for their implementation?

Subquestion 4: How can the implementation of energy efficiency regulations in the Netherlands be improved?

1.5 Societal and scientific relevance

Considering the urgency of mitigating CO₂ emissions in the light of climate change, but also in the light of the increasing demand for energy worldwide (Cherp, Jewell & Goldthau, 2011), achieving a more energy efficient society is needed. By means of this case study analysis, the limitations and possibilities of the implementation of Dutch energy saving measures can be assessed. The recommendations that arise from this assessment could be used to improve the implementation of the energy efficiency obligation, thus contributing to a more energy efficient society.

Regarding the scientific relevance, this thesis aims to contribute to the body of knowledge on policy implementation by combining policy evaluation with important indicators for implementation that have been found in implementation research.

There is a newly sparked interest in researching policy implementation of sustainability legislation (Hudson, Hunter & Peckham, 2019; Howes, Wortley, Potts & Dedekorkut-Wortley, 2017) . However, current theoretical frameworks are ill-equipped to analyze policy implementation and generate recommendations for improved implementation. The current study aims to contribute to the existing body of knowledge by providing a framework that combines an evaluative framework with key variables for the implementation of legislation.

2. Conceptual Framework

In order to enable a systematic analysis of the barriers and opportunities for improved implementation of the energy regulations in the Netherlands, a theoretical framework is needed to understand the theoretical context. This chapter first defines the dependent variable. Subsequently, the independent variable of policy implementation is researched and defined. This leads up to the theoretical framework that is used to assess policy implementation.

2.1 Dependent variable

In this research, the dependent variable is the policy outcomes. Policy outcomes are the actual effects of a policy instrument in terms of achieving the intended goal (Holzinger, Knill & Sommerer, 2009). In order to assess how policy outcomes are generated, policy needs to be evaluated. Policy evaluation is defined as the assessment of merit, and value of administration, and output and outcome of government interventions. This can take place before, during and after a policy instrument is implemented (Mickwitz, 2003).

2.2 Independent variable

In this research, policy implementation is the independent variable. As mentioned in the introduction, policy implementation is defined as “the way policies and policy instruments are put into practice by administrative actors and to what extent they affect the behavior of societal target groups, relating to the extent to which policy goals are achieved” (Khan & Kandaker, 2016; Tosun & Treib, 2018). Mthethwa (2012) describes policy implementation as an ongoing process, which can be successful, unsuccessful, and altered over time. In this research, successful policy implementation is defined based on whether or not aspects of implementation contribute to achieving the policy goals (Mthethwa, 2012). Improved implementation thus refers to alterations in the way the policy is adopted, to further achievement of the policy goals.

This poses the question what these aspects, variables or indicators for successful implementation are. While analyzing the implementation process, implementation researchers came up with a number of frameworks with factors that impact the process of implementation. These models generally follow one of three approaches. The top-down approach takes the central decision-maker as its focus. This approach is the more prevalent one and starts from the top governmental layer. It subsequently proceeds downwards through the hierarchical structure to assess to which extent policy goals are achieved and procedures are followed. The second approach starts with an analysis of actors operating at the local level, and visualises the impacts and outcomes of the policies. These two approaches are followed by hybrid models in which the two approaches are integrated. A number of widely cited frameworks guide research in identifying important factors regarding implementation. Two examples are described in the table below, to show how other implementation models address

implementation. Nonetheless, integration of these variables into one coherent parsimonious framework has not happened in implementation research (O’Toole, 2000; Khan & Kandaker, 2018).

Table 1

Examples of implementation frameworks and the indicators they identified

Study	Variables
Van Meter and Van Horn (1975)	1) policy standards and resources (basically funds) 2) support for those policies in the political environment, 3) economic and social conditions 4) characteristics of the implementing agencies 5) communication of policy standards and other decisions within and among implementing agencies 6) incentives to promote compliance with policy decisions, and 7) the policy dispositions of implementing officials.
Rein and Rabinovitz (as cited in Sabatier & Mazmanian, 1980)	1) the respect for legal intent 2) civil servants' concern for instrumental rationality 3) the general expectation that concerted action requires consensus both within the implementing agencies and in their external political system

Sabatier and Mazmanian (1980) felt former models, among which the model of Van Meter and Van Horn, did not stress the link between individual behavior and the social, political, and economical context it is placed within. This is important to address, as the links between individual behavior and the social, political and economic context might bear important indicators for the success of policy implementation. Additionally, they felt that former models of implementation did not address the ability of a directive to structure the implementation process well enough.

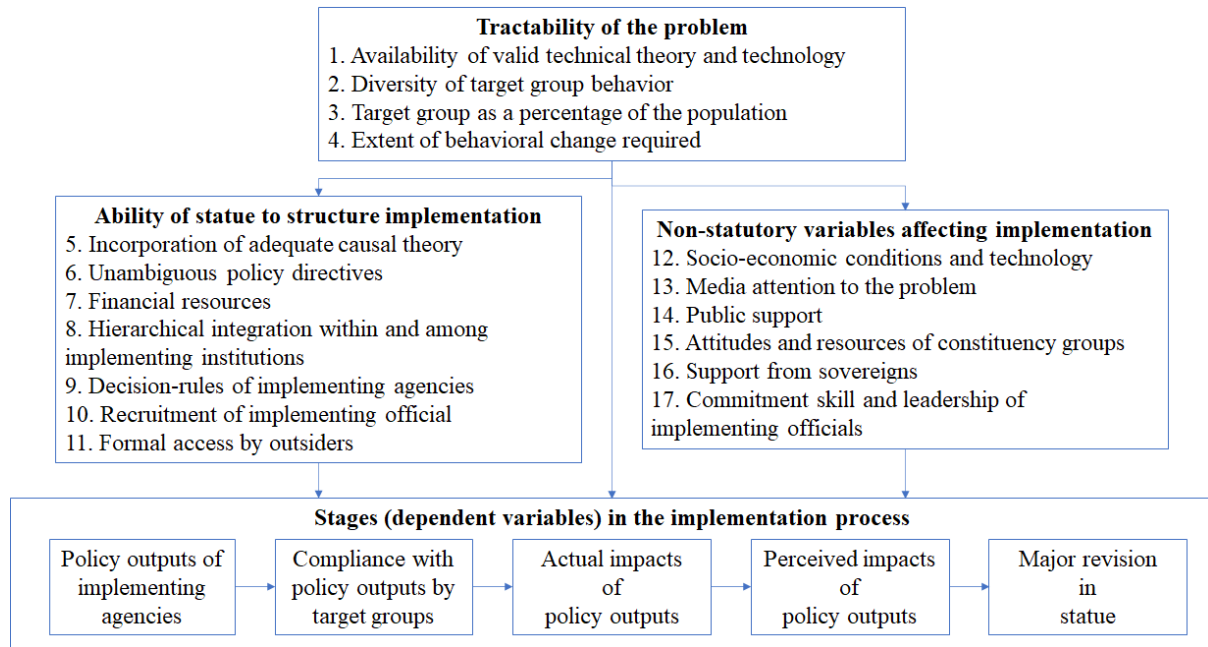
In order to resolve this, Sabatier and Mazmanian (1980) integrated findings of previous studies regarding the implementation of legislation into a framework that could guide further research into this topic. They created a framework aimed at regulatory policies, which acknowledges the ability of a statute to structure the implementation process. The latter had been left out of former models. The acknowledgement of policy context and its link with individual behavior, as well as its focus on directives, makes this framework the most suitable to use in the current research.

Sabatier and Mazmanians (1980) acknowledge three main categories with a total of 17 major variables that affect the achievement of policy instrument objectives through the process of implementation. The categories are tractability of the problems addressed by the statute, the ability of the statute to structure the implementation process, and the effect of the political environment on the

support the statute's objectives get. An overview of the three categories and the major variables Sabatier and Mazmanian identified within them is shown in figure 1 below. Using this framework in evaluative research would thus involve comparing policy goals with policy outcomes, applying the 17 variables to explain a discrepancy between the both.

Figure 1

Depiction of the Framework of Sabatier and Mazmanian (1980)



A more in-depth explanation of the variables deemed important by Sabatier and Mazmanian is described in table x in appendix C. This research aims to analyze a case study and be able to generate directions for improved implementation. This leads to the following research framework.

2.3 Theoretical Framework

In order to structure the variables affecting policy implementation to enable policy evaluation, a clear structure is needed. This structure needs to be grounded in policy theory, and take into account the contextual factors affecting the policy environment. Polski and Ostrom (1999) developed the Institutional Analysis and Development (IAD) framework to enable policy analysis and design. It provides insight into complex social situations by breaking them down into manageable components. Thus the analyst can comprehend the connections and feedback within a complex policy situation, and evaluate how these contribute to policy outcomes (Polski & Ostrom, 1999).

This model has previously been used to analyze energy policy (Shah & Niles, 2016; Guan & Delman, 2017). It is expected to provide the structure the current research needs, as it acknowledges the context a policy is placed within, the interactions that take place within this context, and the effects these have on policy outcomes.

The framework

The framework consists of seven steps, which are followed in order to analyse the policy design, policy context, interactions within the policy context, and the way this leads to policy outcomes. The framework of Polski and Ostrom (1999) is complemented by the indicators on implementation from the framework of Sabatier and Mazmanian (1980).

The first step offers an overview of the policy. It assesses the policy goals, policy theory, and policy design. Research on policy implementation indicates that all these things are of importance when assessing policy implementation. Subsequently, an overview of changes in the policy throughout the years is created in this step. Polski and Ostrom suggest five questions to guide this step. The policy objectives are covered by two indicators of Sabatier and Mazmanian, namely: ‘Incorporation of adequate causal theory’ and ‘unambiguousness theory’. However, these indicators can be answered better when the policy context is more clear. Therefore, these variables are discussed in step 6, the integration. The answers to the central questions of Polski and Ostrom are used to create context of the policy and its objectives.

Table 2

Step 1 Theoretical Framework

Goal	Merged Questions
1. Define policy objective	1. What is happening in the policy arena? 2. What are the policy objectives? 3. Which policy objective is most important?

The subsequent steps, 3 to 5, regard the physical and material conditions, community attributes, and rules-in-use. The physical and material conditions refer to the human and material conditions that influence policy design, politics, and collective action. Sabatier and Mazmanian also recognize the importance of these variables, although they have modeled their important variables in different categories. The first variable: ‘What is the economic nature of the activity?’ has been excluded from current research.

Table 3

Step 2 Theoretical Framework

Goal	Merged Questions
2. Analyze physical and material conditions	6. Are technical theory and technologies valid and available, and is there variation in socio-economic conditions and technology over time and settings? (indicator 1 and 12) 7. What physical and human resources are required to provide and produce implementation? 8. What is the scale and scope of provision activity? 9. Are the financial resources needed for the implementation available? (indicator 7)

The community attributes influence the policy situation, which is recognized by Sabatier and Mazmanian, as well as Polski and Ostrom. Polski and Ostrom focus on the importance of a policy to align with cultural norms and beliefs. Sabatier and Mazmanian operationalize this more specifically. They ask about the extent of behavior change, government agents support for the implementation and acceptance of the general public. As the framework of Sabatier and Mazmanian has been developed specifically for the implementation of directives, their focus has been adopted. All variables in the box of community attributes are therefore indicators of implementation, adopted from Sabatier and Mazmanian.

Table 4

Step 3 Theoretical Framework

Goal	Merged Questions
3. Analyze community attributes	10. Is the target group behavior diverse? (Indicator 2) 11. What is the percentage of the target group compared to the population (Indicator 3) 12. Is the behavior change required extensive? (Indicator 4) 13. Are the officials assigned to the implementation committed to do so? (Indicator 17) 14. Do the sovereigns continuously support implementation? (Indicator 16) a. Via amount and direction of oversight (indicator 8) b. By implementing new and conflicting legislation 15. How is the hierarchical integration among and within implementing institutions arranged (indicator 8) 16. Are the officials needed for implementation recruited? (Indicator 10) 17. Is the general public supportive of the legislation? (indicator 14) 18. What are the attitudes and resources of constituency groups? (Indicator 15)

Regarding the rules-in-use, these explain policy-related actions, interactions, and outcomes (Polski & Ostrom, 1999). The rules in use have been adopted as formulated by Polski and Ostrom. The related important variables by Sabatier and Mazmanian have been incorporated and are indicated in cursive. The integration of the model is also performed as suggested by Polski and Ostrom, as the integration links back to the rules-in-use.

Table 5

Step 4 and 5 Theoretical framework

Merged Questions step 4, rules in use	Merged questions step 5, integration
19. Position rules what are the set of positions or roles that participants assume in an action situation, and the number and type of participants who hold each position?	What are the positions or roles that actors play in this situation?
20. Boundary rules what are the exit and entry rules, specifying which participants enter or leave positions and how they do so? 23. Does the legislation enable formal access by outsiders? (Indicator 11)	Who are the participants?
21. Authority rules what are the actions participants in given positions may take?	What actions can participants take, and how are actions linked to outcomes?
22. Aggregation rules how are decisions made in an action situation? Are the decision rules of implementing agencies supportive of the objectives? (Indicator 9)	What is the level of control that each participant has over action in this situation?
23. Scope rules What is the jurisdiction of outcomes that can be affected and are these outcomes final or not final?	What outcomes are possible in this situation?
24. Information rules what affects the amount and type of information available to participants in an action arena? 25. Is there consistent and influential media attention to the problem? (Indicator 13)	What information about the action situation is available to participants?
26. Pay-off rules how are costs and benefits meted-out in the action arena?	What costs and benefits do participants incur when they take action in this situation?

Subsequently, the patterns of interaction are assessed. These are also adopted from Polski and Ostrom. However, Sabatier and Mazmanian also cover questions on the patterns of interaction in their stages of the implementation process, discussing the policy outcomes of implementing agencies, and the compliance by target groups. These have been integrated in the IAD. The results of this integration are shown in table 1.

Table 6*Step 6 Theoretical Framework*

Goal	Merged Questions
6. Analyze patterns of interaction	27. When are these outcomes occurring? 28. Where are they occurring? 29. How are outcomes occurring? 30. Is the causal theory incorporated accurate? 31. Is the policy directive unambiguous, and structured to enable implementation?

The last step in the policy evaluation framework is the assessment of outcomes. As mentioned already, the legislation regards energy saving, so the energy that is not used. Measuring policy outcomes in an accurate way is therefore difficult. However, it is still important to find a way to assess the extent of the success of this policy. Otherwise, analyzing whether a certain change in policy implementation would make the policy more or less successful, would be difficult. Polski and Ostrom refer to this step as an analysis of the performance of the legislation and indicate it is generally assessed by the following criteria: ‘concerns in political-economic analysis, economic efficiency, fiscal equivalence, distributional equity, accountability, conformance to general morality, and adaptability.’ (Polski and Ostrom, 1999). However, because this policy framework focuses on implementation, rather than effectiveness, the policy outputs will be assessed by comparing policy outputs to policy goals.

