The Public Debate on Biofuels in Germany: Who Drives the Discourse?

Die öffentliche Debatte um Biokraftstoffe in Deutschland: Wer führt den Diskurs?

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Abstract

Following the European Commission's concept of a "Knowledge-based Bioeconomy" (KBBE), great significance in the process of political decision-making shall be attached to scientific expertise. In contrast, the conducted print media analysis on the German biofuel discourse for the period from 1995 to 2012 only found a marginal role of scientific actors in the debate. Even though support for biofuels has been largely rejected as inefficient by several scientific brain trusts for many years, the German government, as well as the EU adhere to this policy. This raises the question of the underlying interests that drive the persistent support for biofuels. In this context, the paper investigates the standing and positioning of different actors in the public media and thereby it contributes to a better understanding of why the political support for biofuels is continued, despite the doubts of scientists. One of the core findings of the study states, that one reason for this political support can be seen in the dominance of a coalition of biofuel advocates, mainly formed by political and economic actors, in the public discourse.

Key Words

biofuel policy; media discourse analysis; political economy; organized interest groups; bioeconomy; public media

Zusammenfassung

Laut dem Konzept der Europäischen Kommission einer wissensbasierten Bioökonomie soll dem wissenschaftlichen Expertenwissen eine bedeutende Rolle im politischen Entscheidungsprozess zukommen. Hingegen stellt die durchgeführte Printmedienanalyse des deutschen Biokraftstoffdiskurses von 1995 bis 2012 nur eine untergeordnete Rolle wissenschaftlicher Akteure in der Debatte fest. Obwohl weite Teile der Biokraftstoffförderung seit Jahren von wissenschaftlichen Expertengremien als ineffizient abgelehnt werden, halten die Bundesregierung und die EU an dieser Politik fest. Dies wirft die Frage auf, welche Interessen die anhaltende Förderung von Biokraftstoffen tatsächlich vorantreiben. In diesem Zusammenhang untersucht der Artikel das Standing und die Positionierung verschiedener Akteure in den öffentlichen Medien und trägt damit zu einem besseren Verständnis bei, warum die Biokraftstoffpolitik trotz der starken Kritik von Wissenschaftlern gefördert wird. Ein zentrales Ergebnis der Studie besagt, dass die Dominanz einer Koalition aus Biokraftstoffbefürwortern im öffentlichen Diskurs, welche sich vor allem aus politischen und ökonomischen Akteuren zusammensetzt, als ein Grund für die politische Förderung von Biokraftstoffen anzusehen ist.

Schlüsselwörter

Biokraftstoffpolitik; Mediendiskursanalyse; politische Ökonomie; organisierte Interessengruppen; Bioökonomie; öffentliche Medien

1 Introduction

The global transition of energy systems, as one cornerstone towards the development of a biobased-economy does not only involve the shift of resources from fossil energy to the renewable energy sector; policy-makers also have to face the competition among different types and uses of bioenergy. For instance, agricultural area could be used to cultivate rapeseed for the production of biodiesel but instead the area could also be used to cultivate corn for the production of biogas or bioethanol. In this respect, it has been suggested to focus subsidization policies on the most efficient uses of biomass in terms of energy efficiency and emission mitigation (WBA, 2007). To identify the most efficient options and to develop a well-suited legal framework, policy-makers rely on

information and recommendations by different stakeholders including economic, societal and scientific actors. The question arises about the share of each actors influence on political decision-making. Following the European Commission's concept of a knowledge-based bioeconomy, which emphasizes in particular the role of science-based policy making (EC, 2010), we could assume a great influence of scientific actors in the policy process. Whether this assumption holds true or whether other actors have a higher influence in reality is the interest of research in this article.

In this context, the paper aims to make two contributions to the literature on the political economy of the bioeconomy. Firstly, this study argues that not all bioeconomy-related policies can be explained by referring to the proclaimed policy aims. As an example of such a policy, the political support of biofuels in Germany is analyzed. The discrepancy between the proclaimed major aim of this policy – mitigating climate change – and the rejection of biofuels by several brain trusts (LEOPOLDINA, 2013; WBA, 2007; WBGU, 2008) for many years, as one of the most unsustainable uses of biomass in terms of its overall potential to reduce CO_2-emissions and its relatively high CO_2-abatement costs, leads to the conclusion that the persistent support is driven by other objectives. Hence, to understand such policies, it is necessary to view them in a broader political economic context (DEPPERMANN et al., 2016).

Secondly, the paper proposes that in such cases, media discourse analysis can contribute to our understanding of bioeconomy-related policies. In recent work, the concept of discourse analysis has generated interesting insights into political decision-making (ERJAVEC et al., 2015; LINHART and DHUNGEL, 2013; HESS et al., 2012). The importance of the media in political agenda setting and decision-making is increasingly being recognized, especially in the field of agricultural and environmental economics (SWINNEN, 2010). Against this background, the media discourse on biofuels in Germany is analyzed for the time period from 1995 to 2012.

2 Data and Methods

In policy research, information and communication are defined as a central instrument of interest intermediation by organized interests (ALEMANN and ECKERT, 2006). Specifically the relevance of the public as a receiver of this communication is increasingly recognized as organized interests aim to reach the sovereignty of interpretation on specific issues (LINHART and DHUNGEL, 2013). Channeling the public opinion in a specific direction helps enforcing own interests in the policy process. This is where the media discourse analysis sets in by investigating which actors are able to make themselves heard in the media, which positions are dominating the debate and how the discourse changed over time.

