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**AGRICULTURE AND FOOD ECONOMY
WITHIN THE EU FRAMEWORK**

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Corporate Social Responsibility in the agri-food sector: the case of GMOs

Abstract. Genetically modified organisms (GMOs) are handled differently in different countries. Whereas global acreage of GMOs jumped to 134 million hectares in 2009 [Cultivation... 2010], in many European countries opposition to GMOs is still strong, and their acreage is very small. This situation poses a difficult situation for many companies and their corporate social responsibility [CSR] strategies. Against this background, we conducted an online survey of 170 agribusiness firms in order to shed some light on how companies handle the conflict between, on the one hand, the growing use of GMOs worldwide and, on the other, the rejection of GMOs by European consumers. The empirical results show that many agribusiness firms perceive the use of GMOs as a highly relevant management issue that shapes their CSR strategies. All in all, agribusiness firms apply a wide spectrum of CSR activities; furthermore, CSR is considered a top management responsibility. GMOs are of above-average relevance in firms that have been criticized for their attitudes towards and use of GMOs. The empirical results have interesting implications for the management of CSR and legitimacy in the agribusiness sector.

Key words: corporate social responsibility, GMOs, agri-food sector

Introduction

GMOs pose major challenges for many European agribusiness firms. On the one hand, acreage of GMOs has surged in world agriculture in recent years. Therefore, it has become more and more difficult to avoid the use of GMOs, for instance in feeding stuffs, or the blending of GMO-free products and GMOs. On the other hand, many (Western) European consumers still adamantly refuse to consume GMOs and consider their use morally condemnable [Koppelman & Willers 2008].

Against this background, sourcing of GMO-free inputs is becoming more and more difficult in agri-food chains. Furthermore, firms' CSR strategies have to take into account the GMO challenge since CSR is a concept that addresses the socially desirable behaviour of companies. It incorporates the economic, legal, ethical and philanthropic responsibility of firms [Carroll 1998]. Implementing a CSR strategy is considered a way to ensure a legitimacy of firm's actions and an acceptance of firm activities by the wider society. In that sense, CSR is believed to guarantee a firm's legitimacy ('license to operate') [Hiss 2006]. Social legitimacy as a result of CSR strategies is expected to have a high relevance for firm's financial performance [Orlitzky et al. 2003; Mackey et al. 2007].

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This paper will illustrate how agribusiness firms perceive the tensions between the growing difficulty of avoiding the use of GMOs and their lack of acceptance in Europe and how these tensions influence their CSR strategies. It will present the results of a comprehensive literature review and an online survey of German agribusiness companies. Respondents were asked to assess the external pressure they face and the CSR strategies and instruments implemented so far. All in all, 170 firms of very different size and from various industries participated in the survey. This reflects the high relevance of social conflicts and CSR issues. The empirical results provide in-depth insights into how agribusiness companies perceive conflicts between technological progress and social expectations and what their reactions to these conflicts are. The results have interesting managerial implications for agribusiness firms.

The remainder of the paper consists of five parts. In section 2, we highlight the relevance of GMOs for world and European agriculture and the uptake of this phenomenon in the literature. Then we examine the relevance of legitimacy for agribusiness firms and outline the CSR concept (sections 3 and 4). In section 5, we present some empirical results. The paper ends with a discussion of our results and some concluding remarks (section 6).

GMOs in agriculture and food production

GMOs have continuously gained market shares in world agriculture. In 2009, GMOs were grown on 134 million hectares [Cultivation... 2010], which represents about 6.7% of the world's total acreage of 1.98 billion hectares. The most important growers of GMOs are the United States (64.0 million hectare), Brazil (21.4 million hectare) and Argentina (21.3 million hectare). In 2009, 14.0 million farmers in 25 countries were growing GMOs. The most important genetically modified crops are soybeans, maize, cotton and rapeseed [Global... 2009]. Since GMOs are mainly used in high-intensity, high-yield production systems, their share in agricultural outputs is larger than their share in the agricultural land.

Except for a few regions, GMOs are of much lower relevance in Europe. In recent years some regions have even witnessed a decline in GMO acreage. Large-scale growing of GMOs can more or less only be observed in Spain, while in many other European countries GMOs are only grown in the context of scientific research projects. Germany is a typical example, with mainly genetically modified maize grown on 150 hectares in 2010 [Oeffentliches... 2010]. Compared to earlier years, this is an extreme decrease: in 2008, for example, GMO maize was being grown on 3,173 hectares. Nonetheless, the actual acreage is often even lower than the acreage registered by competent authorities due to protests from NGOs and a systematic destruction of plants by anti-GMO activists.

Recent changes in the regulatory frameworks of some European states, including Hungary, France and Switzerland, have contributed to a further decline in the relevance of GMOs in Europe. Furthermore, it can be observed that many European food processors have a clear-cut non-GMO strategy [Gawron & Theuvsen 2008]. Unlike feeding stuff companies, food processors are afraid of consumer boycotts and a negative press coverage and, therefore, refrain from using GMOs as raw materials.

