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## Political discourse on biogas and its reflection in regulatory institutionalization

-A discourse analysis of biogas' special role in the German political arena -

### Master Thesis

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**Supervisors:** Dr. Kornelia Konrad, Dr. Fokko Jan Dijsterhuis

**Student:** Antonia Linzbach (Student No: s1018515)

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Picture: <http://blog.fjk-net.com/gescherblogneu/wordpress/?p=10193>

Picture: Fachagentur Nachwachsende Rohstoffe e.V.

\*Translation: We don't want your shit either

## Abstract

A couple of years ago, hype surrounding bioenergies led to versatile policy promotions in this field. During recent years, the topic of bioenergies has grown to be much-debated by the general public as well as in politics, and many changes in bioenergy policy have occurred.

However, as studies point out, some bioenergies, for example biofuels like biodiesel and ethanol, have been more affected by such incidents. Policy promotion for these bioenergies decreased considerably. Biogas seems to have been given a special position, being far less affected by the conflicts over bioenergies. In next year's (2012) new draft of the EEG, biogas remains an important domain for federal funding and an integral part of the German renewable energies concept. In this thesis, the development of this outstanding position of biogas in the policy field will be investigated from a sociological perspective. This project will employ discourse analysis of plenary protocols from the federal assembly (Bundesrat) and the parliament (Bundestag). The period covered will be from 2003, where bioenergies were very positively framed, to 2011, where many adjustments occurred due to previous years' criticisms. This will enable a more comprehensive understanding of the policy arena around biogas.

There will be an investigation of the underlying preconditions of making sense and constructing what is perceived as 'reality' and 'truth' – which is by the way the point connecting the project to core issues of philosophy and sociology. The discourse analysis conducted will reveal storylines and domain linkages in terms of which biogas is debated in the policy arena. This discourse structuration, it will be shown, follows a concept which in the policy arena is shared and accepted; this is one of ecological modernization providing the fundament for biogas's especially advantageous role. It is commonly accepted in the policy discourse arena that a necessity of action against climate change and for future energy security exists. These goals, according to the consensus in policy discourse, could best be achieved through instruments invented on the basis of the concept of ecological modernization.

According to this project, the conclusion is that the structuration puts biogas in the position of being a necessary instrument for climate protection and energy security. In the policy discourse on biogas, there is an overlap in the criticisms on bioenergies. Such criticisms as can be found in the public-media discourse on bioenergies do not, however, affect the largely positive view on biogas in the policy arena. The situation is quite different where other bioenergies are concerned. The policy debate on biodiesel and ethanol, as is shown in a study from Bruno and Linzbach (2011), is much more ambiguous. However, as far as the concept of ecological modernization, this favoring of biogas over other forms of bioenergies makes perfect sense. The hegemony of this concept in policy discourse on biogas, it will be shown is also reflected in regulatory institutionalization concerning biogas.

Though some clear insights could be drawn about biogas' role in the policy discourse arena, the thesis will be rounded down, with certain issues left for discussion and further research. Some speculation can be discussed: Why does the concept of ecological modernization have such an overarching standpoint in the policy arena? It would moreover be interesting to gain other deeper insights. It can be asked whether other discourse arenas, such as the public-media discourse, are also structured around such broader concepts, and if so, which ones. However, this remains a subject for further research.

## Acknowledgments

Somewhere, I recently heard that an acknowledgment is a place for clichés and kind words. Whether or not this is the case I guess I am not very good in both. Thus, I just want to thank everyone who helped me with this project.

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Antonia Linzbach, Berlin, August 2011

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## Introduction

Bioenergies are a much-debated topic. Despite there having been a very positive primary tone with respect to bioenergies, the last few years have seen an increasing number of critical voices and even several legislative adjustments within the field. Assumed contributions to climate protection, energy security and development of rural areas are countered by negative impacts of the bioenergy boom. These negative associations mainly concern competition with food production and possible climate and environmental problems. But they also include technical reasons (WGBU, Schulz-Baldes 2009; Zschache et al. 2009).

While policies to promote biofuels (biodiesel and ethanol) have been considerably adjusted and confined in response to these criticisms (Bruno, Linzbach 2011), biogas seems to be far less affected by the conflicts around bioenergies. In the new draft of the EEG for next year (2012) biogas remains an important domain for federal funding and an important part of the German renewable energies concept. The development of this outstanding position of biogas in the policy field will be investigated from a sociological perspective in this thesis.

Generally, as a study about public-media discourse also points out, the overall situation concerning bioenergy is quite complex. It is one which can be classified as unstable in consideration of the partly contradictory views on the advantages and disadvantages of the several forms of bioenergies. Such distinct views on the several forms of bioenergies can moreover be detected in the discourse analysis on biofuels in the political arena of Bruno and Linzbach (2011).<sup>1</sup>

While Bruno and Linzbach (2011) point out that in Sweden the biogas branch benefited from increasing criticism of other biofuels and came to be known as the better biofuel compared to ethanol, the situation in Germany differs. The promotion of biofuels and the controversies and regulatory changes in this field have been considered in the public as well as in the political arena. Overall, however, the topic of biogas has, in this context received less attention in Germany than in Sweden.

However, aside from the discourse analytical perspective, where the topic of biogas is not much touched upon, some articles about the German biogas sector from the field of innovation research studies can be found (Poeschl et al 2010; Negro, Hekkert 2008). These articles hint at the particularly interesting role of biogas and the policy arena in that field. The studies show the important role of politics (mainly in terms of the EEG) in the development of the German biogas sector. In particular, Poeschl et al. (2010) mention the dynamic development of the EEG and the underlying reasoning for regulatory changes within this act. However,

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<sup>1</sup> C.f. Zschache et al. 2009 for a discourse analysis of the German mass media arena and Bruno, Linzbach 2011 for a discourse analysis of the political domain.

their study does not focus on the act's dynamic development over time. Rather, it deals only with the EEG version effective since 2009 and underlying reasoning for changes compared to the previously valid version. Further incentives to lay the investigative focus of this work on the development in the policy arena are provided by the field of innovation research, where studies highlight the impact of dynamic policies on the development and utilization of innovations in the renewable energy sector (Mautz 2006). To summarize, the field around the relevant political discourse, i.e. the impacts of policies on the biogas branch and the wider sector of renewable energies as well as the public-media debate on bioenergies (including biogas) and the like has already been more or less analyzed, revealing high dynamics and complexity. However, there has not yet been an examination of the political discourse on biogas itself as a crucial link regarding the performance of the complex sector of biogas. These hints in current literature call for an analysis of the political discourse arena on biogas to reveal valuable insights and to contribute to a more comprehensive understanding of the dynamics in the field of biogas. Particularly the close link between political discourse and regulatory institutionalization makes the political domain outstandingly interesting to analyze, because political decisions and legislation have quite a large impact on if and how innovations are realised.

To summarize, this project focuses on the analysis of the political discourse on biogas. It tries to investigate how and why certain dynamics in this field arose. i.e. for example, if the criticism on bioenergy (as can, for instance, be found in public media discourse) has been accompanied by a change in the discursive handling of this topic in the German national political debate about biogas and maybe even influenced the regulatory institutions concerned.

## **1 Theoretical framework**

To investigate if and how certain dynamics, such as criticisms and changes in the perception and evaluation of a topic, have affected the political handling of this topic, discourse analysis provides an appropriate theoretical approach. However, since discourse analysis is an important research approach in several fields, there are several approaches to analyzing discourse.

The Dutch political scientist Maarten A. Hajer has contributed much to the understanding of the discursive nature of such reasoning: He has developed what he calls an 'argumentative approach' to the analysis of discourse in political contexts. Hajer's approach seeks to distinguish the points in time at which changes in a discourse occur through the increasing appearance of critical voices (Hajer 1993; Hajer 1995; Hajer 2008). As a basic assumption, the professor of public policy argues that a political problem is a social construction (Hajer 1993; Hajer 1995). The way a particular issue, such as the role and impact of biogas, is made

sense of determines whether it is considered to be a political issue and, if so, to what extent.

Hajers' approach focuses on the constitutive role of discourse in political processes, with discourse being defined as: "a specific ensemble of ideas, concepts, and categorizations that are produced, reproduced, and transformed in a particular set of practices and through which meaning is given to physical and social realities." (Hajer 1995, p. 44) It is important to note that *discourse* is not equivalent to *discussion*, because *discourse* refers to a range of concepts structuring contributions of the participants to a form of discussion. A discourse analysis thus explains the specific discourse structure of a discussion (Hajer 2008). It enables ideas, concepts and categories to be discovered by means of investigating both an issue (in this case biogas and biogas technology) and the procedures through which the discourse is reproduced and sustained. Thus the analysis of discourses enables an understanding of controversies, not particularly in terms of the rational-analytical argumentation, but in respect to the argumentative rationality the participants bring into a discussion.

The constructivist discourse analytical perspective provides an addition to the positivist approach and to "cause-effect models" as it critically analyzes the development, the initial conditions and the effects (e.g. arising conflict lines) of scientific knowledge/facts by investigating the processes of selections, transformations and the context of those facts (Paler 2008).<sup>2</sup> Thus the underlying constructivist perspective of this project touches the very core of sociology and philosophy of knowledge; Namely through regarding the human being as actively intervening in the perceptions of reality and thereby as designers of reality. According to the constructivist perspective, in the domain of science, this construction of reality occurs by means of discourse (Gadinger 2003).

I.e. Hajers approach provides not only an instrument to analyze the coming about of policies, but in course of that also allows revealing how certain actors and arenas (as politics) construct their realities.

In such a way, discourse analysis makes conditions of socially accepted and shared views on problems, as well as foundations, potentials and limits of social actions and changes visible (Paler 2008). The description of those processes is important in order to show the significance of the social-historical circumstances of all innovation processes. Discourses consist of structures embedded in language and can thus be found and tracked throughout analysis. However, Hajer (2003) points out that discourses are not necessarily obvious to the people employing them. Through focusing on the meanings attached to certain issues rather than on

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<sup>2</sup> At this point the strong link of this thesis to the PSTS Master program is again made very clear; Social constructivism is a core issue of both fields; Science Technology Studies and Philosophy of Technology.



interests, the discourse perspective transcends mere strategic interest conflicts, although this does not mean denying them (Hajer 2008).

Discourse thus has a very central position in the political process: Through discourse, sense is made of the world, and it is by discourse that matters are constituted as being political problems (or not) and as having particular solutions (or not). An illustrative example of this can be found in the debate on climate change, for a long time at least two different discourses could have been identified: Either the rising global temperatures were part of a normal and ongoing global climate cycle, above and beyond human intervention, or these temperature changes were caused by human interventions in the global climate that can and should be mitigated. In the former instance, rising global temperature do not constitute a political problem, and in the latter, they do. What is a problem and what is not depends on how it is framed in discourse.

According to Hajer, it is particularly useful to analyze discourse in the socio-historical context where propositions are made and absorbed. Through the methodologically correct approach of discourse analysis, Hajer further explains, there can be made a link between the following: the analysis of giving of meaning through discourse and the analysis of the development of social constructs as regulatory institutions (Hajer 2008).

In this respect, the close link between Hajers' concept and Foucaults' approach to discourse is worth mentioning: Michel Foucault, who was a thought leader in discourse analysis, understood discourses as the practice of making statements which are part of historically developed rule systems. Discourses are, in this tradition, not linked to the individual but should be understood as statement systems which exist above the individual level and are therefore part of a social universe. Products of these discourses, according to Foucault, are the existing prevalent definitions of reality and truth which can be found in the current social universe, and which reflect themselves in the predominant forms of statements and institutions (Schäfer 2008).

Discourse analysis in the Foucault tradition is particularly interesting for the investigation of political discourse and its institutionalization due to the strong connection between the theoretical approach and distribution of power within a society. Discourses are based on this distribution of power and also reproduce it. Furthermore, they determine what is considered to be the "truth" within a society. They therefore influence both the view of society on topics and people's actions (Schäfer 2008; Foucault 1999 p.29).<sup>3</sup>

As already suggested above, here again the underlying link to core sociological and philosophical issues appears; Discourse is a crucial instrument in the processes of

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<sup>3</sup>For an overview of the development of discourse analysis in Foucault's tradition cf.: Diaz-Bone et al. 2007.



designing what is perceived as truth and reality and in exactly this “reality” humans actions are planned and developed and are taking place. Since this does also count for the policy arena, where in a certain reality policies, strategies and regulations are constructed and debated from and within groups of actors, the link to Hajers concept of discourse analysis to this core issues becomes clear. In accordance with that also Hajer himself points out that political problems are social problems. I.e. policy discourse and there from emerging institutionalizations are direct results of these processes at the very heart of the field of philosophy and STS.

Besides power distributions regarding contents (predominant definition of topics), discursive analytic approaches which are based on Foucault’s also investigate the participating actors. Such analysis can highlight discursive constellations of these elements and their effects within and beyond the discourse as for example its regulatory institutionalization (Schäfer 2008).

Certainly, the investigation of discourses allows other approaches not derived from the Foucault tradition. The qualitative frame analysis is one example; this approach has its roots in cognitive psychology where it was first used to highlight the importance of schemes and scripts on an individual level.<sup>4</sup> Nevertheless, for this project the use of Maarten Hayer’s approach is most appropriate also for its accordance with the tradition of Foucault. When analyzing political discourse and its institutionalization, it is important to regard the dynamics of discourse coalitions and structures of power as well as considering the participating actors. But what makes Hajers’ concept of *discourse coalitions* more appropriate than Foucault’s concept itself is, first and foremost, the level of analysis; Foucault, it is explicated in literature, approaches the societal macro-level i.e. social structures as a whole, which is often criticized for being “all too abstract [...] not really fitted to reach the level of empirical research” (Keller 205 p.1).<sup>5</sup> Hajers’ approach, in contrast, is well proven in empirical research of the kind this project aims to carry

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<sup>4</sup> The social dimension of frames has notably been analyzed by the sociologist Erwin Goffmann (Zschache et al. 2009). The frames approach is suitable for all patterns of interpretation which exist in an object under investigation. However, structures concerning the involved actors and discourse-coalitions between interpretation-strategies and actor-groups are usually not taken into account in the frame analysis (Schäfer 2008). For instance Gamson and Modigliani analyze a discourse-arena by means of *interpretative packages* i.e. interpretations and validation mechanisms of a topic. However the actor-level is not considered in their analysis (Gamson, Modigliani 1989; Schäfer 2008). Nevertheless, there are approaches within the frame analysis which consider the actor-level. For example, Kohring and Matthes (2002) analyzed how the German press reviewed biotechnology in the 1990s. This procedure, however, has been criticized as not covering the notion of “frames” correctly; this concept usually refers to frames of interpretations and patterns without regarding the actors (Schäfer 2008 overview by Entman 1993; Scheufele 2003). However, there do exist studies applying the frames approach for changes within the discourse over a specific time period under investigation, i.e. the qualitative level. One example of such a study is Ruef & Markard (2006).

<sup>5</sup> For further details about Foucault’s concept of discourse analysis and the critique of his macro-perspective cf.: Keller 2005, Krüger-Charlé 2008, Diaz-Bone 2010.

out. Hajers' concept enables a view beyond Foucault's in terms of considering actors and practices in discourse as well as a societal meso-perspective (i.e. organizations and institutions) without being too restricted at a micro-level of analyzing individual statements in detail.

In accordance with Hayers' approach, the aim of this project is to analyze the structures and development of the discourse on biogas in the political arena, which is also why the analysis stretches over several years. The project does not intend to examine the individual text or protocol from this domain, but the supra-individual discourse beyond separate pieces of documentation to which several actors and spheres have contributed. I.e. Hayers' approach, regarding discourse as an "argumentative political debate about societal areas of conflict" (Keller 2005 p.225) and which highlights the political and societal relevance of communication- and argumentation-processes, is particularly relevant for this aim (Keller et al 2001; Zschache et al 2009). Furthermore, the evolution between supporting and critical positions and within the debate generating discourse-coalitions is relevant. This reveals insights about actor groups and strategies of interpretation (Hajer 1995). Hajer (1995) illustrates his concepts of *discourse coalitions* by means of analyzing the debate on acid rain in the 1970s and 1980s. In that context he aims to describe specific coherences which develop and prevail in societal discourse. Societal actors and elements with regards to contents are both considered in his conceptual framework. At the core of Hajers' concept are the terms, *story-line*, *discourse coalition*, *discourse structuration* and *discourse institutionalization*. The following paragraphs will briefly explain them and elaborate on how they are interlinked.

#### 1.1.1 Story Lines

Story lines construct narratives and link the policy debate with the several employed argumentations and facts. Through story lines, fragmented elements from different domains of life are combined and thus a concentration of a complex problem field to individual terms or guiding principles is facilitated.

In order to describe the complex social interactions between actors as well as to accumulate knowledge about reality, these story lines are of great importance. The importance in this respect is threefold: Firstly story lines reduce complexity and help to resolve problems; secondly, they equip actors with the possibility of referring to a symbolic meaning and thus play an important part within a debate; thirdly, they allow actors from different backgrounds to acquire knowledge that lies beyond their own expertise. A discourse coalition can therefore resort to a common way of talking and thinking about a respective policy issue, even though the story line may still be interpreted differently, depending on the individual point of view. On the one hand, story lines thus aid in explaining a problem, and on the other hand they serve in constructing a social and moral order (Hajer, 1995).

### 1.1.2 Discourse Coalition

A discourse coalition is a group of actors who share a common social construct. I.e. they utilize a certain storyline or ensemble of storylines in the context of certain practices (norms, rules and routines) within a given period of time (Hajer 2008).

These actors frame particular issues in certain ways, in order to try and impose their view of reality on others through both debate and persuasion or through openly exercising power or through both, to further their own political ends. In actual discourse, a coalition manifests as an ensemble of storylines on specific problems – the storylines being the medium through which actors try to impose their own views on others and, ultimately, put forward their own vision of the world. Nevertheless, actors do not necessarily need to be conscious of a story line to act in it.

An especially interesting insight for the political arena is that not all discourse coalitions are equal in terms of discursive impact or political impact. This fact illustrates the link between discourse and the inherently political concepts of power and dominance. To consider this matter, and to facilitate an evaluation of a discourse's influence, Hajer (1993; 1995) introduces the terms *discourse structuration* and *discourse institutionalization*.

### 1.1.3 Discourse structuration

Discourse structuration occurs as soon as a discourse starts to influence how a societal unit (a political arena, a society or even a company) frames the world. I.e. central actors in the domain are persuaded or forced (for example, if their credibility depends on it), to accept the concepts and the rhetorical power of the specific discourse (Hajer 2008).

### 1.1.4 Discourse institutionalization

When a discourse leads to actual institutional procedures as laws, specifications and the like, (for example, when the actual policy-making is conducted according to the ideas of a given discourse) it fulfils the criteria of discourse institutionalisation (Hajer 2008).

With these two concepts, Hajer provides a clear two-stage procedure to measure the influence of a discourse; in the case that both criteria are fulfilled, the discourse can be considered dominant (Hajer 1995; Hajer 2008).

## 1.2 Research motivation and research questions

In fact biogas is only one of several renewable energy sources, which are becoming more and more important amid growing concerns about climate change and fossil energy source shortages. Nevertheless, biogas technology as an innovation remains particularly interesting for several reasons.

