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From Policy to Practice: Assessing how Industrial Composition Shapes Implementation of the EU Emissions Trading System in the Netherlands and Belgium.

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**FROM POLICY TO PRACTICE:
ASSESSING HOW INDUSTRIAL
COMPOSITION SHAPES IMPLEMENTATION
OF THE EU EMISSIONS TRADING SYSTEM
IN THE NETHERLANDS AND BELGIUM**

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ABSTRACT

Global temperatures are rising as policymakers aim to tackle the climate challenges our world faces today. The European Union plays a leading role in climate politics and the global reduction of greenhouse gas emissions through one of its key tools, the Emissions Trading System. This thesis examines the impact of EU member states' industrial composition on implementing the EU ETS in phase 2 through a comparative analysis of the Netherlands and Belgium. An examination of the correlation between national industries and the national implementation of the ETS has thus far remained absent in the existing literature and provides policy insights for future climate politics. An analysis of the relevant policy documents reveals how both countries varied in their implementation of the system. It demonstrates how the more pollutive industrial composition of the Netherlands caused the government to be more responsive to the affected industries' interests in the allocation process. However, contrary to expectations, the Netherlands was not more lenient the monitoring of the system and was even more strict than Belgium in most areas.

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1. Introduction

"To have ambitious targets on climate protection is a cost, but the question is what is the bigger cost: to do nothing or to make these changes now?" former president of the European Commission José Manuel Barroso stated in 2007 (New York Times 2007). While the trial phase (phase 1) of the European Union Emissions Trading Scheme (EU ETS)¹ was coming to an end, Barroso stressed the importance of overcoming the challenges of reducing greenhouse gas emissions. A year later, in 2008, the ETS entered a new phase (phase 2) in which the member states of the European Union (EU) had to meet concrete emissions reduction targets for the first time (European Commission n.d.).

Launched in 2005, the ETS has been one of the key tools in the EU climate policy and the world's first trading system that set a limit on the total amount of greenhouse gas emissions through a carbon market (European Commission n.d.). By setting a price on carbon, the ETS forces polluting industries to account for their emissions and reach significant reductions in greenhouse gas emissions by 2030 through four different phases (European Commission n.d.). While phase 1 (2005-2007) was a trial phase, phase 2 (2008-2012) was the phase in which member states were appointed national emission reduction caps for the first time. For phases 3 (2013-2020) and 4 (2021-2030), the system became centralized on an EU level as national emission caps were replaced by an EU-wide cap that decreased throughout the years (European Commission n.d.).

Looking at phase 2 specifically, the ETS formed a prototype of a decentralized climate policy system. While the system was designed at a supranational level, its implementation

¹ The European Union Emissions Trading Scheme, or EU ETS, will be referred to as 'ETS' from here on.

remained largely member states' responsibility in phases 1 and 2 (European Commission n.d.). Due to structural differences between member states, they varied in implementing and complying with the ETS (Åhman et al. 2007; Grubb et al. 2018; Kruger et al. 2007). Since the ETS primarily affects polluting industries, one possible explanation for this variance is the industrial composition of member states. Therefore, to examine the workings of such a decentralized system and the corresponding variation in implementation by member states, this research aims to answer the following research question: “*What has been the impact of member states' industrial composition on the implementation of the EU ETS in phase 2?*”

As nations worldwide are confronted with the negative effects of global warming, tackling the challenges of climate change remains an important topic in international debate. By all means, reducing global temperatures requires worldwide efforts and global cooperation. Examples of efforts to reduce greenhouse gas emissions through a decentralized system are the Regional Greenhouse Gas Initiative in the United States or the Energiewende in Germany. Even though it is no longer in place, an examination of the national implementation of phase 2 of the ETS is crucial as this allows for policy insights into the decentralization of (climate) policy. From a global perspective, this contributes to an understanding of international cooperation in light of decentralized policy that encompasses multiple independent nations in a multinational system. Consequently, this will be both useful and relevant for the policy process of tackling the challenges of climate change on a global level.

In efforts to examine the implementation of EU policy, no research has examined the implementation of the ETS on a national level (Blom-Hansen 2005; Schmidt 2008; Steunenberg 2010; Nabitz and Hirzel 2019; Zhelyazkova et al. 2024). This is surprising because while the ETS is a centralized system today, it formed a prototype of decentralized climate policy as member

states were responsible for the implementation and monitoring during the first two phases of the system (European Commission n.d.). While much research focuses on the policy design and effectiveness of the ETS (Åhman et al. 2007; Convery and Redmond 2007; Clò 2009; Grubb et al. 2018; Kruger et al. 2007), examining the national implementation and monitoring of the system is important as it provides insights into the workings and execution of decentralized (climate) policy. Correspondingly, this will inform policymakers on future climate action. This research addresses this gap by examining the decentralized workings of the ETS in light of how member states implemented and monitored the system in phase 2.

This research is conducted through a qualitative comparative analysis of Belgium and the Netherlands. An analysis of the relevant documents reveals that both countries indeed varied in their implementation of the ETS in phase 2. In the process of allowance allocation, the Netherlands was more responsive to the requests and interests of its installations. Moreover, the chosen allocation method in the Netherlands was more beneficial to installations compared to Belgium. Considering the monitoring of the ETS, contrary to expectations, the Netherlands appeared to be stricter and more straightforward in its implementation compared to Belgium. All in all, this research demonstrates how a more pollutive industrial composition has led the Netherlands to be more considerate of installation's interests but, at the same time, led to a stricter enforcement in most areas of the system compared to Belgium.

This thesis consists of multiple sections. To begin with, the next section is a literature review which presents the existing debates regarding the implementation of EU policy. Following the literature review, the theory central to this research is presented together with the deriving expectations. After

this, the selected research methods of this thesis are laid out in the methodology section. In the analysis and results section, the results of this research are interpreted and discussed. The final section of this thesis is the conclusion, which formulates a coherent answer to the research question, discusses the policy implications, and makes suggestions for future research.