In the last two decades, there has been a considerable research on GMOs. Various studies have analyzed the cost effects of GMOs on agriculture and food industry, highlighting cost savings, due to factors such as lower pesticide costs, and cost increases,

due to additional laboratory tests, separation of batches and so forth [Gawron & Theuvsen 2008; Brookes et al. 2005; Wilson & Dahl 2005]. A second strand of research addresses the acceptance of GMOs by farmers and consumers. Whereas authors find positive attitudes towards GMOs mainly in North America [Napier et al. 2004; Chern & Rickertsen 2002], European studies reveal wide-spread scepticism against GMOs in food products [Hampel 2004]. In Germany, for instance, only 16% of the population are in favour of GMOs. Another 20% cognitively accept GMOs but, nonetheless, have negative feelings towards GMOs. While 18% are not at all interested in the topic, 46% oppose the use of GMOs for various reasons [Willers 2007]. Earlier studies have revealed that many consumers consider the use of GMOs in food production morally condemnable [Koppelman & Willers 2008]. Farmers' attitudes have also been researched. Babcock et al. [2006], for instance, analyzed the effects of expected reductions of input factors, such as use of pesticides and yield increases, on farmers' attitudes.

GMOs and legitimacy of firm activities

The strong rejection of GMOs by a majority of European consumers indicates that genetic engineering as well as the industry and firms developing and using GMO technology suffer from a lack of social legitimacy. According to Parsons [1956], it is a central challenge for any organization to socially legitimize its objectives, structures, products and processes. The legitimacy of actions and institutions is perceived subjectively; it is a result of social construction processes [Berger & Luckmann 1966]. Actions are considered legitimate if they are perceived as correct and appropriate within a social system of norms, values, convictions and definitions [Suchman 1995]. In other words, organizations enjoy legitimacy if they pursue socially acceptable goals in a socially acceptable way [Ashforth & Gibbs 1990] and meet social expectations [Scott & Meyer 1994].

Legitimacy is essential for the survival of organizations since it is a precondition for a continuous flow of resources and a continued support of organizations through core stakeholders [Parsons 1960; Pfeffer & Salancik 1978]. Individuals and organizations that have lost legitimacy face more difficult social exchange processes since their partners have lost trust in their compliance with social rules [Palazzo & Scherer 2006]. Therefore, legitimacy is a form of qualified acceptance that goes far beyond tolerance of organizational behaviour that may result in socially undesirable outcomes. More specifically, it means that institutions receive their 'social license to operate' only if they do not behave in an illegitimate way [Suchanek 2004].

Various forms of organizational legitimacy can be distinguished. Suchman [1995] suggests a distinction between pragmatic, cognitive and moral legitimacy.

Pragmatic legitimacy is ascribed to organizations by utility-maximizing stakeholders or the wider public if these groups benefit from organization's actions through, for instance, payments of loans and dividends, cost savings or contributions to social welfare. Stakeholders and instrumental public relations strategies that demonstrate the usefulness of an organization to external groups are well-proven ways to improve an organization's pragmatic legitimacy [Palazzo & Scherer 2006].

Cognitive legitimacy results from society's belief that an organization and its output are useful and inevitable. Unlike pragmatic legitimacy, cognitive legitimacy is often unconscious. Therefore, it is difficult for organizations to directly influence the perceptions that are relevant for the emergence of cognitive legitimacy [Oliver 1991]. Nonetheless, it can be improved by an organization's compliance with role models and behaviour expected by society [Scott 1995].

Moral legitimacy refers to moral judgments with regard to the outputs and processes of organizations. Since the moral legitimacy is a result of public discourses, organizations should participate in those discourses that are relevant for their moral legitimacy [Suchman 1995].

Against this background, the strong rejection of GMOs by European consumers indicates that they neither experience any immediate benefits from that technology nor perceive it as useful and inevitable. Furthermore, the moral objections that are often raised against GMOs indicate a deeply rooted lack of moral legitimacy. Since moral legitimacy does not result from cognitive processes but from unconscious value judgments, it is very difficult for agribusiness firms to regain legitimacy.

Corporate Social Responsibility

From a neoinstitutionalist perspective, CSR is often discussed as a concept for securing the legitimacy of economic activities, i.e. a firm's 'license to operate' [Hiss 2006; Mueller & Seuring 2007]. Despite a large number of publications on CSR [de Bakker et al. 2005] and the implementation of CSR strategies in many companies, there is still a lack of a precise terminology [Dahlsrud 2006]. Carroll [1999], for instance, identified 25 different definitions of CSR in the literature. This conceptual murkiness is also due to close relationships between CSR and similar concepts, like corporate citizenship, accountability, good corporate governance [Hiss 2006], sustainability and stakeholder management. Many of these concepts have been developed during public and scientific discourses on environmental protection and sustainable development. They can be summarized under a broadly defined CSR concept (Figure 1).

According to the European Commission [2001], CSR can be defined as a concept according to which companies voluntarily integrate social and environmental considerations into their activities as well as their relationships with stakeholders. A similar definition was proposed by the World Business Council on Sustainable Development, according to which CSR is 'the commitment of business to contribute to sustainable economic development, working with employees, their families, the local community and society at large to improve their quality of life. Thus environmental concerns are part of a company's CSR' [The Business... 2002, p. 6]. Concluding, CSR is a concept that integrates social and ecological values into a firm's core activities and includes joint action with stakeholders for the public good.

