
Corporate environmental reporting: survey and empirical evidence

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Abstract: This paper presents an empirical study addressing current tendencies in corporate environmental reporting released to the public. On the one hand, we survey British and German environmental statements according to the 'European Eco-Management and Audit Scheme'. On the other hand, we explore why companies desist from participating in EMAS and thereby from publishing environmental statements. For this purpose, we have conducted a telephone survey with those companies in Northrhine – Westfalia, Germany, which have participated in EMAS twice but have dropped out afterwards. In doing so, the survey also intends to explore whether other types of corporate environmental reporting are increasingly employed in place of environmental statements. All in all, the goal of our study is to derive assumptions about future developments of corporate environmental reporting.

Keywords: corporate environmental reporting; EMAS; empirical study; environmental statements.

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1 Introduction

Corporate environmental reporting has become an important part of corporate reporting at large. This paper presents an empirical study addressing current tendencies in corporate environmental reporting released to the public. On the one hand, we survey environmental statements according to the 'European Eco-Management and Audit Scheme' (EMAS) [1]. Thereby, we analyse the environmental statements of companies in the United Kingdom (UK) with regard to their contents. In addition, we examine environmental statements of companies in Northrhine-Westfalia, Germany, which have joined EMAS for the third time. In this context, special interest is put on the differences between the environmental statements according to EMAS-I and the recent ones that had to be aligned with EMAS-II.

On the other hand, we explore the reasons for companies to desist from participating in EMAS and therefore, from publishing validated environmental statements. For this purpose, we have conducted a telephone survey with those companies in Northrhine-Westfalia which participated twice in EMAS but have dropped out afterwards. In doing so, the survey also intends to explore whether other types of corporate environmental reporting are increasingly employed in place of environmental statements. All in all, the goal of our study is to derive assumptions about future developments of corporate environmental reporting.

2 Variety and goals of corporate environmental reporting

Corporate environmental reporting comprises all information communicated to stakeholders about environmental issues at regular intervals as well as in case of need. Thereby, companies give account about 'environmental aspects', i.e. material consumption, emissions, waste and the corresponding impact on the environment, for example on air, water, biodiversity and human health. In addition, corporate environmental reporting comprises information about interdependencies between environmental and economic issues. For example, environmental aspects may cause financial risks in the form of lost profit margins or higher costs. Furthermore, companies may be able to realise benefits as well, e.g. by decreasing waste and, therefore, costs.

All in all, we can differentiate between the following *varieties of corporate environmental reporting* [2, pp.21–91]:

- Environmental reporting released to the public, especially in the form of stand-alone environmental reports, such as environmental statements according to EMAS. Moreover, companies can publish information about environmental issues in the context of their financial statements or on the internet.
- Environmental reporting due to legal requirements. For example in Germany as well as in the UK, there are legal obligations to report annually on releases of a 'core' list of substances under specific terms.
- Environmental reporting to 'specific users', especially as a consequence of market power. For example, in the automotive industry, component suppliers are increasingly forced to conduct life cycle assessments and report about them to manufacturers.

However, companies do not only report one-way to stakeholders. Corporate environmental reporting has rather become one of the most important manifestations of business-environment interactions by means of two-way communication processes [3].

What are the *goals* of corporate environmental reporting? In many cases, stakeholders, e.g. government, employees and the public, may strive for different goals than the company. Hence, there is a necessity to influence the decisions of those stakeholders who are critical to the achievement of strategic goals. For this purpose, corporate environmental reporting plays a key role.

Any organisation considering voluntary disclosure of information will assess the relative benefits and costs. The costs are predominantly those of data collection and processing, as well as attendant auditing costs. In contrast, the benefit of reporting is much more difficult to quantify, because it requires an evaluation of the degree to which decisions of stakeholders are influenced by corporate environmental reporting. In the following, we will concentrate on corporate environmental reporting released to the public.

3 Corporate environmental reporting released to the public

3.1 Corporate environmental reporting in stand-alone environmental reports

Corporate environmental reporting in stand-alone environmental reports is not required by any provisions of law. Thus, we find a huge variety with regard to contents, complexity and layout. At the same time, there is a trend for a standardisation in form as well as content due to guidelines and scientific requirements [4–10].

