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The Effectiveness of the European Union's Environmental Policies

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Senior Honors Project

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ABSTRACT

The European Union has some of the highest environmental standards in the world. However, multiple member states fail at reaching the deadlines set by the European Union (EU). This thesis examines the effectiveness of the European Union's environmental directives on gaining compliance from member states to reach the agreed-upon standards. This is assessed by using three European Union directives from different environmental areas and analyzing their requirements. Each directive represents either a hierarchical policy, negotiated policy, or voluntary policy transfer. This study hypothesizes that the hierarchical policy, represented by EU Directive 2008/98/EC, will be more effective at gaining compliance than the negotiated or voluntary policies because of its clear requirements and coercive measures. Three out of the 27 European Union member states are studied to obtain an in-depth look at their ability to meet the three directives' goals: reaching a recycling rate of 50% by 2020, using a total of 20% renewable energy and 10% in transportation by 2020, and consuming no more than 90 plastic bags per person by the end of 2019. The three member states analyzed are Bulgaria, Estonia, and Germany. After analyzing the data of Bulgaria, Estonia, and Germany, the findings did not support the hypothesis predicting higher compliance through the hierarchical policy.

INTRODUCTION

The European Union has been an extremely effective international organization in maintaining peace for over 70 years in Europe and helping its member states thrive economically, socially, and environmentally. Even so, it has been criticized by governments as being an ineffective organization in implementing change. In a recent study in 2019, countries

such as Greece, the Czech Republic, and France had a highly negative view towards the supranational organization (Wike et al., 2019). Additionally, Brexit has created more distrust towards the institution's abilities because the United Kingdom cited the problems associated with the Union as reasons for enacting Article 50. The European Union has been criticized for spending funds irresponsibly, being undemocratic by taking away states' sovereignty, ruining economies because of the common currency of the Euro, and being corrupt (Blake, 2018).

In addition, many member states deviate from the environmental targets set by the European Union. The European Commission conducts *Environmental Implementation Reviews* to ensure member states are fulfilling legal provisions they agree to in directives that show the realities of member states' performance. In a 2017 *Environmental Implementation Review*, the findings were disappointing: Croatia was only recycling 17% of its waste when the EU target is set at 50%, and Denmark was producing too much waste at 758 kg per capita, against the European Union's 475 kg per capita requirement (Solletty et al., 2017). Estonia was the only member state that met the EU's air pollution criteria (Solletty et al., 2017). This calls into question how effective the European Union's environmental policies are if so many member states are not meeting the set standards.

Despite these problems, the European Union has enacted many policies that are responsible for changing member states' practices for the betterment of society as a whole. In 2015, the UK implemented a plastic bag charge; Denmark has installed drinking fountains across the city to decrease the reliance on plastic water bottles; and Germany has switched to reusable cups in cafés (Seas at Risk, 2017). These initiatives were influenced by European Union policies which are implementing positive change. Despite these anecdotal cases, "Is the European Union,

as an institution, an effective environmental law-making body?” and “Are member states complying with EU environmental directives?”

This research paper uses three European Union directives in environmental areas including recycling, renewable energy use, and plastic bag consumption, and analyzes the progress each member state has made towards reaching the directive. The three directives were chosen based on the criteria described by Bulmer and Padgett (2005), using their definitions of hierarchical, voluntary, and negotiated policies. The institutionalist perspective is the theory used to analyze the effect the European Union’s directives had on Bulgaria, Estonia, and Germany’s behavior and their success in achieving the targets. Based on this perspective, it is argued that the hierarchical policy will have a larger influence on member states’ domestic implementation because the directive sets clear expectations and has measures put in place if they are not met.

LITERATURE REVIEW

This review shows the findings and perspectives in the political science field of international policy implementation. There are multiple international treaties and agreements that states sign and ratify, but taking those from an international level to a domestic level implementation requires dedication and commitment. The findings below show what methods and considerations should be taken into account to help aid successful implementation of international agreements. These findings help governments and international organizations learn better ways to be successful in reaching the target they are after. For this paper, these insights are used to guide the analysis of the European Union’s directives on Bulgaria, Estonia, and Germany.

The institutionalist perspective in political science analyzes the different methods of policy transfer and the effect they have on guiding national policies. This theory argues that “transfer processes and outcomes will vary based on differently constituted governance regimes and that institutions matter, and outcomes will thus be shaped by the institutional settings in which they take place” (Bulmer & Padgett, 2005, p. 104-105). The governance regimes used in this paper are represented by the hierarchical, negotiated, and voluntary forms of transfer. They hypothesized that hierarchical transfer will be strongest because it has more authority through coercive instruments obliging member states to follow European Union models. The authors classified a hierarchical policy as one “where the EU institutions exercise supranational authority leading to coercive forms of transfer,” a negotiated policy was “where the EU seeks to agree common rules or norms by common (or majority) consent,” and a voluntary policy was “where member states retain sovereignty but coordinate policy via EU institutions” (p. 104). Bulmer and Padgett looked at how these forms of policy transfer influenced the way the policies were implemented in the member states (2005). They found that the negotiated and hierarchical forms of policy transfer were the most effective because these forms were created by an institution that possessed authority through the use of rules, incentives, and sanctions. These two forms are more likely to result in greater policy transfer from the European Union’s directives to domestic policies and greater compliance because “voluntary transfer outcomes rely on influence with a significant incidence of abortive transfer” (p. 112).

Similarly, Abbott and Snidel (1998) utilized the institutionalist perspective, arguing that states use international organizations because they possess centralization and independence from one particular government allowing them to accomplish more than states could on their own. Centralization, defined as “a concrete and stable organizational structure and an administrative

apparatus managing collective activities”, makes it easy for states to stay organized and focus on the issue at hand and independence gives the state autonomy (p. 9). International organizations also promote intergovernmental cooperation, are a neutral information provider, and a community actor. Both arguments recognize the importance of a strong international organization on accomplishing goals and influencing states to follow through with their commitments.