Based on a comprehensive literature review, Carroll [1998] proposed a model that defines CSR as a framework concept that includes company's economic, legal, ethical and philanthropic responsibilities. Economic responsibility refers to the production of socially desirable goods and services at fair prices and to the firm's contribution to employment and social welfare. This has to take place in compliance with the generally accepted regulatory

framework (legal responsibility). The ethical responsibility demands a compliance with social rules and values even if they are not legally codified. Finally, the philanthropic responsibility refers to the good corporate citizenship of firms in the sense of 'corporate giving' or 'giving back to society' [Dubielzig & Schaltegger 2005]. Managing companies in line with these principles allows firms to meet the triple bottom line of economic, social and environmental sustainability [Loew et al. 2004; Elkington 1994; Heyder & Theuvsen 2008]. It is often assumed that CSR contributes to a better firm reputation, a workers' loyalty and a higher legitimacy of firm activities [Moir 2001]. Therefore, CSR may increase costs in the short run but can contribute to improved firm profitability in the long run.

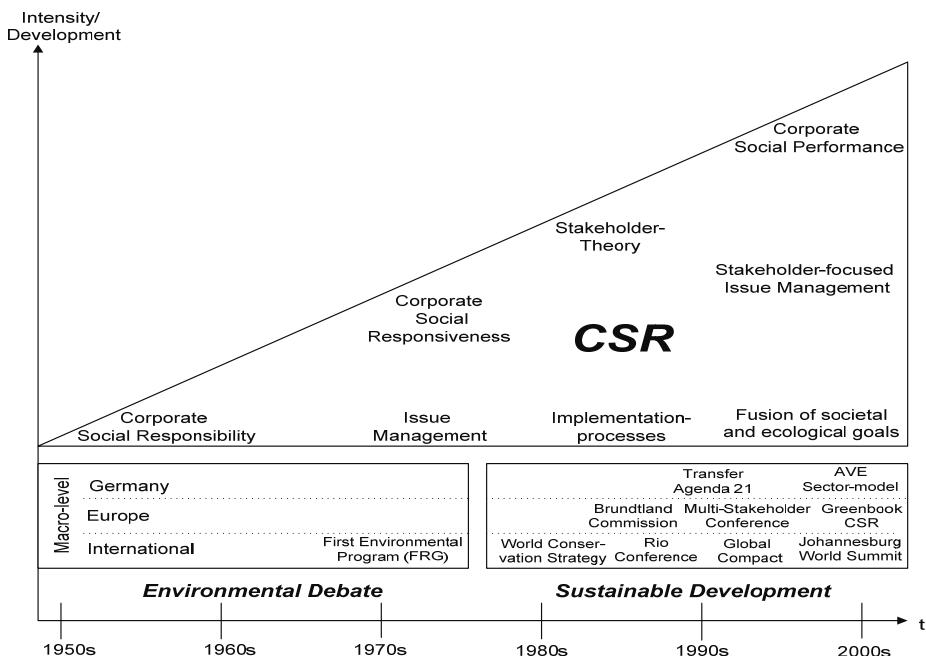


Fig. 1. Historical development of CSR

Source: adapted from Muenstermann [2007].

Empirical findings on CSR strategies in the agribusiness sector

Methodology

Between July and September 2008, an online survey of CSR strategies in the agribusiness sector was conducted. With the help of various industry associations, 2,500 German agribusiness firms were surveyed extensively. The survey focused on the external pressure the respondents faced, the firms' interpretation of social responsibility, and the CSR strategies and instruments implemented so far. For measuring attitudes and perceptions, we mainly used five-point Likert scale. Univariate and bivariate analyses with SPSS software provided in-depth insights into how agribusiness firms perceive the tensions

between technological progress and social expectations and how this influences their behaviour.

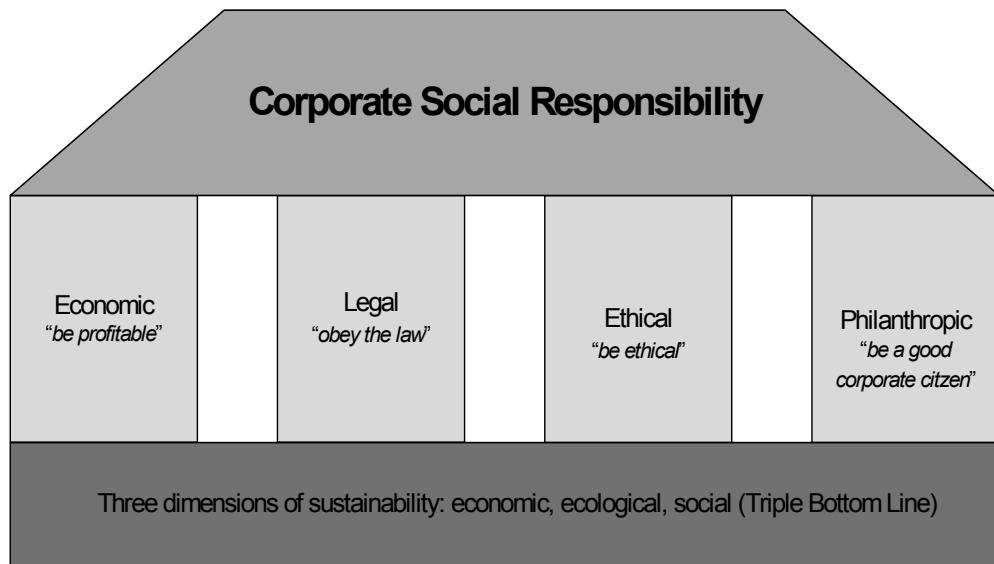


Fig. 2. The 'CSR house'

Source: adapted from Carroll [1998].