2. Literature Review

The EU ETS is the world's first and largest multinational trading system for greenhouse gas emissions (Ellerman 2010, 1). As the ETS has been a means to meet the targets of the Kyoto Protocol, studies have examined the effectiveness of the system (Bayer and Aklin 2020; Clò et al. 2013; Ellerman 2010; Heiaas 2021; Laing et al. 2013; Schleich 2009). In light of emissions reduction, research has demonstrated that the ETS has indeed led to a decrease in the total amount of emissions since its implementation (Bayer and Aklin 2020). However, academics have also highlighted weaknesses of the system and proposed policy options to improve its effectiveness in different areas (Clò et al. 2013; Laing et al. 2013; Schleich 2009). While much research has been done on the effectiveness and implications of the ETS, this research is specifically interested in the implementation of the ETS on a national level. The existing literature puts forward a wide range of research on the implementation of EU policy, which is reviewed in this literature review.

2.1 Decentralization in EU Policy

To begin with, the literature points out how the EU has a rather decentralized role, and its policies are often open for interpretation by member states (Schmidt 2008; Nabitz and Hirzel 2019; Zhelyazkova et al. 2024). The EU, here, is perceived to have more of an overseeing role as it allows member states to set their national policies (Blom-Hansen 2005; Steunenbergh 2010). In his work, Bernard Steunenbergh (2010) compares the EU to 'big brother', as it monitors the member states and only interferes once their national implementation clashes with EU interests. Consequently, EU policy is often perceived as a guiding policy, and it is not worked out in detail due to the

decentralized structure of the EU and the structural differences between member states (Schmidt 2008; Steunenbergh 2010; Nabitz and Hirzel 2019; Zhelyazkova et al. 2024).

With this in mind, EU policy leaves room for interpretation by member states in terms of implementation (Schmidt 2008; Nabitz and Hirzel 2019; Zhelyazkova et al. 2024). Therefore, academic work establishes how the implementation of EU policies is context-dependent and is influenced by many (national) factors (Bondarouk and Mastenbroek 2018; Hartlapp and Leiber 2010; Mbaye 2001). As a result of this, member states differ in their implementation of EU policies (Bondarouk and Mastenbroek 2018; Efstathiou and Wolff 2019; Lampinen and Uusikylä 1998; Nabitz and Hirzel 2019; Zhelyazkova et al. 2024). To demonstrate this, Mariam Hartlapp and Simone Leiber (2010) conduct a case study of Portugal, Greece, Italy, and Spain and highlight how the underlying factors that affect implementation differ considerably per member state. Implementation in Italy and Spain, for example, is affected by domestic political factors like political preferences or changes of government (Hartlapp and Leiber 2010, 475, 483). In Greece and Portugal, on the other hand, implementation is affected by administrative factors like efficiency and coordination (Hartlapp and Leiber 2010, 475, 483). National factors are, thus, considered crucial as domestic structures highly influence implementation capacity and patterns.

Looking at the ETS specifically, the literature highlights how the decentralized structure of the system left member states with relatively high responsibilities regarding the implementation in terms of setting caps and allocating allowances in phase 2 (Åhman et al. 2007; Convery and Redmond 2007; Clò 2009; Grubb et al. 2018; Kruger et al. 2007). Some authors criticized the high responsibilities of member states in the first two phases of the ETS, as it has often caused member states to bend the EU regulations to protect national interests (Convery and Redmond 2007; Clò 2009; Grubb et al. 2018). Correspondingly, Stefano Clò (2009) highlights how the ETS has

demonstrated to be less effective due to a lack of harmonized allocation rules among member states. In response to this, early scholars proposed policy recommendations that increased EU guidance in the ETS and reduced member states' responsibilities (Åhman et al. 2007; Clò 2009). Correspondingly, in phases 3 and 4, the system became indeed more centralized as member states' responsibilities decreased and regulation on the EU level increased.

2.2 Interpretation and Implementation of EU Policy

Given the aforementioned points, the literature argues that space for interpretation leads to differences in implementation by member states (Bondarouk and Mastebroek 2018; Gollata and Newig 2019; Nabitz and Hirzel 2019; Zhelyazkova et al. 2024). Asya Zhelyazkova et al. (2024, 443) highlight how EU policies are modified, interpreted, and refined by member states. Consequently, the literature demonstrates how this has caused, on one hand, member states to go further than what is minimally required by the EU or, on the other hand, member states to solely meet the minimal requirements of EU policy (Bondarouk and Mastebroek 2018; Gollata and Newig 2019; Nabitz and Hirzel 2019; Zhelyazkova et al. 2024). An example that is often highlighted in the literature is that of environmental policy, as studies describe how some member states tend to go beyond EU regulations as they aim to reduce air pollution (Bondarouk and Mastebroek 2018; Zhelyazkova et al. 2024).

Building upon this, one strand of literature argues that it is primarily the economic status of member states that impacts the interpretation and implementation of EU policy (Deroose and Griesse 2013; Efstathiou and Wolff 2019; Melidis and Russel 2020). The main argument here is that the implementation of EU policies improves once member states experience economic downfall, and vice versa. Michail Melidis and Duncan J. Russel (2020), for example, explain how

the economic crisis of 2008 has had a positive impact on the implementation capacity of states in terms of EU environmental policy, as there has been a decreasing number of environmental violations since the crisis. Despite the economic costs of environmental policy, they argue, the decreased levels of economic activity during crises lead to a better implementation of EU environmental policy. Moreover, scholars bring forward how economic crises lead to increased pressures on political leaders as crises require policy responses (Deroose and Griesse 2013; Efstathiou and Wolff 2019). Consequently, they demonstrate, these pressures lead to better implementation of EU economic policies promoting economic stability (Deroose and Griesse 2013; Efstathiou and Wolff 2019). From this perspective, economic factors are believed to have more impact on member states' implementation capacity than other domestic factors (Melidis and Russel 2020).

