# AN ADVICE TO THE DUTCH GOVERNMENT ON THEIR BIOFUEL POLICY BASED ON THE GERMAN BIOFUEL POLICY

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## ABSTRACT

*This research gives an advice to the Dutch government on how to improve their renewable energies in the transport sector to comply with the 10% target set for 2020 by the EU. The difference between the biofuel policy of Germany and the Netherlands will be analysed by using the Advocacy Coalition Framework of P. Sabatier. This framework researches the influence of stable parameters and external events on policies. The data of the respective stable parameters and external events that could have an influence on the biofuel policy will first be described. The stable parameters are the political system, the natural resources and the social cultural values of the countries. The external events are the Kyoto protocol, the EU biofuel policy, the EU agricultural policy and agricultural in political parties, the public transport policies, systemic political coalitions and the public opinion. The difference between the biofuel policies does not lie in what measures the countries use to achieve the 10% renewable energy in transport target. Both countries stimulate research to develop innovative biofuels, however Germany is more advanced in this research. An explanation why the Dutch biofuel policy and its measures are less advanced is because the coalitions in the Dutch parliament change often, almost every three years sometimes even after two years. The German government instead is constant and merely changes with the new elections, although the CDU was part of the last two coalitions. The recommendation given to the Dutch government is to not focus on producing second-generation crops for biofuels in order to achieve the 10% target. However, the Dutch government should focus on promoting just waste as biofuels and achieving the 10% target by implementing other types of renewable energy for transportation such as wind and solar power. This energy can be used for transportation vehicles such as cars and buses. Waste biofuels can also be used in the aviation sector.*

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# 1 INTRODUCTION

## 1.1 PROBLEM STATEMENT

Climate change has long been interesting for scientists and it is not just a common environmental and regulatory issue. The United Nationals Secretary General points out it is the most important environmental issue at this moment and it is incredibly challenging for the environmental regulators to find solutions for it (United Nations Environment Programme, n.d).

The reason why combatting climate change is so important is that greenhouse gas emissions keep on increasing and this affects several sectors in societies such as the economic sector, the health and safety sector, the food production sector and the security sector (United Nations Environment Programme, n.d). To avoid these consequences the world as a whole needs to act together to limit them. Climate change has several direct and indirect consequences, which affect the aforementioned sectors. Two tables are given below, the first one gives the likelihood that that the phenomena occurred in the late 20th century, and the second table gives the likelihood of predicted phenomena in the future. Whereas the direct consequences in table 1 are relatively mild, the predicted phenomena are more severe. The main direct consequences that are visible at this moment can be seen in table 1 below. The NASA (National Aeronautics and Space Administration) investigates these predicted consequences. The results of these investigations are given in the table. It should be noted that for both table 1 and table 2 the ranges are: "virtually certain >99%, very likely >90%, likely >66%" (National Aeronautics and Space Administration, n.d.).

Table 1: Direct consequences of climate change (National Aeronautics and Space Administration, n.d.).

| Phenomena | Likelihood that trend occurred in late 20th century |
|---|---|
| Cold days, cold nights and frost less frequent over land areas | Very likely |
| More frequent hot days and nights | Very likely |
| Heat waves more frequent over most land areas | Likely |
| Increased incidence of extreme high sea level * | Likely |
| Global area affected by drought has increased (since 1970s) | Likely in some regions |

| | |
|---|---|
| Increase in intense tropical cyclone activity in North Atlantic (since 1970) | Likely in some regions |

* Excluding tsunamis, which are not due to climate change.
- Adapted by the NASA from IPCC 2007, Summary for Policymakers, Synthesis Report, p. 13

The consequences that are predicted to occur in the future are visible in table 2. The NASA also determines these consequences. The results of the investigations are given in the table below.

Table 2: Future predicted direct consequences of climate change (United Nations Environment Programme, n.d).

| Phenomena | Likelihood of trend |
|---|---|
| Contraction of snow cover areas, increased thaw in permafrost regions, decrease in sea ice extent | Virtually certain |
| Increased frequency of hot extremes, heat waves and heavy precipitation | Very likely to occur |
| Increase in tropical cyclone intensity | Likely to occur |
| Precipitation increases in high latitudes | Very likely to occur |
| Precipitation decreases in subtropical land regions | Very likely to occur |
| Decreased water resources in many semi-arid areas, including western U.S. and Mediterranean basin | High confidence |

- Adapted by the NASA from Ibid, p. 8.

From table 1 it is visible that the phenomena that indicate direct consequences of climate change happened in the 20th century. The decrease in number of cold nights and cold days was very likely a new trend, and the number of hot days also very likely increased in the late 20th century. Furthermore, there were likely more frequent heat waves in the 20th century and the number of incidents when the sea levels increased to an extremely high level also likely increased.

Table 2 shows its is quite certain that as a result of climate change, in the future ice caps and areas with snow will melt. Furthermore, the prediction is that there will be more climate extremes, such as heat waves and heavy rains and storms.

All these phenomena can have severe consequences on human lives. Not only human lives are in danger, also the development of the economy will decelerate. Furthermore, the environment of a country will be affected; this can have serious consequences for its inhabitants, as they often depend on it (United Nations Framework Convention on Climate Change, n.d). There are many national and international organizations that talk about and discuss the consequences of climate change and how these can be solved. One of the aspects that the United Nations addresses in the 'United Nationals Environment Programme' (UNEP) is climate change (United Nations Environment Programme, n.d). There are two bodies of the UN that are engaged in addressing the problem of climate change. The first one is the international treaty, United Nations Framework Convention on Climate Change (UNFCCC), which was created in 1992 at the Earth Summit to tackle climate change (United Nations Framework Convention on Climate Change, n.d). The Earth Summit is a conference also called the United Nations Conference on Environment and Development (UNCED). The other body is the Intergovernmental Panel on Climate Change (IPCC), which was created in 1998 by the World Meteorological Organization (WMO) and the UNEP to have a source that provides scientific information on an objective basis (IPCC: Intergovernmental Panel on Climate Change). The UNFCCC organizes international climate change negotiations for the 195 parties that are involved in the Convention. These are also called 'the Conference of the Parties', or COP meetings (United Nations Framework Convention on Climate Change, n.d).

Most of EU countries and the EU as a body itself are involved in the UNFCCC and the conferences. The EU sees the use of renewable resources as one of the solutions that is needed to combat climate change and its consequences. They therefore set targets for its members to reduce the overall greenhouse gas emissions; additionally they set special targets that will reduce the greenhouse gas emissions from the transport sector. It has been proven that transport emissions, that contain greenhouse gasses, have contributed to global warming. In the UK, the 2003 Energy White Paper estimated that the transport emissions count for 25% of the total national carbon emissions (The National Archives, 2003, p 63). To reduce greenhouse emissions in general, the transport sector can have an important role in the reduction. There are numerous types of renewable resources, which can be used in the transport sector, and one of them is biofuels. It is assumed by some countries that the use of biofuels seem beneficial in reducing greenhouse gasses, as a result they decide to establish biofuel policies and to implement these. The definition of biofuels according to the European Union is a "liquid or gaseous fuel for transport produced from biomass" (European Parliament and Council, 2009, p. 27).
However, the policymaking process and the political systems are different among countries. Therefore different actors are involved in the process and their influence on the final policy is also different, which can result in different biofuel policies. In this thesis I will describe and compare the differences between the biofuel policies of the Netherlands and of Germany.

In the methodology the process of answering the research questions will be explained.

In the end, I will give a recommendation to the Dutch government about how they can improve the use of biofuels in the Netherlands.

The main reason why the countries Germany and the Netherlands were chosen is because they are both interesting countries concerning the use of biofuels. Germany is the main producer and the main consumer of biofuels in Europe (Franco, Levidow, Fig, Goldfarb, Hönicke, & Mendonça, 2010, p. 15). Therefore it can be assumed that their policies concerning biofuels are well developed. The reason why the Netherlands is the other case that will be assessed is because climate change can have severe consequences on the Netherland, especially because the Netherlands is located below sea level. Another reason why it would be possible to compare these countries is because they have the same political system. Although Germany is built up by federal states it also has a parliamentary system, which is the same political system as the Netherlands. As these case countries are both located in the European Union, they both need to comply with the EU directives. Furthermore, both the Netherlands and Germany are annex 1 and annex 2 countries in the Kyoto protocol and they therefore have the same targets (United Nations Framework Convention on Climate Change, n.d).

## 1.2 RESEARCH QUESTIONS

To find out the differences between the biofuel policies that will help to reduce the greenhouse gas emissions in the transport sector, in order to comply to the EU targets, a main research question is established.

The main research question of this thesis is:

*"What can the Dutch government learn from the biofuel policy of the German government about reaching the EU renewable energy in transport targets?"*

To be able to answer the main research question, two sub-questions were formulated.

The first sub-question is:
*"Is there a difference between the external events that have influenced the biofuel policy of Germany and of the Netherlands and if so, why?"*

The goal of this sub-question is to establish a general overview of the differences between the two countries and their governments and whether these differences have an impact on the biofuel policy in these countries.

The second sub-question is:
*"What measures can the Dutch government implement that will stimulate the consumption of transport biofuels the most? "*

To be able to determine the differences between the biofuel use of the Netherlands and of Germany, the Advocacy Coalition Framework will be used. This framework assesses broader differences than only the differences between the biofuel policies. The focus of this paper will be on transport biofuels. The overall renewable energy consumption will also be taken into account, as the EU transport biofuel goals are set in Directive 2009/28/EC- on the promotion of the use of energy from renewable resources (European Parliament and Council, 2009). The conclusion will include all the possible aspects that had influence in the biofuel use in both countries. Finally, a recommendation on the use of biofuels will be given to the Dutch government.

# 2 THEORETICAL FRAMEWORK

In this chapter the theoretical aspects of the research are treated. First the model that will be used is explained. Second, the concepts used throughout the thesis are discussed.

## 2.1 MODELS IN THE PUBLIC POLICY AREA

The two most frequently reviewed models in the public policy area are the "Rational Comprehensive Decision-Making model" and the "Incremental Decision-Making model". Other models have borrowed from these models and they help to explain how decisions are made (Birkland, 2001, pp. 209-210). The Rational Comprehensive Decision-Making model assumes that decision makers are given a problem and a goal for solving it. They need to solve or address the problem (Birkland, 2001, p. 210). Decision makers collect all the possible information on the problem and the possible solutions to it. The goal is to have "maximum social gain" by the new policy (Birkland, 2001, p. 210). The Incremental Decision-Making model explains that a person acts as rationally as possible, however within boundaries (Birkland, 2001, p. 211).

### 2.1.1 ADVOCACY COALITION FRAMEWORK

The first version of this framework was created over a longer period of time. In the 1980s Paul Sabatier created together with Jenkins-Smith a strategy to encourage other academics to use the framework on policy domains and data sets. This led to several changes in the framework (Sabatier, The advocacy coalition framework: revisions and relevance for Europe, 1998, p. 98). Since 1993 the framework has been used by several academics around the world (Sabatier, The advocacy coalition framework: revisions and relevance for Europe, 1998).

The original version of the ACF consisted of five premises. The first premise explains that the technical information of problems should not be overlooked in a theory on policy processes. The second premise states that at least a decade of information should be taken into account. The third premise explains that the most important unit of analysis in understanding the policy process is a policy subsystem or policy domain (Sabatier, The advocacy coalition framework: revisions and relevance for Europe, 1998, p. 99); this means not only specific governmental organizations should be analysed, but a whole set of actors and laws. The fourth premise states that multiple levels of government should be included in an analysis, within a country and from other organizations that play a role in the problem area (Sabatier, 1999). The last and fifth premise explains that public policies can be seen in the same way as belief systems, as public policies include implicit theories to make sure they reach their goals. These public policies incorporate value priorities and perceptions of world states (Sabatier, 1998). All in all the ACF "focuses on the interaction of advocacy coalitions, each consisting of actors

from a variety of institutions who share a set of policy beliefs within a policy subsystem" (Sabatier, 1999, p. 9).
As mentioned before, the original version has changed slightly over the years. Therefore there are also different versions of the model. The version I will use in my thesis is a revised version, however only the difference between the version from 1988 is that it includes the public opinion in the external (system) events. The version that was created in 2007 is also interesting, as it divides the constraints in long-term and short-term constraints. The policy subsystem is in both versions quite the same.
The ACF consists of three sectors. The "Relatively Stable Parameters", the "External (System) Events" and the "Policy Subsystem". The Relatively Stable Parameters and the External (System) Events influence the constraints and resources of subsystem actors, which is also visible in the diagram stated below. As can be seen in the diagram, the Relatively Stable Parameters include: Basic attributes of the problem area (good), basic distribution of natural resources, fundamental socio-economic cultural values and social structure and the basic constitutional structure (rules). An example of a stable parameter can be the political culture in a country. The relationships between the elite groups in a country are structured by the political culture in the country. This political structure also determines the relationship between the population and the government (Sewell, 2005, p. 65).

