Master Thesis

Lost in Translation

A Multilevel Analysis of the Transposition Deficit of the EU Environmental Acquis

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Abstract

The European Member States have a poor track-record of transposing directives into the respective national law. This phenomenon is particularly common in the field of environmental policy. This thesis sets out to investigate the underlying reasons for the transposition deficit for all environmental directives that were introduced after the Lisbon Treaty of 2009. Moreover, this thesis differentiates between factors intrinsic to the directive itself and factors that vary from Member State to Member State. Thereafter, this thesis applies a multilevel linear regression analysis based on a growing body of academic literature on the transposition deficit of EU directives in general. The results show that the time-granted for the transposition and the commission delegated directives have an impact on the transposition time. By extension, this means that, for European environmental policies, the type of policy, the complexity of the directive, administrative capacity, degree of decentralization and degree of Pro-Europeanism have no impact on the transposition time.

Preface

I hereby proudly present my Master Thesis: *Lost in Translation: A Multilevel Analysis of the Transposition Deficit of the EU Environmental Acquis*. It represents the final product of my MSc in International Public Management & Public Policy at Erasmus University Rotterdam in the Netherlands.

Beyond that, this thesis is the culmination of four years of study, given that I did a Bachelor in European Studies at Maastricht University. I have always been interested in the European Union, its intricacies, complexity, pitfalls, and dynamics, especially vis-à-vis the Member States. Moreover, I have considerable experience for my age in the field of environmental protection, both in the public and private sector. Bringing together my general interest in the environment and EU, I eventually decided to study this rigorously for my Master's thesis.

Overall, it was an arduous, time-intensive, but very fruitful experience. The specificities of my topic changed quite considerably, especially in the beginning, as I struggled with honing down a manageable topic that would fit the scope of the thesis. It was important to me to conduct a quantitative analysis, because I do not have a lot of experience therein and felt I could acquire many skills that would prove beneficial in the long-run. My inexperience with quantitative models was also one major stumbling point in the thesis process. Here I would like to thank Prof. Asya Zhelyazkova for not only offering a crash-course in quantitative research designs but also for giving me personalized feedback, especially for the coding in the statistical software 'Stata.' Second, I would like to thank Carley Panjer, who graciously took me in over the past few months to work on our respective theses together. It was a lovely experience coming over to study, to share our frustrations, and to ultimately overcome the obstacles. Thank you.

Lastly, I would like to thank Prof. Markus Haverland for the invaluable guidance offered throughout the entirety of the process. Thank you for granting me so much flexibility and nudging me in the right direction through steering questions. Thank you for taking the time to sit down with me whenever I was stuck, which happened more often than I'd care to admit.

Lukas Meier
Rotterdam, July 2019

List of Abbreviations

Official Abbreviations of the European Union Member States

Belgium	BE	Lithuania	LT
Bulgaria	BG	Luxembourg	LU
Czech Republic	CZ	Hungary	HU
Denmark	DK	Malta	MT
Germany	DE	The Netherlands	NL
Estonia	EE	Austria	AT
Ireland	IE	Poland	PL
Greece	EL	Portugal	PT
Spain	ES	Romania	RO
France	FR	Slovenia	SI
Croatia	HR	Slovakia	SK
Italy	IT	Finland	FI
Republic of Cyprus	CY	Sweden	SE
Latvia	LV	United Kingdom	UK
European Union – average for the 28 Member States		EU28	
European Union – average for select 24 Member States		EU24	

European Institutions & miscellaneous

European Environmental Agency	EEA
European Commission	EC
European Parliament	EP
Common Foreign and Security Policy	CFSP
Euro (currency)	EUR / €
Ordinary Legislative Procedure	OLP
Qualified Majority Voting	QMV
European Economic Area	EEA

1. Introduction

> The 'grow now, clean up later' economic model that dominates our world and which does not account for climate change, pollution or the degradation of our natural capital is unsustainable. Europe needs to urgently step up efforts to transform its key systems of production and consumption towards sustainability. – Hans Bruyninckx (European Environmental Agency, 2018, p.2)

It is with these words that the Director of the European Environmental Agency (EEA) looks upon the European Union's (hereafter EU) efforts in the field of environmental protection. Environmental issues were, for a long time, seen as futuristic. Given the substantial increase in the frequency and strength of natural disasters, the continued deterioration and degeneration of soil, plant-life, and biodiversity, as well as the growing mountains of trash worldwide, the issue at hand can no longer be pushed off. The effects are real and apparent. According to Oxfam International, "a quarter of the world's population is threatened by storm surges and tsunamis", "more than 150 million people live on land that will be below sea level or regular flood levels by the end of the century", and each year "we see an average of 400 extreme weather events" (Oxfam, n.d.).

There have been several phases to the European Union's environmental policy. For the past two decades, however, environmental issues are approached via two broad avenues: *mitigation* and *adaptation* (European Environmental Agency, 2015). Mitigation refers to the tackling of the root causes of climate change, whereas adaptation refers to the changes required in order to live with the evolving world. The EU's environmental policy addresses both *mitigation* and *adaptation* since the environmental impact of unsustainable economic activities is a transnational issue (European Environmental Agency, 2015). The environmental impact is inherently complex and transnational, as, for example, polluted water flows in rivers across multiple countries, the wind carries greenhouse gases across borders, and potentially-harmful chemicals are taken up by the soil, enter the food cycle and land on consumers' plates. As such, the establishment of a coherent, harmonized strategy when it comes to tackling environmental issues is essential for its effectiveness and is one of the EU's goals (European Commission, 2019). The European Union recognized this early, leading to the introduction of an Environmental *acquis* of hundreds of legislative acts since the mid-80s, applicable to both its Member States and, to a lesser degree to third countries (Lechner, 2016).

The EU is active in promoting environmental protection internationally. By integrating environmental clauses in trade agreements with third countries, it aims to propagate environmental protection abroad, with mixed results (Lechner, 2016). The EU promotes ambitious global action through the UN climate convention (UNFCCC), bilateral relations with non-EU countries, policies, and initiatives at EU and international level and by financial support to developing countries in their efforts to tackle climate change (Lechner, 2016). This speaks to the global presence of the EU and its environmental policy.

The European Union has conceptualized three sets of key climate and energy targets, ranging from the short to long term. These are the 2020 climate and energy package, 2030 climate and energy framework, and 2050 long-term strategy, respectively. By 2020, the European Union aims to cut greenhouse gases by 20% compared to 1990 levels, draw 20% of EU energy from renewable sources and improve energy efficiency by 20% (European Commission, n.d.A). The key targets for the 2030 framework build thereon, increasing the percentage goals to 40%, 32% and 32.5% respectively (European Commission, n.d.B). While the specific goals and targets of the 2050 long-term strategy are not yet set, the "European Commission calls for a climate-neutral Europe by 2050" (European Commission, n.d.C).

The environment is enshrined within EU primary law, which speaks to its importance for the European Member States. According to Article 191(1) Treaty on the Functioning of the European Union, "Union policy on the environment shall contribute to pursuit of the following objectives: preserving, protecting and improving the quality of the environment, protecting human health, prudent and rational utilisation of natural resources, promoting measures at international level to deal with regional or worldwide environmental problems, and in particular combating climate change" (European Union, 2009, Article 191).

There have been, and continue to be, many instances where the Member States of the European Union fail to or purposefully neglect the timely transposition of EU environmental policies. This phenomenon undermines the progress towards the EU's short- and long-term targets and acts not just to the detriment of the environment, but the general population as a whole. A new European Commission report states that the costs of the implementation gap materialize in many different forms, ranging from illnesses increasing as a result of air and noise pollution, amenity values of surface waters decreasing due to poor ecological quality, inadequate environmental risk prevention due to insufficient liability requirement for economic operators

to, lastly, unrealistic market opportunities (European Commission, 2019). The European Commission, within the same report, states that one of the key reasons for this implementation gap is the failure of Member States to transpose the EU environmental legislation in a timely manner (European Commission, 2019).

Compliance with EU-law is necessary for the proper functioning of the European Union. Irrespective of which theoretical lens – *realism* or *functionalism* – is applied to the issue of compliance with EU environmental policy, it quickly becomes apparent that the Member States have an incentive to comply. In short, realists assert that States comply with international agreements when it is in their interest (Simmons, 1998). Given that environmental protection is becoming an ever-more salient topic in the public sphere, and pressure is increasing on domestic and international legislators, compliance with legislation pertaining to it is in the interest of States. Functionalists argue that international agreements provide an opportunity to solve problems that the States could not solve any other way (Simmons, 1998). The adverse effects of environmental issues are, as mentioned earlier, real and measurable. This creates a problem that policymakers should be interested in solving, according to functionalists. Therefore, put bluntly, *compliance matters.* Why, then, is there such a significant degree of non-compliance? Non-compliance with environmental policy, as will be elaborated upon in Section 1.3, is detrimental to the society and the environment. Non-compliance stems, in no small degree, from the failure to transpose directives on time (European Commission, 2019).

It is for these reasons that understanding the reasons for the delay in the transposition of the EU's environmental policy into national law is an essential area of inquiry.

1.1 Research Question

> *What factors determine the transposition time of European Union Environmental Policy into Member State legislation post-Lisbon Treaty?*

1.2 Sub-Questions

The overarching research question can be broken down into two sub-questions. Variables that influence the transposition time are commonly placed in two distinct categories, namely *directive-level* and *domestic-level* variables, which will be elaborated upon later. These levels result in two distinct sub-questions that help structure the analysis.

1. To what extent do *directive-level* factors affect the transposition time of EU environmental policy?
2. To what extent do *domestic-level* factors affect the transposition time of EU environmental policy?

1.3 Societal Relevance

Climate change and its adverse effects are global issues that cannot be stopped without international cooperation, or, at least coordination. As such, the European Union's efforts in harmonizing environmental policy is of high importance for society as a whole. By explaining what determines the transposition performance of countries in this policy area, the results of this study can serve as a guide for the transposition of future EU legislation.

Considering the generally poor performance of Member States in the transposition of directives in policy fields such as social and transport policy (Haverland & Romeijn, 2007; Kaeding, 2006), it is foreseeable that the Member States fail to transpose environmental directives in a timely fashion. These 'implementation gaps' have severe implications on the proper functioning of the European legal acquis. "Implementation gaps are costly to society and materialise in various forms, such as reduced amenity values of surface waters with poor ecologic quality, and increased illness due to air and noise pollution" (European Commission, 2019, p.7). While some of these gaps are somewhat difficult to measure, they remain quantifiable. Table 1 provides an overview of the costs of not implementing EU environmental law per year across various policy areas in billions of euros (European Commission, 2019).

Policy area	Range estimate	Central estimate
Air	8.7 – 40.4	24.6
Nature & biodiversity	10.5 – 15.7	13.1
Water	4.3 – 14.3	9.3
Waste	3.2 – 4.8	4.0
Chemicals	0 – 0	0
Industrial emissions and major accident hazards	3.0 – 4.4	3.7
Horizontal instruments	-	-
Total	**29.7 – 79.6**	**54.7**

Table 1: Cost of not implementing EU environmental law, billion euros per annum, 2018

As seen, the costs of non-implementation of existing EU environmental law, to which the failure to transpose environmental directives contributes, amounts to an approximate 54.7 billion Euros per year. While these financial costs constitute one aspect, the social relevance extends beyond this. Given the vastly different socio-economic and politico-administrative configurations of each EU Member State, determining the factors that delay the transposition of EU environmental policy could assist in the tailoring of future EU environmental policy that is more readily implemented. Beyond thereby ensuring the timely, correct transposition of EU environmental policy, this would lower the financial, administrative, and judicial burden that non-compliance procedures bear upon the European institutions and the Member States alike. Given this, the findings this thesis sets forth are socially relevant.

1.4 Academic Relevance

The transposition delay of EU directives has been subject to quite some research over the last two decades. This study seeks to give empirical backing to theoretical claims and may provide new insights that can contribute to the existing body of knowledge of Europeanization, transposition, and compliance research. There have been numerous studies into the transposition of EU directives in general (Mastenbroek, 2003; Mastenbroek & Kaeding, 2006; Haverland & Romeijn, 2007; Thomann & Zhelyazkova, 2017; Lampinen and Uusikylä, 1998, Mbaye, 2001; König et al, 2005; Börzel et al, 2007; Berglund et al, 2006; Börzel 2001). While the majority of this academic body has been qualitative, the body of quantitative studies into compliance with EU policy has been growing (Bursens, 2002; Haverland, 2000; Haverland et al., 2011; Kaeding, 2008; Sprungk, 2013; Zubek, 2011).

Much like the body of literature in general, the body of academic research specifically into environmental policy has steadily grown (Bandarouk et al., 2018). However, the majority thereof has a different focus or is outdated (Bandarouk et al., 2018). For example, academics have examined the role of national environmental ministries (Jordan, 2001), the globalization of the European Union environmental policy (Kelemen, 2010), the impact of the economic crisis on EU environmental policy (Burns & Tobin, 2016) and lobbying within environmental policy (Gullberg, 2008). Given that the environmental *acquis* continues to grow, updating the research, either by refutation or support, is a vital addition to the academic literature. Therefore, this thesis closes a critical gap in knowledge.

The most important contribution of this thesis in academic terms, however, is methodological. "Most EU scholars focus on factors at the *national level* to explain member states' non-compliance with EU laws" (Zhelyazkova et al., 2009, p.36). This thesis goes beyond this, as it applies a multilevel analytical model. Beyond accounting for factors that influence the transposition time on a directive-level, this thesis accounts for the hierarchical relationship of the independent variables by placing them within a hierarchical conceptual framework. "Most studies on transposition disregard the multilevel structure of transposition data" (Zhelyazkova et al., 2009, p.39). It is this multilevel framework that allows for the gathering of specific results through the differentiation of *levels*. "This differentiation implies that the group and its members both influence and are influenced by the group membership" (Goldstein, 2010, p.2). Ignoring the presence of levels risks a misinterpretation of the results, given that the group effects are overlooked (Goldstein, 2010). As such, this thesis's use of the multilevel analytical model may propagate the use thereof in future academic papers, which is an important academic contribution.

1.5 Thesis Structure

In the first part of this thesis, the overarching topic was introduced, contextualized, and a research question, including sub-questions, proposed. Second, within the literature review, the historical evolution of the EU's environmental policy will be shown, where after the existing body of Europeanization, implementation, transposition, and compliance literature is introduced. Third, the theoretical framework is presented, delineating two distinct levels of variables that are used for the analysis. These culminate in a set of hypotheses that are tested. Fourth, the research design is explained, and the variables mentioned above are operationalized, elaborating on the dependent and independent variables and explaining the sources for the data and case-selection. Fifth, the analysis is conducted, and the model's assumptions are tested. Sixth, the findings are discussed. Lastly, the thesis concludes with a summary, eluding to limitations and further avenues of future research.

2. Literature Review

This thesis makes recurrent references to the terms of implementation, transposition, and compliance. It is therefore essential to define the terminology, as well as to elaborate on existing literature thereon. Implementation, in the context of this thesis, encompasses the penultimate stage of the policy cycle (Howlett et al., 2009). Based on Lasswell and Brewer's work in the field[1], Howlett proposes a model of a five-stage policy cycle (Howlett et al., 2009). This policy cycle can be visualized as follows.
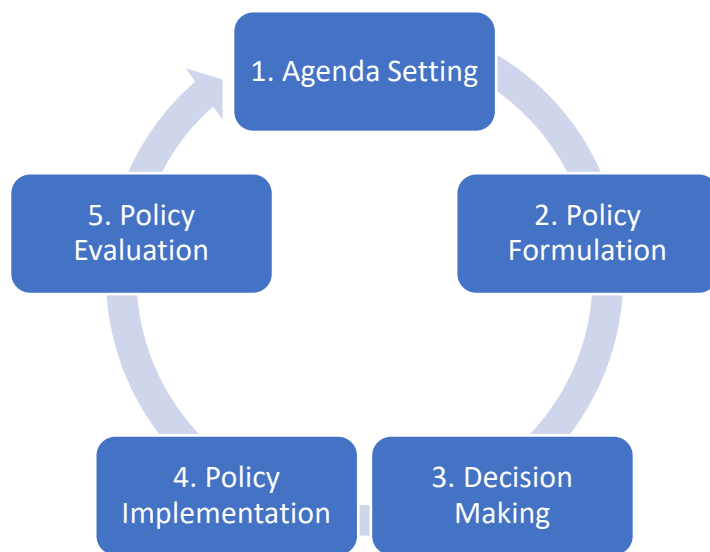
Figure 1: Policy Cycle (Howlett et al., 2009)

Within the policy cycle, the legislative body introduces a problem (Howlett et al., 2009). Thereafter, all relevant bodies, including interest groups, are consulted, and the policy is formulated. In the third stage, the policy is formally decided upon through the proper legislative channels and appropriate voting mechanisms (Howlett et al., 2009). Fourth, the policy is implemented where relevant. Lastly, the policy is evaluated and, depending on the outcome thereof, either the policy is amended, left as is, or entirely abolished, thereby restarting the policy cycle (Howlett et al., 2009). The advantage of this cycle is that it disaggregates the complexity of any given policy, thereby allowing for the understanding of a multi-dimensional, multi-actor process (Howlett et al., 2009). However, this understanding of the policy process can be misinterpreted as suggesting that policy-makers go about solving public problems in a very systematic and more or less linear fashion, which might not always be the case. (Howlett et al., 2009). In reality, for example, policymakers may solely be reacting to external

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[1] For the original work, please refer to (Lasswell, 1956) and (Brewer, 1974).

circumstances (Howlett et al., 2009)[2]. Moreover, ad hoc and idiosyncratic processes may originate from problems in the identification of problems and the dynamic development and implementation of policies. Moreover, "in practice, the stages are often compressed or skipped or are followed in an order unlike that specified by the model" (Howlett et al., 2009, p.13)[3]. Such a compression may occur, for example, if external circumstances create the need for urgent legislation[4]. In short, the linearity proposed by the Policy Cycle often does not hold.

The policy process, in large, does not vastly differ between the processes of national legislatures and that of the European Union. One unique feature of European Union legislation, however, is its categorization of law into regulations, directives, decisions, recommendations, opinions, delegated acts and implementing acts and the respective interplay with the domestic law of the EU's Member States, as will be elaborated upon later. "Implementation refers to the stage between the transposition of EU directives and the enforcement of these directives by European or national actors" (Bondarouk et al., 2018). Given the unique character of EU directives, which will be elaborated upon later, the implementation stage is subcategorized into two interrelated phases – *transposition* and *compliance.* It is important to note, at this point, that compliance is the broader concept which encompasses *transposition*[5].

The first phase is the transposition. Transposition refers to the incorporation of the directive's content into national laws and regulations. Varying from directive to directive, Member States are granted a specified period for the transposition. This period ranges from months to several years. After that, national and sub-national implementation agencies are tasked with familiarizing themselves with the corresponding monitoring and supervisory mechanisms and informing the policies' target groups about their rights and obligations. Moreover, the agencies shall monitor and impose sanctions in the case of non-compliance with the incorporated legislation. These tasks cannot be fulfilled without the proper transposition of the EU directives. "Accordingly, the European Court of Justice (ECJ) considers timely transposition,

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[2] For a theory-based approach on why policymakers may deviate from the policy cycle, please refer to John Kingdon's Multiple Streams Model (Kingdon, 1984; 1995).

[3] For more studies on the criticisms of the policy cycle, please refer to (Howlett et al., 2009, p.13-14).

[4] A concrete example would be the 2015 refugee crisis and policy makers initiating special meetings in the European Council to find solutions for the sudden influx of refugees.

[5] Please see Figure 4 (Page 21) for a description of how these concepts relate to one another.

that is, within the period prescribed by the directive, as an extremely rigorous obligation" (Haverland & Romeijn, 2007, p. 760). The ECJ has stressed that the disjointed implementation within all EU Member States hinders the elimination of inequalities before the law (Haverland & Romeijn, 2007). This also has negative implications on workers' rights and economic ramifications, inter alia (Haverland & Romeijn, 2007; Versluis, 2003)[6]. Moreover, the legitimacy of common policies and the European integration process are undermined as a result of delayed or faulty transposition (Bursens, 2002; Haverland & Romeijn, 2007).