For example, in contrast with solar and wind-energy, it is possible to control the production of biogas because it is dependent on the volume of biomass input per time unit. Also, the utilization of biogas is versatile, e.g. for electricity or heat production or as gaseous fuel. Thus biogas has indisputable advantages, but also disadvantages as rivalries of biomass utilization (food vs. energy) are debated. Such ambiguous complexities make the socioeconomic context of biogas technology an interesting research area. Besides that, the biogas is also interesting from the economy and development perspective: it creates jobs in engineering, science, management, consulting etc. Moreover the structure of the sector is a rather decentralized business, because smaller biogas plants operated by agriculturists have dominated up to now. Besides this strong link of biogas technology to the agricultural sector, operators also come from several other fields (such the wastewater treatment sector or directly from the energy sector) (Poeschl et al. 2010). This variety of operators shows that the biogas sector is a very complex system, comprised of many different actors, each with their own view and reasoning on reality, interests, motivations and expectations. This complexity makes the role of discourse (not only of the political discourse arena) in this case particularly interesting to look at. This is especially the case considering the high probability that, in such a versatile field, versatile storylines about biogas and interlinkings to several domains are also employed by the actors.

Bearing this in mind, a particularly interesting field is policy as a mediating and governing force aligning actors, innovations and impacts in society through social constructs such as regulatory institutionalizations. This can already be seen in the context of the German biogas branch in regards to political support where the EEG enabled a so-called biogas-boom within the last few years (Poeschl et al. 2010; Negro, Hekkert 2008). Negro and Hekkert (2008), Poeschl and colleagues (2010) and Mautz (2006) have already pointed out the role of policy for the performance of innovations and underlying reasoning in the construction of policies (partly particular regarding the biogas branch). This project now investigates, by means of discourse analysis, how these policies materialize (i.e. their discursive presuppositions).<sup>6</sup> The aforementioned outstanding position of biogas in the political arena in itself makes an interesting area of research. Meanwhile, the direct relation of political discourse to political decisions, and the accompanying potential to directly influence the innovation process makes politics an important research area. This project therefore examines the political discourse arena around biogas. As such, the discourse of the democratically-elected representations of the German public is chosen; this is also the leading influencing factor regarding the regulative institutionalization of discourse (i.e. the plenum of the German Bundestag [parliament] and of the Bundesrat [federal assembly]).

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<sup>6</sup> Besides the belief that it is important to analyze the political domain, because political decisions and legislation has a large impact on if and how innovations are realised or not, naturally also space and time, played a role in setting this focus.

The focus of this work is on the discourse in the political arena (i.e. parliamentary discourse of the German Bundestag as well as of the Bundesrat) and not extensive comparison of different discourse arenas (such as public-media and policy discourse). As already indicated, a basic underlying assumption of this study is that utilization and innovation processes around biogas and biogas-technology (such as technological innovations like cogeneration of heat and power [CHP] from biogas) are dealt with by many actors and all of these different actors attach a certain meaning to these issues due to different discourses. In this way, the meaning of biogas in the policy field is influenced by a whole number of discourses. Thus, the policy on biogas which is constructed by the political actors, is affected to a certain extent by the meaning of biogas in the broader field of discourses.<sup>7</sup> To account for this, and to enable exposing the special role of biogas among bioenergies in the political arena this work will incorporate brief references to public media discourse on bioenergies as a junction-point and concentration of several discourse fields. Public and political discourses are assumed to be linked closely, i.e. issues from the public sphere are likely to be incorporated in the political discourse arena (and vice versa) and this political discourse impacts (through discourse institutionalization) the legislation on an issue. Media is regarded to assimilate and concentrate public discourse and also to regulate concepts of thinking with respect to daily routines. Media is thus considered as massively influential in the political domain as far as what is done and what is doable (Jäger 2006).

For the spatial scope of this thesis, Germany is particularly interesting, being generally referred to as a “success story” in the field of biogas (Negro, Hekkert 2008; Poeschl et al 2010). That is to say, biomass digestion in Germany has a comparatively strong position with currently about 6,000 biogas plants (Biogas Segment Statistics 2010). Thus the main goal of this study is to examine how the policy discourse arena in Germany deals with biogas. The discursive basis of the special role of biogas will be analyzed i.e. investigating to what extent the emerging conflict lines around bioenergies are considered in political discourse, and analyzing whether the ambiguity of the image of bioenergies can be traced back to the political discourse on biogas, and, if so, to what degree. ‘Degree’ in this context refers to the dominance of a discourse, i.e. if characteristics of discourse structuration or institutionalization can be found. Particularly interesting, for instance, is whether institutionalizations can be put into the context of these conflict lines, or if other aspects as for example the earlier success of the branch have created a kind of protective frame or alternative view. A focal point here will

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<sup>7</sup> The meaning of biogas in the political field, which is, to a certain extent, represented by its policies, regulations and funding, is also likely to influence the discourse on biogas by other actors. These assumed mutual influences between the overall socio-historical context surrounding biogas and the policy discourse on biogas also makes the political discourse on biogas an important discourse arena to examine in context of the broader view and other discourses on biogas. However, these mutual impacts would be a task for further research.

be discourse institutionalization, since (regulatory) institutions are an important factor regarding the development and performance of any innovation. Thus this thesis will investigate whether the aforementioned ambiguity around bioenergies is reflected in the political discourse. It will also address which connections can be drawn between discourse and regulative institutions. This will be done by analyzing the parliamentary and federal assembly discourse in Germany from 2003 to 2011, and putting it into the context of findings about public media discourse on bioenergies. This examination period was chosen to include the time span around which criticisms of bioenergies emerged (cf.: Zschache et al 2009; Bruno, Linzbach 2011) and, with the EEG novels from 2004, 2009 and the scheduled novel in 2012, this period also includes the discourse in advance of (and after) the three major milestones of regulatory institutionalization with respect to bioenergies and particularly biogas.

In order to reach a conclusion, the following research question will be approached through three sub questions:

- ***How does the political discourse on biogas develop between 2003-2011?***
  - *With which political areas, social domains and actors is biogas associated in the parliamentary and federal assembly discourse in Germany during the study period?*

Through the first sub question the storylines and discourse coalitions will be ascertained. This question thus also accommodates the versatility of the field of biogas. It sheds light the topics, actors and domains with which the discourse is interlinked. This in turn provides first insights about the special role of biogas among the bioenergies. The effects of the critique are in close contact with the setup of those discourses. I.e. points of critique which relate to important and dominant discourse domains will have a greater effect on the discourse performance as a whole as compared to those who affect only minor domains. This interlinking of the biogas discourse contexts (areas, domains and actors) with the general points of contention on bioenergies then reveals information and allows conclusions about the specific role of biogas in the political discourse arena. The significance of a reference to the broader context and the contentions in which biogas discourse takes place, as it is assumed to be provided by the public-media discourse on bioenergies, already implies the next subquestion;

- *Which points of contention can be found?*

Crucial to derive statements about the particular role of biogas among the bioenergies, is an understanding of the conflicts in this area and how they are dealt with. This question aims at revealing whether ambiguities on bioenergies overlap on the political biogas discourse and are reflected in the political discourse and if so, to what extent this is the case. This will be conducted through a brief reference to the main criticism on bioenergies as they are found in the public-

mass-media discourse. On the basis of the main points of contention from that discourse arena statements about which criticisms overlap into the policy biogas discourse can be made. It can thus be deduced whether these contentions might influence regulatory institutionalization. Moreover, it allows some insights on whether or not the parliamentary discourse was created in the political arena or rather appropriated by politicians.

- *Can any reflections of these points in the EEG novels be figured out?*

The purpose of this question is to trace how the discourse becomes institutionalized. Through analyzing a period of eight years (2003-2011), in which three novels were scheduled trends of the discourse institutionalization can be traced. Together with the findings about the previous research questions, conclusions are thus possible about the development of the political discourse at large. It could, for instance, be established to what extent ambiguities like the criticism of the public-media discourse on bioenergy are considered in the political discourse on biogas; alternatively certain story lines, premises or domain linkages could have caused a kind of protective frame or different discourse to develop.

### 1.3 Methodology

To investigate changes in discourse like the inclusion and impact of criticism, it is necessary to have an analysis of the discourse in progression i.e. over a period of time. To study this matter, samples of political discourse from 2003-2011 are analyzed.

To comply with the basic underlying assumption that utilization and innovation processes around biogas and biogas-technology are positioned in a complex field comprising different actors, meanings and discourses and that all these various actors have an influence on political actors, findings about public media discourse will provide a reference to the context of the analyzed political discourse arena. Public media provides a valuable source for this context, since media assimilates and concentrates public discourse and also regulates concepts of thinking regarding daily routines. Media also massively influences the political domain in respect to what is done and what is doable (Jäger 2006). This reference will mainly build on a study by Ulrike Zschache, Stephan von Cramon-Taubadel and Ludwig Theuvsen from the department of agricultural economics and rural development of the Georg August University Göttingen, which analyzed the public-mass-media discourse on bioenergies in the years where fundamental criticism on bioenergies emerged.

The source material for the actual policy discourse analysis comprises transcriptions of debates during plenary sessions of the German Bundestag and of the Bundesrat. The main reason for this choice was that these two institutions are the crucial authorities for legislative processes. The Plenum of the German



Bundestag adopts laws and provisions and enacts petitions. The Plenum consists of all 620 members of the Bundestag, the seats are distributed according to the fraction of votes a party gains at the elections to the Bundestag ([www.bundestag.de](http://www.bundestag.de)). The discourse held in the Bundesrat is worth consideration, being at the federal level. This is interesting since there are considerable differences regarding the biogas branch in the federal states. On the other hand, as mentioned, the federal assembly is also involved in the adoption of laws and thus can be assumed to play an important role in discourse institutionalization.

This material is analyzed mainly qualitatively and on a sort of meso level, in a similar way to the study of Peter Weingart and colleagues (2000), somewhere between the highly detailed micro analytical approach that Rosalind Gill (2000) exemplifies and the macro approach to discourse associated with Michel Foucault (Keller, 2005). Both micro and macro approaches could definitely also contribute to the understanding of biogas discourse. The meso level was chosen because it seemed to fit best with the objective of this study, namely to find out if conflict lines around biogas expand into the political discourse on biogas and if so, to what extent. A macro level approach tends to analyze the structuring of discourse at a broader, societal level and is thus not really suitable for the analysis of a single discourse sphere like the political one. A micro level approach would make it unnecessarily hard to get an overview of the discourse sphere and to trace discourse changes over time (although very useful for deconstructing and analysing arguments in detail).

The Meso level proposed by Weingart et al (2000) suggests analyzing the material in three stages: The first stage traces the development of “attention” to the topic in quantitative terms only. To this end, Weingart and colleagues present quantitative indicators that could adequately represent the course of “attention” over the chosen time period (2003-2011). It is explained that the “attention” paid to a certain topic could be illustrated in a percentile proportion between the total amount of material from the chosen source and the number of material samples relevant to the analyzed topic. i.e. for this study of the political discourse examined by means of plenary protocols, the quantitative attention could be represented by the number of plenary sessions of the German parliament (Bundestag) or federal assembly (Bundesrat) in which the topic in question was on the agenda, relative to the total number of sessions of these institutions per year (Weingart et al 2000).

The second part of the analysis is devoted to the issues and the issue linkages, i.e., the thematic contexts for the discussion of biogas. These will be firstly explicated by means of initial coding; this means that it will be ascertained in which domains and categories biogas features in the discourse. These categories can be acquired via “theory generating” questions concerning the text: What is it about? Which aspects of the research topic are taken into account and which ones are not? Which actors are involved? How do the actors interact? Subsequently these codes will be

aligned by axial coding, which also leads on to the third step of analysis (Böhm 2000).

In axial coding, categories of the initial coding are connected with one another and thus form main categories which relate to each other. While the creation of categories in the first stage is still closely tied in with the material, the categories are now combined and readjusted, taking into account previous knowledge, hypotheses and research questions. It is thereby important to identify correlations between the codes. It should be noted that, during this process, views on the research object could change. For instance, by coding, the central phenomenon may considerably differ from previous presumptions. Doubtless, such changes of the research perspective may allow new valuable insights. However, deviations and the chosen perspective will be made comprehensible through taking notes concerning theories and the research questions and relating them to the codes. This step is the basis to go beyond a merely descriptive work (Böhm 2000).

This third stage is the main part of the discourse analysis, since it provides the actual qualitative text analysis of the documents. This reveals how contexts of meaning are related, and it thus distinguishes the employed domains and storylines of the discourse (Weingart et al 2000). This step will be elaborated upon beyond the suggestions of Weingarts and colleagues to further explicate the dominance of discourse coalitions or certain storylines within these. Actual regulatory institutionalizations and the found discourse coalitions will be comparatively analyzed. The regulatory institution to consider for this aim is the EEG, which is the most important law concerning renewable energies in general and biogas particularly in Germany (Jacobsson, Bergek 2004).

## 2 Results

This section presents the results of the study in four parts. To lay the context, the main points of contention about biogas in general (i.e. in mass media discourse) are first presented. This part [mainly] draws on an analysis of public mass media discourse on bioenergy in Germany by Ulrike Zschache, Stephan von Cramon-Taubadel and Ludwig Theuvsen from the department of agricultural economics and rural development of the Georg August University Göttingen (Zschache et al. 2009). The next part then considers the core of this project - the policy discourse arena - and gives a general overview of the biogas discourse. This includes a brief introduction of the different domains and argumentation lines within which biogas is discussed, and the frequency of the debates. This partial forestalling of analytical results (i.e. introducing the domains) serves to make the following year-by-year review of main discourse trends and topics for the period 2003-2011 easier to follow for the reader. This section is then followed by a brief description of the EEG and its novels in 2004, 2009 and the proposed novel for 2012- which is the reference material for detecting discourse institutionalization. Finally, these

results are analysed, compared and related to the theoretical framework and the research question(-s) of the study.

## 2.1 General conflict lines on bioenergy

This part serves as a basis to find out if and how the general conflicts on bioenergy affected the political discourse on biogas in Germany. In order to find out how general criticism on bioenergies has affected the political discourse on biogas and if, for instance, as implied in the study of political discourse on biofuels in Sweden (Bruno, Linzbach 2011), biogas is given an advantageous position compared to other forms of bioenergy. First of all the general criticisms need to be displayed. This presupposition could be fulfilled easily by reverting to a study by Ulrike Zschache and colleagues (2009) about public mass media discourse on bioenergies in Germany. However, in comparing their work with the samples from the political discourse arena, the following should be considered:

- Firstly, Zschache et al (2009) investigate bioenergy in general.
- Secondly, the time period is slightly different to that of this project.
- Thirdly, the applied theoretical frameworks differ.

Zschache et al (2009) investigated the whole field of bioenergy, meaning their study presents general conflict lines and frames related to all forms of bioenergies. This makes their study particularly interesting for the purpose of this project, namely investigating the special role of biogas in German policy discourse. Those criticisms may or may not be valid for the field of biogas or, rather, related to biofuels or other aspects of bioenergy. To a large extent, much depends on how sense is made of these criticisms, i.e. a great deal relies on the actual discourse.

For the second point, it should be considered that Zschache et al. (2009) investigate the years 2006, 2007 and 2008 since these were the years where an increasing debate on bioenergy within the public media sphere took place. Thus, the timeframe investigated in the work of Zschache et al. (2009) only covers a part of the analyzed period of the policy arena. However, it covers a period where bioenergy was strongly debated in public, and the reviewed protocols show that, in the political arena, these years witnessed particularly frequent and controversial debate regarding biogas (see section on debate frequency). It can be assumed that, despite a slightly shorter analyzed time period, Zschache et al. (2009) take into account the most important lines of contention around bioenergy.<sup>8</sup>

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<sup>8</sup> The general literature review about biogas did not provide reference to other major conflict lines about biogas or bioenergy in general. Reviewed Literature consisted of; Jacobsson & Bergek 2004; Poeschl et al. 2010; Negro, Hekkert 2008; Die ZEIT 14.July 2011).

Thirdly, Zschache and colleagues (2009) use the frame analysis approach for their discourse analysis. Frames refer to basic structures and interpretation-patterns for classifying information and events. They also provide guidance for social behaviour. It needs to be remarked that frames are not the same as story lines. Nevertheless, in the context of this project, the frames, as they are described in Zschache et al.s' study, are very close to the categories and domains filtered out in the process of coding. Thus it follows that there emerges a connection between frames and the concept of *discourse coalitions*, which concerns the "argumentative political debate about societal areas of conflict" (Keller 2005 p.225). Namely, the concept of *discourse coalitions* relies on much the same basis as the frames analysis: Both approaches concern how sense is made of a particular issue (such as the role of biogas and its impact). That is to say that the framing of a topic is also part of the basis for story lines and discourse coalitions.

Having addressed these points, the study of Zschache and colleagues (2009) makes for a fruitful basis allowing an idea of the major conflict lines of bioenergy in general within the public media discourse. These findings can then be used to help detect how these points of contention are dealt with in the political discourse on biogas. However, propositions about the development and the coherencies of these conflict lines in the different discourse spheres are limited: Zschache et al (2009) only carve out the different framings of bioenergy and the related conflicts without stating anything about their development.

Zschache and colleagues (2009) give seven frames as a reference for bioenergy within the public media discourse:

1. environmental protection
2. energy supply
3. economic-/ development issues
4. social problems
5. technology development
6. policy/regulations
7. public acceptance

Not all of these frames necessarily contribute any conflict lines to the topic of bioenergy in general. Even though it should be noted that a clear disjunct definition of the frames cannot always be made and the transitions are blurred, the main points of contention are found to be related to the frames of environment protection (which includes climate protection), social aspects and policy and regulation. It is important to note that there are not two contradicting frames facing one another. The conflict lines can be found within the frames so that the frames are not necessarily in conflict with each other.

Within the framing of environmental protection, the conflict lays in a perceived contention between climate protection and environmental protection. In this frame, bioenergy is seen as a means to mitigate climate change through decreasing emissions, particularly of CO<sub>2</sub>. The underlying argumentation is that the production of energy from fossil resources such as mineral oil, natural gas and coal, should gradually be replaced by bioenergies. On the contrary, an increasing utilization of biomass feedstock is seen as being a potential environmental threat. It is argued that large acreages with monocultures of energy crops endanger biodiversity, and that soil and water can also be affected by intensive industrial agriculture (Zschache et al 2009; Die Zeit 14. July 2011).

Meanwhile, the contribution of all forms of bioenergies to climate protection is contested itself. This contention is based on the climate footprint of bioenergies and the different approaches to determining it. Critics represent the opinion that the sometimes energy-intensive cultivation of biomass mitigates or even erases the savings of emissions during the actual energy recovery process of biomass. This implies that bioenergy does not necessarily have a positive climate-footprint, its contribution to the mitigation of climate change thus being disputed (Zschache et al 2009).