Another strand of literature argues that it is the political and institutional framework of member states that impacts the interpretation and implementation of EU policy (Bondarouk and Mastebroek 2018; Börzel et al. 2010; Lampinen and Uusikylä 1998; Zhelyazkova et al. 2016). Academic work brings forward how factors like political structure, leaders in office, and resources contribute to differentiation among member states in the implementation of EU policies into national legislation (Bondarouk and Mastebroek 2018; Zhelyazkova et al. 2016). Another example is presented by the early work of Risto Lampinen and Petri Uusikylä (1998), in which they argue that political trust and stability combined with an efficient institutional framework contribute to the successful implementation of EU policies. More specifically, Zhelyazkova et al. argue how implementation capacity is influenced by “[...] the effectiveness of domestic enforcement and judicial systems [...]” (Zhelyazkova et al. 2016, 841). Additionally, Börzel et al. (2010) stress the role of political power in the implementation and compliance with EU policy.

They demonstrate how increased political power harms the implementation of EU policy as powerful member states are more likely to counter EU policies, especially in combination with weak institutional capacities (Börzel et al. 2010).

All in all, an examination of the existing literature has highlighted the different strands of literature that examine the implementation of decentralized EU policy. However, no research has examined this in the context of phase 2 of the ETS. The question central to this research, “*What has been the impact of member states’ industrial composition on the implementation of the EU ETS in phase 2?*”, thus remains unanswered.

3. Theory and Expectations

The literature has highlighted how member states had relatively high implementation responsibilities during phases 1 and 2 of the ETS (Åhman et al. 2007; Convery and Redmond 2007; Clò 2009; Grubb et al. 2018; Kruger et al. 2007). Consequently, this left space for member states to protect national interests in their implementation. This leads to the theory that the industrial composition of member states affects their implementation of the ETS through political preferences that derive from this industrial composition. In order to explain this relationship between member states' industrial composition and the implementation of the ETS on a national level, I identify two causal mechanisms.

First, as the ETS introduced a price for carbon, it led to additional costs for industries that fall under the system (Chan et al. 2013). As a result, the implementation of the ETS has had a financial impact on the affected industries and member states' economies. In phase 1 and phase 2, the system covered power generators, energy-intensive industries, and the aviation sector (of which the latter was added in phase 2) (European Commission n.d.). The economies of member states with more prominent power generators, energy-intensive industries, and aviation sectors were thus more affected by the ETS than those with a smaller share of those same industries. The literature has demonstrated how economic setbacks increase the pressure on political leaders and the urgency for policy response (Deroose and Griesse 2013; Efstathiou and Wolff 2019). Member states with a larger share of affected industries will, thus, experience more economic pressures from those industries as installations lobby for lenient implementation to mitigate the impact of the ETS. Consequently, these member states will be more responsive to these requests as they aim to protect

their industries, weakening the implementation of the ETS and the monitoring of installations under the system.

Secondly, in the first two phases of the ETS, free allocation rules applied for the distribution of allowances (European Commission n.d.). In other words, implementation and administration of the allocation of allowances fell under the member states' responsibilities (European Commission n.d.). The literature demonstrated how these responsibilities caused member states to be generous in the allocation of allowances to protect their national industries (Convery and Redmond 2007; Clò 2009; Grubb et al. 2018). Grubb et al. (2018) highlight how this has resulted from increased pressures from the affected industries. Looking at the ETS, the primary reason for installations to lobby for lenient allocation is the direct financial benefit of more allowances (Grubb et al. 2018). As installations lobbied for lenient allocation, they also expressed concerns about competitiveness and unequal treatment under the ETS (Grubb et al. 2018, 135-136). Companies were concerned that they would face losses regarding international competition if they would receive limited free allowances. Moreover, as member states were responsible for the allowance allocation, companies expressed concerns about unequal treatment within the EU compared to similar installations. These expressed concerns by installations translate into political preferences for member states. As countries wish to protect their national industries, they are expected to adhere to installations' requests for lenient allocation. Member states with a more pollutive industrial composition, thus, are expected to face more pressures from affected installations and be more lenient in allowance allocation under the ETS.

Based on this, it is expected that the industrial composition of member states impacts their policy preferences and, consequently, implementation of the ETS. Deriving from the first causal

mechanism, it is expected that pressures from affected industries weaken the implementation and monitoring of the ETS. In practice, this could translate to less strict enforcement and monitoring of the system in member states with a higher share of affected industries under the ETS. This could be, for instance, less accurate implementation of EU guidelines or less strict penalties regarding non-compliance with regulations.

Considering the second causal mechanism, it is expected that member states aim to protect their affected industries from the economic impact of the ETS through the allocation of allowances. In practice, member states with a higher share of affected industries are expected to implement an allocation method that is more beneficial to installations to protect these installations and their economy as a whole. Additionally, these member states are expected to involve the affected industries through consultation and to be more responsive to their interests in the allocation process.

4. Methodology

To answer the research question, this research is conducted through qualitative research methods. More specifically, a comparative analysis is conducted in which two EU member states are compared regarding their implementation of the ETS. Consequently, this will reveal differences and similarities in the implementation of the ETS and the possible role of different industrial sectors in this. To narrow down this research, it focuses solely on phase 2 of the ETS which took place during the years 2008-2012. The primary reason for this is that phase 1 (2005-2007) was a trial period and during phases 3 (2013-2020) and 4 (2021-2030), the national emission caps were replaced by an EU-wide cap as the system became centralized on an EU level (European Commission n.d.). As phase 2 was not a trial phase and implementation and allocation were member states' responsibility, it is the most suitable phase to examine for this research.