The second phase is compliance. Compliance is a broad concept, as it encompasses the final two stages of the Howlett's Policy Cycle. Given the supremacy of EU law over Member State law, Member States are obligated, under threat of penalties in the case of non-compliance, to comply with EU law (Chalmers et al., 2010). For this thesis, in a very narrow definition, compliance refers to the yes/no dichotomy as to whether or not a country follows the statutory laws and regulations once they come into effect. Therefore, the obligation of compliance begins the moment EU law goes into effect, which is always mentioned in the text of the policy. As such, even measures that require transposition must be complied to from a legalistic perspective, irrespective if the directive has been transposed or not. Therefore, transposition is a subset of compliance.

The European Commission is rigorous about cases of non-compliance, irrespective of the policy field.

> In addition to undertaking its own studies and assessments, the Commission investigates complaints from EU citizens and organisations, petitions from the European Parliament, and questions from MEPS. The Commission can use reports submitted by Member States themselves (such reporting obligations are legal requirements under many environmental directives), as a means of detecting breaches of Community environmental law as well as information generated through its own investigations (European Union, n.d.B)

Once a breach of EU law has been established, the Commission engages in a four-step infringement procedure, designed to mitigate non-compliance without overbearing the European Court of Justice.

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[6] See (Haverland & Romeijn, 2007, p.760) for references to additional studies on the negative implications of non-compliance of Member States with EU law.
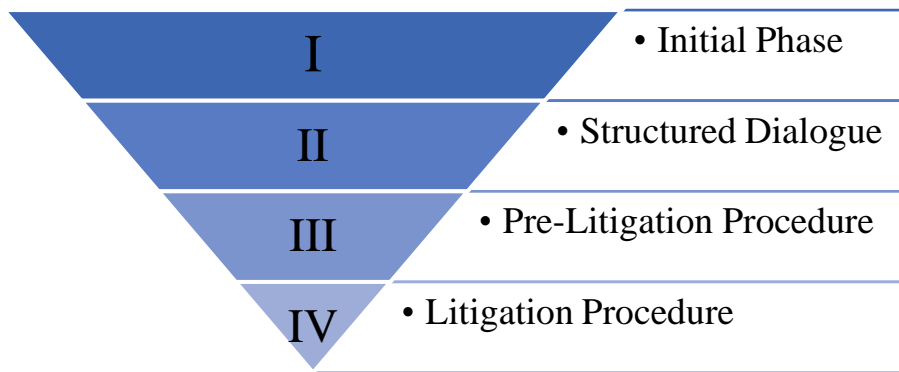
Figure 2: Infringement Procedure

After the detection of non-compliance with EU law (Phase I), the European Commission engages in informal bilateral dialogues with the concerned Member States (Phase II) (European Union, 2009). Should these talks fail, the European Commission requests explanations from the Member State (Phase III) based on Article 258 Treaty on the Functioning of the European Union (TFEU) (European Union, 2009). Should the Member State, in light of the formal pre-litigation procedure continue to fail to adhere fully to the EU law, the European Court of Justice can deliver a judgment and penalty payment (Phase IV) under Articles 258, 260(2) and 260(3) TFEU (European Union, 2009).

There is substantial existing literature on European environmental acquis and the implementation of EU policies (Haverland & Romeijn, 2007; Phelan, 2018; Thoman & Sager, 2017), as will be elaborated upon later. As such, the first part of the literature review sets forth a brief historical overview of the significant steps within the evolution of the European environmental policy, followed by a discussion of Europeanization literature. Third, general implementation-of-EU-policy literature is considered, which can be subcategorized into transposition and compliance literature.

2.1 Background: European Environmental Policy

The European environmental policy has undergone substantial changes since its conception in 1972. Ever since there have been several major so-called 'stepping stones.' These are events that changed, to varying degrees, the decision-making procedures, and the extent to which the EU can be active within the field of environmental policy. It is essential to understand this evolution in order to fully grasp the relationship the EU Member States share with the environmental acquis. The major 'stepping stones' can be visualized as follows:

Year	Event
1972	• European Council Declaration • 1st Environmental Action Programme
1981	• Directorate-General Environment founded within European Commission
1987	• Single European Act
1993	• Maastricht Treaty
1994	• European Environmental Agency (EEA) founded
1999	• Amsterdam Treaty
2009	• Lisbon Treaty

Figure 3: Timeline of 'Stepping Stones' of European Environmental Policy

European environmental policy was formally founded through a European Council declaration made in Paris in October 1972. In the same year, the EU adopted its first Environment Action Programme, based on the ideas that prevention is better than cure and the 'polluter pays' principle (Cave & Blomquist, 2008). The first environment ministries were established throughout this decade within a number of European Member States. Throughout the 1970s and 1980s, the EU continued to build on its body of environmental legislation (Jordan, 2001). The European Community expanded to twelve Member States and regained momentum through the Single European Act (SEA) in 1987. "The SEA explicitly recognised the environmental policy aims with three new articles, reflecting an independent political valuation of environmental protection as an important European Communities goal" (Zito et al., 2019, p.197). Moreover, the European Commission established the first European-wide system for environmental data collection, which would later inspire the creation of the European Environment Agency in 1994.

The 1990s were notable for two reasons. First, the European Community became the European Union through the Maastricht Treaty, which also strengthened the role of the European

Parliament. "Granting the European Parliament co-legislative powers with the Council of Ministers made the Parliament a stronger veto player in EU environmental policy" (Zito et al., 2019, p.191). Later, the EU adopted the Amsterdam Treaty, which states that environmental protection requirements are to be integrated into Community policies and activities. Secondly, membership of the Union rose to 15 with the accession of Austria, Finland, and Sweden, seen by many as pioneers in environmental policy (Jordan & Liefferink, 2004, p.46).

In 2009 the European Union concluded the Lisbon Treaty, which had some important ramifications on EU environmental policy. Benson & Jordan categorize these ramifications under general principles & objectives; the allocation of competences; institutional developments; procedural innovations; and participatory democracy. For the general principles & objectives, the Lisbon Treaty broadens its scope (Article 3 TFEU), allowing for more EU actions to protect the environment (European Union, 2009). This coincides with the changes in the allocation of competences. According to the Lisbon Treaty, the EU and its Member States are henceforth obligated to deal with regional and global environmental problems, and in particular combatting climate change, by promoting measures at the international level (Benson & Jordan, 2010). As to the institutional developments, Benson & Jordan argue that the Lisbon Treaty would have a more significant impact on the EU's Common Foreign and Security Policy (CFSP), rather than environmental policy, but that it remains to be seen if this holds in reality[7]. For the procedural innovations, Benson & Jordan state that the likely increase in the use of qualified majority voting (QMV) in the Council will facilitate speedier development of the EU environmental policy under the new Ordinary Legislative Procedure (Benson & Jordan, 2010). A qualified majority is reached when 55% of Member States vote in favour, which represents at least 65% of the EU's total population (European Council, 2019). Lastly, with respects to the impact on the participatory democracy, environmental activists now have greater access to influence environmental policy through the so-called 'right of citizens' initiative (Benson & Jordan, 2010). At the end, however, Benson & Jordan determine that there will most likely not be any fundamental changes in the EU environmental policy, stating "plus ça change, plus c'est la même chose", which translates to 'the more it changes, the more it remains the same' (Benson & Jordan, 2010, p. 474)[8].

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[7] Benson & Jordan's article was published a few months after the Lisbon Treaty came into effect. This means that the exact post-Lisbon, intra-institutional dynamics of the European institutions and their relationship with the Member States were yet fluid.

[8] Own translation.

Having contextualized European environmental policy, it is worth considering existing academic literature on the implementation, transposition of- and compliance with European policy in general.

2.2 Europeanization Literature

To an ever-increasing degree, the European Union 'matters' in the political sphere, both domestically and internationally (Jordan & Liefferink, 2004, p.1). This trend is commonly referred to as *Europeanization*, but the exact definition differs as to who is asked. In general, however, there are five different ways in which Europeanization is approached. First, Europeanization could be seen as the top-down impact of the European Union on its Member States (Jordan & Liefferink, 2004, p.5)[9]. Second, Europeanization can be seen as an increase in the EU's competences (Jordan & Liefferink, 2004)[10]. Herein, "Europeanization is synonymous with European integration" (Jordan & Liefferink, 2004, p.5). Third, Europeanization can be seen as the increased use of the EU as a reference point by national and subnational actors (Jordan & Liefferink, 2004)[11]. Fourth, Europeanization can be seen as the increased use of European institutions as a facilitator of the transfer of policies, information, and concepts between Member States (Jordan & Liefferink, 2004)[12]. Lastly, Europeanization may refer to the "two-way interaction between states and the EU" (Jordan & Liefferink, 2004, p.5), wherein the Member States actively influence new EU policy according to their national preferences, thereby precluding the use of national policy processes[13]. While the exact definition of Europeanization remains contentious, one fundamental characteristic remains constant. The European Union 'matters' more for its Member States. As such, this thesis defines Europeanization as the increasing importance and role of the European Union in the policymaking processes of its Member States.

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[9] See (Héritier et al., 2001, p.3) for a formal definition of Europeanization from a top-down perspective.

[10] See (Cowles et al., 2001) for more articles on the European integration approach to Europeanization.

[11] For more on the growing importance of the EU as a reference point for national and subnational actors, see (Hanf and Soetendorp, 1998, p.1) and (Wessels et al., 2003, p.xiv).

[12] For more on the 'policy transfer', see (Bomberg & Peterson, 2000).

[13] For more on the 'two-way interaction between states and the EU', see (Bomberg & Peterson, 2000, p.8).

As a consequence of Europeanization, "member states try to upload their policies to the EU level, with the aim of laying these down in binding EU legislation" (Mastenbroek & Kaeding, 2006, p.332). In this way, Member States try to minimize the costs of adaptation and to establish a level European playing field for their industry (Héritier, 1995, p.278). As a result of the different definitions of Europeanization, different theoretical lenses have been developed and used to analyse the phenomenon. Overall, however, rationalism and constructivism remain the dominant theoretical schools within in this field (Knill & Lenschow, 2001). Both schools apply an ontological understanding of human nature and, therefore, the logic behind choice (Knill & Lenschow, 2001). The leading rationalist and constructivist propositions have been aptly summarized:

> The core of the constructivist project is to explicate variations in preferences, available strategies, and the nature of the players, across space and time. The core of the rationalist project is to explain strategies, given preferences, information, and common knowledge. Neither project can be complete without the other. (Katzenstein et al., 1998, p. 682)

The body of Europeanization literature began in the 90s, but gain traction in the early 2000s as more and more scholars devoted attention to it[14]. One recurring theme throughout the academic literature discussing the Europeanization of policy is the *goodness of fit* argument. This refers to how well the European provisions coincide with "national rules and practices for explaining the degree of national adjustment to European requirements" (Haverland, 2000, p.83). In a qualitative analysis of Germany, the Netherlands, and the UK, Haverland finds that "the number of institutional veto points that central governments have to face when imposing European provisions on their constituencies, ultimately tend to shape the pace and quality of implementation" (Haverland, 2000, p.83) However, "the differential gap in the goodness of fit cannot explain the pace and degree of adaptation to European requirements" (Haverland, 2000, p.100).

Similarly, Bugdahn finds that Europeanization coincides with a trend of so-called *domestication*, which refers to the "domestic choices of non-prescribed or non-recommended policy options in the same policy area" as European legislation (Bugdahn, 2005, p.177). This may appear counterintuitive at first, but this merely means that the Member States retain the possibility of introducing more rigorous or ambitious legislation, as long as they adhere to the

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[14] See (Börzel & Fagan, 2015) for additional references to Europeanization literature since the 1990s.

minimum thresholds set forth by the European Union. Similar to Haverland (2000), Bugdahn studies only a select few European states, namely Ireland, the UK, and Germany. She sets forth that a number of domestic factors, inter alia, impact the Europeanization of policies to various degrees. These include the "[pre-existing capacity, contradicting tradition, supervisory capacity, organizational capacity and domestic interest in broader reforms]" (Bugdahn, 2005, p.182).

In line with the domestic-explanations approach for the Europeanization, Mastenbroek and Kaeding assert that the generally much-supported concept of "*goodness of fit* lacks empirical and conceptual strength" (2006, p.331). The Goodness of fit is too deterministic, as it does not consider the role of domestic politics (Mastenbroek & Kaeding, 2006). Giving credence to domestic factors is, as such, an important factor for all subsequent studies of the Europeanization of policies.

Börzel, Hofmann, Panke & Sprungk explain, to a point, cross-country variation in non-compliance with European law by examining domestic factors, inter alia (2010). Their main finding sets forth that real politics does, in fact, still hold sway over the implementation of European policy across the Member States. In addition to that, it was found that small countries with efficient administrations comply the most (Börzel et al., 2010, p.1363). Through the use of a congruence analysis that compared the realist, rational institutionalist and social constructivist school of thought, Börzel et al. find that domestic administrative capacities are important in determining the degree of compliance with EU law across over 6300 violations. Börzel et al. show that power, capacity, and legitimacy all affect the frequency of noncompliance. To elucidate, "States with high capacities and low political power violate European law less frequently than other member states" (Börzel et al., 2010, p.1382). For example, the United Kingdom complies more than Italy, despite having similar political power, since its bureaucracy is much more efficient (Börzel et al., 2010). For the third pillar of their analysis, Börzel et al. were not able to show conclusively that legitimacy in and of itself had an impact on compliance unless linked with capacity. The trend of *Europeanization* necessitates the implementation of more and more EU law in national systems, a topic which has been rigorously studied, as will be shown in the subsequent subsection.

2.3 Implementation Literature

Europeanization, as previously shown, explains the shift of policy-making from the national to EU-level. Despite this trend, EU Member States recurrently fail to implement EU law. This implementation deficit has been rigorously studied along two main channels. First, hypotheses "stemming from the discipline of public administration" are tested against the researcher's dataset (Haverland & Romeijn, 2007, p.758). Second, theories from the fields of international relations and EU studies have been used to examine the implementation deficit (Haverland & Romeijn, 2007). Implementation is often indirectly discussed in the literature on the transposition of- and compliance with European legislation. Irrespectively, it remains pertinent to this thesis to discuss some properties and developments of the European environmental policy (*acquis*) and how it is implemented.

The European environmental *acquis* often comes in the form of directives. Directives grant the Member States some flexibility as to the form and method but retain the legal obligation to make sure that directives come to full effect (European Commission, 2019). This process, however, "is prone to many problems that seriously endanger the effectiveness of the policies" (Haverland & Romeijn, 2007, p. 758). In purely economic terms, the costs and foregone benefits for the European Union amounts to an approximate "EUR 55 billion per year from not achieving the environmental targets specified in the EU environmental legislation" (European Commission, 2019). The incomplete or wrong transposition of EU environmental legislation is clearly a major contributing factor thereto.

According to the Treaty on the Functioning of the European Union, the European Commission, as 'guardian of the treaties,' is obliged to assist the Member States in their efforts and enforce laws that have been violated (Schmälter, 2018). Schmälter finds that the Commission prefers capacity-enhancing instruments, such as training Member State bureaucrats via the European networks and agencies and allocating more financial resources, over initiating infringement procedures that result in a decision by the European Court of Justice (Schmälter, 2018). Moreover, Phelan argues that the gradual delegation of more powers and responsibilities to the European Court of Justice has ramifications on policy fields of shared competences, such as EU environmental policy (Phelan, 2018). One such consequence is that the European legal order developed "beyond the limited arrangements provided for in European Treaties into a much more ambitious system incorporating national courts and private individuals" (Phelan,

2018, p. 1563). This is mostly due to the establishment of the infringement procedure and the principles of direct and indirect effect, and ECJ compliance-insurance (Phelan, 2018).

Research into the implementation of EU policy is often associated with a strong focus on legal compliance therewith. However, implementation goes beyond this due to the EU's multilevel governance structure. Thomann and Sager account for this, as they see a shift towards a more performance-oriented perspective on EU implementation (2017). They argue that policy instruments and goals may undergo context-sensitive modifications during the process of policy transposition. Implementers (domestic governments) should have flexibility and autonomy for adjustment to facilitate learning, capacity-building, and support-building in order to address policy problems (Thomas & Sager, 2017). Ultimately, effective implementation is measured by the extent to which the perceived outcomes correspond with the preferences of the actors involved in the implementation process (Thomas & Sager, 2017).

The implementation deficit research usually comes in the form of small-N analyses, where the focus lies on a small number of directives or few Member States. A small-N allows for very in-depth analyses, but cannot generalize over broader samples, given the ambiguity whether "patterns identified are intrinsic to their cases or hold across all directives" (Haverland & Romeijn, 2007, p. 759). As such, this thesis adds to the existing body of literature by taking a broader perspective. Therefore, large-N or quantitative studies are best suited to create a viable theoretical framework through which to analyse the transposition delay within the field of EU environmental policy.

2.3.1 Transposition Literature

A transposition deficit is apparent for many years now. As early as 2004, it was asserted that "in recent years problems with the transposition and, more especially, the implementation of EU laws have become more evident. This is mainly due to "the combination of a decentralized domestic administrative structure and the use of framework legislation" (Jordan & Liefferink, 2004, p.185). Most literature on the transposition deficit addresses the transposition deficit in two ways. The first method is by examining the performance of a country across all policy fields[15]. The second approach taken by scholars is to examine all, or

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[15] See (Bursens, 2002, p. 180) and (Haverland & Romeijn, 2007) for additional studies on the cross-policy performance of Member States

a representative set of, countries with regards to a singular policy field, such as on environmental policy, transport policy, or social policy[16].

A somewhat recent development is the emergence of a third category of literature on transposition. These are comprehensive, quantitative analyses on the delaying factors cross-sectionally and across a set of countries. One such example is the study by Haverland and Romeijn (2007), who examine the variation in EU policy implementation in the field of social policy. The analysis reveals modest variation between social policy areas, more profound cross-country differences, and substantial cross-area variations within some countries (Haverland & Romeijn, 2007).

Haverland, Steunenberg and Van Waarden conducted a quantitative study of the transposition of directives in five EU Member States across eight policy areas, namely agriculture, food, health and safety at work, other social policies, road transport, maritime shipping, telecommunications and energy, between 1978 and 2002 (Haverland et al, 2011). In brief, it finds significant cross-sectoral performance differences, which complicate generalization from studies of only one sector. These differences can be partly explained by "systematic cross-sectoral differences in transposition deadlines given, the share of Council versus Commission directives, and the legal implementation measures used" (Haverland et al., 2011, p.1). Herein, the 'implementation measures' refer to the domestic level legal and administrative tools, which are employed to transpose the directive.

The most recent academic article on the transposition deficit of EU environmental policy was written by Bondarouk and Mastenbroek in 2018. They propose a new conceptual framework on implementation performance that differentiates between three dimensions: substance, scope, and effect. In doing so, they find "evidence of three types of knowledge deficits: there is neglect of the 'scope' and 'effort' dimensions of implementation" in addition to disproportionate attention being given to a specific directive by Northwest European countries (Bondarouk et al., 2018, p.1). The operationalization of the independent and dependent variables, given their new framework, differs from the conventional theory-based approaches

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[16] See (Bondarouk & Mastenbroek, 2018) for additional studies on the methodological approaches taken by scholars to examine the implementation performance in the field of environmental policy.

to the transposition deficit. The emphasis does not lie *per se* on the results of their small-N quantitative study, but rather on testing the analytical model. While their analysis is limited to 18 directives, the analytical model remains innovative within the field of public administration studies.

Kaeding examines the transposition delays within the field of transport policy across Germany, Greece, UK, Spain, and the Netherlands between 1957 and 2004, showing that only 39% of the *acquis* was transposed in time (Kaeding, 2006). The analysis is split into three categories, namely European directive specific, national implementing specific variables and institutional & actor configurations. In applying a multinomial logistic regression accounting, Kaeding's findings support the data by other authors. While directive-level variables do have an impact, it is marginal and predominantly domestic-level factors influence the timeliness of the transposition process, which is also used as an indicator for compliance. In short, Kaeding argues that the "fewer actors involved in the making of the legal measure, the faster the transposition process" (Kaeding, 2006, p. 248)[17].

2.3.2 Compliance Literature

A considerable part of the Commission's workload is directly linked to non-compliance of Member States with EU law. "A major source of infringement proceedings remains the failure by Member States to implement directives punctually" (Dashwood et al., 2011, p. 137). A sizable amount of research has been conducted in this direction, with three particular studies standing out from the existing compliance literature.