The second sector is the External (System) Events. These external events are essential factors that determine major policy changes (Sabatier, 1999). As can be seen in the diagram, these external events include: Changes in socio-economic conditions, changes in public opinion, changes in systemic governing coalition, and policy decisions and impacts from other subsystems. For example changes in certain laws that affect everyone, such as tax laws can have important impacts on several subsystems in a country (Sabatier, 1999, p. 120). Other examples of external events are: changes in beliefs of the coalitions. This might be a consequence when new information has been acquired. Also changes in socioeconomic conditions and in technology can have an influence in the policy making process. They can also have an indirect effect on the stable parameters (Sewell, 2005, p. 81).
The third sector is the Policy Subsystem. This sector consists of several aspects; all these aspects combined make policy process happen and as a result policies emerge (Sewell, 2005, p. 33). The policy subsystem is a body that includes "government officials, interest group representatives, journalists, scientists, and individual persons that are active in the policy process". The "advocacy coalitions" are founded on the belief systems of these actors (Sewell, 2005, p. 34). Sabatier (1998, p.122) explains that the belief systems include "deep core beliefs, policy core beliefs and secondary aspects". They are built up in a hierarchical structure. Policy core beliefs are according to the ACF the beliefs that create the coalitions, as they are the "basic normative and empirical commitments within the domain of specialization of policy elites". The third aspect is the Policy Brokers. These are actors that try to mediate between the strategies of the different coalitions. The task of the policy brokers is to find a reasonable compromise between

the different strategies to prevent conflicts (Sabatier, 1999, p. 122). This compromise will result in governmental programs decided by the sovereigns. These governmental programs will create policy outputs, which will be implemented (Sabatier, 1999, p. 122). As a result the outputs will have an effect on the impacts on the problem.

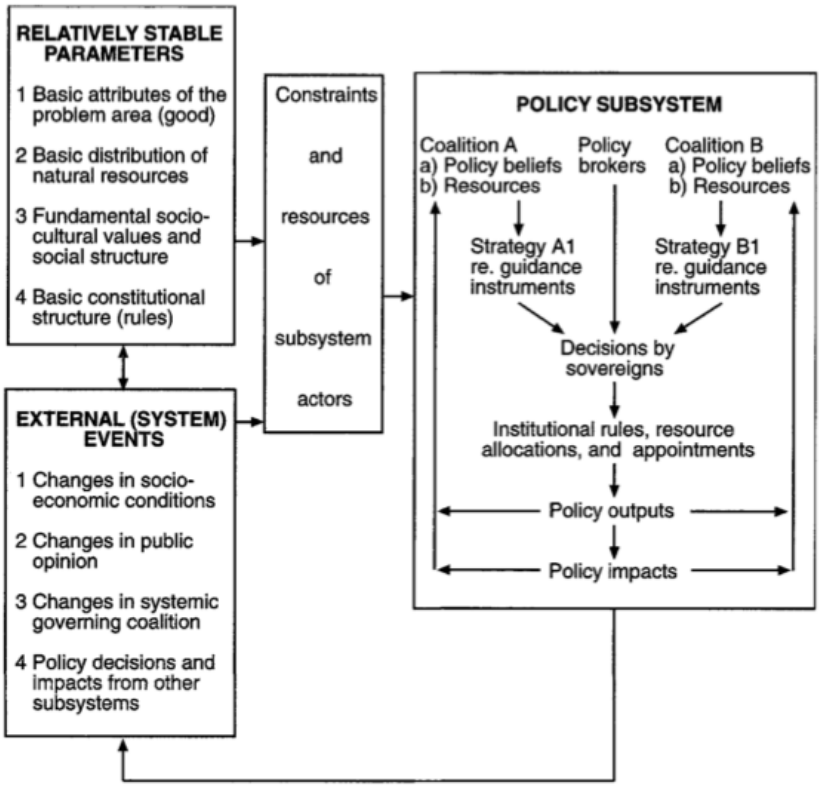



Figure 1: a revised diagram of the Advocacy Coalition Framework

## 2.2 CONCEPTS

The conceptual analysis is important to understand the research and to have a clear and consistent view of the concepts that are used. The first variable that will be defined is policy. It is not always clear what is meant by a "policy", and in this thesis it is essential to know what a (public) policy is. The second definition is "biofuels".

### 2.2.1 (PUBLIC) POLICY

There are several definitions of policies and especially public policies. Therefore it should be better to split these two words into public and policy. According to Schneider and Ingram (1993) the definition of a policy is as follows:
"Policies are revealed through texts, practices, symbols, and discourses that define and deliver values including goods and services as well as regulations, income, status, and other positively or negatively valued attributes" (Birkland, 2001, p. 20)
The meaning of public in public policy comes from the fact that the policies that are created by the government have a wider impact than decisions that are made by private

organizations. Birkland (2001) explains that the public is the source of political authority. This means that the government acts on behalf of the public and it therefore creates public policies (Birkland, 2001, p. 20).

### 2.2.2 BIOFUELS

A clear and more detailed explanation about biofuels and the biofuel market especially in Germany and the Netherlands is necessary. The European Union defines biofuels in the 2009 renewable energy directive as "Liquid or gaseous fuel for transport produced from biomass" (European Parliament and Council, 2009, p. 27).
There are two kinds of biofuels, the first-generation biofuels and the second-generation biofuels. The first-generation biofuels are fuels that are produced out of food crops such as maize, sugarcane and wheat (Charles, Ryan, Ryan, & Oloruntoba, 2007, p. 5738). These food crops can be used for food consumption. The second-generation biofuels are produced out of cultivation that cannot be used as food. These can be for example grasses, agricultural waste material and just organic waste (Charles et al, 2007, p.5738).

# 3 METHODOLOGY

## 3.1 RESEARCH DESIGN

This research is a descriptive case study research. The definition of a descriptive study is that it "sets out to collect, organize and summarize information about the matter being studied. To describe how things are proceeding" (Punch, 2006, p. 33). As the goal of the thesis is to find out the differences between the biofuel policies in the Netherlands and Germany, this will be a descriptive case study. The data that will be collected is qualitative and quantitative data. This qualitative data will mostly be governmental reports about the biofuel policies, EU directives concerning biofuels and renewable energies and about the Kyoto protocol. Furthermore, scientific articles about climate change will be used. Quantitative data will be obtained from statistic agencies in the Netherlands, Germany and the European Union.

This thesis is divided into seven chapters, including the conclusion and recommendations. The first chapter will give an introduction, which gives an overview of climate change and its consequences and how this is related to the biofuel policies in the Netherlands and Germany. The second chapter introduces the Advocacy Coalition Framework, which will be used to determine the differences between the biofuel policies. Furthermore a conceptual analysis will be given. In the fourth chapter, only qualitative- and quantitative data regarding the stable parameters, the external system events and the policy outputs of the biofuel policies will be given. The external system events given in chapter four are only the events that are related to the biofuel policies. The content of this chapter is just data, as it will be otherwise unclear for the reader to determine the analysis and the conclusion of the different parts. Therefore, the 5th chapter includes the analysis of the stable parameters, the external system events and the policy outputs of the biofuel policies. Chapter four will give the data that is needed to answer the first sub-question and chapter five will answer the first sub-question. The sixth chapter will provide a conclusion. Chapter seven will give recommendations and will answer the second sub-question.

The Advocacy Coalition Framework mentioned before will be used to point out and address possible differences. The differences between the use of biofuels in the Netherlands and Germany can have multiple explanations; therefore it is not possible to say there is one explanation for a difference. By using the Advocacy Coalition Framework possible explanations of differences can be identified, therefore this framework is needed to analyse the differences. The results will be explained in the conclusion.

## 3.2 CASE SELECTION

The two cases that are used in this study are the Netherlands and Germany. The reason why these cases are chosen will be explained further. However it can already be mentioned that the Netherlands and Germany have the same political system. Germany is a federal state, but it also has a parliamentary system, the same political system as the Netherlands.

### 3.2.1 THE NETHERLANDS

The implementation of renewable energies such as biofuels is quite important for the Netherlands, as the consequences of climate change will be severe. Around 55% of the Netherlands is located below sea level or next to large rivers and the risk of flooding exists for 60% of the Netherlands (Slomp, Rijkswaterstaat, 2012, p. 14). These cities and villagers are protected by dykes and dunes. (Koninklijk Nederlands Meterologisch Instituut , 2013) In 1953, the Netherlands already experienced flooding, as a result of dykes that collapsed. Over 1800 human lives were lost (Koninklijk Nederlands Meterologisch Instituut , 2013). The older Dutch citizens still remember the event, which is called the "watersnoodramp" and the younger children are taught about the "watersnoodramp" by teachers in elementary school. Nobody wants this event to happen again and therefore the government and the citizens are especially aware of the consequences of climate change.
Looking at the Netherlands now, one can see that around 4% of the Netherlands is not protected by dykes (Slomp, Rijkswaterstaat, 2012, p. 14). A consequence of climate change is the rise of the sea level and the increase in occurrences of extreme weather. Especially in the parts of the Netherlands that are not protected by dikes flooding can occur. The sea levels are rising as a result of the melting of the ice sheets in Greenland and Antarctic. In the seawaters of the Netherlands the rise was around 20% in the 20$^{th}$ century (PBL Netherlands Environmental Assessment Agency, 2012, pp. 38-39). Therefore it is necessary that the Netherlands prevents extreme flooding and tries to limit the consequences of climate change. This is also why I choose the Netherlands, as it is especially for the Netherlands important to limit climate change. Therefore I am interested to what extent the Netherlands is promoting and using biofuels as a mitigation measure.

### 3.2.2 GERMANY

The other country that has been chosen is Germany. Germany also faces consequences of climate change.

For example, Central Europe recently faced severe flooding, including Germany. As mentioned in the article of the CNN, around 45000 people from Germany were asked to evacuate. Especially communities that were located next to the river Elbe were destroyed. A spokesman of the Saxony-Anhalt interior ministry mentioned that new dykes needed to be created to cease the flooding (Noack, CNN, 2013)

A sector in Germany that is quite vulnerable to climate change is the water sector. As mentioned before flooding can damage a country significantly. Furthermore, the agricultural sector is affected by droughts that happening more frequently are also more frequently happening, especially in the east parts of Germany (Zebisch, Grothmann, Schröter, Hasse, Fritsch, & Cramer, 2005, p. 9)
These are the main reasons why Germany needs to think about renewable energies in order to limit the amount of greenhouse gasses that affect the climate change. However, another main reason why I took Germany is because it is already quite far in implementing biofuels and is the main promoter of biofuels in the EU (Franco et al, 2010, p. 15). It is interesting to find out the differences between the biofuel policy of Germany and the biofuel policy of the Netherlands, as the Netherlands need to make sure the impacts of climate change do not affect them severely.

## 3.3 THREATS TO VALIDITY

The most important validity issue that can arise concerns the external validity of the study. The definition of external validity is "the truth of a proposition with respect to the population of an inference- its generalizability" (Gerring, 2012, p. 424). This means that if a study is externally valid, it can be generalized to more cases. In my case, the problem of external validity arises, as I cannot generalize the differences between the cases to the whole EU. The reason for this is that the history of the country, the geography and different laws all might have influence on the biofuel policy. However, if more cases and smaller countries are compared with the Netherlands the external validity will increase, as the relationships between achieving the targets and the actual policy can be compared.

# 4 USING THE ACF TO DESCRIBE THE BIOFUEL POLICY

To find out the differences between the use of biofuels in the Netherlands and Germany, stable parameters and external events will be determined. The stable parameters will explain the natural resources, the socio-cultural values and the basic constitutional rules of the Netherlands and Germany. The external (system) events will include changes in the public opinion, changes in the systemic governing coalition, and policy decisions and impacts from other subsystems. The latter includes the Kyoto protocol, the EU directives, the EU agricultural policy and the Dutch and German public transport policy.
Furthermore, the Dutch and German government need to comply with the Kyoto protocol, and the EU directives; as a result they are restricted in setting their policies and creating regulations. As mentioned before, in this chapter only data concerning the stable parameters, external events and the policy outputs of the biofuel policies is given. To keep a clear structure for the reader, the analysis of the data is given in chapter five.

## 4.1 IMPORTANT STABLE PARAMETERS

### 4.1.1 POLITICAL SYSTEM - GERMANY

Germany is a federal parliamentary republic. It is also called the "Federal Republic of Germany" and it consists of federal states; in total there are 16 states and a federal government (Länder) (Frankfurter Societäts-Medien GmbH, 2013). Germany has two national legislative bodies, which are the Bundestag and the Bundesrat. These two bodies can be compared with the second and the first chamber in the Netherlands respectively. The Bundestag is the parliament of Germany; it consists of representatives that belong to a specific party (Frankfurter Societäts-Medien GmbH, 2013). The function of the Bundestag is to elect the Chancellor and to pass legislation. The parliament gets proposals, so-called bills, from the Federal Government that need to be approved, changed or dismissed. The Federal President is the head of the state (Frankfurter Societäts-Medien GmbH, 2013). The role of the president is to represent the country. He can also send away the government and if needed dissolve the parliament. The current president is President Joachim Gauck; he is elected for five years. The Federal Chancellor is a member of the Federal government. One can say that the tasks of the Federal Chancellor are quite similar to the tasks of prime ministers in a parliamentary democracy and the President in a presidential democracy. The Federal Chancellor can choose its own ministers and ministries and "lays down the guidelines of government policy" (Frankfurter Societäts-Medien GmbH, 2013). At this moment, the Federal Chancellor is Angela Merkel (CIA: The World Factbook, 2013). Together with the ministers, Angela Merkel forms the Federal Government of Germany.
The last body is the Bundesrat, representatives of the governments of the German federal states form this body. Their main task is to approve the amendment or

replacement of central laws and of laws that will give the states more administrative costs (Frankfurter Societäts-Medien GmbH, 2013).