Since compliance with EU directives will be analyzed, the reasons behind why countries are successful or not in policy compliance is questioned. One finding was states generally comply with treaties that they commit to and that they have an interest or passion for the treaty (Von Stein, 2005). The reasons behind countries’ decisions to sign are important and very influential on their actions after committing (2005). This would be an effective measure in making sure that treaties are being followed by the signatories, therefore making them more effective treaties. In contrast, the reason why EU member states do not comply with policies is from the fact that not all EU policies created are favored by all member states (Thomson et al., 2007). Most policies pass with just a majority vote, meaning that some states are not satisfied with the decisions but still have to follow the policies. This leaves room for deviation because these states are less committed to the cause. Thomson et al. looked at 24 EU directives and the extent to which member states and the Commission disagreed with them. They also looked at the number of incentives to deviate, which was measured by the difference between the EU directive’s original proposal and the resulting outcome. Thomson et. al found that decision making prior to the adoption of directives could overcome differences between national and European legislation to increase compliance, and flexibility in directives allow national positions to be somewhat maintained. Both studies provided helpful recommendations and insights for

increasing states' compliance. Analyzing the reasons why states deviate from policies, as done in these studies, would be beneficial in understanding why EU policies are not always achieved.

Several authors found how successful nongovernmental organizations (NGOs) are in ensuring states to follow through with international agreements. Hathaway (2007) studied why countries commit to human rights treaties and argued that a treaty's success on solving the issue they want to address is dependent on domestic enforcement, including the amount of NGOs, and consequences for not adhering. Hathaway looked at three human rights treaties and analyzed why states would commit to them by looking at the benefits and costs of compliance and found that a state's commitment is influenced by the amount it currently diverges from the desired behavior and how likely domestic institutions will require the government to conform to the treaty requirements. Neumayer (2005) used the institutionalist perspective to study whether human rights treaties improve human rights. The dependent variables used were civil rights and personal integrity rights. To measure personal integrity rights, the Purdue Political Terror Scales and Amnesty International Reports were used and the Freedom House index was used to measure civil rights. Neumayer also measured the amount of NGOs a state had to show the commitment to human rights protection (2005). The findings showed without civil societies or democratic governments, human rights treaties make no difference; meanwhile, the more democratic a country is and the more participatory citizens are in NGOs, the more helpful treaty ratification is on human rights (Neumayer 2005).

Similar to Hathaway, Avdeyeva (2007) also studied the impact of international policies on national policies and argued the number of intergovernmental organizations (IGOs) a country participated in and NGOs affected its commitment. These organizations influence a state through three methods: coercion, persuasion, and acculturation. The article used two

agreements, the “Convention on the Elimination of all Forms of Discrimination against Women” and the “Beijing Platform for Action” that have provisions on violence against women in 25 post-Communist states (Avdeyeva, 2007). The analysis focused on studying the establishment of government offices to combat violence, the adoption of other laws targeted at eliminating violence, and the implementation of policy components (Avdeyeva, 2007). The study found that states are social actors who allow social pressures to influence their decision on ratifying treaties, even if the treaties do not match up with their own interests or capacities (p. 898). Additionally, these social pressures are a useful way to encourage compliance to international requirements (p. 898). This is valuable information for organizations to understand to increase international compliance.

Overall, the institutionalist perspective will guide the research on how effective the European Union’s environmental policies are because it focuses on how the policies were created. The hierarchical, negotiated, and voluntary forms of transfer will distinguish the three EU directives from one another and will then be analyzed to see which form was closest at reaching the directive’s requirements, therefore was more successful in obtaining compliance from the member states. The hypothesis is based on the findings from Bulmer & Padgett’s study (2005) that the hierarchical form of policy transfer was very effective in gaining compliance. The process of their creation could affect how well they are carried out and implemented by member states domestically. The central question in this research is whether the European Union’s environmental directives are followed by member states, which is guided by Abbott and Snidel’s argument that international organizations are able to accomplish more than states can on their own. The finding by Von Stein that states comply with treaties that they commit to will be analyzed to see if that finding is supported by this data. The findings discovered from these

authors are applicable to answering the research questions: “Is the EU, as an institution, an effective environmental law-making body?” and “Are member states complying with EU environmental directives?”

METHODS

To study how effective the European Union’s environmental policies are in changing member states’ behaviors, an in-depth analysis of different environmental policies is taken. Three specific European Union directives are studied, and numerical data is gathered to see if Bulgaria, Estonia, and Germany are on track to meet the directives’ requirements by the deadlines. The efforts of each member state to reach the directives are included to show the differences between the three member states in implementing that policy in their country. Member states differ in their ability to reach certain policies and these differences at reaching the goals are analyzed. The institutionalist perspective will determine whether how the policies are created and implemented (through either a hierarchical, negotiated, or voluntary approach) affects how successful the member state is in reaching the goals outlined in the directives. The finding by Bulmer and Padgett that the hierarchical form of policy transfer is more effective in gaining policy compliance will be tested.

Hypothesis:

Based on the findings from Bulmer and Padgett’s study, it is expected that the hierarchical European Union directive will be more effective at acquiring compliance from the member states than the voluntary or negotiated directives.

Dependent Variables:

The dependent variables in this study will be the success the member state has in reaching the goals of the EU directives and the commitment of each member state to achieve the

EU directive by the deadline. Success will be measured by whether or not the member state is on track to meet the EU directive specified goal, represented by a numerical figure.

Commitment will be shown through each member state's national implementation efforts and expected ability to meet the deadline. The variable of success is used because it will provide clear quantitative data from the member states that can be compared to the EU targets to see if the directive is expected to be achieved. Commitment is used because it will show how much effort each member state is putting into reaching the goal and the differences in their efforts.

Data can be found on the European Union/Commission official websites as member states submit ongoing reports of their progress. Additionally, the member states' governmental websites will provide statistics and figures as well as nongovernmental organizations. News articles will also be beneficial in announcing the achievements of member states' progress towards the goals.

Independent Variables:

The independent variables will be the environmental ranking of each member state and the type of EU directives: hierarchical, negotiated, or voluntary policies based off of Bulmer & Padgett's definitions of the terms (2005). The hierarchical policy type is defined as one "where the EU institutions exercise supranational authority leading to coercive forms of transfer" (p. 104). The negotiated policy type is defined as "where the EU seeks to agree common rules or norms by common (or majority) consent" (p. 104). Lastly, the voluntary policy type is defined as a form of policy transfer "where member states retain sovereignty but coordinate policy via EU institutions" (p. 104). These directives will be accessed on the European Union website. Environmental ranking is measured through the Environmental Performance Index and the

Climate Change Performance Index and represents the different performance each member state has in environmental action. Environmental ranking is used because it shows their overall performance in environmental issues compared to other countries.