Table 7*Step 7 Theoretical Framework*

Goal	Merged Questions
7. Analysis of results	3. How do observed outcomes compare to policy objectives? 4. Which outcomes are most important? 5. Which outcomes are satisfactory and which not?

3. Method

In order to answer the research question, a qualitative research design will be used. Qualitative research consists of methods aiming to describe and explain behaviors, experiences, interactions, and social contexts (Fossey, Harvey, McDermott & Davidson, 2002; Merriam, 2002). These kinds of methods are well suited for understanding and describing complex, dynamic, and multidimensional research problems and are thus suitable for the research at hand (Sofaer, 1999).

A literature review will provide insight in the way the legislation is implemented so far. This is complemented by the insights and experiences of the government officials that work with this legislation. Since this research falls in the category of hypothesis-generating research, the data will be explored to find important patterns, leading to a hypothesis about the main variables influencing the research problem, and important relations in the research problem (Hartwick & Barki, 1994).

3.1 Data

Different types of data will be gathered in order to answer the research question: *‘How is the energy efficiency obligation of the environmental law articles 2.14c and 2.15 implemented in The Netherlands, and what are the barriers and opportunities for improved implementation?’*

In order to get an initial idea of the policy and its context, a literature review will be conducted. This review will cover the governmental documents regarding this policy instrument, as well as grey papers covering the topic of the (introduction of) the energy regulation in the Netherlands. Grey literature has been defined as ‘that which is produced on all levels of government, academia, business and industry in print and electronic formats, but which is not controlled by commercial publishers’ (Hopewell, Clarke and Mallett, 2005).

The research mainly relies on grey literature as these provide most insight on the implementation of the legislation and related barriers and opportunities. Examples of this include policy documents, and articles and explanations of the legislation. The literature found will be selected based on the question of whether it covers articles 2.14c and 2.14 of the Dutch environmental law, the ‘Activiteitenbesluit’. The database used for selecting the literature will be Nexus Uni, a database that specializes in published articles, mainly from newspapers. The data will be selected based on the following criteria: it should cover information on energy regulations in the Netherlands, or the implementation of them. The data will be gathered by looking up articles containing the keywords ‘Activiteitenbesluit’, ‘Energiebesparing’ or ‘Energiebesparende Maatregelen’. This is expected to generate around forty articles covering changes, impacts, and effects of this legislation. These articles are the starting point for information gathering. New information from the articles will be added to the literature review, until the retrieved information is satisfactory and no new information on the framework is found anymore. This technique is called snowballing (Wohling, 2014).

Using the search criteria mentioned above, the initial literature review in Nexis uni generated forty unique articles covering the energy regulations. Reading these articles, an information gap on the actual policy documents covering the design and implementation of the regulation was discovered. Governmental documents on the regulation were then looked up and added to the literature selection. Moreover, the first forty articles mentioned a change in legislation regarding energy efficiency regulations. As this is important for the implementation of the legislation, information on changes in legislation has been looked up and added to the literature selection. In total, this led to a literature selection of 57 articles.

In order to decide which actors needed to be interviewed, the governmental actors involved with the implementation of the legislation named in the literature were listed. From the resulting list, a selection of actors that were approached for an interview was made. Municipalities, environmental offices, the Ministry of Economic Affairs and Climate Policy, and the Netherlands Enterprise Agency (RVO) were identified as relevant actors.

Table 8

Overview of Important Actors

Actor	Role
Municipalities (355 organisations)	Municipalities have jurisdictional authority over the legislation and are responsible the legislation is implemented
Environmental offices (29 organisations)	Environmental offices are responsible for the execution of environmental law in the Netherlands, commissioned by municipalities and provinces
Ministry of Economic Affairs and Climate Policy (EZK)	The ministry of EZK pushed the legislation and extended it
Ministry of Internal Affairs (BZK)	The ministry of BZK is concerned with the integration of the new environmental legislation in the Netherlands
Netherlands Enterprise Agency (RVO)	This agency is hosts the online office for the information obligation, collecting the data from entrepreneurs, commissioned by EZK
Rijkswaterstaat (RWS)	This agency is in charge of the VUE subsidy, commissioned by EZK

Due to the time available for this research, it was not possible to interview all municipalities and environmental offices. To get a good overview of the implementation process on all different government levels, a selection of municipalities and environmental offices was made.

To get a representative sample of the whole country, environmental offices and municipalities were selected based on the province they are in. From each province, one environmental office and two municipalities were selected for an interview. The environmental offices were selected first. These were selected at random, with the criterion that there should be one environmental office from each province in the selection. Then, a selection of municipalities was made. The municipality selection was based on the environmental office that operates in their area. Since twelve out of 29 environmental offices would be interviewed, only the municipalities that work with these twelve environmental offices were up for selection. This way, the connections between these two governmental partners could be reviewed from both sides.

Within the selection of municipalities, the average amount of filed information obligation forms was calculated. Subsequently, one municipality was selected from the municipalities that score above average for the environmental office they commission, and one municipality of those that score below average. This way, not only small and larger municipalities were included in the selection, but also that municipalities who have different strategies regarding the enforcement of environmental law were included. Additionally, EZK, BZK, RVO, and RWS are also approached for an interview. The full list of actors approached for an interview is in appendix A.

The interviews followed a semi-structured format. The interview scheme was based on the merged key questions from the theoretical framework and is shown in appendix E. Interviews were conducted online, as Covid-19 still restricted the possibilities for in-person interviews. 38 potential interviewees were approached. Of those, twenty participants agreed to be interviewed. This included eleven environmental offices in eleven provinces of the Netherlands. Further, eight municipal civil servants from six different municipalities have been interviewed. Servants of the Ministry of Economic Affairs and Climate Policy and the RVO were also interviewed. In the case of EZK, two civil servants were interviewed. BZK and RWS did not respond to the interview request.

3.2 Data analysis

The data from the literature review was used to answer the questions posed in the theoretical framework. Each article and interview was examined for information on the concepts of the IAD. The information gathered from these articles and interviews will be used to answer the central questions of the IAD regarding each concept.

The software Nvivo was used to archive and code the data. The seven steps of Polski and Ostrom (1999) were used as nodes, and the merged questions are incorporated as subnodes. All

information in the literature that covers these merged questions was then coded within the corresponding node. In order to identify all relevant actors, case nodes were used.

The coded information was the starting point to answer the research questions. All specified questions that could be relevant have been left in the framework and were incorporated as nodes. An overview of how the data affected the framework and the results of this process is provided in the results section.

3.3 Integration research question

The IAD framework enables the conceptual breakdown of the implementation of energy regulation, allowing for in-depth assessment of the vital building blocks influencing the regulation. The theoretical framework provides a structured way to research the possibilities for improved implementation of this legislation. The analysis steps in the framework were combined to find answers to the research questions. This information was to be used to answer the research question: *‘How are the energy efficiency regulations implemented in The Netherlands, and what are the possibilities and limitations for improved implementation?’* This research question was tackled by answering four subquestions.

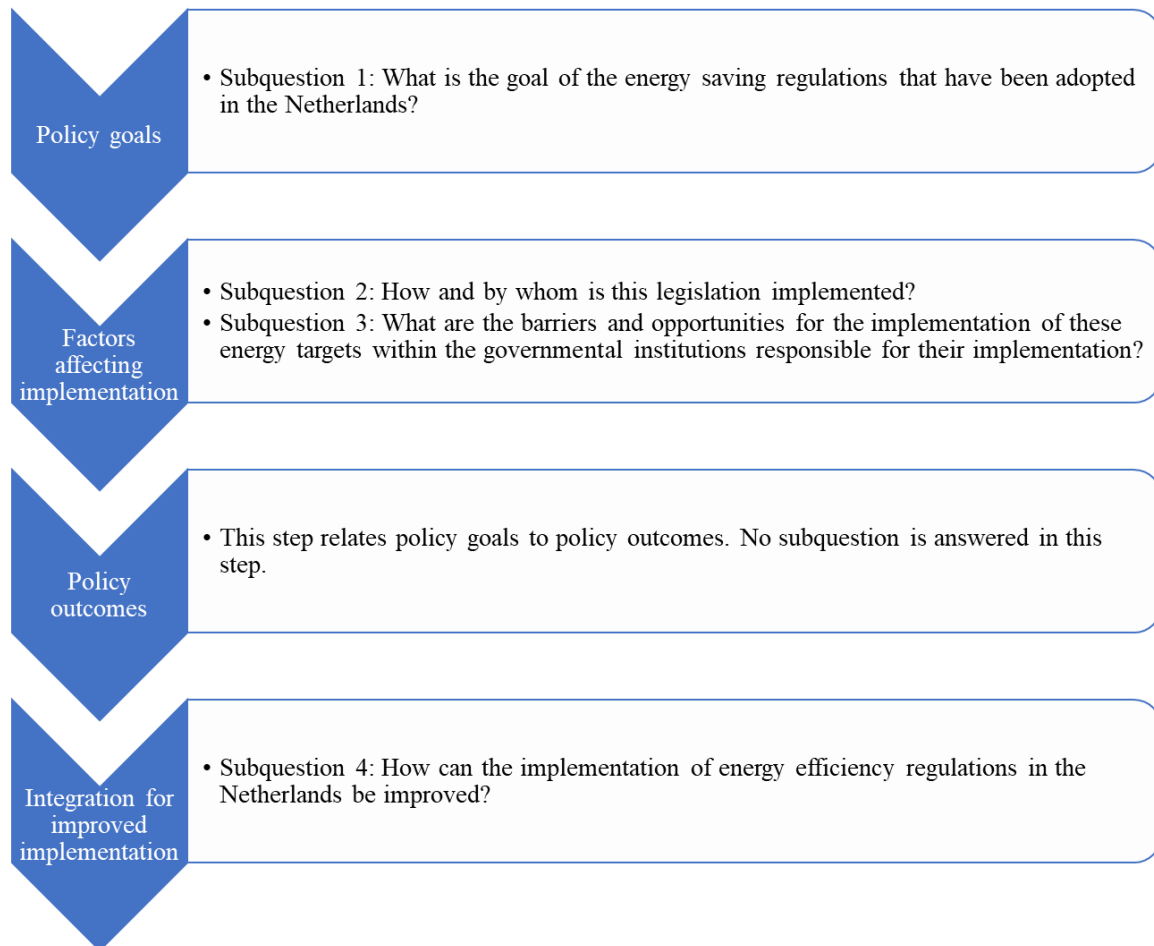
The first subquestion (*“What is the goal of the energy efficiency obligation that has been adopted in the Netherlands?”*) corresponds to the first analysis step in the framework, that addresses the policy goal. The answers to subquestions 2 and 3 (*“How and by whom is this legislation implemented?”*, and *“What are the barriers and opportunities for the implementation of these energy targets within the governmental institutions responsible for their implementation?”* respectively) were provided by the steps concerning the physical and material conditions, and community attributes.

The final subquestion (*“How can the implementation of energy efficiency regulations in the Netherlands be improved?”*) was addressed by examining the extent to which the policy outcomes match the set goals. Afterwards, the factors influencing implementation discovered in the previous steps and their impact on the outcomes were discussed. From this analysis, opportunities for improved implementation were derived.

The relation between the research questions and the analysis steps in the theoretical framework is summarized in the figure below.

Figure 2

Relations Between the Theoretical Framework and Research Questions



3.4 Reliability and Validity

Using a systematic literature review, well-defined search criteria, and structured coding of articles enables test-retest reliability (Heale & Twycross, 2015). Because this is a literature review, new studies and findings that will be published over time would lead to test-retest differences if this method would be adopted again in ten years. A major part of the information fueling the research findings are interview-based. It is impossible to recollect exactly the same data at a later point in time, as the involved officials and their insights will change over time.

Another aspect that requires attention is the inter-rater reliability. Even if the most stringent criteria are used for literature selection, eventually a call needs to be made as to whether a piece of information fits those criteria, and will thus be labelled within a certain code. There is always some subjectiveness in this judgment. This is often mitigated by the researcher asking a fellow researcher to check the coding, using the criteria that are applied in the research, to see whether they generate a similar result (Armstrong, Gosling, Weinman & Marteau, 1997). In order to increase the inter-rater

reliability, the applied labelling criteria and a sample of the data selection were discussed with a fellow student.

To ensure internal validity (Malterud, 2001) this research attempts to gather literature and interviews throughout the Netherlands, based on which conclusions and recommendations are drawn. However, this research has shown that almost all interviewed environmental offices and municipalities have a different approach regarding the implementation of this legislation. Conclusions are therefore often drawn based on limited information, and the possibilities of other findings that would have changed the results, can not be excluded. This risk of internal validity has been attempted to minimize, but cannot be fully excluded.

Lastly, this research analyzes a case study of a particular piece of legislation in the Netherlands. Although the lessons learned from this could prove useful in designing energy efficiency legislation in other contexts, findings from this study might not be universally applicable. The policy context could be different in different countries. Therefore, conclusions regarding external validity in general should be very carefully drawn (Steckler & McLeroy, 2007).

3.5 Ethical implications research

In order to treat the participants of this research in an ethical and appropriate fashion, each participant was given an informed consent form. This form, as shown in appendix A, confirms the rights of participants and describes the research procedure. The researcher walked through this form with the participant, so they knew what to expect and understand their rights. All participants have signed this form and sent it to the researcher.

The interviews that have been conducted were not added in the appendices, as the interviews contain confidential information. Accurate conclusions can be drawn regardless of this, as this research focuses on policy implementation in the entire country, instead of assessing the implementation by specific governmental organisation.

4. Results

The framework used in this research consists of seven steps, exploring the policy, policy context, and the factors affecting the implementation and policy results. In this section, firstly the policy itself is elaborated upon. This step relates to the first subquestion: *What is the goal of the energy saving regulations that have been adopted in the Netherlands?*

Subsequently, the physical and material conditions, and the community attributes are discussed, by means of the variables that have been found to affect implementation and results. This sheds more light on subquestion two and three: *How and by whom is this legislation implemented?* and *What are the barriers and opportunities for the implementation of these energy targets within the governmental institutions responsible for their implementation?*

Then, the policy outcomes are discussed. They are discussed before the interaction variables, as comparing the policy goals with the policy outcomes gives important insight on the extent to which policy goals are achieved, and what policy outcomes are available. Lastly, by comparing the policy goals and factors affecting the implementation and results, patterns of interactions can be derived. In this step, the last subquestion is answered: *how can the implementation of energy efficiency obligation in the Netherlands be improved?*

4.1 Policy objective

In this step, the policy objective is assessed by means of questions regarding what is happening in the policy arena, what the policy objectives are, and which objectives are most important.

The policy

In 1993 an energy efficiency obligation was incorporated in the Dutch Environmental law (Adromi, 2020) Compliance was required from a major part of the businesses with a yearly energy use exceeding 50.000 Kwh in electricity and/or 25.000 M³ gas. These are obliged to take all energy efficiency measures that can be recouped within five years (TNO, 2021; Adromi, 2020).