By analyzing a public discourse, the news coverage in mass media forms the core of interest (KELLER, 2011). To analyze the national biofuel debate, this study focused on articles published in the *Süddeutsche Zeitung*, *Frankfurter Allgemeine Zeitung*, *Die Welt*, *Handelsblatt* and *Die Tageszeitung*, the five national quality dailies with the largest circulation in Germany (IVW, 2013). These newspapers were chosen for several reasons. Firstly, the study focuses on print media, because this form has the advantage that discussions can be traced over longer periods of time (SCHWAB-TRAPP, 2006) and are recognized as having the largest influence on the problem perception of recipients compared to other media (MCCLURE and PATTERSON, 1976). Secondly, empirical studies showed that these quality broadsheets are regularly read by German policy-makers and other journalists (HERZOG et al., 1990; SCHNEIDER and OLLMANN, 2013). Thus, the selected newspapers are influencing decision-making processes and provide topics for other media (BONFADELLI and FRIEMEL, 2011). Furthermore, the broadsheets cover the main political spectrum of German politics with the FAZ considered being rather conservative, while the SZ having a more social-liberal profile (SCHNEIDER and OLLMANN, 2013).

By using the digital online archives, every section of the newspapers was analyzed for one of several keywords, including their grammatical variations (see Table 1) and thus, some 2160 articles were selected. Out of this total number of articles, 303 random samples were selected for the analysis covering all five newspapers and the entire time period from 1995 to 2012. The sampling procedure followed the principle of a theoretical saturation (STRAUSS and CORBIN, 2015) and thus, after reaching a point where more samples would bring no further insights, the analysis was completed. In this empirical analysis, the theoretical saturation was reached after three stages of sampling and a sample size of 303 articles. Based on these samples, covering about 14% of the total number of articles, the analysis of relevant actors and their assessment of biofuels were conducted by using the software MAXQDA. The codification followed the lines of a two-step content analysis (HESS et al.,

Table 1. Keywords for the biofuel discourse in Germany

Agrodiesel	Agrosprit	Biodiesel	Bioethanol
Biokraftstoff	Biosprit	Biotreibstoff	E10
Ökobenzin	Ökodiesel	Ökosprit	Pflanzenkraftstoff
Pflanzenmethlester (PME)	Pflanzenöl	Pflanzensprit	Pflanzentreibstoff
Rapsdiesel	Rapsmethylester (RME)	Rapsöl	Sun-Diesel

Source: own representation

2012). In the first step, a qualitative content analysis was carried out to identify the different actors and their positioning in the discourse. Secondly, a quantitative text analysis investigated the standing of the actors and their overall positioning towards biofuels, which allows us to categorize supporters and opponents of biofuels. Due to a relatively long sample period, the analysis covers not only the levels of standing and positioning of the actors, but also a third, temporary level of investigation, which offers valuable clues to possible changes in the discourse. Thereby, the analysis contributes to the growing literature on the research of discursive change (cf. KELLER, 2010).

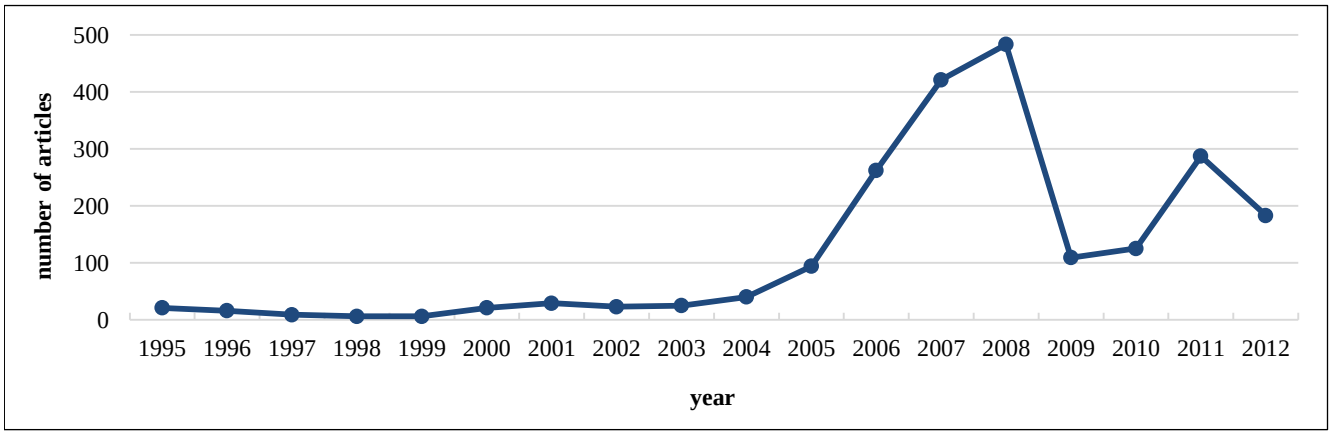
3 Results

3.1 Structure of the News Coverage

Before we will deal with relative measurements in the following chapters in terms of how successful an actor can place its statements in the media in comparison to other actors, this chapter focuses on absolute sizes of the national discourse. This is also instructive as the size of a discourse indicates how relevant the issue is for public media (GERHARDS and SCHÄFER, 2006). Then again, this is relevant, as we know from researches on agenda-setting, that increased media attention for a specific issue often affects the recipients to consider the issue to be important. The hierarchy of relevance in the media agenda is translated into the hierarchy of the information of recipients (RÖSSLER, 2013).