European Union Environmental Directives:

1. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives:

This specific EU directive represents the *hierarchical* policy type defined by Bulmer and Padgett (2005) as one “where the EU institutions exercise supranational authority leading to coercive forms of transfer” (p. 104). Directive 2008/98/EC is a hierarchical policy because the European Union sets a clear requirement that member states must reach and the directive includes an enforcement section (2008). According to the directive, member states must reach a recycling rate of 50% of household waste by 2020, and follow a “waste hierarchy” in the set order to prioritize waste prevention methods. This directive also has an “enforcement and penalties” section that neither directive 2 or 3 possess. Article 36 of the directive states the penalties for not meeting this target will be “effective, proportionate, and dissuasive” and based on the infringements. These qualities make the directive clear on expectations and forceful by providing a punishment clause to ensure success, thus supporting my argument that hierarchical policies will have a more forceful impact over member states’ compliance.

2. Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources:

This EU directive represents the *negotiated* policy type defined as “where the EU seeks to agree common rules or norms by common (or majority) consent” (Bulmer & Padgett, 2005, p.

104). This is because the EU agreed that Directive 2009/28/EC will set a minimum target of 20% renewable energy production for member states to reach by 2020, but, in addition, the member states will set their own national targets. The directive also sets a 10% minimum of renewable energy in the transport sector by 2020. The provisions in this directive give member states freedom by having them set national goals on renewable energy but still requires them to all meet a common, agreed upon goal.

3. Directive (EU) 2015/720 of the European Parliament and of the Council of 29 April 2015 amending Directive 94/62/EC as regards reducing the consumption of lightweight plastic carrier bags:

This EU directive represents the *voluntary* policy type defined as a form of policy transfer “where member states retain sovereignty but coordinate policy via EU institutions” (Bulmer & Padgett 2005, p. 104). Directive 2015/720 sets a target of achieving a plastic bag consumption rate of 90 per person by December 31, 2019. However, this policy allows for member states to decide what methods they will use to meet this target. Options could include implementing a plastic bag tax, charging for plastic bags, a plastic bag ban, or any other methods member states choose to implement (2015). This policy was created by the European Union, but it leaves the decision up to the member states on deciding how to reach the goal in their country.

Member State Selection:

The member states of Bulgaria, Estonia, and Germany were chosen because of their differences, including their geographical and demographic features. Germany was chosen because it is much wealthier and has been at the forefront of environmental action. Germany is considered the West, while Estonia and Bulgaria represent the East. It is also one of the six original members of the European Union, having become a member in 1958 (“Germany,” 2019).

Germany has an approximate population of 82 million people, the largest state by population in the European Union. Germany is considered a powerhouse as it has a gross domestic product (GDP) of \$3.95 trillion, the largest of all the EU member states, and is the largest contributor to the EU budget, providing €19.5 billion (“Germany,” 2019). Its gross national income (GNI) of \$47,000 is much higher than Bulgaria and Estonia’s GNI (World Bank, 2019). Germany’s wealth and membership in the EU closely represents other Western EU member states.

In stark contrast, Estonia is a much newer member state, having gained membership in 2004 (“Estonia,” 2019). Furthermore, Estonia has a population of just over one million. Estonia’s GDP is \$30 billion, and its GNI is \$21,000, significantly lower than Germany’s (World Bank, 2019). It is important to note that Estonia was formerly a communist country under Soviet Union occupation for 48 years, only becoming independent 29 years ago in 1991. Communist countries, especially ones controlled by the Soviet Union, have a horrible track record of environmental issues. The Soviet Union raped the land of resources, which resulted in deforestation, metal poisoning, and erosion (DePrisco, 2018). Estonia, being a new EU member state and former part of the Soviet Union, represents other member states categorized by these differences than the Western states.

Similar to Estonia, Bulgaria became an EU member state more recently, in 2007, (“Bulgaria,” 2020). Its population is around seven million and it is located in Southeastern Europe. Bulgaria’s GDP is \$65 billion, however, its GNI is the lowest out of all EU member states at \$8,900 (World Bank, 2019). Bulgaria was chosen because it was ranked the lowest out of all European Union member states on the 2018 Climate Change Performance Index in “Climate Policy” at number 58/60 (Burck et al., 2019). Bulgaria is far behind Germany and Estonia on environmental policy, adding a diverse mix to the country selections.

The differences between the three member states provides a diverse representation in the research. Germany is the largest of the three states and has an exponentially larger amount of money than Estonia and Bulgaria, making them more financially able to invest in solutions to environmental issues. This is proven through Germany's commitment to improving the environment, considered a world leader in terms of environmental policies, and ranked 13th on the 2018 Environmental Performance Index. Based on Germany's commitment, I expect they will have the most success in completing the directives compared to Estonia and Bulgaria who are newer members to the EU, therefore have had less time to familiarize themselves with the EU directive process. Bulgaria was ranked 30th and Estonia 48th out of 180 countries on the 2018 Environmental Performance Index, indicating both countries are performing substantially lower in environmental protection than Germany (Yale University, 2019). I expect these differences in environmental performance to carry over into my results for EU directive compliance and the ability to reach the targets by the deadlines.

FINDINGS

EU Background

The idea of a unified Europe was created after the death and destruction that came from World War II. It started as an economic agreement among the six original members of Belgium, Germany, France, Italy, Luxembourg and the Netherlands. In 1958, it was the "European Economic Community" due to the belief that economically linked countries are less likely to go to war against each other ("The EU in brief," 2019). In 1993, it was vastly expanded in policy areas and officially earned its name as the European Union ("The EU in brief," 2019). Today, it has a total of 27 member states which are vastly integrated through trade agreements, a single market, 19 member states using the same currency of the Euro, and 22 member states

participating in open borders in the Schengen area. The European Union is the largest trading block, leading donor in humanitarian aid, and hosts the second-largest democratic election in the world after India (“The EU,” 2019). It has sustained over 70 years of peace since its creation and has the strictest environmental regulations in the world (“The EU,” 2019).