The legislation is further operationalized by acknowledged measures lists. These specify for 19 branches of companies, which measures are acknowledged to be recouped within five years for their branch. This results in 19 different lists with different measures. These are agreed upon by the governmental institutions and branche organisations from the specific branch they apply to (Interview 20, Adromi, 2020; Engie, 2018). The acknowledged measures are not obliged within every situation. If a company can indicate that a measure can not be recouped within five years in their situation, they do not need to implement this measure. The acknowledged measures function thus more as an operationalisation for law enforcement, than an obligation (Interview 4, 11, 12)

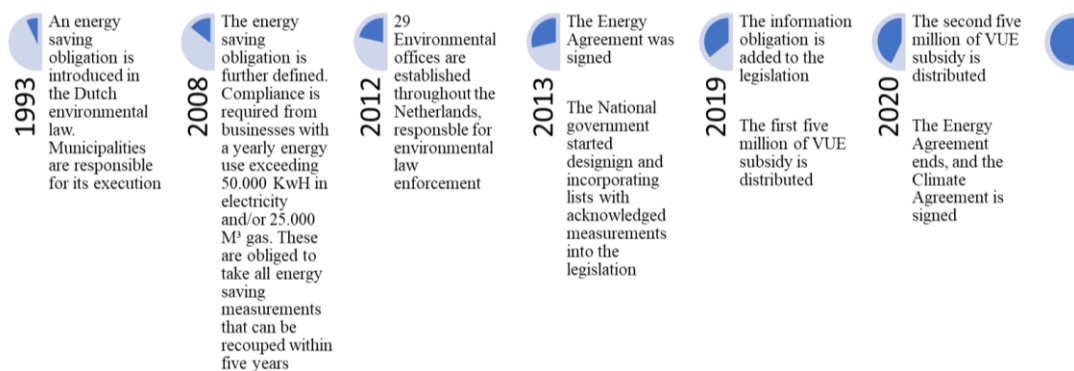
The second main objective of the legislation is called the information obligation. It requires all businesses and institutions that have to comply with the energy efficiency obligation to report to the

Dutch Enterprise Agency (RVO) which energy efficiency measures they took (Interview 11; Rijksoverheid, 2021). They are obliged to do so every four years, starting in 2019 (Interview 1, 20, Adromi, 2020). The information obligation is used as a means to acquire insight into which companies have the most energy saving potential, and should be inspected (Interview 14, 16, 18, 20). Thus, environmental offices currently prioritize the enforcement of the information obligation, before working on the enforcement of the energy saving measures (Interview 4, 5, 14, 15, 16, 18, 20, TNO, 2021).

The energy saving legislation was incorporated in 1993. Since then, the legislation has been changed and expanded. Subsequently, a number of events that have impacted the implementation of the legislation are shown in the figure below.

Figure 3

Timeline of Legislation Implementation (KEV, 2019;TNO, 2021)



This timeline shows important developments regarding the energy efficiency obligation. Since 2013, the legislation has gained attention on a political as well as administrative level. Before then, implementation and enforcement was not given much priority. The Energy Agreement incorporated concrete and ambitious goals on energy saving. This led to changes in the legislation, its implementation, and policy results started to be achieved (Interview 10, 14, 15, 20).

The national government supported legislation implementation on a local level by organising meetings to share and acquire knowledge, by means of the VUE subsidy, which is further elaborated upon when funding is discussed, adding the information obligation to the law, and clarifying and concretizing the energy saving measures by drafting and updating the acknowledged measures lists (Interview 10, 12, 14, 15, 20).

“Let’s say it like this: I started working on energy policy in 1992. That was a completely different world compared to the past few years. For the first time, I feel we are going somewhere.”

- Interview 14

4.2 Physical and material conditions

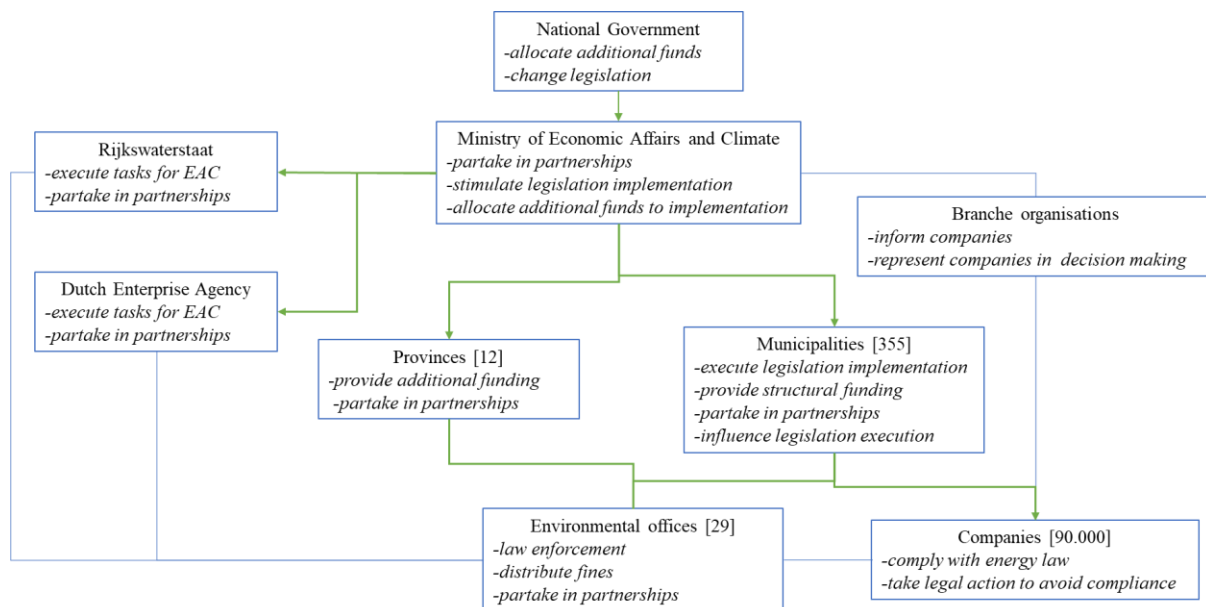
The physical and material conditions of the policy context the instrument is implemented within, affects the implementation process itself, as well as the eventual policy outcomes. In the subsequent section the major physical and material conditions that have been found to impact the legislation are elaborated upon.

Hierarchical integration

The legislation itself does not provide directions for implementation, or appoint parties responsible for implementation or enforcement (see appendix B). The legislation is merely structured by its integration in Dutch governance law (Interview 14, Interview 15). In the figure below, the actors and actions they can take, are shown.

Figure 4

Overview of Actors, Positions and their Subsequent Roles

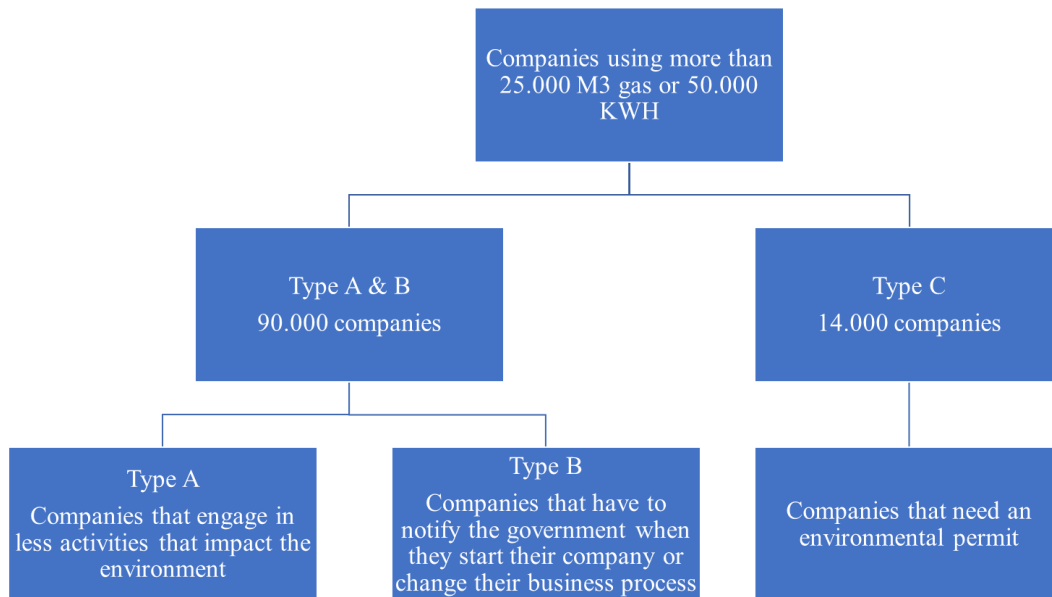


The relation between positions based on financial dependency is indicated with a green arrow. Regarding the national government as well as municipalities, the boxes mark the governance and political processes that lead to decisions on the energy law and its implementation.

For the enforcement of environmental law, companies are categorized in three categories: Type A, Type B and Type C (Interview 1, 2, 4, 9, 16, Adromi, 2020). Type A and B companies that use more than 25.000 M3 gas or 50.000 KWh electricity need to comply with the energy efficiency obligation (Appendix B). This is estimated to be around 90.000 companies (TNO, 2021).

Figure 5

Overview of Categorization of Companies that have to Comply with the Environmental Law (Interview 1, 4, TNO, 2021)



Branches within the type A category for example are schools, offices, healthcare facilities and sports organisations. Because they do not need to notify the government when these start or change, governmental organisations often have less oversight on where these companies are, how many of these companies there are in their jurisdictional area, and interviewees indicate these companies are especially difficult to get in touch with (Interview 1, 2). However, these are also the branches that still bear the biggest energy saving potential (Interview 4, 20).

Type B companies are for example small industry and agriculture. Type C companies are the more heavy industrial companies, and are not yet required to comply with the energy efficiency obligation (TNO, 2021). These companies have an environmental permit, requirements on energy use can be integrated within the permit (Interview 3, 11).

Traditionally, environmental law focused on danger, damage and hindrance. In order to prioritize law enforcement and inspections for companies that are high-risk regarding these topics, environmental offices work with a risk-categorization. Hence, environmental inspections are most performed with Type C and B companies. Type A companies are rarely visited (Interview 4, 5, 7, 9, 10, 12 14, 20).

Funding priorities

The 90.000 companies are divided between 355 municipalities and 29 environmental offices (TNO, 2021, Interview 15). The structural funding of environmental law enforcement is provided by

municipalities and provinces. This funding is commission-based. A standard task package has been drafted, based on the risk-prioritization that is mentioned in the hierarchical integration (Interview 1, 7, 10, 14).

Energy law enforcement is not mentioned in the standard task package, but does cover companies that have been transferred to environmental offices. Interviewees indicate the subject of energy has been forgotten when drawing up the standard task package of environmental offices (Interview 2, 3, 7, 10; Adromi, 2020).

Enforcement of energy law would mean a significant increase of companies that need to be inspected, as there are a significant number of Type A companies that are currently rarely visited, but have significant energy saving potential (Interview 7, 20; Adromi, 2020). Some municipalities pay additional money to environmental offices to perform energy related law enforcement (Interview 1, 8, 10, 12, 14). However, a lot of municipalities are also not willing to do so, or can only contribute a little bit (Interview 2, 7, 9, 10, 12, 13, 14). If municipalities are not willing or able to pay extra money for energy law enforcement, this often results in energy law not being enforced (Interview 2, 7, 10).

“As an environmental office, we are constantly looking for funding for our work. It almost looks like enforcement of this legislation regulated by market forces, that seems really strange to me”

- Interview 7

Non-structural funding has been provided by means of subsidies, for example the VUE (TNO, 2021; Interview 10, 15, 18). This is a subsidy provided by the national government. Environmental offices can use this subsidy to hire external expertise to support them with the enforcement of the Energy efficiency obligation. This has helped environmental offices and municipalities to build knowledge to start with energy inspections (Interview 2, 10, 12, 14, 16). However, it is experienced to be difficult to build structural enforcement with temporary money (Interview 10, 12, 16, 19). Environmental offices state they would prefer it if the subsidy money from for example the VUE, would be transferred directly to the environmental offices, instead of only being available for external expertise they can make use of. However, a legal way to do this has so far not been found (Interview 3, 10, 14 15).

Technical theory and technologies

Environmental law is currently enforced by means of calls, letters, and visits where the companies are checked for their compliance. These checks are done by means of analog checklists, and subsequently registered in the digital systems the environmental office or municipality uses (Interview 1, 5, 14). From these systems, information on the measures that are taken, can be retrieved from the letters that are sent to the companies. However, data on the amount of energy saved, or the amount of measures a company has taken is not registered (Adromi, 2020).

Environmental offices state the administrative process of approaching the right people within the right companies, those that actually need to comply, has so far taken most of the time available for the enforcement of this legislation. This is because environmental offices often do not have the oversight of which companies in their jurisdictional area need to comply with this legislation (Interview 5, 7, 11, 14, 15, 18, 20). The information obligation has aided this process, as it provides nationwide data on energy use of companies. Environmental offices use this to create insight in the task at hand. (Interview 4, 10, 11, 14, 15, 18, 20).

“I think our list of companies is 60 percent correct now. That achievement is quite okay!”

- Interview 18

Two interviewees indicated that they use a different, innovative system to enable the inspections, making use of digital means to track actual saved energy. However, use of this system is dependent on companies' willingness to share their energy data, which they are not obliged to do (Interview 7, Interview 18).

Variation in socio-economic conditions

Municipalities are responsible for the structural funding to implement this legislation. This causes major differences in the way energy law is enforced. Smaller municipalities, or municipalities that are more conservative in their climate policy, are less willing or able to do so. Enforcement furthermore depends on municipalities' attitude towards the importance of the legislation, their willingness to pay for the enforcement of energy law, and the extent to which they are convinced the approach of the environmental office will achieve energy saving (Interview 3-10, 13, 14, 16, 18, 20). However, there are also municipalities that fully support the importance of the energy efficiency obligation, and are willing to invest in this (Interview 4, 12, 14, 18).

“Something interesting: the list with the percentage of companies that have complied to the information obligation shows that the municipalities that have the lowest compliance rate, are almost parallel with the richest municipalities in The Netherlands”

- Interview 20

When the environmental offices were formed throughout the Netherlands in 2012, environmental officers that previously worked on environmental law for municipalities, were transferred to environmental offices. This drained municipalities, especially the smaller ones, of expertise regarding environmental law and created a bigger distance between the jurisdictional authorities over environmental law, and the environmental offices enforcing it (Interview 3, 5, 6, 7, 8, 10, 13, 16).

“Back then [2012] all policy makers were transferred to environmental offices. But when the environmental office asks the municipality what policy they need to execute, we do not have the answer, because we do not employ those policy makers anymore”

- Interview 13

However, for municipalities that either did not fully transfer all their companies to environmental offices, or work closely together on the policy as well as implementation of this instrument, cooperation and implementation of this law progresses more smoothly (Interview 4, 10, 12, 18).