All in all, the sample includes 170 agribusiness firms from various industry sub-sectors and of very different size. The response rate was 6.8%. Although some authors report on higher response rates [Dennis 2003; Al-Subaihi 2008], we consider the participation in our study satisfactory when generally declining response rates in surveys [Schiefer & Reynolds 2009] and the tight time budgets of the top managers contacted are taken into account. Of the respondents, 56% are board members. The industries represented in the sample include slaughtering and meat processing (12.3%), bakery products (10.7%), sweets (7.4%), dairy companies (6.6%), breweries (6.6%), mills (5.7%), agrochemical companies (4.9%), agricultural engineering (4.9%), feeding stuffs (4.1%), seed companies (4.1%), fruit and vegetable processing (4%) and others (28.3%).

The agribusiness sector is characterized by a few large leading companies and a wide spectrum of small and medium-sized enterprises. This industry structure is also reflected in the survey, which includes micro enterprises, small and medium-sized companies and a few very large companies (Figure 3). Of the respondents, 51% have an annual turnover of €5 million up to €250 million. Despite a good representation of the overall industry structure with regard to firm size and industry sub-sectors, the survey lacks representativeness. Nonetheless, since most respondents are affected to a certain degree by social conflicts with regard to the use of GMOs, the survey provides interesting insights into agribusiness firms' reactions to public discussions on GMOs and allows for conclusions regarding the management of legitimacy through CSR strategies.

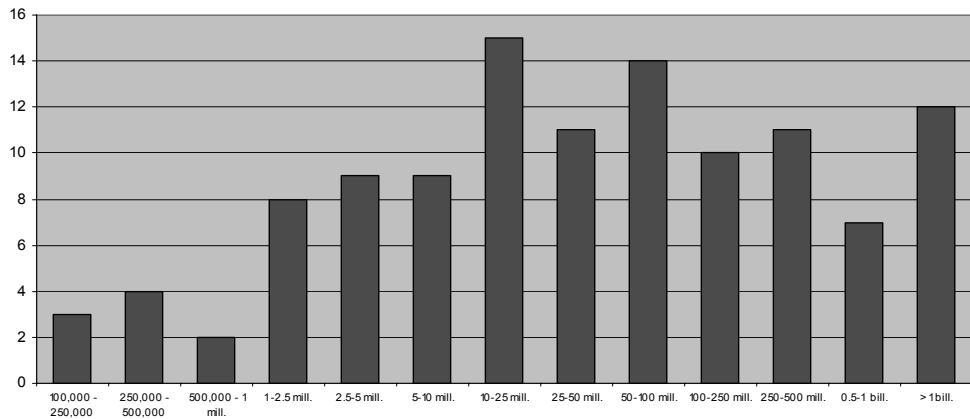


Fig. 3. Annual turnover of companies surveyed, euro

Source: own illustration.

Agribusiness Firms under Public Pressure

Due to the debate on GMOs, but also due to a considerable number of crises and scandals, public pressure on agribusiness firms has increased in recent years. Unlike farmers, who have a comparatively positive, albeit somewhat old-fashioned, image, the agribusiness firms are in the focus of various critical stakeholders, such as nongovernmental organizations (NGOs) as well as the wider public. Due to a widespread dissatisfaction with the industrialization of food production, including the use of GMOs, the agribusiness sector has become a preferred target of societal debates [Jansen & Vellema 2004]. As a consequence, the legitimacy and reputation of the food supply chain have been severely damaged.

The results of our survey show that the respondents, although they perceive a strong public pressure on their companies, do not generally refuse public demands and protests with regard to food production. Instead, a majority of the respondents agree that claims for paying fair prices to farmers ($\mu = 3.72$; $\sigma = 0.997$), providing fairer terms of trade for developing countries ($\mu = 3.62$; $\sigma = 0.883$) and acceptable social standards for employees ($\mu = 3.53$; $\sigma = 0.939$) as well as higher environmental ($\mu = 3.48$; $\sigma = 0.950$) and animal welfare standards are justified. The question whether or not protests against GMOs are justified provokes mixed answers ($\mu = 2.98$; $\sigma = 1.240$); 31.8% of the respondents perceive these protests as justified or even very justified, whereas 36.4% consider them not or not at all justified. Only very limited support can be observed with regard to protests against globalization ($\mu = 2.78$; $\sigma = 0.862$) and claims for lower levels of pesticide residues in food products ($\mu = 2.85$; $\sigma = 0.997$) and higher food product labelling standards ($\mu = 2.83$; $\sigma = 0.974$) (Table 1).

Table 1. Answers to question. There are often protests and claims with regard to food production. Do you think that the following claims are justified?

Issue	μ	σ	Not at all justified	Not justified	Partly justified	Justified	Strongly justified
Protests against globalization (n=170)	2.78	0.862	8 4.7%	56 32.9%	78 45.9%	22 12.9%	6 3.5%
Acceptable social standards for employees (n=169)	3.53	0.939	5 3.0%	18 10.7%	49 29.0%	77 45.6%	20 11.8%
Higher environmental standards (n=170)	3.48	0.950	3 1.8%	24 14.1%	53 31.2%	68 40.0%	22 12.9%
Higher animal welfare standards (n=170)	3.25	0.984	4 2.4%	34 20.0%	68 40.0%	44 25.9%	20 11.8%
Lower limits for pesticide residues in food products (n=170)	2.85	0.997	6 3.5%	69 40.6%	52 30.6%	31 18.2%	12 7.1%
Protests against GMOs (n=170)	2.98	1.240	22 12.9%	40 23.5%	54 31.8%	28 16.5%	26 15.3%
Fairer terms of trade for developing countries (n=170)	3.62	0.883	0 0%	18 10.6%	56 32.9%	68 40.0%	28 16.5%
Fair prices for agricultural products (n=170)	3.72	0.997	3 1.8%	19 11.2%	39 22.9%	70 41.2%	39 22.9%
Stricter and more informative food product labelling (n=169)	2.83	0.974	11 6.5%	57 33.7%	56 33.1%	39 23.1%	6 3.6%

Notes: μ – mean; σ – standard deviation

Source: own investigation.