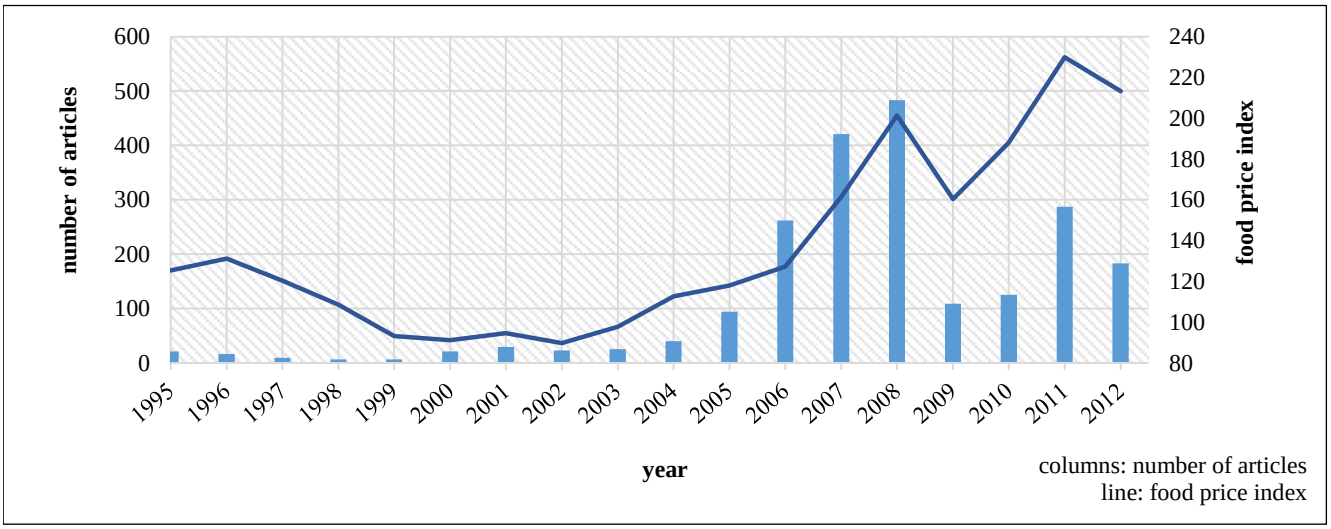
Beside absolute measurements of a discourse, the „issue attention cycle“ (DOWNS, 1972) is another crucial feature to describe public debates. How does the chronological sequence of the news coverage look like? Are there any phases of intense debate and what might have determined the rise in media interest? In the analyzed German print media, we find some 2,160 articles on the basis of the pre-defined keyword search in the sample period from 1995 to 2012 that raise the issue of biofuels. An intense public debate on biofuels begins not until the year 2005 (cf. Figure 1). Within only three years the news coverage enormously increased from 94 articles in 2005 up to 483 articles published in 2008. Equally rapidly, the issue loses attention after 2008 and drops back almost to the level in 2005. A repeated peak in news coverage can be denoted in 2011 followed by a decrease until the end of the sample period.

Figure 1. Chronological sequence of the news coverage on biofuels 1995-2012



Source: own representation

Figure 2. Chronological sequence of the news coverage on biofuels vs. food price index 1995-2012



Source: FAO (2015) and own representation

The chronological sequence of the news coverage on biomass produced fuels depicts significant analogies to recent trends in global food prices, as shown in Figure 2. Thus, the continuous rise in food prices from 2002 to 2008 equals the observed increase in media attention on biofuels in the same time period. Also, the peak levels of the news coverage correspond with the price spikes of the worldwide food crises in 2007/2008 and 2011 as well as the interim drop of the food price index in 2009. Thus, the discourse on biofuels in Germany seems highly dominated by the food vs. fuel debate. To what extend the broader issue of biofuels is dominated by the food vs. fuel discussion cannot be discovered within the scope of this analysis. The qualitative approach of frame analysis, however, investigates the interpretation patterns of actors and provides interesting opportunities for further research on that question (e.g. SCHEUFELE, 2003). Beside the food vs. fuel debate, we also have to consider current policy events at that time. In the beginning of 2007, the mandatory blending came into force in Germany, which triggered the debate on biofuels already during the decision-making process since 2005 but also after the policy event, primarily in terms of discussions on the problems of implementation. Focusing on policy events, the peak of news coverage in 2011 can also be explained by a huge debate in Germany on the challenges that arose with the implementation of E10, a gasoline including 5% to 10% bioethanol.

3.2 Standing: Actors in the Discourse

After a quantitative pre-analysis, based on the total number of articles that resulted from the keyword search, the results of the following two chapters refer to the quantitative and qualitative assessment of 303 random samples taken from all five newspapers as well as from the entire sample period.

To find out which actors have a visible presence in print media, the degree of different actors' participation in public debate was analyzed by using the relative frequency with which they appeared in the newspapers (standing). In total, we identified 708 single actors that were categorized into 6 main and 21 sub categories; Table 2 shows the frequency of participation among the different groups. Since the analysis is only interested in the identification of extra medial actors that have a "voice in media" (FERREE et al., 2002), medial actors as well as indirectly speaking actors were excluded. Such indirect speakers are only referred to by direct speakers and therefore they are not considered to have standing (LINHART and DHUNGEL, 2013).

With a frequency of participation of about 37%, economic actors form the group with the highest standing in the debate. Within this group of actors, business associations are the most relevant with 13.4% standing overall. Despite the literature on interest groups noting the growing influence of PR agencies, independent consultants and in-house departments of public affairs on the EU multilevel-system, business associations are still considered the classical representative of economic interests (HAACKE, 2006). Thus, the observed major role of business associations in the discourse is in line with the findings of interest group research. The business associations with the highest frequency of participation

Table 2. Standing and positioning, differentiated by actors (in %)

