Stakeholder Pressures, Environmental Impact and Managerial Initiatives of SMEs: A Longitudinal Study

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Abstract: *Environmental sustainability has become an issue of uttermost importance for business organisations. Therefore, the implementation of corporate environmental initiatives has been vigorously embraced by industry. Two decades ago, no clear picture of industry initiatives to reduce their environmental impact was available in Denmark. Consequently, a longitudinal research project was initiated to enlighten the situation. This study investigates environmentally related initiatives taken in response to the perception of stakeholder pressures and the perceived corporate environmental impact. The empirical design is based on a survey which has been repeated every fourth years since 1995. It focusses on industrial small and medium-sized enterprises' (SMEs) sampled from an electronic database of Danish companies. This allows for detailed and longitudinal analyses. The paper concludes that despite the apparent popularity of self-regulation, voluntary initiatives do not tend to be widely adopted by SMEs, stressing a need for a continuing regulation of industry's behaviour in relation to environmental issues.*

Key words: *Stakeholder influence; corporate environmental impact; corporate managerial initiatives; industrial SMEs*

1. Introduction

Over time, powerful industrialists have called for greater self-regulation through voluntary participation to supplement existing national and international efforts to regulate the environmental consequences of business activities (Schmidheiny 1992). Furthermore, scientists have become increasingly interested in the reasons behind companies' efforts to reduce their environmental impact (cf. Gilbert 1993; Stead & Stead 1992; Ulhøi 1993; Taylor 1994; Welford 1995). Therefore, in order to help companies organise their work on environmental issues, a new form of management emerged the practical side of which became visible in integrated environmental management systems. This came first in the guise of the British environmental management system standard BS7750, then as the European environmental management and auditing scheme/EMAS (see, e.g., Rothery 1993), followed

by the international ISO 14001 standard (see, e.g., Sheldon 1997).

However, while undertaking an EU research project in the mid-1990s (see Ulhøi et al. 1999), it was found that very little was known of the actual situation related to the adoption and implementation of environmental management initiatives in general and, more specifically, among Danish industrial companies. This led to a survey of stakeholder influence as perceived by managers in industrial SMEs in Denmark, of the environmental impact from the companies themselves and of implemented initiatives. The aim was to achieve a more detailed understanding of actions and attitudes. The results turned out to be quite interesting (see, e.g., Madsen & Ulhøi 1999), so it was decided to repeat the survey later on to monitor the development. This led to a number of identical surveys being carried out on a four-year basis.

Although industry's voluntary implementation of environmentally related initiatives has been seen as the least 'evil' solution, the surveys have demonstrated that legislation and regulation are still reported to be among the major drivers when companies implement such initiatives (see, e.g., Madsen & Ulhøi 2006). However, the question is whether the drivers of corporate management initiatives related to environmental issues can be identified more precisely and if changes in the level of activities can be identified over time. Furthermore, research has often focussed on larger enterprises (LEs) with a more visible impact. Small and medium-sized enterprises (SMEs), on the other hand, often lack sufficient resources to take action. Thus, there is a need to research the situation among SMEs, as they actually account for quite a substantial part of production in developed countries (Hillary 2000).

In this context, the focus of this paper will be an analysis of the effects of perceived stakeholder pressures, the role of perceived environmental impact and the environmentally related initiatives taken by management in industrial SMEs in Denmark in response to those perceived pressures. More specifically, which stakeholder pressures drive management in industrial SMEs to implement more environmentally friendly production and management practices? What is the role of the perceived corporate environmental impact? And last but not least, what are the actual actions taken in response to these potential driving factors? These questions will be the focus of this paper. Since information has been collected frequently for more than ten years, it is possible to introduce a unique analysis of potential trends and developments over this period as well as more detailed analyses of the factors mentioned above in search of a potential underlying structure in these factors.

The paper is structured as follows: The subsequent sections detail the background, as well as the empirical and methodological basis, of the research. After this, the research results are presented and discussed and followed up by an assessment of potential implications and concluding remarks.