The empirical results also show that finding an official position towards the use of GMOs is difficult for many agribusiness firms (Table 2). Only 37% of the respondents say that they do not face a strong public pressure with regard to GMOs due to the official (anti-GMO) position of their company. Correlation analyses show that companies that have very critical attitudes towards GMOs and consider protests against GMOs justified ($r = 0.483$; $p < 0.001$) are often engaged in the organic food market. These companies' legitimacy is not challenged in the GMO debate. On the other hand, a similarly large group of respondents (37.1%) perceive a strong or even a very strong public pressure due to their position towards GMOs. The latter is perceived as a single most relevant issue with regard to societal debates ($\mu = 2.97$; $\sigma = 1.241$). Next come the food product characteristics that have negative effects on consumers' health (such as fat, sugar and alcohol; $\mu = 2.79$; $\sigma = 1.207$), the environmental effects of production methods ($\mu = 2.65$; $\sigma = 1.067$) and the potential threats to public health resulting from contaminants in food products ($\mu = 2.57$; $\sigma = 1.236$). The standard deviations are on average high since companies from certain agribusiness subsectors, such as slaughtering and meat processing, face strong external pressure, whereas other respondents do not see any threats to their reputation and legitimacy at all, since their products or production methods do not have any negative effects on, for instance, the environment or consumers. Interestingly, very few respondents feel strong

external pressure due to food safety incidents and other scandals that often receive an extensive media coverage.

Table 2. Answers to question. How strongly do you perceive external pressure on your company with regard to the following?

Issue	μ	σ	Very weak	Weak	Neither weak nor strong	Strong	Very strong
Effects on the external environment (emissions, waste water etc.) (n=170)	2.65	1.067	28 16.5%	49 28.8%	50 29.4%	40 23.5%	3 1.8%
Company's position towards GMOs (n=156)	2.97	1.241	23 14.7%	35 22.4%	40 25.6%	40 25.6%	18 11.5%
Animal welfare issues (n=164)	2.13	1.283	78 47.6%	27 16.5%	26 15.9%	26 15.9%	7 4.3%
Health incidents due to contaminants in food products (residues etc.) (n=165)	2.57	1.236	37 22.4%	52 31.5%	34 20.6%	29 17.6%	13 7.9%
Characteristics of our food products (e.g. fat, sugar, alcohol) (n=167)	2.79	1.207	30 18.0%	42 25.1%	38 22.4%	47 28.1%	10 6.0%
Working conditions of employees (e.g. wages) (n=170)	2.15	1.026	52 30.6%	63 37.1%	35 20.6%	17 10.0%	3 1.8%
Internal affairs (corruption, bad corporate governance etc.) (n=168)	1.64	0.828	92 54.8%	49 29.2%	23 13.7%	3 1.8%	1 0.6%
Conflicts with neighbours (e.g. due to construction work) (n=168)	2.00	1.083	71 42.3%	50 29.8%	26 15.5%	18 10.7%	3 1.8%
Lack of fair treatment of customers and suppliers (n=168)	2.02	1.041	65 38.7%	55 32.7%	32 19.0%	12 7.1%	4 2.4%
Protests against production methods of suppliers (n=167)	1.80	0.788	69 41.3%	66 39.5%	29 17.4%	3 1.8%	0 0.0%

Notes: μ – mean; σ – standard deviation

Source: own investigation.

A strong public pressure many companies face due to their position towards GMOs suggests that it would be advisable to analyze in greater detail the relationships between the pressure perceived (Table 2) and other statements that reflect various aspects of external pressure, a company's social responsibility and its relationships with external stakeholders (Table 3). Interestingly, a highly significant relationship can be observed between a company's position towards GMOs and its public image. Companies that support the use of GMOs are more regularly criticized by the wider public, receive a more negative press coverage and more often suffer from decreasing turnover. All in all, this reflects a negative public image of industries that advocate the use of GMOs. These industries include the biotech industry as well as parts of the food industry since public protests are also directed against production methods of suppliers. Companies that are attacked due to their position towards GMOs are also criticized for the potential negative effects of their products on human health and the environment, animal welfare issues, employee working conditions

and product characteristics in general. The latter aspects can, at least to a certain degree, be considered negative spillover effects of the use of GMOs. As a consequence, it can be summarized that companies that support the use of GMOs in food production have a very negative public image and are criticized for a variety of reasons. Positive correlations between the company's position towards GMOs and the claimed relevance of CSR, sustainability issues and a dialogue with NGOs support the hypothesis that a lack of social legitimacy increases the relevance of a systematic management of stakeholder relations and legitimacy.