Börzel et al. examine the extent to which Member States comply with EU policy based on their capacity to do so and their power vis-à-vis the institutions and other Member States (Börzel et al., 2010). Member States' non-compliance can vary in duration and across the stages of the official infringement proceedings, some being resolved within weeks whereas others drag on over the years. Some states fail to comply with EU law even once the ECJ has convicted them twice – once for violating EU law and secondly for not acting upon the court's original judgment (Börzel et al., 2010). They conclude the more powerful the state, the likelihood of non-compliance increases proportionally (Börzel et al., 2010).

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[17] See also Mastenbroek & Kaeding, 2006, p.337 for references to studies on domestic actors within the transposition process.

Other authors consider the fit between the European and national legal architecture as an explanatory factor for poor implementation and transposition (Steunenberg & Toshkov, 2009, Falkner et al. 2005; Kaeding 2006; König and Luetgert 2009; Thomson et al. 2007). This occurs despite, in purely legalistic terms, the principle of 'Primacy of European Union law' ensuring that EU law is treated preferentially whenever in conflict with national legislation (Chalmers et al., 2010). It is found that discretion and legal fit are important determinants of transposition time (Steunenberg & Toshkov, 2009). However, "[transposition] performance differs significantly across sectoral lines in addition to the cross-national diversity" (Steunenberg, & Toshkov, 2009, p.952)[18]. To elaborate, "[the] positive effect of government effectiveness and the quality of the civil service is very well established" (Steunenberg, & Toshkov, 2009, p.953)[19].

Similarly, Hofmann finds that the political weight of special interests (interest groups) can explain delays in changes from the non-compliant status quo to policies consistent with European legislation (Hofmann, 2018). Moreover, protracted and escalating infringement proceedings are the result of opportunistic governments maximizing political support by providing particularly influential special interests with continued non-compliance, thereby supporting the findings of Börzel et al. (Hofmann, 2018; Börzel et al., 2011).

Carruba, Gabel, and Hankla conducted a quantitative analysis of the political constraints imposed by national governments upon the European Court of Justice. By examining the degree of non-compliance of Member States with EU directives and regulations, and with ECJ judgements, they found that "the threat of noncompliance increases as the likelihood of retaliatory punishment (by the ECJ) decreases. Assuming that a court wants to avoid noncompliance, it is more likely to rule for the government as the threat of noncompliance by that government increases" (Carruba et al., 2012, p. 216). They conclude by stating that overall, the ECJ is a good vehicle to establish compliance, particularly given the hierarchical nature of European legislation (Carruba et al., 2012).

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[18] See Toshkov, 2008 for additional studies on sectoral differences in transposition performance.

[19] For additional studies on infringement proceedings as a measure of noncompliance, please refer to: Börzel et al, 2010, p.1373

This thesis introduced some of the academic work in the field of *Europeanization, implementation, transposition,* and *compliance.* The relationship of these concepts vis-à-vis each other can be placed into a conceptual model.
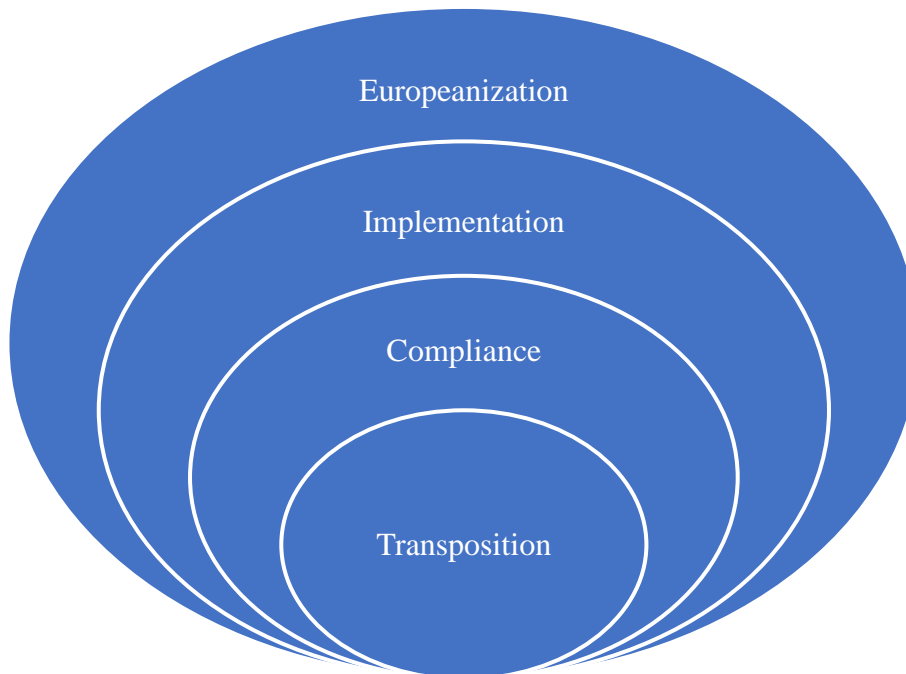
Figure 4: Relationship of Concepts vis-à-vis each other

As shown, *Europeanization* literature encompasses all other bodies of literature that are discussed in this thesis. *Transposition* literature is a subset of *compliance* literature given that the timely and correct transposition of directives is a legal obligation of Member States. This falls within the broader concept of *implementation* literature, given that legislation needs to be adopted by the European institutions in order for compliance to be necessary.

Having explained and contextualized this thesis within this larger body of literature, it remains to be seen what factors influence the transposition time of European Union environmental directives. The subsequent section draws from the literature above and sets forth a theoretical framework that assists in discerning the factors that influence the transposition time of European Union environmental policy.

3. Theoretical Framework

The theoretical framework strongly leans on the work conducted by Haverland and Romeijn (2007) and Kaeding (2006). This thesis categorizes the independent variables into two distinct levels, namely the *directive-level* variables and *domestic-level* explanations. *Directive-level* variables are independent variables derived from factors that are intrinsic to the directive in and of itself. To elaborate, based on previous academic literature, they pertain to the *institutional decision-making, type of policy*, namely whether it is new or an amendment to one or more prior directives, the *complexity*, and the *time-granted* for the transposition process altogether.

As to the *domestic-level*, the variables relate to factors which are intrinsic to the various domestic systems and therefore differ from Member State to Member State. Herein, the relevant variables for this thesis are the *administrative capacity*, measured through strategic capacity, government efficiency, and level of corruption, *decentralization*, and degree of *Pro-Europeanism* within environmental policy. This collection of variables can be placed within a conceptual framework, which looks as follows.
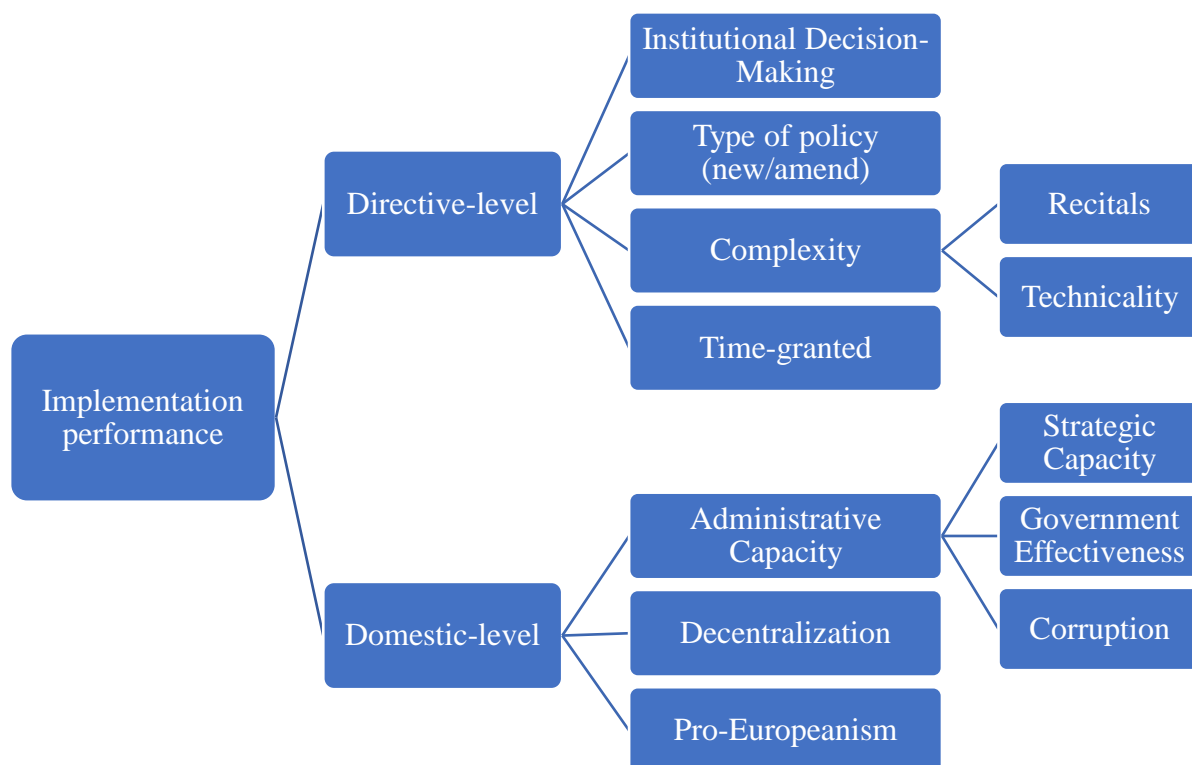

Figure 5: Conceptual Framework

In the subsequent sub-sections, each variable within the directive-level and domestic-level will be explained, drawing on the works of previous scholars. Finally, based on the theoretical framework, a series of hypotheses will be set forth.

3.1 Transposition Delay

Several scholars have placed the transposition delay into three distinct categories (Haverland & Romeijn, 2007; Haverland et al., 2011; Kaeding, 2005). These categories are 'on time,' 'modest delay,' and 'serious delay' respectively. While 'on time' is self-explanatory, 'modest delay' refers to a delay in the transposition of up to two years (Haverland & Romeijn, 2007). A serious delay occurs after that. The reason to draw the line between a modest delay and serious delay is due to the European Council's statement that any transposition delay of more than two years is unacceptable (European Council, 2002, p. 6). However, to simplify the analytical model, which will be elaborated upon in Section 4, and to have a higher degree of accuracy, this distinction mentioned above is not applied. Instead of measuring the transposition delay, this thesis examines the transposition time. The transposition time is the difference, in days, between the date on which the directive was transposed within that country for that directive and the corresponding deadline.

3.2 Directive-level

This thesis utilized four variables that are inherent to the directive itself. These are the *institutional decision-making*, *type of policy, complexity,* and *time-granted.* This section outlines how former academics have tackled these variables and what their respective findings have been.

3.2.1 Institutional Decision-Making

The realist school of thought of international relations has strongly influenced the research into transposition delays (Mbaye 2001, p. 263)[20]. Realism sets forth that the system of international relations is based on the interaction of state preferences who vie for power (Morgenthau, 1973). Neo-realism builds thereon, stating that States are primary actors within the international system due to its anarchic nature (Mearsheimer, 1994). While the method of measuring power differs across the authors, a common finding persists, namely that the more

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[20] For additional studies on the impact of power dynamics on international relations, see: Fearon, 1998; Tallberg, 2002; Falkner et al. 2004

powerful the state, the likelihood of non-compliance increases proportionally (Börzel et al., 2011). Moreover, in line with realist and neo-realist thinking, one can expect that directives adopted through unanimity are transposed more swiftly than directives under qualified majority voting (QMV), given that under unanimity, a state may veto any proposal that does not satisfy their preferences (Mbaye, 2001, p.263). Following the logic, Member States likewise have no reason to unnecessarily delay the transposition if adopted through unanimity (Haverland & Romeijn, 2007). It was found, however, that the type of voting bears little influence on the transposition time (Haverland & Romeijn, 2007). Whether this holds for EU environmental policy remains to be seen.

As is in line with the realist school of thought, if the directive does not coincide with national preferences, the Member State will vote against it (Mbaye, 2001; Haverland & Romeijn, 2007). The vetoing of a directive by a single Member State is not possible wherever QMV is applied. While some Member States bear a higher proportion of the votes, it is always possible for States to be outvoted by the other Member States within the OLP due to QMV. The political or economic power of a State, therefore, has little significance in the OLP. This way, from a realist point of view, countries whose interests are not encompassed within a directive due to being outvoted, "have an incentive to delay implementation" (Falkner et al., 2004).

It was found that three types of Directives have been used within the field of EU environmental policy since the Lisbon Treaty. These are the so-called *Ordinary Directive*, *Council Directive,* and *Commission Delegated Directive*. It will be shown how each of these procedures ultimately influences the transposition time.

The first is what is coined the *Ordinary Directive*. The name derives from the ordinary legislative procedure which is used for this type of directive[21]. "Under the ordinary legislative procedure, the Commission, the Council, and Parliament must reach agreement on draft legislation" (Finck, 2017, p.11)[22]. The crux of the issue lies with the voting procedure

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[21] The term *ordinary* is by no means the official name of this type of directive, and is therefore used solely to differentiate this directive from the two other 'types' of directives, namely the Council Directive and Commission Delegated Directive.

[22] The *ordinary directive* is used predominantly for new directives, as thereby all interest groups, both on the European and domestic level, are integrated in the decision-making process. Simplifying the complex institutional interplay, the interests of the European citizens

employed within the OLP. Within the OLP, it is common to use qualified majority voting (QMV) as the decision-making instrument (European Council, 2019). Therefore, herein, Member States can be outvoted.

The second is the *Council Directive*. Herein, the European Council is the sole decision-maker within the legislative process. This form of a Directive is commonly used for particularly contentious policy fields. The role of the European Parliament is limited to giving advice, but it has no co-decision power. Within the Council, the Member States vote using unanimity. "Under unanimity rule, self-interested strategic member states can veto any proposal that does not satisfy their preferences. As a result... Member states have no incentive to delay the implementation of the decisions" (Haverland & Romeijn, 2007, p.770)

The last is the *Commission Delegated Directive*. To streamline the institutional interplay, the European Commission was delegated the power *a priori* to amend directives that have been adopted in the past (Finck, 2017; Tallberg, 2002). Herein, only minor details within the text of a previous directive can be altered, and then only to such a degree that does not exceed the powers of the Commission (EU Monitor, 2019). There is no voting present in this type of directive. By logical extension, given that there is no Member State involvement in this type of decision-making, the process is entirely depoliticized (EU Monitor, 2019). Especially since Delegated Directives are always incremental and where the Commission is legally bound not to exceed its competences (EU Monitor, 2019), one would expect that Delegated Directives are always uncontentious amendments to already-existing directives. The Member States, despite having no formal voting power within Commission Delegated Directives, also have little to no incentive to delay the transposition.

Based on the literature of Haverland and Romeijn (2007), Falkner et al. (2004), and Mbaye (2001), the expected relationship between the institutional decision-making and the transposition time can more readily be visualized in the following table.

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are manifested within the European Parliament, the supranational interests through the Commission and the Member States' interests within the European Council.
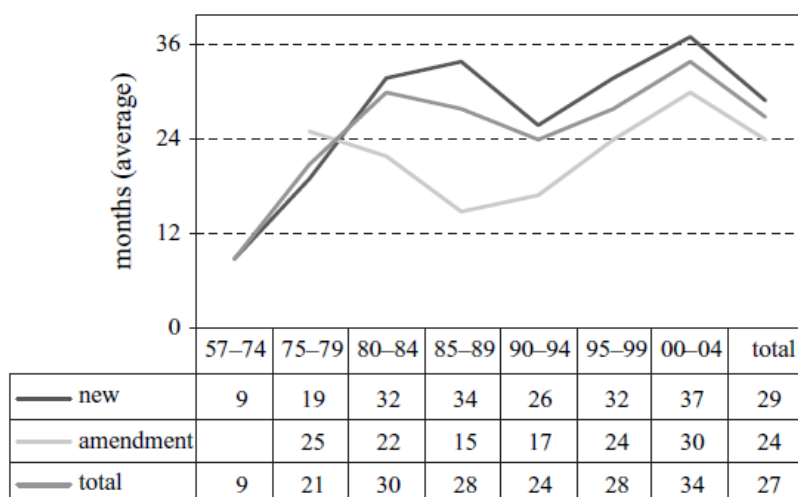
Institutional Decision-Making	Voting Procedure	Expected Transposition Time
Ordinary Directive	QMV	Middle
Council Directive	Unanimity	Fast
Commission Delegated Directive	None	Fast

Table 2: Relationship between Institutional Decision-Making & Transposition Time

It is important to note here, however, that the directives only reveal the form of the Directive (*ordinary directive, council directive* or *commission delegated directive*). The decision-making style (*QMV*, *unanimity,* or *none*), which is the factor that influences the transposition time according to the realist school, is extrapolated therefrom. This thesis hypothesizes that, given the power-interest dynamics of States, Commission Delegated Directives and Council directives are transposed faster than ordinary directives.

3.2.2 Type of policy

Referring back to the work of Howlett's model and the circular nature of policy cycles, one can expect there to two kinds of directives, namely *new* and *amending* directives (Howlett et al., 2009). "New directives introduce a new topic of legislation" (Haverland & Romeijn, 2007, p.769; Kaeding, 2006). *Amending* directives alter laws that have already been introduced in the past. These alterations are usually technical or constitute an incremental or marginal change in thresholds, benchmarks or quotas, if, for example, there have been technological or scientific advances in the relevant field. Therefore, "the required domestic change is relatively low and uncontroversial" (Haverland & Romeijn, 2007, p.769). As such, one would expect that it would be easier and subsequently faster for the Member States to transpose amending directives. However, it has been suggested that amending directives are not necessarily adapted swifter than new ones (Haverland & Romeijn, 2007; Kaeding, 2006). This can be visualized from the following figure that illustrates the transposition delay in European Union Social Policy between 1957 and 2004.

	57–74	75–79	80–84	85–89	90–94	95–99	00–04	total
new	9	19	32	34	26	32	37	29
amendment		25	22	15	17	24	30	24
total	9	21	30	28	24	28	34	27

Source: Haverland & Romeijn, 2007, p. 762

Figure 6: Transposition delay in European Union Social Policy

As seen, new directives tend to take slightly longer than amending directives, but the trends over the years mirror each other, suggesting that other factors have a more significant impact on the transposition period. Logically speaking, amending directives should transpose swifter than new directives, given that in addition to that the text within the national legislation only needs to be altered to a considerably lesser degree.

3.2.3 Complexity

The complexity of a directive is logically linked to the transposition time. The more complex the directive is, the longer one can expect the transposition time to be. The complexity of the directive derives from the management school of international relations (Chayes and Chayes, 1995) as well as from general and EU-related public administration literature (Falkner et al., 2004, p. 463)[23]. Complexity, for this thesis, can be measured along two avenues, namely the number of recitals and the 'technicality,' which is the share the annex is of the directive as a whole. These are treated as individual independent variables but are discussed together in the analysis and conclusion.

A relatively recent trend in transposition literature is to study the number of recitals as a measure of the complexity of the directive, which is interchangeably referred to as explanatory

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[23] See Bursens, 2002, p.181 for a study of complexity within a constitutional and administrative context.

notes (Kaeding, 2005). "Since explanatory notes or recitals seek to clarify the purpose of the directive and describe its major provisions, their number is a valid indicator of the complexity of a directive" (Haverland & Romeijn, 2007, p.771). Therefore, the more recitals are needed to explain the directive satisfactorily, the more complex the directive is. As such, there is a direct, linear relationship between the number of recitals and transposition time.

This thesis goes one step further than counting the number of recitals per directive. Commonly, within the specific articles of the directive, references are made to technical information that is found in the annexes. Seeing how much of the directive is technical information through a measure of the percentage the annex is of the entirety of the directive, tells us how technical the directive is. If, for example, there is no annex to the directive at all, this would indicate that no technical data needs to be included in the transposition process. The complexity is subsequently very low. Complex and intricate issues necessitate experts, technocrats or experienced administrators for their proper transposition into national law. A high degree of technical information, therefore potentially causes a delay. In other words, there is an expected linear relationship between the 'technicality' and the transposition time.