Further conflict potential is pointed out by Zschache and colleagues regarding the framing of bioenergy in relation to social aspects. Specifically, the competitiveness between the utilization of crops for energy production and for nourishment is highlighted as being a major conflict for bioenergy. The underlying argumentation is that the increasing usage of farmland for means of energy plant production competes with the availability of farmland for food and animal feed, which leads to increasing prices for food and farmland. (Zschache et al. 2009; Theuvsen et al. 2010) Notably, this conflict line provides the argument that the population of developing and newly industrialized countries suffers from increasing prices for basic foods, since they can barely afford provisions anymore. Following on from that, there is criticism that bioenergy facilitates hunger and coincidentally enlarges the gap between the rich and the poor. Some critical voices demand that agricultural production should consider its important and comprehensive function in society and provide basic nourishment for everyone instead of concentrating on bioenergy production for a higher earnings outlook (Zschache et al. 2009). Other voices argue that increasing food and animal feed prices result from many factors (e.g. the rapidly increasing world population, bad harvest or changes in diets, particularly among inhabitants of newly industrialized countries). In view of these factors, it is argued that bioenergy is but an insignificant parameter (Zschache et al. 2009).

The last major conflict area presented in the study is related to the policy and regulatory area surrounding bioenergy. Within this framing, the article about public media discourse on bioenergy (Zschache 2009) presents four lines of

argumentation of which three can be considered conflict lines within the area of bioenergy.

One line raises concerns over the feasibility of the ambitious aims for the extension of bioenergy production set by political actors such as the German government and the EU. In this context, it is argued that these goals do not account for the limited disposability of biomass. It is demanded that policies should take this into account, and should adjust the objectives set by the political domain.

The second point addresses the legitimation of bioenergy's political promotion. Within this domain, mass media discourse provides the argumentation that there are several reasons why the promotion of bioenergy is generally desirable and politically intended. However, since bioenergy cannot yet survive on a competitive basis, it is for policy to provide promotion and subsidization. This argumentative pattern appreciates policy support (e.g. investment assistance for the construction of biogas plants). Market liberalization, in contrast, is perceived as being risky for the new branch.

In opposition to this argumentation, the third view regards as unambiguously negative any policies and subsidizations to promote bioenergy. These policies, it is pointed out, are a major intervention in liberal market structures. It is considered that they signify a politically predetermined market structuration able to cause enormous negative impacts. The context for this ideological view is the artificial construction of a market for bioenergy. This puts considerable competition pressure on other agricultural fields such as food and animal feed production and, besides that, forces a non-sustainable mass production of bioenergy crops. Furthermore, there is criticism that several policies (e.g. fixed compensations for electricity from biomass) hinder efficiency in increasing technological innovations. For these reasons, proponents of this argumentation stipulate the abolishment of policy assistance for bioenergies. Instead they propose trusting in the self-regulating forces of the free market. According to this reasoning, a bioenergy branch should be able to sustain its position within competitive circumstances. This, it is argued, is much more efficient, technologically innovative and sustainable in respect to social and ecological issues than an artificial policy-created branch (Zschache et al. 2009).

To summarize, with their analysis of the public mass media discourse on bioenergy in Germany, Zschache and colleagues (2009) highlight the several topics to which bioenergy is related in public-mass-media discourse (frames). According to their study, bioenergy displays three main conflict lines which can be derived; these concern mainly effects of bioenergy on environment protection, social aspects (food vs. energy) and policy and regulation.

## 2.2 The policy discourse arena

As major scenes of the political discourse arena in Germany, the Bundestag (parliament) and the Bundesrat (federal assembly) were chosen as focal points of this analysis.

The German Bundestag is the lower house of the bicameral parliament in Germany. Together with the Bundesrat, the Bundestag is the legislative branch of the German political system. The Bundestag members are the only federal officials directly elected by the public. Additionally, they exercise oversight of the executive branch on issues of both substantive policy and routine administration.

The most important organizational structures within the Bundestag are parliamentary groups (Fraktionen), which are formed by political parties represented in the chamber and that have gained more than five percent of the total votes. There are currently six political parties represented in the German Bundestag: CDU (Christian Democrats), CSU (Christian Social Democrats) (the two Christian parties have always formed one Fraktion in the Bundestag), FDP (Liberal Democrats), SPD (Social Democrats), Bündnis90/Die Grünen (Alliance 90/The Greens) and Die Linke (The Left). After the federal election of 2005, the red-green coalition of SPD and Bündnis 90/Die Grünen was succeeded by a grand coalition of the CDU/CSU and SPD. The grand coalition, however, had no majority in the Bundesrat and thus depended on votes from other parties concerning important political issues. As a result of the federal election of 2009, the grand coalition came to an end and CDU/CSU and FDP were able to form a coalition, together holding 332 seats (out of a total 622) in the German Bundestag. The current opposition parties in the Bundestag are thus SPD (holding 146 seats), The Left (76 seats) and The Greens (68 seats). CDU/CSU and FDP form a center-right government with Angela Merkel (CDU) as chancellor ([www.bundestag.de](http://www.bundestag.de)).<sup>9</sup>

While the parties in the Bundestag (parliament) represent the public on the federal level (Bundesebene), the members of the Bundesrat (federal assembly) represent the federal states. There are 16 federal governments in the Bundesrat; it is therefore in its composition a result of all federal elections. The states have different vote weights, depending on their respective population. Altogether, the Bundesrat has 69 regular members. The president is the head of the Bundesrat and is elected annually ([www.bundesrat.de](http://www.bundesrat.de)).

### 2.2.1 Dataset

The data used for this analysis consists of transcriptions of speeches being made during plenary sessions of the German Bundesrat and Bundestag. This includes debates on committee reports, debates on proposed legislation, interpellation

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<sup>9</sup> For a more elaborated build up of the parliament during the study period cf: Appendix 1. Tables 1-3



debates where representatives are able to ask questions directly to ministers, and party leader debates, recurring events during which the leaders of the elected parties convene to debate current issues in front of the parliament respectively federal assembly.

Most of the material consists of parliamentary protocols (simply because plenary sessions in the parliament are held much more often than for the federal assembly). It could be assumed, as it is done in other studies (cf.: Bruno, Linzbach 2011) that this alone would already provide sufficient insight into the policy discourse. But to facilitate the possibility of viewing comprehensively the political discourse on biogas, the dataset of the parliamentary protocols is complemented by protocols of the federal assembly (Bundesrat). The discourse held in the Bundesrat is worth considering, being on the federal level. This is interesting since there are considerable differences between the federal states regarding the biogas branch. On the other hand, the federal assembly is involved in the adoption of laws. It can thus be assumed to play an important role in discourse institutionalization.

It should be noted that the analyzed plenary protocols of both institutions do not contain minutes of committee meetings or other parliamentary ensembles. Nor do they contain reports of parliament-sponsored inquiries or other documents. As is common in most modern parliaments, very little of the decision-making in the German parliament and federal assembly is actually done during the plenary sessions. The individual parties decide on their stance in meetings with their own parliamentary or federal assembly group, and the parties then negotiate the preparation of proposals in the committees. By the time a proposal is presented for a vote, the outcome is, except in very special cases, already known.

In spite of this, transcriptions of plenary sessions are valuable data. Firstly, as noted, the plenary sessions are not only devoted to debates on proposals processed by the committees, but they also include interpellation debates and party leader and minister debates. Secondly, the actual decision-making may be done in committee sessions; it is still reasonable to assume that a party representative going on record with a statement during a plenary debate explicitly presents the stance that his or her party has taken or at least wants to project as having taken. In some ways, this can arguably be more interesting for a discourse analysis than the more pragmatic negotiating that characterises the committee work. Nonetheless, there is still the risk that the data does not give a holistic picture and that some influencing factors are disregarded. As already mentioned, influencing factors from outside the political arena might not be described adequately. For example, a representative might present the opinions of his or her party without mentioning that these opinions have been heavily influenced by extra-political actors. This needs to be borne in mind as a limitation of the analysis.

The total dataset used for the analysis consists of 125 protocols, of which 111 are protocols of plenary sessions held in the Bundestag. 14 are protocols of plenary

sessions of the Bundesrat. There are a significantly higher number of protocols from the parliament (Bundestag) than from the federal assembly (Bundesrat). However, it needs to be noted that parliamentary plenary sessions take place much more frequently than the conferences of the federal assembly (Bundesrat). The parliament meets around 60-70 times a year while the federal assembly holds circa 11-12 plenary sessions a year ([www.bundesrat.de](http://www.bundesrat.de); [www.bundestag.de](http://www.bundestag.de)).

These protocols contain the transcription of an entire session of debates; the relevant parts were manually selected for analysis after an initial review. The relevant part of one protocol can be everything from a rather brief exchange during an interpellation debate up to the point where it reflects a rather comprehensive part of the transcription, for example if important legislation is discussed. The data was retrieved by querying the online databases of the German Bundestag and the German Bundesrat for protocols of plenary sessions: <http://suche.bundestag.de/index.do> and [http://www.bundesrat.de/cln\\_179/nn\\_8336/DE/parlamentsmaterial/beratvorg/suche-beratungsvorgaenge-node.html?\\_\\_nnn=true](http://www.bundesrat.de/cln_179/nn_8336/DE/parlamentsmaterial/beratvorg/suche-beratungsvorgaenge-node.html?__nnn=true)). Several combinations of keywords were used to find the relevant protocols. At first, the German word “biogas”, was used, but this did not yield all relevant results. Thus, the query was extended to include broader search terms, as they could be found in different materials about biogas (newspapers, journal articles etc.). In total, eight search items were selected in this way: Biomasse [biomass], Bioenergie [bioenergy], Biomethan [biomethane], Biogasanlage [biogas plant], Agrogas [synonym for biogas], energiemais [energy corn] and Energiepflanzen [energy crops].<sup>10</sup>

This yielded mostly relevant protocols, which were then subject to an initial review during which clearly irrelevant protocols were extracted (for example protocols in which biogas were mentioned in passing without real discursive content to analyse). The relevant parts of each protocol were selected for analysis, as mentioned above. The source material was then coded using the HyperResearch software tool, initially by open coding and, after getting a better feeling for the material, axial coding. This identified the core policy issues and actors at the heart of the biogas debate. In the chapter on the biogas's positioning in the political arena, I will briefly elaborate on the main categories/domains established during the coding.<sup>11</sup> This will provide a structure or overview allowing the reader to better follow the subsequent year-by-year review of the material.

As reference source validating processes of discourse institutionalization, i.e. detecting reflections of the political discourse on biogas in regulatory institutions, the EEG (Renewable Energy Law) and the respective novels within the examined time period (2003-2011) will be used. The EEG is said to be the most important

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<sup>10</sup> Cf.: Appendix 2, Chart 1,2 for an overview of the found protocols, intersections of search results and relevance of the found protocols.

<sup>11</sup> [22:58:37] Nona: Cf.: Appendix 3 for an overview of the categories acquired through the coding process of the plenary protocols from the German Bundestag and Bundesrat during 2003 to 2011.

regulatory act regarding the biogas sector (Jacobsson, Bergek 2004). There is, however, the danger that the EEG might not reflect all processes of legislative institutionalization. Other laws and policies might also have been influenced through the discourse on biogas and thus could be considered a result of discourse institutionalization.

### 2.2.2 The positioning of biogas in the political arena

First of all, it should be mentioned that, particularly in the data from earlier years of the analyzed period, biogas often appears in the context of general debate about bioenergies. Sometimes, the difference is overlooked between forms of bioenergies. i.e. it happens that the debate is about bioenergies in general, sometimes without distinguishing much between biogas, biofuels and biomass combustion.

However, the coding process reveals that, during the study period, biogas was discussed in connection with several different political domains. That is to say that biogas was either used as an argument in discussions of a more general political problem, or that discussions directly about biogas were always related to one or several more general political domains. Five of these domains dominated the discourse:

- environmental and climate protection
- energy supply security and energy efficiency
- economic growth and development of rural areas and industries
- research and technology development
- the role of the state (in biogas market regulation)

Besides these dominating domains, another less employed domain involved aspects best framed as ***social and acceptance issues***.

Within the environmental and climate protection domain, biogas was generally discussed as a means of reaching certain environmental targets (for instance, lower emission levels decided by national or EU policies). In most of the discourse examined, climate change mitigation was seen as an aspect of environmental protection, and so biogas was seen as a way of reducing carbon dioxide emissions. Also, other aspects of environmental protection were mentioned, such as the effects of biogas production on the local environment.

In the economic domain, biogas was seen as an important emerging sector mainly for the domestic agricultural industry. The domestic biogas-technology development, production and maintenance branch was also seen as something in

itself able to create jobs and economic growth. The close link between the German biogas sector and agricultural business also meant that both aspects related to rural development.

In the energy supply domain, biogas, and bioenergy generally, was seen as a way of reducing fossil energy dependence and (especially in some argumentations) also nuclear power dependence. There was also a certain amount of overlap between the energy and environmental domains, because the problems with fossil energy sources generally were seen as twofold: They are problematic for energy security reasons as their supply depends on a relatively small number of more or less unstable producers who might also play out their increasing influences to the disadvantage of Germany; they are also bad because they contribute to global warming. This overlap of the energy and the environmental domain can also be detected for nuclear power. In the view of some actors and under certain circumstances, this is seen as posing a potential threat to nature and humans. The perceived threat concerns mainly raw materials (e.g. uranium) needed for operating nuclear power plants and their final disposal. Accidents in nuclear power plants are also an issue. This second aspect has been highlighted by the nuclear disaster in Fukushima, Japan in March 2011. As far as energy security, the dependency on unstable suppliers is less strong in the domain of nuclear power than in that of fossil energy sources. It is sometimes mentioned though that raw materials for running nuclear power plants originate from unstable regimes.

The fourth main domain considers the role of the state in the biogas branch. About a general value and necessity of policy instruments to help establishing the important and innovative biogas branch was in principle consensus. However, the appropriated construction of that was much debated.

The domain of research and technology had one major contribution: the premise of the scientific technological solvability of criticized aspects of the biogas field and related aspects.

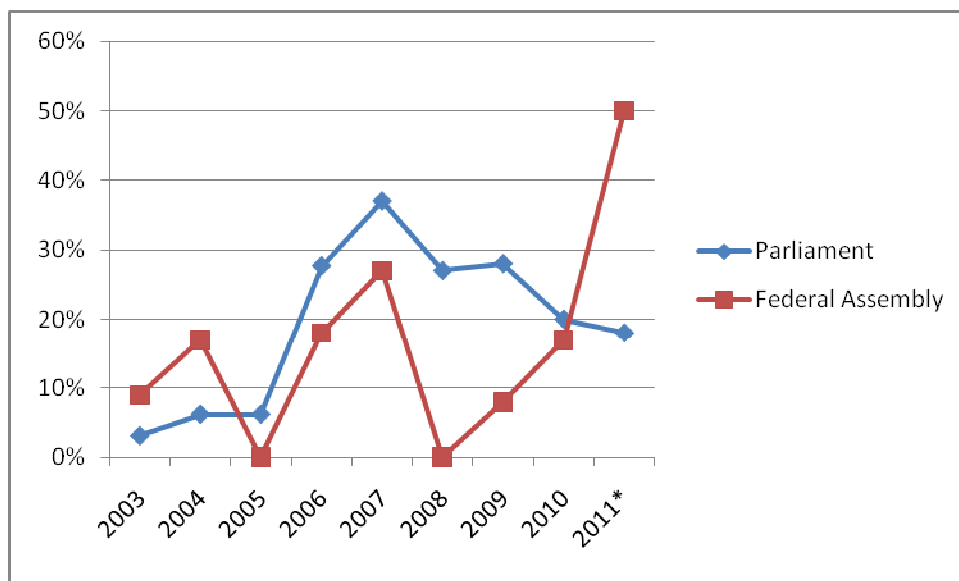
Lastly, within the domain of social issues, biogas is regarded as an instrument for positive rural development and the creation of jobs. In contrast to that, social acceptance of biogas is sometimes seen to be a challenge. This view mostly concerns the landscape changes caused by biogas plants and its feedstock cultivation.

As this overview already implies, for instance in respect of the overlaps in the social and the economical domain (i.e. the shared positive view on jobs and development) the process of axial coding revealed overlaps and sometimes blurred boundaries between the domains. Moreover, there are also complex dynamics and versatile links between the domains. In the following year-by-year review, the dynamics and links during the research period are traced. In the subsequent

analysis, those dynamics and links are investigated in connection with the research question.

### 2.2.3 Debate frequency

The diagram below details the percentage of plenary sessions per year where biogas was discussed in the parliament and in the federal assembly during the study period:



**Figure 1: Percentage of protocols from Bundestag and Bundesrat per year of which a biogas debate is part.**

It can be seen that the debate was, for both institutions, most intense during 2006 and 2007. Lower activity occurred before and after those two years, except for a notable increase in the federal assembly debate during the first half of 2011. However, the diagram must not be over-interpreted: What it displays is merely a percentage of sessions per year in which some debate about biogas took place. The intensity, importance and impact of the debates are not taken into account. Nonetheless, the peak in 2006 and 2007 is validated by the qualitative analysis. These will later be shown to be the years when the biogas debate changed the most, furthermore it is the same time where also Zschache et al conducted their analysis, because of the increasing public debate on bioenergies.

### 2.2.4 Year-by-year review

In this section, the discourse will be presented in a little more detail, in the form of a year-by-year review of the entire study period. The most important aspects of each year's discourse will be presented for the parliamentary debate as well as for the discourse in the federal assembly. Together with a brief review of the EEG

novels (from 2004, 2009 and the projected novel for 2012) and the conflict lines of public mass media discourse, this will lay the foundation for the subsequent analysis.

## 2003

2003, the first year of this analysis, was characterized by very occasional debate on biogas in the parliament as well as in the federal assembly. However, the few times biogas was on the agenda, it was within a largely positive discourse. The debate in the federal assembly contains little information. It merely mentions that energy crops and their utilization for electricity production makes for a generally positive and sustainable form of energy production. Bioenergy is said to help mitigate climate change and environment destruction and therefore a promotion is appreciated.

The discourse on biogas in the German parliament is slightly more elaborate and strongly connected to economic issues. Biogas, and also the branch around the development and supply of biogas technology, is referred to as providing great and important chances for the German rural economy and labor market. Argumentations in the style of the following statement can be found throughout the whole debate:

“We support the use of agricultural area for renewable primary products. This also includes cultivation of set-aside-areas. (Applause among members of the CDU/CSU and FDP - [...]) The use of biomass for power generation is in any case cheaper and has a higher added value as for example wind-energy.”

Peter Bleser (CDU/CSU), Bundestag, 29<sup>th</sup> meeting

This view on the economic advantages provided by the biogas branch is also connected to a rather similar view in the domain of energy security. Biogas is considered as being a promising future energy source. There is a wide consensus on these points among all parties represented in the parliament. However, the political role within this field reveals a somewhat more complex situation.

Also having particular economic relevance is the increasing promotion of biogas and bioenergy generally advocated by all parties. The renewable energy law (EEG) is not only a law to promote renewable energies and serve climate protection; it is also represented as forcing technological innovation and labor-market incentives. This framing sees no opposed voices. Only the FDP supports a more market-orientated approach based on the concept of emission-certificate trading instead of

direct subsidies. In general though, a political encouragement of the biogas branch is not defeated by any party.