	Standing		Positioning		
			positive	ambivalent	negative
Economic actors	**37.0**		**80.3**	**3.2**	**16.5**
Business associations	13.4		86.2	0.0	13.8
DBV		3.5	100.0	0.0	0.0
MWV		1.6	0.0	0.0	100.0
UFOP		1.3	100.0	0.0	0.0
VDB		1.1	100.0	0.0	0.0
VDA		1.0	66.7	0.0	33.3
Other business associations		5.0	90.0	0.0	10.0
Biofuel industry	6.4		94.4	2.8	2.8
Automobile industry + subcontractors	5.7		65.6	3.4	31.0
Volkswagen		1.7	90.0	0.0	10.0
Daimler		1.0	100.0	0.0	0.0
BMW		0.9	25.0	0.0	75.0
Other companies		2.1	33.3	11.1	55.6
Service providers	5.5		61.3	12.9	25.8
Petroleum industry	2.8		70.6	0.0	29.4
Shell		1.1	85.7	0.0	14.3
BP		0.8	75.0	0.0	25.0
Other companies		0.9	50.0	0.0	50.0
Agribusiness	1.8		100.0	0.0	0.0
Other economic	1.4		100.0	0.0	0.0
Political actors	**26.3**		**58.3**	**4.6**	**37.1**
Executive	15.5		57.1	6.5	36.4
Parties	8.3		78.0	2.4	19.5
SPD		3.1	92.3	7.7	0.0
CDU/CSU		1.9	100.0	0.0	0.0
Die Grünen		1.8	80.0	0.0	20.0
FDP		1.5	14.3	0.0	85.7
Die Linken		0.0	-	-	-
Legislative	0.5		-	-	-
Judiciary	0.0		-	-	-
Other politicians	2.0		7.1	0.0	92.9
Individuals	**16.9**		**66.3**	**3.4**	**30.3**
Scientific actors	**9.9**		**36.8**	**5.3**	**57.9**
Non-university research institutions	6.4		35.1	5.4	59.5
IFEU		1.3	0.0	25.0	75.0
DIW		0.4	100.0	0.0	0.0
Institut für Getreideverarbeitung		0.4	100.0	0.0	0.0
KIT		0.4	50.0	0.0	50.0
Leopoldina		0.4	0.0	0.0	100.0
DBFZ		0.3	100	0.0	0.0
IFO		0.3	100	0.0	0.0
Forschungszentrum Jülich		0.3	0.0	0.0	100.0
IFPRI		0.3	0.0	0.0	100.0
CSMCRI		0.3	100.0	0.0	0.0
IW		0.3	0.0	0.0	100.0
Other non-university research institutions		1.7	22.2	0.0	77.8
Universities	3.5		40.0	5.0	55.0
Civil Society	**7.2**		**2.9**	**0.0**	**97.1**
Environmental NGOs	4.2		4.8	0.0	95.2
Consumer protection organizations	1.7		0.0	0.0	100.0
Charity organizations	1.1		0.0	0.0	100.0
Other associations	0.2		-	-	-
Various	**2.7**		**33.3**	**13.4**	**53.3**
Other actors	2.1		27.3	18.2	54.5
Readers	0.6		50.0	0.0	50.0
N	708		314	20	182

Source: own calculations

in the debate are the German Farmers' Association (DBV) with 3.5%, the Association of the German Petroleum Industry (MWV) with 1.6%, the Union for the Promotion of Oil and Protein Plants (UFOP) with 1.3%, the Association of the German Biofuel Industry (VDB) with 1.1% and the Association of the German Automobile Industry (VDA), with nearly 1% standing in the debate. As second most represented group of economic actors, we can identify the biofuel industry. Although the ethanol producing company Südzucker AG (including its sub companies) is much more represented than other firms of the sector, the biofuel industry can be seen as a rather pluralistic group of actors in the way that 24 different biofuel companies have been involved in the debate. This relatively high number of single actors might be due to the fact that the biofuel industry was still in its fledgling stages, especially during the first half of the period of investigation. During this time, the media focused their attention on domestic startups of the sector that were mainly pictured as "great white hope". The majority of these companies had to shut down some years later. In contrast to the biofuel industry, the automobile and the petroleum industries were represented in the debate only by a small number of big global players. Such identified companies are VW, BMW and Daimler, together representing 63% of standing within the automobile and subcontractor industry and BP and Shell, making up 68% of the petroleum industry's media presence. The fact that service providers are relatively largely represented in the debate (5.5%) is mainly due to the classification of the finance and consulting sector that includes, companies such as Deutsche Bank, Goldman Sachs and McKinsey. This sub category is, with nearly 3% overall standing in the discourse, the most represented sector among service providers. Instead the agribusiness sector is represented by only 1.8%. The minor standing of agriculture can be explained in the way, that it is usually represented comprehensively by the German Farmers' Association (DBV) arguing for interests on behalf of farmers. This finding corresponds with the fact, that nearly 90% of German farmers are members of the DBV (ANDERSEN and WOYKE, 2003). One reason for the high degree of organization can be seen in the very successful history of agricultural interest intermediation as one of several services provided to the members (NIEMANN, 2003). It is therefore important to consider the coding of the DBV, which is grouped under business associations, when assessing the standing of agriculture. Other economic actors, including the aviation sector, can be neglected due to very low frequency of participation.

Political actors, especially the Executive including governments and ministries on national as well as on federal state level, account for more than a quarter of all actors and form the second largest group in the debate. The single actors appearing most often in this group are the Federal Environment Agency (UBA) and the German Social Democratic Party (SPD) which are presented by more than 3% each, followed by the Union of Christian Democrats and Socialists (CDU/CSU) with 1.9% and the German Federal Ministry of Food and Agriculture (BMEL) with 1.8%. Quite unexpected is that the German Socialist Party (Die Linke; former: PDS) didn't get a word in edgewise at all, although they were represented in the German parliament during the entire sample period. However, this finding is consistent with the results of a survey among function owners of German political parties by LINHART and WINDWEHR, which stated that "Die Linken" do not identify agriculture as a core area of their interest (LINHART and WINDWEHR, 2012).

Accounting for 16.9%, individuals form another pluralistic group of actors including 81 different individuals. The most represented individual is Patrick Döring, former expert on transport of the Liberal Democratic Party. Although this individual person appeared most often in the debate, he only has a total standing of 0.7%. Therefore, the discourse on biofuels differentiates clearly from other discourses that are determined more heavily by one or two individuals (cf. GERHARDS and SCHÄFER, 2006). This might be due to the broadness of the discourse on biofuels. As the issue shows intersections with various areas (e.g. transport, agriculture, energy and development), the range of individuals involved in the debate is relatively high.