### 4.1.2 POLITICAL SYSTEM - THE NETHERLANDS

The full name of the Netherlands is also "The Kingdom of the Netherlands". The word "Kingdom" means that it is a monarchy. The Netherlands also has a constitution next to the monarchy; therefore it is called a constitutional monarchy (Instituut voor Publiek en Politiek, 2009, p. 9). A monarchy recognizes the King or the Queen as head of the state. However, in the Netherlands the King or Queen has a more ceremonial and symbolic role rather than the decision-making role (Instituut voor Publiek en Politiek, 2009, p. 9). The King or Queen does have a role in the government, although he or she is not responsible for its acts (Instituut voor Publiek en Politiek, 2009, p. 9). The Netherlands has a parliamentary democracy. This means that the parliament represents the citizens in the country. Therefore these citizens have indirect influence on the ruling and governing in the Netherlands (Instituut voor Publiek en Politiek, 2009, p. 10). The parliament consists of two chambers: the second chamber and the first chamber (Senate). The second chamber (in Dutch: Tweede Kamer) is also called the House of Representatives; this is the most important chamber (Instituut voor Publiek en Politiek, 2009, p. 33). These chambers consist of several political parties, which have their own beliefs and ideologies. The goal of these political parties is to get as many votes as possible in the House of Representatives, the states-provincial and in city councils (Instituut voor Publiek en Politiek, 2009, p. 13). The Netherlands consists of 12 provinces and 408 municipalities (Central Bureau voor de Statistiek, 2013). If they have a reasonable amount of votes they can have influence in the governmental policies. However, the citizens can only vote for the second chamber, not for the first chamber. The body that governs consists of the head of the state and the ministers (Instituut voor Publiek en Politiek, 2009).

### 4.1.3 DISTRIBUTION OF NATURAL RESOURCES IN THE NETHERLANDS AND GERMANY

According to data of the CIA Factbook (2013), Germany has a total area of approximately 357.000 sq km. This includes land and water; therefore 348.000 sq km is land (CIA: The World Factbook, 2013). Germany has several natural resources, these include: arable land, coal, natural gas, lignite, iron ore, uranium, nickel, copper, potash, salt, construction materials and timber (CIA: The World Factbook, 2013).
The land in Germany is being used for different purposes; around 33,25% is used for arable land, 0,56% for permanent crops and 66,19% for other purposes. Germany has around 81.147.265 inhabitants in 2013 (CIA: The World Factbook, 2013).

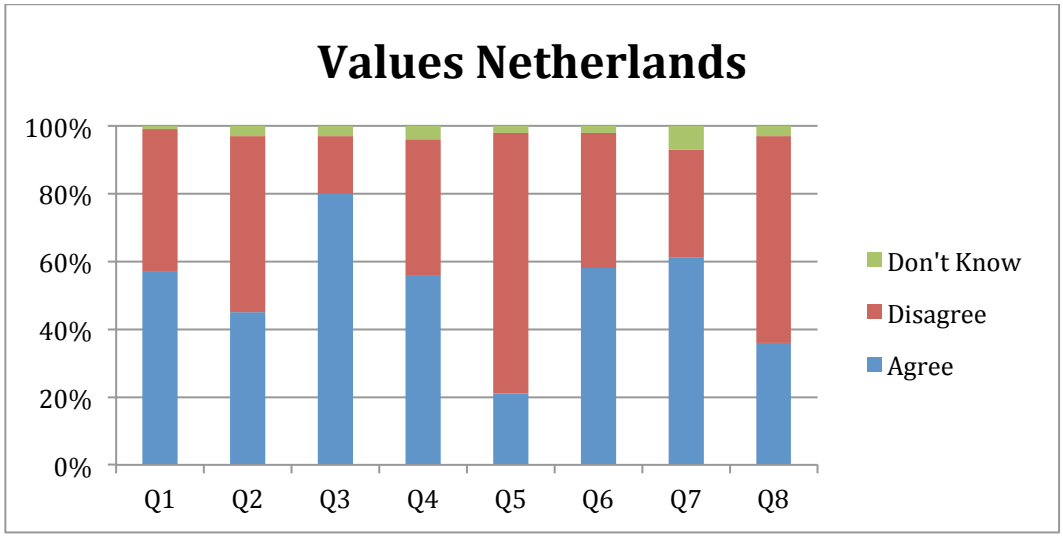
The Netherlands has a total are of 41.543 sq km. Furthermore; the area of land is 33.893 sq km and the area of water 7.650 sq km (CIA: The World Factbook, 2013). The natural resources of the Netherlands are; natural gas, petroleum, peat, limestone, salt, sand and

gravel, and arable land (CIA: The World Factbook, 2013). The land use in the Netherlands is divided in the following way: the percentage of arable land is 25,08%, percentage of permanent crops is 0.88% and the percentage of other land use is 74,04%. The Netherlands has around 16.805.037 inhabitants in 2013 (CIA: The World Factbook, 2013).

### 4.1.4 Social-cultural values and social structures in Germany and the Netherlands

The EU (Eurobarometer) has conducted research regarding the social values of citizens of all the member states by issuing a questionnaire. This questionnaire assessed the public of several countries on seven topics: Justice, freedom, immigration, leisure, environment, state intervention and free competition in the then 27 countries of the EU (European Commission, 2008, p. 33). The statements that were given in the questionnaire are:

1) The State intervenes too much in our lives.
2) We need more equality and justice even if this means less freedom for the individual.
3) Nowadays there is too much tolerance Criminals should be punished more severely.
4) Immigrants contribute a lot to (OUR COUNTRY).
5) Economic growth must be a priority for (OUR COUNTRY) even if it affects the environment.
6) Protecting the environment should be a priority for (OUR COUNTRY) even if it affects the economic growth.
7) Free competition is the best guarantee for economic prosperity.
8) More importance should be given to spare time than to work.



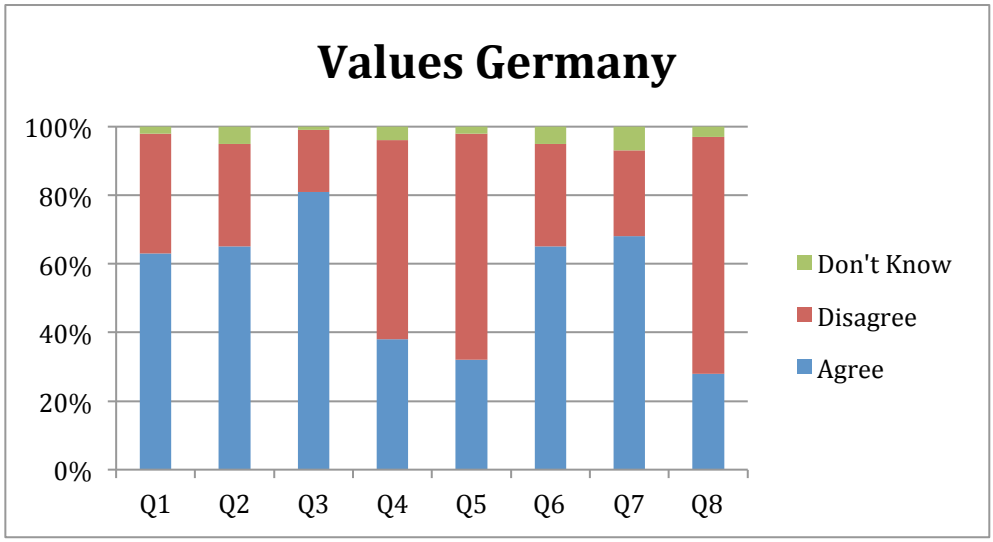



Figure 2: results of the questionnaire regarding social values in the Netherlands and Germany

To come back to the different topics that were assessed. It seems that social values that differ the most in these two countries are equality versus individual freedom, attitude towards immigrants, importance of the environment, and leisure.
The interesting difference is the attitude towards the environment. The attitude towards the environment does not differ much when the citizens of both countries are asked whether they believe the protection of the environment should be a priority even if it affects the economic growth. However, the Dutch citizens disagree more with the statement that the economic growth must be a priority for the country even if it affects the environment. Furthermore, 65% of the German citizens questioned do want to give up individual freedom for more equality, this compared to only 45% of the Dutch citizens.
Annex D shows the complete results of a questionnaire executed by the Eurobarometer organization.

## 4.2 Important external (system) events

The important external events might have influenced the biofuel policies and the biofuel use of the Netherlands and Germany. These identified external events are stated below.

### 4.2.1 Kyoto protocol

The Kyoto protocol was created under the United Nations Framework Convention on Climate Change in a session of the COP (Conference of Parties) in 1997. It is an international agreement that "commits its Parties by setting internationally binding emission reduction targets" (United Nations Framework Convention on Climate Change, n.d). The main objective of the Kyoto protocol is to "stabilize atmospheric

concentrations of greenhouse gases at a level that would prevent harm to the climate system" (United Nations Climate Change Portal, n.d). It came into force in February 2005. In 2007, 191 Parties (countries) ratified the Kyoto protocol. The Parties that ratified the Kyoto protocol got specific tasks to comply with the objective. The first task is to report national greenhouse emissions. The Parties do this by sending national communications to the UNFCCC. Secondly, countries are obliged to control greenhouse gas emissions and to facilitate changes that are needed to deal with climate change, through implementation of national programs (United Nations Climate Change Portal, n.d). The third task is particularly for industrialized, also annex 1 Parties. They are obliged to send national communications more often than the non-annex 1 Parties. Another task these Parties need to do is to send their national greenhouse gas emissions each year to the UNFCC. Furthermore the annex 2 Parties need to share their technological expertise on climate change with the developing countries (United Nations Climate Change Portal, n.d). They should also give financial support to the developing countries to make it possible for them to implement instruments against climate change. Furthermore, the annex 1 Parties agreed to special binding emission targets, these had to be achieved between 2008 and 2012. The Kyoto protocol also established three mechanisms to (Agentschap NL, 2013) make it easier for the industrialized Parties to achieve their targets; these were the clean development mechanism, joint implementation and emissions trading (United Nations Climate Change Portal, n.d). As a tool to control the implementation and achievement of the targets the compliance committee was established. The function of this committee is to control the countries and to impose sanctions when needed (United Nations Climate Change Portal, n.d).

The Kyoto target that was set for most of the European countries and also for the Netherlands and Germany is achieving 8% emission reduction in 2012 (United Nations Framework Convention on Climate Change, 2013). This is related to the total amount of greenhouse gas emissions in a base year. For the Netherlands and Germany the base year was 1990 (United Nations Framework Convention on Climate Change, 2013).

### 4.2.2 BIOFUEL POLICY EU

The first directive concerning biofuels that the EU created was the "Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport". Following this directive, the member states needed to promote and introduce biofuels in the transport sector. The first goal was to have 2% of the total energy that comes from fossil fuel to be biofuels in 2005. In 2010 this should be 5,75% (Agentschap NL, 2013). However it should be noted that these targets were only indicative and not binding. There are three forms of using biofuels that count towards this indicative target. First it is allowed to mix small quantities of biofuel with fossil fuel. The second form is essentially the same, only with a much higher amount of biofuel (Agentschap NL, 2013). The third method is using pure biofuels. This also depended on

what the country itself wanted, as for the second and the third option the cars and engines needed to be modified (Agentschap NL, 2013).

In 2009, the "European Renewable Energy Directive (2009/28/EC)" replaced and amended the Directive of 2003. The new directive set a new target for renewable energy sources in general. In 2020, 20% of all the energy consumption in the European Union should come from renewable energies. Furthermore the member states are required to use biofuels for at least 10% of their total fuel that is needed for transportation (European Parliament and Council, 2009, p. 19). This is a binding target and the biofuels should be generated in a sustainable way. The Directive includes sustainability criteria for obtaining and using biofuels. The sustainability criteria for biofuels point out that it should not be obtained from natural forests and from raw land that has a very diverse ecosystem including many types of animals (European Parliament and Council, 2009, p. 37). New transparent and clear rules need to be created to calculate the amount of energy that comes from renewable resources. National targets per EU country were set to make sure the 20% of renewable energies and the 10% biofuels are achieved. These national targets were established by taking into account the possibilities of the member states and how much renewable resources they already have (European Parliament and Council, 2009). The 10% renewable energy requirement that applies to the national transport will be the same for every member state, as this resource can be traded relatively easily (European Parliament and Council, 2009, p. 18). The member states needed to create a national renewable energy action plan, which included the national targets and how they are going to achieve these targets (Agentschap NL, 2013). As there are different forms of using biomass, the member states also need to address these in their action plan (European Parliament and Council, 2009, p. 18). In order to achieve the national goals, the member states will need to finance research and the development of renewable energy technologies. The European Commission should control the supply of biofuels on the European market and if needed it should also make sure that the balance between imported biofuels and domestically created biofuels is right. The member states should increase their energy efficiency in all sectors to be able to achieve the goal (European Parliament and Council, 2009, p. 18)
The member states are allowed to trade energy from renewable sources to other member states. However the renewable energy from the sending country is subtracted from the renewable energy that counts for the compliance to the EU directive. The quantity of renewable energy that the receiving country receives is added to the total amount of renewable energies that is counted for the country's target (European Parliament and Council, 2009, p. 30).

According to article 21 it depends on the kind of transport biofuel how much it counts for the national target. Biofuels that are created by using waste or excesses/leftovers of industry or otherwise created with non-usable excesses are counted double for the national target. Furthermore, transportation means that use of renewable energy counts for 2,5 times the standard rate (Agentschap NL, 2013).

An additional aspect that is addressed in Directive 2009/29/EC is the change in the use of land as a result of biofuels. This is also called indirect land use changes (ILUC). When biofuels are produced on land that can also be used for food crops, this land needs to be obtained somewhere else (European Commission, 2012). As a result, land such as forestland is changed into arable land to produce food crops, which increases the greenhouse gas emissions. Directive 2009/29/EC and Directive 2009/30/EC oblige member states and fuel providers to include the emissions that come from ILUC in their total emission rate (European Commission, 2012).