Concerning the other important domains within which biogas is debated – environmental protection and climate change and social issues - there are only a few remarks in 2003. These say only that biogas is thought to be positive for climate protection. However, the problem of the biomass's utilization for energy production conflicting with social issues (e.g. food supply and environmental protection) is very rarely mentioned. In the session where the topic is addressed (by the social-left spectrum of parties), it is framed as being a problem occurring in developing countries due to their engagement in the biofuel sector. Thus it is not directly connected to the area of biogas. Moreover, an eye-catching standpoint in this same plenary session illustrates again the strong link between discourse on biogas and the economic domain. In the process of demanding more support for energy crop planting to facilitate a 'clean development', a member of the Christian Democratic Party refers to the possible economic advantages of utilizing crops for energy production instead of selling them on the global market for agricultural products:

"[...] it is particularly important that subsidiary programs in the bioenergy field will be considerably expanded. [...] Creation of energy crop plantation, not, Mrs. Hartnagel, in order to worsen the situation concerning food supply (Anke Hartnagel [SPD]: We have to be careful, though!) There are a lot of agricultural products that get terrible prices on the world market. At that point, we have to raise the question if it might not be better that the added value within the country is not attained in that way.

(Applause among members of the CDU/CSU)"

Rudolf Kraus (CDU/CSU), Bundestag, 23<sup>rd</sup> meeting

## 2004

In 2004, especially the first half of the year, bioenergy and biogas featured slightly more often than they had in 2003 on the agendas of both the parliament and the federal assembly. A major part of the debate concerned the EEG novel from 2004, which came into effect in August 2004. The discourse content continued to be characterized by strong support for bioenergy across the political spectrum. Biogas is still seen as one promising aspect of this whole promising branch.



This positive view on bioenergy, and particularly electricity produced from biomass, is illustrated by quite a few contributions from politicians belonging to different parties in both the Bundesrat and the Bundestag: It is proposed that bioenergy is advantageous compared to all other renewable energies. Quotes like the following one can be found in nearly every session including the bioenergy topic.

"The use of biomass, in comparison to electricity generation from fossil and other renewable energies, has only advantages."

Dr. Axel Horstmann (SPD, North-Rhine-Westphalia),  
Bundesrat, 796th meeting

In the discourse of the federal assembly, there is undisputed appreciation for the increased promotion of energy crop utilization in biogas plants (NaWaRo-bonus) in the EEG-novel of 2004. However, there is still not considered to be enough promotion for the very positively-regarded biogas sector. Conflicts with regards to biogas (acreage competition, for example) through increasing energy crop planting go unmentioned.

A comparable situation can be found in the parliament: All parties agree that bioenergy is very promising. However, criticism on governments policy plans arises from the opposition parties (CDU/CSU, FDP). According to this, the promotion of bioenergies should be still higher than outlined in the EEG novel of the government; likewise the building of biogas plants. This demand, again, often sees the uprating of biogas/bioenergies compared to other renewables, particularly wind-energy:

"Especially biomass offers the possibility to avoid or solve the conflicts which arise in the inland concerning the use of wind energy plants."

Dr. Peter Paziorek (CDU/CSU), Bundestag, 87th meeting

"Especially biomass as base-load-energy offers a - I would even say - the - possibility to serve as a main pillar in agriculture. We should not stand in the way of the German agriculturists ensuring their survival. (Applause among members of the SPD - Dr. Peter Paziorek [CDU/CSU]: That's right!) In this context I would like to mention something: I see the use of wind-energy not

necessarily as a typical sideline for an agriculturist.  
(Michaele Hustedt [BÜNDNIS 90/DIE GRÜNEN]: That depends!)“

Georg Girisch (CDU/CSU), Bundestag, 87th meeting

In summary, there is tireless emphasis by all parties (FDP, SPD, CDU/CSU and Green state it explicitly) on the importance of utilizing biomass for energy production in terms of climate protection, energy security and meanwhile also the development of rural areas and the economic coverage of agriculture. Farmers gain a second main pillar of support. From the perspectives of energy-security, climate protection and economy political promotion is regarded as strongly legitimised and highly appreciated.

That aspects of efficiency and market orientation should be considered in relation to all renewable energies is particularly made explicit by the CDU/CSU and FDP. Other governing parties, namely the Greens and SPD, relate all other aspects of biogas and bioenergies to this domain. The link to the economic domain is applied as a strong legitimating force. This is also illustrated by the following statement, where the legitimization of climate protection is framed in terms of market oriented measurement categories:

“Climate protection is by far not only an ecological question and also not a problem which is nice to have of the green party. I would like to argue economically because when it comes to environmental issues you - the FDP, as well as partly the CDU/CSU - do not care at all anyway. The costs of the flood in 2002 amounted to 15 billion euro.”

Michaele Hustedt (Bündnis 90/DIE GRÜNEN, Bundestag, 103rd meeting

In the context of the dominating interlinking of bioenergy climate protection and the economic domain, another interesting aspect is the aim of policy intervention in the bioenergy branch. Particularly for biomass planting and utilization, this is described as the coordination of the utilization of biomass in order to reduce constraints in further investments.

Also significant is that bioenergy is used to bring the contested topic of genetic engineering onto the agenda. This also happens within the economy argumentation pattern. Opposition parties argue that the only disadvantage of bioenergies is that renewable feedstock is expensive and thus genetic engineering

should be applied to increase the efficiency of feedstock production to decrease prices.

## 2005

For the third year of this analysis, it should initially be noted that in 2005 biogas was not on the federal assembly's agenda. However, the Bundestag saw some discussion taking place. For the parliamentary discourse, it can be recorded that, for the time before parliamentary elections in September 2005, the discourse on biogas was quite similar to the year before. Due to their base load capability, there is a highlighting of the favourability of biomass-based electricity compared to that based on other renewable sources such as wind and solar energy. Likewise, there is the consensus among governing and oppositional parties that the potential of biomass in Germany has not yet been exhaustively utilized.

"I agree with the FDP-parliamentary group on the fact that we're not even close to using the potentials of biomass in Germany efficiently."

Andrea Wicklein (SPD), Bundestag, 169th meeting

The Bundestag elections of September 2005 saw the coalition between SPD and Bündnis 90/Die Grünen displaced by the grand coalition of SPD and CDU/CSU. Thereafter, the discourse was generally sustained in the same way. Still, all parties represented in the parliament (SPD, CDU/CSU, Bündnis 90/Die Grünen, FDP) in principle shared a positive view of biomass in respect to climate protection. It was seen as a valuable and eligible alternative to fossil energy feedstock. A noteworthy aspect in this economically-focused discourse on biogas/bioenergy is that now a further link between the environmental and the economic domain is made explicit in terms of job security. In previous years, the bringing together of the economic and the climate and environment domain was generally achieved through cost benefit accounts. Now, the following argumentation pattern enforces this argumentative link:

"We continue to foster the development of renewable energies; we extend the use of biomass [...] as only environmentally friendly jobs are safe jobs in the end." (Applause among members of the SPD, the CDU/CSU as well as among members of BÜNDNIS 90/DIE GRÜNEN)"

Sigmar Gabriel (SPD), federal minister for the environment, nature conservation and nuclear safety, Bundestag, 5<sup>th</sup> meeting

Negative stances on biogas still remained absent from the debate. As can also be found in previous years, there were but sporadic references to the social and environmental problems of biofuel production in developing countries. However these criticisms are not (as yet) connected with biogas. Biogas is neither considered as being applicable to these problems, nor is it considered as being an alternative to problematic biodiesel or bioethanol.

## 2006

In 2006, the debate on biogas in the federal assembly is still very occasional. It mentions only that the biogas sector should further be expanded because of it contributing to many interests such as climate protection, energy security and rural development. It also mentions the utilization of biogas as fuel for traffic. However, in the parliamentary debate, a change can be detected following the elections. The biogas topic as well as that of bioenergies and renewable energies generally are more controversially debated in parliament in 2006 than in previous years. The left and green spectrum in the parliament still holds a very positive view on bioenergies generally, and represents the opinion that the potentials in the agricultural sector are not yet fully utilized, and that biogas should be more promoted. They connect their argumentation to various domains. These include value creation in rural areas, the agricultural sector, and sustainable and climate friendly energy security. The EEG is evaluated as an important and valuable measurement for this aim, and there is strong opposition to voices demanding cutbacks in this field. Parties of the middle-left spectrum believe that the advantageous and promising field of biogas is not promoted enough and that the potential in this field is still not fully utilized. The liberal party (FDP) contributes to the debate the problem of utilization rivalry for biomass production in Germany. In this process, they also see a competitive situation between biogas and biofuels because they are relying on the same resources. Thus other sustainable technologies should, according to them, be more promoted. Interestingly their view is now accompanied by criticism of a lack of policy strategies for regulating and controlling the amounts of biomass for electricity production and biofuels.

“You have no – I repeat: no – strategy concerning the use of biomass in Germany. You have no answer for the question of utilization rivalry. You have no strategy concerning which part of biomass should be used for electricity- and heat generation and which part should go into the substantial use within industrial production.”

Michael Kauch (FDP), Bundestag, 43rd meeting

The standpoint of the governing coalition (CDU/CSU, SPD) cannot be described as critical of biogas. Rather, slightly cautious optimism is displayed. For instance, possible utilization rivalries of crops and soil are acknowledged. However, bioenergy is still regarded as promising and worth promoting also on EU level, where Germany sees itself as having a precursing role in this respect.

The CDU/CSU, the biggest fraction in the government, now argues strongly on the subject of economic and energy security reasons. It is less positive about the potential of policy incentives for biogas. It also applies the argument of rationality for its standpoint, and accuses the Green party which was in the former governing coalition, of an ideologically coined and unrealistically positive view on biogas and renewable energies generally. The view, that biogas is a job creator and positive economic factor in rural areas is now contrasted by voices rising up within the government coalition. They claim that the promotion of renewable energies poses high costs for the economy and for citizens. However, it is also argued that one should simply leave the sector to the free market:

“However, I consider the aim to foster the construction of biogas-plants artificially by further laws to be completely wrong. And I will also tell you why. As every interference into the market, your proposals lead to significant distortions. I therefore strongly recommend focusing on organic market growth concerning the energy generation by biogas. The concept is rather convincing. Biogas is environmentally friendly and it can contribute to a great extent at appropriate locations.”

Franz Obermeier (CDU/CSU), Bundestag, March 17<sup>th</sup> 2006

Nuclear phaseout, which was decided upon by the former government, is after the change of government reconsidered. Instead of biogas or bioenergies, nuclear energy now features more and more in the debate as a climate friendly base load capable technology complementing biogas.

There is one point about which, at first glance, some consensus exists among all parties: This is the opinion that further research into biogas and bioenergy is important and should be promoted by policy. However, the form of this research and development is again a contested field. For instance, the liberal spectrum utilizes this debate to bring onto the agenda yet again genetic engineering as a technological way of solving problems. This is very much opposed by the left, green spectrum.

## 2007

2007 was, for both examined discourse arenas, a year where a peak value of biogas debate could be detected. This occurred in 22 out of 59 (37%) plenary sessions of the Bundestag and in 3 out of 11 sessions (27%) of the Bundesrat. For the parliament, this was actually the year where biogas was most often on the agenda. In the federal assembly, it was only for 2011 that a higher attention to the topic could be found.

Regarding content, the discussion in the federal assembly is focused on biogas in the context of the domains of climate protection and sustainability. In general biogas is regarded in a very positive light; nevertheless these domains are linked to the economic domain and to efficiency (e.g. in terms of technological innovation as power-heat cogeneration), which is seen as playing a decisive role for development of the biogas branch. As is illustrated in the following quote, the underlying reasoning in the debate of the Bundesrat is that if policy sets the right incentives for the competitive capacity of biogas, the branch could best benefit from its advantages.

"It [biogas] has extraordinary potentials for an efficient CO<sup>2</sup> reduction. By using plants in connection with a closed nutrient cycle we receive a space- and energy efficiency which is superior to all other forms of energy made of biomass. [...] The gas distribution system should be supplied with locally produced biogas and the gas should be used efficiently in power-heat cogeneration. Certainly, the processing of biogas to natural gas quality is expensive. The economic benefit however is evident if we transport the gas in the existing natural gas network to places with a high energy requirement and a higher degree of efficiency."

Hans-Heinrich Ehlen (CDU, Lower-Saxony), Bundesrat, 839<sup>th</sup> meeting

Nonetheless, a representative of North-Rhine Westphalia, which has a sizeable coal industry, points out that bioenergy could not sustainably replace coal as an energy feedstock: There exists too little disposable area of cultivable land.

Notable for the parliamentary debate in 2007 is that, for the first time, the hitherto comprehensively applied economic domain for evaluating biogas is, to a remarkable extent, questioned by the government. Issues like respect for nature are given. In this relation, here biogas is also positively viewed.

"Biogas is a positive development. It deserves to be supported for several reasons. It contributes to climate protection and environmental protection, as well as the economic existence of farmers. [...] We need to conduct a dialogue about how to correct the mistakes we have made regarding agricultural policy during the post-war decades - during that period we emphasized on the economic aspect - quantity - while neglecting the importance of the integrity of creation."

Horst Seehofer, federal minister of food, agriculture and consumer protection, Bundestag, 78<sup>th</sup> meeting

From such viewpoints, the positive effects of biogas rely on the circumstances of its production. Policy intervention is thought to provide the right circumstances for enabling a development of the biogas sector not aimed at mere industrialization and market orientation, but taking into account environmental and climate protection.

Moreover, the oppositional green, left spectrum now makes more visible its argumentation for the necessity of climate protection, independently of any economic considerations. It frames biogas as an important contributor to this task. Competition is still regarded as important, but the tenor of the debate is that it should not be treated as a universal remedy, but only a measurement for the evaluation of instruments to mitigate climate change. The social aspects of a future energy supply need to be taken into account too. To enable this on a European level, Germany is, by all parties, regarded as playing a leading role.

Biogas's role in the domain of energy security - as a (partial) substitution for fossil gas - is emphasized by the government as well as by the greens and the left party. However, there is debate about biogas's capability of substituting nuclear power, as well as on how to evaluate the climate friendliness or harmfulness of nuclear power and biogas. By the green and left spectrum of representatives nuclear power is regarded in a far more negative light, which in their argumentation speaks in favour for biogas. Their argumentation lines emphasize much more the dangers of nuclear accidents and the ultimate waste disposal problem. Contrastingly, the more liberal spectrum employs argumentations emphasizing low CO<sub>2</sub> emissions during the actual production process of nuclear power and the soil rivalry biogas production faces. Nuclear power is thus put in a more positive light compared to biogas.

A consensus among the parties can be found on the view that policies should aim to increase the efficiency of biomass utilization in the biogas sector, and that power-heat cogeneration is a promising measurement in this respect.

Interestingly, the underlying argumentations as to why an increase of efficiency is so favourable rely on different foci. This depends on whether the argumentation is employed by someone belonging more to the green middle left political spectrum or the liberal spectrum. The former focus mainly on the domain of environment and climate protection was arguing a need for more efficient technologies for biogas production and utilization. The latter lay a focus on energy security and independency from foreign fossil energy resources. More efficient technologies are thus called for.

## 2008

In 2008 the debate on bioenergies focuses very much on the controversially debated topic of biofuels (which, in the German case, mostly refers to biodiesel) and less on biogas. Biogas is now sometimes framed as being the more efficient and climate friendly form of energy production from biomass compared to liquid biofuels. It also constitutes a possible substitute for these biofuels. This emphasis on biofuels (mainly biodiesel) is also due to decisions about regulatory policies in this field. Nevertheless, in the Bundesrat, biogas was not debated in any plenary session in 2008.

However, the debate on biofuels is – to a certain extent – also meaningful in the biogas discourse: Both forms of bioenergy rely (at least partly) on the same feedstock. A certain proxy-character of the debate on biofuels is then also acknowledged by a member of the parliament in order to call for a comprehensive application of sustainability norms for biomass production.

“This strategy to implement ecological standards regarding the cultivation of biomass for energy generation and the orientation towards a net balance must of course be extended to the field of electricity generation. And even more: From my point of view these criteria also have to be applied in the use of animal feed in agriculture; (applause among members of the SPD) seeing that more than 80 percent of biomass are used in food and animal feed production.”

Sigmar Gabriel, federal minister of environment, nature protection and reactor safety, Bundestag, 145<sup>th</sup> meeting

As also mentioned in previous years, a prevalent view on these interlinkages and arising concurrencies among the several forms of bioenergies, is that they need to be mitigated through technical solutions facilitating an increase of efficiency. As an



instrument for this, biogas utilization in power-heat cogeneration is seen, while the sole production of heat from biogas is considered to make problems deteriorate. Moreover, for the domain of energy security, again the argumentation of the necessity of biogas as an energy source is emphasized. The previously applied evaluative argumentations from the economic domain appear to alter slightly. The domain of economy still plays a role. However, it has again slightly changed from more immediate profitability as a topic through which biogas was evaluated to sustainability and more long-term profit reasoning. Ecology and social issues are increasingly considered. That means that the argumentative patterns referring to the domain of economy have changed in such a way that the view becomes more future-oriented. Another link to the economic domain now emerges: Renewable energies like biogas will become cheaper while fossil fuel prices will increase in future. Biogas is more expensive now because the technology is not yet fully developed and not very widespread.

"Let me say one last thing: We need a consistent adjustment towards renewable energy sources: In the light of a situation where we start to run short of resources it is indispensable to rely on biogas. We have heard that nuclear energy is a cheap way to resolve our energy crisis. Let me say this: Nuclear energy is not cheap; instead, it will turn out to cost us dear."

Hans-Josef Fell (BÜNDNIS 90/DIE GRÜNEN), Bundestag, 136th meeting

The up until now rather neglected issue of acceptance of biogas plants in society is mentioned. The rivalries on soil and biomass do not induce a generally negative opinion on biogas although they are seen as a challenge. They are also considered, particularly by oppositional parties, as a result of failed policy. This is illustrated in the following quote.

"The second important point concerns bioenergies. You fund small biogas plants more than in the past. There is still no sustainability-act. It is therefore not regulated how we can limit what we are discussing. By this EEG-law you foster the change from grassland to corn. We don't want that. We don't need corn-monocultures in Germany."

Bärbel Höhn (BÜNDNIS 90/DIE GRÜNEN), Bundestag, 167th meeting

## 2009

The federal assembly discusses the promotion of biogas for utilization in the transportation sector. Interestingly, when this idea was mentioned before, the underlying reasoning was that biogas would be a substitute for other biofuels (e.g. biodiesel and ethanol) because of energy efficiency and related ecological considerations. In this case, the argumentation refers to the economic domain: A policy to promote biogas (conditioned to biomethane) in the transportation sector would help to mitigate the tense situation in the German biofuel sector.

In parliament, the discourse in 2009 is very much related to current issues. Namely, many references to the fossil gas crisis of 2009 are drawn. Furthermore, it should be noted that the discourse only covers the 16. Bundestag (grand coalition). Nothing relevant was found on biogas for the 17. Bundestag (coalition of CDU/CSU FDP). In view of the gas crisis, biogas is argued to be an instrument against possible problematic situations of energy security.