4.1 Case Selection

To examine the impact of member states' industrial composition on the implementation of the ETS through a comparative analysis, the two member states are selected based on a most similar systems design. That is to say, the countries are selected on the criteria that they are similar in most aspects but differ in their industrial composition. Following a most similar system design is the most suitable method for case selection in this research, as it demonstrates the impact of the deviating variable between both cases (being their industrial composition) (Seawright and Gerring 2008).

Based on this, the two selected cases central to this research are the Netherlands and Belgium. Looking at these countries, they are similar in various aspects. From a political perspective, for example, both countries are parliamentary representative democracies. Moreover,

the countries share a similar culture, language, and historical experiences. As highlighted in the literature review, the economic state capacity of members states is also an important factor in the implementation of EU policy. Given that, Belgium and the Netherlands both had a high state capacity to implement EU policy right before the start of phase 2 in 2007, with a GDP per capita of €33.760 and €39.120 respectively (Eurostat 2024). Looking at support for EU climate action, the public in Belgium and the Netherlands shared similar views too. In 2007, four in five people in Belgium (81%) and the Netherlands (79%) supported climate action and believed that it should be taken jointly within the EU (European Commission 2008, 8).

In terms of their industries, however, the Netherlands and Belgium differ considerably. Looking at industrial composition, the Netherlands has a strong focus on agriculture, energy, and chemicals (Atitwa 2018). Belgium, on the other hand, has a large finance and trade sector and has seen an overall decreasing agricultural industry (Sawe 2019). Due to these differences in industrial composition and the similarities in other aspects, the Netherlands and Belgium are the most suitable cases for this research.

Another noteworthy distinction between the Netherlands and Belgium is the regional fragmentation of Belgian politics. Where the Netherlands has a centralized political system, national policy in Belgium is appointed to the Flemish, Walloon, and Brussels Capital Regions. This is a potential shortcoming to this research as this regional fragmentation might lead to inconsistent implementation. However, implementation by the three regional governments can still be compared to implementation in the Netherlands. By looking at implementation in the three regional governments, it is possible to determine whether the regions have overall been more or less strict than the Netherlands. Moreover, as regional fragmentation is deeply rooted in Belgian politics, the competent regions are familiar with EU policy implementation. Therefore, the possible

differences between implementation in Belgium and the Netherlands are not primarily driven by the difference between a decentralized and centralized political system.

Lastly, during phase 2 of the ETS, the system covered CO₂ emissions from power generators, energy-intensive industries, and the aviation sector (European Commission n.d.). Looking at these sectors, the Netherlands faced considerably higher emissions than Belgium when the ETS was implemented in 2005. For all stationary installations that fell under the ETS, the Netherlands emitted a total of 80,351 Mton CO₂ while Belgium emitted 55,363 Mton CO₂ in 2005 (European Environment Agency 2023). Emissions from the aviation sector have been more complicated to measure due to air traffic between countries, and data only became available in 2012. Therefore, the aviation sector will not be considered in this research.

4.2 Data Collection

In terms of data collection, this research focuses primarily on official documents from the EU, the Netherlands, and Belgium regarding the policy and implementation of the ETS. The website of the European Commission provides a wide range of policy documents that capture all legislation regarding the ETS. For example, the National Allocation Plans (NAPs) of all member states and the corresponding decision of the European Commission are published here. As the NAPs capture the allocation of emission allowances per member state, these documents will be particularly important to examine implementation in light of allowance allocation. Moreover, the website of the European Environment Agency provides a dataset with a wide range of data reports on the environmental policies of the EU. Among other things, this dataset holds the annual reports of member states on the implementation and monitoring of the ETS. Both the aforementioned websites will be used to collect the relevant documents.

Overall, these documents are unlikely to be subject to a lot of bias as they are official policy documents that must follow set requirements. However, member states might present their actions in a more favorable light to appear better in terms of compliance. Nevertheless, this bias is expected to be limited as these documents are expected to present transparency and accountability.

4.3 Operationalization

In order to confirm the expectations, this research has to reveal considerable differences between the Netherlands and Belgium in implementing the ETS resulting from their industrial compositions and the corresponding pressures from industries. As the Netherlands faced higher ETS emissions than Belgium in 2005, pressures from affected industries should be more visible in implementation and monitoring in the Netherlands compared to Belgium. That is to say, the Netherlands should demonstrate considerable efforts to benefit affected sectors through a more lenient allocation method and a less strict enforcement compared to Belgium. Moreover, in the allocation process, the Netherlands should involve its industries and be more responsive to their interests compared to Belgium. Responsiveness, thus, should translate to frequent consultation with affected industries and taking the requests and interests of installations into account during implementation.

5. Analysis and Discussion

For this research, the implementation of the ETS is distinguished between the allocation of allowances and the monitoring of installations by member states. During phase 2, the key piece of legislation that set the framework for the implementation of the ETS on a national level was Directive 2003/87/EC² (Official Journal of the European Communities 2003). This Directive laid down the guidelines for implementing the ETS that member states had to follow and adhere to. This section analyzes the implementation of the ETS while considering the guidelines set down in this Directive.

5.1 The Allocation of Allowances

As laid down in the Directive, the NAPs of member states should capture the allocation of emission allowances to their respective industries and the methodology used to meet the emission targets of the ETS (Official Journal of the European Communities 2003). For the years 2008-2012, Belgium and the Netherlands had an annual cap of 62,9 and 95,3 million tons of CO₂ respectively (Commission of the European Communities 2005, 11). Belgium's NAP was based on a cooperation agreement, which separated the country in terms of organization and management and divided the available allowances between the three regions (European Commission 2006a, 5). The national plan, therefore, provided a summary of the three regional allocation plans. The NAP of the Netherlands, on the other hand, set target values for the different sectors to meet one domestic

² Will be referred to as 'Directive' from here on.

target, and a foreign target was set for the purchase of foreign allowances (European Commission 2006b, 23).