The underlying logic is the more complex a directive is, the more difficult and therefore time-intensive its transposition. The empirical findings contradict this logic, as the transposition time for more complex directives is about the same as for less complex directives (Haverland & Romeijn, 2007). This can potentially be explained by the fact that national authorities compensate for the complexity by allocating more attention and resources to the directive. Given the diverging opinions and results, seeing if the complexity influences the transposition time of environmental policy is a crucial variable to consider. The 'number of directives' and 'the degree of technicality' are proxies for the measure of the complexity of the directive within this thesis.

3.2.4 Time-granted

Member States require time to transpose any given directive, irrespective of the policy field. This time varies from directive to directive. "One rather banal reason for the relatively bad performance in this policy area (of social policy) might be the comparatively limited time granted for transposition" (Haverland & Romeijn 2007, p. 765). Depending on the complexity of the directive and anticipated national legal-politico configurations, the European Commission sets forth different timeframes that are considered realistically achievable by all

European Member States. Moreover, there has been a trend that the European Commission grants more time for the transposition process (Haverland & Romeijn, 2007, p.762).

3.3 Domestic-level

Moving away from directive-level factors to the domestic stage, scholars have identified and researched many independent variables across various policy fields. Factors inherent to the domestic systems have often been proposed to explain patterns in transposition- and compliance-performance. This thesis considers three variables on the domestic level that influences the transposition time. These are the *administrative capacity*, degree of *State decentralization*, and *Pro-Europeanism*. Hereafter, each variable is explained.

3.3.2 Administrative capacity

Administrative capacity is a difficult variable given its inherent ambiguity. According to some researchers, administrative efficiency exists if three criteria are fulfilled, namely the existence of performance-related pay, which is borrowed from private-sector management theory, positions are not tenured, as is borrowed from general public administration theory and vacancies are publicly announced (Haverland & Romeijn, 2007)[24]. Early research into this area suggested there was a so-called 'Southern problem,' meaning that countries such as Spain and Greece do not have sufficient capacity for the correct transposition (Haverland & Romeijn, 2007). While this assumption held, it was not to as large a degree as initially proposed[25]. While administrative efficiency is complicated to measure, it was irrespectively found that it substantially and significantly influences the transposition time (Haverland & Romeijn, 2007; Toshkov, 2010). Therefore, the study of the administrative capacity is essential for this thesis. However, given the difficulty in the direct measurement of administrative capacity, three proxy variables are used. These are the strategic capacity, government effectiveness, and corruption. These variables are sourced from the Bertelsmann Stiftung and World Bank.

Strategic capacity measures to what extent governments strategically engage with policy issues, both in the long and short term, making use of the intellectual resources at hand (Bertelsmann Stiftung, 2018). Government effectiveness measures the perceptions on the

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[24] See Haverland & Romeijn, 2007, p.772 for references to studies on the operationalization of administrative capacity of Member States.

[25] Again, refer to Haverland & Romeijn, 2007, p.772 for additional studies on the administrative capacity.

"quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies" (World Bank, 2018, p.1). In the same vein, corruption "reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests" (World Bank, 2018, p.1).

3.3.3 Decentralization

Early literature on the effect of federalism vs. unitarism suggests that the more unitary a state, the swifter the transposition process (Haverland & Romeijn, 2007)[26]. This stems from the fact that there is a higher dependence on sub-national actors within a federal system for not just implementation of, but also compliance with legislation. To build thereon, relatively autonomous sub-national actors occasionally have conflicting positions (Haverland & Romeijn, 2007). This leads to the need to find compromises, which is a time- and labour-intensive process, thereby leading to a delay in the transposition. This finding was reinforced through implementation research in general and concerning EU policies (Haverland 2000; Mbaye 2001; Bursens 2002). The results from the studies of decentralization are commonly seen as having low generalizability across policy fields because the number of ministries and sub-national actors involved in the transposition process varies from Member State to Member State and directive to directive. Coupled with the limited existing research as to whether this holds for environmental policy, this thesis considers the decentralization of the Member State as an important independent variable to research.

3.3.4 Pro-Europeanism

Momentarily setting aside whether or not a Member State has the capacity and necessary national structure for transposition, it is essential to consider whether or not the Member State has the *political will* to do so. This has been studied in the past, differentiating between voter preferences, public support for the EU, and government policy preferences[27]. The underlying logic is that the higher the domestic support for the European Union and its

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[26] See, for example, Hanf and Scharpf, 1978 for early studies on the impact of decentralization in international relations.

[27] See (Toshkov, 2011, p.174) for additional studies on the influence of the economy and party positions on the transposition performance of Member States.

policies, the greater the incentive for national politicians to actively support the transposition process. This is because politicians are, in part, interested in re-election. If a predominantly pro-European voter base sees the domestic politician actively supporting the transposition of the European *acquis*, including environmental policy, then the probability of re-election is higher. The same holds vice versa, specifically that the more Eurosceptic the country's population is, the slower the transposition time can be expected to be. This logical extrapolation is supported in previous academic literature (Kaeding, 2006, p.240). Defining Pro-Europeanism, within the context of this thesis, is therefore of utmost importance.

Euroscepticism, in political studies, is typically defined as the "idea of contingent or qualified opposition, as well as incorporating outright and unqualified opposition to the process of European integration" (Taggart, 1998, p.336; Leruth et al., 2018). This thesis agrees therewith but decides to tailor the public opinion question closer to the policy issue, as will be elaborated upon in the operationalization section. Briefly, however, this thesis considers the ratio of those in favour of decisions being made jointly between their respective government and the EU against those who prefer environmental policy to be a purely national matter[28]. This ratio is, for this thesis, the definition of Pro-Europeanism.

3.4 Hypotheses

Based on the theoretical framework, this thesis proposes seven hypotheses.

1. Commission Delegated Directives and Council Directives have a shorter transposition time than Directives passed by means of the Ordinary Legislative Procedure.
2. Amending directives have a shorter transposition time than new directives.
3. More complex directives have a higher transposition time than less complex directives.
4. Directives that have a longer time-granted for the transposition process have a lower transposition deficit than directives with very short transposition deadlines.
5. The better the administrative capacity of the Member State, the shorter the transposition time will be.
6. The more centralized (unitary) the State is, the shorter the transposition time.
7. The greater the degree of Pro-Europeanism, the shorter the transposition time.

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[28] In this way, the thesis accounts for omitted ('I don't know/Other') observations in the Eurobarometer as well as having the question directly relate to environmental policy, rather than having a highly generalized question about citizens' attitudes towards the EU in general.

These predictions can be summarized, for ease of understanding, in a table.

		+ speeds up transposition	- delays transposition
Directive-level	Institutional Configuration	Council Directives; Commission Delegated Directives	'Ordinary' Directives (OLP)
	Type of Directive	Amending	New
	Complexity	Low	High
	Time-granted	High	Low
Domestic-level	Administrative capacity	High	Low
	Decentralization	Low	High
	Pro-Europeanism	High	Low

Table 3: Predicted influence on the speed of transposition

4. Research Design

The design of the research is outlined in this section of the thesis. The first subsection discusses the overall categorization of the research model. After that, the population and sample are introduced, with explanations offered for the choice in variables and the omission of other variables. The multilevel analytical model is explained. Second, the variables are operationalized, explaining exactly how they fit within the model.

4.1 Research Design

4.1.1 Qualitative vs Quantitative Analysis

In general, there are two types of research designs, namely qualitative and quantitative. While qualitative studies are better suited for small-N studies, perhaps as small as a singular case study, quantitative research typically engages in large-N studies. "Congruence analyses are rather straight-forward in that they compare two theories to a single phenomenon (Haverland, 2019, p.4). Qualitative research sources its information from "interviews, archives, questionnaires, surveys, and observations and is usually more explanatory in nature, that is, it fully explores, in great depth, substantively important events" (Zhelyazkova, 2019).

This thesis engages in a large-N analysis of the impact of a set of factors (variables) on the timeliness of transposition of 55 environmental directives across 24 European Member States. Fifty-five environmental directives were distilled from a total of 65 post-Lisbon Treaties[29]. Similarly, if the Member States had too much missing data, irrespective of the reason, the State was dropped from the analysis[30]. Most of the data is sourced from existing databases, which in turn get their data from reports and national self-reporting, in addition to the legislation, which is consistent with quantitative approaches (World Bank, 2018; Bertelsmann Stiftung, 2018). "Quantitative research studies produce results that can be used to describe or note numerical changes in measurable characteristics of a population of interest; generalize to other, similar situations; provide explanations of predictions; and explain causal relationships" (Salkind, 2010, p. 1166). This first criterion is fulfilled as the mathematical relationship between a set of predictor variables with a dependent variable is studied in this thesis. The second criterion is also fulfilled, given that the lessons drawn from this thesis can be applied to other policy fields,

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[29] Please refer to Section 4.1.2.1 for the criteria.

[30] These are Sweden, Hungary, Denmark and Croatia. Please see Section 4.1.2.2 for the exact reason as to why these States were dropped from the analysis.

for example, social or transport policy. Third, hypotheses are proposed based on explanations from the existing academic body. Fourth, the aforementioned numerical relationships show a causal (or correlator) relationship between the independent variables and the dependent variable through the examination of the P-value (statistical significance). This thesis is, therefore, a quantitative analysis.

4.1.2 Population and sample

The following section sets forth why which Member States and directives were included or excluded, based on a stringent set of selection criteria respectively. Missing data is practically unavoidable in large-N quantitative studies, and it will be shown wherefrom the missing observations stem.

4.1.2.1 Directives

The directives were chosen based on a variety of criteria. Firstly, this thesis sought out to consider all directives within the field of environmental policy given the social and academic relevance the research can provide[31]. However, according to the EU's legislative database *EUR-lex,* this would have been a total of 620 Directives since the conception of EU environmental law (European Union, n.d.A). This reaches far beyond the practical- and time-constraints provided for this thesis. Given that the Lisbon Treaty was the last major revision of EU primary law, it was therefore used as the starting point for the data collection. Any directives that were signed before the 1st of December, 2009, were therefore excluded.

The criteria used to find all relevant directives on EUR-Lex are as follows.

EUR-Lex Search criteria	
Subdomain	Legal acts
Type of act	Directive
Data	1.12.2009 – 29.05.2019
Directory code, 1st level	Environment, consumers and health protection
Directory code, 2nd level	Environment
Search language	English
Miscellaneous	Exclude corrigenda

Table 4: EUR-Lex Search criteria

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[31] For more thereon, please consult Sections 1.3 & 1.4.

One downside of using this approach is that the search results included directives which have been passed by the European Union, but for which the transposition deadline has not yet passed. Having already collected some preliminary data on allotted transposition times in the policy field, which, very broadly speaking, averages at two years, the data from 2018 and 2019 was briefly scrutinized. Probing a representative number of directives from 2018 and 2019 by ways of random selection, it swiftly became clear that the transposition deadlines for said directives have not yet passed, and that their inclusion within the greater dataset would this way bear no added value. Moreover, their inclusion may exaggerate the findings, thereby degrading the internal validity of the data. Corrigenda are excluded as those are merely a correction of errors within texts and thereby do not add to the Environmental acquis.

Based on the criteria mentioned above, 65 directives were found in total. However, after gathering data, specific directives needed to be excluded. The reason for this was that they either had multiple transposition deadlines, which means that particular Articles within directives needed to be transposed to differing times, or there was a lot of missing data (>50%). After excluding these, ultimately, 55 directives remained[32].

4.1.2.2 Member States

As to the countries, all current EU Member States were considered at the onset of this thesis, in line with the quantitative approach of a few authors (Kaeding, 2008; Sprungk, 2013). Some authors, on the other hand, have made use of a representative sample of Member States from where the results were generalized to apply to the entirety of the EU (Bursens, 2002; Haverland, 2000; Haverland & Romeijn, 2007; Haverland et al., 2011; Zubek, 2011). However, this thesis wishes to include as many EU Member States as possible in order to prevent the need to generalize. This increases the internal validity of the results. Moreover, the use of as-many-as-possible Member States allows for the use of a multilevel analytical model, which will be elaborated upon in Section 4.1.4.

Despite best intentions, four countries needed to be excluded due to practical issues. These are Sweden, Hungary, Denmark, and Croatia. Sweden, Denmark, and Hungary were excluded

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[32] For the full list of directives, ordered by the year in which they were signed, please consult Appendix I.

because they consistently failed to inform the European Commission as to the date of transposition in their countries. More for than half of the directives, these countries failed to inform the Commission as to the transposition date. Theoretically, it would have been possible to go into the national legislative databases and search for the transposed measures there, but that was highly impractical due to linguistic barriers. Croatia was excluded since it only joined the European Union in 2013. Even if this thesis were to consider the transposition time of Croatia from 2013 onwards, the central deficit Croatia would face would be inexperience in the transposition process. Therefore, this thesis anticipated a more substantial delay in Croatia in the transposition process compared to all other Member States, which would unnecessarily skew the data. In sum, Sweden, Hungary, Croatia, and Denmark are excluded from the analysis.

4.1.2.3 Missing Data

In total, this thesis has 155 missing observations. These missing observations were in most cases blank fields in the *EUR-lex* database for the 'transposition date' of a given Member State. The missing data points can be explained through a variety of factors. First, the Member States could have found the transposition unnecessary if the domestic legislation is more ambitious than the EU legislation, therefore making the transposition of said directive redundant. Second, the Member State might not yet have transposed the directive, which would insinuate a severe delay. Third, a blank 'transposition date' on *EUR-lex* may be explained by that fact that the Member State merely has failed to notify the Commission of the transposition, despite having transposed the measure on time. Fourth, in a somewhat particular case wherein there are multiple dates under 'transposition date' for a single directive, the Member State might have used numerous implementing measures for a single directive over a wide span in time. If the Member States uses multiple measures to transpose a single directive, and these measures are not implemented on the same date, this would introduce ambiguity into the data. This would be the case because it would be unclear as to which of the dates to use as the 'transposition date' for the analysis. Therefore, wherever there were instances of multiple transposed measures with varying transposition dates, these were excluded. The remaining data set amounts to 1212 observations.

4.1.2.4 Variable Selection

When going through the vast EU implementation, transposition and compliance literature, authors alluded to various factors that did, or did not, affect the transposition time of directives into national law. It is based on this literature that the various independent variables

were chosen for this thesis. If sufficient literature backs a claim that a factor did not alter the transposition time, this thesis acknowledges that these have been studied before and can, therefore, set aside for this thesis. These can, in line with the preceding theoretical framework and subsequent research design, be split into directive-level and domestic-level explanations. This section discusses the variables that have been excluded from the research and why. After that, the variables that have been chosen for the analysis are operationalized in Section 4.2.

4.1.2.4.1 Directive-level

Previous academic literature has touched upon many potential variables that are inherent to the Directive that may potentially impact the transposition time of a directive. This thesis attempts to touch upon as many as possible of these variables but had to, for a variety of reasons, exclude several thereof. Three such variables are the *decade* wherein the directive was introduced, *discretion*, *policy fit*, and *policy field*, respectively.

As for the first, namely '*Decade*,' it has been suggested that the more recent the European acquis has been passed, the higher the transposition delay (Kaeding, 2006). The reason, therefore, is that there is already a backlog of directives that the Member States have failed to transpose on time or correctly up to that point, leading to an even more significant backlog (Kaeding, 2006). Given that this thesis focuses on post-Lisbon directives only, the timespan is too short to justify the use of this variable given that the backlog from year to year is existent but marginal.

Second, '*discretion*' is a measure of the "extent to which Member States are restricted in the implementation of the content of the articles" (Steunenberg & Toshkov, 2009, p.952). The degree of discretion can have two different impacts, depending on your interpretation. First, it can be argued that it simplifies the transposition because the national authorities are at liberty to adopt the European standards to national or sub-national differences (Steunenberg & Toshkov, 2009). Alternately, discretion may complicate the process if the process is politicized on the national level (Steunenberg & Toshkov, 2009). If there is much discretion and different sub-national actors, for example, have conflicting stances vis-à-vis the European legislation, compromises must be found, which thereby delays the transposition process. Given the ambiguity in the interpretation and the difficulty in finding the degree of discretion for each directive for each Member State, this variable was not considered in this thesis.

The *policy fit* refers to the degree to which a country's national legislation already coincides with legislation passed by the European Union (Kaeding, 2006). This is to say that, for example, if a country already implements more ambitious environmental policies than the homogenized European counterpart, this means there is no need for the transposition of the directive. Despite previous academics finding that the policy fit does influence the transposition time, it is excluded within this thesis due to practical limitations[33]. There are practical limitations because examining the goodness of fit for large-N studies is very difficult and time-intensive (Kaeding, 2006).

Environmental policy not only comes in different types of legislative acts but also cover a wide span of topics. Specific topics are undoubtedly more politicized than others. For example, general provisions may be more contentious within the European Council, given the hesitance of national delegates to cede additional policy-making power to the European institutions. Alternately, with regards to legislation addressing air pollution, Council ministers and Members of the European Parliament may be subject to lobby pressures by both national and transnational interest groups while the European Commission pushes more ambitious harmonizing measures. The dynamics, therefore, understandably vary depending on the specific policy field in question[34]. EU environmental policy spans general provisions, combatting climate change, biodiversity, land use and forestry, water protection & management, air & noise pollution, resource efficiency and the circular economy, sustainable consumption & production, and chemicals & pesticides (European Parliament, n.d.). However, simply because a legislative act covers one topic, this does not mean that it does not directly or indirectly address another policy field. To exemplify this, a directive restricting the carbon dioxide emissions of a tractor in agricultural use falls under air & noise pollution, but also directly relates to combatting climate change. It is for this reason that the subdomain of environmental policy is unlikely to have a statistically significant impact on the transposition delay. Given the ambiguity of the classification of directives into specific policy fields, this variable is not considered for this thesis.

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[33] For studies on the impact of the degree of discretion and policy fit, inter alia, on the transposition time, please see: Franchino 2004; Franchino 2005; Kaeding, 2008; Thomson et al, 2005; Steunenberg, 2006

[34] For a study on, inter alia, cross-policy-field variations within the domain of EU social policy, see (Haverland & Romeijn, 2007).

4.1.2.4.2 Domestic-level

Similar to variables inherent to the directive, some variables that vary from Member State to Member State could not be studied within the parameters of this thesis for a variety of reasons. The following domestic-level variables are excluded, despite being addressed by previous academics, the reasons for which are explained hereafter.

1. General elections
2. Parliamentary configurations
3. Inter-ministerial coordination
4. Parliamentary involvement
5. Effects of national transposition packages

Changes in parliamentary party-constellations and general elections were not chosen for this thesis because, according to existing literature, "government changes during the period of transposition do not affect significantly transposition time" (Steunenberg & Toshkov, 2009, p.952). For a large-N study such as this thesis, gathering the data on the party-constellations (and the shifts therein) across ten years for 24 Member States for a variable that has been shown by previous academic literature to be insignificant, seemed a time-intensive choice. Moreover, the linguistic restrictions also complicate the data collection of this specific variable.

The need for inter-ministerial coordination is strongly associated with transposition delay (Haverland & Romeijn, 2007; Mastenbroek, 2003). "Half of the national transposition measures where only one ministry is formally involved are transposed on time, as against 28 percent of those where two or more ministries are involved" (Haverland & Romeijn, 2007, p. 774). Despite having a statistically significant relationship with the transposition period, this variable is excluded in this thesis given that it is very challenging to manually research the ministerial involvement in 24 Member States across over fifty directives, especially in foreign languages. The problem, therefore, is not conceptual but practical, which is why this variable is dropped from the analysis.

Given the legal nature of directives to begin with, namely that their content can be altered in such a way as to suit the respective national socio-economic and politico-administrative configurations, the process of transposing EU directives takes on different forms in the respective Member States. One factor that differs between the Member States is whether or not there is parliamentary involvement. The underlying logic here is that the higher the

parliamentary involvement in the transposition process, the higher the transposition delay. The reason is that it politicizes and opens for debate an inherently legal-administrative process, thereby causing delays. However, there is no evidence that the inclusion of national parliaments provides a delay in the transposition, despite claims by earlier scholars (Haverland & Romeijn, 2007; Mastenbroek 2003, pp. 377-378).