Environmental statements, according to EMAS, are a specific kind of environmental report which will be discussed in more detail. When EMAS came into force in 1993, environmental statements were supposed to play a major role in future corporate environmental reporting. Companies were expected not only to improve their environmental management by joining EMAS, but also to obtain a major interest from the broader public in their validated environmental statements. In Germany, EMAS was made additionally attractive by pronouncing regulatory relief exclusively to EMAS registered companies. In contrast, in other countries, for example the UK, the authorities did not provide any preferential treatment to EMAS participants. This is considered one of the main reasons for a greater number of companies joining EMAS in Germany. In addition,

in the UK, BS7750 existed prior to EMAS, and both government and industry did not consider EMAS a superior alternative [7, p.36]. In 2001, EMAS was amended (in the following referred to as 'EMAS-II'). EMAS-II was meant to create additional benefits to make participation more attractive for companies. Amongst other things, the requirements on environmental statements were modified. We will discuss this in more detail in Section 4.2 in connection with the results of our analysis of British and German environmental statements.

3.2 *Corporate environmental reporting in financial statements*

In the context of corporate environmental reporting in financial statements, with regard to the addressees, information about the impact of environmental issues on the financial position is taking centre stage. Within US-GAAP as well as IAS, environmental issues are of the same nature as any sort of changes in the business environment: that is, they may lead to changes in cash flows, liabilities, earnings, etc., and these changes in turn are reflected in the corporation's financial numbers. 'As with any other change in the business environment, such changes in the financial numbers need, within conventional accounting thought at least, only be separately identified if they are in some way *material*'. [4, p.223] However, in case environmental issues are (potentially) significant, their exclusion may be sending misleading signals to the financial statements' readers [8,9].

A variety of empirical studies reveal that financial statements commonly include information on environmental issues [5,10,11] and therefore are used as a means of corporate environmental reporting. Thus only a small fraction of the financial statement includes information on the impact of environmental issues on financial data. It is remarkable that at the same time, financial statements more often refer to environmental issues that are not closely related to economic issues. For example, in some cases financial statements even include the environmental policy or improvement programmes. Because of the specific information demanded of the addressees, we evaluate these reporting practices in financial statements not to be target-orientated. It is in fact more advisable to report solely about the interdependencies between environmental aspects and the company's economic issues [2, p.28]. Additionally, further information about ecological issues should be released, for example, in stand-alone environmental reports or posted on the internet.

3.3 *Corporate environmental reporting on the internet*

Environmental reports as well as financial statements are typically published in separate booklets. But concerning today's requirements with regard to dialogue, feedback, customisation, and interactivity, this shows significant shortcomings. In consequence, internet-based communication is gaining in importance. The usage of the internet is also supposed to enable a further connection of financial and environmental reporting [6].

Concerning environmental reporting, as a first step, more and more companies post their environmental reports on the internet in the form of downloadable files (e.g. PDF), or just converted into HTML. Besides, the websites can provide e-mail, navigation features, order and feedback forms as well as newsgroups and chats to allow two-way environmental communication [3, pp.196–197].

In addition, a growing number of companies employ their websites to publish further information about environmental issues in case of need as well as in order to update the information published in paper-based environmental reports. In this context, the benefits of using the 'eXtensible Markup Language' (XML) are increasingly discussed. In particular, XML offers benefits concerning the rationalisation of a company's preparation, administration and distribution of information. Additionally, XML-based corporate environmental reports can be clustered semantically. Hence, users are enabled to extract and compare information e.g. for benchmarking and their individual decision-making process [6,12]. Thus, internet technologies can help to improve target group-orientated corporate environmental reporting and at the same time reduce the costs of the distribution of information.

4 Empirical study

Section 4 provides the main results of a comprehensive empirical project conducted to analyse current trends in environmental reporting released to the public.