"The dependency in this area must be reduced. But instead of extending the lifespan of the nuclear power plants which need uranium that comes from abroad or to rely on the Baltic Sea pipeline which makes us even more dependent on Russian gas, Mrs. Merkel should rather urge the EU to invest money into renewable energies, thus diminishing the dependency on fossil fuels rather than slowing down this process. Admit the necessity to increase the percentage of biogas within the natural gas supply network rather than allowing the inefficient use of agro fuel in cars."

Hans Kurt Hill (DIE LINKE), Bundestag, 217th meeting

Furthermore, from the Left party (Die Linke) a strong opposition to other biofuels (biodiesel and ethanol) can be found. They employ the domain of energy efficiency to put biogas in a far more advantageous position than biofuels. They also propose relying on an abandonment of biofuel promotion through politics. Overall, the left-green spectrum argues that biogas is important for climate protection, for energy security (in view of the mentioned uncertainties with fossil resources) and also for German rural development and the job market. Alongside this very positive opinion on biogas, the topic is also among the other parties quite positively viewed. Nonetheless, it is pointed out that some issues should be considered for ruling out negative effects as increasing cultivation of monocultures of energy crops. However CDU/CSU also sees some problems in the economic domain:

Because of today's economic situation, biogas is still more expensive than fossil alternatives. To solve these issues, there is a call for policy to ensure that the circumstances of biogas production do not have negative ecological impacts, i.e. to avoid excessive planting of monocultures. On the other hand, a view opposing changes in policies exists. This argues that the requested changes in policy conflict with the market development, since they might, for instance, lead to decreasing investments and a loss of jobs.

"As a consequence of the amendment of the EEG-law which is in force since January 1<sup>st</sup> 2009 many biogas plants in economically underdeveloped regions with a high unemployment rate are about to file for bankruptcy. Jobs are in dangers as well as deposits of farmers. The grad-coalition has made serious mistakes regarding the amendments of the EEG. Thus, SPD and CDU/CSU jeopardize jobs and the existence of several biogas companies."

Hans-Josef Fell (BÜNDNIS 90/DIE GRÜNEN), Bundestag,  
208th meeting

In the process of the debate about an increase of efficiency in biogas production to reduce possible negative effects, again the genetic engineering debate is introduced by the FDP in connection with biogas production. The rejection of the Greens is seen as ideological fear-mongering and paternalism. The critical standpoint of the CDU/CSU-SPD coalition is depicted as supporting this strategy.

## 2010

In 2010, the debate on biogas within the federal assembly starts with what is, compared to previous years, a slightly unexpected point in the discourse: A critical view on planting of energy crops in general is brought into the debate by a representative from the green party. This is employed to put solar energy in an advantageous light compared to energy based on biomass:

"Moreover, photovoltaic has, in comparison to the cultivation of energy crops, which is being subject of controversial discussion, a higher efficiency concerning land use. Energy crops generate 10 kilowatt-hours per square-meter a year, while photovoltaic generates 100 kilowatt-hours. A significant utilization

rivalry cannot be expected based on the minor percentage of agricultural area used."

Dr. Simone Peter (Bündnis 90/Die Grünen, Saarland),  
Bundesrat, 871th meeting

This argumentation in favour of solar energy over biomass based energies is fairly new. Previously, the issue of soil rivalries almost always appeared in an argumentation favouring efficiency-increasing bioenergy-related technologies (e.g. combined heat and power (CHP), or genetic plant engineering). It was hinted that a more efficient utilization of energy crops could solve or mitigate the soil rivalries. However, the favouritism of solar-energy over bioenergy is disputed:

"Alongside wind energy, bio energy plays a central role."

Hans-Heinrich Sander (FDP, Lower-Saxony), Bundesrat,  
878<sup>th</sup> meeting

In view of this representative from Lower Saxony, the problems of soil and animal feed rivalry with biogas should be compensated through an increase of efficiency of the biogas plants. This should be promoted by policy and the promotion of recycling material use. Biogas is debated in the domains of economy and energy efficiency regarding which the problem of soil rivalry also enters the stage. But the Bundesrat discourse on biogas at no point makes a strong, indisputable case regarding its responsibility for negative impacts (for instance, environmental damage). Interestingly, the debate in the parliament in 2010 starts with a debate on energy supply, promotion and security. The governing parties CDU/CSU talk about the future energy supply and the base load capable energies without even mentioning biogas. Their argumentation is very much in favour of nuclear energy, which they argue as being necessary for the base load supply. In their view renewable energies are less reliable and also difficult to handle:

"Because, regarding subsidization of renewable energies, there are ecological malfunctions. For example: It doesn't make sense if we set the priority on renewable raw materials rather than on the use of waste materials. We want that waste materials are used primarily before we start using renewable raw materials as we don't need those for power generation exclusively."

Michael Krauch (FDP), Bundestag, 25<sup>th</sup> meeting

In the further development of the debate, there is also a rather similar argumentation for stone coal energy in the domain of energy security, considered to be necessary base load energy. This argumentation, also linked to the domain of economy, argues in favour of stone coal energy and also of building new stone coal-energy plants. This is seen as a much cheaper and economically advantageous alternative to biogas:

“Despite the elevation of the basic price and the abolition of subsidies, regarding the generation of a single kilowatt-hour from electricity made of stone coal, natural gas and biogas are very inefficient alternatives in order to supply the medium load. Thus, in the medium term, stone coal will continue to play an important role within our energy-mix.”

Thomas Bareiß (CDU/CSU), Bundestag, 51<sup>st</sup> meeting

Overall, in the debate there can be detected a move towards economically-framed argumentations, putting biogas in a weak position for market competition capabilities. These argumentations are particularly emphasized by the parties governing since September 2009, the CDU/CSU and FDP. Furthermore the CDU/CSU makes negative allusions to the domain of social issues for biogas plants. They argue that increased energy corn-planting negatively influences the landscapes. Nevertheless CDU/CSU (the governing parties) still acknowledge that renewable energies are the future. They view biogas and other biomass energies as being particularly important because of their base load capability, and thus also valuable to promote. However, wind energy, in their opinion, is and should in the future be the primary hope. Furthermore, they share the view in government that the renewable energies should be used in combination with coal and nuclear power. Framed in a similarly economic context, as the governing parties speak out for coal and nuclear energy, the life-span extension of nuclear power plants is argued to be harmful to the agricultural sector (primarily those agriculturists who have based their economic existence to a great extent on biogas). This is the main point of the Greens. Besides these controversies about the future role of biogas, a consensus exists that the efficiency concerning the production and use of biogas must be increased by technologies like CHP.

Another issue in the biogas debate in 2010 is again the utilization of biogas as vehicle fuel. This debate is also linked to the domain of environmental and climate protection, as well as to energy safety and efficiency. The underlying argumentation is that biogas is considerably more efficient in terms of energy derived from the utilized biomass and thus has a better CO<sub>2</sub> footprint. Add to this less soil rivalry than for other biofuels. Although there is widespread consensus about this, the derived conclusions differ: One side (FDP, SPD) argues in favour of a

political promotion to push this market, whilst the green party sees a concurrency in biogas as vehicle fuel with other biogas utilizations. This might increase ecological and social problems through an over-planting of energy crops.

## 2011

The last year of this review is, for the discourse arena of the federal assembly, marked by an emphasis on the, up-until-now rather seldom-considered social domain. Regional and local acceptance problems of biogas plants and related energy crop planting are brought onto the agenda by several representatives, hinting that these rather newly occurring disputes should be regarded in future policies:

“Acceptance: About this topic we also have to talk openly, honestly and clearly. In some states, there are now citizen action groups which have been supporting renewable energies over several years but which are now against further promotion of wind energy and biogas-plants. We have to take this into account and we have to adjust to this situation. We have to find solutions for this problem.”

Matthias Platzeck (Brandenburg, SPD), Bundesrat, 882<sup>nd</sup> meeting

“Biogas-plants: We have to avoid uncontrolled construction of new plants, seeing that we have great acceptance problems already.”

Peter-Harry Carstensen (Schleswig Holstein, CDU), Bundesrat, 884<sup>th</sup> meeting

Besides social problems surrounding the acceptance of biogas plants (and linked technologies such as the gas and electricity grids), there are no other explicitly-made criticisms, such as ecological disadvantages. Wind energy is now mentioned several times as being more advantageous than biogas, particularly off-shore wind energy, since it causes fewer social problems. Furthermore, it is argued that these problems mean that policy should implement control mechanisms to survey and govern the growth of the biogas branch.

This debate is also conducted in parliament, where it is strongly linked to the domain of energy efficiency. In doing this, acceptance problems in the social domain are exploited to argue in favour of or against an obligation to utilize biogas in CHP. Meanwhile, the SPD strongly argues in favour of that:

"What we have today is a situation in which biogas is discussed on different levels and in which we have major problems regarding its acceptance. In order to adjust the acceptance to criteria of efficiency we have to pay close attention to the fact that biomethane is used as efficiently and climate-friendly as possible (Dr. Maria Flachsbarth [CDU/CSU]: That's what we already do!) This means that we don't simply use it in the water-heat system but rather in power-heat cogeneration. If we want public buildings to serve as a role model, we have to take into account the criterion of efficiency in an exemplary manner. Therefore, we have to stay with the CHP-commitment and the use in the water-heat system should not be a priority."

Dirk Becke (SPD), Bundestag, 93<sup>rd</sup> meeting

The FDP argues against it and employs in their argumentation the capability of free decision-making by the public:

"The requirement which you have set concerning biogas and which Mr. Becker has mentioned - saying that biogas be too precious to burn it - by the way not in the water-heat system, here we talk about the most efficient technology - the condensing boiler - should also be applied on Russian natural gas. Because here, we don't talk about which molecule, regardless whether biogas molecule or natural gas molecule, is used in the inefficient plant. This you cannot distinguish within the natural gas network anyway. Instead, we have to talk about how to render the production and use efficient. But not only for those who want to sell biogas but also for those who want to sell natural gas. Here we are facing a question of efficiency. [...]I don't want to leave the decision what's good for the

individual to officials and politicians. Everyone should decide themselves which technology they want to use."

Michael Krauch (FDP), Bundestag, 93<sup>rd</sup> meeting

Then, in March 2011, a last major change in the examined period happened. This put biogas into a position of being more than ever a necessary energy source, despite all possible negative aspects. The nuclear disaster occurred in Fukushima, Japan in March 2011. In view of this catastrophe, the otherwise ever-important economic considerations lose some of their power. The prospect of higher costs for biogas and other renewable energies compared to nuclear power are acknowledged, but framed as still being the favourable solution:

"We have to tell the citizens: Nothing will become less expensive but it will become more expensive. Although we also have to say: What are those increased costs compared to the costs that Japan is facing in light of this disaster?"

Jürgen Trittin (BÜNDNIS 90/DIE GRÜNEN), Bundestag, 96th meeting

Nevertheless, the conflicts around rivalries concerning soil, food and animal feed are not disregarded in the debate. Rather they are seen as needing to be solved through wise policy measurements, which still have to be discussed:

"Surely we will continue to talk about changes. Therefore we negotiate the EEG-law where we have to question the problem of utilization rivalry, notably in the biogas-sector. To make it short I would say: Towards leftover material utilization and decentralized structures. One point regards the question of the liquid manure premium which, at the moment, leads to problems among stock farming businesses because of the minimum share of 30 percent liquid manure. I want to precise the importance of biomass in general for renewable energies: In all utilization areas of renewable energies, which means heat, fuel and electricity generation two thirds of the energy stems from biomass. At this point it becomes clear that if we have a master plan, we cannot abandon this area, we



only have to render it intelligent and compatible. Therefore we need good professional practice regarding the cultivation of soil and – as I have said – at this point the principle of sustainability must be applied.”

Dr. Wilhelm Priesmeier (SPD), Bundestag, 107th meeting

#### 2.2.5 **Regulatory Institutions concerned with Biogas (EEG)**

According to Hajer, a discourse can be termed "institutionalized" when it leads to actual institutional procedures such as laws, specifications and the like (Hajer 2008). To see if and how these criteria are fulfilled in the German policy discourse on biogas, this paragraph will give a brief overview on the EEG (Renewable Energy Act). Together with the year-by-year review, this section then provides the basis for detecting processes of discourse institutionalization.

The renewable energies act is seen as the most important base policy instrument influencing the biogas sector (Poeschl et al. 2010). It is the aim of the EEG to foster climate protection and to reduce the dependency on fossil energy sources. A main characteristic of the act is that it is designed as a dynamic law, i.e. adaptations and changes to certain facts are explicitly planned. Since the effecting of the law in April 2000, possible changes are taken into account by amendments. ([www.bmu.de](http://www.bmu.de)). As the following graph illustrates, throughout the years, several additional policies were added to the law. Although, the explanatory power of a mere quantity of paragraphs and appendices is limited and not all of these paragraphs might directly affect biogas. Nevertheless, this increasing number of policies illustrates the dynamic development of the policy field of the whole renewable energy sector. Even though these developments might not all directly influence the biogas sector also indirect influences are relevant.

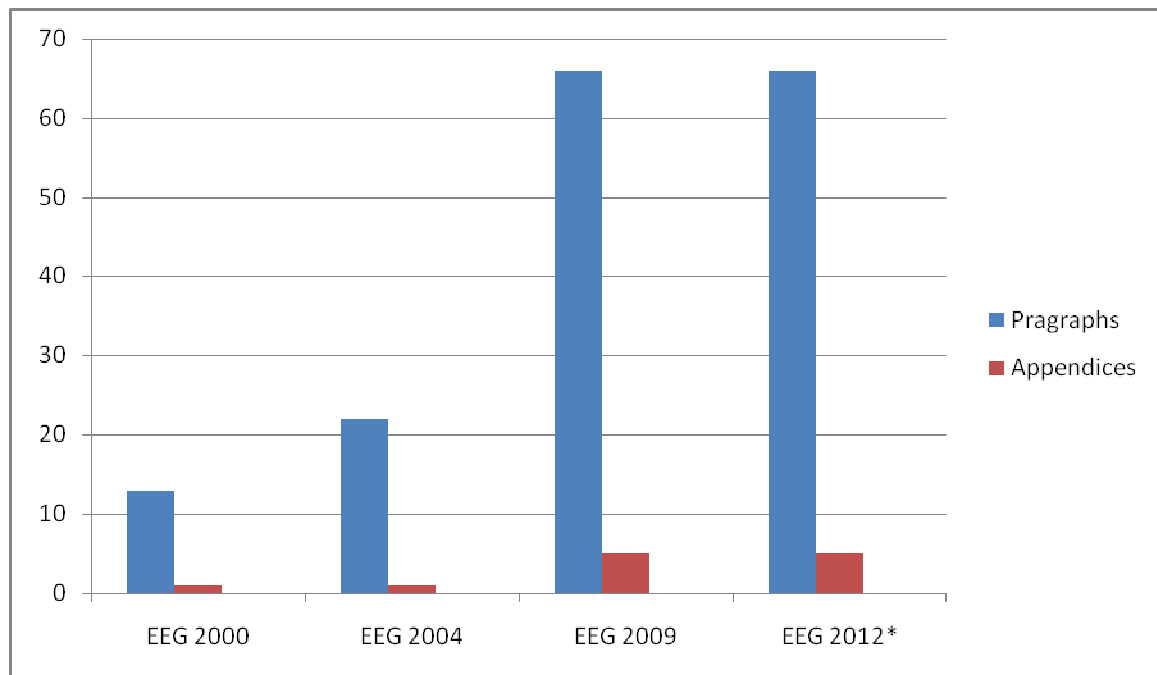


Figure 2: Number of paragraphs and appendices of the respective EEG versions. \* correspond to the draft for the prospective novel of 2012 (cf: Körner 2008).

It can already be seen in the graph that the EEG is a complex set of paragraphs. To fully understand all details, appendices and interpretations of that law, additional expertise, time and space are needed. Nevertheless, with the help of some literature, the most significant parts of the EEG concerning biogas can be summarized. In general the EEG provides guaranteed purchaser prices for electricity produced from renewable sources. For the biogas sector, there are several compensation-classes and bonuses configuring the compensation for the produced energy. The most fundamental changes of the EEG in the biogas sector are the several bonuses. Considerable economic incentives are thereby attached to the utilized feedstock and applied technologies of biogas plants (Poeschl et al. 2010; Negro, Hekkert 2008). During the period studied, there were two EEG novels coming into force and a third one, scheduled for 2012, was debated and designed. The following paragraphs will present the most notable changes in the field of biogas in the novels of 2004, 2009 and the planned changes for 2012.

### EEG novel 2004

The most important change in the EEG novel of 2004 compared to the previously valid version (EEG 2000) was the introduction of a bonus for using renewable raw materials (NaWaRo-Bonus). The NaWaRo-Bonus is granted when only plants or parts of plants are utilized which have been produced in agriculture, forestry, horticulture or landscape preservation, and who serve no other cause than being used in the biogas plant. Furthermore, the co-generation of heat and power (CHP)

and the utilization technology innovations, such as the conditioning of biogas to fossil gas quality, are additionally gratified (EEG 2004).

### **EEG novel 2009**

Compared to the 2004 novel, the EEG novel from 2009 provides further increased compensations for the utilization of RRM (Renewable-Raw-Materials). This aims to increase economic appeal in consideration of elevated prices for energy crops in cultivating area. The new bonus scheme additionally grants extra subsidies to promote small biogas plants having installed capacity of up to 150 kWel and using a minimum mass of 30% liquid manure. These subsidies were introduced to promote the installation of small biogas plants, since the potential of biogas production in this segment (small farm scale plants) was considered to be as yet unexploited. Furthermore, to set increased incentives for a more efficient use of biogas, the CHP-bonus was also put up compared to 2004 (EEG 2009; Field Report 2004; Erfahrungsbericht EEG 2004).

### **EEG novel 2012**

In the draft for the prospective novel of 2012, the NaWaRo-bonus is cancelled. Instead, a gratification system classifying the several raw materials into two gratification classes is introduced.

Gratification class I includes energy crops like corn, grain and such. The input material of gratification class II comprises ecologically preferable charge materials which do not contribute to utilization rivalries. Their application provides a high contribution to climate protection but they can only be mobilized with higher costs. This class includes, for instance, liquid manure, landscape preservation material, straw, clover grass, Luzerne grass and fast-growing woods from short rotation forestry as far as they comply with certain nature-friendly minimum standards.

All input materials, i.e. input materials of the gratification classes I and II, can also be used blended with other materials in the future. This includes other input materials which count as accredited biomass according to the biomass decree. The former principle of exclusiveness as defined in the NaWaRo-Bonus will be abandoned. The formerly-excluded possibility of a blended use of energy crops and waste material is, according to the 2012 EEG novel, possible. Thus, a better exploitation of recycling material potential is facilitated. The complexity of the gratification system decreases. The calculation of the gratification according to the used input material is then carried out proportionally and corresponds to the gratification classes: Moreover, there is adopted a 60 % limit on the use of corn and grains (energetic). Furthermore, the gratification level is dropped by 10 to 15 percent. Concerning mainly small plants, a reduction is attempted in order to avoid excessive aid. Another novelty in the EEG of 2012 will be the introduction of a capacity bonus to foster investments in the capacity of market-oriented energy

generation of biogas plants. This bonus will allow for investments in bigger gas tanks and generators in order to permit a postponement by about 12 hours of energy generation (EEG draft 2012; [www.bmu.de](http://www.bmu.de)).