Occasionally, to reduce the burden on the national transposition agents, the transposed measures are bundled before the national parliament. Depending on which directive within the bundle is examined, the bundling may have positive or negative ramifications on the transposition time. "The transposition of the initial directive in a package has to wait for the adoption of the last directive domestic decision-makers wish to include" (Steunenberg & Kaeding, 2009, p.440-441). While this bundling has a definite impact on the transposition time, it is excluded from the analysis due to practical restraints. Determining which directives are bundles at what point in time with which other directives across all 24 Member States is highly impractical due to time- and linguistic restrictions.

4.1.3 Multilevel Analysis

This thesis makes use of a multilevel linear analytical model. In a traditional multivariate regression analysis, the hierarchical relationship of the factors (variables) is not accounted for, thereby diminishing the accuracy and reliability of the results. Multilevel regression accounts for this by relating a group (*level*) of predictor variables to a set of other variables on a different *level*. As such, multilevel analysis is defined as a statistical model that accounts for variables that vary on more than one level (Gelman & Hill, 2007).

There are two key identifiers of multilevel models. The first is the presence of varying coefficients (Gelman & Hill). What this means is that the coefficients, which is a measure of the direction and strength of the relationship between the independent variable and dependent variable, differ from one independent variable to another. Second, the model accounts for the variation between groups, which is interchangeably referred to as *level*, wherein the independent variables are placed (Gelman & Hill). A single group, therefore, would indicate that the model is a standard regression analysis as opposed to a multilevel model.

This thesis went about categorizing the variables into two distinct levels. These are the *directive-level* and *domestic-level*. The *directive-level* encompasses the institutional decision-

making, type of policy, complexity, and time-granted of each different directive. The *domestic-level* encompasses the administrative capacity, decentralization, and Pro-Europeanism of each respective Member State.

When going about multilevel analysis, there are four starting points to examine the coefficients (degree of correlation) and significance of the predictors vis-à-vis the dependent variable, which in this case would be the transposition time. It is important to note here that the subsequent models are not multilevel models. Instead, they are commonly used by researchers as starting points, to get a feel for the data and so see how the variables relate to one another (Gelman & Hill, 2007). Alternately, they can be used as alternatives to multilevel modelling altogether. For this thesis, however, these subsequent models are little more than an extension of the standard descriptive statistics, which reveal information such as the number of observations, the mean (average), standard deviation, minimum and maximum values. What is meant thereby is that it is pertinent to the analysis to see whether or not the fact that variables are situated within different levels or not matters.

The first is the *complete-pooling model*. Herein, the group information is completely ignored, and a simple classical regression analysis is run between the predictor and dependent variables, with no coefficients for group indicators (Gelman & Hill, 2007). What this means is that the independent variables are not placed within their *levels*. This model can be useful in seeing to what extent the grouping of variables influences the correlation of said variables with the dependent variable. Second is the *no-pooling model*, which is "a single classical regression that includes group indicators, but no group-level predictors [and] with no model for the group coefficients" (Gelman & Hill, 2007, p.270). Essentially, this means that the variables are placed within their respective levels, but no group coefficient is determined. The third is the use of *separate models*. This is a separate classical regression in each group, conducted separately (Gelman & Hill, 2007). For example, if there are two levels, a linear regression is run for each of the two levels, respectively. Fourth is the *two-step analysis*. Herein, one starts with "either no-pooling or separate models, then fitting a classical group-level regression using, as 'data,' the estimated coefficients for each group" (Gelman & Hill, 2007, p.270).

This thesis started off using the *complete-pooling model*. The Directive-level and Domestic-level variables were conjointly plugged into STATA, and the model was run, without differentiating between the hierarchical relationship between the predictor variables. The

reason for the use of the *complete-pooling* model as the starting point was to see whether or not the data would change significantly if the levels are disregarded. The complete-pooling model is, de facto, a standard linear regression model.

In order to run a multilevel analysis that provides reliable results, three general assumptions must be set forth and subsequently tested before the multilevel analysis is run. These assumptions are *normality*, *homoscedasticity*, and the *(lack of) multicollinearity*. These assumptions are explained in detail in Section 5.2. These were tested and cross-referenced with secondary tests in order to maximize the internal validity of the results.

Running the Multilevel multivariate linear regression analysis through Stata produces five values that are of interest for the Analysis and Discussion, given that the assumptions are fulfilled. The first is the Coefficient ('Coef'). Generally speaking, the coefficient reveals the strength and direction of the relationship between the predictor and the dependent variable, given that the coefficients are standardized. If the coefficient is a negative value, the relationship is inverted. If it is positive, there is a proportional, positive relationship between the respective variables. The value of the coefficient (the number itself, irrespective of the preceding +/- sign), shows the strength of the relationship. In essence, the more the value deviates from '0', the stronger the relationship. To paraphrase, the coefficient tells us the degree to which the transposition time changes for a one-unit increase in the respective predictor variable in linear regressions (Yang & Miller, 2008). Second, the Standard Error ('Std. Err.') tells us the variance of the coefficient. The smaller the Standard Error, the more closely clustered the predicted value is to change with regards to the coefficient. Third, the $P > |z|$ reveals the statistical significance of the correlation between the independent and dependent variable. Customarily, a p-value of less than 0.05 is considered statistically significant and therefore validates the use of said predictor variable for the analysis (Yang & Miller, 2008). Lastly, comes the 95% Confidence Interval. "The confidence interval is the location where we expect the average of many similar series to fall" (Yang & Miller, 2008, p.600). To rephrase, a 95% confidence interval defines the range of values that you can be certain to 95% that it contains the population mean. Thusly, the 95% confidence interval always consists of a minimum and maximum value for each respective independent variable. However, one must note that the "normal-based confidence interval is very sensitive to minor departures from the normality assumption and its performance does not improve with increasing sample size" (StataCorp, 2017, p. 341).

4.2 Operationalization

The following subsection operationalizes the variables used throughout this thesis. What this means is that they transformed from 'concepts' to empirical, testable values, which can be used in the statistical software STATA.

4.2.1 Dependent Variable

The dependent variable is the time it takes for the Member States to transpose European Union environmental directives into domestic law. The transposition-time is the difference between the deadline of the directive and the date on which the Member State transposed the directive. It is important to reiterate that solely the timeliness of the transposition is considered, not whether or not the environmental directive was implemented correctly in this thesis. While the factors that delay transposition with high certainty also influence the correctness of the transposed directive, this falls outside the scope of this thesis. Whenever the Member States transposed a directive through multiple implementation measures and the transposition dates were identical, said date was used. If, however, there were multiple transposition dates due to multiple implementation measures that *were not* transposed on the same day, these were excluded from the analysis. In rare cases, where for example the transposition dates were all clustered within the same week, the earliest transposition date was used. The transposition dates were all found on the EU legislative database *Eur-lex* (European Union, n.d.A).

This thesis considers the deviation by the respective Member State from the transposition deadline counted in the number of days. This can be depicted as a formula.

$$Transposition\ Time = Transposition\ Deadline - Transposition\ Date$$

A positive value indicates that Member State is ahead of schedule, whereas a negative value would indicate a delay of a corresponding number of days. A negative value, therefore means that the Member State is noncompliant with the directive, which, by logical extension, grants the European Commission the power to initiate an infringement procedure.

4.2.2 Independent Variable

4.2.2.1 Institutional Decision-Making

Directives can come in three forms, based on different institutional configurations and legislative procedures within the European Union. These institutional configurations employ different types of voting (qualified majority voting, unanimity, or none), which in turn has an impact on the extent of the power of the Member State within the decision-making process. Based on the theoretical framework, this disparity in power has an impact on the transposition time. This requires operationalization. These aforementioned configurations are threefold. The first thereof is the Commission Delegated Directive. Herein, solely the Commission amends previously introduced directives, if, for example, thresholds or benchmarks need adjustment, as is often the case after technological advances. The substantive body of the directive it amends, however, is therein not allowed to be substantially altered. The Member States have no opportunity to vote herein. The second type is the Council Directive, wherein solely the European Council passes a Directive without the involvement of the European Parliament. Given that this legislative format is used for highly politicized issues, such as for EURATOM agreements, unanimity is typically employed for Council Directives. Lastly, is the Ordinary Directive, named-so for this thesis as it is passed using the Ordinary Legislative Procedure. In the OLP, both the European Parliament and Council must assent to the directive before it can be passed employing QMV.

This is a categorical variable with three categories. As is commonplace with a set of three categorical variables, two dummy variables are employed. From the data collection, it quickly became clear that the vast majority of the directives are, in fact, Commission Delegated Directives. Based on the theoretical framework, it was suggested that Commission Delegated Directives are expected to be transposed faster than *ordinary* directives. Similarly, Council Directives are also expected to be transposed faster than *ordinary* directives. Given this, anything other than an *ordinary* Directive would speed up the transposition process. It is for this reason that the *ordinary* Directive is used as the reference variable. The dummy variables are coded as follows.

The first dummy variable is the Commission Delegated Directive. If the directive is a delegated directive, for this column it is coded as '1', if not then as '0'. The second dummy variable is the Council Directive. If the directive is a Council Directive, for this secondary column it is coded as '1', if not then as '0'. Since the ordinary directive is the reference variable for this set

of dummy variables, it is excluded from the analytical model. This is the case since if the directive is neither a Commission Delegated Directive or Council Directive (meaning they were both coded as '0'), the only remaining alternative is the ordinary directive.

The data's source is the text of the respective directives. Within the text of the directive, usually preceding the recitals, it is always indicated which European institutions were involved in the decision-making process. Alternately, the title of the Directive often reads "Commission Delegated Directive" or "Council Directive" or "Directive of the European Parliament and Council," the latest of which meaning that the directive was passed through the OLP.

4.2.2.2 Type of Policy

The type of the directive is a binary, categorical variable, meaning that a directive is either a new or amending directive. To properly code this for the multilevel model, a dummy variable is introduced. The chosen reference variable is the 'new' directive since, given the existing literature, it is expected that amending directives transpose faster than new ones. The dummy variable, therefore, is 'Amending,' wherein '1' means it is, in fact, an amendment, and '0' means it is not.

The source of the data is the directive itself. Within the title of the directive, it is always indicated if it is an amending directive. If nothing is explicitly mentioned within the directive's title to state the contrary, then it is a new directive and is coded as such.

4.2.2.3 Complexity

As outlined in the theoretical framework, the complexity of the directive makes use of two proxy variables, namely the number of recitals and the technicality of the directive. For both, the data is sourced directly from the text of the directives themselves. Both are continuous variables. These proxy variables are treated as independent variables. However, given that their values ultimately relate to the 'complexity' of the directive, they are seen as its proxy variables thereto. They will be discussed together, but act and are studied as independent variables.

The recitals, which are also referred to as explanatory notes, precede the main body of any given piece of European legislation. For this variable, these recitals are counted. Therefore, the source is the text of the directive itself.

The technicality, on the other hand, is the ratio between the pages that are dedicated to the technical information (the annexes) relative to the total page number of the directive. This can be shown as an equation.

$$Technicality = \frac{Pages\ in\ the\ Annex}{Total\ pages}$$

Since it is a ratio, it takes the value between 0 and 1. The closer the value is to 1, the greater the amount of technical information.

4.2.2.4 Time-granted

Member States are granted a certain amount of time to transpose the directive. Intuitively, the more time is granted for the transposition, the more likely it is for the directive to be transposed on time. The time-granted for the transposition process is counted from the moment it officially went into effect, which is enshrined in the second-to-last Article of every directive. The standard formulation that is used is "This Directive shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union" (Directive 2013/39/EU, 2013). The day of its publication in the Official Journal is usually the day following the date of signing. The formula to determine the time-granted, therefore, is as follows:

$$Time\ granted = Transposition\ Deadline - Date\ of\ Effect$$

Where:

$$Date\ of\ Effect = Date\ of\ Signing + 1 + 20$$

Ultimately, given the data available within the text of the directive, the time-granted is found by conjoining these equations to form the following:

$$Time\ granted = Transposition\ Deadline - Date\ of\ Signing + 1 + 20$$

The time-granted will in every case be a positive value given that the deadline cannot precede the date on which the directive was signed. The source of this data point is the directive itself.

The transposition deadline is, in the absolute majority of cases, mentioned in one of the last three articles of every directive and thusly sourced from there.

4.2.2.5 Administrative Capacity

This thesis deviates from the most common operationalization of the administrative capacity due to practical limitations. Mbaye (2001) introduced an additive index of administrative efficiency based upon three structural factors. These factors are a proxy for administrative efficiency based on the assumption that efficiency is closely related to the incentive structure and recruitment criteria for civil servants. Administrations are assumed to be efficient if: (1) performance-related pay exists, (2) positions are not tenured, and (3) vacancies are publicly announced. However, these proxies are set aside since the relevant database was unavailable. Instead, three proxies are used, namely *Strategic Capacity*, *Government Effectiveness*, and *Corruption*.

Strategic capacity measures to what extent governments strategically engage with policy issues, both in the long and short term, making use of the intellectual resources at hand. This variable stems from the Bertelsmann Stiftung and is a categorical variable, ranging from 1 (very poor) to 10 (excellent) (Bertelsmann Stiftung, 2018). More specifically, the categories are as follows (Bertelsmann Stiftung, 2018):

1 – 2: There are practically no bodies within the national government that consider long-term policy challenges and potential solutions thereto.

3 – 5: There are strategic planning units and bodies, with an occasional, minimal impact on government decision-making vis-à-vis long-term policy challenges and potential solutions thereto.

6 – 8: There are strategic planning units and bodies, with a limited impact on government decision-making vis-à-vis long-term policy challenges and potential solutions thereto. This impact is systematic, but limited in scope or depth.

9 – 10: There are strategic planning units and bodies, with a profound impact on government decision-making vis-à-vis long-term policy challenges and potential solutions thereto.

The second proxy variable is Government effectiveness. Scaled between -2.5 and 2.5, positive 2.5 being the best, the government effectiveness indicator "reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from

political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies" (World Bank, 2018). Logically, the higher the government effectiveness, the lesser of a transposition delay. The reason for this is that the transposition process needs an effective, efficient bureaucracy that can deal with complex legal issues. If the national administration is highly politicized, for example, and easily swayed by domestic political pressures, this would cause considerable delays in the transposition, especially if the governing party (within a parliamentary system) is opposed to the directive and can act as a de facto domestic veto player. A neutral, independent, and effective administration, therefore, speeds up the transposition, which is measured through this proxy variable.

The third proxy variable is the corruption across the European Member States. It "reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests" (World Bank, 2018). Similar to the Government effectiveness variable, the measure of corruption is scaled between -2.5 and 2.5, with positive 2.5 being the best (World Bank, 2018). Intuitively, the greater the amount of corruption, the greater the delay. Corruption delays the transposition process because elites and private interests could influence administrators who are involved in the transposition process through bribes or threats if a directive goes against their interests. Incorruptible public servants, therefore, speed up the transposition process.

Two databases are used as sources for the analysis, namely one on Governance performance by the World Bank and one by the Bertelsmann Stiftung on the strategic capacity. These are reputable, neutral sources with accessible data. The World Bank database comprises the World Governance Indicators. This Wold Bank collects its data "from a number of survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms" (World Bank, 2018). The second dataset – that of the Bertelsmann Stiftung – sets forth each EU Member State's strategic capacity through an in-house analysis of the administrative structures in each EU government (Bertelsmann Stiftung, 2018).

4.2.2.6 Decentralization

Decentralization is a measure of whether a Member State makes use of a federal or unitary governmental system. It is thereby a binary, categorical value. As it is a categorical value, a dummy variable is employed for the operationalization of the decentralization. Moreover, since previous academics suggest that fewer involved actors result in a faster transposition time, 'unitary' is used as the dummy variable, thereby making 'federal' the reference variable. If the Member State is unitary, the value is '1'. If the Member State is federal, the value is '0'. The data for the decentralization of the Member State is sourced from the CIA World Factbook (Central Intelligence Agency, n.d).

4.2.2.7 Pro-Europeanism

Pro-Europeanism is an important, albeit tricky variable to operationalize given the broad definition of the term. Within this thesis, it is interpreted as the countermovement to Euroscepticism. The EU is highly interested in the degree of Euroscepticism of its citizens and, as such, recurrently includes questions thereon in its Eurobarometers, which are large-scale public opinion reports. Two of these questions are (1) "in general, does the EU conjure up a very positive, fairly positive, neutral, fairly negative, or very negative image?" (European Union, 2018, p.15) and (2) "for each of the following media and institutions, please tell me if you tend to trust it, or tend not to trust it" (European Union, 2018, p.13), the latter of which provides the European Union as an option.

However, these questions are too broad for this thesis. Therefore, a third question is ultimately used from the 2017 Special Barometer. This question is:

> When it comes to protecting the environment, do you think that decisions should be made by the (NATIONALITY) Government or made jointly within the EU? (European Union, 2017, p.468)

The replies are categorical, namely "Don't know; Other; National Government; or Jointly with the EU" (European Union, 2017, p.468). Given that the Eurobarometer, for this question, had 27,881 randomized and representative respondents across all EU Member States, this method of measuring the degree of Pro-Europeanism across the Member States pertaining to environmental policy is reliable. To minimize the number of categorical variables within the set of independent variables, the Pro-Europeanism is operationalized differently.

In order to make the results comparable, the Euroscepticism towards EU environmental policy was operationalized as a ratio of the number of people in favour of decision-making on the EU level per person against, since the inclusion of those who do not know or fall under the 'other' category would skew the data unnecessarily. A simple equation can be set-up to determine the said ratio for each Member States.

$$Ratio = \frac{Jointly\ with\ the\ EU}{National\ Government}$$

This ratio reveals the number of people who prefer joint decision-making relative to national decision-making[35].

4.2.3 Control Variable

This thesis does not make use of control variables, mainly due to two reasons. Control variables are needed to account for alternative explanations, predictions, and descriptions (Yang & Miller, 2008). First, for the vast majority of the thesis process, it was assumed that control variables are not necessary given the analytical model used. By the time this misconception was corrected, not enough time had remained before the deadline to use one or more control variables correctly. Secondly, given that this thesis draws on extensive previous literature on factors influencing the transposition time to determine an essential set of independent variables, alternate explanations are unlikely. It was acknowledged in Section 4.1.2.4 'Variable Selection,' which alternative explanations could have been used within the analysis, but ultimately had to be excluded. If there are alternative explanations present, these will be shown in the multilevel model by the '_cons' variable (see the end of Section 5.3).

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[35] For an overview of the exact results of the Eurobarometer survey, please refer to Appendix IV: Euroscepticism.

4.2.4 Summary

The dependent variable and independent variables can be summarized in the following tables, respectively[36].

Dependent Variable		
Variable	**Variable Type**	**Unit of measurement/coding**
Transposition Time	Continuous	Transposition Time = Date of the deadline – Date of transposition

Independent Variable			
Level	**Variable**	**Variable Type**	**Unit of measurement/coding**
Directive-level	Institutional Decision-Making	Categorical	Two dummy variables: If the directive is a commission delegated directive, for this column, it is coded as '1', if not then as '0'. If the directive is a Council Directive, for this secondary column it is coded as '1', if not then as '0'.
	Type of policy	Categorical	'0' = New // '1' = Amending
	Number of Recitals	Continuous	Number of recitals prefacing the articles within the respective directives.
	Technicality	Continuous	The percentage that the annex relative to the total length of the directive counted in pages. $$\text{Technicality} = \frac{\text{Pages in the Annex}}{\text{Pages of the Directive}}$$
	Time-granted	Continuous	Number of days given to national authorities to transpose directives.

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[36] For an overview for the sources utilized for each variable, please consult Appendices I & II.

Level	Variable	Variable Type	Unit of measurement/coding
Domestic-level	Strategic Capacity	Categorical	Scale 1-10; 10 being the best possible strategic capacity.
	Government Effectiveness[37]	Continuous	Ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance
	Corruption[38]	Continuous	Ranges from -2.5 (weak) to 2.5 (strong) governance performance
	Decentralization	Categorical	Dummy variable: If the Member State is unitary, the value is '1'. If the Member State is federal, the value is '0'.
	Euroscepticism[39]	Numerical	The proportion of national population who want the decision-making in environmental policy to be done jointly between the national government and the EU. $$Ratio = \frac{Jointly\ with\ the\ EU}{National\ Government}$$

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[37] For the precise description of what the Government Effectiveness entices, please refer to Section 4.2.2.5 Administrative Capacity.