4.1 Research design

Our empirical study was conducted from October 2002 to January 2003 and consists of two parts: an *analysis of environmental statements* and a telephone survey. First, we analyse actual reporting practices in environmental statements. On the one hand, all British companies participating in EMAS were asked by mail and/or phone to send us their environmental statement. After two follow-up procedures, we had a total of 63 British environmental statements; this equals a response rate of 84%. On the other hand, we continued a study to analyse the development of environmental statements of companies in Northrhine-Westfalia, Germany, participating repeatedly in EMAS [see for the analysis of the first and second environmental statements 2, pp.157–177]. While from May 1997 to July 1999 81 companies in Northrhine-Westfalia participated in EMAS for the second time, three years later, out of these only 36 companies participated for the third time. Twenty nine of these 36 companies sent us their environmental statement. In our analysis, one focus was to explore the differences between the first two environmental statements according to EMAS-I and the recent ones that had to be aligned with EMAS-II. As far as we know, this is the first long-term study analysing the development of environmental statements over several years.

In order to analyse both the British and the German environmental statements, we employed a tried and tested scheme [2, pp.99–118] which was slightly modified in order also to cover the additional requirements of EMAS-II (Section 4.2.1).

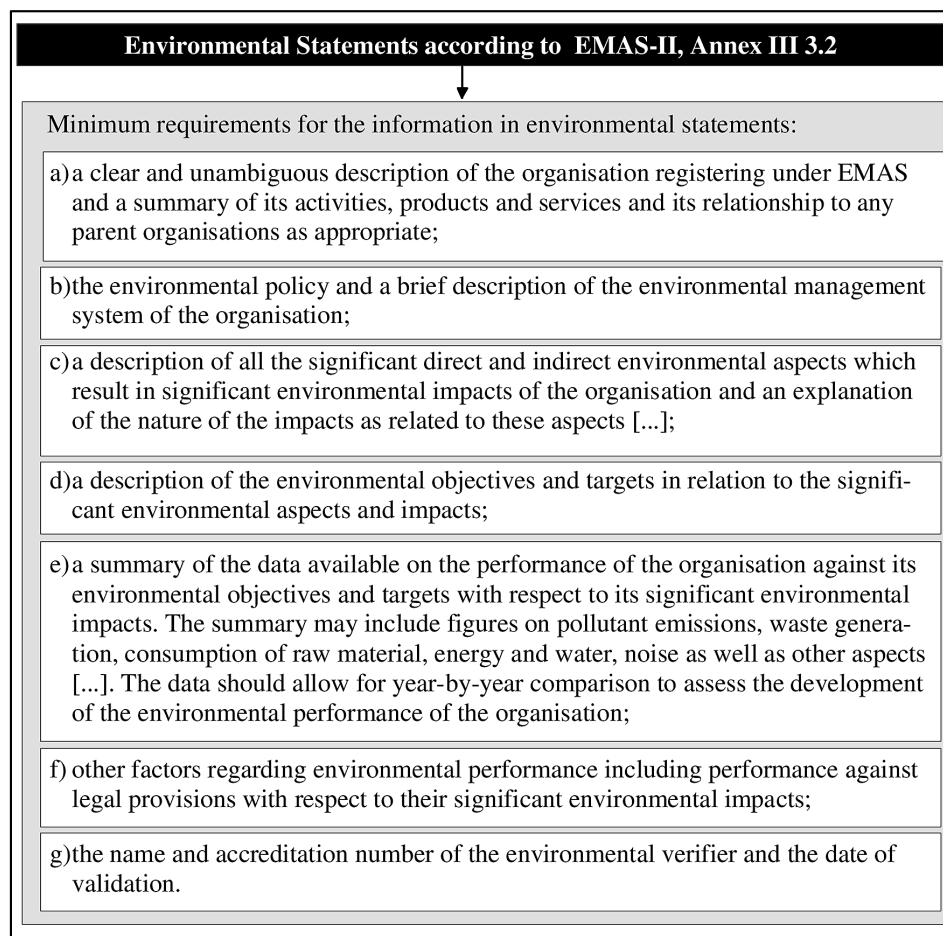
As more than half of the company sites in Northrhine-Westfalia which participated twice in EMAS decided to drop out afterwards, as a second step we conducted a *telephone survey* with these companies. Therefore, our focus was to get more detailed information about the reasons why companies desist from publishing environmental statements and if other types of corporate environmental reporting are increasingly employed instead (Section 4.2.2).

4.2 Results

4.2.1 Environmental statements

Figure 1 shows the minimum requirements for the information to be published in environmental statements [1].