### **3 Analysis**

This section will relate the findings about the contentions in general discourses on bioenergies, as they are reflected in public-mass-media, the actual policy discourse on biogas and the concerned regulative institutionalizations (EEG) with the theoretical concept of discourses from Maarten Hajer. Firstly a brief overview about the actors will be given, followed by findings about the discourse development in the political arena. While the first section also provides insights about the relation between the policy and the public (-media) discourse arena, the section about the discourse development will depict which criticisms from the public discourse can also be found in the policy arena and how they are dealt with in policy discourse. In chapter five then I will, building up onto that draw conclusions about the special role of biogas in the policy arena.

#### **3.1 Identifying important actors on representative and legislative levels**

Many different actors, inside and outside of the political domain, influence the discourse on biogas in the parliament and in the federal assembly. Inside the political domain, the most directly involved actors are, of course, the political parties themselves, as represented during the plenary sessions by their elected members. The parties in the Bundestag (parliament) represent the public on federal level (Bundesebene), while the members of the Bundesrat (federal assembly) represent the federal states. Generally, members of parliament express the opinions of their party (sometimes explicitly, using phrases such as ‘We as social democrats propose...’). This is also the case for the federal assembly, where references to the interests of the specific federal states are prevalent i.e. members of the federal council often use expressions like ‘Lower-Saxony needs...’ and the like. Ultimately, the political parties shape the national biogas policies through committee negotiations, parliamentary and federal assembly votes. But the represented parties are not the only political actors on the stage. Other important actors are local policy makers, such as municipal authorities, who can affect biogas policies and projects on the local level.

Outside the political domain, the actors most often referred to can be loosely grouped as ‘information actors’. These are actors like the German Advisory Council on Global Change (WGBU) whose expertise the parliamentarians require in the field of biogas. Many actors in this category are, however, not explicitly referred to in the discourse. They are merely mentioned as being authors of articles or research reports. Nevertheless, actors in this group are normally either government agencies, academic researchers or domain experts (with their own

interests). It happens that contributions of information actors on a topic that is then addressed in the parliamentary debate are mentioned, though only briefly, as it seems to be expected that the interested parties will already have read the report. Another group referred to in an explicit manner are agriculturists. This is not surprising since the biogas sector relies on agriculture for feedstock suppliers as well as plant operators. Furthermore actors often mentioned in the debates are other actors related to the biogas branch. This category very seldom refers to specific companies but mostly to the biogas technology sector as a whole. Moreover, actors from the research and development sector appear. The third large group of actors, besides the 'information actors' and the several sub groups of the biogas branch can be described as the public. References to this group include the mentioning issues like citizen groups and public criticisms.

### 3.2 Discourse development

As earlier noted, political problems are social constructs, and a discourse coalition is a group of actors who share these constructs. A discourse coalition also includes a set of storylines for particular problems that these actors use as the medium through which they try to impose their view of reality on others. This section will be about the empirical data for these theoretical concepts. It will be argued that the biogas, along with the whole bioenergy discourse, is in principle the sub-discourse of a more comprehensive discourse on climate protection and energy security.

The widely-accepted necessity of activities against climate change and the narrowness of fossil energy sources are the underlying main topics putting biogas on the agenda in the political discourse. The means to serve these ends are mainly evaluated on the basis of economic reasoning. Both topics are also important for framing bioenergies as a whole within the public-media sphere. This can be seen from the results of Zschache and colleagues' (2009) analysis. However, Zschache et al's study does not allow statements about the dominance of the revealed frames.

Nevertheless, I will show that the biogas discourse within this broader discourse is particularly interesting: it splendidly illustrates the dynamic development and versatile influence of the discourse's factors for the design of climate protection and energy security. This dynamic becomes most apparent through a shift in discourse transitioning from the advantages of bioenergy in general to that of biogas specifically. This seems to be closely linked to criticisms as they can also be found in the public sphere (as they can be found in public mass media).

The political discourses of the parliament and the federal assembly can be compared with the findings for public media discourse on bioenergies in Germany. The media and the political discourse arenas showed similarities in the domains or frames within which bioenergy respectively biogas were discussed. Both discourse arenas debate the topic mainly in the context of environmental & climate

protection, economic development, energy security and social issues (in a wider sense, this also includes public acceptance). It is also interesting that, the conflicts about bioenergies, found in the public-media arena, can also be detected in political discourse, but that despite these critical points biogas is nevertheless positively viewed in policy discourse. It will be shown that this positive framing in policy discourse is also accompanied by actual discourse structuration and institutionalization.

In both discourse arenas, it can be found that conflict lines are on environmental and climate issues (monoculture problems) as well as on social issues (soil and nutrition rivalries and landscape changes), and also on policy's role in the biogas sector. Notably the criticism on policies role in the biogas sector is of a different form in the policy and in the public media discourse arena. In public media discourse in respect of the role of the state in the biogas market primarily two conflicting positions were apparent: One of these saw biogas as a positive example of how policy could help establishing an innovative new market. Another viewpoint depicted it as an example of how the state conducts market deliberalization and competition biases and was opposing policy instruments in general. In distinction to that the policy area was characterized by a consensus about the value and necessity of biogas promotion and only the design of these policy instruments was debated. The argumentation of market deliberalization, competition biases and paternalism was only employed in context of some aspects as for example CHP but not in respect of the general necessity of policy measures in the biogas branch. This can be interpreted as a first indication that the discourse in the political arena is in distinction to the public mass media discourse linked to the concept of ecological modernization. Ecological modernization, which is at the core of Hajers' thematic emphasis, is based on an ecologically motivated change of the industrial society. As I will elaborate later on, policy plays, besides science, technology and market economy an important role in this approach (Hajer 1996).

Another indicator that the public (mass-media-discourse) expands into the political discourse arena is that actors in the political discourse sometimes even explicitly refer to the public sphere. An evaluation of biogas and bioenergies through consideration of broader public opinion on bioenergies can be found particularly in material from later years of the study period. Building up onto the awareness that the main criticisms of the public-media discourse arena on bioenergies are acknowledged within the political arena, the interesting and focal point of this work, in order to reveal findings about the special role of biogas in the policy arena, is to analyze how the political discourse on biogas deals with that;

It could be recorded that throughout the whole period from 2003-2011, a general consensus exists in the political discourse arena: Biogas is interpreted as being beneficial for the German energy supply, for the climate and also for the German economy and agricultural development.

However, in terms of actual political discourse, it will be argued that the consensus on the general merits of biogas in fact contains a remarkable shift. It will be shown that the discourse is initially centred on storylines about bioenergy in general. After the shift, the discourse is centred on storylines about biogas in particular.

At the start of the study in 2003, the bioenergy discourse coalition was already in place. This is not strange considering that what was at that time the governing coalition in the parliament (SPD/Bündnis 90 Die GRÜNEN) was very much in favour of renewable energies; moreover it planned the nuclear phaseout. All forms of bioenergies, from biogas to biomass combustion to biofuels for the transportation sector, were seen as an important energy source for climate protection and energy security. This was not least because of their base load capability.

The discourse was largely about *biomass energy*. This could be anything from biogas for electricity production to biomass combustion. Biogas, in this context, was considered as only one important form within the generally advantageous and promising range of bioenergies. This discourse coalition was built up around storylines giving bioenergy, and with it also biogas, the role of problem-solver in the domains of climate protection and energy security: It would help mitigate climate change and it would help replace fossil energy sources. Moreover, it would be beneficial for rural development and industry, which were the most important evaluation criteria for means of climate protection and energy security. It seems fair to say that this discourse coalition dominated in 2003, 2004 and 2005, as both of Hajer's (1993) criteria for dominance were fulfilled: There was structuration of all discourse in these terms. That is to say, bioenergy in general was mostly not discussed from the perspective of other storylines, such as a storyline about rivalry with cultivated land or food production. In contrast, it was sometimes even argued that the potential of cultivable land is nowhere near exploited by now. Moreover, the discourse was institutionalised because the parliament not only talked positively about bioenergy but also legislated positively for biogas and also for other bioenergies;

In the case of biogas, this discourse institutionalization can most notably be seen in the EEG novel of 2004. Besides the already existing hurdle rate for electricity produced from biogas, the introduction of the NaWaRo-bonus in particular illustrates the will of policy to promote further development of the biogas branch. This bonus was introduced to facilitate the utilization of energy crops for biogas production. The higher costs for the input of renewable feedstock are considered in this policy with increased compensation for plants running solely on renewable feedstock or manure or some forms of mash.

By this regulation, it is illustrated that the potential of available crop land is not yet exhausted and that there are no rivalries with energy crop, animal feed or food production. The NaWaRo-bonus also reflects the point of view that policy's role in

this area is primarily to reduce constraints in all forms of further investments into biogas production. This assumption includes the facilitation to exploit other biomass sources after biomass and wood-waste potentials are largely exhausted.

For other bioenergies, one illustration of discourse institutionalization is that from January 1st 2004, the mineral oil tax was no longer applicable to biofuels. Subsequently, consumption went up on a large scale. Biodiesel consumption went up from 800,000 tons in 2003 to 1.8 million tons in 2005. The consumption of bioethanol was also positively affected. In 2004, 65,000 tons of bioethanol were consumed, increasing to 226,000 tons in 2006 and to 479,000 tons in 2007 ([www.bdbe.de](http://www.bdbe.de)).

The dominance is particularly clear if one considers the rather exaggerated optimism that could be seen in these three years. A limitation of crop land was not even detectable according to this coalition. The task of policy was seen mainly as providing an environment to encourage further investments in the biomass energy branch. All parties involved in the discourses of the parliament and of the federal assembly persistently emphasized the importance of bioenergies for climate protection and energy security and the merit of policy promotion in this sector. Such statements, which for the most part went unquestioned, would hardly work in the semi-hostile debate environment of a political parliament without the applied storyline being part of a profoundly dominant discourse coalition.

After the parliamentary elections in September 2005, storylines then arose questioning the absolute support for and positive view on bioenergies. However, this introduction of new storylines into the dominating discourse coalition particularly concerned biofuels for transportation utilization (biodiesel and ethanol) and not biogas. This first indication of a shift in the bioenergy discourse coalition can also be confirmed through the findings of Bruno and Linzbach (2011). These point out that in 2005 the German policy discourse about biofuels was slightly ambiguous. Discussions about an adjustment of biofuel promotion, it is further explained in that study, started primarily after the change of government in 2005. The decreasing gains of mineral oil tax (particularly through the increasing biodiesel consumption in the preceding years) then provided a reason for the newly installed grand coalition (CDU/CSU, SPD) to rethink the biofuels policy. This was facilitated by a displacing of the tax promotion through the administrative regulation of a blend obligation in 2006. These legislative changes were highly debated throughout the following years (Bruno, Linzbach 2011).

However, besides this emerging ambiguity regarding biofuels, all parties represented in the parliament (SPD, CDU/CSU, Bündnis 90/Die Grünen, FDP) in principle shared a positive view: that biomass is, in general, a valuable and eligible alternative to fossil energy feedstock and that a further promotion through the EEG is absolutely desirable. A comparable view could also be found among the representatives in the federal assembly.



Monetary reasoning underlies the first debates of an adjustment of biofuel policy, which incidentally clearly illustrates the importance of the economic domain as an evaluation criteria for instruments of climate protection and energy security. From 2006 storylines also see a rivalry on biomass utilization between biofuels and biogas introduced into the parliamentary debate (mainly by the liberal FDP).

Most other parties, such as the CDU/CSU and SPD, begin to acknowledge the limitations of biomass production. These storylines did not immediately affect the dominance of the main coalition; in fact they tended to be preceded or followed by statements that were aligned to the dominating coalition. Nevertheless, these 'dissenting' storylines did introduce new elements into the discourse: These included a competition between the several forms of biomass utilization and the opinion that biomass will never be enough to fairly serve all forms of biomass utilization; the most efficient ways of bioenergy production should thus be promoted. Notably, the second storyline did not simply engage in a critique of a comprehensively positive view on bioenergies, but it underlines the more fundamental idea that climate/environmental and energy problems always have technological solutions. This premise seems to be widespread, as it could for instance also be found in the German and Swedish policy discourse on biofuels (Bruno, Linzbach 2011). However, an interesting distinction with the aforementioned discourse exists: While within the Swedish biofuel discourse Bruno and Linzbach (2011) find a few voices calling for a necessity of lifestyle change, since technology cannot solve all problems, such voices were not found in the protocols studied for this analysis. At this point of the discourse, again besides the methodological link to Hajer, a link to his thematic emphasis can be drawn; ecological modernization. Ecological modernization as already shortly introduced above is a concept based on an ecologically motivated change of the industrial society. Hajer characterizes it as follows:

„ [...] society has to modernise itself out of the crisis. Remedying environmental damage is seen as a 'positive sum game': environmental damage is not an impediment for growth; quite the contrary, it is the new impetus for growth. In eco-modernist discourse environmental pollution is framed as a matter of inefficiency, and producing 'clean technologies' (clean cars, waste incinerators, new combustion processes) and 'environmentally sound' technical systems (traffic management, road pricing, cyclical product management, etc.), it is argued, will stimulate innovation in the methods of industrial production and distribution"

(Hajer 1996: 249).

The crucial role for the realization of this change is played by technology, science, free market economy and policy interventions (Hajer 1996). I.e. particularly these societal arenas which decisively caused the current ecological problems should now take important roles in solving them. Proponents of this concept, see the ability to alter and align with new guiding principles of these arenas already confirmed. As a validation of this they mention for instance the oecologization of the chemical industry and the change of environmental policy from aftercare to preventice (Littig, Gießler 2004) Opposed to that, critical voices regard that as a mere mitigation of symptoms without any effects on the underlying causes of these problems (as they were found in the study of Bruno and Linzbach (2011)). They argue that although policy changes and technological innovations facilitated a range of improvements the global ecological situation has still not improved. This is also because many of the improvements are often nullified through a rebound effect (Littig, Gießler 2004).

However, as we will see, this premise and the connected link to ecological modernization was not only able to survive the shift in the discourse from bioenergy to biogas, but also provided a main argument for the shift. Interestingly, these storylines also led to the role of policy being redefined. During the first three years, policy's role was seen to be setting incentives for further investments in all forms of biomass energy. Now policy is more often referred to as providing strategies to decrease rivalries; it is also called upon to regulate and control the amounts of biomass used for fuel production for the transportation sector and for electricity production.

In 2007, something very interesting then happened. Compared to the preceding years, the debate connected to biogas increased greatly, i.e. biogas was much more often on the agenda of plenary sessions of the parliament and the federal assembly than in other examined years. Interestingly, the debate was suddenly much more explicitly on biogas and no longer on bioenergies in general. The advantages of biogas compared to other bioenergies were underlined. In particular, allusions were made to the efficiency of biogas and emerging advantages in the domains of energy security and efficiency as well as climate and environment protection.

Interestingly, the underlying argumentations as to why an increase of efficiency is so favourable rely on different foci: The argumentation might be employed by someone belonging more to the green-middle-left political spectrum or the liberal-middle-right spectrum. The former focus, mainly on the domain of environment and climate protection, was to argue for biogas as a particularly efficient technology in the bioenergy sector. The latter lay a focus on energy security and independency from foreign fossil energy resources as reasons to call for efficient bioenergy technologies. This circumstance very clearly illustrates how actors can interpret storylines differently: While one spectrum of the political arena interprets the storyline of a need for increased efficiency in the biomass energy sector in terms of climate and environmental issues, another interprets it within

the context of energy security and independency. Nevertheless these actors share the same storyline and view on reality leading to the same conclusion, namely that an increase of efficiency of biomass utilization in the energy sector is necessary, and that this could be served through biogas technology.

The first indices for a discourse restructuration can already be seen in the debate about changes in the biofuel policies. Now, in 2007, the rhetoric of the coalition also changes slightly: Previously, all ecological and climate issues were addressed from the perspective of economic reasoning (a cost benefit calculation of the effects of climate change) as was done in previous years even by the green party. Now though, the necessity for climate protection independent from only economic considerations is made more explicit. This argumentation is again utilized to argue for the advantages of biogas. A weakening is seen of opposed argumentations on the economic value of the whole bioenergy branch. The idea of a re-structuration in 2007 is also somewhat corroborated by the brief quantitative analysis presented above. This indicates that the biogas debate as a percentage of separate discussion peaked during 2007. Moreover, Zschache et al (2009) choose to start their study period in 2007 because of an increasing debate around bioenergies.

Reviewing the discourse on biogas in 2008 and the findings of the analysis about biofuels (Bruno, Linzbach 2011), one can say that the discourse shift is still in process in 2008. In particular, the debate in the federal assembly includes controversial debate on biofuels, and puts biogas in an advantageous position compared to biodiesel and ethanol. It is even suggested that biogas is the better biofuel for the transportation sector. However, at the same time the criticism on biodiesel and ethanol puts the whole field of biomass energy into an ambiguous situation. The positive storylines about biogas which were emphasized bore a striking resemblance to the storylines about the whole branch of bioenergies from the preceding years: Now, it was particularly biogas that was the general solution for energy and climate problems, and besides that also a great economic stimulant. This discourse shift also coincided with a European Union change of policy: The new policy took rising criticism on biofuels into account and was thus more restrictive (Bruno, Linzbach 2011). Nonetheless, the view that bioenergies on the whole are a beneficial energy source for climate protection and future energy security did not lose its dominance overnight. Although storylines emphasising bioenergies in general as a complete solution could no longer work, it was still possible to talk positively about other forms of bioenergies besides biogas. Actors would, for example, talk about biofuels and biogas together as being important for the industry or the environment.

These perceptions also exist in regulatory institutions. An increase of the NaWaRo-bonus (Renewable Raw Material- Bonus) in the EEG novel of 2009 further promotes biogas production from renewable raw materials. This offbalances increased prices of animal feedstock and other crops in economical concurrence to energy crop planting (EEG 2009). Furthermore, the shared view that the problems

linked to acreage shortage should be mitigated or solved through applying the right technological solutions is also reflected in the EEG. Additional payments for the use of biogas in combined heat and power plants (CHP-plants) are raised compared to in 2004. In the novel from 2009, the production of biomethane is gratified additionally through the technology bonus. In the meantime, in another regulation, an increase of the blend percentage of biodiesel and ethanol to fossil fuels was redeemed (EEG 2009; [www.biokraftstoffverband.de](http://www.biokraftstoffverband.de)).

But as we can see, especially in the debate of the federal assembly in 2009, the discourse re-structuration that had started would not stop. By 2009, the arguments for a promotion of biogas utilization in the transportation sector were expanded; meanwhile, when biogas was discussed as vehicle fuel before, the underlying reasoning was that biogas would be a better substitute for other biofuels (e.g. biodiesel and ethanol) because of energy efficiency and related climate and ecological considerations. The new argumentation now adds the argument that a policy to promote biogas (conditioned to biomethane) in the transportation sector would moreover also help to mitigate the tense situation in the German biofuel sector. This implies that it is no longer debated which bioenergy is better. According to the important economic evaluation criteria for instruments to protect climate and serve energy security, biogas at that point is however considered to be the main and most advantageous bioenergy. This indicates that the shift in the discourse had been completed and now biogas takes the position formerly taken by bioenergies.