Another category is formed by scientific actors that account for only one-tenth in print media. Non-university research institutions are more represented in the debate than universities. Some of the non-university research institutions got regularly heavily engaged in the discourse, but only for a short period of time. This is mainly related to the period after the publication of a contract research, which was done for clients with a specific interest in biofuel policy. The Institut für Energie- und Umweltforschung (IFEU) in Heidelberg for example, having the highest standing in its actor group with 1.3%, conducted several studies about the effects of biofuels by order of the Federal Environment Agency (UBA) (REINHARDT, 1993;

REINHARDT et al., 1999). Other non-university research institutions like the Leibniz-Institut für Wirtschaftsforschung (IFO) or the German Biomass Research Center (DBFZ) mainly cooperated with business associations of the biofuel industry (cf. SCHÖPE, 2010; MAJER and OEHMICHEN, 2010). It is already recognized by interest group research, that scientific evidence in general became more important in strategic lobbying in terms of trading information for access (cf. MICHALOWITZ, 2004; CHALMERS, 2013). However, comparatively little research on informational lobbying strategies has focused on the field of agricultural and bioenergy policy lobbying. This can be explained by the fact that research on agricultural policy is clearly dominated by agricultural economics, while other social sciences like political or communication science are rarely involved. Nevertheless, agricultural economists are starting to admit the necessity for a more holistic approach that goes beyond quantitative economic models in order to better understand the reality of political decision-making in agricultural policy (cf. BRINK, 2013; DOYON, 2015).

Civil-societal actors only have a minor standing of 7.2% in the German discourse on biofuels. Within this group of actors, environmental NGOs are most often represented with a total standing of 4.1%. The most dominant environmental NGOs are Friends of the Earth Germany (BUND), Greenpeace and the German Nature and Biodiversity Conservation Union (NABU). While charity organizations, including Oxfam and Misereor, form another pluralistic group of actors, organizations on consumer protection are clearly led by the German Automobile Club (ADAC) with a total standing of 1%.

The remaining 2.7% of standing consists of readers of the newspapers and other actors that could not be assigned to one of the above mentioned categories including diffuse actors such as "society" or "biofuel advocates."

3.3 Positioning of the Actors

As analyzed in the previous chapters, standing is a premise for actors to make the public aware of their issues of interest. How they make use of their presence in media, in terms of communicated positioning towards biofuels, is the object of investigation in this chapter.

The assessment of an issue such as biofuels communicated by the actors serves as an important determinant for the analysis of public discourses, since the positioning is likely to have an influence on the opinion of the public as well as the elite and decision makers (GERHARDS and SCHÄFER, 2006). Referring to the "persuasion"-hypothesis, the direction of the opinion of the public and the elite as either negative or positive on an issue, is related to the presented assessment of the issue in the mass media (cf. BONFADELLI and FRIEMEL, 2011; SCHENK, 2007).

The major category of the following analysis is the positioning of the different actors towards biofuels, which was qualitatively detected from the statements made. Actors can position themselves in favor of or opposed to biofuels. Moreover, they can make ambivalent statements, which include pro and con elements in equal shares. An overview of the articles in which a pro, ambivalent or con position is expressed, is presented in Table 3. We can assert that biofuels are positively evaluated by more than a half of the articles, whereas 19.4% of the articles assess biofuels in an ambivalent manner and nearly 30% clearly disapproved biofuels. However, here we have to consider that the size of each newspapers audience differs and thus, not all five papers are of equal influence. In terms of print run, the *Süddeutsche Zeitung* is the largest newspaper covering 36%, followed by the *Frankfurter Allgemeine Zeitung* with 29%, *Die Welt* with 20%, *Handelsblatt* with 10% and Die *Tageszeitung* with 5% (IVW, 2013). Considering that the two newspapers with the highest size of print run, covering together 65% of the audience of all five newspapers, assess biofuels mainly positively by 48% (ambivalent by 19% and negatively only by 33%), confirms the above mentioned statement that the debate is overall pro biofuels although the evaluation is a bit more balanced compared to the average of all five newspapers.

The distinct dominance of the advocates of biofuels in the national discourse is surprising insofar, as public media are usually rather critical and predominated by negative statements (cf. EILDERS, 2008). Against the background of a comprehensive under-

Table 3. Positioning towards biofuels in the analyzed print media (in %)

positive	50.7
ambivalent	19.4
negative	29.9
N	261

Note: The table presents the overall assessment of the articles (excluding 42 articles with an unclear assessment on biofuels).
Source: own calculation

standing of the mass media as the most important forum in terms of political influence (FERREE et al., 2002; KELLER and VIEHÖVER, 2006), the overall very positive evaluation of biofuels in public media contributes to explaining the persisting policy of biofuel support by the German government.

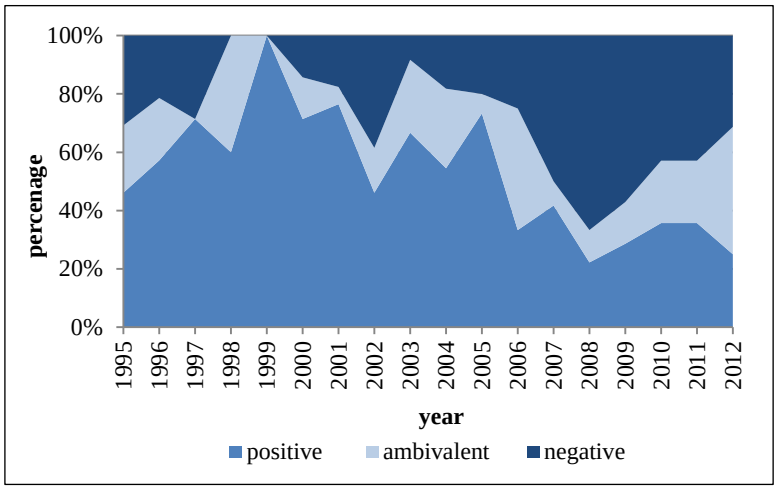
Examining the positioning over time, as presented in Figure 3, we can assess significant changes. Generally, the graph depicts a trend from a predominantly positive assessment of biofuels in the articles until 2005 to a more critical positioning on biofuels in recent years. Identifying 2007 as the first year, where negative assessments outweighed the positive ones, we can assume the 2007/2008 global food crisis to be a fundamental event of this turnaround. In connection with these price spikes, some actors such as environmental NGOs and charity organizations started to engage much more in the topic than they did before. As presented in Table 2, these actors are clearly opposing biofuels and thereby they changed the discourse towards a critical direction due to their rapid increase in standing during this time. Additionally, another new and clearly negatively connoted scientific debate concerning emissions from indirect land-use change (ILUC) due to the production of biofuels rose up in 2008 after a publication by SEARCHINGER et al. (2008).