Figure 1 Contents of environmental statements according to EMAS-II



Our study reveals that every environmental statement we analysed includes information about the seven category groups stipulated. In the following, we will first present the main results of the analysis of British environmental statements and then those concerning environmental statements in Northrhine-Westfalia, Germany.

4.2.1.1 British environmental statements

All the British environmental statements *describe their organisation* by specifying their products, and, in addition, more than half of them (54%) quantify the volume of production

and describe their production plant as well as processes. Besides, 40% name the number of employees. Furthermore, we find detailed descriptions of the company sites' geographical positions and the adjacent areas (60%).

All environmental statements include the *environmental policy* of the companies, thus we find a huge variety of environmental principles. Those frequently referred to most are the principles of compliance with formalities (79%) and continuous improvement of environmental management (63%). As these principles are explicitly required by EMAS, one could assume that they would be verbalised even more often. Other frequently named principles are conservation of nature and natural resources as well as eco friendly production processes (54%) and products (28%). The descriptions of the *environmental management systems* are rather brief, focusing primarily on organisational aspects as well as planning processes.

In accordance with EMAS, the descriptions and explanations of significant *environmental aspects* and the corresponding *environmental impacts* are much more detailed. For this purpose, *material flow analyses* and *environmental performance indicators*, such as the quantity of waste per unit of production, are commonly employed. Approximately three quarters of the companies, therefore, publish data that allow a year-by-year comparison. Hence, the environmental statements enable readers to assess the development of the companies' environmental performance.

It is noteworthy, that 77% of the British environmental statements mention *indirect environmental aspects*, for example product related issues (especially transportation, use and waste recovery and disposal), or the environmental performance of suppliers. In most cases, it is also mentioned that the companies try to influence these indirect environmental aspects, for example by encouraging suppliers to implement environmental management systems.

EMAS requires companies in addition to report about their *environmental objectives* in relation to the significant environmental aspects and environmental impacts. Therefore, in each case about 40% of the objectives verbalised in the environmental statements demanded organisational measures (e.g. workshops with suppliers to improve their environmental management), and technical measures (e.g. the installation of a filter system). In addition, 20% of the targets applied an improved measurement and evaluation of material flows (e.g. the development of environmental performance indicators).

All in all, the British environmental statements provide comprehensive information about the company sites' environmental aspects and environmental performance. The contents vary remarkably, which can mostly be traced back to the fact that the companies are of different sizes and belong to different industries, including the service sector. In addition, about ten participants are local authorities, which most likely have material flows varying from those of companies. This also applies to the environmental statements in Northrhine-Westfalia, Germany, which will be analysed in the following section.

4.2.1.2 Environmental statements in Northrhine-Westfalia

The *description of the organisation* in environmental statements in Northrhine-Westfalia (NRW) in most cases comprises a summary of the products and processes (96%) as well as engine plant (71%). 42% information about the volume of production and 75% even name the number of employees. In addition, about 58% of the companies describe their geographical position and the adjacent areas. In this regard, the recent environmental statements do not reveal any significant differences compared to earlier statements.

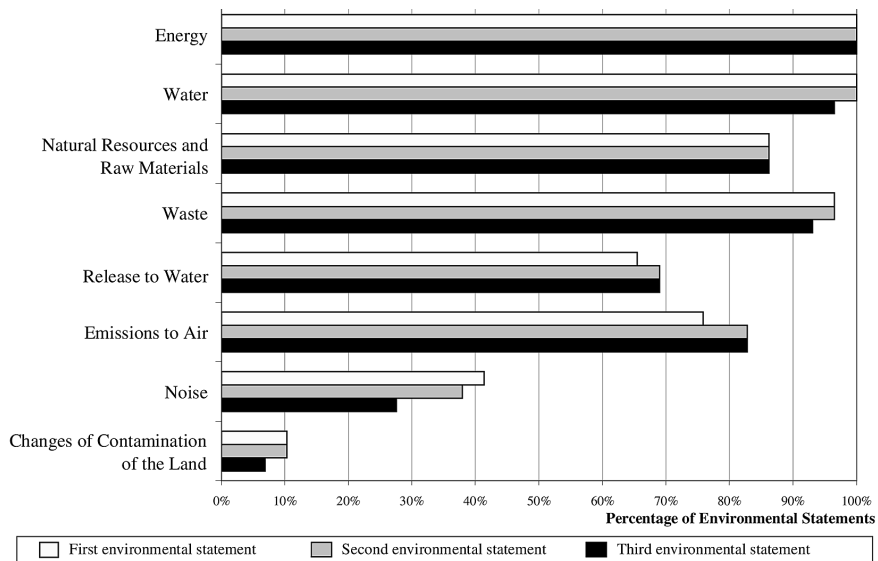
Compared to the British environmental statements, we more often find the number of employees and a description of the engine plant, but less often information on the volume of production.