5.1.1 Public Consultation

One of the criteria for the NAPs, as stated in Annex III of the Directive, was that “The plan shall include provisions for comments to be expressed by the public, and contain information on the arrangements by which due account will be taken of these comments before a decision on the allocation of allowances is taken” (Official Journal of the European Communities 2003, 43). An analysis of both NAPs demonstrates how the affected industries have been more involved in the allocation process of the Netherlands than that of Belgium.

The Dutch NAP repeatedly highlights the involvement of the industries in the process of writing the plan. Representatives of the affected industries were involved in the construction of the draft plan and, later in the process, the public was given the opportunity to provide comments (European Commission 2006b, 8). Additionally, the involved parties were informed through the regular publication of newsletters and two organized conferences. The 109 comments received in the feedback phase were mostly from the concerned installations, but also from various trade associations and environmental organizations (European Commission 2006b, 20). In response to these comments, the NAP states that “In a number of cases, the public comments have led to amendments of the plan, but also in a great many cases to a confirmation of the approach taken until then” (European Commission 2006b, 20).

This demonstrates how the affected industries have been regularly involved in the process of allowance allocation in the Netherlands. It is stated that the frequent consultation with the affected industries has allowed for a quick response to concerns raised by industries during the

writing process as well as during the public consultation period (European Commission 2006b, 20). The Dutch government, thus, responded frequently to the requests and interests of the affected installations.

Frequent consultation has been very beneficial to installations as it has allowed them to advocate for their interests in the process of allowance allocation. As a result of this, the listed amendments made to the plan that derived from the public consultation period mainly benefitted the affected installations (European Commission 2006b, 21). Among other things, these amendments included the allocation of extra allowances in terms of industrial expansion and an increase in the size of the deposit for new entrants. Looking at extra allowances, a provision was added that allowed for extra allowances for industries in the production of steam and other thermal energy carriers, together with district heating. These extra allowances benefitted these specific industries as extra allowances led to a direct financial relief and more operational freedom under the system.

Compared to the process of allowance allocation in the Netherlands, the affected industries were less involved in Belgium. Similar to the Netherlands, the Flemish government consulted with representatives from the affected sectors during the drafting of the plan and held two public consultations (European Commission 2006a, 63). Moreover, the Walloon government provided copies of the plan to organizations upon request and held two public consultations in which a total of 26 comments were received (European Commission 2006a, 157). Criterion 9 of Annex III of the Directive required member states to report on how comments from the public were considered in the NAP, but both the Flemish and Walloon government reported no amendments made due to public consultation. Lastly, the government of the Brussels Capital Region reported to have consulted the Brussels' municipalities and relevant organizations (European Commission 2006a,

111). As a result of this, various changes were made in response to the received comments, ranging from the inclusion of additional installations and a set relative maximum to the use of flexibility mechanisms by companies (European Commission 2006a, 111-112).

All in all, the affected industries in Belgium were only actively involved in the writing process of the Flemish allocation plan (European Commission 2006a, 63). Moreover, the affected installations did not have considerable input during public consultation periods in the three regions as only a few modifications were noted. To involve the industries, public consultations were held but only the Brussels Capital Region reported modifications made in response to this (European Commission 2006a, 111-112). The Belgian regional governments, thus, interacted less with the interests and requests of the affected industries compared to the Netherlands. Moreover, the comments received from the public were less influential in Belgium compared to the Netherlands, as only the Brussels Capital Region mentioned that received comments led to amendments to the plan.

5.1.2 Allocation Methods

Moving on, the Directive required member states to lay out the methodology used to allocate emission allowances for installations in their NAPs (Official Journal of the European Communities 2003). Looking at both plans, the allocation of allowances has been based upon similar criteria for the Netherlands and the three regions of Belgium.

For installations in the Netherlands, the allocation of allowances was based upon “[...] the historic emissions, the expected growth per sector, the efficiency factor, and a correction factor” (European Commission 2006b, 14). Notably, historical emissions were based on an average from three years chosen by installations themselves from the reference period 2001-2005. As stated in

the NAP, this method has been chosen as “[...] sufficient justice is done to the individual interests of the separate installations [...]” (European Commission 2006b, 15). This way, installations could eliminate two years with lower emissions which could be the result of “[...] legal circumstances or market conditions” (European Commission 2006b, 15). Here again, the Netherlands demonstrates to have been responsive to and considerate of the interests of installations. Moreover, this allocation method was beneficial to installations as they could choose the three years with the highest emissions to receive more allowances. Accordingly, installations could not receive extra allowances because of ‘special circumstances’, as this method already allowed for special circumstances (European Commission 2006b, 17).

Additionally, the sector’s expected growth rate and installation’s energy efficiency were taken into account (European Commission 2006b, 14-17). The expected growth of the sectors was considered as this leads to growth at installations’ level as well. Taking this into account, thus, is beneficial to installations as they need more allowances to cover their rising emissions as a result of this growth. Looking at energy efficiency, allowances were allocated based on the installations’ Energy Efficiency (EE) factor which is based on performances in the energy efficiency Benchmarking Covenant (European Commission 2006b, 16-17). Installations that did not participate in a covenant received an automatic EE factor of 0.85. Through this method, installations were motivated to increase their energy efficiency.

For installations in Belgium, the allocation method varied between the three regions and was, similar to the Netherlands, based on installations’ historical emissions or energy efficiency. In the Flemish Region, allocation was based on the energy efficiency of installations in the industry sector as set down in a benchmarking covenant or on the best possible production technology for installations in energy production (European Commission 2006a, 47, 51-52). Similar to the

determination of installations' energy efficiency in the Netherlands, companies had to demonstrate improvement through an energy efficiency covenant. In the Walloon Region, sectors' energy efficiency was calculated through sectoral agreements and translated into a Greenhouse Gas Emission Index, which allowed for the calculation of required sectoral allowances (European Commission 2006a, 135, 139-140). For the Brussels Capital Region, allowances were allocated based on a bottom-up approach in which operators provided their average of the historical emissions of the period 2003-2005 (European Commission 2006a, 106-107).