To identify the advocates and opponents of biofuels in the discourse, it is necessary to view the positioning on the issue for the separated actor groups (cf. Table 2). Firstly, we can assess that political and economic actors as well as the majority of individuals are generally supporting biofuels. On the contrary, scientific, civil-societal and various actors are opposing - biofuels above-average. Since these opponents have an only marginal standing in the debate, the advocates of biofuels clearly lead the debate.

With more than 80% of the statements being positive, economic actors, especially business associations, the biofuel and agribusiness industries and other economic actors such as airlines, build the group that most strongly speaks in favor of biofuels. Especially the German Farmers Association (DBV) and the representatives of the biofuel industry (UFOP and VDB), are the strongest supporters of biofuels within the sub category of business associations. A clearly positive positioning of the service providers can be explained due to a strong support by the financial sector that primarily appreciates the potential of the biofuel sector as a lucrative investment. Although they are both clearly positive on the issue, the petroleum and automobile industries show a higher variance in positioning compared to the other economic actors. Whereas Daimler and Volkswagen placed clearly positive emphasis on biofuels, BMW put more effort on the research of hydrogen fuel cell and opposed biofuels in the early stages. To understand the reasons behind the different company's research focuses in terms of future engine, it would be interesting to conduct expert interviews with managers of different automobile manufactures. In the case of the petroleum industry, the variance in positioning cannot be explained by advocating and opposing actors, but rather by changes in the positioning of the entire industry over time from a rather negative assessment towards a positive positioning after the mandatory blending came into force in 2007. By introducing the additive obligation in Germany, decentralized production and commercialization of biofuels ceased, which changed the market in favor of the petroleum industry. In addition, the leading petroleum companies could freely choose between the various biofuel suppliers which enabled them to depress purchasing prices (ECKERT, 2006). Furthermore, the findings of OBERLING et al. (2012) indicate that petroleum companies invest heavily in liquid biofuels as a strategy to diversify their supply sources in the long run.

The political actor category showed a high variance in positioning between single actors. Focusing only on the single actors with the highest standing, we can identify the ministries of agriculture and environment on national and federal state level,

Figure 3. Chronological sequence of the positioning on biofuels 1995-2012



Source: own representation

the EU-Commission, as well as the political parties CDU/CSU and SPD as the most important advocates of biofuels in this group. The Green Party (Die Grünen) as well as the Liberal Democratic Party (FDP) positioned themselves more ambivalent, which is due to a shift in their positioning from a rather advocating role until the early 2000s, towards an opposing role in the following years. By far, the most important single actor opponent of biofuels in the discourse is the Federal Environment Agency (UBA) with nearly 95% of clearly negative statements. In contrast to the Greens or the Liberal Democrats, the UBA consistently opposed biofuels since the beginning of the sample period. This is surprising insofar as the agency acts as a research division of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) which is, with 89% of its statements being positive, a strong supporter of biofuels. This divergence between BMUB and UBA may be explained in light of the collegial principle. This principle states that the decisions that have been made by the Cabinet on the base of the majority rule are represented in the public with one voice. Thus, the BMUB might have followed the Cabinets decision on the promotion of biofuels, although the UBA advised not to do so. A similar discrepancy is found for the positioning of the Federal Ministry of Food and Agriculture (BMEL) compared to the WBA (Wissenschaftlicher Beirat für Agrarpolitik), its scientific advisory council, and the Thünen Institute (TI), its main ministerial research institute. Although the academic experts of the WBA as well as the TI unanimously criticized first generation biofuels as one of the most inefficient uses of biomass (WBA, 2007; ISERMEYER and ZIMMER, 2006), the BMEL, with all of its statements during the period analyzed being positive, continued to support biofuels. Therefore, we can assume that the BMEL was influenced more heavily by agricultural interest groups, especially by the DBV.

For the group of scientific actors we can state that the majority opposes biofuels, although the share of positive and negative statements is relatively balanced. As highlighted in the previous chapter, there are network structures existing between scientific actors and clients from other actor groups due to contract researches. Comparing the positions of the clients including UBA, UFOP and VDB with the positioning of the scientific institutions that cooperated with them (IFEU, DBFZ and IFO), we can detect a very high degree of agreement. Therefore, IFEU represents, similar to its client UBA, a strong opponent of biofuels, whereas the DBFZ and IFO can be identified as supporters similar to their clients UFOP and VDB.

In contrast to the relatively balanced positioning of scientific actors, civil society can be identified as strongest opponent of biofuels with about 97% of their statements arguing against biofuels. However, the sub groups differ clearly from each other in regard to the biofuel related problem they focused on. Whereas environmental NGOs rejected biofuels mainly in terms of ecological concerns, charity organizations concentrated on social and development aspects particularly on the food vs. fuel debate and consumer protection organizations like the ADAC cautioned against biofuels in light of possible technological problems that may arise by the use in vehicles. Unfortunately, this paper cannot make more detailed statements on the argumentations used by the actors as for this purpose, we would need to conduct a so-called frame analysis.

4 Conclusions

The conducted media discourse analysis shows that biofuels were a highly discussed issue in public media, especially in the years of 2007, 2008 and 2011. These peaks in media attention correspond to the times of worldwide food price spikes, which supports the assumption that the public discourse on biofuels in Germany is highly dominated by the food vs. fuel debate. Additionally, the time of the 2007/2008 food crisis marked a significant turnaround from a clearly positive assessment of biofuels to a more critical view in national news coverage.