The legislation is taken up differently within each environmental office. First and foremost, environmental offices experience energy law enforcement to be very complex (Interview 4, 7, 9, 10, 12, 16). Some environmental offices integrate energy law enforcement within their regular environmental inspections. This generally causes challenges regarding the time an inspection can take, the knowledge of the inspectors and the willingness of inspectors to prioritise energy law within their environmental inspections (Adromi, 2020, Interview 2-4, 7, 9, 10, 16).

Other environmental offices regard energy law enforcement as additional work, which they will only do if they are funded with extra money. These environmental offices often have separate teams of policy advisors and inspectors that are focused on energy law only. For these teams, it seems to be easier to attract employees willing to perform energy law enforcement (Interview 5, 10, 12, 14, 16)

4.3 Community attributes

The attributes of the community the legislation is implemented in, also have its impact on the implementation, as well as the results in terms of achievement of policy goals. Regarding the community attitudes, three influential themes arose from the research: information regarding the target group, the implementing officials, and the development of the legislation over time.

Target group

19 branches have a different list of acknowledged measures that can be recouped within five years, that they should comply with (Interview 1). The structure of the organisations influences the way a company needs to be approached, the measures that apply, and the subsequent agreements that will be made with a company. It can hence be stated that the target group behavior is diverse (Interview 1). Additionally, companies that are larger or more technically oriented, often have more insight in the measures they need to take (Interview 9, 12, 20).

When the legislation came into force in 1993, attitudes towards the legislation were rather negative. However, this attitude has become more and more positive in the last few years (Interview 10, 12, 14, 19, 20). Currently, sustainability is a widely supported topic in the Netherlands, which makes

companies willing to conform to this legislation (Interview 1, 2, 9, 14, 20). However, insight in the requested behavior often lacks, due to complicated legislation (Interview 1, 4, 5, 7, 9, 10, 14, 16).

Some municipalities are weary of stringent energy law enforcement, as they fear this will hurt the companies in their jurisdictional area. They therefore request environmental offices to only stimulate companies to comply with environmental legislation, without handing out fines in cases of non-compliance (Interview 6-8, 13, 14, 16). Other governmental organisations are opposed to this, as they feel the time of stimulating and voluntary agreements has passed (Interview 4, 10, 15, 18, 20).

Within the environmental inspections, deadlines for the incorporation of the obligated measures are determined by mutual agreement between the inspector and the company, based on feasibility and what can be reasonably expected (Interview 1, 3, 10, 12, 14, SER, 2013). Inspectors indicate that companies are often more than willing to listen and improve, when they are alerted to their violation of the law, what they have to do to fix this, and the fact that fixing this violation will save them money. Inspectors see it as a challenge to achieve this change of attitude (Interview 1, 2, 3, 7, 9, 14, 16).

“I always say: energy law enforcement is our only product that actually sells. Because all the other aspects of environmental law cost a company money. This saves them money. And you see this insight slowly dawn. At first the attitude is: I have to work hard, I don't have time for leftist hobbies, but then they realize: wait, this can actually save me money!” - Interview 9

Implementing officials

The interviewed officials show intrinsic passion for the topic of sustainability (Interview 7, 8, 9, 20). The interviewees also indicate that it is difficult to find inspectors that are willing and motivated to perform the energy inspections, due to their complicatedness, and the fact that energy inspections often have to be performed ‘on the side’. Government officials indicate that they think ‘the government’ is not stringent enough towards companies about this legislation (Interview 8, 9).

“I think it is good that we are doing something, because the situation is dire, but I still think the government favours companies too much in a wide range of areas. The way the economy is still put first. This is not how we are going to make it.”
- Interview 8

Despite their intrinsic motivation, interviewed government officials generally state dissatisfaction with the progress that has been made in compliance of companies with the prescribed energy saving measures. A lot of energy offices have only just started with enforcement of the acknowledged measures lists, or haven't even started at all (Interview 4, 16, 18).

New and conflicting legislation

There is more energy legislation than only this legal obligation. These regulations for companies frequently overlap. However, complying with one regulation does not automatically mean a company complies with all. This creates a very complex field of regulations for companies. They often don't know what they should comply with (Interview 7, 8, 11, 14, Engie, 2018).

The environmental law in the Netherlands is set to be incorporated in a new piece of legislation, called the Environmental and Planning Act (EPA). Not all interviewees are aware how this will affect implementation of the energy legislation. Additionally, the changes this new law will pose to the execution of the energy legislation are not very clear to the governmental officials themselves yet, but are expected make law enforcement more complex (Interview 1, 4, 10, 14, 16, 17)

Other interviewees indicate the following changes. With the new environmental law a significant portion of the old law will be decentralised from the national to the municipal level. This means a reorganisation of the responsible authority of executing and implementing these measures (Interview 4, 6, 9-11, 14, 15, 19, 20). Additionally, the information obligation will not be fully transferred for the environmental regulations that will land in municipal law (Interview 10, 11, 15, 20).

Currently, the environmental law that regulates energy efficiency applies to the entirety of the Netherlands, with municipalities as jurisdictional authorities. This limits the influence the national government can have. Changing that would be a major task, and one that has not been demanded politically (Interview 15). The transfer of some responsibilities in the upcoming EPA to municipalities will only exacerbate the problem. There is not one interviewee that indicated this is a situation that is desirable. However, the new environmental law was initiated before 2013, when the increased attention for the energy legislation started. Energy law enforcement seems to have been forgotten again when the EPA was drawn up (Interview 4, 10, 15).

4.4 Policy Outcomes

In this subsection, the policy outcomes are elaborated upon. Connecting these to the policy goals, as well as the topics that impacted implementation, enable a picture from which the patterns of interaction can be derived. The policy has two main goals. The first one regards achieving compliance with the energy efficiency measures from all companies that have to comply with the legislation, the second one regards achieving compliance with the information obligation.

Energy efficiency measures

Outcomes in energy measures that are incorporated, are difficult to assess. TNO (2021) mentions that most environmental offices do not keep track of how many measures the companies have implemented, and how much energy saving this has generated. Network operators have insight into the amount of energy used. However, they are not allowed to share that information (Interview 15).

TNO (2021) researched the energy saving potential from these measures, if all researched sectors would take the applicable measures from their respective acknowledged measures list. They

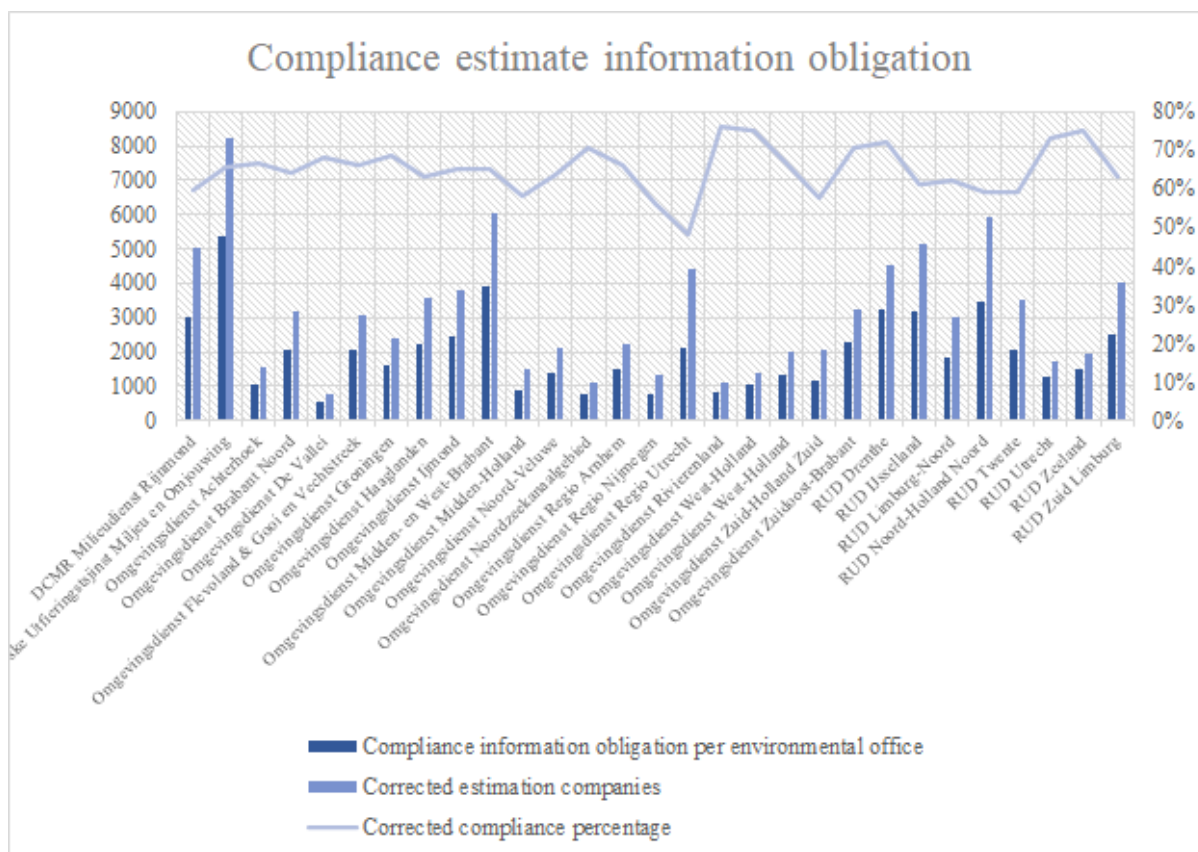
concluded the estimated saving potential in the services sector is 13-18 PetaJoule of gas, and 4-6 petajoule of electricity. In the industry, an estimated 1-5 PetaJoules of gas, and 1-4 PetaJoule electricity can be saved by means of this legislation. However, local governments have difficulties to translate these expected savings to the situation in their region, and to operationalize them into concrete targets (Interview 10).

The information obligation

Policy outcomes regarding the information obligation are easier to visualize, as this data is centrally available. The information obligation allows tracking the progress companies make, because companies are obliged to provide the progress information every four years. Since the obligation was enacted in 2019, no progress overview can be given yet. However, it does allow for an updated picture of the companies that have filled in their information obligation. An estimated 90.000 companies and institutions were obliged to comply with the information obligation. As of August 20th 2020, about 57.537 companies have provided the required information. This leaves an estimated 30.000 companies that needed to comply since 2019, but have not done yet. In the graph below the estimation of companies that need to oblige according to the corrected list from Statistics Netherlands per environmental office (Interview 11).

Figure 6

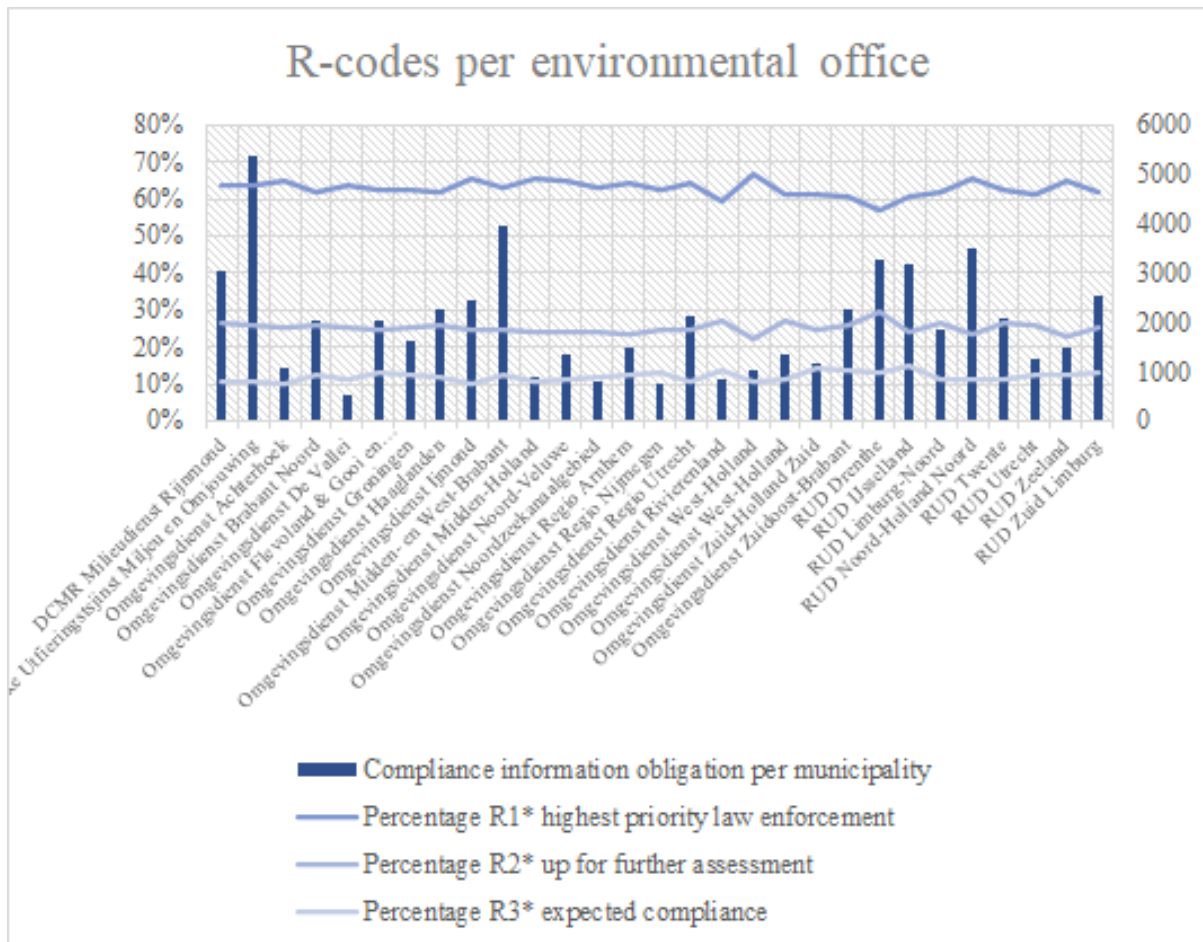
Compliance Estimate Information Obligation



The data was originally retrieved from Statistics Netherlands, and included type C companies. Therefore, the data has been corrected to only include the 90.000 type A and B companies.

Additionally, the information retrieved from companies is categorized in three R-codes. Companies in the category R1 are high priority. The companies in this category have not executed one or more obligatory measures, and therefore don't comply with the law. Companies in the R2 category need further assessment, and companies with the code R3 are expected to have complied with the legislation. However, as the companies fill in the information obligation themselves, the subsequent question is whether they filled in the information correctly (Interview 11, 16). In figure 3 below, the categories are visualized per environmental office.

Figure 7
R-codes per Environmental Office



The data was originally retrieved from Statistics Netherlands, and included type C companies. Therefore, the data has been corrected to only include the 90.000 type A and B companies.

4.5 Patterns of interaction

In this section, the information from the policy goal, physical and material conditions, community attributes and outcomes are used to derive ideas on how the implementation of energy efficiency regulations can be improved.