The second directive that affects the use of biofuels is the "European Fuel Quality Directive" (2009/30/EC). This directive "amends Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC". This directive amends two directives and it revokes one directive. The main goal of this directive is to make sure that the producing and also using of fuels will become cleaner and as a result will reduce the emissions (Agentschap NL, 2013). It explains that 20% of the greenhouse gas emissions currently result from the combustion of transport fuels, such as diesel and gasoline (European parliament and the Council, 2009). Furthermore, sustainability criteria particularly for biofuels were created.
The biofuels should be produced in a sustainable manner. Therefore, in order to be counted for the greenhouse gas reduction targets, they should comply with the sustainability criteria of the 2009/30/EC directive. Furthermore, these biofuel sustainability criteria should be similar to the sustainability criteria set in the 2009/28/EC directive (European parliament and the Council, 2009, p. 89). As a consequence of the usage of biofuels, the demand for land for agricultural purposes is growing. The sustainability criteria should stimulate the restoration of unusable land to meet this demand (European parliament and the Council, 2009, p. 91).
This directive is related to the aforementioned 2009/28/EC directive, as this directive also focuses on reducing the greenhouse gas emissions and achieving the 20% renewable energy consumption in 2020 (Agentschap NL, 2013). Furthermore the directive requires member states to reduce their greenhouse gas intensity (the amount of emission of greenhouse gasses per unit of energy). The target that was set is 6% reduction of greenhouse gasses intensity by 2020, with year 2010 as the base (Agentschap NL, 2013).

Table 3 gives an overview of all the targets of Directive 2003/30/EC, Directive 2009/28/EC and Directive 2009/30/EC.

| Directives | | |
|---|---|---|
| Directive 2003/30/EC | Directive 2009/28/EC | Directive 2009/30/EC |
| 2005: 2% of total energy from fossil fuels need to be biofuels | 2020: 20% of all energy consumption in the EU should be from renewable energies | 2020: 6 % reduction of greenhouse gas emissions per unit of energy, might increase to 10% after 2014. |
| 2010: this should be 5,75% | 2020: 10% of the total transport fuels of each member state should come from biofuels. | Contribution to the 2020 target: 20% of all energy consumption in the EU should be from renewable energies |
| Not binding targets | Dutch target: 14%, German Target: 18% | |

Table 3: Summary of directives

### 4.2.3 EU AGRICULTURAL POLICY

The EU agricultural policy was established to create a 'partnership between Europe and Farmers'. The economy depends much on the famers in the rural areas. As a consequence the EU depends largely on the farmers and cannot lose them. It is visible that over the years the number of people that are occupied in farming is decreasing. In 2007 there were around 14 million farmers in Europe. Therefore the CAP policy of the EU is stimulating, especially young farmers by funds and subsidies such as financial assistance (European Commission, 2012, pp. 6-9). The CAP also provides so-called 'income support payments' to the farmers when they use sustainable methods for their farm. The farmers take up almost half of the total EU land. Their role is to produce food and to be in charge of the rural areas (European Commission, 2012, p. 8). Most of the farmers have a small business. On average the amount of land is 12 hectares, however 70% of the EU farms has 5 hectares of land or even less (European Commission, 2012, p. 12). A goal of the CAP is to help these small farms to compete with other larger farms, as it is more difficult for smaller farms to produce their products at the same price as the larger farms (European Commission, 2012, p. 12). The CAP of the EU helps the smaller farms by establishing farmer organizations or by giving the farmers more power; additionally they encourage farmers to become more specialized in their foods supply and they provide funds that protect the smaller farmers against competition (European Commission, 2012, p. 12).

### 4.2.4 DUTCH AND GERMAN PUBLIC TRANSPORT POLICY

The responsibility for public transport is decentralized in the Netherlands. This means the central government is responsible for the railway infrastructure and furthermore it can create concessions to the 'hoofdrail net', which is the main railway network. At this moment only the NS, which is the Dutch railway company, is operating at the main railway network (Ministry of Transport, Public Works and Water Management, 2010).
In the Netherlands public transport includes several forms of transport such as the tram, train, the underground and the bus. Public transport can transport a great number of people at the same time; especially the train helps to limit traffic on the road. Furthermore, the responsibility of the bus, tram and underground lies at the public transport companies and the decentralized governments, such as provinces and municipalities (Ministry of Transport, Public Works and Water Management, 2010). ProRail, is the main responsible company for the train system. The government is the only shareholder; the ministry of infrastructure and environment is responsible for the cooperation with ProRail (ProRail, n.d). Furthermore, ProRail decided to focus on a sustainable train system. They set a number of goals to improve the sustainability of the trains. The first goal is to reduce the total amount of energy by 30% in 2020 (ProRail, n.d). Furthermore, all the energy that is used needs to be sustainable by 2020, which will be done by using solar panels and by importing energy that is sustainable. Additionally, ProRail wants to reduce the amount of CO2 emissions coming from the trains and they are focusing on changing the train stations into more sustainable stations (ProRail, n.d). At this moment there are projects running for more sustainable buses, such as hybrid buses or buses that run on natural gas (Brasser, Change Magazine, 2009).

In Germany the National Transport Infrastructure Plan (Bundesverkehrswegeplan) is in charge of regulating the public transportation system and the public transportation policy. The National Transport Infrastructure Plan is responsible for the autobahns, the railways, the highways and the airports. They regulate the policy in cooperation with the federal government. The Regional Development Plan for Transport (Landesentwicklungsplan) is responsible for the transport policy on the regional level, the German Länder (Directorate General XVI, 2000). The Municipal Transport Funding Law (Gemeindeverkehrsfinancierungsgesetz) gives funds to the municipalities; these funds are mostly used for the public transportation and for the infrastructure (Directorate General XVI, 2000, p. 3).
As mentioned before, the German federal government stimulates further research on whether biofuels can be used in the public transport sector.

The main forms of public transport that are used in Germany are the underground train (U-Bahn), the suburban express train (S-Bahn), the tram and the buses. Most of the people use the bus in Germany to travel between the rural areas and the urban areas (InterNations worldwide, n.d).

Another sector that is focusing on implementing more renewable energies is the airline industry. The airport Schiphol wants to reduce their CO2 emissions and produce 20% of their own renewable energies in 2020 (Schiphol Group, n.d). In the Netherlands the KLM is using biofuels, from deep fried fat and second-generation resources, for their airplanes. The KLM wants to reduce their CO2 emissions with 20% compared to 2009 (KLM, 2013). In Germany Aireg is focusing on implementing biofuels in aviation. They set the goal of 10% alternative aviation fuel in 2025 (aireg, n.d).

### 4.2.5 CHANGES IN POLITICAL SYSTEMIC GOVERNING COALITION

A short summary of the coalitions of Germany and the Netherlands is shown below. The first year that will be shown is 2002. The German coalitions did not change much. From 2002 until 2005, the chancellor Gerhard Schroeder from the SPD and the Greens collate (Proksch & Slapin, 2006). From 2005 until now, Angela Merkel's party CDU has been in the cabinet. Initially the CDU formed the "grand coalition" together with the SPD. Currently, the CDU is in a coalition with the FDP.
In the Netherlands the governmental coalitions changed often over the years. In 2002, cabinet 'Balkenende 1' was established. This coalition was central-right and included CDA, VVD and LPF (Lijst Pim Fortuyn, the leader of this party Pim Fortuyn was assassinated just before the elections) (Parlement & Politiek, n.d). In 2003, coalition 'Balkenende 2', with CDA, VVD and D66, was formed (Parlement & Politiek, n.d). This coalition governed until 2006. This resulted in new elections from 2006-2007, which formed 'Balkenende 3', including CDA, PvdA and the CU (Christian Union) (Parlement & Politiek, n.d). This coalition fell in 2010. In 2010, the coalition 'Rutte 1' was created including the VVD and CDA, and the PVV was the supporting party (gedoogpartij) (Parlement & Politiek, n.d). This coalition fell in 2011. The current coalition 'Rutte 2' has been created in 2012, including the parties VVD and PvdA. The formation of this coalition was done in a new way, without the influence of the Queen (Parlement & Politiek, n.d).

### 4.2.6 CHANGES IN PUBLIC OPINION

The last external event that can have influenced the biofuel policy of Germany and the Netherlands is the changes in public opinion on national problems. As can be seen in Annex F (Agentschap NL, 2013), in April 2008 5% of the German citizens in the poll saw the protection of the environment as a national issue, this decreased to 2% of the German citizens in mid-2010. Furthermore, a significant increase from April 2008 to June 2010 can be seen in the percentage of German citizens that perceive the economic situation in the country as an important national issue from 14% to 41%. In November of 2010 the issue of the economic situation was significantly less, 19% compared to 41% in June 2010. Furthermore, the issue of environmental protection increased with 3% from June 2010 to November 2010 and in the same period the issues of terrorism and

immigration increased much and became more important. In the Netherlands the same increase in the issue of the economic situation can be seen from the end of 2008 until June 2010, as there was an increase from 22% to 54%, with some peaks and low points in between. The issue of protecting the environment stayed quite the same; only in the end of 2009 there was a decrease from 6% to 3%. In April 2010 this was already increased to 7%. Furthermore the issue of terrorism was only high in April 2008, and the issue of immigration was high in April 2008 and it decreased until November 2009, after November 2009 it started increasing again until the last given data which is of November 2010.

## 4.3 POLICY OUTPUTS OF BIOFUEL POLICY SUBSYSTEMS

### 4.3.1 BIOFUEL POLICY NETHERLANDS

As mentioned before, the biofuel policy of the Netherlands needs to comply with the directives of the EU. Therefore the 2003 European Biofuels Directive resulted in a change of the Dutch biofuels policy. From 2006 until 2010 the biofuel policy of the Netherlands needed to confirm with the European directive from 2003 concerning biofuels (2003/30/EG). As a result of the conformation with the EU directive, the Netherlands needed to do something in order to stimulate biofuels.

The first act that was taken to stimulate biofuels was the partly tax exemption for biofuels, which was introduced in 2006 (Agentschap NL, 2013). The Netherlands decided to promote the use of biofuels by lowering the tax for biofuels, which would be 50.5 eurocents per liter for bio-ethanol and 30,5 eurocents per liter for biodiesel. As a result of this act, companies such as oil and fuel companies that sell fuels on the Dutch market also need to sell a certain amount of biofuels (Agentschap NL, 2013). These can be mixed or just pure biofuels. In 2007 the percentage of biofuels that needed to be sold besides conventional transport fuels was 2%, which went up to 5,75% in 2010 (Agentschap NL, 2013).

It was mandatory that of all sold transport fuels such as petrol and diesel, at least a minimum percentage is biofuel. However it was not necessary that regular fuel and biofuel were mixed, as long as enough biofuel was sold in total (Agentschap NL, 2013). This regulation was only meant and mandatory for license holders, as these amounts of biofuels are counted for the targets. License holders are companies that bring the conventional transport fuels on the market. Every year the license holders needed to report to the VROM (Ministry of Housing, Spatial Planning and Environment) how much biofuels they sold on the market and whether they complied with the regulations (Agentschap NL, 2013). There were two ways to acquire biofuels: Companies could produce them themselves, or they could trade so-called biotickets on the market (Agentschap NL, 2013).

As mentioned before, in 2009 two important directives, the RED and FQD came into force. A consequence was that the Dutch biofuel policy also needed to change, as the member states were obliged to implement the new directives before the 31st of December 2010. The new Dutch legislation came into force on the first of January 2011. On the 22th of March 2011, the proposal for the implementation of Directive 2009/28/EC, Directive 2009/30/EC and Directive 2009/33/EC (Clean Vehicles Directive) was accepted by first chamber (the "Tweede Kamer" in Dutch) (Agentschap NL, 2013). Furthermore, the Dutch Emission Authority will grant emissions licenses to companies, it will inspect companies on their emission administration and data, and finally it also checks whether companies keep up to the biofuel laws. If companies do not obey to the rules the Dutch Emission Authority is allowed to give sanctions (Nederlandse Emissieautoriteit) .

The targets of the Netherlands to achieve 10% renewable energies in the transport sector are given in the table below.

Table 4 (NL Agency, 2013)

| | Total |
|---|---|
| 2010 | 4,0% |
| 2011 | 4,25% |
| 2012 | 4,5% |
| 2013 | 5,0% |
| 2014 | 5,5% |
| 2020 | 10,0% |

As can be seen in the National Action Plan for Renewable Energies of the Dutch government, the Dutch strategy for renewable energy consists of three pillars. One of these is the goal to have cleaner and more efficient energy supply, which can be done by stimulating the saving of energy and producing more renewable energies (Rijksoverheid, n.d). The goals of the cabinet for 2020 were set in the Clean and Efficient Work Program; one of the goals is to obtain 20% of the total amount of energy by using renewable energies, and to save 2% of the total energy per year (Rijksoverheid, n.d, p. 10). The desired strategy not only promotes the use of renewable energy to combat climate change, but aims to stimulate innovation as well.
The central instrument that is used explicitly for biofuels is the "Biofuel Obligation". This instrument obliges companies to obtain a certain percentage of renewable energy, related to the total fuels for the transport sector. As can be seen in the EU directives part of the thesis, this instrument is related to directive 2009/28/EC (Rijksoverheid, n.d, p. 11).

In figure 3 the targets that were set by Directive 2009/28/EC are shown next to the percentages that the Netherlands is expected to realize. It can be seen that the Netherlands expects to exceed the goal of 14%, by 0,5%. Furthermore the goal from

Directive 2009/28/EC in obtaining 10% renewable energy in the transport sector is also expected to be overachieved by 0,3% (Rijksoverheid, n.d, p. 12).