This shift is visible in many ways. One telling example is the emphasis on the possibilities of efficiency increase of biomass utilization through biogas technology. This illustrates again the underlying premise of both discourse coalitions, that technology - though appropriated governed through policy as suggested in the ecological modernist view - , bears the solutions for environmental, climate and energy security problems. The only difference in this respect is that, while before bioenergy technologies in general were regarded as the technological answer to these problems, now biogas technology is seen as the appropriate technology. This is because - according to the dominant discourse coalition - it offers the possibilities of using biomass in such an efficient way that possible negative aspects (occurring mainly through excessive energy crop consumption) can be mitigated. Important technologies are presented for an efficient use of biomass feedstock biogas utilization in CHP and the conditioning of biogas to biomethane. Policy instruments to facilitate these technologies are highly debated and even lead to ideological conflicts. The idea of a CHP prescription for electricity production from biogas is linked to reproaches of exaggerated paternalism versus destructive liberalism. The liberal spectrum of representatives (mainly members of FDP) reproaches against the Greens that their call for a regulatory prescription of CHP for biogas plants is too paternalistic. They, in turn, argue that an all too liberal view on this topic negatively affects climate protection

as well as the future energy security. Regarding the fossil gas crisis of 2009, the emphasis on energy security and efficiency is becoming an even more powerful shared main storyline in the discourse. This is accompanied by a widespread consensus about the advantage of the versatile possibilities for utilizing biogas (for electricity and heat production as well as a vehicle fuel). For the last two years of this analysis, it is fair to say that the discourse in the federal assembly, as well as in the parliament, continued to be dominated by a view of biogas as being the most promising form of bioenergy.

A shift was seen from bioenergies in general to biogas in particular. In most ways, however, the discourse coalition centered around the necessity of acting against climate change and fossil energy source shortages remained similar. Storylines were similar (though of course about biogas and not bioenergies in general). Also, mostly the same actors were involved. Nonetheless notable is the emergence of slight criticism in 2010 and the very beginning of 2011. Besides ecological concerns, mainly similar to those previously applied to the case of biodiesel and ethanol, (i.e. environmental problematic of monocultures) emphasis can be found on the negative aspects of biogas in the social and agricultural-economical domain. Formerly, biogas was in that domain predominantly seen as beneficial in terms of rural development and job opportunities. Now, the landscape changes and the increasing lease prices for crop land through biogas production, it is argued, are often not accepted anymore by the surrounding communities and other agriculturists. However, these criticisms are always preceded by an acknowledgement of the merits and the importance of biogas; they are regarded as issues to be solved through policy adjustments. This again fits to the concept of ecological modernization.

Here again an incorporation of the public standpoint can be seen. Although the years after 2008 are not studied in Zschache and colleagues' (2011) discourse analysis of the public-mass-media discourse on bioenergies, some of the criticisms mentioned there are now reflected in the political discourse. To a certain extent, a reflection of these criticisms can also be found in the draft legislation of the parliament for the novel of the EEG coming into effect in 2012. This legislation envisages a general decrease of compensation for electricity from biogas, the cancellation of the NaWaRo-bonus, and limitation of energy corn and grain utilization. Besides these measurements, the novel should also mitigate the consumption of energy crops for biogas production through a particular promotion of manure utilization in biogas plants.

Nevertheless, this acknowledgement of critical storylines in discourse and on institutional level did not result in a discourse re-structuration or a loss of dominance of the discourse coalition. In fact, in the final month of the study period, these voices lost their attention due to the nuclear catastrophe in Fukushima, Japan in March 2011. In view of this catastrophe, some power is lost by the otherwise consistently important economic aspects for evaluating instruments of

climate protection and energy security. Possible higher costs of biogas (and also other renewable energies) compared to nuclear power are acknowledged, but framed as still being a solution favourable to nuclear energy.

Finally, considering the fact that the whole discourse on biogas can be regarded as a sub-discourse in the field of climate protection and energy security aligned to the concept of ecological modernization, it should also be mentioned that sub-coalitions are often identifiable within the main coalition that came to structure the discourse as a whole. Such sub-coalitions are not part of Hajer's theory. But since they were occasionally quite noticeable in the discourse, they deserve to be mentioned (Bruno, Linzbach 2011). For example, one can look at the debate about genetic engineering, introduced by the liberal FDP in connection with bioenergies. This can represent a means to increase the efficiency of biomass production to be used for bioenergy production. And as another illustrating example, the domain of politics' role in the bioenergy and biogas branch should be mentioned. However, within the debate, one sees competing storylines about the particular issue of policy promotions: On the plus side, they are a legitimate measurement to promote a valuable technology. However, they are also critical because of a general commitment to the free market. Nevertheless, encouragement was needed for the establishment of bioenergies or later biogas on the free market. In this case, a similar debate was also conducted in the public-media discourse arena, and the coalitions more or less conformed to the middle-right and green-left political blocs.

## 4 Conclusions

Having looked at how the policy discourse arena in Germany deals with biogas, some conclusions regarding the discursive basis of biogas's special role can be drawn. One conclusion stands out as being most important concerning the question of how discourse on biogas develops and is structured: Biogas and also the bioenergy discourse as a whole can be regarded as a sub-discourse of a broader discourse on the design of climate protection and energy security. This discourse, it appears in the analysis, is very dynamic and in many aspects aligned to the concept of ecological modernization. It can be concluded that this broader discourse is structured through a very dominant discourse coalition around ecological modernization. Though the concept is at no point explicitly mentioned, the discourse analysis reveals that the characteristics of this concept are accepted and employed by largely all represented parties in the federal assembly and in the parliament. Structuration, i.e. no opposed voices to this concept and also institutionalization of this hegemonic view can be found.

However, zooming in on actual biogas discourse, it appears that, although a structuration through a broader frame exists, still many aspects need to be considered in the design process of appropriated instruments for climate

protections and energy security. These dynamics are all the more apparent if one takes a closer glance at the political areas and social domains associated with biogas in the parliamentary and federal assembly discourse in Germany. Three conclusions can be drawn in this respect:

Firstly, between 2003 and 2011, a shift within the German discourse on biogas is identifiable inside the political arena: from a broader, positively-regarded bioenergy discourse to a more biogas-centred discourse. The storylines utilised by both foci present the respective form of energy as a solution to climate and energy problems and as being very beneficial for the domestic industry and development. The broader focus on bioenergies had a dominant position during the first three to four years of the analysis (during which biogas was mostly referred to as being one of several very valuable forms of bioenergies). Then, in 2007 and 2008, new biogas-positive and biodiesel and ethanol critical storylines began to re-structure the discourse and to fragment the consistently positive view on bioenergies. During that process, the focus had shifted by 2009 to one with biogas signifying a very beneficial instrument for climate protection and energy security. These views with two different foci came to shape most debates on biogas.

Secondly, it can be concluded that these two emphases in the discourse comprise the same members and use very similar storylines: From 2009, biogas' role is seen to correspond with the one which bioenergies had in 2003, 2004 and 2005. Moreover, the evaluation criteria for bioenergies are first and foremost based on economic reasoning. Following the shift, this was particularly the case for biogas. Social aspects like public acceptance are given much less consideration, although their relevance seems to attract more notice in the second half of the study period. Furthermore, the discourse is, before and after the shift, still united by an implied basic premise of a belief in technological solutions to climate/environmental and energy problems, in regard of which policies' role is to provide the appropriated governing. This, as already mentioned, corresponds with Hajers' concept of ecological modernization.

Thirdly, it can be concluded that smaller sub-coalitions are identifiable 'beneath' the dominating discourse. These sub-coalitions have their discourse structured along the lines of the dominating discourse, but differ in their choice of emphasis. This can most likely be explained by referring to political ideology. Parties with more liberal leanings evaluate their support of bioenergies and particularly biogas mostly in terms of giving incentives for economic development; generally they place high trust in the regulating forces of the free market. The more left-leaning ecologically-oriented spectrum of parties also legitimates slightly more paternalistic policies through perceived advantages for climate and environment. These place less emphasis on the economic contexts.

This structure of the discourse also enables explanations answering the second sub-question (*Which points of contention can be found?*). Looking to what extent

emerging conflict lines around bioenergies are considered in political discourse and if the ambiguity of bioenergies' image can be traced back to the political discourse on biogas. It can be recorded that climate change and energy security are the dominant aspects of the discourse in the policy arena and that the concept of ecological modernization provides the generally accepted approach to serve these issues. The dominance of these two aspects and the concept of ecological modernization influences the incorporation of conflict lines around other domains.

As it can be seen throughout the whole discourse, as long as biogas respectively bioenergies can be positively interpreted within this concept; other criticisms as they appear in public-mass-media discourse are considered but might not affect the overall positive view. The shift in the discourse from bioenergies as a generally advantageous field of renewable energies to mainly biogas as *the* most advantageous form of bioenergies is framed primarily in terms of energy security and climate protection. The evaluating criteria applied to bioenergies respectively biogas, particularly those from the economic domain, sometimes seem to be so powerful that they appear to be an end in themselves. But climate protection and energy security still provide the fundament that brings biogas (and also bioenergies) onto the agenda in the first place.

These conclusions about the German policy discourse on biogas are also validated through the institutionalization of the discourse in the most important body of legislation concerning biogas. This answers the last sub-question of this project. The regulatory institutionalization of the biogas discourse makes the link to climate protection and energy security very explicit. The EEG itself is coined as an act serving climate protection and mitigating dependency on fossil energy sources. Moreover, the EEG not only illustrates that the policy biogas discourse is itself a sub-discourse of the climate protection and energy security discourse; it also articulates that this is a design discourse comparable to findings about climate discourse from Fritz Reusswig (2010). This design process in the discourse can be monitored by means of the discourse development itself, and also in the regulatory institutionalization concerned (EEG). In the discourse itself, the necessity of climate protection and invention of means to mitigate fossil energy source dependency is not challenged at any point in the whole study period, i.e. a very strong discourse structuration in this respect can be found. However, the appropriate means are debated although the concept of ecological modernization seems to be widely accepted in the political arena as providing the framework to develop these means. This is also reflected in the EEG, which is designed as a dynamic law and is, during the study period, actually appropriated and expanded through several novels.

To summarize, what puts the policy discourse on biogas in a special and more positively framed role compared to other bioenergies is the structuration of the policy discourse according to the concept of ecological modernization. Within this concept and the accompanying domain linkages of climate protection, energy



security, science, technology and economy, it was shown, a structure is build in which it makes sense to perceive biogas as more advantageous then other forms of bioenergies. This discourse structuration is also clearly reflected in the regulatory institutionalization of the policy biogas discourse, as it can be seen in the EEG.

## 5 Discussion

Although some clear conclusions could have been drawn about the German policy discourse on biogas, and this project adds some insights to a more comprehensive understanding of the dynamics in the field of biogas, several more or less interrelated points of the above analyses deserve further discussion. Most importantly, perhaps, the determining storylines in the German policy discourse on biogas appeared to be energy security and climate protection; the discourse can even be seen as a sub-discourse on how to design these topics. It might have been valuable to take into account more insights on these areas. Especially the public media discourse on ecological modernization, which is the dominant concept structuring the political discourse, would have been interesting to incorporate, as well as points of public contention from the broader fields of climate protection and energy security. They could have influenced the policy discourse on biogas, possibly even more so than for the general points of contention on bioenergies. It can be asked whether other discourse arenas, such as the public-media discourse, are also structured around such broader concepts (as ecological modernization), and if so, which ones. However, this remains a subject for further research.

In respect of this dominant structuration of policy discourse on biogas according to the concept of ecological modernization, the question arises, why this concept is that dominant and generally not contested at all in the first place? This, as we can see in the study from Bruno and Linzbach (2011) is far from usual or necessary. In Swedish policy discours on biofuels voices calling for a profound change of lifestyle to cope with the threads of climate change and fossil fuel shortages can be found, though these voices at no point get a dominat position in discourse. However, in the German discourse on biogas this view is not argued by any party. On this issue, it can be speculated, that in Germany the voices calling for a change of lifestyle were not found since ecological modernization is also part of the of the red green government concept during their government coalition (until 2005 the green party was member of the government) ([www.bmu.de/pressearchiv](http://www.bmu.de/pressearchiv)). Thus the green party which would be likely to bring in such voices into the discourse as it was found in the Swedish discourse was in this case committed to the concept of ecological modernization.

Another point is that it is with relative difficulty that different discourse actors could be identified in the source material. Basically, beyond the intra-parliamentary and federal assembly actors and cabinet ministers, few direct and explicit references were made to any actors besides the major players. References

were made only occasionally to scientific experts, actors from the bioenergy/biogas branch or citizens' groups. This raises issues for the analysis. A premise of the discourse coalition concept is that such a coalition brings together actors from different parts of society who share a particular discourse on a topic. Some parallels in the way bioenergy was discussed in public-media and handled in political discourse could be found, the contentions found in the public-media discourse on bioenergies to a largely found some consideration in policy discourse on biogas. It was nevertheless hard to see beyond the parliamentary actors. However, these parallels allow the assumption that the parliamentary discourse was not inherently created by and limited to the parliament. This at least proves the close links between these discourse arenas. For example, the identified discourse shift from bioenergy in general to biogas in the political discourse sometimes explicitly refers to acceptance problems of the biogas branch in public. It is thus to some extent possible to trace how the intra-parliamentary discourse is related to (possible) extra-parliamentary discourse. However, it does not say much about how much the discourse coalition identified here stretches beyond the parliament. Conclusions about how the analyzed political discourse is related to the policies and actions of other actors cannot be drawn from the examined material. In other words, the present analysis explains why biogas has despite the criticisms on bioenergies an especially positive role in policy discourse and in concerned regulatory institutionalization; This is because of the discourse structuration according to the concept of ecological modernization. Also the shift in discourse from bioenergies in general to a positive view on biogas in particular fits into that explanation. Nonetheless, even though it can be said that the structurization of the policy discourse in terms of an ecological modernizationist concept provided kind of a protective framework keeping biogas in a positive role, the parallels between public-media and political discourse (in terms of appearing critical points) do not contradict the speculation, as was mentioned in the research motivation, that there are influencing relations between different discourse spheres and between discourse and action. These relations are said to shape the discourse and are very probably themselves being shaped and influenced by many factors. Presumably, more explanatory power would be added if these relations could be better explicated. For example additionally study could be carried out over the broader topic of climate protection and energy security and the concept of ecological modernization, and also over other discourse spheres, such as professional or scientific discourse.

However, as we have seen, the incorporation of the public-mass media discourse could only partly mitigate the problems of seeing beyond the parliamentary actors. This limits the conclusions that can be drawn. But it is not critical in a study like this, which has the main objective of investigating the discourse in the two arenas that finally decide regulatory institutionalizations (i.e. parliamentary and federal assembly discourse). With this in mind, critical minds might discuss the use of the discourse institutionalisation concept. In Hajer's theory, this concept signifies a

progression: Certain storylines initially structure discourse and later start to influence actual policy. In the context of parliamentary and federal assembly debates, one might assert that this progression loses some of its meaning: Parliamentary discourse is not far from the actual act of legislation. I.e. By the time the parliamentary discourse is structured, the institutionalisation can be seen as an almost immediate effect. Conversely, it could also be argued that this furthermore depends on the degree of consensus or dissent on a particular issue. However, in the present analysis characterised by a large degree of consensus, the institutionalization was a somewhat immediate effect of the discourse. But nevertheless valuable conclusions could have been drawn about which main domains and concepts in the discourse most influenced the regulatory institutionalizations. The value of Hajer's concept is thereby underlined, despite these criticisms.

Furthermore, the inherent discourse analytical premise is that political and social problems are social constructs. What becomes clear is the strength of discourse analysis in examining the underlying processes of the emergence of these problems. The approach critically analyzes the development, the initial conditions and the effects (as for instance arising conflict lines) of facts and knowledge by investigating the processes of selections, transformations and the context of those facts. This makes visible conditions of socially accepted and shared views on problems, as well as foundations, potentials and limits of social actions and changes (Paler 2008). With this in mind, the discourse coalition and discourse structuration concepts appear to be useful for illuminating conditions within the parliament and federal assembly. Discourse institutionalisation could probably also be useful to study how discourse influences other type of institutions beyond the policy process and the political domain. This is still the case even when it is not in the sense where Hajer first used the concept.

With the above points in mind, it is also necessary to address the issue of why plenary protocols from the Bundestag and Bundesrat as source material were chosen in the first place. Of course, if the goal had been to examine biogas discourse in society as a whole, it would not have been sufficient. But that was never the objective. Still, even for a focus on political discourse, other sources could have been added: parliamentary reports, committee meeting protocols etc. This was not done for several reasons. On one hand, some limitations were necessary due to time and scope constraints. On the other hand, the plenary and federal assembly session transcripts arguably contain the clearest statements of political positions and are most closely related to the actual institutionalization processes. Thus, the plenary session transcripts form the most fruitful basis for illuminating the discursive processes and their institutionalization in respect to the special role of biogas. This was the ultimate objective of the study and it revealed some useful explanatory insights.