2. Theoretical Framework

2.1 Corporate Environmental Management and SMEs

As mentioned by Friedman and Miles (2002, p 324), 'One problem is that many SMEs consider their environmental impact to be minor or even insignificant'. Furthermore, because many SMEs are subcontractors to other companies, they often lack direct consumer influence encouraging them to take environmentally related initiatives and generally conceive of their environmental impact as minimal (see, e.g., Biondi *et al*. 2002; Madsen & Ulhøi 2001; Gadenne 2009). However, SMEs account for about nine out of 10 firms in most countries (Schaper 2002). Therefore, they are actually responsible for a large part of business activities and thus may have a greater environmental impact than LEs. Research in the field demonstrates that the discrepancy between perceived and actual environmental impact might be due to the unsystematic and ad hoc basis on which SMEs handle environmentally related activities (Murillo & Lozano 2006).

Unfortunately, until recently, empirical studies concerning cleaner corporate production and management focussed mainly on LEs. Therefore, it is questionable whether insights from these studies can be directly applied to SMEs or whether the contexts, opportunities and obstacles facing SMEs are fundamentally different, thus invalidating such an extrapolation. As a consequence, an immediate transfer of results from LEs may not be possible or valid, which calls for research with a specific focus on environmental issues related to SMEs.

Two decades ago, little information was available concerning the implementation of environmentally friendly management practices and production methods in Danish businesses (mainly SMEs). As a result, researchers began to monitor Danish industrial companies as part of an ongoing, survey-based research project (see, e.g., Madsen & Ulhøi 1996a, 2001, 2006; Ulhøi & Madsen 2005; Madsen *et al*. 1997). The main focus has been to investigate management perceptions of stakeholder influence when taking initiatives to reduce companies' impact on the natural environment - i.e., to implement initiatives which lead to cleaner production and thus a reduced environmental impact. Managers' perceptions of the environmental impact of the companies' own business activities have been included as well.

2.2 The Role of Stakeholders

The number of stakeholders that directly or indirectly influence a company's business activities related to reducing environmental impact is often much higher than expected and may not fit directly with the primary/secondary stakeholder model mentioned by Clarkson (1995). Furthermore, as pointed out by Donaldson and Preston (1995), stakeholder theory includes descriptive, instrumental and normative approaches. An instrumental approach is primarily applied here. Thus, relevant stakeholders may not only include the owners, the employees and the authorities but also local and international environmental groups, local neighbours worried about various discharges and different interest groups focussing on environmental protection or improvement. Taking this into consideration, it is hardly surprising that firms might wish to develop good relationships with important stakeholders - especially when considering environmental issues. Therefore, integrating the environmental concerns of stakeholders may be a means to achieve an environmentally more sustainable situation for the companies (see, e.g., Madsen & Ulhøi 2001). However, a lack of resources may encourage companies - and especially SMEs to direct their attention towards the stakeholders perceived as the potentially most influential ones.

As mentioned by Freeman (1984), an increasing focus seems to have been directed towards how stakeholders are handled with regard to industrial activities. Management teams of many companies have realised that stakeholders are important players in the handling of environmental issues by companies (see, e.g., Fineman and Clarke 1996 or Henriques and Sadorsky 1999 for early publications and González-Benito 2011 or Garcés-Ayerbe 2012 for more recent publications). This should be of interest to decision makers in companies, as regulation still seems to be the main factor motivating firms to implement environment-protection measures (see, e.g., Madsen & Ulhøi 1996a, 1996b; Ulhøi *et al*. 1996). Furthermore, different stakeholders will most likely increasingly affect the environmental behaviour and attitudes of SMEs. Therefore, addressing dynamic and intertwined interests of environmental stakeholders is likely to become a straightforward managerial responsibility.

However, the question is whether environmentally related initiatives in companies can be influenced by stakeholders other than regulators and legislators and whether companies will see compliance with norms and regulations as an opportunity instead of a threat or, as mentioned by Porter and van der Linde (1995b), if they will start to recognise environmental issues as opportunities and not as economic burdens. If so, the competitive equilibrium may be affected and thus motivate (or force) companies to take further action. In this case, companies will begin to climb the 5-step ladder mentioned by Nidumolu *et al*. (2009): (i) viewing compliance as an opportunity, (ii) greening the supply chain, (iii) introducing sustainable issues into products and services, (iv) developing new business models and (v) creating next-practice platforms.