[38] For the precise description of what the Corruption entices, please refer to Section 4.2.2.5 Administrative Capacity.

[39] One assumption that was made within this thesis was that the preferences of the citizens of each respective Member State remained stable and that there was no significant shift in public opinion between 2009 and 2019.

5. Analysis

5.1 Descriptive Statistics

The first step of the analytical model is to examine the descriptive statistics. These refer to the mean, standard deviation, minimum, and maximum values for each respective variable, irrespective if it is the dependent variable or independent variables. These values can be summarized as follows.

Variable	Obs	Mean	Std. Dev.	Min.	Max.
Transposition time	1165	38.64979	270.0853	-1371	1920
Delegated	1320	0.6363636	0.481228	0	1
Council	1320	0.0909091	0.2875887	0	1
Amending	1320	0.8363636	0.3700855	0	1
Recitals	1320	14.85455	14.77586	3	65
Techn	1320	0.4609199	0.2541023	0	0.99635
TimeGranted	1320	504.4	266.5002	31	1343
StratCap	1320	5.604167	1.225032	3.5	8
GovEffect	1320	1.101053	0.530402	-0.19626	2.07467
Corr	1320	0.9692816	0.7282711	-0.2171	2.21591
Unitary	1320	0.875	0.3308443	0	1
ProEuro	1320	2.266294	1.210721	0.849057	5

Figure 7: General Descriptive Statistics

The transposition time, which is the dependent variable, averages at 38.65 days ahead of schedule, as it is a positive value. The largest delay was one of 1371 days, whereas in one case a Member State transposed a directive five years ahead of schedule (1920 days). What this means is that the Member State probably reported a pre-existing national measure. This reporting happens whenever the legislation of a Member State is more ambitious than that of the EU and the Member State sees no need to transpose the said directive. The standard deviation is 8.7 months (270 days), so the majority of the data points are clustered quite tightly around the mean, given the broad range.

As to the directive-level variables, almost two-thirds of all post-Lisbon environmental directives are commission delegated directives, 10% are council directives, and 27% are directives passed using the OLP. The overwhelming majority (81%) of the directives within the sample are amending directives, whereas slightly less than one-in-five directives introduce entirely new legislation. The complexity was measured through the number of recitals and the proportion of technical data as part of the entirety of the directive. On average, each directive

contained 14.85 recitals, ranging between 3 and 65. However, the standard deviation is almost as large as the mean, meaning that the number of recitals is distributed very broadly. On average, 46% of the content of each respective directive is its annex and thereby, technical data such as benchmarks, thresholds, or technical specifications. As for the time-granted by the European institutions to transpose the respective directives, the values range from a month (31 days) to over 3years and eight months (1343 days). On average, Member States were allocated 504.4 days to transpose directives, with a standard deviation of approximately half thereof (266.5 days).

On the domestic-level, the EU-24 Member States have an average strategic capacity of 5.6, which means that "strategic planning units and bodies take a long-term view of policy challenges and viable solutions. Occasionally, they exert some influence on government decision-making" (Bertelsmann Stiftung, 2018, p.1). Cyprus and Slovenia have the lowest strategic capacity, which is at 3.5, while Finland and the UK had the highest at 8. With a standard deviation of 1.26, the strategic capacity of the Member States is tightly clustered. Government effectiveness and corruption mirror each other to a large degree. Averaging, on the scale proposed by the World Bank, at 1.1 and 0.96 respectively, the EU-24 were relatively strong in their performance. With minimums of -0.2 and -0.22 and maximums of 2.07 and 2.22 respectively, the EU-24 perform quite well. The standard deviations are 0.53 and 0.73 for government effectiveness and corruption. Only Belgium, Germany, and Austria are classified as federal States within the sample countries, meaning that the remaining 21 member states (87.5%) are unitary, as reflected in the data table above. With regards to the ratio of pro-Europeans to Eurosceptics, on average, there are 2.27 pro-Europeans for each Eurosceptic. What this means concretely, is that there are 2.27 people, on average, who wish the decision-making in environmental policy to be done jointly with the EU for each person who wishes it to be a purely national matter[40]. The only country where the 'Eurosceptics' outnumber to pro-Europeans is the Czech Republic, where the ratio is 0.85. The maximum ratio is 5, namely Germany. The standard deviation is quite scattered, with a value of 1.21.

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[40] To recall, the precise equation is as follows: $Ratio = \frac{Jointly\ with\ the\ EU}{National\ Government}$.

5.2 Assumptions-Test

The next step in multilevel multivariate linear regression analysis is to test the three assumptions. The subsequent sub-section tests each respective assumption and provides remedies, wherever possible if the assumptions are not satisfactorily fulfilled. There are three assumptions, namely *normality*, *homoscedasticity*, and a (lack of) *multicollinearity*.

5.2.1 Assumption 1: Normality

The error terms of a variable, also referred to as residuals, need to be distributed normally within multilevel analysis (Yang & Miller, 2008). Fulfilling this assumption is important as normally distributed errors prerequisites to calculate the confidence interval and p-values. "If the error distribution is significantly non-normal, the confidence interval may be too wide or too narrow" (Yang & Miller, 2008, p.482).

There are three methods to go about testing normality (Hair et al., 2010). The first thereof is through the use of a graphical test, namely using *histograms*. This visual test is appealing due to its simplicity. However, problems arise in small-sample studies given that a histogram can be set up in such a way as to distort the visual depiction of the error term (Hair et al., 2010). The width, height, number of categories and their respective widths, inter alia, can influence said visual depiction (Hair et al., 2010)

Second, one can test the *skewness & kurtosis*. Normality is achieved when the skewness is close to zero and the kurtosis is close to three (Hair et al., 2010). Skewness is a mathematical measure of the symmetrical distribution of the observations (Hair et al., 2010). Kurtosis, similarly, is a measure of the outliers of the data (Yang & Miller, 2008).

Lastly, *statistical tests* could be used to determine the normality. In specific, the *Shapiro-Wilk* test could be applied for small to medium sample, which would "calculate the level of significance for the differences from a normal distribution" (Hair et al., 2010, p.73; Yang & Miller, 2008). The Shapiro-Wilk test should be insignificant in order to fulfil the normality assumption (Statistics Solutions, n.d.). Another option would be the use of the Kolmogorov-Smirnov, Looney-Gulledge, or Lilliefors test for large samples (Yang & Miller, 2008). Alternately, one could make use of the Kernel Density Estimate. Depending on the statistical

software used by the researcher, one can run any of these tests for normality[41]. For this thesis, however, and especially given the relatively small sample size, the Shapiro-Wilk test and Kernel Density Estimate are used. The reason this is considered a small sample size is that it is only a fraction of the total number of directives within the field of environmental policy (55 out of 620), which results in a total of 1320 observations. The Kernel Density Plot is a "visual depiction of the distribution of a single variable based on a smoothed calculation of the density of cases across the range of values" (Kellstedt & Whitten, 2013, p.125).

Nonnormality may occur as a result of a non-linear relationship of a variable with the dependent variable (Yang & Miller, 2008). In such cases, it may be necessary to transform the nonnormally distributed variable into a non-linear variable. (Yang & Miller, 2008). The first possibility to remedy non-normality would thusly be to transform the variables, for example by inserting it into a logarithmic function. Alternately, if the transformation is ineffective, there remains the possibility to leave out the variable entirely.

The typical test, given the sample size, is to conduct the *Shapiro-Wilk test* (Hair et al., 2010). The results can be seen below [42].

Variable	Obs	W	V	z	Prob>z
Transposition time	1165	0.89449	76.479	10.807	0
Delegated	1320	0.99953	0.385	-2.388	0.99153
Council	1320	0.98507	12.13	6.249	0
Amending	1320	0.99461	4.382	3.7	0.00011
Recitals	1320	0.7535	200.223	13.27	0
Techn	1320	0.96511	28.344	8.375	0
TimeGranted	1320	0.94377	45.677	9.569	0
StratCap	1320	0.99517	3.921	3.421	0.00031
GovEffect	1320	0.9742	20.957	7.618	0
Corr	1320	0.96898	25.194	8.08	0
Unitary	1320	0.9917	6.746	4.78	0
ProEuro	1320	0.87989	97.559	11.47	0

Figure 8: Shapiro-Wilk Test for Normality

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[41] This software for statistical modelling can be, but is not limited to: R-Studio, SPSS or STATA. This thesis made use of STATA as the software.

[42] For the exact Stata codes, please refer to Appendix V: STATA Coding.

A V-value of '1' represents the median value of a normal population. As such, "large [V-values] indicate nonnormality" (StataCorp, 2017, p.2702). Nonnormality was shown to be detrimental to the statistical analysis.

Skewness and kurtosis are other options for testing the normality of the data. To recall, "a variable is assumed to have a normal distribution when skewness is closest to zero and kurtosis closest to three" (Hair et al., 2010, p.71). To improve the internal validity of the data, the conclusions drawn from the Shapiro-Wilk Test are cross-referenced with the skewness and kurtosis values for the set of independent variables.

Variable	Pr (Skewness)	Pr (Kurtosis)	adj chi2(2)	Prob>chi2
Delegated	0	.	.	.
Council	0	0	.	0
Amending	0	0	.	0
Recitals	0	0	.	0
Techn	0.5802	0.5324	0.7	0.7051
TimeGranted	0	0	.	0
StratCap	0.0013	0	43.31	0
GovEffect	0	0.5967	40.46	0
Corr	0.6809	0	.	0
Unitary	0	0	.	0
ProEuro	0	0.0208	.	0

Figure 9: Skewness & Kurtosis Test Applied

The skewness is normal for all variables except for the technicality, strategic capacity, and corruption. The skewness-value for Strategic capacity is so close to '0', however, that it does not need to be remedied (0.0013). The kurtosis-value is non-normal for the technicality (0.5324), government effectiveness (0.5967), and Euroscepticism (0.0208). Similarly, the kurtosis-value is only marginally non-normal, which, given the medium sample size, makes little difference for the analytical model. Therefore, it must not be remedied.

The above Skewness & Kurtosis Test purposefully left out the Skewness & Kurtosis for the transposition time. For this, the Kernel density estimate was applied, as visualized below.
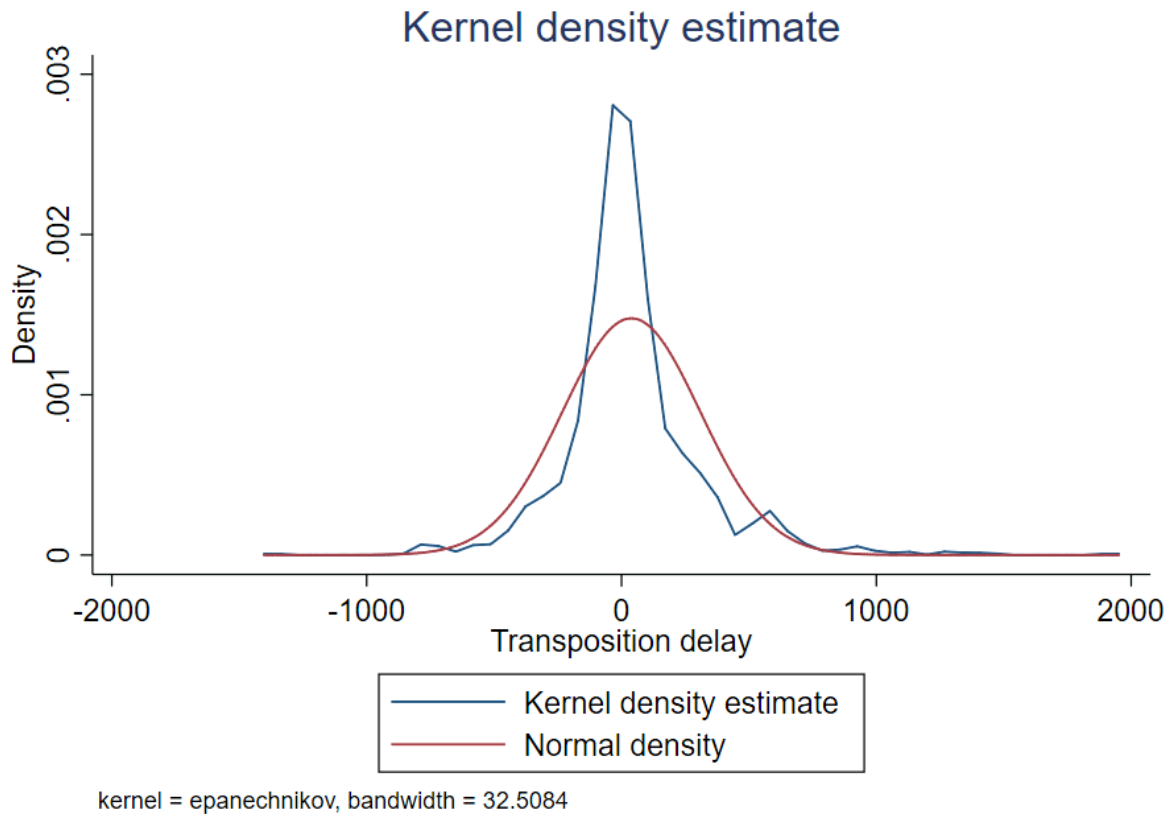
Figure 10: Kernel Density Estimate for the Transposition Time

As seen, the data points for the transposition time (DV) are mostly normally distributed. However, there is a sharply peaked distribution which coincides with the model by Hair et al. (2010, p.71). What this means in practical terms, is that the Member States transposed the directives on or very tightly around the transposition deadline, both ahead of schedule and slightly delayed, which is in line with the findings of previous academic literature (Kaeding, 2008). Given that the transposition time is normally distributed, it must not be adjusted or justified.

It has been established that there is a non-normal distribution for the variables of technicality, government effectiveness, and corruption. These need to be remedied. "Violations of normality may occur because the linearity assumption is violated. In such cases, a nonlinear transformation of variables might solve the problem" (Yang & Miller, 2008, p.482). What this means is that one may take the logarithm of the variable, thereby creating a normal distribution of the error.

The test for Section 5.2.3 Assumption 3: (Lack of) Multicollinearity, shows that there is multicollinearity between government effectiveness and corruption, which will be elaborated upon later. Therefore, also considering there is a non-normal distribution of corruption, the variable 'corruption' is dropped from the multilevel linear analytical model. However, the technicality and government effectiveness must be transformed into a nonlinear model with normally distributed errors. This can be done through the Stata code "generate GovEffect2=log(GovEffect)" and "generate techn2=log(Techn)" respectively. Thereby, the logarithm is taken for every value of government effectiveness and technicality. Having done so, the skewness and kurtosis for the logged variables are retested, the results of which are depicted below.

Variable	Obs	Pr (Skewness)	Pr (Kurtosis)	adj chi2(2)	Prob>chi2
Techn2	1176	0	0	.	0
GovEffect2	1265	0	0	.	0

Figure 11: Adjusted Skewness/Kurtosis Test for Techn2 and GovEffect2

As seen, the values for skewness and kurtosis are both '0' for the adjusted variables, meaning they are normally distributed. It must be noted, however, that "transforming variables by taking their logarithm translates the relationship into a measure of proportional change (elasticity)" (Hair et al., 2010, p.77). Ultimately, the assumption of normality has been accounted for and is fulfilled.

5.2.2 Assumption 2: Homoscedasticity

An equally important assumption that is made within multilevel linear models is that of homoscedasticity. Homoscedasticity is defined as the uniformity of the error variance (Kellstedt & Whitten, 2013). Heteroscedasticity can occur as a result of measurement errors or if there are differences in the subpopulation or effects by the interaction of other variables (Williams, 2015). Researchers strive for homoscedasticity because the dependent variable is supposed to vary as much as possible as a result of the intervention of different independent variables so that cross-independent variable differences can be measured (Hair et al., 2010). In other terms, if all independent variables have the same impact on the dependent variable, it becomes redundant to measure and study more than one variable. Moreover, in the case of heteroscedasticity, the "regression model fits some of the cases in the population better than

others" (Kellstedt & Whitten, 2013, p. 191). This leads to problems when testing the hypotheses.

There are two ways to test for homoscedasticity. The first involves the creation of *scatterplots* comparing the relationship between the individual independent variables with the dependent variable. To test the homoscedasticity, one could create a *residuals v fitted plot*. Such a model can be used to test if the assumptions of homoscedasticity and normal distribution of errors are violated (Rabe-Hesketh & Skrondal, 2012, p.55). The second method to test the heteroscedasticity is to conduct the Breusch-Pagan Test (1979). The Breusch-Pagan test considers the chi-squared value. Heteroskedasticity is present when there is a large chi-squared value (Williams, 2015). Simultaneously, "[if] the absolute magnitude of the residuals appears on average to be the same regardless of the value of the independent variable, then there probably is no heteroskedasticity" (Yang & Miller, 2008, p.481). The Breusch-Pagan test is a post estimation test in Stata, meaning it is conducted after the multilevel model.

Nonnormality of one variable frequently causes heteroscedasticity (Hair et al., 2010). Therefore, one can remedy homoscedasticity by addressing the nonnormality assumption (Hair et al., 2010). As such, one can compensate for the presence of heteroscedasticity by addressing the normal distribution of the error terms of the variables, namely assumption 1. To recall, the way one does this is by either dropping the afflicted variable entirely or creating a nonlinear transformation of the variable.

For this thesis, the Breusch-Pagan Test was applied for the analytical model through the use of the code "estat hettest." Running this code gives us the following table.

Ho:	Constant variance
Variables:	fitted values of Transposition delay

chi2(1)	11.63
Prob>chi2	0.0006

Figure 12: Breusch-Pagan Test

As seen, the chi-squared value is not excessively large, being at 11.63. This is within the acceptable range. To double-check the results of the Breusch-Pagan test, this thesis cross-

references it with the *residuals v fitted plot*, as depicted below. Given the large scale and large number of samples, the visual depiction is somewhat messy.
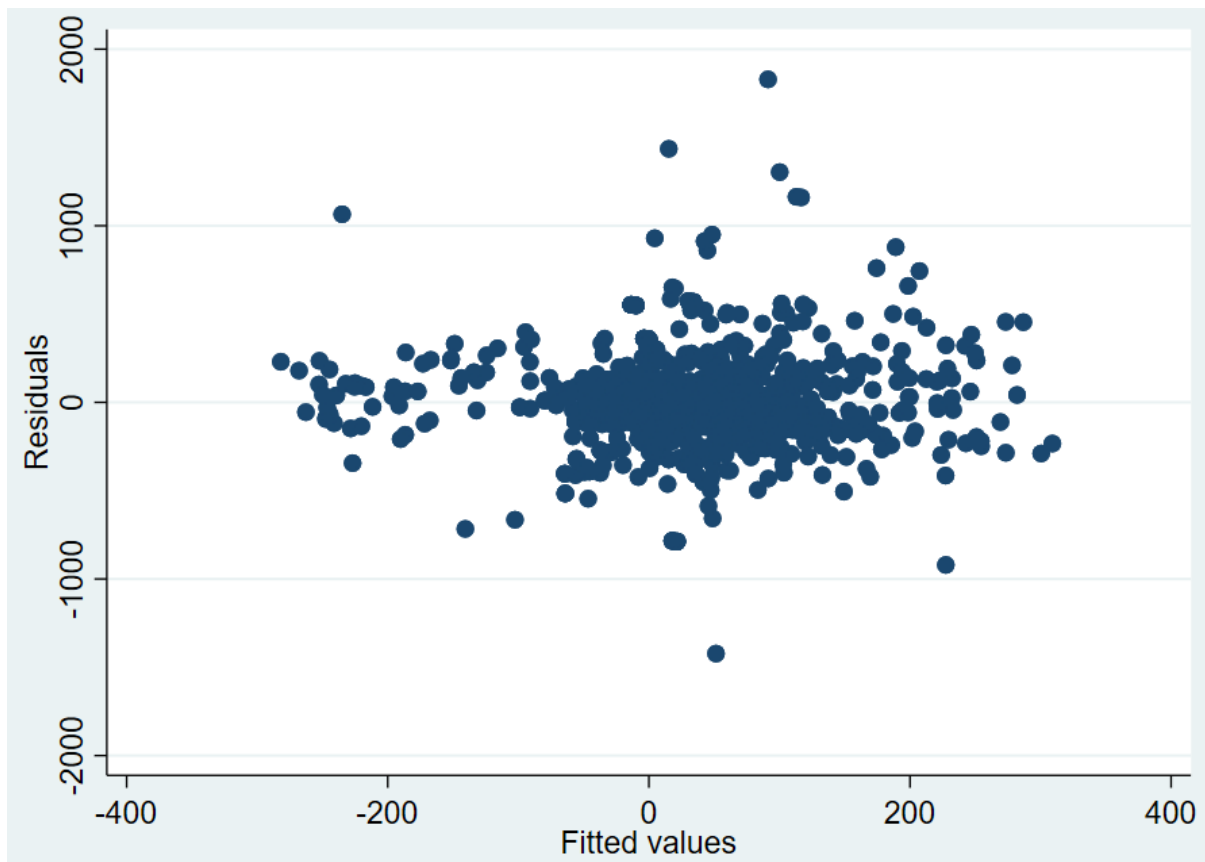
Figure 13: Residuals v Fitted Plot Results

As seen, there are a few outliers. However, the absolute majority of the data is aligned linearly around the x-axis. The dispersion of the data points is noticeable, but not large enough to warrant the use of a remedy. Therefore, it can be concluded that assumption two has, therefore, been fulfilled.