Operationalizing legislation

The energy efficiency obligation was an important instrument to achieve the goals set in the Energy Agreement. However, it appeared that almost nothing happened with the legislation since it came into force in 1993. When the Energy Agreement in 2013 demanded concrete energy saving, this kickstarted research into why the instrument had remained almost unused (Interview 10, 14, 15, 20). It showed that the legislation was so difficult, and thus expensive, to work with, that municipalities prioritized other policy areas (Interview 4, 7, 9, 10, 12, 16). However, while the energy efficiency obligation rested in oblivion, the EPA was drawn up and environmental offices were standardized throughout the Netherlands.

The problem with sustainability problems like energy, compared to other topics covered in Environmental law, is that it transcends jurisdictions. The energy saving goals are national goals, but are enforced on a local level. On the contrary, the consequences of failing to comply with environmental law on noise or safety regulations, among others, is the responsibility of the same municipality where the non-compliance takes place. The active involvement of the central government since the Energy Agreement was signed in 2015 has been vital to start working with this legislation on the different government levels. However, the Dutch law is decentralized, and set to become more decentralized with the EAP. Energy fundamentally does not fit that model. The structures that were created for the environmental offices and the new law, thus do not fit with the Energy efficiency obligation. Working around this is complex and time consuming.

This led to research into why it was difficult to realise outcomes for a law that had been installed 20 years before. The conclusion was: this legislation needs to be easy to work with. Since then, the acknowledged measures lists and information obligation have been added to the legislation. This furthered implementation and outcomes of the policy, towards achieving the policy goal. The energy legislation is still complex to work with. Inspections require in-depth expertise, but there are inspectors that have been executing these inspections for a while. They indicate the inspections are quite doable (Interview 1). An important take-away is thus to ensure that the legislation that is created can be enforced with the time and means available.

Cooperation between different levels of government

The Dutch environmental and governance legislation shape the energy saving regulation in such a way that it is national legislation, but municipalities have jurisdictional authority over them. This means municipalities are responsible for actually implementing the legislation. This creates a highly fragmented landscape. There are 355 municipalities that need to implement the legislation, aided by 29 environmental offices that are financially dependent on those municipalities.

A trend discovered in municipalities that are more involved with the energy inspections, either because they have chosen to invest additional money in the additional assignments, or because they did not transfer all companies that have to comply with this legislation to the environmental offices. Those municipalities feel more responsible for the implementation of the legislation, which has a positive effect on implementation as well as outcomes (Interview 2, 4, 10, 12).

All environmental offices interviewed structured their energy law enforcement in a different way, based on the specific context they operate in. A few central themes can be discovered. Only one environmental office reported that energy has been mentioned as one of the standard tasks that was transferred to them in 2013 (interview 4). The other environmental offices interviewed built their organisation and funding structure around the tasks that were important based on risk categories. Since a lot of companies that need to comply with the energy law are not high risk companies, this means a

lot of additional companies to regulate. This requires funding, and a change in the way they decide which companies need to be visited.

Some environmental offices ask their environmental inspectors to also perform energy related tasks. These environmental offices experience problems regarding a lack of time, education and interest in the topic with their employees. Environmental offices that organise energy law enforcement this way, seem to be at larger risk that energy law is not, or not fully enforced, as inspectors are not able to do so in the time that is available for environmental inspections, and because energy law enforcement is quite complicated. When environmental offices put together teams specifically for energy law enforcement, aforementioned problems are observed less. Subsequently, for the environmental officers that approached the function of energy inspector this way, it seems to be easier to fill positions. (Adromi, 2020; Interview 2-5, 7, 9, 10, 14, 16).

Technical theory and technology

Regarding the energy saving measures, implementation does not enable monitoring or tracking outputs. This is because energy officers generally don't use the data of the measures that companies have to take after inspections, nor when these measures are incorporated. Subsequently, there is not yet a common approach towards calculating the energy savings that are delivered because companies have incorporated the measures. This complicates the task for environmental offices requesting additional commission from municipalities, as they can not show concrete numbers and results, relating their efforts to the sustainability ambitions of municipalities (Interview 1, 5, 14; Adromi, 2020).

Funding and priorities

The omission to mention energy saving in the standard task package, enabled a disagreement between municipalities and environmental offices on whether energy law enforcement is already paid for as part of the standard task package, or that environmental offices should receive additional funding for energy law enforcement (Interview 7, 13, 14). This takes time, and environmental offices have indicated that their ability to start working with the legislation is largely due to the nationally distributed VUE subsidy, and provincial contributions.

This discussion is fueled by the worries of municipalities that environmental offices will be too stringent on environmental law, which will cause companies to relocate. The role that is expected from municipalities in this topic is thus a very delicate one. However, whether a stimulating or more stringent enforcing role is taken, deadlines for the incorporation of the obligated measures are always determined by mutual agreement between the inspector and the company, based on feasibility and what can be reasonably expected (Interview 1, 3, 10 12, 14; SER, 2013). Most companies can be helped by discussing with environmental inspectors what they need to do, and are eventually positive towards the

inspection (Interview 1, 2, 3, 7, 9, 14, 16). Fines in cases of non-compliance are rarely needed (Interview 1-10, 12-20).

Political pressure

The energy efficiency obligation has been part of Dutch environmental law since 1993. However, municipalities experienced a lot of difficulties determining which measures companies exactly needed to comply with. It was simply deemed not worth the effort, and seemingly more important issues got priority. However, when in 2013 the Energy Agreement was signed, the national government, amongst others, committed to concrete targets regarding energy saving, and thus had to invest time and effort into implementing the legislation. Since then, the national government added the energy saving measures lists and the information obligation to the law, which aided energy law enforcement.

A similar trend is witnessed for municipalities. When city councils request climate action and the energy transition, government officials can take concrete action on the energy transitions (Interview 10). This enables decision making regarding energy saving and its funding.

5. Conclusion

The research answers the following main research question: *How are the energy efficiency regulations implemented in The Netherlands, and what are the barriers and opportunities for improved implementation?* This question is answered by means of answering four subquestions.

The goal of the energy efficiency obligation in The Netherlands is that the required energy saving measures are implemented by all 90.000 companies the legislation is estimated to apply to. This contributes to the overarching goal of the legislation; using less energy. However, which companies the legislation exactly applies to, is not clear.

As shown in Figure 4, many governmental organisations are involved in the implementation of the law. As the legislation itself does not structure how the legislation should be implemented, it is merely structured by its integration in Dutch environmental law. As a result, the implementation and law enforcement are structured, implemented, prioritized and funded very differently by the numerous municipalities and environmental offices. When funding is lacking, energy law enforcement is often not performed.

Although the legislation was implemented in 1993, its complexity and lack of concrete ways to enforce it caused municipalities to prioritize other policy areas. This changed in 2013, when the Energy Agreement was signed. The energy agreement included concrete goals on energy saving, which put the energy efficiency obligation back on the administrative agenda, as a means to achieve these goals. Subsequently, the acknowledged measures lists and information obligation were added to the legislation, to enable more easy enforcement. Additionally, national subsidies were given to environmental offices as extra funding. Our findings show that the legislation that is drafted, needs to be easy to work with throughout the different government levels. Otherwise, other policy areas will be prioritized.

Only since the implementation of the information obligation in 2019, the national government has concrete means to assess the progress companies make taking the energy saving measures, and to stimulate municipalities and environmental offices to take action to implement this legislation. The information obligation also provided municipalities and environmental offices with an overview of the companies that needed to comply with the legislation. This aided environmental offices and municipalities with the overview and prioritisation of the companies that needed to comply.

When energy law is enforced, deadlines for the incorporation of the obligated measures are determined by mutual agreement between the inspector and the company, based on feasibility and what can be reasonably expected (Interview 1, 3, 10, 12, 14; SER, 2013). Inspectors provide additional insight into what the legislation entails, and how it benefits companies. This generally results in a positive attitude within companies (Interview 1, 2, 3, 7, 9, 14, 16). Fines in cases of non-compliance are rarely needed (Interview 1-10, 12-20).

There are two main barriers found for the implementation of this legislation. Firstly, the energy efficiency obligation is national legislation, but jurisdictional responsibility is placed on the local level. As shown in the results section, this generates a number of problems. Municipal budget, political orientation, and policy priorities determine whether the legislation is enforced, or not. Implementation of the legislation has been significantly furthered since the national government took a proactive role in operationalizing the legislation by creating acknowledged measures lists, and allocated funding towards the legislation.

Secondly, research finds a mismatch between the scale of the policy problem and the scale of the policy implementation, is more prevalent in sustainability problems. The policy goals are national goals, and thus exceed jurisdictional boundaries. The harm that is done by not taking these energy saving goals seriously, will show up delayed. For other aspects of environmental law, this is different. If a municipality experiences a noise problem, or a safety hazard regarding a company in their jurisdictional area, the problem and the solution come from the same governmental level.

A number of recommendations are done to improve policy implementation. It is advised that the influence of municipalities on implementing this legislation is reduced. Decreasing the influence of municipalities could be achieved by changing the funding arrangements for the implementation of this legislation.

However, the results also indicate that changing the level of authority might not be a possibility. There are possibilities to improve the implementation of the legislation without changing the jurisdictional level of authority. Considering future developments regarding the EPA, these might be the only options available.

When the EPA is implemented, the decentralized approach to environmental legislation is enlarged. Municipalities get a bigger responsibility on which parts of the energy efficiency obligation they want to incorporate, and how they want to do so. Since expertise on environmental law enforcement is transferred to environmental offices, environmental offices and municipalities will have to work closer together in order to implement this law.

An interesting pattern was discovered with the environmental offices and municipalities that already work closely together. This seems to build a shared sense of responsibility and involvement to put this legislation into practice. This could provide an opportunity in the light of the new environmental law, where part of the energy saving legislation will be placed on the municipal level. This requires municipalities to take responsibility for this law, and could thus stimulate a more close cooperation with environmental offices. In order for this to be a viable solution however, municipalities need to attract expertise to work on this legislation.

Security about structural funding for energy law enforcement has enabled some environmental offices to create project teams of policy officials, project managers, and inspectors. This specialization has helped them tackle the complexity of the legislation, enabled more thorough energy inspections, and enabled knowledge to build. Environmental offices that view energy law enforcement as part of the

regular job, experience more problems in those areas. Therefore, this specialized approach is recommended to further implementation.

6. Discussion

The results of this research show that even when sustainability ambitions are enshrined in the law, this does not mean compliance, or the achievement of the sustainability goals. In the end, the achievement of policy instrument goals is heavily influenced by the technical theory, organisational structure, funding, and feasibility of legislation enforcement. Additionally, in this particular case, even when sustainability ambitions are defined on a national level, this political pressure does not guarantee results. When the political climate on a local level is adverse to investing in sustainability, achieving the legislation's goals is difficult. This shows in a very concrete way how multiple government levels impact the legislation implementation. This impact of the multiple governance levels is something that the framework captured.

The framework that was used in this research is a combination of the IAD for policy evaluation, which allows to elaborate on the relevant variables of the policy situation, and the framework of Sabatier and Mazmanian. This resulted in an evaluative framework, combined with key variables for the implementation of legislation. This gives a broad overview of the policy context and all relevant variables. This could serve as a foundation for future research, focussing more on individual indicators.

The framework aimed to analyze the implementation of this legislation over a period of time of 28 years. However, the temporal component of the changes this legislation has undergone, and how this has impacted results, was difficult to visualize using the current framework. In further research, focusing on these influencing variables could shed more light on successful implementation.

By conducting many interviews with environmental offices, we got a clear picture of the differences in the organisation and execution of energy law enforcement between the offices. At the same time, this made it difficult to recognize patterns of interaction in the way the legislation was implemented. We cannot rule out that this had an impact on the reliability of the findings.

The results of the research touch upon the complexity of the legal landscape and the introduction of the EPA. Moreover, the interviewees indicate that there will be more changes in the legal landscape. A recent example is the replacement of the Energy Agreement by the Climate Agreement. The latter focuses more on CO₂ reduction, rather than energy efficiency. The consequences this has for the energy efficiency obligation fell outside of the scope of current research, but are very interesting to elaborate upon in future research.

The findings of this study describe the main factors affecting the implementation of a piece of sustainability legislation that has been around for a long time. The framework composed to discover these factors constitutes a first attempt to evaluate the implementation of sustainability legislation. On top of that, recommendations for improved policy implementation regarding the Dutch energy efficiency obligation were given. In a future where the sustainability topic becomes an issue of life and death, concerning us all, this study aimed to give concrete steps towards putting the ambitions into practice, giving hope that it will be okay.

7. Literature

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INFORMED CONSENT FORM for participation in:

Energy Saving Regulations in The Netherlands: Can their
implementation be improved?

To be completed by the participant:

I confirm that:

- I am satisfied with the received information about the research;
- I have been given opportunity to ask questions about the research and that any questions that have been risen

have been answered satisfactorily;
- I had the opportunity to think carefully about participating in the study;
- I will give an honest answer to the questions asked.

I agree that:

- the data to be collected will be obtained and stored for scientific purposes; the collected, completely anonymous, research data can be shared and re-used by scientists to answer other

research questions;
- video and/or audio recordings may also be used for scientific purposes.

I understand that:

- I have the right to withdraw my consent to use the data;
- I have the right to see the research report afterwards.

Name of participant : _____

Signature: _____ Date,
place: ___ / ___ / ___, _____

To be completed by the investigator:

I declare that I have explained the above mentioned participant what participation means and the reasons for data collection.

I guarantee the privacy of the data.

Name:

Date: ___ / ___ / ____ (dd/mm/yyyy)

Signature:

Activiteitenbesluit milieubeheer

Geldend van 01-07-2021 t/m heden

Artikel 2.14c

Deze afdeling is van toepassing op degene die een inrichting type A of een inrichting type B drijft.

Activiteitenbesluit milieubeheer

Geldend van 01-07-2021 t/m heden

Artikel 2.15

1. Degene die de inrichting drijft neemt alle energiebesparende maatregelen met een terugverdientijd van vijf jaar of minder.
2. Degene die de inrichting drijft rapporteert uiterlijk op 1 juli 2019 en daarna eenmaal per vier jaar aan het bevoegd gezag welke energiebesparende maatregelen zijn getroffen.
3. Indien andere maatregelen zijn uitgevoerd dan de maatregelen die bij ministeriële regeling zijn aangewezen, voor zover deze op de inrichting van toepassing zijn, worden deze maatregelen in de rapportage omschreven.
4. Het bevoegd gezag kan bij maatwerkvoorschrift een gefaseerde uitvoering van de verplichting, bedoeld in het eerste lid, toestaan waarbij rekening wordt gehouden met de bedrijfseconomische omstandigheden van de inrichting. Hierbij stelt het bevoegd gezag per maatregel een redelijke termijn vast waarbinnen die maatregel moet zijn uitgevoerd.
5. Indien aannemelijk is dat niet wordt voldaan aan het eerste lid, kan het bevoegd gezag degene die de inrichting drijft waarvan het energieverbruik in enig kalenderjaar groter is dan 200.000 kilowatt uur aan elektriciteit of groter is dan 75.000 kubieke meter aardgasequivalenten aan brandstoffen, verplichten om binnen een door het bevoegd gezag te bepalen termijn, onderzoek te verrichten of te laten verrichten waaruit blijkt of aan het eerste lid wordt voldaan.
6. Indien uit het onderzoek, bedoeld in het vijfde lid, blijkt dat niet wordt voldaan aan het eerste lid, neemt degene die de inrichting drijft de in het eerste lid bedoelde maatregelen binnen een door het bevoegd gezag te bepalen redelijke termijn.
7. Het eerste en tweede lid zijn niet van toepassing indien het energiegebruik in de inrichting in enig kalenderjaar kleiner is dan 50.000 kilowatt uur aan elektriciteit en kleiner is dan 25.000 kubieke meter aardgasequivalenten aan brandstoffen.