European Union legislation comes in many different forms including regulations, directives, decisions, recommendations, and opinions (“Regulations,” 2019). For this paper, EU directives are used as they apply to all member states in reaching a common goal, however member states decide on how they will implement the directive domestically (“Regulations,” 2019). The first step in creating EU legislation starts with the European Council, consisting of every Head of Government or State, who sets the political direction that the European Union legislation will take. The leaders decide on the most pertinent issues that they want the European Union to address. Once the political agenda is set, it is the sole duty of the European Commission to create legislation. Once directives are drafted, the standardized method of voting and debating on them is through a process called “Ordinary Legislative Procedure” or more simply, codecision between the European Parliament and the Council of the European Union (“How EU,” 2019). The European Parliament consists of a representative proportion of Members of the European Parliament (MEPs) from each member state based on their population size, further divided into political parties. The Council of the European Union is made up of ministerial representatives from each member state. Once the Parliament and the Council agree to amendments, if any, the directive is adopted (“How EU,” 2019). This codecision process ensures agreement by multiple bodies, so member states have a higher chance of compliance. Because EU legislation has to get approval from different bodies to become a law, it shows the high amount of support the directive has from member states to become a reality. However,

legislation is also adopted despite some countries' opposition. This lack of unanimity can be a factor as to why not all EU directives are successfully implemented in all member states. While the EU is encouraging countries to consider the impact their actions have on the environment through adopting legislation, the power ultimately resides in member states that have discretion on how dedicated they will be to meeting the targets outlined in the directives.

Implementation of EU Legislation per Member State:

Estonia:

Estonia ranked 48th out of 180 countries on the Environmental Performance Index in 2018 (Yale University, 2019). It ranked 30th on the Climate Change Performance Index out of 60 countries, overall, and 33rd on the "Climate Policy" category (Burck et al., 2019).

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives:

This directive sets a recycling requirement of 50% of municipal waste for each member state to reach by 2020 (2008). In 2009, Estonia had a recycling rate of 21% (Schmid, 2019). According to data from the European Commission, the Republic of Estonia had a recycling rate of 28% of municipal waste as of 2017 ("Environmental Review-Estonia," 2019). Since this is their most recent rate and the deadline is quickly approaching, they are not expected to meet the EU Directive's requirement of 50% by 2020.

Table 1. Recycling Rate from 2010-2017

Source: The Environmental Implementation Review 2019-Estonia

2010	2011	2012	2013	2014	2015	2016	2017
18%	23%	19%	18%	31%	28%	28%	28%

Estonia has a fluctuating history of recycling their waste over the past seven years from 2010-2017. The highest recycling rate was in 2014 at 31%, but then dropped to 28% in 2015 (“Environmental Implementation Review-Estonia,” 2019). This recycling rate has remained consistent ever since and is the current rate. While Estonia has made progress in their recycling efforts, in a 2017 Environmental Performance Review, it was declared the state was not on target to achieve the 50% recycling rate (“Environmental performance,” 2017).

Efforts:

While Estonia is not expected to meet the directive’s recycling target, the country has taken many steps towards improving its waste management practices. Estonia used to send a majority of waste to landfills with 601,000 tons landfilled in 2000 (“Environmental performance,” 2017). However, the country has made strides in recycling and incinerating waste after 2000 (“Environmental performance,” 2017). As figure 1 shows, there has been a transition from the traditional method of landfilling waste to using more environmentally-friendly practices.



Figure 1. Waste Practices

Source: Environmental Performance Reviews-Estonia, 2017

Starting in 2008, Estonia required that municipalities have to separate the collection of waste products such as cardboard, paper, hazardous waste, and garden waste from households and small businesses (“Environmental performance,” 2017). Another step the country has taken is creating national legislation to ensure there are set standards on waste management across the country. Estonia’s *Packaging Act* explains policies regarding the prevention of excess packaging and packaging waste, reuse of packaging, recycling, and energy recovery (2014). The act maintains that packaging must be made to ensure its ability to be reused or recovered and recycled to limit its negative impact on the environment (*Packaging Act*, 2014). Another example is the *Waste Act*, which states that waste prevention should be maximized to prevent its effects on the environment and to increase the use of products that are reusable or have a long life span (2015). The act has guidelines on how to reduce waste by preventing its production, and reusing, recycling, recovering, and disposing of it correctly (*Waste Act*, 2015). Additionally, Estonia has implemented a Deposit Refund System that charges consumers an extra fee for buying bottles to encourage them to recycle the bottles back into these machines. This has increased the recycling of cans, glass and plastic bottles (Lobley, 2019). Estonia has seen a total

return rate of 82.7% for its deposit refund systems (Lobley, 2019). These are some of the notable steps Estonia has taken to improve their recycling rate.

The European Commission published an Early Warning Report for Estonia in 2018 citing reasons why Estonia was unable to meet the recycling rates. The Commission’s findings were that there are structural problems, including regulatory barriers that are not standardized, and the lack of enforcement measures for municipalities to adhere to the recycling targets (The Early Warning Report for Estonia, 2018). In addition, Estonia’s “extended producer responsibility (EPR) schemes for waste are not well integrated with municipal collection services, there are insufficient incentives for households to separate waste, and there is no incineration tax to shift waste disposal towards recycling” (p. 1). These factors bring attention to the fact that Estonia has a lot of barriers to overcome to be able to reach the 50% recycling rate.

Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources:

This directive sets minimums for the total use of Renewable Energy (RE) to at least 20% and 10% in the transport sector by 2020 (2009). The directive also encourages member states to set their own individual goal and the government of Estonia set their national renewable energy target to 25% (“Renewable Energy in EU,” 2019). Remarkably, Estonia exceeded both the EU and national targets by accomplishing 29.2% in 2017 as shown by table 2.