Overall, the allocation method of the Netherlands was the most beneficial to installations. Allocating allowances based on historical emissions often leads to higher allowances for installations, especially for those with higher historical emissions. This method, thus, allows the most pollutive installations to emit the most. Additionally, the Netherlands made this method even more beneficial by allowing installations to choose the three years with the highest emissions, resulting in more allowances. Compared to the Belgian regions, which looked at energy efficiency or historical emissions (without choosing the most beneficial years), the allocation method used in the Netherlands was thus most beneficial to installations.

5.2 The Implementation and Monitoring of the ETS

According to Article 21 of the Directive, member states were obliged to annually report on the national implementation and monitoring of the ETS. This report should be constructed following the guidelines of a questionnaire drafted by the Commission and contain the following information: “[...] the allocation of allowances, the operation of registries, the application of the monitoring and reporting guidelines, verification and issues relating to compliance with the Directive and on the fiscal treatment of allowances, if any” (Official Journal of the European Communities 2003, 38).

An analysis of the annual Dutch and Belgian reports from phase 2 brings forward how both member states implemented the ETS on a national level and monitored their installations.³

5.2.1 Competent Authorities

To begin with, the first few pages of these reports are concerned with the competent authorities for the regulation and monitoring of the system. In the Netherlands, it was primarily the Dutch Emissions Authority (NEa) that was responsible for the monitoring of the ETS (European Environment Agency 2010b, 1-2). For Belgium, the regulation of the ETS was divided among its three regions and there were different competent authorities between as well as within regions (European Environment Agency 2009b, 5-7). Looking at question 4.2 of the report, cooperation among the competent authorities in Belgium was poorly regulated on a national level as there was no overarching law or guidance regarding cooperation (European Environment Agency 2009b, 13). Moreover, the regional governments were fully and independently responsible for the implementation of the ETS. There was, however, a working group that aimed to steer cooperation through regular meetings.

Considering the verification of emissions, operators were obliged to submit their emission reports to the competent authorities. In Belgium, there were no cases where operators failed to do so (European Environment Agency 2009a, 21-22). In the Netherlands, there were instances where reports were not provided in the years 2008-2010, and measures were taken to discourage non-reporting. In the years 2008 and 2009, installations received a daily penalty for each day of non-compliance (European Environment Agency 2010b, 14; European Environment Agency 2010c,

³ As regulations did not change annually, most information derives from the reports on 2008 because this was the first year of phase 2. It will be mentioned if any relevant changes were made in the subsequent years.

14). In 2010, installations received a new deadline and a fine (European Environment Agency 2011b, 14). On one hand, this demonstrates how the Netherlands was strict in monitoring its installations, as non-compliance in terms of the submission of emissions reports was not tolerated and installations were strictly corrected. On the other hand, there were no violations in terms of emission reporting in Belgium, which might also indicate that operators expected harsh penalties if they did fail to report. From this perspective, Belgium would have been more strict. However, as operators failed to report in the Netherlands but not in Belgium, it remains difficult to compare both countries here.

Additionally, both the Netherlands and Belgium had developed guidelines for verifying emissions that could be used by independent verifiers (except for the Flemish region) (European Environment Agency 2006b, 14; European Environment Agency 2009a, 20-21). In both countries, these independent verifiers were still supervised by the competent authorities. Additionally, all Belgian regions required these verifiers to suggest ways to enhance the monitoring of installations (European Environment Agency 2009a, 20). As the Netherlands did not, this indicates a higher commitment to accuracy in light of emissions verification in Belgium. Correspondingly, Belgium perceives to be more strict here as it strives for continuous improvement in the verification of emissions.

5.2.2 Compliance with Emission Permits

Moving on, part 4 of the questionnaire captures the national regulations concerning the emission permits for installations. Member states were required to report the national measures taken to ensure that installations comply with the requirements of their emission permits. Here, measures applied by Belgium and the Netherlands have remained constant throughout phase 2. Comparing

these reports, the Netherlands and the Belgian regions were quite similar in these regulations. For example, both stated to act in case of non-compliance by ‘naming and shaming’ installations and prohibiting them from selling their reserve allowances (European Environment Agency 2009b, 12; Environment Agency 2010b, 5).

There were, however, differences between measurements taken by the Netherlands and the Belgian regions. To demonstrate, routine checks were done to check compliance of installations in both countries except for the Brussels Capital Region (European Environment Agency 2009b, 12). In case of missing emission reports from installations, the Netherlands and the Walloon Region allowed for conservative emissions estimates while the Brussels Capital Region and the Flemish Region did not (European Environment Agency 2009b, 12; Environment Agency 2010b, 5). Conservative emissions estimates, here, refers to emission estimates that are either equal or higher to the unknown amount of emissions (European Commission 2013, 5). This method was used to ensure that the under-estimation of emissions would not occur. Additionally, except for the Flemish Region, permits would not be withdrawn and installations would never be suspended from the ETS in both countries (European Environment Agency 2009b, 12; Environment Agency 2010b, 5).

Looking at these measures, both countries were strict in the monitoring of compliance with emission permits. Except for the withdrawal of permits and suspension from the system, all proposed measures were taken in the Netherlands and (in most cases) in all three Belgian regions as well. Where the Flemish Region deviated from the other regions and the Netherlands, it stated to only withdraw permits ‘in extreme circumstances’ or to not estimate conservative emissions as no such instance has yet occurred (European Environment Agency 2009b, 12). The Brussels Capital Region was the least strict as it stated to, different from the other regions, not do routine

inspections or conservative emissions estimates in case of missing reports (European Environment Agency 2009b, 12). In some cases, thus, the Netherlands was more strict than the Belgian regions.