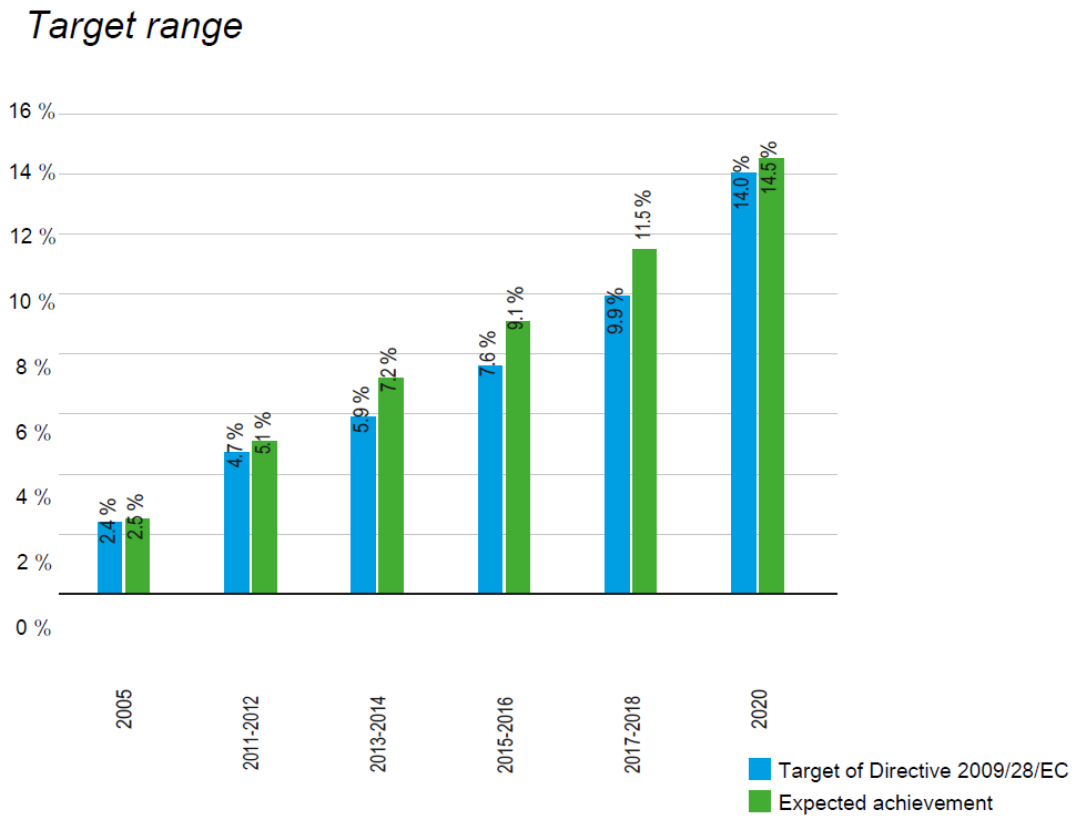



Figure 3: Goals of the Directive and the expected achievement (Rijksoverheid, n.d, p. 12)

The Dutch government has several measures to achieve these goals. The different measures and the type of measure are shortly explained.

There are three types of measures; a soft measure, a regulating measure and a financial measure. A soft measure is not binding, but is more a guideline and gives information. Therefore companies or persons cannot be punished when they do not act according to the measure (Federal Republic of Germany, 2010, pp. 88-90). A regulating measure instead is a binding measure, companies need to comply with this regulation, and otherwise the government or an authority of the government can punish them. Finally there are financial measures; these can be seen as financial contributions of the government for investment, such as (Federal Republic of Germany, 2010, pp. 88-90).

**"Energy report 2008"**
This report focuses on cleaner energy supply in 2050 for Europe and the Netherlands, however this should be as reliable and as affordable as the current energy supply. One of the first programs that contributed to this vision is the "Clean and Efficient Work Program", which has been set up by the government. The Energy Report 2008 includes ideas of the cabinet concerning (renewable) energies and it shows the strategy for the coming years. The long-term strategy of the cabinet related to biofuels consists of increasing the amount of cars fuelled by biofuels (Ministerie van Economische Zaken, 2008, p. 11). This is a soft measure.

**"Clean and Efficient Work Program" (Schoon&Zuinig)**
Certain goals of the Clean and Efficient Work Program have already been mentioned before. This program ended in 2011. This was a soft measure.

**Green Investment (Groen beleggen)**
This is still an on-going project, which started in 1995. The objective of this project is to let Dutch citizens invest in a green fund. The citizens get a lower investment rate, however they get tax compensation (Rijksoverheid, n.d). As a result of the green fund, the bank can provide loans with a lower interest rate than usual loans. These loans are only available for green and sustainable projects (Rijksoverheid, n.d).

**Energy innovation agenda**
Innovation is important in order to achieve sustainable energy supply. However there are many factors that can limit the innovation. The goal of the cabinet is to limit and eliminate these factors to improve innovation in several sectors. The innovation agenda consists of several themes, every theme has a goal. One theme is the green raw materials; this includes innovation for the production of biofuels (EnergieTransitie-Creatieve Energie). The government stimulates private investments to achieve sustainable energy supply. This is a financial measure and it ended in 2012 (EnergieTransitie- Creatieve Energie).

**Biofuel obligation**
This measure has been extensively explained before. In summary: registered companies are obliged to report their fuel and biofuel supply, related to transport and mobile machines, to the Dutch Emissions Authority. This is a regulatory measure and it ended in 2010 (Rijksoverheid, n.d, p. 26) .

**TAB: Filling station for alternative fuels**
This is a subsidy program for gas stations that sell alternative fuels such as green gas, E85 that is also called ethanol, and biodiesel, which is B30. This program is an initiative from the Ministry of Transport, Public Works and Water Management, from several

Dutch provinces and municipalities. This is a financial measure and it is an on-going subsidy program (Interprovinciaal Overleg, 2010).

**IBB: Innovative biofuels**

The goal of this subsidy program is to reduce CO2 emissions. This is done by stimulating research regarding innovative methods of making biofuels. Innovation in the production of biofuels as well as the character of the produced biofuel itself is stimulated. This is a pilot program from 2006 until 2014, and it therefore is still running. Furthermore, it is a financial measure, as it is a subsidy program (Koninkrijk der Nederlanden, 2006).

### 4.3.2 BIOFUEL POLICY GERMANY

The latest German policy that concerns biofuels is the German Energy Policy of 2010, which was adopted in September 2010. This policy consists of a long-term renewable energy strategy until 2050. It gives certain guidelines to accomplish an energy supply that is reliable, affordable and renewable. The German policy aims to invest in both renewable energy as well as innovation in enhanced energy efficiency in general (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2010, p. 4). The targets that were set by the German government and which are interesting for biofuels are; 18% of the total energy consumption should be from renewable energies in 2020, this should be increased to 30% by 2030, 45% by 2040 and 60% by 2050 (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2010, pp. 4-5). Additionally concerning the transportation sector, the total consumed energy should fall with 10% by 2020 and 40% by 2050. At the same time, a new "energy and climate fund" was created to make sure the Energy Concept can be implemented in the right way (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2010, p. 6). The aim of Germany with this Energy Concept is to "transform energy supply in a way that makes economic sense for industry and consumers" (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2010, p. 7). Concerning mobility, Germany set the goal of having one million electric vehicles in 2020, and up to 6 million electric vehicles in 2030. Furthermore, it also promotes more use of biofuels for vehicles. The government introduced several measures to achieve this (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2010, p. 24).

The energy policy also mentions that regulations regarding carbon emissions will be sharpened in the long term, and biofuels will be promoted through tax measures. Car manufacturers will be stimulated to develop the necessary technology to create cars that can function efficiently on biofuels. Furthermore, the refinement process of diesel can be made more sustainable by adding vegetable oil to the mineral oil used while refining (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2010, p. 25). The amount of added sustainably produced vegetable oil will also count for the biofuel quota. Research regarding the extension of the use of biofuels in the transport sector will be stimulated, especially application of biofuels for trains and in shipping in general. Finally, the government will invest in research on whether it is possible to

implement the emissions-based vehicle tax on vehicles that run on fossil fuels (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2010, p. 25).

It should be taken into account that the creation of the National Renewable Energy Action Plan which concerns Directive 2009/28/EC happened at the same time as the drafting of the of the Energy Policy. Therefore the German Energy Policy may have changed some aspects of the National Renewable Energy Action Plan (Federal Republic of Germany, 2010, p. 4).

The EU decided the national targets for renewable energies in the transport sector and national targets for renewable energies in general. The national mandatory target concerning renewable energies for Germany is 18% and the national mandatory target for renewable energies in the transport sector is 10% (Federal Republic of Germany, 2010, p. 15). However, the German government estimated that in 2020 the percentage of renewable energies of the total energy consumption in 2020 could be 19,6%. Furthermore, the target of 10% renewable energies in the transport sector is also assumed to become higher in 2020, up to 13,2% (Federal Republic of Germany, 2010, pp. 7-8). Germany is already far in their measures to achieve the 2020 target, although the measures might need to develop even more. Looking at the history of biofuels in Germany, it can be seen that biofuels are not uncommon, from 2004 until 2007 Germany already had a high growth in using biofuels as it went from 1,8% of the total fuel consumption to 7,2% (Federal Republic of Germany, 2010, p. 7).

As explained in the part about the political systems of Germany and the Netherlands, Germany consists of several states. This is also visible in the manner the government is working on achieving the goal of 18%. The majority of the states decided their own targets; these targets will make sure the overall German target will be achieved before 2020 (Federal Republic of Germany, 2010, p. 13).

The federal government of Germany has several measures to achieve the targets; however only the ones that address biofuels will be explained. These different measures can be legislative or financial measures.

The first Biofuel Quota Act (BioKraftQuG) was adopted in 2007. In the first years, companies were given a minimum of biofuel quotas that they needed to achieve. These quotas were created on the basis of the energy content and they were binding (CropEnergies, 2012). Later this was changed into total biofuel quotas. The current biofuel quota goal is to have 6,25% of total fuel consist of biofuels. The biofuel quotas after 2015 will not be based on the energy content but on how much they contribute to greenhouse gas reduction. (CropEnergies, 2012). The quota that follows the change in 2015 will be a 7% greenhouse gas reduction in 2020. Furthermore, usage of some biofuels can lead to tax benefits; these are second-generation biofuels and bioethanol. If

companies do not comply with the quotas, the Biofuel Quota Authority can impose sanctions (Federal Republic of Germany, 2010, p. 90).

Following the EU Directive 2009/28/EC, Germany needed to make some changes in their national programs and laws. As mentioned before, the new EU directive created sustainability criteria. As a result, the Biofuels Sustainability Ordinance was created (Federal Republic of Germany, 2010, pp. 7,15,183).

The Biofuels Sustainability Ordinance (Biokraft-NachV) was created in 2009 to make sure biofuels are produced in a sustainable manner. Only when the produced biofuels measure up to the criteria they count for the biofuel quota; moreover companies can also get tax benefits when they produce certain biofuels (Federal Republic of Germany, 2010, p. 63). This is set in the Energy Tax Act (EnergieStG). Further mentioned in Directive 2009/28/EC, authorities and certification systems need to check whether companies comply with the sustainability criteria. In Germany these authorities are non-governmental bodies, created by the German Federal Agency for Agriculture and Food (BLE). Since 2010, 2 certification systems and around 12 certification bodies have been created (Federal Republic of Germany, 2010, p. 63).

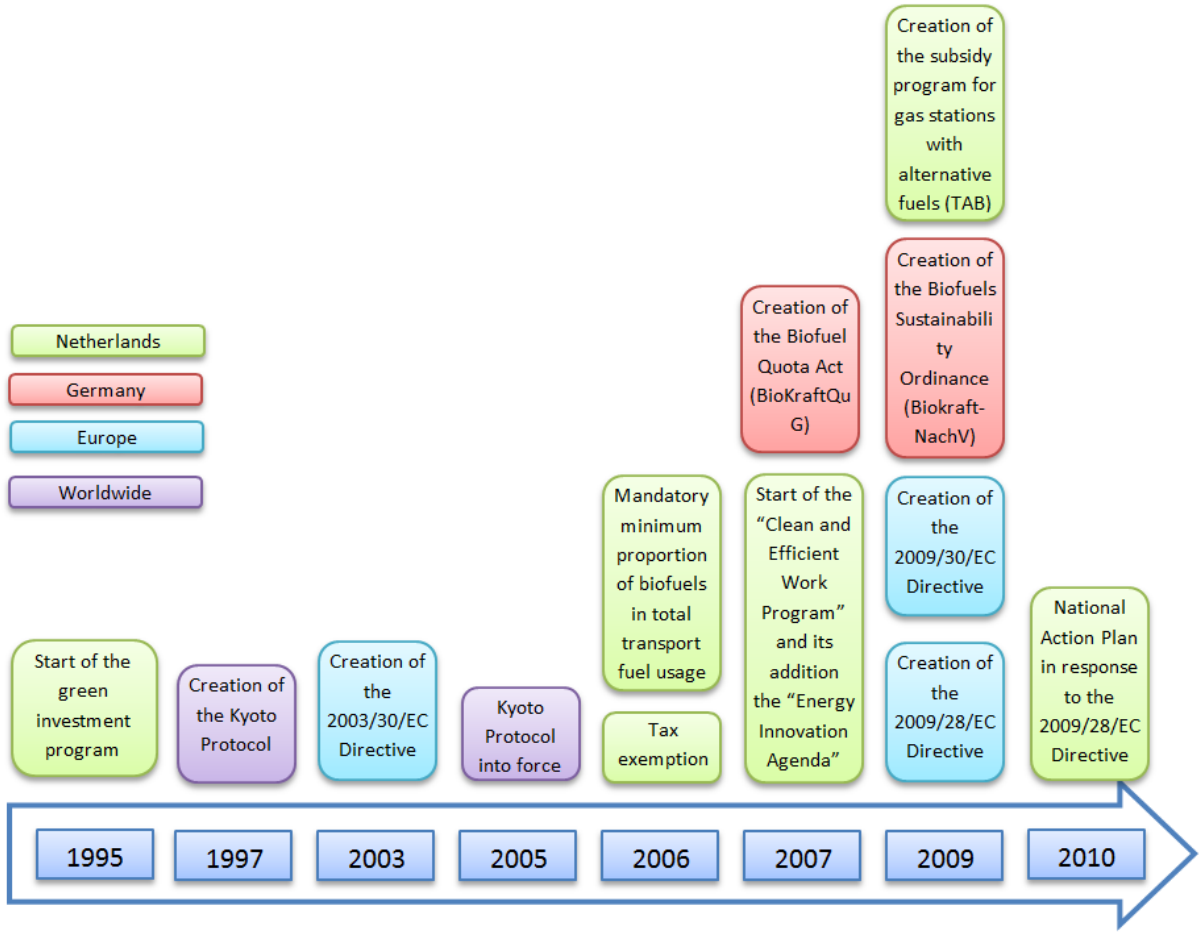



Figure 4: Timeline of the important programmes and directives in the biofuel policy area

# 5 ANALYSIS

The two main groups that will be analyzed are the Stable Parameters including the political system, distribution of natural resources and the social-cultural values and social structure values. The other group is the External System Events including the Kyoto protocol, the EU biofuel policy, the EU agricultural policy, the public transport policy, changes in systemic political coalition and changes in public opinion.