Furthermore, we identified a coalition of biofuel advocates, mainly formed by political and economic actors, that was encountered by several critical voices in the media. But these opposing actors, primarily environmental NGOs, charity organizations and scientific actors, are less represented in the debate. The asymmetric standing structure directly impacts the distribution of the overall assessment and leads to a hegemony of positive positioning towards biofuels in the debate.

The marginal standing of scientific actors in the discourse on biofuel policies, does not correspond well to the aim of a knowledge-based bioeconomy that builds on the inclusion of scientific expertise (cf. EC, 2010). Following the understanding of public media as the most important forum in terms of political persuasion, we can assume a weak influence of science in the decision-making process similar to its

low representation in the public discourse. This is also reflected in the example of the UBA, the main governmental agency for environmental analysis and policy advice, which has clearly rejected the political support of biofuels since the 1990s on the base of scientific studies. In contrast, the superordinate Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) supported biofuels in public media through all stages. Thus, the paper argues that the BMUB might have followed the Cabinets decision on the promotion of biofuels in order to act as a united government. Another example is the media presence of the German Ministry of Food and Agriculture (BMEL) supporting biofuels, contrasting with the scientific evidence put forward by its advisory council (WBA) as well as its federal research institute (TI). To explain this discrepancy, we can assume that agricultural interest groups did have a higher influence on the BMEL compared to the presented research institutions.

In conclusion, the discrepancy found in positioning cannot be seen as an exceptional case: political actors obviously do not base their positioning towards biofuels on grounds of scientific expertise. Academic actors in turn, do not undertake sufficient efforts to communicate their findings in the general media, as their incentives are based on academic excellence rather than policy impact. The resulting limited standing in the media compared to political and economic actors, however, undermines their impact.

References

ALEMANN, U. and F. ECKERT (2006): Lobbyismus als Schattenpolitik. In: Aus Politik und Zeitgeschichte 15 (2006): 3-10.

ANDERSEN, U. and W. WOYKE (2003): Handwörterbuch des politischen Systems der Bundesrepublik Deutschland. Bundeszentrale für politische Bildung. Leske + Budrich, Bonn.

BONFADELLI, H. and T. N. FRIEMEL (2011): Medienwirkungsforschung. UVK Verlag, Konstanz.

BRINK, L. (2013): Making agricultural economics research relevant for policy advice. In: Canadian Journal of Agricultural Economics 61 (1): 15-36.

CHALMERS, A. W. (2013): Trading information for access: informational lobbying strategies and interest group access to the European Union. In: Journal of European Public Policy 20 (1): 39-58.

DEPPERMANN, A., F. OFFERMANN, J. PUTTKAMMER and H. GRETHE (2016): EU biofuel policies. Income effects and lobbying decisions in the German agricultural sector. In: Renewable Energy 87 (1): 259-265.

DOWNS, A. (1972): Up and down with ecology – the "issue attention cycle". In: Public Interest 0 (28): 38-50.

DOYON, M. (2015): Can agricultural economists improve their policy relevance? In: Canadian Journal of Agricultural Economics 63 (1): 1-5.

ECKERT, D. (2006): Biosprit-Hersteller enttäuschen an der Börse. In: Die Welt, 07.11.2006.

EILDERS, C. (2008): Massenmedien als Produzenten öffentlicher Meinungen – Pressekommentare als Manifestation der politischen Akteursrolle. In: Pfetsch, B. and S. Adam (eds): Massenmedien als politische Akteure. Konzepte und Analysen. VS-Verlag, Wiesbaden: 27-51.

ERJAVEC, E., M. LOVEC and K. ERJAVEC (2015): From "Greening" to "Greenwash": the drivers and discourses of CAP 2020 reform. In: Swinnen, J.F. (ed.): The Political Economy of the 2014-2020 Common Agricultural Policy: An Imperfect Storm. Rowman & Littlefield, London, and CEPS, Brussels: 215-244.

EC (European Commission) (2010): The Knowledge Based Bio-Economy (KBBE) in Europe Achievements and Challenges. Full report. Brussels. Available at http://www.kbbe2010.be/en/kbbe2010/programme/kbbe-report, accessed 11 February 2015.

FAO (Food and Agriculture Organization of the United Nations) (2015): World Food Situation. Available at http://www.fao.org/worldfoodsituation/foodpricesindex/en/, accessed 5 March 2015.

FERREE, M.M., W.A. GAMSON, J. GERHARDS and D. RUCHT (2002): Four models of the public sphere in modern democracies. In: Theory and Society 31 (3): 289-324.

GERHARDS, J. and M.S. SCHÄFER (2006): Die Herstellung einer öffentlichen Hegemonie. Humangenomforschung in der deutschen und der US-amerikanischen Presse. VS-Verlag, Wiesbaden.

HAACKE, E. (2006): Wirtschaftsverbände als klassische Lobbyisten – auf neuen Pfaden. In: Leif, T. and R. Speth (eds.): Die fünfte Gewalt. Lobbyismus in Deutschland. BPB, Bonn: 164-187.

HERZOG, D., H. REBENSTORF, C. WERNER and B. WESSELS (1990): Abgeordnete und Bürger. Ergebnisse einer Befragung der Mitglieder des 11. Deutschen Bundestages und der Bevölkerung. VS-Verlag, Wiesbaden.

HESS, S., S. VON CRAMON-TAUBADEL, U. ZSCHACHE, L. THEUVSEN and D. KLEINSCHMIT (2012): Explaining the puzzling persistence of restrictions on seasonal farm labor in Germany. In: European Review of Agricultural Economics 39 (4):707-728.

ISERMEYER, F. and Y. ZIMMER (2006): Thesen zur Bioenergie-Politik in Deutschland. Arbeitsberichte des Bereichs Agrarökonomie 2006/02. FAL, Braunschweig.

IVW (Informationsgesellschaft zur Feststellung der Verbreitung von Werbeträgern e.V.) (2013): Auflagenliste 4. Quartal 2012. Available at http://www.ivw.de/downloadcenter?bereich=14&field_file_category_tid=24&type=document&sort_by=name&sort_order=ASC, accessed 10 December 2014.