Table 2. Renewable Energy Use (In % of gross final energy consumption)

Source: Renewable energy in the EU, 2019

Year:	2004	2014	2015	2016	2017	2020 Target
EU	8.5	16.2	16.7	17.0	17.5	20
Bulgaria	9.4	18.0	18.2	18.8	18.7	16

Estonia	18.4	26.2	28.4	28.6	29.2	25
Germany	6.2	14.4	14.9	14.9	15.5	18

However, in the transport sector, Estonia is only using 0.4% of renewable energy sources as of 2017, as shown in table 2 (“SHARES (Renewables),” 2017). This falls extremely short of the European Union directive target of 10%; this will make it nearly impossible for Estonia to meet by 2020. While Estonia has done well in increasing the total renewable energy rate set by the EU, the transport sector is far behind in meeting the target set out by the directive. The European Commission published a report on renewable energy in Estonia in 2012 and explained that the use of renewable energy in the transport sector is encouraged through bio-methane use and fueling stations (Estonia: Overall Summary, 2012). Unfortunately, Estonia has not made much progress in utilizing renewable energy options over fossil fuels.

Table 3. Share of Renewable Energy in Transport Sector

Source: “SHARES (Renewables),” 2017

Year	2004	2014	2015	2016	2017	2020 Target
EU	1.4	6.1	6.6	7.2	7.6	10.0
Bulgaria	0.9	5.7	6.4	7.2	7.2	10.0
Estonia	0.2	0.4	0.4	0.4	0.4	10.0
Germany	2.2	6.9	6.6	7.0	7.0	10.0

Efforts:

Estonia’s success in the total renewable energy use target for the EU at 20% and their national target of 25%, is due to their committed national strategies. The country is promoting the use of renewable energy through a feed-in premium scheme introduced in 2007 that rewards

renewable energy producers through an extra payment on top of the purchasing price (“Environmental performance,” 2017). The government has also created subsidies to make switching to renewable energy sources more enticing. The amount of subsidies have seen a massive increase from \$1.5 million in 2004 to \$65 million in 2014 (“Environmental performance reviews-Estonia,” 2017). Estonia’s substantial €706 million investment in 2013 in renewable energies is responsible for their 29.2% renewable energy use in 2017 (“Environmental performance reviews-Estonia,” 2017). Biomass is the largest source of renewable energy in Estonia, and there are currently 17 biogas plants in the country (“Estonian Biogas,” n.d.). These account for 52% of the total renewable energy production for the country (“Estonian Biogas,” n.d.). Wind energy comes close behind accounting for 36% of total renewable energy production in 2018 with 139 wind turbines (“Wind Energy,” n.d.). However, not much change has taken place in promoting the use of renewable energy for transportation. The country still heavily relies on fossil fuels for transportation, and this reliance hurts their ability to meet the EU directive completely.

Directive (EU) 2015/720 of the European Parliament and of the Council of 29 April 2015 amending Directive 94/62/EC as regards reducing the consumption of lightweight plastic carrier bags:

This Directive sets a maximum of 90 plastic bags consumed per person by December 31, 2019 (2015). According to the data entered in the Packaging Register, the number of plastic carrier bags consumed in Estonia in 2018 is 42,610,654 (Averin, 2019). As of January 1, 2019, there were 1,324,820 people in Estonia (Averin, 2019). This equates to 32 plastic bags consumed per person, lower than the target set by the European Union. If Estonia stays on track, the country will be able to meet the EU Directive’s plastic bag target.

Efforts:

In 2016, Estonia decided to charge for thin produce bags used in retail food chains to increase the state's commitment to reducing the consumption of single-use plastics (Whyte, 2018). This decision was made in addition to the country already charging for larger plastic shopping bags. This new initiative has led to a consumption decrease of these plastic bags by 20% in 2018 (Whyte, 2018). Also, the consumption of larger plastic bags has seen a decrease of 25%, and the more environmentally friendly option of paper bags' use has doubled (Whyte, 2018). This decision was influenced by Estonia's commitment to the *EU Plastics Strategy* which aims at reducing the 100 billion plastic bags consumed per year across the EU (*A European Strategy*, 2018). Estonia found that charging people to use plastic bags has been an effective measure in encouraging people to utilize reusable options instead.

Germany:

Germany ranked higher than Estonia and Bulgaria on the Environmental Performance Index, ranked at 13 (Yale University, 2019). On the Climate Change Performance Index, Germany also ranked higher than both countries at 22 and 15 on "Climate Policy" (Burck et al., 2019).

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives:

As of 2017, Germany has a recycling rate of 67.6% which exceeds the European Union's target of 50% by 2020 ("Recycling rate," 2018). Germany is on track to meet the 50% target by 2020 as the target was surpassed in 2009 and keeps increasing.

Table 4. Recycling Rate of Germany

Source: Eurostat, 2018

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017
Percent	63.1%	62.5%	63%	65.2%	63.8%	65.6%	66.7%	67.1%	67.6%

Efforts:

Germany has been committed to advancing its waste management system since the 1980s landfill capacity shortage forced the country to reevaluate traditional waste methods (Jaron, 2018). Starting in the '90s, the country has been shifting from a waste management system to a resource management system (Jaron, 2018). This included developing treatment, sorting, and recycling technologies that are now well-established and have increased their recycling capacity (Jaron, 2018). According to the German Federal Ministry for the Environment, waste management is now a substantial economic sector in Germany employing more than 270,000 people in over 11,000 companies (Jaron, 2018). The sector reportedly makes €70 billion annually from its 15,500 waste facilities involved in recycling and other resource recovery services (Jaron, 2018). These efforts are furthered by Germany's *Circular Economy Act* and "The Waste Prevention Programme" including waste prevention strategies and incentives. Every November, Germany participates in the European Week for Waste Reduction, promoting their commitment to reducing waste (Jaron, 2018). The country is equipped with 45 bio-mechanical waste treatment plants that help limit the amount of waste that ends up in landfills. In 2017, five million tons of waste were created; however, the plants treated 4.5 million tons, resulting in only 0.5 million tons ending up in landfills (Jaron, 2018). This inspiring achievement explains why Germany is part of the Zero Waste Europe Network, an international organization aiming to

eliminate waste in our society, and is committed to increasing recycling rates in the future (“Our Network,” n.d.)

Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources:

This directive sets a total renewable energy minimum of 20% and 10% in the transport sector (2009). This directive also allows member states to set their own individual goal. Germany’s goal was to get 18% of its energy from renewable energy sources (2009). According to recent figures, Germany reached only 15.5% in total renewable energy usage and 7.0% in the transport sector in 2017 (“Progress reports,” 2019). Germany is behind the renewable energy targets, but has shown strong initiative since 2005 to increase their use of renewables. Based on the data, it is predicted that Germany will fail to meet the EU’s set targets and their own national target by the 2020 deadline (“Progress reports,” 2019).