2.3 Awareness of Corporate Environmental Impact

Another issue influencing environmental initiatives of SMEs positively is the awareness among decision makers of environmental consequences due to the business activities of their company (corporate impact). Based on an approach developed by Schaper (2002), Gadenne *et al*. (2009) have looked into this issue from an individual attitudinal perspective. Thus, because the acknowledgement of corporate impact can be motivated by stakeholder influence (fully or partly), an interaction between stakeholder and corporate environmental effects can be expected.

2.4 Propositions

This leads to the proposition that perceived stakeholder influence might positively impact corporate environmental initiatives, as might managers' acknowledgement of the green impact of their firms'

business activities. Furthermore, interaction between the stakeholder effect and awareness of industrial influence might be possible. This proposition will be analysed through a study of how environmentally related initiatives taken in Danish industrial SMEs can be explained by stakeholder influence and acknowledgement of their environmental effects. After looking at the general development of this in a longitudinal perspective, a more detailed study of the perceived effect of different stakeholders, areas of awareness and areas of initiatives will be presented in order to identify potential underlying structures in these factors.

3. Methodological Approach

A pre-tested and structured questionnaire was used based on the theoretical issues mentioned in the previous section, that is, issues related to environmental management, stakeholder influence as perceived by management in the companies, their perception of the company's own impact, and implementation of environmental initiatives and the outcome of them. After a few test surveys, identical full-scale surveys have repeatedly been carried out on a four-year basis from 1999 to 2011. The surveys have all been based on a random sample of Danish companies in the industrial sector. The reason for focussing on industrial companies is that they have been required to implement initiatives related to environmental issues from a variety of stakeholders over the last three to four decades. Therefore, they are supposed to have - at least some - experience with handling environmental issues. The companies to be included in the surveys were sampled from KOB which is an electronic database of Danish firms. Since very small companies may not have the resources to implement initiatives besides the ones strictly required by regulation or customers, it was decided only to include companies with more than nine employees. Taking the size of the industrial sector in Denmark into account, this implies that the focus of the surveys is on SMEs. The initial sample in each survey included some 500 industrial SMEs, corresponding approximately to ten per cent of Danish industrial SMEs. The sampled companies were contacted via a telephonic pre-notification strategy to help identify the decision makers in the companies with formal environmental responsibility as well as to obtain an agreement to participate in the survey. The identified decision makers were then asked to complete the questionnaire on behalf of the company and avoid expressing any personal opinions. The response rate for all surveys was around 60 per cent.

For each concept included in the questionnaire, a scale of items was constructed based on relevant published research. A related response scale allowed responses to be given on a five-point ordinal scale, allowing respondents to express their degree of agreement/disagreement or level of perceived impact or influence in response to the questions. The details of the questions related to perceived stakeholder influence, perceived corporate impact and corporate environmental initiatives (i.e. the scale of items and the response scales) can be found in Tables 2 – 4. Because the number of items included in each scale of items differs, an index representing an average value transferred to a range from 0 to 10 was constructed to facilitate comparisons and subsequent analyses.

The original data collected, as well as the constructed index, can be analysed in various ways by applying a number of statistical techniques. In order to analyse the research propositions mentioned in section 2.4 above, regression analysis using OLS, factor analysis using principal component analysis and varimax rotation, and profile analysis were applied since these analyses allow for identifying relationships between variables, underlying structures in the responses and dissimilarities in responses to a similar topic across surveys, as will be demonstrated in the following section (for more details of the statistical techniques, please refer to Hair et al. 2005, e.g.). Performed tests were all based on a 5% level of significance.

4. Results

4.1 General trends

The overall development of perceived stakeholder influence, perceived corporate impact and corporate environmental initiatives taken from 1999 to 2011 is shown in Figure 1.