Table 3. Correlations between the company's position towards GMOs and other aspects

How strongly do you perceive public pressure with regard to the following?	Our position towards GMOs	
	r	α
... Health incidents due to contaminants in food products	0.422***	0.00
... Characteristics of food products	0.231**	0.04
... Employee working conditions	0.277***	0.00
... Animal welfare issues (e.g., housing, transport)	0.318***	0.00
... Internal affairs (corruption, bad corporate governance etc.)	0.236**	0.03
... Effects on the external environment (emissions, waste water etc.).	0.384***	0.00
... Protests against suppliers' production methods	0.350***	0.00
My company is criticized by the wider public	0.260**	0.01
In the media our company is often negatively described in a one-sided way	0.263**	0.03
Scandals in our industry have resulted in lower turnover for our company	0.240**	0.03
Our industry has a bad reputation	0.238**	0.03
We consider CSR and sustainability unimportant	-0.256***	0.00
We are in dialogue with NGOs	0.289***	0.00

Notes: r= two-sided Pearson correlations; α= significance

Source: own investigation.

CSR in agribusiness companies

It can be derived from the results presented so far that agribusiness firms are subject to public pressure for various reasons, GMOs being only one of them. Zerfass and Scherer [1993] hypothesize that existing conflict lines force managers to better adapt company goals to their firms' social environments. CSR is often considered an instrument for gaining and sustaining societal legitimacy [Hiss 2006; Mueller and Seuring 2007]; therefore, it is highly relevant in the context of the GMO debates agribusiness firms face.

Despite the high relevance of CSR for agribusiness firms, hardly any research on this topic has been conducted so far. In order to explore the topic further, we analyzed the way agribusiness firms perceive their social responsibility and which CSR concepts have been implemented in order to meet strong public pressure, with regard to such issues as firm strategies towards GMOs.

Table 4 shows that agribusiness firms employ broad definitions of CSR; the vast majority of aspects that can be summarized under a firm's CSR concept are assessed positively and considered relevant elements of CSR. Only activities with regard to culture,

research and sports activities receive less support. Besides responsibility to employees with regard to job security, two other issues have close conceptual relationships with the GMO topic: responsibility to customers with regard to food product safety and responsibility for the environment.

Table 4. Answers to question. Which of the following do you consider to be important elements of a firm's 'corporate social responsibility' (CSR)?

Issue	μ	σ	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Responsibility for employees (n=169)	4.46	0.567	0 0.0%	0 0.0%	6 3.6%	80 47.3%	83 49.1%
Engagement in cultural, research and sporting activities (n=169)	3.18	0.819	5 3.0%	22 13.0%	87 51.5%	48 28.4%	7 4.1%
Revealing ethical values (n=169)	4.08	0.802	2 1.2%	7 4.1%	15 8.9%	97 57.4%	48 28.4%
Responsibility for the environment (n=170)	4.23	0.635	0 0.0%	0 0.0%	19 11.2%	93 54.7%	58 34.1%
Responsibility to suppliers (fairness) (n=168)	3.97	0.754	0 0.0%	4 2.4%	38 22.6%	85 50.6%	41 24.4%
Responsibility for and participation in the region (n=169)	3.95	0.868	2 1.2%	4 2.4%	44 26.0%	70 41.4%	49 29.0%
Taking democratic rights and duties seriously (n=169)	3.98	0.852	1 0.6%	7 4.1%	36 21.3%	76 44.7%	49 28.8%
Readiness to innovate, provide impetus for the economy (n=169)	4.10	0.814	0 0.0%	7 4.1%	27 16.0%	77 45.6%	58 34.3%
Providing job security (n=169)	4.21	0.723	0 0.0%	5 3.0%	15 8.9%	89 52.7%	60 35.5%
Responsibility to society (n=166)	3.93	0.813	1 0.6%	6 3.5%	37 22.3%	82 49.4%	40 24.1%
Responsibility to customers (product safety) (n=169)	4.54	0.598	0 0.0%	0 0.0%	9 5.3%	60 35.5%	100 59.2%
Making a profit (n=169)	4.17	0.698	0 0.0%	3 1.8%	20 11.9%	91 54.2%	54 32.1%

Notes: μ – mean; σ – standard deviation

Source: own investigation.

Against this background, it is not surprising that companies feel responsible mainly to their employees and customers. Furthermore, the interests of owners and stakeholders in the company's neighbourhood are taken into account. Firm managers, the state and NGOs are of minor relevance to agribusiness companies (Table 5).

The study also shows that, due to its high relevance and public visibility, CSR has become a top management issue. In 90% of the firms surveyed, the board is responsible for CSR. Communication and public relations (31%) as well as human resource management (26.8%) departments are also involved in CSR activities to a certain degree. It is mostly in

larger companies that a cross-cutting unit in which various departments collaborate is responsible for CSR.

Table 5. Answers to question. Whom do you mainly feel responsible to?

Issue	μ	σ	Not at all important	Less important	Neither important nor unimportant	Important	Very important
Employees (n=170)	4.48	0.618	0 0.0%	1 0.6%	8 4.7%	69 40.6%	92 54.1%
Owners (n=161)	4.25	1.002	8 5.0%	2 1.2%	11 6.8%	60 37.3%	80 49.7%
Customers (n=170)	4.74	0.456	0 0.0%	0 0.0%	1 0.6%	43 25.3%	126 74.1%
State (n=168)	2.85	0.926	12 7.1%	46 27.4%	69 41.1%	37 22.0%	4 2.4%
Society in general (n=168)	3.51	0.875	1 0.6%	22 13.1%	54 32.1%	73 43.5%	18 10.7%
Managers (n=159)	2.87	1.062	17 10.7%	42 26.4%	53 33.3%	39 24.5%	8 5.0%
Suppliers (n=166)	3.63	0.884	1 0.6%	18 10.8%	47 28.3%	76 45.8%	24 14.5%
NGOs (n=165)	2.53	1.062	31 18.8%	53 32.1%	48 29.1%	29 17.6%	4 2.4%
Stakeholders in the local neighbourhood (n=164)	3.68	0.933	4 2.4%	12 7.3%	46 28.0%	73 44.5%	29 17.7%

Notes: μ – mean; σ – standard deviation

Source: own investigation.