Table 5. Overall Renewable Energy Shares

Source: “EU Energy in figures,” 2019

Year:	2005	2010	2016	2017
EU	9.1	13.1	17.0	17.5
Bulgaria	9.4	14.1	18.8	18.7
Estonia	17.4	24.6	28.6	29.2
Germany	7.1	11.7	14.9	15.5

Table 6. Renewable Energy in Transport

Source: “EU Energy in figures,” 2019

Year:	2005	2010	2016	2017
EU	1.8	5.2	7.1	7.4
Bulgaria	0.8	1.4	7.2	7.2
Estonia	0.2	0.4	0.4	0.4
Germany	4.0	6.4	7.0	7.0

Efforts:

Despite being behind the 20% and 10% targets, Germany has made tremendous progress in transitioning from fossil fuels to renewable energy sources. This is a commendable commitment as historically Germany has been a large greenhouse gas producer and emitter. This is a result of their abundant natural resource of lignite coal which is one of the cheapest, yet dirtiest coal types.

Today, renewable energies are helping Germany achieve the energy transition. Germany’s goals are to become less reliant on fossil fuels, therefore decreasing their impact on climate change (“Renewable Energy,” 2019). Currently, 40% of Germany’s electricity comes from renewable energies which surpasses the country’s national target of 35% by 2020 (“Renewable Energy,” 2019). These goals are influenced by the *Renewable Energy Sources Act* that encourages the use of renewable energies (“Renewable Energy,” 2019). The main sources of renewable energy in the country are wind, solar, biomass, and hydropower (“Renewable Energy,” 2019). Wind makes up the largest share of renewable energy, with solar coming in close behind.

In transportation, biomass accounts for 88% of the energy consumption used from biofuels such as bioethanol, biodiesel, and biogas (“Renewable Energy,” 2019). Electric cars are an alternative to fossil fuel-powered cars and are becoming increasingly popular in Germany. In 2017, the automobile industry heavily invested in electric vehicles, and an additional €40 billion on research and development will be invested by 2020 (Bischoff, 2018). This will drastically increase the number of electric models from 30 to 100 by 2020, providing more options for consumers (Bischoff, 2018).

Directive (EU) 2015/720 of the European Parliament and of the Council of 29 April 2015 amending Directive 94/62/EC as regards reducing the consumption of lightweight plastic carrier bags:

This directive sets a maximum consumption rate of no more than 90 plastic bags per person to be reached by December 31, 2019 (European Union, 2015). Remarkably, Germany only consumes 24 plastic bags per person as shown in table 7. The country is ahead of EU targets and as of 2018, already surpassed the directive’s goal. Based on 2018 data, it is expected Germany will still be under the 90 plastic bag limit by the 2019 deadline.

Table 7. Plastic Bag Use in Germany

Source: Are plastic bags finally on the way out in Germany? 2019

2000	2012	2015	2016	2017	2018
85 per person	76 per person	68 per person	45 per person	29 per person	24 per person

Efforts:

In 2016, a voluntary agreement was made between the German Federal Environment Ministry and the German Trade Association to put a five to 50 cent fee on plastic bags and a one euro fee on larger, thicker bags (“Regulations in the EU,” 2018). This agreement with the retail sector is how Germany opted to meet the EU target, and their efforts were successful (European Commission, 2017). The 1991 Packaging Ordinance requires “German packaging distributors and manufacturers finance the collection, sorting, and recycling of their products, including plastic bags” (Larsen, 2014). Compared to other member states, Germany has a very high plastic recycling rate of 48.8% (“Plastics,” 2018). In September of 2019, Germany announced plans to take matters further by banning all single-use plastic bags, and retailers violating this policy can be fined up to €100,000 (“Germany to ban,” 2019).

Bulgaria:

Bulgaria ranked higher than Estonia on the Environmental Performance Index, at number 30 in 2018 (Yale University, 2019). However, Bulgaria ranked lower than Germany and Estonia on the Climate Change Performance Index at 42nd and 58th on the “Climate Policy” category in 2018 (Burck et al., 2019).

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives:

Table 8 shows the recycling rate of municipal waste in Bulgaria which has seen an upward trend. In 2017, the rate was up to 35%, which is an accomplishment for Bulgaria but under the EU recycling requirement of 50% by 2020 (The Environmental Implementation Review, 2019 (Bulgaria)). Bulgaria’s recycling rate is also much lower than the EU average of 46%, making it a difficult task to increase the country’s recycling rate before the 2020 deadline. Based on data from 2017, Bulgaria is not expected to meet the EU recycling requirement.

Table 8. Recycling Rate in Bulgaria

Source: The Environmental Implementation Review 2019 - COUNTRY REPORT BULGARIA

2010	2011	2012	2013	2014	2015	2016	2017
25%	26%	25%	29%	23%	29%	32%	35%

Efforts:

The European Commission's 2019 Environmental Implementation Review of Bulgaria identified the causes of Bulgaria's low recycling rate as the lack of collection of recyclables because of the competition between formal and informal waste collection systems. This in turn affects the incentives for increasing recycling rates such as extended producer responsibility schemes and citizens desire to participate (The Environmental Implementation Review, 2019 (Bulgaria)). Unfortunately, Bulgaria has one of the highest landfill rates for municipal waste, at 62% in 2017, compared to the EU average of 24 %. On a positive note, Bulgaria has increased composting to 8%, however, this falls below the EU average of 16%. Bulgaria has taken steps towards improving their waste practices, but the policies have failed to be implemented.

Bulgaria introduced a waste law in 2013 that required waste collection fees to be based on waste generation, however it was supposed to be enforced in 2015 but has yet to be implemented. Similarly, a 2017 addition to the Law on Local Taxes and Fees became postponed until 2020. Bulgaria's decision to postpone these initiatives is disappointing because these two laws could create high incentives for people to change their wasteful behaviors and help Bulgaria reach the EU's recycling rate.

Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources:

This directive requires EU member states to fulfill at least 20% of total energy needs with renewables by 2020 which are to be achieved through the attainment of individual national targets. All EU countries must also ensure that at least 10% of their transport fuels come from renewable sources by 2020. Table 5 shows that Bulgaria used 18.7% of renewable energy, which exceeded the national target of 16% in the 2020 National Action Plan for Renewable Energy (National Plan), but falls short of the EU 20% minimum. The transport sector uses 7.2% of renewable energy, which also falls short of the 10% target (“EU Energy in figures,” 2019). However, given that the country still has three years to work towards the targets before the deadline and renewable energy use has been increasing over the years, they seem capable of reaching the 2020 deadlines.

Table 5. Overall Renewable Energy Shares

Source: “EU Energy in figures,” 2019

Year:	2005	2010	2016	2017
EU	9.1	13.1	17.0	17.5
Bulgaria	9.4	14.1	18.8	18.7
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Table 6. Renewable Energy in Transport

Source: “EU Energy in figures”, 2019

Year:	2005	2010	2016	2017
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EU	1.8	5.2	7.1	7.4
Bulgaria	0.8	1.4	7.2	7.2
Estonia	0.2	0.4	0.4	0.4
Germany	4.0	6.4	7.0	7.0

Efforts:

Bulgaria has had an overall increase in the consumption of renewable energy in all sectors including: electricity, heating and cooling, and transport. The largest sources of renewable energy are from hydropower plants (57.2%), wind (18.9%), photovoltaic (18.6%) power plants, and biomass plants (5.3%) (Energy, 2017). In the transport sector, biofuels including biodiesel and bioethanol are the main sources of renewable energy. To incentivize the use of renewable energy in transportation, a quota system is used to make sure companies are not only using fossil fuels but have to include biofuels as a percentage of their fuel sales, a fiscal regulation mechanism (Bulgaria: Overall Summary, 2012). These efforts are promising in helping Bulgaria meet the directive's renewable energy use requirements by 2020.

Directive (EU) 2015/720 of the European Parliament and of the Council of 29 April 2015 amending Directive 94/62/EC as regards reducing the consumption of lightweight plastic carrier bags:

In 2010, Bulgaria consumed 421 bags per person, far above the EU average (European Commission, 2017). In 2011, Bulgaria used a reported 1.2 billion plastic bags a year (Pasolini, 2011). Bulgaria's population was seven million in 2011, equating to approximately 171 bags used per person per year. A nongovernmental organization, The Plastic Free Campaign, reported plastic bag consumption doubled in Bulgaria from 2010 at 5 kilograms (kg) per person to 10kg per person in 2016 (Friends of the Earth Europe, 2018). This amount is equivalent to 2-3 plastic

bags consumed per person per day, which would equate to an annual consumption of around 730 plastic bags per person in 2016, extremely over the EU directive's limit of 90. In April of 2018, environmental activists protested the government's lack of action towards reducing the use of plastic bags and demanded a plan to end their use. The activists claimed that Bulgaria was in breach of the EU's Plastic Bags Directive, and unless plastic bag use has significantly declined in the country, their claim seems likely (Friends of the Earth Europe, 2018). However, this contradicts the Environment Ministry's 2015 claim that plastic bag consumption had been substantially decreasing (Novinite Group, 2015). It seems highly unlikely Bulgaria will be able to meet the EU directive's deadline of December 31, 2019 based on the reported data being well over the 90 plastic bag limit and a violation claim made in 2018.

Finding official data on plastic use was very difficult. There were no official reports from Bulgaria's government, besides a vague statement from the Environment Ministry that plastic bag use was decreasing, as of 2016. Not surprisingly, the Bulgarian government has been criticized for a lack of public transparency (The World Factbook, 2018). Friends of the Earth Europe, the largest environmental network in Europe, criticized Bulgaria's Environment Ministry for not sharing its EU Council positions in meetings, not responding to questions from NGOs, not making the amount of plastic bags recycled, incinerated, landfilled or littered publicly available, and for not sharing where the money from eco-taxes goes (2018). Friends of the Earth Europe said in a statement, "Bulgarian Environment Minister Neno Dimov has so far ignored citizens' petitions and letters, and failed to take action to limit single-use plastic bags" and has a "disappointing lack of initiative" (2018). These criticisms do not reflect well on the country's efforts towards curbing plastic bag use, making it difficult to believe Bulgaria will reach the EU directive's requirement for plastic bags.

Efforts:

Despite these transgressions, Bulgaria was one of the first member states to implement an eco-tax on plastic bags in 2011 (Surfrider, 2018). While the Environment Ministry's claim cannot be verified, they did report a reduction in plastic bag use in 2015 (Novinite Group, 2015). Substantial action needs to be taken because Bulgaria's Black Sea coast is one of the heaviest microplastics polluted areas in the world (Friends of the Earth Europe, 2018). Thankfully, the Plastic Free campaign, alongside Greenpeace Bulgaria, is working towards eliminating single-use plastics in Bulgaria (Friends of the Earth Europe, 2018). While Bulgaria seems incapable of reaching the directive's plastic bag reduction rate, there is at least some action being taken towards curbing plastic usage.

ANALYSIS

Policy type:	Hierarchical	Negotiated	Voluntary
Bulgaria	Not on track	On track	Not on track
Estonia	Not on track	Not on track	On track
Germany	On track	Not on track	On track
Total:	1/3	1/3	2/3

The hypothesis that hierarchical policies would be more effective at making member states reach EU directives than negotiated or voluntary policies was not supported by the data from the three EU member states of Bulgaria, Estonia, and Germany. Germany is the only country expected to meet the hierarchical policy, EU Directive 2008/98/EC, because the most recent data available showed a recycling rate of 67.6% in 2017. This is well above the 50% recycling rate minimum by 2020 that the directive proposes. Bulgaria had a recycling rate of 25% in 2010, and the most recent data shows a 35% rate in 2017. Considering it took Bulgaria

seven years to increase the rate by 10%, it does not seem realistic the rate will increase 15% in three years. Therefore, it is not predicted Bulgaria will be able to meet the hierarchical directive, so the country is not on track. Estonia recycled 21% of its waste in 2009, and that only increased to 28% in 2019. This small increase of 7% over 10 years, is not promising for the country to meet the 50% recycling target. Thus, Estonia is not on track to meet the target.