With regard to the *environmental policy* all of the Northrhine-Westfalian environmental statements – similar to the British ones – include a wide range of environmental principles. In each case 90% of the environmental statements contain the principles of compliance with formalities on the one hand and continual improvement of environmental management on the other. The requirements of EMAS-II concerning environmental policy are less concrete than they were in EMAS-I. All the same, hardly any of the participants of our study had changed their environmental principles. However, on the one hand this is not surprising, because environmental policy, like corporate policy at large, is meant to be long-ranging. In addition, the idea behind environmental management systems according to EMAS has not changed with the amendment. On the other hand, it is noteworthy, because nearly a third of the companies modified their environmental principles between the time of their first and second participation in EMAS.

We find a similar picture concerning the description of the *environmental management systems*: According to EMAS-II, they have to be mainly aligned with the requirements of ISO 14001. As these do not differ remarkably from the requirements verbalised in EMAS-I, companies obviously decided it to be unnecessary to report any alignments. As with the British environmental statements, the Northrhine-Westfalian environmental statements comprise short descriptions of the environmental management systems, picking organisational aspects as well as planning processes out as central themes.

Concerning the description and explanation of significant *environmental aspects* and the corresponding *environmental impacts* our study reveals some interesting developments. As Figure 2 shows, most environmental statements include figures on the material flow. The results do not, therefore, vary remarkably over the years. In most of the environmental statements they allow a year-by-year-comparison.

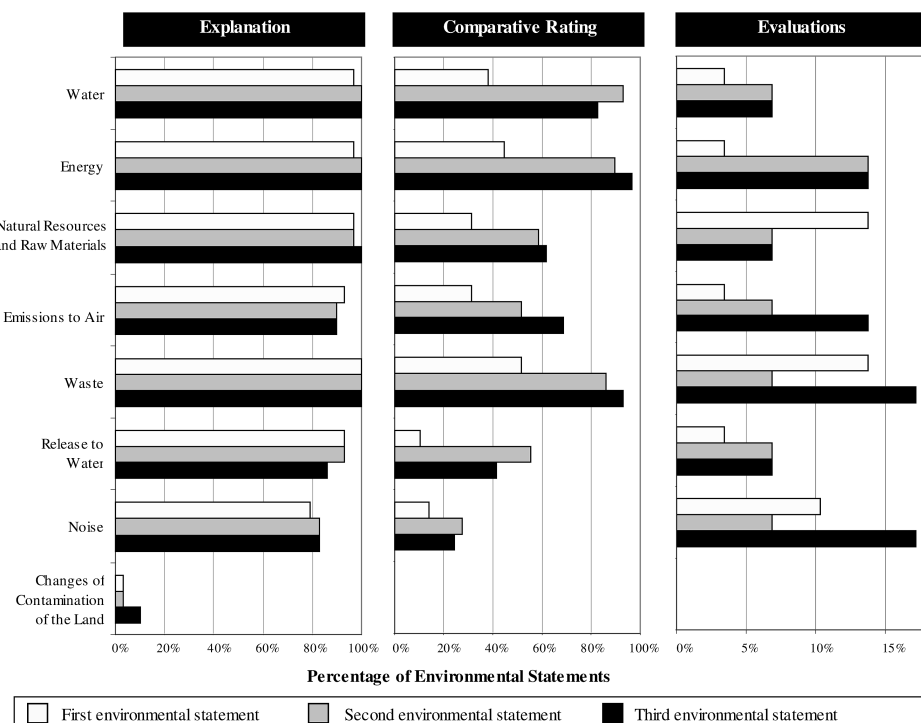
Figure 2 Figures on environmental aspects



Nonetheless, it is somehow surprising that the third environmental statements include less frequent data concerning water input, waste, noise, and changes of contamination of the land. Further analyses show that regarding the contamination of the land as well as noise emissions these findings are due to improvements in environmental management that have lead to the avoidance of these environmental aspects.