As can be seen, all three factors follow an almost identical pattern of development: a decline from 1999 to 2003 followed by an increase from 2003 to 2007. The level in 2011 was approximately the same as in 2007. In order to identify whether or not any of the deviations were significant, a profile analysis was undertaken (see Hair et al. 2005). The results of the analysis showed that the decline from 1999 to

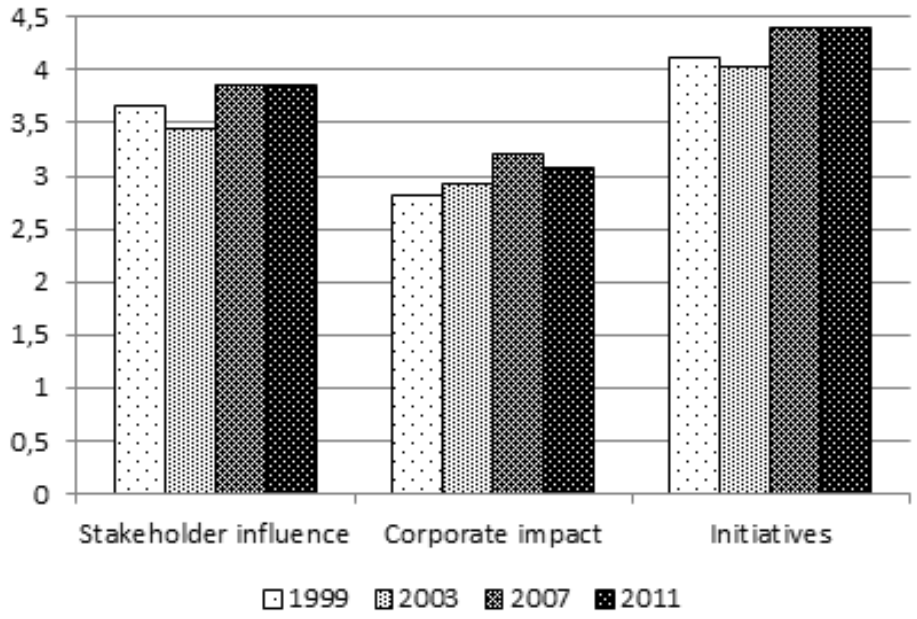

Figure 1. *The general trend in the development of perceived stakeholder influence and corporate impact as well as environmental initiatives taken (measured on an index scale ranging from 0 to 10).*

2003 was not significant, whereas the increase from 2003 to 2007 was significant.

Furthermore, the situation in Figure 1 indicates that stakeholder influence is perceived as higher than the perception of the company's own impact (the corporate impact). However, the level of environmental initiatives implemented is higher than both perceived stakeholder influence and the perceived corporate impact.

However, since the information depicted in Figure 1 is arranged on an index scale (going from 0–10), a general level of around 3–4 cannot be characterised as a convincing level of awareness or involvement in any of the categories.

4.2 Regression Analysis of Stakeholder Pressure and Awareness of Corporate Impact on Initiatives

To assess whether perceived stakeholder influence and perceived corporate impact have a significant impact on corporate environmental initiatives, it is appropriate to carry out a regression analysis (see Hair et al. 2005) using the perceived level of implemented initiatives as the explained variable and the perceived stakeholder influence and perceived corporate impact as explanatory variables. Furthermore, as mentioned earlier, various stakeholders may influence decisions makers' perceptions of the environmental effects following from their firms' industrial activities. It is thus relevant to include an interaction between stakeholder pressure and the environmental effects following from the industrial activities. Table 1 below includes the result of the regression analysis.