5.2.3 Assumption 3: (Lack of) Multicollinearity

The third fundamental assumption within multilevel linear regression analysis is that of (a lack of) multicollinearity. Multicollinearity refers to the phenomenon whereby predictor variables influence one another and not merely the dependent variable. The problem with collinear independent variables is that "one doesn't have enough unique information on a collinear variable to produce precise estimates of its effect on the dependent variable" (Yang & Miller, 2008, p.484). As such, the entire point of the analytical model is undermined if this assumption is not met.

One method to test the presence of multicollinearity is to apply Variance Inflation Factors (VIFs). The VIF is found by regressing the predictor variables amongst one another by quasi-identifying an independent variable as the dependent variable for the VIF. This produces the R-squared value for the said variable. The variance of the variable is positively related to the VIF value (Kellstedt & Whitten, 2013, p. 240). A value of VIF between 5 and 10 is moderately collinear, but still within an acceptable range. However, "a value of VIF [greater than] 10 indicates multicollinearity is present, and the assumption is violated" (Statistics Solutions, n.d., p.10). The inverse of the VIF ($\frac{1}{VIF}$) is referred to as the tolerance index (Kellstedt & Whitten, 2013, p.240).

There are multiple methods for dealing with multicollinearity. The first, and easiest, would be by dropping the variable from the model altogether (StataCorp, 2017). Alternately, the analytical model can be changed to a ridge regression, or one could examine the weighted least squares (StataCorp, 2017).

This thesis ran the VIF to test for the presence of multicollinearity. To recall, the VIF value should be as small as possible, but under no circumstances exceed 10, as that would violate the assumption of a lack of multicollinearity (Statistics Solutions, n.d., p.10). The assumption of the independence of variables is violated for the variables of corruption and government effectiveness, who have a VIF of 10.48 and 10.35, respectively[43]. The other VIFs do not exceed 3.86, which is within the acceptable range. Given that corruption and government effectiveness are based on the same source (World Bank, 2018) and are placed upon the same scale, they are easily comparable. Referring back to the descriptive statistics, one finds that they are, in fact, very similar in terms of their mean, standard deviation, and minimum and maximum value.

This multicollinearity can be explained. Logically, it is difficult to have an effective government if there is a relatively high level of corruption as corruption would diminish government effectiveness. There is thusly a close, positive relationship between the corruption and government effectiveness of a State. Moreover, these variables were used, in conjunction with strategic capacity, as proxy variables for the administrative capacity of the respective

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[43] Please see Appendix VI for the tabulated results of the Variance Inflation Factors (VIF).

Member States. Multicollinearity is not unexpected due to these reasons. Nonetheless, multicollinearity remains statistically unacceptable. Therefore, as suggested by the literature, the variable of 'corruption' is dropped from the analytical model. Thereby, government effectiveness can be retained as an independent predictor variable without the presence of multicollinearity. Assumption 3 has, therefore, been fulfilled.

5.3 Multilevel Analysis

Having accounted for the model assumptions, the multilevel multivariate linear regression analysis can be run. The results are as follows:

TranspDelay	Coef.	Std. Err.	z	P>|z|	95% Conf. Interval	
Delegated	190.892	56.56705	3.37	0.001	80.02263	301.7614
Council	45.75622	86.5328	0.53	0.597	-123.845	215.3574
Amending	3.548443	50.92472	0.07	0.944	-96.2622	103.3591
Recitals	3.545682	1.866152	1.9	0.057	-0.11191	7.203272
Techn2	-36.6674	32.92868	-1.11	0.265	-101.207	27.87159
TimeGranted	0.199314	0.071757	2.78	0.005	0.058673	0.339954
StratCap	20.38471	14.91554	1.37	0.172	-8.84922	49.61864
GovEffect2	22.9567	34.12646	0.67	0.501	-43.9299	89.84333
Unitary	61.15561	53.57857	1.14	0.254	-43.8565	166.1677
ProEuro	-4.46887	14.73327	-0.3	0.762	-33.3455	24.4078
_cons	-434.463	137.6645	-3.16	0.002	-704.281	-164.646

Table 5: Multilevel Analysis Results

This thesis hypothesized that Commission delegated directives and Council directives are transposed faster than OLP Directives. 'Delegated' and 'Council' are dummy variables for the first independent variable, namely the institutional decision-making. Beginning with the coefficient, one sees that the coefficient is extremely large (~190) for the commission delegated directive. What this means is that a Commission Delegated Directive is transposed approximately 190 days faster than OLP Directives. With a $P > |z|$ value of 0.001, the coefficient of the delegated directive is statistically significant. The 'council' variable, on the other hand, has a much lesser impact (coefficient of 45.76) on the transposition time. Similarly, this value of approximately 45 means that the Council Directives are typically transposed 45 days faster than ordinary directives. The standard error, at 86.53, exceeds the coefficient. What this means is that there is substantial uncertainty as to the correlation between the council-variable and the transposition time. The relationship may even be negative. This uncertainty is reinforced by a $P > |z|$ value that exceeds the 0.05 limit, being situated at 0.597. There is, as

such, no statistical significance for the council-variable. Therefore, the hypothesis can only be partially confirmed, in that the Delegated Directives are definitively transposed faster, but Council Directives are not transposed faster compared to ordinary directives.

The second hypothesis proposed that amending directives are transposed faster than new directives. According to the data, on average, amending directives are transposed 3.5 days faster than new directives. With a standard error value of 50.9, the error range is very large. Most important is the $P > |z|$ value, which is 0.944. Such a large value indicates absolute statistical insignificance. Moreover, the 95% confidence interval ranges from negative 96.26 to 103.36. Given the large $P > |z|$ value, the interpretation of the coefficient is redundant. The second hypothesis, therefore, can be refuted.

The third hypotheses set forth that the greater the complexity, the slower the transposition of the directive. The complexity of the directive was measured through the use of two proxy variables. These are the Recitals and Technicality. Looking back at the operationalization, it was stated that the relationship between the complexity should be linear to the transposition time. As for the recitals, the coefficient is 3.54, with a standard error of 1.86. What this means is that for each additional recital, which is also referred to as explanatory notes, the transposition time decreases by approximately three-and-a-half days. The p-value exceeds the cut-off point of 0.05, being situated at 0.057. Therefore, the results for the recitals insignificant and must be refuted. Moreover, the 95% confidence interval ranges from -.11 to 7.20. The technicality, which refers to the proportion the annex takes up of the overall directive, has a coefficient of -36.66 with an error term of 32.92. The coefficient shows that for each percentile increase in the 'technicality,' the transposition time decreases by approximately 37 days. It must be noted here that this variable was adjusted by taking the logarithm. Therefore, the coefficient is transformed into a "measure of proportional change (elasticity)" (Hair et al., 2010, p.77). Moreover, the finding is slightly statistically insignificant, given that the value is 0.265, which is above the 0.05 threshold. The 95% confidence interval ranges from -101.20 to 27.87, which is a very large range. Given the statistical insignificance, the results for the technicality are negligible. Therefore, the third hypothesis was rejected by the data, given that the p-values for the recitals and technicality are both insignificant.

The final directive-level variable is the time-granted, wherein it was hypothesized that there is a positive relationship between the time-granted and transposition time. With a coefficient of

0.19, standard error of 0.07, and $P > |z|$ of 0.005, there is a statistically significant, positive relationship between the time-granted and the time Member States ultimately needed for the transposition process, with statistical significance. For each additional day grated to the Member States, the transposition time decreases by 0.19 days. To rephrase, the coefficient reveals that for every five additional days granted for the transposition process, Member States needed one less day for the transposition process. Its 95% confidence interval is very narrow, ranging from 0.6 and 0.34. The time-granted hypothesis can, therefore, be confirmed.

Moving on to the variables on the Member-State (domestic) level, the hypothesis proposed that a higher strategic capacity would decrease the transposition time. The strategic capacity has a coefficient of 20.38, with an error of 14.91. This means that for each unit increase in the strategic capacity, the transposition time decreases by 20 days. With a $P > |z|$ value of 0.172, there is no statistical significance. The range of the 95% confidence interval (-8.84 → 49.62) is mediocre. As such, this part of the hypothesis is refuted. As with the strategic capacity, it was hypothesized that greater government effectiveness would result in a faster transposition. The government effectiveness is a logged variable and has a coefficient of 22.95 and standard error of 34.13. What this would mean is that for each unit increase in the government effectiveness, the transposition time would decrease by approximately 23 days. It is statistically insignificant (0.5) and has a 95% confidence interval ranging from -43.93 to 166.17, which is rather large. Given the insignificance (p-value) of both the government effectiveness and strategic capacity, the fifth hypothesis can be rejected.

The sixth hypothesis proposed that a State with a low degree of decentralization would transpose directives faster. The decentralization, measured by the presence of a unitary governmental system, has a coefficient of 61.16 and standard error of 53.58. This means that, on average, a unitary state transposes a directive about two months faster than a federal State. This is a statistically insignificant variable, as the $P > |z|$ value is 0.254. The confidence interval, however, is large, ranging from 10.38 to 107.33. Given the lack of a statistically significant relationship, the sixth hypothesis is rejected.

The final hypothesis proposed that the more pro-European the attitudes of the citizens of the Member State, the faster the transposition. This variable was operationalized as the ratio of pro-Europeans for each Eurosceptic. Herein, the coefficient is the -4.46 with a standard error

of 14.73. $P > |z|$ exceeds the 0.05 benchmark (0.76), making this variable statistically insignificant. If not for the statistical significance, this would have meant that for each additional pro-European, the transposition time would have increased by seven days, which is somewhat counterintuitive. Moreover, the 95% confidence interval ranges from a negative value to a positive value (-33.34 to 24.41). As such, this final hypothesis can be refuted.

The _cons value shows a coefficient of -434.46 and standard error of 137.66. With a $P > |z|$ of 0.002, the residual is highly, statistically significant. What this means, conceptually, is that there are unexplored factors present which have a very serious delaying-impact on the transposition time that have not been accounted for in the analytical model, perhaps due to practical or other reasons. What precisely these variables are, however, cannot be seen from the _cons value. This factor – or number of factors – causes a delay of approximately 434 days, which is over a year.

Having discussed each individual value, it is essential to contrast these against the assumptions of which variables would speed up the transposition. This contrast can be tabulated as follows.

Level	Independent Variable	Presumed Variable that +speeds up transposition	Hypothesis: Confirmed / Rejected
Directive-level	Institutional Configuration	Commission Delegated Directives; Council Directives	Delegated: Confirmed Council: Rejected
	Type of Directive	Amending	Rejected
	Complexity	Low Complexity	Recitals: Rejected Technicality: Rejected
	Time-granted	High time-granted	Confirmed
Domestic-level	Administrative capacity	High administrative capacity	StratCap: Rejected GovEffect: Rejected
	Decentralization	Low decentralization	Rejected
	Euroscepticism	Low Euroscepticism	Rejected

Table 6: Testing hypotheses against results

It remains essential to consider the inter-group residuals (random-effects parameters), especially since the coefficient of the _cons is comparatively very large. The random-effects parameters show what were to happen if repeatedly random samples are taken from the

population, and estimates are made as to how much the model coincides with the sample. This produces the parameters of these repeated tests. Therefore, the closer the estimated value is to zero, which would insinuate no deviation whatsoever, the better. The random effect parameters for the multilevel model can be tabulated as follows.

Random-effects Parameters	Estimate	Std. Err.	95% Conf. Interval	
var (R.DirID)	5179.203	1547.124	2883.986	9301.064
var (R.MSID)	5327.08	1965.036	2585.24	10975.85
var (Residual)	51288.05	2370.863	46845.53	56151.86

Table 7: Group residuals, variance

This table shows that that variance within the directive-level has a value of 5179 while the variance across on the domestic-level is 5327. These estimates and, therefore, inter-group variance, are very large. What this means is that there is a high degree of directive-to-directive and Member State-to-Member State variability. This is detrimental to the reliability of the results, as such a large variance is indicative of an issue with the model at hand. This issue can be explained by the fact that solely two out of ten variables have a statistically significant relationship with the transposition time (dependent variable). Moreover, no variable on the domestic-level has a statistically significant relationship with the transposition time. The estimates for the standard deviations of the random-effects on the directive- and domestic-level should also be considered, which can be tabulated as seen below.

Random-effects Parameters	Estimate	Std. Err.	95% Conf. Interval	
sd (R.DirID)	71.96668	10.74889	53.70276	96.44202
sd (R.MSID)	72.98685	13.46157	50.84525	104.7705
sd (Residual)	226.4686	5.234417	216.4384	236.9638

Table 8: Group residuals, standard deviations

This table shows that the standard deviation of the variance within the directive-level has a value of 71.97 while the that on the domestic-level is 72.98. These values are important for the determination of the intraclass correlation[44]. As seen above from Table 7, the random-effects parameters are nowhere near zero, meaning that the multilevel model does not fit well with the data.

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[44] For a calculation of the intraclass correlation for both the Directive-level and Domestic-level, please refer to Appendix VII.

6. Conclusion

In this closing chapter, the research question is answered through a systematic review of the set of hypotheses as well as through the sub-questions. Subsequently, the limitations of the research study and the implications are provided, followed with some suggested avenues for future research.

6.1 Discussion

The track record of the European Member States in the transposition of Post-Lisbon EU Environmental Policy is poor. As seen below, almost half of all environmental directives introduced since the Lisbon Treaty of 2009 have been transposed late.
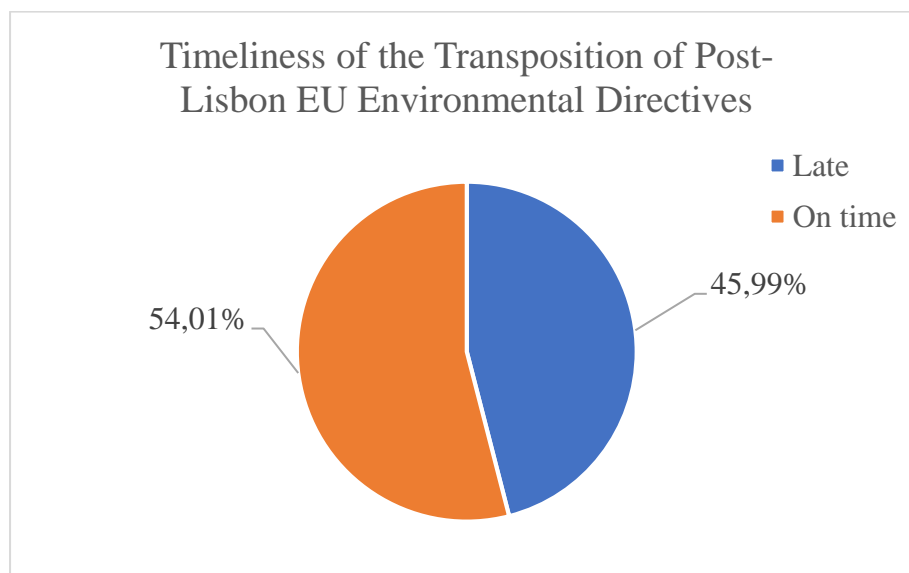
Figure 14: Timeliness of Post-Lisbon EU Environmental Policy

This thesis set out to examine why European Member States struggle with the transposition process, specifically within the field of environmental policy. To rephrase, the central research question of this thesis is:

What factors determine the transposition-rate of European Union Environmental Policy into Member State legislation post-Lisbon Treaty?

Based on the work of many established authors in the field and correlated policy fields, several hypotheses were outlined in 'Section 3.4 Hypotheses' in order to answer this question. Through the use of multilevel linear regression analysis, these hypotheses were subsequently tested. The results can be summarized as follows:

	Hypotheses	Confirmed / Rejected
1	Commission Delegated Directives and Council Directives have a shorter transposition time than Directives passed by means of the Ordinary Legislative Procedure.	Partially confirmed
2	Amending directives have a shorter transposition time than new directives.	Rejected
3	More complex directives have a higher transposition time than less complex directives	Rejected
4	Directives that have a longer time-granted for the transposition process have a lower transposition deficit than directives with very short transposition deadlines.	Confirmed
5	The better the administrative capacity of the Member State, the shorter the transposition time will be.	Rejected
6	The more centralized (unitary) the State is, the shorter the transposition time.	Rejected
7	The greater the degree of Pro-Europeanism, the shorter the transposition time.	Rejected

Table 9: Summary of Hypotheses-Results Test

The extent to which these factors influence the transposition time varies considerably. Two sub-questions were outlined in order to differentiate between factors that are intrinsic to the directive itself and factors that vary from Member State to Member State. These are referred to as Directive-level and Domestic-level, respectively. The first sub-question was:

> *To what extent do directive-level factors affect the transposition time of EU environmental policy?*

According to the results of the multilevel model and with regards to the directive-level at first, if a directive is a commission delegated directive, it will be transposed the fastest. This is the case since commission delegated directives typically only change a few details of previously-passed directives. Therefore, the national transposing agents solely need to change minor details within the already-transposed respective national legislation. This process is neither time- nor labour-intensive and typically does not call for a significant degree of inter-ministerial coordination, which would slow down the transposition process. There was no

statistically significant relationship between the council directive and the transposition time. As such, it can be concluded that a commission delegated directive is transposed 190 days faster than an ordinary directive. The voting-style, or in the case the lack thereof, thusly matters for the transposition process. The depoliticized process (delegated directive) is by far the most influential speeding-up factor.

The second hypothesis set forth that new directives would take longer to be transposed than amending directives. The underlying logic is that new directives introduce new legislation to the body of legislation that already exists within each Member States. This has implications on the existing legal order. As such, the transposing agent would need to cross-reference, check, and double-check the existing national legislation to prevent any legal conflict. Moreover, introducing new directives calls for the coordination of multiple domestic and international institutional actors, thereby slowing down the process considerably. For amending directives, the underlying logic reflects that of the institutional decision-making, namely that amending directive do just what the name suggests: they amend. There is no need to cross-reference legislation, but merely to change numbers, benchmarks, thresholds, inter alia, if there was, for example, the technological progress that allows for an incremental introduction of more ambitious environmental policy. Ultimately, it was found that there was no statistically significant relationship between the type of directive and the transposition time, meaning the hypothesis must be refuted.

The third hypothesis proposed that more complex directives take longer to be transposed than less complicated directives. The idea is that it is more difficult to transpose highly detailed, lengthy directives compared to shorter, 'simpler' ones, which results in more time needed for the transposition process for the prior. However, it was seen that this hypothesis was, in fact, refuted. The complexity was measured through the proxy variables of the number of recitals and the technicality. Recitals are often also referred to as explanatory notes. What this means is that the more recitals there are in the directive, the faster the transposition. Explanatory notes (recitals) often explain how the directive fits into the greater body of European legislation. The reason there is a positive correlation, perhaps, is that the recitals help the transposing agent in contextualizing the transposition measure also on a national level, as reference points are given. This contextualization means that it is always stated within the explanatory notes which previous directives are amended as a result of that directive. The national transposing agent, therefore, has the possibility of cross-referencing the new directive with the measures

transposed in the past, using those as de facto templates for the transposition of the new directive. The statistical significance of both proxies exceeds the cut-off point. The third hypothesis is, as such, ultimately refuted.