Under the negotiated policy, represented by EU Directive 2009/28/EC, only Bulgaria is on track to meet the renewable energy targets. In 2017, Bulgaria used 18.7% of renewable energy and 7.2% in transportation. Since Bulgaria was so close to the 20% and 10% target in 2017, it is predicted the country will be able to reach the targets by 2020. Estonia exceeded the 20% renewable energy target in 2017 at 29.2% but only used 0.4% of renewable energy in transportation. Since Estonia only met half of the directive's requirement and is so far behind in the transport sector, the country is not on track to meet the directive by the deadline. Germany is also not on track to meet the negotiated policy with renewable energy accounting for 15.5% of total energy use and 7% in transportation in 2017. While Germany is close to the requirements, it is not expected to reach them by 2020.

Surprisingly, the voluntary policy, EU Directive 2015/720 on plastic bag use, was more successful at gaining compliance. Both Germany and Estonia were able to use less than 90 plastic bags before the deadline in 2019. Germany used 24 plastic bags in 2018, and Estonia used 32 plastic bags per person in 2019. However, Bulgaria is not on track based on claims in 2018 that they were in breach of the directive, and used an estimated 730 plastic bags per person in 2016. Based on the data from the three countries, the voluntary policy was the most successful because both Germany and Estonia were able to reach a plastic bag rate lower than the maximum rate of 90; therefore both countries are on track to meet the 2019 deadline.

The hierarchical policy was not successful at gaining compliance because only Germany is likely to meet the directive's recycling goal because it already surpassed it in 2017. The negotiated policy was not successful at gaining compliance either because only Bulgaria is expected to achieve it by the 2020 deadline. The voluntary policy was the most successful form of gaining compliance because two out of the three countries, Germany and Estonia, are on track to meet it. Commitment efforts for each member state seemed to contribute to their success in being able to reach the directive. Germany is on track to achieve both the hierarchical and voluntary policy and showed extensive commitment to each. Germany has been working towards increasing its recycling rate since the 1980s, and its hard work has paid off. In 2019, Germany pledged to ban all single-use plastic bags, a step Bulgaria and Estonia have not made.

Germany was the most successful member state out of the three chosen because it is on track to achieve $\frac{2}{3}$ of the EU directives. Estonia showed strong commitment to decrease the use of plastic bags but is far behind the 50% recycling rate target and unable to fully meet the renewable energy targets because of fossil fuel use in the transport sector. Bulgaria is the only country expected to reach the renewable energy targets because it has had an overall increase in the consumption of renewable energy in all sectors. As of 2017, Bulgaria's renewable energy use was very close to reaching the goals of the EU directive. This fact makes it look promising for Bulgaria to meet the renewable energy targets by the 2020 deadline. This finding supports Von Stein's argument that states comply with agreements that they are committed to and passionate about.

Germany and Estonia are not on track to meet the renewable energy targets. While both countries have made great efforts in switching to renewable energy, they are not expected to meet the targets. Germany does not want their economy to suffer during this transition because

the country was very close to going into a recession, making it careful not to achieve progress too quickly. Germany is developing a smooth transition from coal, while Estonia has to limit the use of oil shale.

Based on environmental ranking through the Environmental Performance Index and the Climate Change Performance Index, it is not surprising that Germany had more success in meeting the directives. Germany ranked higher than Estonia and Bulgaria on the Environmental Performance Index, ranked at 13. On the Climate Change Performance Index, Germany also ranked higher than both countries at 22 and 15 on “Climate Policy”. Estonia ranked 48th on EPI and 30th on Climate Change Performance Index and 33rd on “Climate Policy” category. Bulgaria Ranked 30 on EPI and 42nd on Climate Change Performance Index and 58th on their “Climate Policy” category. Bulgaria and Estonia both ranked lower than Germany and are both only predicted to reach one of the EU directives by the deadline. The data suggests that environmental ranking was a factor on whether a country was more likely to comply with a directive, as Germany ranked higher and is predicted to achieve two out of the three directives. Estonia and Bulgaria ranked lower than Germany and are only predicted to reach one of the EU directives. Environmental ranking of the member states was a useful gauge to see if the country was more likely to be on track to meet the directives than others.

The findings show that coercive or strict requirements, associated with the hierarchical policy, are not more effective in gaining higher compliance rates from member states. This disproves the institutionalist theory’s belief that countries’ compliance depends on policy creation because both the hierarchical and negotiated policy were worse at achieving compliance. The findings showed that the model of voluntary compliance worked better at gaining compliance as two out of the three countries, Germany and Estonia, are expected to

reach this directive. Both countries employed the same tactic of charging for the use of plastic bags and both were successful. Based on the data, it seems that the domestic methods the member states implement are more important factors in reaching compliance than the way the policies are created considering no policy is expected to be reached by all three member states.

Further Research:

Further research could be taken to analyze Avdeyeva and Neumayer's arguments. Germany was successful in meeting the recycling rate, and the country participates in the NGO, "Zero Waste Europe" and the European Week for Waste Reduction which could support the argument that participation in NGOs affects compliance. Additionally, Germany is pressured to have a strong waste management system because its large population creates a lot of waste. This social pressure could have helped the country meet the recycling target, supporting Avdeyeva's argument (2007). Additionally, further research would need to take place to see if policy creation has a greater effect on the compliance rate of other European Union member states or if the success rate is based on the countries' implementation methods. Only using three out of the 27 EU member states provides a very limited view of if member states are complying with EU directives.

CONCLUSION

The central question in this research is whether the European Union's environmental directives are effective by measuring the compliance of member states. Based on the data from these three member states the European Union directives are not. The data shows that the European Union must reevaluate its methods on achieving member state compliance from environmental directives. None of the three policies are expected to be achieved by all three member states, which does not further the European Union's environmental agenda. Allowing

member states more freedom in implementing the directives could be the key in achieving a higher compliance rate; this was the case for Germany and Estonia in achieving the plastic bag consumption rate. The European Union pushes member states to reach lofty goals, but falls short in ensuring member states reach them. A group of 27 countries have extremely different abilities, resources, and histories that can affect their ability to perform. More must be done to ensure that all member states have an equal chance in meeting these targets, so the Earth can prosper without human-induced harm. While the EU has set high environmental standards, there is a disconnect between the EU's desired goals of member states and individual countries' abilities to meet these standards. The solution to this disconnect must be discovered, so the European Union can continue to have the highest environmental standards in the world that put words into concrete action.

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