Table 6 illustrates the CSR strategies that the agribusiness firms surveyed have implemented. Most respondents say that they publicly proclaim their corporate social responsibility, are well known for fair behaviour, put a strong emphasis on the promotion of employees and are environmentally friendly. The majority also confirm that they demonstrate good corporate citizenship, are engaged in social initiatives and oblige their suppliers to meet social and environmental standards. The picture is much more mixed with regard to other matters (Table 6).

In general, employees' engagement in social and charitable projects during leisure time (corporate volunteering) is of minor relevance, but employees of companies that are criticized for their position towards GMOs show stronger commitment to volunteering (0.203; $p < 0.01$; $\alpha = 0.011$). The relevance of animal welfare and biodiversity issues correlates positively with the share of organic products a company sells (0.297; $p < 0.001$).

The quality of relationships with NGOs varies remarkably. Whereas many respondents avoid coming into contact with these groups, 30% say that they consider cooperation with NGOs potentially very helpful for implementing CSR strategies. Companies that are criticized for their position towards GMOs reveal closer relationships with non-profit organizations (NPOs; $r = 0.289$; $p < 0.001$).

Table 6. Answers to question. How does your company handle CSR issues?

Issue	μ	σ	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Our company publicly proclaims its corporate social responsibility (through, for instance, a corporate mission statement) (n=170)	4.01	0.933	3 1.8%	9 5.3%	28 16.5%	74 43.5 %	56 32.9%
We oblige our suppliers to comply with social and environmental standards (n=169)	3.40	0.978	4 2.4%	24 14.2%	65 38.5%	52 30.8 %	24 14.2%
We are in a dialogue with 'critical' stakeholders (such as NGOs) (n=164)	2.83	1.165	25 15.2%	39 23.8%	52 31.7%	35 21.3 %	13 7.9%
We engage in social initiatives (e.g. social and cultural projects) (n=168)	3.53	0.935	5 3.0%	15 8.9%	56 33.3%	70 41.7 %	22 13.1%
Our employees voluntarily engage in charitable projects during leisure time (corporate volunteering) (n=168)	2.90	0.962	16 9.5%	30 17.9%	84 50.0%	30 17.9 %	8 4.8%
Environmental protection is very important to us (e.g. reduction of emissions and water consumption) (n=170)	3.99	0.810	1 0.6%	6 3.5%	32 18.8%	85 50.0 %	46 27.1%
We put a strong emphasis on promoting our employees (through, for instance, training activities) (n=170)	4.01	0.717	0 0.0%	2 1.2%	37 21.8%	89 52.4 %	42 24.7%
The advancement of our local neighbourhood (corporate citizenship) is very important to us (n=169)	3.60	0.847	2 1.2%	13 7.7%	57 33.7%	76 45.0 %	21 12.4%
We are well known for fair behaviour (n=169)	4.05	0.666	0 0.0%	0 0.0%	33 19.5%	94 55.6 %	42 24.9%
We actively promote biodiversity and animal welfare (n=166)	2.83	1.144	22 13.3%	44 26.5%	56 33.7%	29 17.5 %	15 9.0%

Notes: μ – mean; σ – standard deviation

Source: own investigation.

There is a considerable number of management systems that support the implementation and control of sustainability and social responsibility issues. Our survey shows that ISO standards (9001 and 14001) and risk management systems are by far the most important systems applied. Roughly a quarter to a third of the companies has implemented environmental costing or ecological and social purchasing guidelines. Other systems, such as SA 8000, are currently of minor relevance in the agribusiness sector (Table 7).

Table 7: Answers to question. Have the following management systems been implemented in your company?

Specification	Yes	No	Planned
ISO standards (n=140)	93 66.4%	40 28.6%	7 5.0%
Risk management (n=137)	103 75.2%	25 18.2%	9 6.6%
Environmental costing (n=138)	33 23.9%	95 68.8%	10 7.2%
EMAS (Eco-Management and Audit Scheme) (n=132)	28 21.1%	101 76.5%	3 2.3%
EFQM model (n=132)	19 14.4%	109 82.6%	4 3.0%
Social purchasing guidelines (n=134)	32 23.9%	94 70.1%	8 4.7%
Ecological purchasing guidelines (n=133)	49 36.8%	76 57.1%	8 6.0%
CSR cost management systems (n=130)	12 9.2%	107 82.3%	11 8.5%
SA 8000 (Standard for Social Accountability) (n=131)	6 4.6%	116 88.5%	9 6.9%

Source: own investigation.