As the monitoring of the ETS in Belgium was delegated to the regional governments, Belgium was not constant in its measures. As aforementioned, coordination between the three regions was poor and this resulted in irregularities regarding the monitoring of installations. For installations, this translated to inconsistencies and unequal treatment compared to similar installations in another region. In the Netherlands, on the other hand, monitoring of the ETS was regulated on a national level. This was more straightforward for installations as they were all treated equally on a national level compared to other installations.

5.2.3 Application of the Monitoring and Reporting Guidelines

Further, the Directive required the monitoring and reporting guidelines (MRG) of the ETS to be implemented on a national level (Official Journal of the European Communities 2003, 38). Part 5 of the questionnaire has been dedicated to the application of these guidelines. In question 5.1, member states specified the national legislation adopted to implement the MRG. As no annual changes were required, states were only required to report this in the report of 2006, at the beginning of each trading period, and if any relevant changes were made. Comparing the national legislation of the Netherlands and Belgium on these guidelines, the Netherlands was more strict in implementing the MRG than Belgium.

In the report of 2006, the Netherlands was concise about its adopted legislation to adhere to the MRG. It is solely stated that “The monitoring and reporting guidelines have been implemented by Ministerial Order. No derogations are permitted” (European Environment Agency 2006b, 10). In Belgium, on the other hand, the three regions implemented the guidelines differently. Where the

Walloon Region had implemented the MRG through an official act that translated the requirements, the Brussels Capital Region had adopted an environmental permit in which the monitoring method was described and the Flemish Region had established various ministerial decisions that implemented the MRG (European Environment Agency 2006a, 11). During phase 2, no significant changes were reported to the implementation of the MRG in both countries.

Unlike the Netherlands, however, the Walloon and Flemish regions allowed various derogations to the guidelines (European Environment Agency 2006a, 11). The Walloon Region allowed derogations for commercial liquid, gaseous fuels and for plant labs (European Environment Agency 2006a, 11). For commercial liquid and gaseous fuels, the regional government wished to encourage the industry to choose more environmentally friendly fuels rather than present possibly inaccurate figures to win quotas and continue the use of harmful substances. In addition, they commented that the used allocation method was incoherent as industries could easily circumvent the strict reduction of emissions by overstating their expected emissions (European Environment Agency 2006a, 11). Furthermore, just like in the Flemish Region, “plant labs are not obliged to be accredited in accordance with the standard IN ISO 17025” as there would be no commercial advantage for them (European Environment Agency 2006a, 11). Lastly, the Flemish government also approved the use of fuel streams instead of sources to improve accuracy.

All in all, this demonstrates how the Netherlands was more strict in implementing the MRG into national legislation as it allowed no derogations. The Walloon and Flemish governments did allow for derogations to the MRG, which was beneficial to the installations in these sectors. Even though the derogations were initially proposed to improve the accuracy and efficiency of the system, they were still beneficial to operators as they resulted in less strict regulations and more operational freedom for installations.

Moreover, installations were required to follow reporting requirements to their national government. Question 5.10 refers to the reporting burden of installations, as member states had to report whether or not the ETS reporting requirements were coordinated with the reporting requirements of other systems to reduce this reporting burden. Looking at this, the Netherlands had no coordination with other international systems and only with its national NOx emissions trading scheme (Environment Agency 2010b, 12). The reporting burden on installations in the Netherlands, thus, was high as they had many reporting requirements from different systems to adhere to. Additionally, the NEa validated the monitoring plans and installations were forced to correct possible deficits.

Belgium, on the other hand, demonstrated better coordination with other systems which led to a reduced reporting burden on Belgian installations (European Environment Agency 2009b, 20). Especially the Walloon Region, which either fully or partly coordinated its ETS reporting requirements with other reporting requirements. Comparing the three regions, coordination was the poorest in the Flemish region as was only partly coordinated with the UNFCCC⁴. Thus, overall, installations in Belgium faced a lower reporting burden compared to Dutch installations.

5.2.4 Compliance with the ET Directive

Article 16 of the Directive refers to the rules regarding the violation of the adopted national provisions in light of the Directive. This Article states how penalties should be “[...] effective, proportionate, and dissuasive” (Official Journal of the European Communities 2003, 6).

⁴ United Nations Framework Convention on Climate Change

Additionally, the names of the installations that exceed their allowances should be published and should pay an emissions penalty of €100 for each ton of CO₂.

In question 12.1, member states stated the penalties for infringements of national rules and regulations that implement the Directive. There were three types of infringements (“Operation without permit”, “Infringements of monitoring and reporting obligations”, and “Omission to notify changes to the installation”) and two types of penalties (Fines or imprisonment) (European Environment Agency 2009b, 34-35; Environment Agency 2010b, 24). Comparing the stated penalties, both countries varied in the way they tackled violations of the Directive. Throughout phase 2, both countries made no modifications to their penalties.

Looking at the aforementioned infringements, the Netherlands and Belgium varied considerably in terms of using imprisonment as a possible penalty. In the Netherlands, in no case were Dutch operators to be punished through imprisonment (Environment Agency 2010b, 24). In Belgium, however, imprisonment could vary between 8 days and 3 years (European Environment Agency 2009b, 34-35). The most strict region here was the Walloon Region as it posed up to 3 years of imprisonment. In Brussels, imprisonment varied between 8 and 12 months. For the Flemish Region, imprisonment was either not applicable or left open for decision by the public prosecutor. In terms of imprisonment, thus, the Belgian Regional governments have been more strict by posing up to three years of imprisonment compared to none in the Netherlands.

However, the fines imposed on operators in the Netherlands who violated regulations regarding the Directive were much higher compared to fines in Belgium. Whereas fines in the Netherlands varied between €1.000 and €450.000, fines in the Walloon and the Brussels Capital Region varied between €2,50 and €62.500 (European Environment Agency 2009b, 34-35; Environment Agency 2010b, 24). For the Flemish Region, there was no minimum and fines could

amount to up to €250.000 for operating without a permit and €50.000 for the other two infringements (European Environment Agency 2009b, 34-35).