## 5.1 STABLE PARAMETERS

### 5.1.1 POLITICAL SYSTEM

The first stable parameter is the political system. Both countries have a parliamentary system. This means they have the same way of decision-making and it can be assumed that this did not influence the biofuel policy significantly. Furthermore, Germany is divided into federal states. In order to achieve the national renewable energy target in transport and the general renewable energy target these federal states and municipalities set their own targets. However, only the federal government was involved in the decision-making process. In the Netherlands the municipalities also work on the use of renewable energies in the transport sector, although these municipalities did not set their own targets to meet the 10% renewable energy in the transport sector (Dolstra, 2011).

### 5.1.2 NATURAL RESOURCES AND AREA

Looking at the second parameter it is already visible there are some differences between the two countries. Germany has many more natural resources than the Netherlands, however it should be taken into account that Germany has around 10 times more land than the Netherlands. A natural resource of Germany is uranium; this is also the reason why 23% of the installed capacity of energy comes from nuclear fuels (CIA: The World Factbook, 2013). In March 2011 the nuclear power plants in Fukushima started to leak which had major consequences for the environment and the people, as a result Germany decided to stop obtaining any fuels from nuclear resources within 10 years (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2010). Furthermore the oldest 8 nuclear plants needed to be closed (World Nuclear Association, 2013). As a result, the urge for renewable energy is high, which can influence the use of renewable energies from that 2011 on. However, this is not yet visible in the share of renewable resources in the total final energy consumption. The reason the total share did not increase is because the share of renewable energies in transport and the share of renewable energies in heat supply did not change at all (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2013, p.

7). In 2010 solid fuels were still the most important form of energy production in Germany and the other 9 nuclear plants are still running (European Commission).

The most important energy source for the Netherlands is natural gas. This counted for 90.7% of the total energy production in 2010. The natural gas is produced in the Netherlands itself, however they also import the natural gas (European Commission). Furthermore, the renewable energy production was 4.1% while in Germany this was 24.9% (European Commission).

As mentioned before, the Netherlands has a total area of 33.893 sq km. 16,8 million people inhabit this relatively small piece of land; this makes the Netherlands densely populated. In Germany on average 232,7 persons live per square kilometre, while in the Netherlands this is 495,8 persons per square kilometre. It is estimated that approximately 5.208 sq km in the Netherlands is arable land. Another 12.245 sq km is currently used as grassland and for green fodder growth. This means arable land in the Netherlands is intensively used; setting up production of biofuels may thus require large investments in the Netherlands (AgriHolland, 2013). This may result in indirect land change, especially because the EU recently decided to abolish first generation biofuels. As a result new land needs to be created to grow cultivation for biofuels.

### 5.1.3 SOCIAL VALUES

There are differences and similarities visible between the economic and social values of German citizens and of Dutch citizens (see Figure 2). The German and Dutch citizens seem to believe the same on several aspects, such as the intervention of the State on their lives. They both believe this is too much. Furthermore, the citizens of both countries strongly believe the legal system is too mild and does not punish the criminals enough. The environment is for both German and Dutch citizens important, as they believe it should be protected when it does affect the economic growth in the country. It is interesting to see that the Dutch citizens are more concerned with the environment when it will affect the economic growth than the German citizens. Moreover, the citizens in both countries agree that free competition results in economic prosperity. Both the Dutch and German citizens do not think that spare time should become more important; the German citizens are even more determined with this. However, the German and Dutch citizens do not agree on every aspect. The Dutch citizens are 20% less in favor of giving up their freedom for equality and justice and more Dutch citizens disagree than agree. Furthermore, the Dutch citizens are much more (18% more) tolerant towards immigrants. Only 38% of the German citizens that were asked believed immigrants contribute much to the country compared to 56% of the Dutch citizens. .

## 5.2 External System Events

### 5.2.1 Kyoto protocol

The first external system event is the Kyoto protocol. The Kyoto protocol could not have caused a difference between the biofuel policies of the Netherlands and Germany, as the targets and measures set were the same for both countries. They both needed to reduce their greenhouse emissions with 8% by 2012. Furthermore, the EU decided the member states needed to comply with the Kyoto protocol, so they implemented this in their own EU policies and directives.

### 5.2.2 EU biofuel policy

The second external system event is the EU biofuel policy. As mentioned before, biofuels fall under two EU directives; the renewable energy directive (2009/28/EC) and the European Fuel Quality Directive (2009/30/EC). The renewable energy directive created targets for all the countries; however these targets are not the same. Therefore they do have influence on the biofuel policies in the countries in how they want to achieve the targets. For the Netherlands the target for renewable energy in total energy consumption was set at 14% and for Germany at 18%. These targets are set by the EU on the basis of the use of renewable energies at that moment and the capacity of the country to use and implement renewable energies. This means that the land area of the Netherlands is also taken into account. Furthermore, both countries need to acquire a 10% share of renewable energies in transport.
Looking at the data it is visible the use of renewable energy in transport in Germany did not increase at all from 2010 until 2011 and the amount of greenhouse gasses from transport even increased. The reason for this is quite clear. The amount of passenger cars increased significantly with 3.2% from 2010 until 2011 (Kraftfahrt-Bundesamt, n.d).

### 5.2.3 EU agricultural policy and agriculture in political parties

The third external system event is the EU agricultural policy also called CAP. The number of farmers, especially small farmers, is decreasing as a result of the striking competition.
To promote farming this policy helps small and medium farms to compete against the larger farmers by giving subsidies. Furthermore the policy helps to protect the environment and keep the small communities in the rural areas. Some political parties in the Netherlands and Germany depend heavily on the farmer votes in the country. As a result, in the Netherlands the CDA includes subsidies for the farmers and helps the small farmers in their party program. In the Netherlands most of the farmers, around 43%

vote for CDA and the other half for the VVD, although the VVD does not include subsidies in their party program (Agridirect, 2012). They do want to create a strong agricultural sector that is able to compete on the world market; this is also in line with the promotion of the VVD of the development of genetically modified crops (VVD, 2012). Moreover, the environment should be protected when necessary, but the VVD currently considers environmental regulations to be unclear. The VVD wishes to establish clear regulations regarding environment that protect the environment when necessary, but do not hinder economic growth unnecessarily (VVD, 2012, p. 37). The CDA wants to do everything to enrich the position of the Dutch agricultural sector in the world, furthermore they are helping small family businesses to grow and survive, and they want to limit the large intensive farms that are only focuses on lower prices
(CDA, 2010). The CDA is established by a fusion of three different Christian parties, one that was catholic and two were protestant (Parlement & Politiek, n.d).
At this moment, the VVD is the largest party and it is in a coalition with the PvdA. The CDA was one of the largest and at some points the largest party, however its receiving votes decreased significantly. This can be the reason why in 2012 the farmers' votes for the VVD were almost the same as for the CDA, as they know they will have more influence in the decision-making when the vote for the VVD than on the CDA. The VVD is a liberal party (Parlement & Politiek, n.d).

The CDU in Germany is the party where most of the farmers vote for. One of their goals is to "see extensive and flourishing agriculture and forestry in Germany" (Konrad-Adenauer-Stiftung, 2008, p. 50). The farmers also help limiting the greenhouse gas emissions, as they produce raw materials and renewable natural resources. Furthermore they want to have a fair and competitive international market for the agriculture sector and the European agricultural policy should improve the working conditions of the farmers (Konrad-Adenauer-Stiftung, 2008, p. 50). The CDU also focuses on the development of the rural areas that are undeveloped. They do this by improving their economic situation and the technical infrastructure (Konrad-Adenauer-Stiftung, 2008, p. 51). These are also the reasons why the farmers in Germany vote for the CDU.

### 5.2.4 PUBLIC TRANSPORT POLICIES

At this moment in Germany 20% of the total energy used for trains comes from renewable energies. However, the Deutsche Bahn decided to increase this number to 100% in 2050 (Hoek, 2011). The German government is stimulating further research on whether it is possible to implement renewable energies in other forms of public transport, and how this should be done. The NS decided to start a public procurement for the use of green energy in trains. This project is for all the electrical trains from the period 2015 until 2025 (Treinreiziger.nl, 2013). Additionally, the NS gives trainings to their train drivers about how to drive energy efficient. The Dutch government also stimulates projects that implement renewable energies in public transport (Grompel, Spoorpro.nl, 2013). It should be noted that renewable electricity used for trains does not

count toward the 10% renewable energy in the transport sector by 2020. However, it does count towards the 20% renewable energy target of the total energy consumption in 2020.

The aviation sector in both the Netherlands and Germany are focusing on the use of biofuels for airplanes. The Dutch company KLM uses mostly deep fried fat and second-generation biofuels in their airplanes. In Germany AIREG includes companies such as Boeing and Shell in their goals to use biofuels as an alternative fuel for the aviation sector.

### 5.2.5 SYSTEMIC POLITICAL COALITION

Another external event is the changes in systemic political coalition. As mentioned in the systemic political coalition section before, the coalitions in Germany did not change often. The coalitions often served the entire term, while in the Netherlands this is completely different. The coalitions in the Netherlands have changed very often over the years. Some terms were already finished 2 years before they were officially finished. This does affect the decision-making process in the country, as the next coalition can decide not to accept the policy or law or change it drastically. This can also explain why Germany is further with their biofuels policy. The CDU with Merkel as the leader has served from 2005 on. First with the SPD which is left-wing, and after 2009 with the FDP which is right-wing (Mangasarian, Bloomberg, 2013). The CDU itself is center-right. (Conradt, Encyclopedia Britannica)

### 5.2.6 PUBLIC OPINION

The protection of the environment was not a major issue the citizens of Germany and the Netherlands believed their countries faced from 2008 until 2010. In the beginning of 2008 there was a decrease of 2% in Germany compared to the end of 2008. The issue of economic situation however increased significantly in the same period, from 14% to 34%. Furthermore the issue of protecting the environment was 2% in June 2010, this increased to 5% in November 2010. The economic situation in this period also decreased significantly from 41% to 19%. A possible explanation for the decrease of the importance of environment protection and the increase in the importance of the economic situation is the economic crisis. This crisis started in September 2008 when banks started to become bankrupt (Kingsley, The Guardian, 2012). Furthermore, in April 2010 the Euro crisis started with the large debt of Greece, which resulted in European countries giving loans to the country. Germany gave a large fund to Greece in order to prevent a collapse of the country (Kingsley, The Guardian, 2012). Many German citizens did not agree with the bailout of Greece, this also explains why the economic situation was so important in the beginning of 2010 (BBC News, 2012). However, this importance decreased significantly, while terrorism increased significantly, which can be explained

by the ‘terrorist plot against Europe’, especially against the UK, France and Germany (BBC News Europe, 2010)..

In the Netherlands the issue of protecting the environment decreased with 3% from the April 2008 to October 2008. In the same period, the issue of economic situation increased significantly (22% to 64%). Furthermore the issue of terrorism was high in the beginning of 2008, and decreased in the end of 2008 due to the movie Fitna of Geert Wilders. The film was about the Islam, however it evoked much aggression towards the Netherlands. It seems that the three variables “economic situation, terrorism and protection of environment” do not influence each other as much as in Germany. It seems that the economic crisis had more impact on the importance of the environment in Germany than in the Netherlands. The issue of protecting the environment only decreased in June 2009, further it stayed quite stable. The economic situation also stayed quite stable, although high from October 2008 on (European Comission, n.d) .

# 6 CONCLUSION

To conclude this research about the difference between the biofuel policy of Germany and the Netherlands, and to give a solid recommendation on what the Dutch government can learn from the German government to achieve the 2020 target on renewable energies in the transport sector, the research questions need to be answered.