The fourth and last hypothesis that concerns the directive-level factors suggested that the more time the Member States were granted for the transposition process, the lower the likelihood of a delay. The logic is self-explanatory in that Member States require a certain amount of time to correctly transpose any given directive, as the transposition process is inherently a complicated, complex and legalistic procedure that often necessitates the interplay of many actors. This hypothesis was proven as true, although the impact of the time-granted on the overall transposition time is minute.

The second sub-question examines the factors that differ from Member State to Member State.

To what extent do domestic-level factors affect the transposition time of EU environmental policy?

The first hypothesis that relates to the domestic-level relates to the administrative capacity. The hypothesis set forth that the greater the administrative capacity, the faster the transposition time would be. Three proxy variables were used for this hypothesis, which were treated as de facto independent predictor variables, namely strategic capacity, government effectiveness, and corruption. The corruption variable failed the assumptions test, which is why it was dropped from the model. Ultimately, none of these proxy variables show a statistically significant relationship with the transposition time. It can be concluded that the administrative capacity of the Member State is not an important influencing factor on the transposition time.

The second hypothesis set forth that unitary states transpose directives more swiftly than federal states since there is less of a reliance on subnational actors in the transposition process. The reason why subnational actors would delay the transposition process is that these actors may occasionally have confliction positions which necessitates the development of compromises. Especially when it comes to politically sensitive topics, of which environmental policy is becoming more and more a part of, this decentralization can cause delays. However, this hypothesis was not backed by the data, which means it can be rejected.

The last hypothesis set forth that the greater the degree of Pro-Europeanism in the field of environmental policy, the faster the transposition time would be. The reason is that policymakers who are involved in the transposition process are inherently interested in re-election. If the voter base is predominantly pro-European, then the politician has an incentive to support the transposition process. Ultimately, however, this hypothesis was rejected by the data.

To directly address the sub-questions, it was found that (1) the presence of a commission delegated directive and the time-granted influence the transposition time of Member States and (2) no domestic-level factors influence the transposition time.

6.2 Limitations

Every study has its limitations, much like this one, for a variety of reasons. Most limitations of this thesis were practical. The main limitation is that several variables, as listed in Sections 4.1.2, needed to be excluded from the analytical model due to the lack of accessible data, the time-intensity required for the data collection or due to language barriers. Given this, the number of variables included within the model is comparatively small relative to the number of factors that could, according to previous academic literature, influence the transposition time.

Secondly, this thesis was limited with regards to the scope of the directives as it solely considers directives from December 2009 onwards, given that that was the time when the Lisbon Treaty came into effect, which represents the latest substantial change to the policy process of European environmental policy. The environmental acquis has been around since the 1980s, however, so a large body of existing policy fell outside the scope of this thesis. This relates to the first limitation (practicality) too, given that researching the transposition deadlines and dates for all environmental directives across all European Member States is a very time-intensive process.

Third, a limitation was the exclusion of four of the European Member States, namely Sweden, Hungary, Croatia, and Denmark, for varying reasons[45]. Excluding four of the 28 Member States is not too much of a limitation, especially given the stark socio-economic and politico-administrative differences of the excluded States. Including them would have yielded more precise results, thereby strengthening the thesis' validity.

6.3 Implications

The results of this quantitative study have implications for both research and policy. As for the research, this study reinforces the findings of previous academic research into the transposition delay and the underlying causes[46]. It was found that the factors delaying the transposition of environmental policies into the Member States can be split into two categories, namely the directive-level and domestic-level. On the directive-level, the most substantial speeding-up factor was the lack of a formal voting procedure, as is the case within Commission Delegated Directives. Secondly, the more time is granted for the transposition process, the faster the transposition is, though to a far smaller degree compared to the voting-procedure. On the domestic-level, all variables were shown to be statistically insignificant, which means that factors inherent to the various European Member States are irrelevant. What this ultimately means is that if the European Member States have an interest in an incremental progression of trans-European environmental policy, these Member States should relinquish power by allowing the European Commission to propose and implement additional Commission Delegated Directives with a high time-granted for the proper transposition thereof.

There remain, however, several avenues for future research. For one, the data set could be expanded. Instead of focusing on post-Lisbon treaties solely, *all* environmental directives could be considered, adjusting for the changes over time of likely independent variables. Rather than a multilevel analysis, the comprehensive study of the transposition deficit across all EU environmental policies would likely yield a panel analysis given the presence of time as a factor. Ultimately, it would prove beneficial to contrast the findings of this thesis with findings from other policy fields following the Lisbon Treaty, especially since the findings of this thesis tend to refute the results of previous studies.

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[45] Please refer to Section 4.1.2.2 for the specific reasoning as to why these Member States were excluded from the analysis.

[46] Please refer to Sections 1.3 and 1.4 for the Societal and Academic Relevance respectively.

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8. Appendices

Appendix I: Directive-level Variables (Raw Data & Sources)

Section 4.2 set forth the criteria used to find and distil all relevant EU environmental directives post-Lisbon. Based thereon, the following EU environmental directives were found. Moreover, the following table displays the raw data of all directive-level variables. The source of each of these data points is always the directive itself, followed by calculations wherever necessary. For the equations, please refer to Section 4.2.

Directive Identifier	Directive-Type	New vs. Amendment	Number of Recitals	Technicality	Time-granted (days)
2010/79/EU	Commission Directive	Amendment	5	0.5	569
2010/26/EU	Commission Directive	Amendment	12	0.894737	365
2010/22/EU	Commission Directive	Amendment	8	0.955882	411
2011/70/EURATOM	Council Directive	New	40	0	766
2011/72/EU	Ordinary	Amendment	9	0.5	10
2011/88/EU	Ordinary	Amendment	13	0.4	374
2011/76/EU	Ordinary	Amendment	41	0.25	750
2011/87/EU	Ordinary	Amendment	6	0	389
2011/97/EU	Council Directive	Amendment	12	0	466
2011/65/EU	Ordinary	New	30	0.478261	574
2012/2/EU	Commission Directive	Amendment	15	0.6	357
2012/33/EU	Ordinary	Amendment	34	0.153846	574
2012/46/EU	Commission Directive	Amendment	15	0.916667	380
2012/19/EU	Ordinary	New	36	0.529412	590
2012/3/EU	Commission Directive	Amendment	14	0.333333	357

2012/50/EU	Delegated Directive	Amendment	3	0.5	84
2012/51/EU	Delegated Directive	Amendment	3	0.5	84
2013/30/EU	Ordinary	New	65	0.634146	1133
2013/39/EU	Ordinary	Amendment	36	0.352941	763
2013/21/EU	Council Directive	Adapting	3	0.991379	49
2014/72/EU	Delegated Directive	Amendment	4	0.5	232
2014/94/EU	Ordinary	New	65	0.1	758
2014/80/EU	Commission Directive	Amendment	7	0.5	750
2014/87/EURATOM	Council Directive	Amendment	29	0	1134
2014/75/EU	Delegated Directive	Amendment	4	0.5	232
2014/76/EU	Delegated Directive	Amendment	4	0.5	232
2014/74/EU	Delegated Directive	Amendment	5	0.5	232
2014/73/EU	Delegated Directive	Amendment	4	0.5	232
2014/69/EU	Delegated Directive	Amendment	5	0.5	232
2014/89/EU	Ordinary	New	27	0.090909	788
2014/101/EU	Commission Directive	Amendment	7	0.5	568
2014/70/EU	Delegated Directive	Amendment	4	0.5	232
2014/71/EU	Delegated Directive	Amendment	5	0.5	232
2015/573	Delegated Directive	Amendment	5	0.5	304
2015/1513	Ordinary	Amendment	38	0.172414	732
2015/996	Commission Directive	New	13	0.996355	1322
2015/1127	Commission Directive	Amendment	8	0.333333	387

2015/1480	Commission Directive	Amendment	9	0.625	491
2015/652	Council Directive	New	18	0.857143	732
2015/720	Ordinary	Amendment	21	0	578
2015/863	Delegated Directive	Amendment	9	0.333333	641
2015/1787	Commission Directive	Amendment	15	0.75	752
2015/2087	Commission Directive	Amendment	9	0.5	387
2015/2193	Ordinary	New	35	0.315789	755
2015/574	Delegated Directive	Amendment	5	0.5	304
2016/585	Delegated Directive	Amendment	7	0.666667	382
2016/1028	Delegated Directive	Amendment	5	0.5	376
2016/1029	Delegated Directive	Amendment	4	0.5	376
2017/845	Commission Directive	Amendment	10	0.571429	569
2017/2096	Commission Directive	Amendment	6	0.714286	203
2017/2102	Ordinary	Amendment	8	0	574
2017/1009	Delegated Directive	Amendment	6	0.5	480
2017/1010	Delegated Directive	Amendment	5	0.5	480
2017/1011	Delegated Directive	Amendment	5	0.5	478
2017/1975	Delegated Directive	Amendment	6	0.333333	385

Table 10: Directive-Level Variables, Raw Data

Appendix II: Domestic-level Variables (Raw Data & Sources)

      Factors, such as the strategic capacity, government effectiveness and corruption (the three of which are proxy variables for the administrative capacity of the respective Member State), as well as the decentralization and 'Euroscepticism' vary from Member State to Member State. The raw data is depicted in the following table.

Country	**Strategic Capacity**	**Government Effectiveness**	**Corruption**	**Decentralization**	**Euroscepticism**
Belgium	6.5	1.48	1.57	Federal	3.13
Bulgaria	5	0.17	-0.22	Unitary	1.97
Czech Republic	5.5	0.96	0.39	Unitary	0.85
Germany	5	1.64	1.81	Federal	5.00
Estonia	7	1.04	1.16	Unitary	1.14
Ireland	6	1.44	1.60	Unitary	2.16
Greece	5	0.41	-0.08	Unitary	1.97
Spain	6	1.08	0.83	Unitary	4.65
France	4.5	1.41	1.39	Unitary	2.52
Italy	5.5	0.44	0.10	Unitary	2.17
Republic of Cyprus	3.5	1.26	0.99	Unitary	3.13
Latvia	7	0.86	0.35	Unitary	2.96
Lithuania	7	0.89	0.47	Unitary	1.11
Luxembourg	5.5	1.70	2.08	Unitary	2.03
Malta	6	1.10	0.83	Unitary	1.65

The Netherlands	6.5	1.80	2.02	Unitary	4.50
Austria	5.5	1.59	1.53	Federal	1.34
Poland	4.5	0.68	0.61	Unitary	1.14
Portugal	5	1.13	0.99	Unitary	4.11
Romania	4	-0.20	-0.15	Unitary	1.04
Slovenia	3.5	0.84	0.20	Unitary	1.16
Slovakia	4.5	1.05	0.85	Unitary	1.45
Finland	8	2.07	2.22	Unitary	1.55
United Kingdom	8	1.56	1.73	Unitary	1.69

Table 8: Domestic-Level Variables, Raw Data

The sources of the raw data on the domestic-level are as follows:

Level	Variable	Source
Domestic	Strategic Capacity	Bertelsmann Stiftung, 2018
	Decentralization	CIA World Factbook, n.d.
	Government Effectiveness	World Bank, 2018
	Corruption	World Bank, 2018
	Euroscepticism	European Union, 2017

Table 9: Raw Data Domestic-Level

Appendix III: Missing Variables

At the onset, after having gathered the data, the missing values were examined. These can be tabulated as seen below, showing the number of missing transposition dates per country across all 55 directives, which can then also be represented as a percentage.

	BE	BG	CZ	DE	EE	IE	EL	ES	FR	IT	CY	LV
Missing Data Points (#)	2	8	11	8	3	3	1	2	13	6	5	20
Missing Data Point (Percentage)	4	15	20	15	5	5	2	4	24	11	9	36

	LT	LU	MT	NL	AT	PL	PT	RO	SI	SK	FI	UK
Missing Data Points (#)	7	2	2	2	8	11	2	5	3	3	8	20
Percentage	13	4	4	4	15	20	4	9	5	5	15	36

Table 13: Missing Data per Country

As can be seen, a total of 155 data points is missing from a total number of observations of 1320. In percentages, this means that 11.7% of the data set is incomplete, which marginally takes away from the internal validity, but is still within an acceptable range.

Appendix IV: Euroscepticism

Two-thirds of EU nationals believe decisions to protect the environment should be made together with the EU (European Union, 2018). A combined 4% of Europeans have other opinions or don't know. Less than a third (29%) of Europeans believe that decisions regarding the environmental policy should be made solely by their national government (EU, 2018).

There may, however, be significant cross-country variation, as shown in the following table.
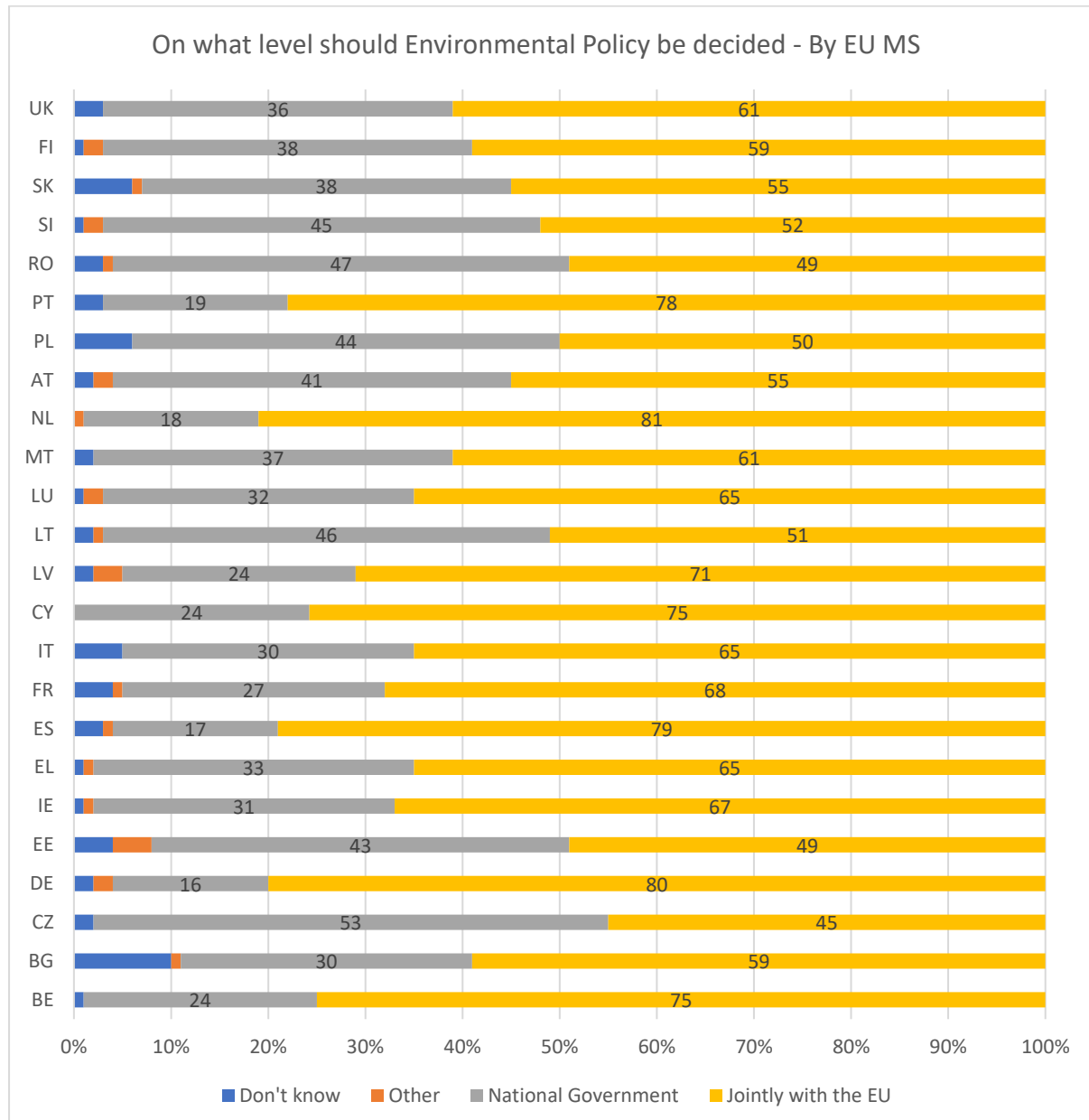

Figure 15: Cross-European Public Opinion on Environmental Decision Making. Source: (European Union, 2018)

As seen, the variation between countries is quite considerable, with the CZ being the most 'Eurosceptic' and the Netherlands being the most 'pro-European.'

Appendix V: STATA Coding

After having imported the coded, formatted data set into STATA, this thesis applied the following codes in order to run the multilevel analysis and to test the assumptions.

Equation 1: Multilevel Multivariate Linear Model

mixed TranspDelay Delegated Council Amending Recitals Techn2 TimeGranted StratCap GovEffect2 Unitary ProEuro || _all: R.DirId || _all: R.MSID, stddev

Equation 2: Shapiro-Wilk Test

swilk Delegated Council Amending Recitals Techn Timegranted StratCap GovEffect Corr Unitary Euroscept

Equation 3: Kernel Density Test

kdensity Transpositiondelay, normal

Equation 4: Variance Inflation Factor (VIFs)

estat vif

Equation 5: Descriptive Statistics, general

summarize Delegated Council Amending Recitals Techn Timegranted StratCap GovEffect Corr Unitary Euroscept Transpositiondelay , separator(0)

Equation 6: Descriptive Statistics, detailed

summarize, detail separator(0)

Equation 7: Breusch-Pagan Test

estat hettest

Equation 8: Residual v Fitted Plot

rvfplot

Equation 9: Logging an independent variable

gen GovEffect2=log(GovEffect) // gen Techn2=log(Techn)

Appendix VI: Variance Inflation Test

The VIF and according tolerance index ($\frac{1}{VIF}$) was calculated for all independent variables and subsequently tabulated.

Variable	VIF	1/VIF
Corr	10.48	0.095462
GovEffect	10.35	0.096593
Recitals	3.86	0.259386
Delegated	3.29	0.304355
Amending	2.13	0.468548
TimeGranted	2.04	0.489615
Techn	1.51	0.660257
Councnil	1.39	0.718575
StratCap	1.32	0.760219
Euroscept	1.21	0.828370
Unitary	1.18	0.844112
Mean VIF	3.52	

Figure 16: Variance Inflation Factor

Appendix VII: Intraclass Correlation

The random-effects parameters (standard deviations) from the end of Section 5.3 can be used to determine the intraclass correlation (ICC). The intraclass correlation reveals the correlation of the observations within a level (Torres-Reyna, n.d., p.5). Given that there are two levels, namely the *Directive-level,* and *Domestic-level*, the intraclass correlation can be run once for each level. This ICC can be determined using the following equation (Torres-Reyna, n.d., p.5):

$$Intraclass\ Correlation\ = \frac{sd(\_cons)^2}{sd(\_cons)^2 + sd(residual)^2}$$

Plugging in the correlating values for the Directive-level, the equation looks as follows:

$$Intraclass\ Correlation_{DirID} = \frac{71.97^2}{71.97^2 + 226.47^2} = 0.100991$$

Repeating the process of the Domestic-level (MSID), the equation, and results, are as follows.

$$Intraclass\ Correlation_{MSID} = \frac{72.99^2}{72.99^2 + 226.47^2} = 0.094099$$

The intraclass correlation for the Directive-level, as such, is 0.10, whereas that of the Domestic-level is 0.09. Cicchetti proposes that an ICC value between zero and 0.4 is poor (Cicchetti, 1994). Therefore, the intraclass correlation for both the directive-level (0.1) and domestic-level (0.09) variables are poor. What this means is that the variables chosen within this thesis are not correlated to one another. Such a low ICC indicates low reliability of the results on that level or that the variables within that level have little to no effect on the dependent variable. To recall, the multilevel analysis revealed that only two out of ten variables have a statistically significant relationship with the dependent variable, namely *Commission Delegated Directives* and *time-granted* on the *transposition time*. The poor ICC in this context shows that the variables within the *directive-* and *domestic-level* have little to no effect on the transposition time.