Altogether, the Netherlands did pose considerably higher fines than Belgium. However, then again, the Belgian regional governments posed imprisonment as a possible penalty while the Netherlands did not. As imprisonment imposes more personal consequences than financial loss, it can be perceived as a more severe punishment than a fine. Especially when looking at large installations, a financial penalty might not be as impactful as imprisonment. Therefore, it can be concluded that Belgium was stricter than the Netherlands regarding the violation of the Directive by its installations. On a final note, throughout all the reports published in phase 2, both the Netherlands and Belgium reported that none of the penalties were imposed on installations as they were all in compliance with the Directive.

To provide a clear overview of the comparisons made above, this table summarizes the comparisons across all different parts of implementation.

	The Netherlands	Belgium
The allocation of allowances		
Public consultation	Frequent consultation with industries during the writing process Opportunity to provide comments Newsletters and two organized conferences	FL: consultation with industries and two public consultations WA: copies to organizations and two public consultations BC: consultation with municipalities and relevant organizations
	Many amendments to the plan that benefitted installations	FL: no amendments WA: no amendments BC: various amendments
Allocation method	Based on historical emissions (best three out of five years), sectoral growth, energy efficiency, and a correction factor	FL: energy efficiency WA: energy efficiency BC: historical emissions
Implementing/monitoring of the ETS		
Competent authorities	Primarily the NEa	Divided among the three regions, poor coordination between regions
Verification of emissions	Few instances of non-reporting	No instances of non-reporting
<i>Penalties</i>	A daily penalty (2008-2009) or a new deadline and a fine (2010)	N/a
<i>Independent verifiers</i>	Independent verifiers were not required to recommend improvements to monitoring	Independent verifiers were required to recommend improvements to monitoring
Compliance with emission permits		
<i>Naming and shaming installations in case of non-compliance</i>	Yes	FL: yes WA: yes BC: yes

<i>Prohibition from selling reserve allowances in case of non-compliance</i>	Yes	FL: yes WA: yes BC: yes
<i>Routine checks</i>	Yes	FL: yes WA: yes BC: no
<i>Conservative emissions estimates in case of non-compliance</i>	Yes	FL: no WA: yes BC: no
<i>Withdrawn of permits and suspension in case of non-compliance</i>	No	FL: yes WA: no BC: no
MRG	Implemented and no derogations are permitted	Implemented with few derogations: FL: derogations for plant labs and the approval of the use of fuel streams WA: derogations for commercial liquid, gaseous fuels and plant labs BC: no derogations
Reporting burden	High due to poor coordination with other systems	Low due to good coordination with other systems
Punishment for non-compliance with Directive	No imprisonment	Imprisonment varying from 8 days to 3 years
	Fines between €1.000 and €450.000	Fines up to €250.000

6. Conclusions

In conclusion, an analysis of the relevant documents submitted to the EU by Belgium and the Netherlands has demonstrated how both countries varied in implementing the ETS in phase 2. Moreover, it has demonstrated how their industrial composition has not entirely impacted their implementation of a decentralized climate policy system like the ETS as initially expected.

On one hand, it was expected that member states with a more pollutive industrial composition would be protective of their prominent industries in the allocation process. An analysis of the NAPs brought forward how the Netherlands has indeed been more protective of its industries in light of the allocation of allowances. That is to say, the Netherlands involved the relevant industries in the allocation process more than Belgium and was more responsive to the interests of the affected installations. Moreover, the allocation method of the Netherlands was most beneficial to installations as it was based on historical emissions and installations could choose their most beneficial years. In light of the process of allowance allocation, thus, the more pollutive industrial composition of the Netherlands translated to a more responsive government and an allocation process in which the industries were more involved and benefitted.

On the other hand, it was expected that member states with a more pollutive industrial composition under the ETS would pose a less strict enforcement of the system. Looking at the monitoring of ETS installations, Belgium was inconsistent in its monitoring due to the delegation of authority to the regional governments. The Netherlands, on the other hand, was more straightforward in its monitoring and demonstrated equal treatment for installations on a national level. Where the Belgian regions varied in measures taken to ensure compliance with emission permits, the Netherlands was stricter as it imposed all proposed measures except for the withdrawal

of permits. In light of the regulation of compliance with emission permits and application of the MRG, the Netherlands was stricter as it imposed almost all proposed regulations and allowed no derogations. Looking at installations' compliance with the Directive, however, the infringements of Belgium were more impactful as all three regional governments allowed imprisonment as a punishment. Overall, the more pollutive industrial composition of the Netherlands has not caused the Netherlands to be lenient in its implementation. On the contrary, the Netherlands has been more strict in most areas compared to Belgium.

In short, the more pollutive industrial composition has caused the Netherlands to be more considerate of its industries' interests but, on the other hand, has not led to less strict enforcement of the system. This demonstrates that in a decentralized climate policy system that encompasses various independent nations in a multinational system, structural differences do not necessarily obstruct the implementation of such a system. Taking this to a global level would indicate that a decentralized global climate policy system can be constructed and structural differences between states can be overcome as they adhere to the framework of a global system. However, harmonized allocation rules would be essential if a global system were to be constructed to prevent unequal treatment between similar installations on an international level.

On a final note, one limitation of this research is the regional fragmentation of Belgium. As this leads to less state capacity in light of policy implementation, this could have influenced implementation of the ETS. Future research could address this limitation by comparing two other member states which both have a centralized political system. Moreover, another limitation of this research has been its sole focus on phase 2 of the ETS, as the system has been reformed into a centralized system since. Therefore, future research could look into phases 3 and 4 to examine the workings of a centralized climate policy system. Lastly, as this research focused solely on the

industrial composition of member states, future research could consider other structural differences between member states and examine their impact on implementing a decentralized policy system.

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