The main research question is "*"What can the Dutch government learn from the biofuel policy of the German government about reaching the EU renewable energy in transport targets?"* This question will be answered by two sub-questions:

The first sub-question:
*"Is there a difference between the external events that have influenced the biofuel policy of Germany and of the Netherlands and if so, why?"*

The second sub-question is:
*"What measures can the Dutch government implement that will stimulate the consumption of transport biofuels the most? "*

The first conclusion is that the share of renewable energy in the transport sector increased significantly from 2010 until 2011. This means that the Netherlands already improved their measures to comply with the 10% share of renewable energies in the transport sector in 2020.

As mentioned before the population density of the Netherlands is much higher than the German population density. Moreover, the percentage of arable land is also lower in the Netherlands than in Germany. Therefore arable land in the Netherlands is much scarcer than in Germany. As a result of the higher price of the land in the Netherlands compared to the price of land in Germany, growing biofuels is also be more expensive, and less economically attractive. This might be the reason the public transport in the Netherlands is more focusing on using renewable electricity.

The EU target for the Dutch and German government is 10% renewable energies in the transport sector by 2020. In 2011, the German government used 6.1% renewable energies of the total fuels in the transport sector, and the Netherlands used 4.6%. This is not a large difference; if the Netherlands continues to grow with around 1% per year, then they will achieve the target in 2017. The targets for renewable energies in the total energy consumption by 2020 are 14% for the Netherlands and 18% for Germany. The German government already used 12,3% renewable energies of their total energy consumption, the Netherlands used 4,3% renewable energies of their total energy consumption. This shows that the Netherlands will need to improve their growth in the use of renewable energies to achieve this target.

Both Germany and the Netherlands are trying to find out manners to reduce greenhouse gas emissions in public transport. The Deutsche Bahn of Germany decided to increase renewable energies in the train to 100% in 2050 and in 2013 the NS decided to start a public procurement for the use of green energy in trains. Furthermore, both the German and Dutch government are stimulating projects and research on the use of renewable energies in the public transport. However, it seems that the trains will not use biofuels, as they ride on electricity now. Instead they will use electricity that is derived from renewable energies, such as biomass. It should be noted that renewable electricity used for trains does not count toward the 10% renewable energy in the transport sector by 2020. However, the aviation sector is also focusing on the use of renewable energies such as biofuels, this sector does count toward the 10% target.

Another characteristic of the Dutch government that has influenced the biofuel policy of the Netherlands in the past is the unstable cabinet. The cabinet of the Netherlands changed often the last decade, much more often than the German cabinet. As a result of the changes of coalitions that form the cabinet, the policy-making process will go slower. It might be possible that in the middle of the policy-making process the cabinet falls, and as a result the new biofuel policy is not implemented due to different opinions between the new and old coalition. The German cabinet instead is much more stable, and therefore it is less difficult to create and implement policies.
Moreover, the financial crisis and euro crisis influenced the focus of citizens themselves on the environment. This also influences the focus of the election programs of the political parties and the cabinet itself. However, some political parties in Germany and the Netherlands depend on the votes of the farmers. In the Netherlands these parties are the VVD and the CDA and in Germany this is the CDU. The VVD is at this moment the largest party in the cabinet; the CDA was for a couple of years the largest party. In Germany the CDU is the largest party in the cabinet. Agriculture is as a result of the dependency on farmers an important aspect in the party programs of the respective parties and for the EU itself. Especially the small farmers are decreasing and these parties are in favour of helping them to survive by giving subsidies, which results in votes.

Additionally, the public opinion shows that both in Germany and the Netherlands the economic situation of the country in April 2008 had an impact on how the citizens perceive the protection of the environment. The cause for this was the start of the financial crisis. This also indicates an impact on the urge to address renewable energies including biofuels in the government. Annex A shows the dip of the use of renewable energies in transport for both the Netherlands and Germany.

All in all, the conclusion can be made that the Netherlands does not focus much on biofuels. The most likely reason for this is the scarce amount of land and the changes in coalitions. The Netherlands simply does not have enough land to grow biofuels;

additionally the profit derived from growing second-generation biofuels is much less than growing food crops. The Dutch government does focus on renewable energies to achieve the 2020 target in transport and the final target. However, they focus more on wind energy, solar panels and the use of electric cars. Germany has more land and the population density is much lower than the Dutch density. This results in more free land, which can easily be used for biofuels. In the Netherlands the biofuels need to be imported.

It seems the Dutch government and the German government are similar in their measures to achieve the targets set for 2020. However, the German government is further in implementing these. The German government is looking more at other possibilities to implement biofuels that will reduce the greenhouse gas emissions in the transport sector. They do this by stimulating research to develop technology to create cars that function efficiently on biofuels. The Dutch government stimulates and promotes more, instead of setting regulations.

# 7 RECOMMENDATIONS

The recommendation I give to the Dutch government is not to focus on the production of biofuels to achieve the EU renewable energy in transportation goal. The land in the Netherlands is too scarce, and therefore it would be better to focus more on the possibilities to use more renewable energy that does not need to use this land, such as wind energy and solar energy. Bio-energy such as biofuels can also be used. However, it would be better when this energy is created from organic material such as green waste (from fruit and vegetables), waste from gardens and manure. This is also the case with the use of renewable energies in transport. The Netherlands is already busy with promoting the use of electric cars. These cars should be even more promoted and subsidized by the government, and the energy used for these cars should come from renewable resources (or waste biofuels). Until then, the Dutch government should import second- or if possible third generation biofuels from other countries. Furthermore, the Netherlands should focus on using sustainable energy in public transport. Some public transportation models already use sustainable energy. The Dutch government should work together with the regional transport companies and the decentralized governments to decide a strategy that increases the renewable energies in public transport. Some ideas can be to only use hybrid buses that get their energy from renewable energies sources such as the wind and the sun. At this moment there are on-going projects for renewable energies in public transport, however they are local and not national. I believe if the Dutch government will work together with the municipalities and the public transport companies to set targets for each municipality, the 10% target can be achieved. Now the Dutch government only stimulates the use of renewable energy in public transport instead determining clear targets for the municipalities.

Another recommendation I give to the Dutch government is to stimulate the research on the use of biofuels or renewable energies in other forms of transport, such as water transport. Furthermore, the regulations concerning the emission quantity of the produced vehicles should be sharpened, together with subsidizing research on the development of technology to create cars that generate fewer emissions. The German government is already doing this.

The VVD can stimulate biofuels by providing subsidies for small farmers that grow second-generation crops. The VVD then ensures economic growth for the small farmers, and it makes sure their vision on supporting entrepreneurship is maintained.

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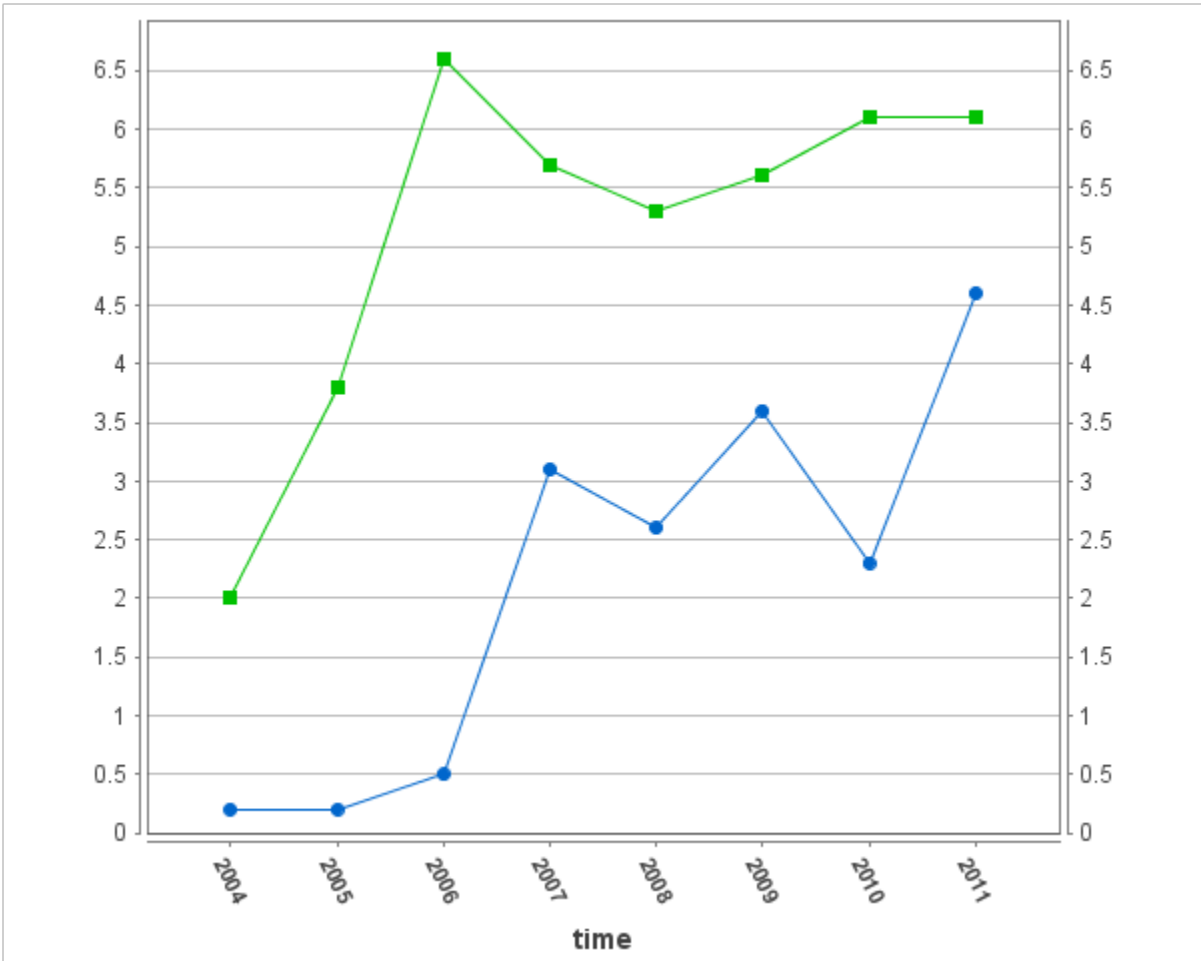
# ANNEX