8. Het eerste en tweede lid zijn niet van toepassing op een inrichting waarop de verboden, bedoeld in artikel 16.5 van de wet, betrekking hebben en op een inrichting als bedoeld in artikel 15.51, eerste lid, van de wet.
9. Het tweede lid is niet van toepassing op degene die de inrichting drijft die is toegetreden tot de meerjarenafspraak energie-efficiëntie.
10. In afwijking van het tweede lid rapporteert degene die een inrichting drijft, die op 1 januari 2019 nog niet was opgericht, voor de eerste maal uiterlijk een jaar na oprichting van de inrichting.
11. In afwijking van het tweede lid rapporteert degene die een inrichting drijft, die onderdeel uitmaakt van een onderneming die geen kleine of middelgrote onderneming is, als bedoeld in artikel 8, vierde lid, van de richtlijn energie-efficiëntie, voor de eerste maal uiterlijk op 5 december 2019.

As adopted from the Dutch environmental law, Activiteitenbesluit Wet Milieubeheer. Art. 2.14c and 2.15 (2021).

Appendix C - Indicators Sabatier and Mazmanian (1980)

Category	Variable	Explanation
Tractability of the problem	Availability of valid technical theory and technology	Regards difficulties in measuring changes in the seriousness of the problem, relating changes back to modifications in behavior, and to the development of technology that enables target groups to institute changes.
	Diversity of target group behavior	Diverse behavior is more difficult to regulate by means of clear regulations, which lessens the likeliness that objectives will be achieved.
	Target group as a percentage of the population	If the target group is a smaller percentage of the population, political support will be more easy to generate, which makes the objectives easier to achieve.
	Extent of behavioral change required	The amount of behavioral change required to achieve objectives is determined by the number of people in the target groups and the amount of change required of them. The expectation is that the more change is needed, the harder it is to achieve the goals.
Ability of instrument to structure implementation	Incorporation of adequate causal theory	A statute implies an underlying causal theory. This theory consists of two parts. Firstly the technical validity, which refers to the relationship between the behavior of the target group and the achievement of the objectives. The second is implementation effectiveness, referring to the ability of institutions to produce the behavior change in the target groups.
	Unambiguous policy directives	Policy objectives need to be precise and clear to enable effective implementation
	Financial resources	Money is needed to hire staff and conduct the technical analyses involved in the development of regulations, the administration of programs, and in monitoring compliance
	Hierarchical integration among and within implementing institutions	This regards the extent to which the statute hierarchically integrates the implementing agencies. If the system is only loosely integrated, the degree of behavioral compliance among implementing officials and target groups will vary—as each responds to the incentive for modification within his/her local setting.
	Decision rules of implementing agencies	A statute can bias the implementation process by stipulating the formal decision rules of the implementing agencies. To the extent, for example, that the burden of proof in permit/licensing cases is placed on the applicant and agency officials are required to make findings fully consistent with statutory objectives, the decisions of implementing agencies are more likely to be consistent with statutory objectives.
	Recruitment of implementing official	In order to achieve objectives which seek to modify target group behavior, the implementing agencies need to be committed to the achievement of those objectives.
	Formal access by outsider	Statutes that provide liberal rules of standing for citizen participation in proceedings and as petitioners in judicial review, are more likely to have their objectives attained.

Non-statutory variables affecting implementation	Socio-economic conditions and technology	There are four ways in which variation of conditions over time and among settings can affect the political support for objectives. Variation in socio-economic conditions affects perceptions of the importance of the problem addressed. Successful implementation is additionally rendered more difficult by local variation in socioeconomic conditions. Support for environmental regulations seems to be correlated with the economic viability of target groups and their importance in the total economy. Finally, in the case of policies directly tied to technology, changes or lack of changes in the technological state of the art is crucial.
	Media attention to the problem	Mass media are important in the implementation process because they intervene between changes in socio-economic conditions and perceptions of those changes by the general public. Additionally, most television stations and newspapers tend to play an issue to the hilt and then go on to something else. This is an obstacle to gain political support from the beneficiaries of environmental protection programs.
	Public support	The general public can influence the implementation process in three ways: 1) Public opinion affects the political agenda. 2) Legislators are influenced by their constituents important to them, particularly when opinion within the district is homogenous. 3) Finally, public opinion polls are often employed by administrators and sovereigns to support particular policy positions.
	Attitudes and resources of constituency groups	Membership and financial resources of constituency groups are likely to vary with public support for their position and with the amount of behavioral change mandated by statutory objectives. Constituency groups can also intervene in the decisions of the implementing agencies. Such groups have the capacity to affect agency policy indirectly through voicing their opinions.
	Support from sovereigns	Sovereigns have the authority to alter and /or undermine the legal and financial resources of implementing agencies. In short, the very interrelatedness of policy areas in any complex society enormously increases the monitoring responsibility of the protectors of a statute and the probability that the statute will be undermined through subsequent tangential legislation.
	Commitment and leadership skills of implementing officials	The commitment of agency officials to the realization of statutory objectives comprises the direction and ranking of the statutory objectives in officials' preference orderings, and, their skill in realizing those preferences.

Appendix D - Tables Results Theoretical Framework

Policy objective

In this step, the policy goal and policy outcomes are assessed by means of two merged questions in the table below. These questions do not contain indicators on implementation, but are merely discussed to provide context on the policy instrument, its context and its outcomes.

Merged Questions	Results
1. What is happening in the policy arena?	<ul style="list-style-type: none"> - Since 1993 an energy efficiency obligation was incorporated in the Dutch Environmental law (Adromi 2020; stand van zaken energiebesparingsplicht, Over de wet milieubeheer) - Since 2008, this was further defined (Over de wet Milieubeheer). Compliance was required from a major part of the businesses with a yearly energy use exceeding 50.000 Kwh in electricity and/or 25.000 M³ gas. These are obliged to take all energy saving measures that can be recouped within five years (RVO activiteitenbesluit gebouwen Rijksdienst, Webpagina infomil activiteitenbesluit en energiebesparing; Adromi, 2020). - Since 2013, acknowledged measures lists have been added to the legislation, in order to specify what exactly this energy efficiency obligation contains. These lists are specified per branche and contain measures that can be recouped within five years. They are agreed upon by the governmental institutions and branche organisations from the specific branche it applies to (Interview 20; Adromi, 2020; RVO Informatieplicht energiebesparing; Engie, 2018) - The energy agreement (2013) includes concrete goals on energy saving. These goals, as well as the fact that the energy agreement was signed by 47 important actors in The Netherlands, provided the political pressure needed to work seriously on implementing the energy efficiency obligation.
2 .What are the policy objectives?	<ul style="list-style-type: none"> - The overarching aim of this legislation is energy saving and contributing to CO2 reduction (Interview 1, Energiebesparende maatregelen, Informatieplicht energieverbruik) - The second main objective is called the information obligation. It requires all businesses and institutions that have to comply with the energy efficiency obligation to report to the Dutch Enterprise Agency (RVO) which energy saving measures they took. They are obliged to do so every four years (Interview 20, Adromi, 2020; Aandachtspunten bij een milieucontrole)
3.Which policy objective is most important?	<ul style="list-style-type: none"> - The energy efficiency obligation was no major item on the administrative agenda for the first 20 years the legislation existed (Interview 12, interview 14, Adromi, 2020) - The information obligation is used as a means to acquire insight into which companies have the most energy saving potential, and should be inspected. Thus, most environmental offices currently prioritize the enforcement of the information obligation, before working on the enforcement of the energy saving measures (Interview 15; TNO, 2021).

Physical and material conditions

In this step, the physical and material conditions affecting the policy context are assessed, as well as the implementation of the policy instrument. Outcomes are assessed by means of five merged questions, shown in the table below. The questions that are not followed up by an indicator on implementation are used to provide context regarding the physical and material conditions.

Implementation indicator	Result

<p>7. How is the hierarchical integration among and within implementing institutions arranged (indicator 8)</p>	<ul style="list-style-type: none"> - The energy saving legislation applies to companies within the Netherlands. - 355 Municipalities have jurisdictional authority over the legislations and are responsible for the enforcement of the legislation. - 29 environmental offices were installed to execute environmental law enforcement throughout the Netherlands in 2012. - Municipalities and provinces commission environmental offices for their work in environmental law via a standard task package. Although energy law is applicable to the companies mentioned in this standard task package, enforcement of energy law itself is not mentioned in this standard task package. This results in a discussion between municipalities and environmental offices on additional payment. (Interview 1, Interview 14, Interview 7). - The legislation itself does not provide directions for implementation, or appoint parties responsible for implementation or enforcement. The legislation is merely structured by its integration in Dutch governance law (Interview 14).
<p>8. Are technical theory and technologies valid and available (Indicator 1)</p>	<ul style="list-style-type: none"> - Interviewees indicate no additional technology is needed for law enforcement (Interview 1) - Law is currently enforced by means of calls, letters, and visits where the companies are checked for their compliance. These checks are done by means of analog checklists, and subsequently registered in the digital systems the environmental office or municipality uses (Interview 1, Interview 14, Interview 5) - From these systems, information on the measures that are taken, can be retrieved from the letters that are sent to the companies. However, data on the amount of energy saved, or the amount of measures a company has taken is not registered (Onderzoeksrapport Adromi) - Environmental offices state the administrative process of approaching the right people within the right companies, those that actually need to comply, has so far taken most of the time available for the enforcement of this legislation. This is because environmental offices often do not have the oversight of which companies in their jurisdictional area need to comply to this legislation (Interview 5, Interview 20) - The information obligation has aided this process, as it provides nationwide data on energy behaviors of companies that environmental offices use to create insight in the task at hand (Interview 11, Interview 4, Interview 20).
<p>9. Is there variation in socio-economic conditions and technology over time and setting by means of 1) changes in technological state of the art 2) local variation in socio-economic conditions, 3) perceptions of the importance of the problem or 4) support regarding the economic viability and importance of target groups to the economy. (indicator 12)</p>	<p>Changes in technology</p> <ul style="list-style-type: none"> -Two interviewees indicated that they use a different, innovative system to enable the inspections, making use of digital possibilities to track actual saved energy. However, use of this system is dependent on companies' willingness to share their energy data, which they are not obliged to do (Interview 7, Interview 18) -Additionally, the information obligation has to be filled in via an e-loket from 2019. The data that is generated this way is accessible for environmental offices and the ministry of EZK and enables insight into which companies have to comply with the legislation, and the extent to which they do (Interview11) <p>Local variation socio-economic conditions</p> <ul style="list-style-type: none"> -Municipalities are responsible for the structural funding to implement this legislation. However, smaller municipalities, or municipalities that are more conservative in their climate policy, are less willing or able to do so (Interview 4, Interview 5, Interview 10, Interview 13, Interview 14, Interview 18, Interview 20, Interview 9) -The municipalities that have the lowest response rate to the information obligation, are almost completely the same as the richest municipalities in the Netherlands (Interview 20). <p>Perceptions importance of the problem</p> <ul style="list-style-type: none"> - When the environmental offices were formed throughout the Netherlands in 2012, environmental officers that previously worked on environmental law for municipalities, were

	<p>transferred to environmental offices. This drained municipalities, especially the smaller ones, from expertise regarding environmental law and created a bigger distance between the jurisdictional authorities over environmental law, and the environmental offices working with it (Interview 10, Interview 7)</p> <ul style="list-style-type: none"> - Environmental offices often experience difficulties convincing municipalities from a) the importance of this law, and b) the viability of the solutions they offer. This seems to be particularly true for municipalities that transferred all their expertise on environmental law to environmental offices, or environmental offices and municipalities that have a very clear separation of tasks, in the way that the municipality is the policy department, and the environmental office is expected to only work on executive tasks. - However, for municipalities that either did not fully transfer all their companies to environmental offices, or work closely together on the policy as well as implementation of this instrument, a trend is witnessed. Cooperation and implementation of this law progresses more in those municipalities. It seems those municipalities that did not transfer all of the work, feel more responsible for the implementation of the legislation, and are therefore more willing to invest in it (Interview 10, . <p>support economic viability and economic importance target groups</p> <ul style="list-style-type: none"> - Some municipalities are weary of stringent energy law enforcement, as they fear this will hurt the companies in their jurisdictional area (Interview 13, Interview 6, Interview 7) - Within the environmental inspections, deadlines for the incorporation of the obliged measures, are determined on mutual agreement from the inspector as well as the company, based on feasibility and what can be reasonably expected (Interview 12, Interview 14, SER, 2013)
<p>10. What physical and human resources are required to provide and produce implementation?</p>	<ul style="list-style-type: none"> - It will take environmental offices 4-6 years to approach all companies to fill in their information obligation (TNO, 2021). - To actually perform an inspection for all companies that have to oblige to the legislation, would take 15-20 years, with the current visitation rate and human resources available. - Taking into account changes in business processes, changes in the specific applicable measures, and technical developments regarding energy efficiency, this is too little to ensure compliance. - Adromi (2020) researched for two environmental offices that one or two FTE extra would provide environmental offices the ability to provide an energy inspection for all relevant companies once every five years.
<p>11. What is the scale and scope of provision activity?</p>	<p>The energy efficiency obligation covers an estimated 90.000 companies that have to comply, throughout the Netherlands (TNO, 2021)</p>
<p>12. Are the financial resources needed for the implementation available? (indicator 7)</p>	<ul style="list-style-type: none"> - The structural funding of environmental offices is provided by municipalities and provinces. This funding is commission-based. A standard task package has been drafted (Interview 1, Interview 10) - Energy law enforcement is not mentioned in the standard task package, but does cover companies that have been transferred to environmental offices. Some interviewees indicate the subject of energy has been forgotten when drawing up the standard task package of environmental offices (Interview 2, Adromi 2020; Interview 7) - Enforcement of energy law would mean a significant increase of companies that need to be inspected, as there are a significant number of companies that consume enough energy to comply with this regulation, but have a low-risk profile, like offices, schools, and sports associations (Interview 20, Onderzoeksrapport Adromi, Interview 7, - Some municipalities pay additional money to environmental offices to perform energy related law enforcement (Evaluatie OD Ijsseland, Interview 1, Interview 10, Interview 12, Interview

	<p>14. However, a lot of municipalities are also not willing to do so, or can only contribute a little bit (Interview 7, Interview 10, Interview 12, Interview 13, Interview 14, Interview 2).</p> <p>-Additional, non-structural funding has been provided by means of subsidies, for example the VUE (TNO, 2021, Interview 10, Interview 15, Interview 18). This has helped to build knowledge and start with energy inspections (Interview 12, Interview 14, Interview 16, Interview 2). However, it is experienced to be difficult to build structural enforcement with temporary money (Interview 12, Interview 16, Interview 19).</p> <p>- Environmental offices state they would prefer it if the subsidy money from for example the VUE, would be transferred directly to the environmental offices, instead of only being available for external expertise they can make use of. However, a legal way to do this has so far not been found (Interview 15)</p> <p>-If municipalities are not willing or able to pay extra money for energy law enforcement, this results in energy law not being enforced (Interview 2) .</p>
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Community attributes

In this section, firstly a number of descriptives that have been found important by Sabatier and Mazmanian are covered. These are noted in the table below. All questions are related to indicators, so no contextual section is provided.