## 6 Reference List

- Bdbe. Website Bundesverband der deutschen Bioethanolwirtschaft e.V. (bdbe) Retrieved February 04, 2011, from [http://www.bdbe.de/\\_33\\_66\\_\\_.html](http://www.bdbe.de/_33_66__.html).
- Biostrom nein danke! (2011, July 14). Die Zeit, 29, 35–36.
- Blatter, J., Janning, F., & Wagemann, C. (2007). Qualitative Politikanalyse: Eine Einführung in Forschungsansätze und Methoden. Wiesbaden: VS Verlag für Sozialwissenschaften | GWV Fachverlage GmbH Wiesbaden.
- BMU Pressearchiv 14. Legislaturperiode, from ([http://www.bmu.de/pressearchiv/14\\_legislaturperiode/pm/1454.php](http://www.bmu.de/pressearchiv/14_legislaturperiode/pm/1454.php)).
- Böhm, A. (2000): Theoretisches Codieren: Textanalyse in der Grounded Theory. In: Flick, U., Kardorff, E. v. und Steinke, I. (Eds.). Qualitative Forschung: Ein Handbuch, (pp. 475-485), Rowohlt Taschenbuch Verlage, Reinbeck bei Hamburg.
- Bruno, K., & Linzbach, A. (2011). Political discourse on biofuels A comparison between Sweden and Germany.
- Bundesministeriums der Justiz (2004). Gesetz für den Vorrang Erneuerbarer Energien (Erneuerbare-Energien-Gesetz): EEG.
- Bundesministeriums der Justiz (2009). [Duplikat] Gesetz für den Vorrang Erneuerbarer Energien (Erneuerbare-Energien-Gesetz): EEG.
- Bundesregierung (Ed.). (Draft EEG 2012): Gesetzentwurf der Bundesregierung Entwurf eines Gesetzes zur Neuregelung des Rechtsrahmens für die Förderung der Stromerzeugung aus erneuerbaren Energien from: [http://www.bmu.de/erneuerbare\\_energien/downloads/doc/47464.php](http://www.bmu.de/erneuerbare_energien/downloads/doc/47464.php).
- Deutscher Bundestag (Ed.). Erfahrungsbericht 2004 zum Erneuerbare-Energien-Gesetz (EEG-Erfahrungsbericht 2004): Drucksache 14/6077.
- Deutscher Bundestag (Ed.). [Duplikat] Erfahrungsbericht 2011 zum Erneuerbare-Energien-Gesetz (EEG-Erfahrungsbericht 2011): Drucksache 348/11.
- Diaz Bone, R. et al (2007). The Field of Foucaultian Discourse Analysis: Structures, Developments and Perspectives. Forum Qualitative Sozialforschung, (8), from [www.qualitative-research.net-texte/2-07/07-02-30-e.htm](http://www.qualitative-research.net-texte/2-07/07-02-30-e.htm).
- Diaz-Bone, R. (2010). Was ist der Beitrag der Diskurslinguistik für die Foucaultsche Diskursanalyse? Forum Qualitative Sozialforschung, 11(2), Art. 19, from <http://www.qualitative-research.net/index.php/fqs/article/viewArticle/1454/2954#g1>.
- Entman, R. M. (1993): Framing: Towards Clarification of a Fractured Pradigm. In: Journal of Communication 43 (pp. 51-58).
- Fachverband Biogas e.V. (Ed.) (2010). Biogas Segment Statistics 2010. Retrieved August 25, 2011, from [http://www.biogas.org/edcom/webfvb.nsf/id/DE\\_Branchenzahlen/\\$file/11-06-27\\_Biogas%20Branchenzahlen%202010\\_eng.pdf](http://www.biogas.org/edcom/webfvb.nsf/id/DE_Branchenzahlen/$file/11-06-27_Biogas%20Branchenzahlen%202010_eng.pdf).
- Fachverband Biogas e.V. (Ed.) (2008). Aktueller Stand zum EEG 2009. Retrieved August 26th, 2011 from <http://www.agrarinfo.rlp.de/Internet/global/themen.nsf/0a5ac1487b28d1c9c>

1257633004c7d60/6c36c49436289eb4c1257507003c650f/\$FILE/EEG\_aktuell  
er\_Stand.pdf

- Foucault, M. (1999). *Botschaften der Macht. Reader Diskurs und Medien*. Stuttgart: Deutsche Verlags-Anstalt.
- Gamson, W. A. & Modigliani, A. (1989): *Media Discourse and Public Opinion on Nuclear Power: A Constructionist Approach*. In: *American Journal of Sociology* 95 (pp. 1-37).
- Gadinger, F. (2003): „Internationale Beziehungen und Policy-Forschung: Ein produktiver Dialog?“ Papier präsentiert auf dem Workshop „Ideen, Wissen, Diskurse: Neuere Konzepte der Theorie Internationaler Beziehungen“ im Rahmen der Jahreskonferenz des IPC, Frankfurt am Main, 10/2003.
- Gill, R. (2000). *Discourse analysis*. In: M. W. Bauer & G. Gaskell (Eds.), *Qualitative Researching with Text, Image and Sound: A Practical Handbook* (pp. 172-190). London: Sage.
- Hajer, M. A. (1995). *The Politics of Environmental Discourse. Ecological Modernization and the Policy Process*, Oxford: Clarendon Press.
- Hajer, M. A. (2003): *Argumentative Diskursanalyse. Auf der Suche nach Koalitionen, Praktiken und Bedeutung*. In: Keller, Rainer et al. (Eds.): *Handbuch sozialwissenschaftliche Diskursanalyse. Band 2: Empirische Fallstudien*, (pp. 271-297). Leske + Budrich, Opladen.
- Hajer, M. A. (1993). *Discourse coalitions and the institutionalization of practice: The case of acid rain in Britain*. In: J. Forester and F. Fischer (Eds.), *The Argumentative Turn in Policy and Planning* (pp. 43-76). Durham: Duke University Press.
- Hajer, M. A., 1996: *Ecological modernization as cultural politics*. In: Lash, S. (Ed.). *Risk, environment and modernity: Towards a new ecology* (pp.246-268). London: Sage.
- Jacobsson, S., & Johnson (Bergek), A. (2004): *Transforming the Energy sector: the evolution of technological systems in renewable energy technology*. In: *Industrial and Corporate Change*, Jg. 13, H. 5, S. 815–849.
- Janning, F. & Toens, K. (Eds.) (2008). *Die Zukunft der Policy-Forschung: maarten Hajer; Diskursanalyse in der Praxis: Koalitionen, Praktiken und Bedeutung* (pp.211-223): VS Verlag für Sozialwissenschaften (GWV).
- Keller, R. (2005). *Analysing discourse. An approach from the sociology of knowledge*. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 6(3), Art. 32. Available at: <http://www.qualitative-research.net/fqstexte/3-05/05-3-32-e.htm>.
- Keller, R. (2004). *Handbuch sozialwissenschaftliche Diskursanalyse* (2. Ed.). Wiesbaden: VS Verl. für Sozialwiss.
- Kohring, M. & Matthes, J. (2002): *The Face(t)s of Biotech in the Nineties: How the German Press Framed Modern Biotechnology*. In: *Public Understanding of Science* 11 (pp. 143-154).
- Krüger-Charlé, M. (2008). *Zeitdiagnose Wissensgesellschaft: Überlegungen zur Rekonstruktion eines öffentlichen Diskurses*. In: . Gelsenkirchen, S. *Institut Arbeit und Technik Jahrbuch 2008*, 71–83.

- Littig B., & Grießler, E. (2004). Soziale Nachhaltigkeit. Wien: Bundeskammer für Arbeiter und Angestellte. Retrieved August 15, 2011, from <http://www.arbeiterkammer.at/bilder/d24/Umweltpolitik160.pdf>.
- Mautz, R. (2006). Der Ausbau der regenerativen Energien - Chancen und Barrieren. SOFI-Mitteilungen, (34), 29–41.
- Negro, S., & Hekkert, M. (2008). Explaining the success of emerging technologies by innovation system functioning: the case of biomass digestion in Germany. *Technology Analysis & Strategic Management*, 20(4), 465–482.
- Online Database of the German Bundesrat [http://www.bundesrat.de/cln\\_179/nn\\_8336/DE/parlamentsmaterial/beratvorg/suche-beratungsvorgaenge-node.html?\\_\\_nnn=true](http://www.bundesrat.de/cln_179/nn_8336/DE/parlamentsmaterial/beratvorg/suche-beratungsvorgaenge-node.html?__nnn=true).
- Online database of the German Bundestag <http://suche.bundestag.de/index.do>.
- Paler, M. (2008). Umweltpolitische Prozesse aus diskurstheoretischer Perspektive: Eine Analyse des Südtiroler Feinstaubproblems von der Problemkonstruktion bis zur Umsetzung von Regulierungsmaßnahmen. *Social Ecology Working Paper*, (105).
- Poeschl, M., Ward, S., & Owende, P. (2010). Prospects for expanded utilization of biogas in Germany. *Renewable and Sustainable Energy Reviews*, (14), 1782–1797.
- Reusswig, Fritz (2010) *Klimawandel und Gesellschaft. Vom Katastrophen- zum Gestaltungsdiskurs im Horizont der postkarbonen Gesellschaft*. In Voss, M. (Ed.). *Der Klimawandel: Sozialwissenschaftliche Perspektiven*. Wiesbaden: VS Verl. für Sozialwiss.
- Ruef, A & Markard, J. (2006): What happens after a hype? Changing expectations and their effect on innovation activities in the case of stationary fuel cells. *Technology Analysis & Strategic Management* 22(3), (pp. 317-338).
- Schäfer, M. S. (2008). Diskurskoalitionen in den Medien. Ein Beitrag zur theoretischen und methodischen Verbindung von Diskursanalyse und Öffentlichkeitssoziologie [Discourse Coalitions in the Mass Media. On Theoretical and Empirical Connections between Discourse Analysis and a Sociology of the Public Sphere]. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 60(2), 367–397.
- Scheufele, B. (2003): *Frames – Framing – Framing-Effekte: Theoretische und methodische Grunlegung des Framing-Ansatzes sowie empirische Befunde zur Nachrichtenproduktion*. Opladen: Westdeutscher Verlag.
- Schindler, D. (2007). Rezension: Brigitte Kerchner & Silke Schneider (Hrsg.) (2006). Foucault: Diskursanalyse der Politik. Eine Einführung. *Forum Qualitative Sozialforschung*, 8(2), Art. 16, from <http://www.qualitative-research.net/index.php/fqs/article/view/263/578>.
- Theuvsen, L., Plumeyer, C.-H., & Emmann, C. (2010). Endbericht zum Projekt: „Einfluss der Biogasproduktion auf den Landpachtmarkt in Niedersachsen“.
- Website German Bundesrat: [www.bundesrat.de](http://www.bundesrat.de). Retrieved August 15, 2011, from [http://www.bundesrat.de/cln\\_171/nn\\_8328/DE/organe-mitglieder/organe-mitglieder-node.html?\\_\\_nnn=true](http://www.bundesrat.de/cln_171/nn_8328/DE/organe-mitglieder/organe-mitglieder-node.html?__nnn=true).
- Website Biokraftstoffverband: [www.biokraftstoffverband.de](http://www.biokraftstoffverband.de). Retrieved August 25, 2011, from <http://www.biokraftstoffverband.de/de/politik/deutschland.html>.

Website Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU): [www.bmu.de](http://www.bmu.de).

Website Deutscher Bundesrat: [www.bundesrat.de](http://www.bundesrat.de), from [www.bundesrat.de](http://www.bundesrat.de).

Website Deutscher Bundestag: [www.bundestag.de](http://www.bundestag.de).

WGBU, & Schulz-Baldes, M. (2009). Welt im Wandel: zukunftsfähige Bioenergie und nachhaltige Landnutzung. Berlin: Wiss. Beirat der Bundesregierung Globale Umweltveränderungen (WBGU).

## 7 Appendix

### 7.1 Appendix 1

#### Build-up of the parliament during the study period

Table 1. Current (early 2011) makeup of the German parliament. (Since federal elections of 2009). Source: [www.bundestag.de](http://www.bundestag.de)

Party name	% of popular vote	No. of seats
CDU/CSU	33.8	239
SPD	23,0	146
FDP	14.6	93
The Left	11.9	76
The Greens	10.7	68

Table 2. Makeup of the German parliament during the time of the grand coalition (2005-2009). Source: [www.bundestag.de](http://www.bundestag.de)

Party name	% of popular vote	No. of seats
CDU/CSU	35,2	226
SPD	34,2	<b>222</b>
FDP	9,8	61
The Left (PDS at that time)	<b>8,7</b>	<b>54</b>
The Greens	<b>8,1</b>	<b>51</b>

Table 3. Makeup of the German parliament during the time of the red-green coalition (2002-2005). Source: [www.bundestag.de](http://www.bundestag.de)

Party name	% of popular vote	No. of seats
CDU/CSU	38,5	248
SPD	38,5	<b>251</b>
FDP	7,4	47
The Left (PDS at that time)	<b>4,0</b>	<b>2</b>
The Greens	<b>8,6</b>	<b>55</b>



## 7.2 Appendix 2

### Lists of all found and analyzed protocols from the Bundesrat and the Bundestag

**Chart 1: Bundesrat (federal assembly)**

Search Item Protocol Number	Biogas	Biomasse	Bioenergie	Biomethan	Biogasanlage	Agrogas	Energiemais	Energiepflanzen
<b>2003</b>								
786			X					X
<b>2004</b>								
796		x						
799		X						
<b>2005</b>								
<b>809</b>			X					X
<b>2006</b>								
<b>819</b>		X						
821		X	X					
826	X							
<b>828</b>		X						X
<b>2007</b>								
831		X						
834		X						
839	X	X	X					
<b>2008</b>								
<b>853</b>								X
<b>2009</b>								
859		X		X				

<b>2010</b>								
<b>868</b>		x						
871		X						
<b>873</b>		x						
<b>874</b>		x						
<b>876</b>			X					
<b>877</b>		x						
878		X						
<b>2011</b>								
882		X						
883			x					X
884		X						X

In total 23 protocols for five search items. (The three items *Agrogas* [synonym for *biogas*], *Energiemais* [energy corn] and *Biogasanlage* [biogas plant] did not yield any results), from which 14 were considered relevant. The manually, after a first review sorted out, irrelevant protocols are marked red in the table.

**Chart 2: Bundestag (parliament)**

Search Item	Biogas	Biomasse	Bioenergie	Biomethan	Biogasanlage	Agrogas	Energiemais	Energiepflanzen
<b>2003</b>								
15023		x						
15029			x					
<b>15069</b>		x						
<b>2004</b>								
15087	x	x						
15103	x		x					

15108		x						
15148			x					
<b>2005</b>								
15169	x	x			x			
<b>15178</b>		x						
15184		x						
16005		x						
<b>2006</b>								
16014		X			X			
16015	X	X			x			
<b>16016</b>		X	X					
16019		X						
16022		X						
<b>16024</b>		X						
16025		X						
16026	X	X	X	X	X			
16027	X		X					
16029		X	X					x
16032		X	X					
<b>16035</b>								x
16036	X			X	X			
16040		X	X		X			
<b>16042</b>		X						
16043		X	X					
16045		X			X			
16047		X						
<b>16048</b>		X	X					
<b>16051</b>		X						

16053		X						
16054	X	X	X					
16057	x	X	X		X			
16060		X	X					x
16062		X						
16063		X	X					
16067		X	X					
16070		X						
<b>2007</b>								
16075		X						
16076		X	X					
16078	X	X						
16081		X						
16082	X	X	X					
16083	X		X					
16085	X	X						
16087		X						
16089		X	X					
16090		X						x
16091	X	X			X			
16094		X	X		X			x
16097		X	X		X			x
16100		X						
16101	X	X						
16102		X	X					
16105					X			
16106	X	X	X					
16108		X						

16109		X			X			x
16110	X	X						
16114		X						
16115		X			X			
16116			x					
16118	X	X	X		X			
16119					X			
16120	X	X	x		X			
16121		X						
16122		X						X
16123			X		X			
16126		X			X			
16128	X	X						
16130	X	X						
16133	x	X			X			
<b>2008</b>								
16136	X	X						
16138		X						
16139		X			X			
16140		X						X
16142		X						
16145	X	X	X		X			
16147		X	X		X			
16149		X	X					
16150	X	X	X		X			
16151	X				X			
16153		X	X		X			
16155		X						

16156	X	X	X					
16157	X	X	X					
16159		X	X					X
16160	X	X						
16161		X	X				x	
16163	X	X	X		X			
16166					X			
16167	X	X	X		X			
16168			x					
16169	X	X	X					
16172	X	X	X					
16174		X						
16176		X						
16177					x			
16183		X	X					
16186		X	X					
16188		X	X		X			
16190					X			
16193	X	X	X	X	X			
16194		X			X			
16197		X						
<b>2009</b>								
16199	X							
16200	X		X					
16201				X				
16202	X	X						
16205	X				X			
16208	X	X			X			

16211			x					
16214			x					
16217	X	X	X	X	X			
16219	X	X						
16220	X	X	X		X			
16222		X						
16224			X					
16226	X							
16227	X	X						
16228								X
16230	X	X	X		X		x	
17003					X			
17004		x		x				
17008	X							
17013		X						
<b>2010</b>								
17014		X						
17023			X					
17025	X	X	X		X			
17026		X	X					
17031					X			
17032		X	X					
17033					x			
17034		X						
17037		X						
17040		X						
17042		X						
17043		X						X

17046		X						
17047		X						
17048								X
17049	X	X	X					
17051	X	X			X			
17055		X						
17057		X			X			
17059					X			
17060		X						
17061			X					
17062	X				X			
17065	X	X		X				
17068	X	X	X		X			
17071	X	X	X	X	X			
17075		X	x					
17076		X						
17078	X	X		X	X			
<b>2011</b>								
17084		X						
17087			x					X
17091		X			X			
17093	X			x	X			
17095		X						
17096	X				X			
17098		X						
17099			x					
17103		X						X
17104	X							



17105			x		X			X
17107	X	X						
17108		X	X	x				
17110		X						
17114		X	X		X			


In total 171 protocols for all eight search items (however, the item *Agrogas* [synonym for *biogas*] didn't yield any results) from which 111 were considered relevant. The manually, after a first review sorted out, irrelevant protocols are marked red in the table.

2003: 2/64 = 3,1%  
2004: 4/65 = 6,2%  
2005: 3/48 = 6,2%  
2006: 18/65 = 27,7%  
2007: 22/59 = 37,3%  
2008: 17/64 = 26,6%  
2009: 14/50 = 28%  
2010: 14/69 = 20,3%  
2011: 6/33= 18,2% (until 20.6.2011)

### 7.3 Appendix 3

#### Coding

The chart shows an overview of the categories acquired through the coding process of the plenary protocols from the German Bundestag and Bundesrat (study period 2003-2011). The issues about which a consensus could be found are listed as well as the major conflicts within these domains, including references to the parties representing the respective views. Furthermore the major shifts during the discourse development are listed and especially noticeable incidents within the policy discourse.

Category	Consensus	Shifts in consensus over time	conflicts 	conflicts	Majority opinion	Noticeable issues
<b>Energy security</b>	Biogas is crucial as well as bioenergies in general (particularly 2003,04,05)	Particularly biogas is important (higher efficiency of biomass utilization than other bioenergies)	biogas/bioenergy enough as a base load energy source (DIE LINKE, Grüne, SPD)	Other energy sources are necessary to cover base load (FDP, CDU/CSU)		The role of biogas is seen as the more important during the gas crisis 2009 and again after Fukushima
<b>Climate protection</b>	Biogas is crucial as well as bioenergies in general (particularly 2003,04,05)	While other bioenergies (biodiesel) are problematic biogas is advantageous. (ca. 2006-2011)	biogas/bioenergy enough as a base load energy source (DIE LINKE, Grüne, SPD)	Other energy sources are necessary to cover base load (FDP, CDU, CSU)		The role of biogas is seen as the more important during the gas crisis 2009 and again after Fukushima
<b>Economy</b>	Economic measurements should be taken into account for evaluating biogas and concerned actions		Self regulating forces of the market			After Fukushima expenses of biogas and renewable energy use become secondarily
<b>Social domain</b>	Rural development	Acceptance issues 09-11				
<b>Policy domain</b>	Policy should promote bioenergy and mitigate all barriers for further investments in this branch	Policies are necessary to avoid negative aspects of generally beneficial biogas branch	Market deliberalization (contra CHP obligation) FDP (pro coal energy plants) North Rhine Westphalia Bundesrat	Market governing in order to serve climate protection and energy security (pro CHP obligation) Bündnis 90/DIE GRÜNEN, DIE LINKE	Establishment of innovative branch (Policy regulations are necessary in order for that)	
<b>Technology/ Science</b>	Important instrument to solve energy and climate challenges Research and Development should be promoted		Efficient biomass use Genetic engineering (FDP) CHP Obligation (SPD, Bündnis 90/DIE GRÜNEN)		CHP is an important technology	