With regard to the explanation of environmental aspects and their environmental impact, our study reveals that companies have developed their approaches to evaluate in particular waste, noise, and emissions to air (see Figure 3).

Figure 3 Explanation and evaluation of environmental impacts



Nearly all environmental statements include comments about *indirect environmental aspects*, and about 50% even describe efforts to influence them. This means a significant increase, as only half the second environmental statements contained such information. This development is presumably due to the particular requirement of EMAS-II which was not included in EMAS-I.

Interestingly, most environmental statements include not only the current *environmental programme*, but also the previous one and inclusive information about the goals which have been achieved and why other goals were not achieved. This result is noteworthy, because only about half of the environmental statements published three years before contained the respective 'old' programme, so the number has increased remarkably. In addition, EMAS-II (contrary to EMAS-I) only requires information about

the environmental goals, but not about the measures employed to reach these goals. Hence, the reporting practice obviously goes even beyond demands.

Compared to the British environmental programmes, those of Northrhine-Westfalian include more organisational and technical measures (more than 90%); in contrast only 7% apply on improved measurement and evaluation of material flows. This is probably due to the fact that the companies developed their methods to measure and evaluate material flows during the first years of their participation in EMAS.

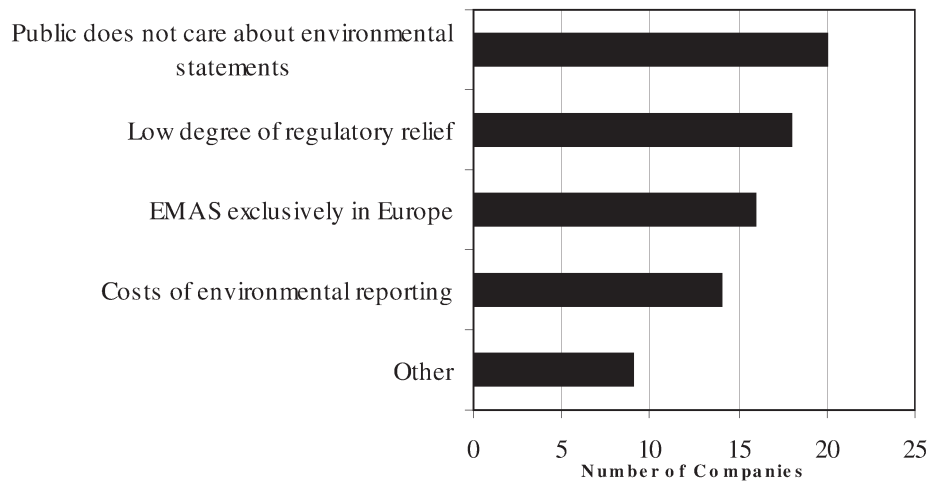
At large, our analysis of the third environmental statements in comparison with those made previously shows improvements, especially concerning the evaluations of environmental impacts and improvement programmes. In addition, presumably in consequence of the modified demands of EMAS-II, not only direct environmental aspects, but also indirect environmental aspects are focused upon. All in all, in our opinion, environmental statements according to EMAS are a proper means of corporate environmental reporting to the public. It therefore, seems advisable not only to publish environmental statements in separate booklets, but to post them on the internet and integrate them in to the overall reporting system.

4.2.2 Interviews with 'dropouts'

In spite of the fact that just three years ago empirical analysis revealed an increase both in EMAS-registered companies as well as ISO 14001-certifications [13], meanwhile participation in EMAS has been disappointing in terms of turnouts. This also applies to Germany, where participation is largest, compared to other European countries [14]. In consideration of the fact that stand-alone corporate environmental reports in Germany are predominantly realised in the form of environmental statements [15, p.4], this development leads to a decline of environmental reporting to the public at large. This corresponds to similar tendencies.