Indicators implementation

Indicator	Result
12.Is the target group behavior diverse? (Indicator 2)	<ul style="list-style-type: none"> - 19 branches have a different list of acknowledged measures that can be recouped within five years, they should comply with (Interview 1, Interview 17,). - The structure of the organisations influences the way a company needs to be approached, the measures that apply, and the subsequent agreements that will be made with a company. It can hence be stated that the target group behavior is diverse (Interview 1, Interview 17, Interview 20, Interview 5, Interview 9) . - Additionally, companies that are larger, more technically oriented, or have more enthusiasm for the topic of energy saving, often have more insight in the measures they need to take (Interview 3, Interview 12 Interview 9).
13.What is the percentage of the target group compared to the population (Indicator 3)	<ul style="list-style-type: none"> - An estimated 90.000 companies need to comply with the legislation, of the category type A and B. - Currently, environmental inspections focus on category B and C companies. - The population of companies up for inspection therefore increases by means of this legislation.
14.Is the behavior change required extensive? (Indicator 4)	<ul style="list-style-type: none"> - Sustainability is a widely supported topic in the Netherlands, which makes companies willing to conform to this legislation. This positive attitude of companies has been developing since the implementation of the legislation, when companies attitudes towards the legislation was actually quite negative (Interview 1, Interview 10, Interview 19, Interview 4, Interview 9) - Insight in the requested behavior often lacks, due to complicated legislation, and the fact that entrepreneurs' main focus is doing business (Interview 12, Interview 7). -Inspectors indicate that companies are often more than willing to listen and improve, when they are attended to their violation of the law, what they have to do to fix this, and the fact that fixing this violation will save them money (Interview 12, Interview 14, Interview 4, Interview 9)

<p>15. Are the officials assigned to the implementation committed to do so? (Indicator 17)</p>	<ul style="list-style-type: none"> - The interviewed officials show intrinsic passion for the topic of sustainability (Interview 12, Interview 20, Interview 6, Interview 7, Interview 8, Interview 9) - The interviewees also indicate that it is difficult to find inspectors that are willing and motivated to perform the energy inspections, due to their complicatedness, and the fact that energy inspections often have to be performed 'on the side'. - Government officials indicate that they think 'the government' is not stringent enough about this legislation towards companies (Interview 7).
<p>16. Do the sovereigns continuously support implementation? (Indicator 16)</p> <p>- Via amount and direction of oversight</p> <p>- By implementing new and conflicting legislation</p>	<ul style="list-style-type: none"> - Enforcement of energy law was so complex that a lot of municipalities decided to prioritise other policy areas. This led to energy being forgotten as an important task when the environmental offices were founded (Interview 2, 7; Adromi 2020). - The way energy law is enforced, varies majorly locally. Enforcement depends on municipalities' attitude towards the importance of the legislation, their willingness to pay for the enforcement of energy law, and the way environmental offices are structured, and structure their energy law enforcement (Interview 1, Interview 10, Interview 12, Interview 13, Interview 14, Interview 16, Interview 18) <p>Two general approaches are discovered:</p> <ul style="list-style-type: none"> - Some environmental offices integrate energy law enforcement within their regular environmental inspections. This generally causes challenges regarding the time an inspection can take, the knowledge of the inspectors and the willingness of inspectors to prioritise energy law within their environmental inspections (Adromi, 2020; Interview 16, Interview 2) . Interviews indicate that environmental offices that organise energy law enforcement this way, are at larger risk that energy law is not, or not fully enforced, as inspectors are not able to do so in the time that is available for environmental inspections, and because energy law enforcement is quite complicated. - Other environmental offices regard energy law enforcement as additional work, which they will only do if they are funded with extra money. These environmental offices often have separate teams of policy advisors and inspectors that are focused on energy law only. In these teams, difficulty finding human resources is not mentioned as a concern (Interview 10, Interview 12, Interview 14) - The national government supported legislation implementation on a local scale by organising meetings to share and acquire knowledge, and by means of the VUE subsidy, adding the information obligation to the law, and clarifying and concretizing the energy saving measures by drafting and updating the acknowledged measures lists (Interview 15, Interview 20) <ul style="list-style-type: none"> - There is more energy legislation than only this legislation in the environmental law. These regulations overlap for companies. However, complying with one does not automatically mean a company complies with all regulations. This creates a very complex field of regulations for companies (Interview 11). - The environmental law in the Netherlands is set to be incorporated in a new piece of legislation that regards surroundings in the broader sense of the word. - Not all interviewees are aware how this will affect implementation of the energy legislation. Additionally, the changes this new law will pose to the execution of the energy legislation are not yet very clear, and will make law enforcement more complex (Interview 1, Interview 10, Interview 14, Interview 16, Interview 17) <p>However, other interviewees indicate the following changes.</p> <ul style="list-style-type: none"> - With the new environmental law a significant portion of the old environmental law will be decentralised from the level of national law, to municipal law. This means a reorganisation of the responsible authority of executing and implementing these measures (Interview 11, Interview 14, Interview 15, Interview 19, Interview 20) - Additionally, for the environmental law that will be municipal law, the information obligation will not be transferred (Interview 20)

	The Energy Agreement ended in 2020. From then on, the Climate Agreement is used. However, the Climate agreement does not focus on energy saving, but on CO2 saving. This also has consequences for the priority and implementation of the energy saving measures. What these consequences are, is not yet fully known (Interview 15).
18. Are the officials needed for implementation recruited? (Indicator 10)	<ul style="list-style-type: none"> - Several interviewees indicate the workload of thoroughly implementing the energy law enforcement exceeds their current human resources. - Interviewees indicate recruiting additional officials is favored, but dependent on whether funds are available - Environmental offices that incorporate energy law enforcement within their general environmental law enforcement indicate more often that they experience difficulties finding people for the vacancies than environmental offices that treat energy law enforcement as a separate task.
19. Is the general public supportive of the legislation? (indicator 14)	<p>Interviewees indicate that the topic of sustainability has gotten additional media attention over the past decade. However, not all interviewees recall a lot of media attention regarding this particular piece of energy related legislation.</p> <ul style="list-style-type: none"> - not a lot of info
20. What are the attitudes and resources of constituency groups? (Indicator 15)	<ul style="list-style-type: none"> - The national government funded branche organisations to inform the companies in their branche about the acknowledged measures (Interview 20, Interview X). - Additionally, a number of umbrella organisations, like VNO-NCW, the umbrella organisation of Dutch municipalities, have been involved with the process of this legislation (Vragen Tweede Kamer)

Rules-in-use and integration

In this paragraph, the rules-in-use are assessed. Additionally, two indicators on implementation are assessed. This leads to an integration and conclusion. The rules are focused on the governmental organisations implementing the legislation.

Contextual information

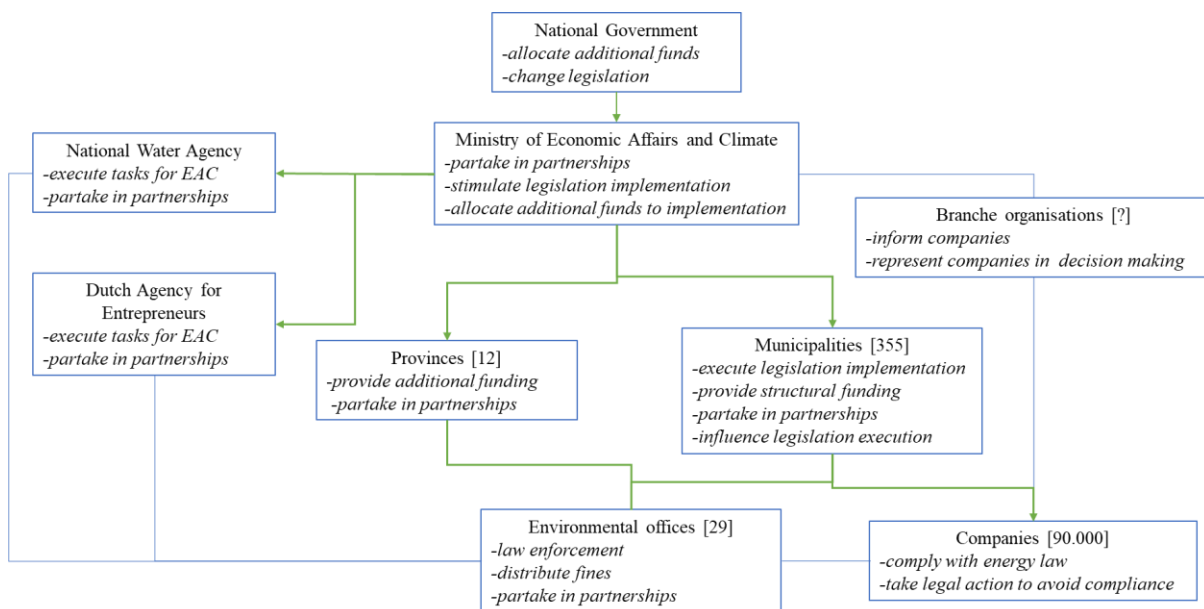
Merged Questions step 4	Result
21. Position rules what are the set of positions or roles that participants assume in an action situation, and the number and type of participants who hold each position?	<ul style="list-style-type: none"> - The positions actors may hold in this situation are depicted in the visualisation beneath. - Regarding the national government as well as municipalities, the boxes mark the governance and political processes that lead to decisions on the energy law and its implementation.
22. Boundary rules what are the exit and entry rules, specifying which participants enter or leave positions and how they do so? 23. Does the legislation enable formal access by outsiders? (Indicator 11)	<ul style="list-style-type: none"> - In 2012, structural changes in the organisations responsible for the enforcement of environmental law caused expertise from municipalities to transfer to environmental offices. This makes the governmental reorganisations a boundary rule.

	<ul style="list-style-type: none"> -Subsequently, funding is a boundary rule, as it determines whether employees can be hired to work on the implementation of the energy law. -When funding is not available, positions might not be filled, or officials might be laid off, or given other tasks.
<p>24.Authority rules what are the actions participants in given positions may take?</p>	<ul style="list-style-type: none"> - The actions visualized in cursive in the figure may be taken by the participants in the different positions. - In its core, participants can either not act upon the implementation of the legislation, or act in line with the implementation of the legislation.
<p>25.Aggregation rules how are decisions made in an action situation? Are the decision rules of implementing agencies supportive of the objectives? (Indicator 9)</p>	<ul style="list-style-type: none"> -Political choices and the political agenda determine the decisions made in the action arena on a local and national level. -However, it is indicated that particularly for smaller municipalities, these aggregation rules are less stable compared to bigger municipalities.
<p>26.Scope rules what is the jurisdiction of outcomes that can be affected and are these outcomes final or not final?</p>	<ul style="list-style-type: none"> -The environmental law that regulated energy saving applies to the entirety of the Netherlands, with municipalities as jurisdictional authorities. Under the new environmental law, part of the legislation is transferred to the municipal level. - The implementation of the law depends on the priority that is given to it by governmental organisations, and the willingness to enforce the legislation - The enforcement of the energy obligation is executed by governmental officials, who determine the moment the measures need to be taken in agreement with the companies. Eventually, in cases of non-compliance, this can be followed up by fines. The interviewees could not recollect a case in which that has happened.
<p>27.Information rules what affects the amount and type of information available to participants in an action arena? 28.Is there consistent and influential media attention to the problem? (Indicator 13)</p>	<ul style="list-style-type: none"> -Information on this legislation is mainly provided by the government, but external bureaus offer their services into making clear what the legislation exactly entails and how compliance can be arranged as well. - Governmental information is mainly spread by means of websites - The branche organisations were funded by the government to inform their branche about the measures that they should take. . - A significant number of companies in the target group only become aware of the exact requirements after a government official visits them for energy advice, or an energy inspection.
<p>29.Pay-off rules how are costs and benefits meted-out in the action arena?</p>	<ul style="list-style-type: none"> - Costs for implementing the energy saving measures are for the companies that implement them. However, the acknowledged measures can be recouped within five years. - However, in order to realise compliance, the government needs to make significant investments to guide and inform companies as to what they are exactly required to do, and to enforce this law. - The national government provides non-structural funding in the form of subsidies, specifically the VUE subsidy.

	<ul style="list-style-type: none"> - Structural contributions to the implementation of the legislation are expected to come from municipalities. - The structural contributions municipalities make for environmental law enforcement are captured in the agreements of the standard task package. However, in this agreement, energy law enforcement is not specifically mentioned. This enables a disagreement between municipalities and environmental offices on whether energy law enforcement is already paid for by means of the funding of the standard task package, or whether environmental offices should receive additional funding for energy law enforcement.
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Figure 5

Visualisation of Positions with Relations



The relation between positions based on financial dependency is indicated with a green arrow. The relation between positions that have authority over another position is indicated with a black striped line. Regarding the national government as well as municipalities, the boxes mark the governance and political processes that lead to decisions on the energy law and its implementation.

Indicators Implementation

Indicators rules-in-use	Information
Are the decision rules of implementing agencies supportive of the objectives? (Indicator 9)	- The acknowledged measures lists that were drafted, aid implementing organisations by providing a list that has been agreed upon by branche organisations. The measures on those lists are

	acknowledged to be recouped within five years. If a company does not want to implement those measures, they will have to clarify as to why they are not willing to implement these measures, or want to implement another measure.
28. Is there consistent and influential media attention to the problem? (Indicator 13)	- Literature does not indicate consistent media attention to this problem.