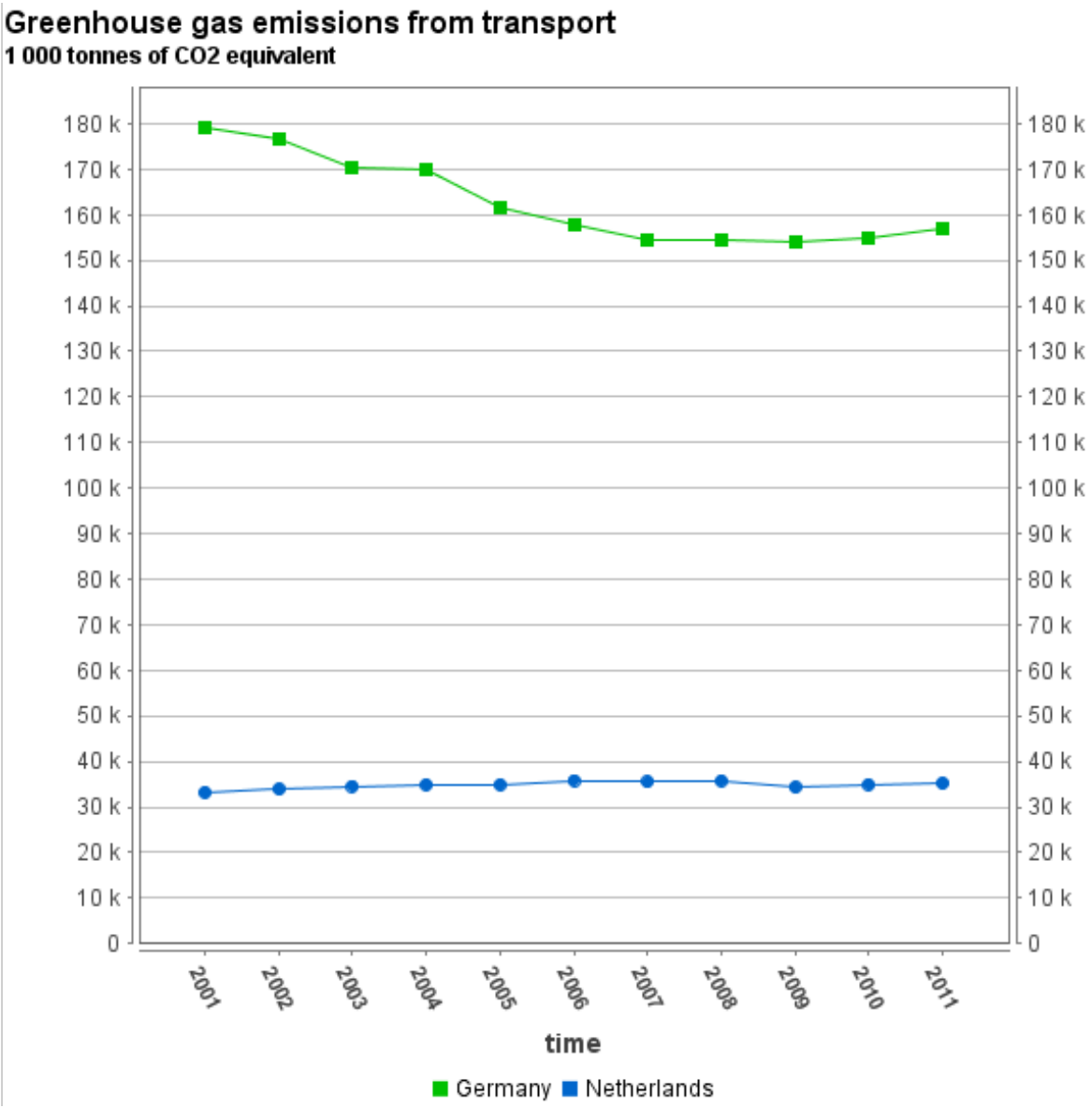
## 8.1 ANNEX A

Share of renewable energy in fuel consumption of transport - %



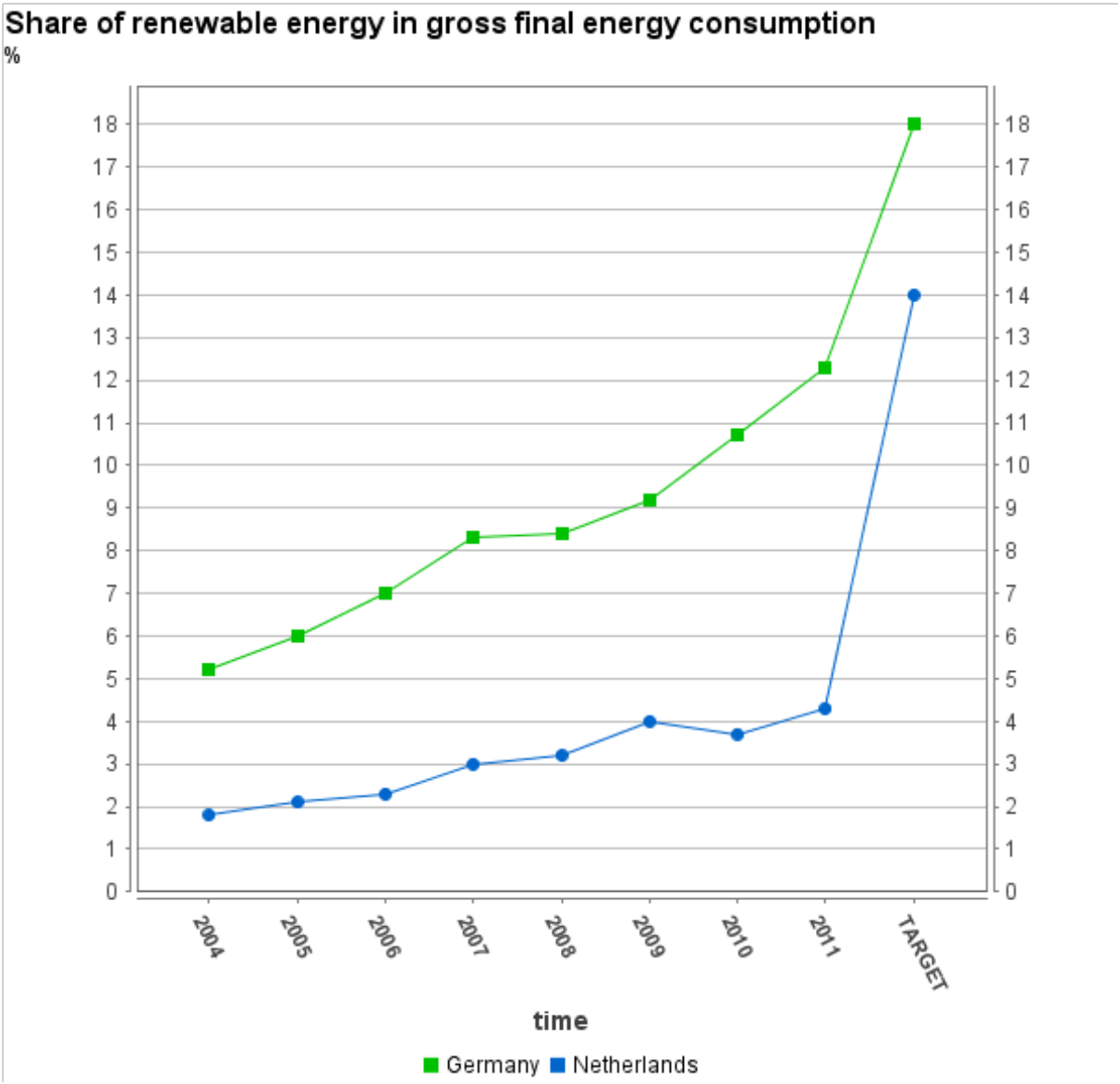

Source: Data from Eurostat

## 8.2 ANNEX B




Source: Data from Eurostat

## 8.3 ANNEX C




Source: Data from Eurostat

## 8.4 ANNEX D

Economic and social values of the Dutch, German and total EU citizens.

| | | EU27 | | | Germany | | | The Netherlands | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Question | Agree | Disagree | Don't Know | Agree | Disagree | Don't Know | Agree | Disagree | Don't Know |
| Q1 | The State intervenes too much in our lives | 58 | 37 | 5 | 63 | 35 | 2 | 57 | 42 | 1 |
| Q2 | We need more equality and justice even if this means less freedom for the individual | 65 | 29 | 6 | 65 | 30 | 5 | 45 | 52 | 3 |
| Q3 | Nowadays there is too much tolerance. Criminals should be punished more severely | 84 | 13 | 3 | 81 | 18 | 1 | 80 | 17 | 3 |
| Q4 | Immigrants contribute a lot to (OUR COUNTRY) | 44 | 47 | 9 | 38 | 58 | 4 | 56 | 40 | 4 |
| Q5 | Economic growth must be a priority for (OUR COUNTRY), even if it affects the environment | 39 | 53 | 8 | 32 | 66 | 2 | 21 | 77 | 2 |
| Q6 | Protecting the environment should be a priority for (OUR COUNTRY), even if it affects the economic growth | 74 | 19 | 7 | 65 | 30 | 5 | 58 | 40 | 2 |
| Q7 | Free competition is the best guarantee for economic prosperity | 61 | 25 | 14 | 68 | 25 | 7 | 61 | 32 | 7 |
| Q8 | More importance should be given to spare time than to work | 43 | 50 | 7 | 28 | 69 | 3 | 36 | 61 | 3 |

(Eurobarometer 69: 1. Values of Europeans, 2008)

## 8.5 ANNEX E

Energy production 2000 – 2010 (million tonnes oil equivalent)

| | Total production of primary energy | | Share of total production, 2010 (%) | | | | |
|---|---|---|---|---|---|---|---|
| | 2000 | 2010 | Nuclear energy | Solid fuels | Natural gas | Crude oil | Renewable energy |
| **EU-27** | 940,6 | 830,9 | 28,5 | 19,6 | 18,8 | 11,7 | 20,1 |
| **Euro area** | 448,9 | 475,8 | 39,4 | 13,5 | 17,4 | 3 | 24,9 |
| **Belgium** | 13,4 | 15,1 | 81,8 | 0 | 0 | 0 | 13,2 |
| **Bulgaria** | 9,8 | 10,4 | 38,1 | 47,5 | 0 | 0 | 14,2 |
| **Czech Republic** | 30,6 | 31,5 | 23 | 65,8 | 0,5 | 0,9 | 9,2 |
| **Denmark** | 27,7 | 23,3 | 0 | 0 | 31,5 | 53,5 | 13,4 |
| **Germany** | 135,4 | 131,5 | 27,6 | 34,3 | 7,4 | 2,9 | 24,9 |
| **Estonia** | 3,2 | 4,9 | 0 | 80 | 0 | 0 | 20 |
| **Ireland** | 2,2 | 2 | 0 | 52,4 | 15,9 | 0 | 31,3 |
| **Greece** | 10 | 9,5 | 0 | 77,4 | 0,1 | 1,2 | 21 |
| **Spain** | 31,5 | 34,1 | 46,9 | 8,9 | 0,1 | 0,4 | 43 |
| **France** | 129,4 | 134,4 | 82,2 | 0 | 0,5 | 0,9 | 15,5 |
| **Italy** | 28,3 | 30,2 | 0 | 0,2 | 22,8 | 19,8 | 54,1 |
| **Cyprus** | 0 | 0,1 | 0 | 0 | : | 0 | 91,7 |
| **Latvia** | 1,4 | 2,1 | 0 | 0,1 | 0 | 0 | 99,4 |
| **Lithuania** | 3,2 | 1,3 | 0 | 0,7 | 0 | 8,9 | 90,5 |
| **Luxembourg** | 0,1 | 0,1 | 0 | 0 | 0 | 0 | 70,8 |
| **Hungary** | 11,6 | 11 | 37,1 | 14,5 | 20,3 | 9,8 | 17,5 |
| **Malta** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Netherlands** | 57,6 | 69,9 | 1,5 | 0 | 90,7 | 2,6 | 4,1 |
| **Austria** | 9,8 | 11,8 | 0 | 0 | 12,6 | 8,7 | 73,2 |
| **Poland** | 79 | 67,1 | 0 | 82,1 | 5,5 | 1,1 | 10,2 |
| **Portugal** | 3,8 | 5,6 | 0 | 0 | 0 | 0 | 97,4 |
| **Romania** | 28,6 | 27,7 | 10,8 | 21,3 | 31,1 | 16,1 | 20,5 |
| **Slovenia** | 3,1 | 3,7 | 39,2 | 32,1 | 0,2 | 0 | 27,9 |
| **Slovakia** | 6,3 | 6 | 64 | 10,3 | 1,5 | 0,3 | 23,4 |
| **Finland** | 14,8 | 17 | 34,6 | 10,6 | 0 | 0,7 | 53,2 |
| **Sweden** | 30 | 33,1 | 45,1 | 0,7 | 0 | 0 | 52,6 |
| **United Kingdom** | 269,8 | 147,6 | 10,9 | 7 | 34,9 | 43,3 | 3,6 |
| **Norway** | 225,7 | 209,2 | 0 | 0,6 | 44,7 | 49,1 | 5,5 |
| **Switzerland** | 12 | 12,6 | 54,3 | 0 | 0 | 0 | 39,5 |
| **Croatia** | 3,6 | 4,2 | 0 | 0 | 52,5 | 18,1 | 29,2 |
| **FYR of Macedonia** | 1,5 | 1,6 | 0 | 73,9 | 0 | 0 | 26,1 |
| **Turkey** | 25,9 | 32,3 | 0 | 54,3 | 1,7 | 7,9 | 36 |

Source: Eurostat (online data codes: ten00076, ten00080, ten00077, ten00079, ten00078 and ten00081)

## 8.6 ANNEX F

What do you think are the two most important issues facing (OUR COUNTRY) at the moment? (MAX. 2 ANSWERS POSSIBLE)

Germany

| | Economic situation | Defence/ Foreign affairs | Housing | Pensions | Health care system | Crime | Rising prices/ inflation | Taxation |
|---|---|---|---|---|---|---|---|---|
| apr.-08 | 14% | 1% | 0% | 16% | 21% | 16% | 44% | 9% |
| okt.-08 | 34% | 2% | 1% | 12% | 21% | 11% | 42% | 9% |
| jun.-09 | 49% | 1% | 0% | 10% | 16% | 9% | 19% | 8% |
| nov.-09 | 46% | 1% | 0% | 7% | 21% | 13% | 16% | 7% |
| jun.-10 | 41% | 2% | 0% | 9% | 23% | 10% | 27% | 11% |
| nov.-10 | 19% | 4% | 0% | 13% | 29% | 12% | 18% | 7% |

| | Unemployment | Terrorism | The educational system | Protecting the environment | Other | Immigration | Energy related issues |
|---|---|---|---|---|---|---|---|
| apr.-08 | 35% | 3% | 16% | 5% | 1% | 6% | 7% |
| okt.-08 | 24% | 3% | 17% | 3% | 1% | 5% | 9% |
| jun.-09 | 53% | 3% | 16% | 4% | 0% | 4% | 2% |
| nov.-09 | 58% | 3% | 14% | 4% | 1% | 4% | 2% |
| jun.-10 | 41% | 2% | 18% | 2% | 1% | 5% | 5% |
| nov.-10 | 30% | 19% | 16% | 5% | 2% | 16% | 6% |

Netherlands

| | Economic situation | Defence/ Foreign affairs | Housing | Pensions | Health care system | Crime | Rising prices/ inflation | Taxation |
|---|---|---|---|---|---|---|---|---|
| apr.-08 | 22% | 5% | 4% | 3% | 28% | 30% | 16% | 5% |
| okt.-08 | 64% | 3% | 6% | 5% | 25% | 26% | 18% | 2% |
| jun.-09 | 59% | 1% | 2% | 8% | 20% | 24% | 8% | 3% |
| nov.-09 | 50% | 1% | 2% | 19% | 26% | 21% | 7% | 4% |
| jun.-10 | 54% | 3% | 3% | 9% | 28% | 24% | 9% | 5% |
| nov.-10 | 46% | 1% | 5% | 17% | 32% | 24% | 7% | 4% |

| | Unemployment | Terrorism | The educational system | Protecting the environment | Other | Immigration | Energy related issues |
|---|---|---|---|---|---|---|---|
| apr.-08 | 4% | 16% | 25% | 9% | 5% | 18% | 6% |
| okt.-08 | 4% | 6% | 13% | 6% | 2% | 11% | 5% |
| jun.-09 | 40% | 3% | 9% | 3% | 3% | 8% | 2% |
| nov.-09 | 32% | 3% | 11% | 7% | 2% | 8% | 3% |
| jun.-10 | 20% | 5% | 14% | 7% | 3% | 10% | 2% |
| nov.-10 | 16% | 3% | 13% | 7% | 3% | 17% | 2% |

(Public Opinion: Two most important issues facing (OUR COUNTRY) at the moment, n.d)