'History shows time and time again that [. . .] voluntary initiatives follow a general, predictable – and entirely unsurprising – pattern. That is, initiative is taken up by a few innovative, leading companies. Then the majority (but not all) of the larger companies (typically the transnational corporations) becomes involved and then, unless the issue passes into legislation, it begins to fade away. At the end of the 1990s, environmental reporting was at these crossroads.' [4, p.243]

In order to get more information about potential future trends of corporate environmental reporting, we conducted a telephone survey with those 45 company sites in Northrhine-Westfalia which dropped out of EMAS after having participated twice. Eleven of the 45 companies did not participate in the interviews, mainly because they refuse in principle to take part in telephone surveys or the company sites no longer exist. Figure 4 shows the reasons why the remaining 34 companies desisted from participating in EMAS.

Figure 4 Reasons to desist from participating in EMAS and publishing environmental statements

All in all we can assume that the interviewees evaluate the cost/benefit-ratio of participating in EMAS and consider publishing environmental statements to be insufficient. The most frequently cited reason is that *'the public does not care about environmental statements'* (20 out of 34 companies). In addition, it plays a prominent role that companies are *'disappointed about the low degree of regulatory relief'* offered to EMAS registered companies (18 out of 34 companies). In this context it has to be considered that the actual degree of regulatory relief varies remarkably between the different Federal States of Germany. It is interesting to notice that the number of dropouts in Northrhine-Westfalia is much higher than the number, for example, in Bavaria, where an 'Environmental Pact' was signed in 1995 that provides preferential treatment, for example, in the form of reduced fees of legal immission control procedures to EMAS registered companies [16].

Nearly half of the interviewees place emphasis on the point that they have certified environmental management systems according to *ISO 14001* that are internationally accepted – not exclusively in Europe. These results correspond to the fact that while participation in EMAS decreases, the number of certifications according to *ISO 14001* worldwide is growing remarkably [13]. In addition, 14 companies evaluate the *costs of environmental reporting* as a crucial reason to drop out of EMAS.

When companies desist from participating in EMAS there is no legal requirement to continue publishing environmental statements, in particular environmental reports. Nonetheless, six companies in our sample continue publishing an environmental report more or less similar to the formerly released environmental statement. However, these reports are no longer validated. Moreover, in five cases environmental reporting is now realised in the form of 'sustainability reports', mostly published not by the company site, but by the headquarters.

In addition, some other kinds of environmental reporting is enforced. Above all, news items as well as information on a company's website are increasingly employed to inform stakeholders about current environmental issues.

All in all, most interviewees expect environmental reporting to be at least as important in the future as it is today (28 out of 34 companies), while six assume it is going to play a minor role. Further questions revealed that none of the interviewees anticipate that environmental reporting in financial statements as well as via the internet will lose importance. The only type which is expected to become less common is the stand-alone environmental report. Hence, one can even assume that – at least to a certain degree – reporting on the internet will replace paper-based environmental reports. In this context it is interesting to note that while only one of the company sites in Northrhine-Westfalia had posted its first environmental statement on the internet, 12 companies chose to employ the internet as a means of publishing their third environmental statement.

5 Conclusions

Corporate environmental reporting on the one hand is supposed to be increasingly important, mostly because of the growing demands on the part of the companies' stakeholders. In addition, our empirical analysis reveals that British and Northrhine-Westfalian environmental statements according to EMAS contain comprehensive information and even show significant enhancements over the years. On the other hand, we find that environmental statements are becoming less common. This is significant, because environmental statements are, in Germany, the most commonly used variety of corporate environmental reporting released to the public. Hence, if companies refrain from participating in EMAS, corporate environmental reporting at large will decline.

Furthermore, our telephone survey reveals that the main reason for this development is the insufficient cost/benefit-ratio of publishing environmental statements. This, in turn, is influenced by the disappointingly low demand of the public for information about environmental issues, as well as the costs of corporate environmental reporting. In addition, authorities at least in Northrhine-Westfalia, provided less preferential treatment to EMAS participants than had been anticipated by the companies. The example of Bavaria, where is granted to a greater extent regulatory relief and participation in EMAS and hence the publication of environmental statements has not decreased over the years, shows that this indeed seems to be a crucial factor. Another way to strengthen environmental reporting to the public is to lower the corresponding costs. In this respect, corporate environmental reporting on the internet seems to be a promising development, allowing not only cost savings, but also the linking of corporate environmental reporting and financial reporting.

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