KELLER, R. and W. VIEHÖVER (2006): Diskursanalyse. In: Behnke, J., T. Schwend and D. Schindler (eds.): Methoden der Politikwissenschaft. Neuere qualitative and quantitative Analyseverfahren. Nomos, Baden-Baden: 103-111.

KELLER, R. (2010): Wandel von Diskursen – Wandel durch Diskurse. Das Beispiel der Umwelt- und Risikodiskurse

seit den 1960er Jahren. In: Landwehr, A. (ed.): Diskursiver Wandel. VS-Verlag, Wiesbaden: 69-87.

– (2011): Diskursforschung. Eine Einführung für SozialwissenschaftlerInnen. VS-Verlag, Wiesbaden.

LEOPOLDINA (Nationale Akademie der Wissenschaften) (2013): Bioenergie – Möglichkeiten und Grenzen. Stellungnahme. Halle (Saale).

LINHART, E. and A.-K. DHUNGEL (2013): Das Thema Vermaisung im öffentlichen Diskurs. In: Berichte über Landwirtschaft. Zeitschrift für Agrarpolitik und Landwirtschaft 91 (2). Available at http://160.45.170.111/index.php/buel/article/view/22/linhart-pdf, accessed 13 November 2014.

LINHART, E. and J. WINDWEHR (2012): Die Bedeutung bestimmter Ministerien, Geschäftsbereiche und Politikfelder für die Parteien in den deutschen Bundesländern. In: Zeitschrift für Parlamentsfragen 43 (3): 579-597.

MAJER, S. and K. OEHMICHEN (2010): Mögliche Ansätze zur Optimierung der THG-Bilanz von Biodiesel aus Raps. Deutsches BiomasseForschungsZentrum (ed.), Leipzig.

MCCLURE, R. D. and T.E. PATTERSON (1976): Print vs. Network News. In: Journal of Communication 26 (2): 23-28.

MICHALOWITZ, I. (2004): EU Lobbying-Principals, Agents and Targets: Strategic interest intermediation in EU policy-making. LIT-Verlag, Münster.

NIEMANN, E. (2003): Das Interessengeflecht des Agrobusiness. In: Leif, T. and R. Speth (eds.): Die stille Macht. Lobbyismus in Deutschland. Westdt. Verlag, Wiesbaden: 186-212.

OBERLING, D.F., M. OBERMAIER, A. SZKLO and E.L. ROVERE (2012): Investments of oil majors in liquid biofuels. The role of diversification, integration and technological lock-ins. In: Biomass and Bioenergy 46 (2012): 270-281.

REINHARDT, G. (1993): Energie- und CO_2-Bilanzierung nachwachsender Rohstoffe, theoretische Grundlagen und Fallstudie Raps. Verlag Vieweg, Braunschweig, Wiesbaden.

REINHARDT, G., J. BORKEN, A. PATYK, R. VOGT and G. ZEMANEK (1999): Ressourcen- und Emissionsbilanzen: Rapsöl und RME im Vergleich zu Dieselkraftstoff. In: Umweltbundesamt (ed.): Aktuelle Bewertung des Einsatzes von Rapsöl/RME im Vergleich zu Dieselkraftstoff. UBA-Texte 97/99, Berlin.

RÖSSLER, P. (2013): Agenda-Setting. Theoretische Annahmen und empirische Evidenzen einer Medienwirkungshypothese. Studien zur Kommunikationswissenschaft Band 27. Westdeutscher Verlag, Wiesbaden.

SCHENK, M. (2007): Medienwirkungsforschung. Mohr Siebeck, Tübingen.

SCHEUFELE, B. (2003): Frames – Framing – Framing-Effekte. Theoretische und methodische Grundlegung des Framing-Ansatzes sowie empirische Befunde zur Nachrichtenproduktion. Westdeutscher Verlag, Wiesbaden.

SCHNEIDER, V. and J. OLLMANN (2013): Punctuations and Displacements in Policy Discourse: The Climate Change Issue in Germany 2007-2010. In: Silvern, S. and S. Young (eds.): Environmental Change and Sustainability. InTech, Rijeka: 157-183.

SCHÖPE, M. (2010): Gesamtwirtschaftliche Effekte der Förderung von Biodiesel. In: Ifo Schnelldienst 63 (04): 40-48.

SCHWAB-TRAPP, M. (2006): Diskurse als soziologisches Konzept – Bausteine für eine soziologisch orientierte Diskursanalyse. In: Keller, R., A. Hierseland, W. Schneider and W. Viehöver (eds.): Handbuch sozialwissenschaftliche Diskursanalyse – Band 1: Theorien und Methoden. VS-Verlag, Wiesbaden: 261-283.

SEARCHINGER, T., R. HEIMLICH, R.A. HOUGHTON, F. DONG, A. ELOBEID, J. FABIOSA, S. TOKGOZ, D. HAYES and T.-H. YU (2008): Use of U.S. croplands for biofuels increases greenhouse gases through emissions from land-use change. In: Science 319 (5867): 1238-1240.

STRAUSS, A.L. and J.M. CORBIN (2015): Basics of qualitative research. 4th edition. SAGE, Los Angeles.

SWINNEN, J.F.M. (2010): The political economy of agricultural and food policies: recent contributions, new insights, and areas for further research. In: Applied Economic Perspectives and Policy 32 (1): 33-58.

WBA (Wissenschaftlicher Beirat Agrarpolitik) (2007): Nutzung von Biomasse zur Energiegewinnung – Empfehlungen an die Politik. Available at http://www.bmel.de/DE/Ministerium/Organisation/Beiraete/_Texte1/NutzungBiomasseEnergiegewinnungVorwort.html, accessed 27 November 2014.

WBGU (Wissenschaftlicher Beirat Globale Umweltveränderungen) (2008): Welt im Wandel. Zukunftsfähige Bioenergie und nachhaltige Landnutzung. Available at http://www.wbgu.de/hauptgutachten/hg-2008-bioenergie/, accessed 17 August 2014.

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