Policy Outcomes

Merged Questions	
4. Which outcomes are satisfactory and which not?	<p>- Interviewees and reports show dissatisfaction with the progress that has been made regarding the legislation and its implementation (Interview 12, Interview 17, Interview 7) .</p> <p>- Of the references that are found regarding this topic, only two positive remarks are made, and those regard the progress that has been made regarding the information obligation (Interview 20, Interview 2)</p> <p>- Interviewees state that getting the last 30.000 companies to oblige is most difficult, as these companies are often not on the radar nor visitation schedule of environmental offices. Subsequently, specifically these companies are estimated to have a high energy saving potential (Interview 20)</p>
5. Which outcomes are most important?	<p>- The information obligation is most useful to track company progress, as companies are obliged to fill in their energy obligation forms every four years.</p> <p>- The data that has become available from the VUE trajectory may be good data to assess where money is spent in order to implement this legislation, and how much, but it does not give any insight into actual energy saving.</p> <p>- As such, the information generated from the information obligation is the most direct indicator of energy saving, and can thus be regarded most important.</p>
6. How do observed outcomes compare to policy objectives?	<p>- So far, 57.537 companies have obliged on the 20th of August, 2020 (bron). This leaves an estimated 32.500 companies that needed to comply since 2019, but have not done yet (Kamerbrief Stand van Zaen energiebesparingsplicht)</p> <p>- An overview of how the VUE money has been spent by the environmental offices is shown in table X below. In 2020, the national government subsidized external expertise, to be applied for by environmental offices, for €4.628.112,67. This money could be spent on a predisposed number of activities. In total, €4.577.221,88 has been spent from the reserved money. In 2021, an amount of €4.922.914,04 has been reserved for the VUE subsidy, of which €2.359.512,71 has been used up until the 30th of September, 2021.</p> <p>- From the organisations that enforce energy law, one indicates all important middle and large users have been visited. Other organisations indicate that with the means available, they are only able to visit a fraction of the companies that need to comply. Other organisations that enforce law are in between (Interview 12, Interview 1, Interview 2, Onderzoeksrapport Adromi).</p> <p>- Policy outcomes in terms of energy saved is difficult to measure, as the legislation aims to prevent energy use. If energy is saved, it is difficult to determinate why this has happened, as it also might be because of the season, changing business processes or other third variables (Interview 15, Interview 18)</p> <p>- The companies that stay behind the most regarding the compliance with this legislation are the companies in the services sector. Schools, sports associations, offices (Interview 20)</p> <p>- Estimates of the expected energy saving by means of the energy saving measures have been made. However, the band width of the estimates is wide, indicating uncertainty on its effects (Brief voortgangsoverleg energieakkoord klimaatakkoord)</p>

The policy outcomes in energy saved are very difficult to measure. Network operators have insight into the amount of energy used. However, they are not allowed to share that information. In order to measure energy saved, environmental offices and municipalities rely on the theoretical research available. For example, TNO (2021) executed research into the energy saving potential from these measures. They concluded the estimated saving potential in the services sector is 13-18 PetaJoule of gas, and 4-6 petajoule of electricity. In the industry, an estimated 1-5 PetaJoules of gas, and 1-4 PetaJoule electricity can be saved by means of this legislation. TNO (2021) also mentions that most environmental offices do not keep track of how many measures the companies have implemented, and how much energy saving this has generated. Current data confirms this. However, the interviews show that local governments have difficulties to translate these expected savings to apply to their region, and to operationalize it into concrete targets.

Patterns of interactions

In this section, the information from the physical and material conditions, community attributes, rules-in use and the subsequent integration is used to infer patterns of interactions. These refer to the structural characteristics of the action situation and the way participants react as a result of that. There are a number of interaction themes identified regarding the context. However, in this subsection the indicators and their context are discussed integrated.

Contextual information and indicators

Unambiguousness directive. The energy efficiency obligation was important to achieve the goals set in the Energy Agreement. However, it appeared that almost nothing happened with the legislation since its implementation in 1993. This led to research into why it was difficult to realise outcomes for a law that had been installed 20 years before. In order to enable easier implementation, lists of standard measures per branche were created. These could be used by law enforcement to have a starting point when doing environmental controls.

Additionally, funding became available to environmental offices, so they could build expertise with energy legislation. The national government initiated an extra subsidy that environmental offices could use to hire external expertise for performing the energy inspections. The environmental offices indicated this helped them to get started with the energy inspections. Currently, inspectors still state the energy inspections require in-depth expertise, but there are also inspectors that have been executing these inspections for a while, that indicate the inspections are quite doable.

It is indicated that energy inspections cannot simply be integrated with the regular environmental controls, as walking through the company by means of the acknowledged measures lists is simply too time consuming, and energy inspections require that much in-depth knowledge that inspectors can not really do it on the side. The environmental officers that do require inspectors to cover the energy saving measures during their regular controls, find a lot of inspectors are not willing or able to do that. Some environmental offices therefore also hire specialized energy policy officials that support the inspectors to enable thorough energy controls. The data indicates practice makes perfect. However, if funding is not structurally appointed, knowledge might slip away again.

Theory adequacy. In its core, the theory used for this legislation is adequate. If you want to save energy, this goal will be achieved if companies incorporate energy saving measures. However, there is a catch with the way the legislation is formulated within the context. Every measure that can be recouped within four years, needs to be taken. However, the biggest energy users pay a lower price for energy. Therefore, a measure that is obligatory for a small company like a baker or butcher, does not need to be obligatory for a major energy user.

Additionally, the implementation of the theory has been and is so complicated, that there are massive delays in achieving the actual behavior change on the part of the companies. In that sense, the theory might be adequate, but it has not been very effective. This is related to its interaction with the action situation. The interaction variables of importance are discussed below.

Legislation. The Dutch environmental and governance legislation shape the energy saving regulation in such a way that it is national legislation, but municipalities have jurisdictional authority over them. This means municipalities are responsible for actually implementing the legislation. This creates a set-up for a highly fragmented landscape, as there are 355 municipalities that need to implement the legislation. Subsequently, municipal priorities are a big determinant in whether this implementation is prioritized to the extent that it is on the agenda.

Moreover, in the new environmental law this decentralized model will be extended. This is difficult when dealing with sustainability issues, as they exceed jurisdictional boundaries, and the harm that is done by not taking them seriously will show up delayed, and not necessarily one-on-one connectable to the places it was caused. In this way, sustainability issues are different compared to a lot of other issues regulated in the environmental law, like safety, water quality, soil quality and noise.

Funding. As municipalities have jurisdictional authority over the legislation, they also are responsible for funding the legislation. However, if it is not such a high priority that it's even on the agenda, chances of investments in time or finances are small. This creates the dynamic in which municipalities that are stringent with environmental law, are an outlier. Municipalities fear this will lead companies to relocate if they are too stringent.

Subsequently, energy related law enforcement is not mentioned in the tasks municipalities and environmental offices agreed upon. However, it is part of the environmental legislation that is transferred to environmental offices. This raises the debate on whether or not municipalities need to pay environmental offices additional money for the execution of the legislation, and a lot of municipalities are not willing to do so.

Although provinces do not have to spend additional money on the implementation of this legislation, as the companies that are within their jurisdictional authority so far, do not have to comply with the legislation, it is witnessed that several provinces still decided to fund part of the law enforcement for environmental offices. The offices indicated this has majorly helped them to get started

Political pressure. The legislation has been in the Dutch environmental law since 1993. However, municipalities experienced a lot of difficulties determining which measures companies

exactly needed to comply with. This was so complex, it was simply not worth the effort, and seemingly more important issues got priority. However, when in 2013 the Energy Agreement was signed, the government, amongst others, committed to concrete targets regarding energy saving, and thus had to invest time and effort into implementing the legislation. A similar trend is witnessed for municipalities. If city councils request action regarding climate action and the energy transition, government officials can work on concrete goals regarding their approach towards the energy transitions. This enables decision making regarding energy saving and its funding.

Implementation. Regarding the energy saving measures, implementation does not enable monitoring or tracking outcomes. This is because energy officers don't keep track of the measures that companies have to take after inspections, nor when these measures are incorporated. Subsequently, there is not yet a common approach towards calculating the energy savings that are delivered because companies have incorporated the measures. This complicates the task for environmental offices requesting additional commission from municipalities, as they can not show concrete numbers and results, relating their efforts to the sustainability ambitions of municipalities.

Additionally, when municipalities transferred a big part of the tasks they executed in the area of environmental law to environmental offices in 2012. Governmental officials working on environmental law for municipalities were often transferred to environmental offices as well. This enabled clustering of expertise with environmental offices. However, it also drained municipalities from all people with a focus on environmental energy saving legislation. As a result, municipalities that transferred most tasks and people were at larger risk losing the importance of energy law enforcement out of sight.

Indeed, a trend is witnessed with municipalities that are more involved with the energy inspections, either because they have chosen to invest additional money in the additional assignments, or because they did not transfer all companies that have to comply with this legislation to the environmental offices. These municipalities are more willing to invest in the enforcement of this legislation. A higher interest of the city council to this added expenses and responsibilities adds to this increased sense of responsibility for the implementation of the legislation. Another interesting observation one of the interviewees did, is that the municipalities that score lowest on rate of information obligation, are almost the same as the richest municipalities in The Netherlands.

All environmental offices interviewed structured their energy law enforcement in a different way, based on the specific context they operate in. A few central themes can be discovered. Only one environmental office reported that energy has been mentioned as one of the standard tasks that was transferred to them in 2013. The other environmental offices interviewed built their organisation and funding structure around the tasks that were important based on risk categories. Since a lot of companies that need to comply with the energy law are not high risk companies, this means a lot of additional

companies to regulate, which requires funding, and a change in the way they decide upon which companies need to be visited.

One of the environmental offices interviewed indicated they changed their entire model that decides when they visit a company, to integrate the energy relevant companies. Other environmental offices tailor additional commissions for municipalities that wish additional effort regarding energy law enforcement. These are executed in a variety of different ways. However, one observation that has been made when interviewing the environmental offices is that some environmental offices ask their environmental offices to also perform energy related tasks. These environmental offices experience problems regarding a lack of time, education and interest in the topic with their employees. When energy officers are hired specifically for energy inspections or advice, aforementioned problems have not been observed. Subsequently, for the environmental officers that approached the function of energy inspector this way, it has been easier to fill positions.

Appendix D - Semi-structured Interview Form

Interview Formulier

- Eerst de vraag: vind je het goed als ik dit interview opneem? Dan kan ik het gemakkelijker uitwerken tot een gespreksverslag.
- Het zal als volgt gaan. Eerst lopen we samen het formulier door dat ik je heb gemaïld. Als je het daar allemaal mee eens bent wil ik je vragen om het formulier ondertekend terug te mailen. Dan kan ik de informatie die ik van je krijg ook gebruiken.
- Vervolgens heb ik wat algemene vragen voor je over je naam en je functie, en dan wat specifieke vragen over de energiebesparende maatregelen, en daar praten we verder over door.
- Van een aantal van de vragen die ik je stel denk je misschien ‘huh, weet je dit niet?’. Dat hoeft niet zo te zijn, want ik heb natuurlijk ook een literatuuronderzoek gedaan als vooronderzoek, maar ik stel deze vragen toch omdat ik graag jouw antwoord op de vragen wil horen. Als de vraag niet duidelijk is, mag je dat aangeven, en als je het antwoord ergens niet op weet dan mag je dat ook gewoon zeggen, dan gaan we door naar de volgende vraag.
- Het is een semi-gestructureerd interview. Dat betekent dat ik een aantal vragen heb voorbereid, waar wij gewoon over kunnen doorpraten.
- Is dat allemaal oké? Heb je verder nog vragen over het interview?

Naam:

Leeftijd:

Geslacht:

Functie:

Organisatie:

Hoe lang doe je dit werk al:

Define policy objectives

Wat is het doel van deze regels?

Is komt het theoretische doel van de regels overeen met hoe het in de praktijk werkt?

Zijn de regels duidelijk, goed gestructureerd, en maar op één manier op te vatten?

Analyze policy outcomes

Wat zijn de uitkomsten van de regels die jij ziet?

Komen deze overeen met de doelen?

Kunnen we tevreden zijn met de uitkomsten?

Analyze patterns of interaction

Hoe komen jullie tot deze uitkomsten?

Wie zijn er betrokken om deze uitkomsten te realiseren in jouw organisatie en wat is hun functie?

physical & material conditions

- Welke technische processen zijn er nodig om dit beleid uit te voeren en zijn die beschikbaar?
- Hoe zit het met de financiële middelen die nodig zijn om dit beleid uit te voeren?
- Zijn die beschikbaar?
- Wie betaalt dit?
- Is dit veranderd door de tijd heen?

Community attributes

Regarding target group

- Hoe zit het met de doelgroep van dit beleid, is die divers?
- Is de gedragsverandering die met dit beleid wordt beoogd groot?
- **Boundary rules** Hoe zit het met bedrijven die binnenkomen/vertrekken? Wat gebeurt er dan?
- **Authority rules** Hoe kunnen de deelnemers reageren in hun positie? Welke acties en reacties zien jullie veel?
- **Position rules:** Wie zijn volgens jou de belangrijke deelnemers aan deze regels? Welke rol nemen zij in? Hoe kijken ze naar het beleid? Zijn dit veel mensen?
- **Aggregation rules** Hoe worden deze acties/reacties gemaakt en veroorzaakt?
- **Decision rules:** Are the decision rules of implementing agencies supportive of the objectives?
- **Scope rules** Hoe zit het met de juridische kant van deze maatregelen? Is dat houdbaar?
- **Information rules** Wat beïnvloedt de hoeveelheid informatie die beschikbaar is voor de implementerende organisaties/bedrijven?
- **payoff rules** Wie heeft er voordeel van de uitvoering van dit beleid?

Regarding implementing institutions

- Welke organisaties zijn betrokken op het implementeren van deze wetgeving?
- **Position rules** Welke rol nemen zij in? Wat vinden zij van de rol die ze moeten innemen?
- Hoe is de samenwerking tussen de organisaties die de wetgeving implementeren?
- Zijn de mensen die zich bezighouden met de implementatie van de beleidsdoelen hierop gefocust?
- **Boundary rules:** Je noemde net de organisaties die een rol spelen bij de uitvoering/ het realiseren van deze regels. Zijn daar organisaties aan toegevoegd of verwijderd sinds de regelgeving is geïntroduceerd? was het meteen duidelijk wie wat ging doen?

- **Authority rules** Hoe reageren de verschillende organisaties daarop? Welke acties en reacties zien je?
- **Aggregation rules** Hoe worden deze acties/reacties gemaakt en veroorzaakt?
- **Decision rules:** Are the decision rules of implementing agencies supportive of the objectives?
- **Scope rules** Hoe zit het met de juridische kant van deze maatregelen? Is dat houdbaar?
- **Information rules** Wat beïnvloedt de hoeveelheid informatie die beschikbaar is voor de implementerende organisaties/bedrijven?
- **payoff rules** Wie heeft er voordeel van de uitvoering van dit beleid?

Is er van 'hogerhand' continue steun, zodat jullie de beleidsdoelen kunnen behalen?
 Wordt er conflicterende wetgeving geïntroduceerd die hierbij in de weg staat?

Regarding third parties

Krijgen deze regels veel media aandacht?

Vind jij dat de algemene acceptatie van de regels is veranderd door de tijd?

Is er nog iets wat ik gemist heb in dit interview dat belangrijk is als het gaat om deze regels en de succesvolle implementatie/realisatie van naleefgedrag?