Discussion and implications

For various reasons, agribusiness firms are facing increasing scrutiny and are severely criticized if their company policies do not meet stakeholders' expectations. The results of our study of German agribusiness firms show that public pressure is due mainly to the companies' position towards GMOs, environmental effects of production and food product characteristics, like high fat or sugar content. The legitimacy of an organization is essential for its long-term survival [Parsons 1960; Pfeffer & Salancik 1978]; it is threatened if company activities are no longer perceived as appropriate or in line with social standards and expectations [Suchman 1995]. Against this background, the strong resistance of a majority of EU consumers to GMOs has the potential to threaten the legitimacy of agribusiness firms, such as seed companies that are engaged in the development of GMOs, opt to use them or simply have problems avoiding the use of or contamination with GMOs (for instance, the feeding stuff industry). Multinational agribusiness firms face an additional problem since they have to deal with the very diverse attitudes towards GMOs in different parts of the world; such companies have to implement an overall strategy that, on the one hand, takes into account local attitudes towards GMOs and, on the other, avoids obviously contradictory behaviour with regard to GMOs in different regions.

CSR has been discussed as a concept for legitimating company activities by aligning a firm's objectives with the demands of its social environment [Hiss 2006; Mueller and Seuring 2007; Zerfass and Scherer 1993]. Our results show that, for agribusiness firms, high pressure on legitimacy in fact results in a growing relevance of CSR and sustainability issues. Companies that are criticized for their position towards GMOs, for instance, do not

consider CSR and sustainability unimportant ($r = -0.256$; $p < 0.001$). On the contrary, they engage in closer dialogues with critical stakeholders; this reflects their growing orientation towards the wider public (0.289; $p < 0.001$). Nonetheless, so far it is not well understood whether this behaviour is mainly motivated by traditional financial performance goals or whether it reflects a deeper belief in the moral necessity of acting in a socially responsible fashion. This could be a starting point for future research that analyzes in greater detail the determinants of implementation and design of the CSR strategies. In this context, how the perceived relevance of GMOs for a firm or industry influences the design of its CSR activities could also be analyzed.

Despite the undisputed relevance of CSR activities, such approaches are sometimes criticized by critical stakeholders as an obvious attempt to camouflage socially undesirable behaviour ('green washing') [Greer & Bruno 1996; Shultz & Holbrook 1999]. Against this background, the question how CSR contributes to a sustained legitimacy deserves more attention. Existing research indicates that credibility is essential for avoiding a situation in which CSR contributes to a further loss of legitimacy [Palazzo & Richter 2005]. If this cliff has been circumnavigated, CSR can contribute to higher firm profits due to improved legitimacy [Orlitzky et al. 2003], which reduces the probability of consumer boycotts, public protests or campaigns by critical stakeholders against firm activities [Hiss 2006]. The four columns of the CSR house (Figure 2) as well as the distinction between pragmatic, cognitive and moral legitimacy provide various starting points for implementing measures that contribute to (re-)gaining and sustaining legitimacy.

Many pro-GMO activists try to convince consumers and other stakeholders of the advantages of that technology by highlighting the contribution of genetic engineering to improved food security through breeding, for instance, salt- or water-stress-resistant crops. This can be a successful strategy for establishing pragmatic and cognitive legitimacy, but it will probably fail if the proposed advantages have little relevance for consumers, such as the resistance of crops against total herbicides. It will also fail with regard to deeply convinced opponents who question the moral legitimacy of GMOs. In this context, CSR strategies should stipulate a more intensive dialogue between firms willing to use GMOs and their opponents. It has repeatedly been stressed that open dialogues and discourses are one of the very few ways to alter deeply rooted beliefs [Suchman 1995]. Therefore, it can be considered appropriate that most companies have decided to allocate responsibility for CSR to higher hierarchical levels.

With regard to cultural change, Schein [1992] has pointed out how difficult a change can be. He conceptualized the dynamics of change as a three-step process: unfreezing, cognitive restructuring and refreezing. According to his observations, the motivation to change deeply rooted beliefs can only develop if three preconditions are met: (1) enough disconfirming data (for instance, GMOs contributing to food security or reduced use of pesticides), (2) enough anxiety or guilt resulting from the connection of the disconfirming data to important goals or ideals and (3) sufficient psychological safety in the sense that individuals see a possibility of solving the problem without loss of identity or integrity. It can be assumed that changing beliefs in the immorality of genetic engineering requires a similar process. Unfortunately, it is very difficult for managerial action to engender such a change [Schein 1992].

Our study has revealed that the agribusiness firms surveyed have accepted the challenges that the GMO debate in Europe poses and take it into account when designing

their CSR strategies. Due to the still growing relevance of CSR, we expect its further professionalization in agribusiness firms. In the longer run, this could result in the implementation of certification systems that allow independent third parties to externally audit a firm's social responsibility. In this sense, certification could act as means of meeting external pressures and institutionalized expectations with regard to firm behaviour [Walgenbach 2007]. This trend is accompanied by the development of social accounting methods. The idea of social accounting can be traced back to the 1970s, but it was not until the turn of the millennium and the growing relevance of CSR and sustainability issues that it gained more relevance. Today quite a large number of methods exist for measuring and documenting the economic, environmental and social sustainability of firm activities [Guidelines... 2009; Jørgensen et al. 2008].

The study presented here is only a first step on a long road to better understanding firm strategies with regard to GMOs and CSR. Future research should be based on larger samples from a variety of countries so that they are more representative of the European agribusiness sector. Moreover, more in-depth analyses of the contingency factors that determine firm's GMO and CSR strategies could provide valuable insights into how firm strategies are shaped and which influences they actually have on firm management and behaviour.

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