Table 1. *Regression analysis of the effect from perceived stakeholder influence and corporate impact on environmental initiatives taken by companies based on the 2011 survey*.*

	Full model	Reduced model
Constant	1.796 (0.000)	1.855 (0.000)
Perceived stakeholder influence	0.441 (0.000)	0.424 (0.000)
Perceived corporate impact	0.332 (0.008)	0.311 (0.000)
Interaction between stakeholder influence and corporate impact	-0.006 (0.849)	-
Adjusted R^2	0.289	0.292
n	270	270

**Brackets contain the estimated parameters of the critical level of significance for the t-tests.*

The first column of Table 1 (the full model) demonstrates that the interaction is slightly negative but highly insignificant, whereas the two primary explanatory variables seem to have a significant influence. Therefore, the interaction may be excluded from the full model. When re-estimating the model, the managers' perceptions of stakeholder influence and corporate impact still appear to be highly significant in explaining the level of corporate environmental initiatives taken (see the reduced model in Table 1). Furthermore, an increase in the adjusted coefficient of determination is observed. This result indicates that around 42% of an increase in initiatives taken can be explained by perceived stakeholder influence and around 31% by the decision makers' perceptions of their companies' impact.

However, even if these two explanatory variables essentially describe the development of companies' environmental initiatives, they may not take account of any variation in the perception of the individual items constituting these two variables. Therefore, the focus will now be on a more detailed analysis of perceived stakeholder influence, perceived corporate impact and corporate environmental initiatives taken by means of factor analyses. These detailed analyses will be based on the most recent survey data from 2011.

4.3 Categories of Stakeholders

The stakeholders included in the surveys and the averages of their perceived influence are presented in the last column of Table 2.

Table 2. *Perceived stakeholder influence based on a factor analysis – names of the identified components are specified as headlines of each grouping.*

Stakeholder	**Component**				**Average**
	1	2	3	4	**Response***
1. Stakeholders with an indirect influence:					
Employer/Industry organisations	.760				2.32
Distributors	.703				1.94
Industry networks	.662			.399	2.21
Unions	.616				1.76
Research and educational institutions	.542	.309		.363	1.85
Environmental organisations	.470	.397			2.34
2. Market-based stakeholders:					
Competitors		.786			2.36
Customers		.675	.354		3.30
Consumer organisations	.407	.649			1.94
The press		.621			1.94
Suppliers	.422	.501			2.22
Financial institutions		.431		.427	1.88
3. Regulative stakeholders:					
National authorities/legislation			.880		3.52
Local authorities/legislation			.814		3.59
International authorities/legislation			.744		3.15
4. Internal stakeholders:					
Owners/Shareholders				.733	3.61
Employees			.318	.625	3.16

**Response options were (1) no influence, (2) little influence, (3) some influence, (4) a lot of influence or (5) enormous influence.*

A factor analysis was carried out in order to identify if any underlying structures should be present in the perception of the influence of the included stakeholders (see Hair et al. 2005). The result shown in Table 2 indicates that stakeholders can be categorised into four groups. The first includes a group of stakeholders which can be characterised as having an indirect influence upon SMEs - e. g, various interest organisations or associations. The only stakeholder that does not logically belong to this group is distributors. The second includes a group of market-based stakeholders such as customers, competitors and suppliers. One can argue that the remaining stakeholders in this group (consumer organisations, the press and financial institutions) have a market-based influence, although it may be more indirect than the other ones. The third factor includes a group of local, national and international regulations, and the fourth factor includes a group with two members: owner/shareholder and employees. Thus, the last two factors represent external and internal stakeholders, respectively, with a clear and direct influence. Using the original response scale, the average responses in the last column of Table 2 show that the stakeholders in the two last factors are perceived to be among the most influential ones, with a perceived average influence ranging around 3.5, whereas the perceived influence of the stakeholders in the first two groups fluctuates at a somewhat lower level. The only exception is the perceived influence of customers, which is comparable to the level reported for regulators, owners/shareholders and employees.

4.4 Categories of Awareness

The averages of the decision makers' perceptions of environmental impact due to the business activities of their own companies can be found in the last column of Table 3.

A factor analysis was carried out in order to identify if any underlying structures should be present in the decision makers' perceptions of the environmental impact due to their own business activities (see Hair et al. 2005). The result shown in Table 3 indicates a two-factor solution in which the first factor describes a group of activities related to internal and more visible aspects of the production process and the second factor describes a group of more external and indirectly visible aspects.

Looking at the averages in the last column of Table 3, the level of perceived environmental impact related to the two factors indicates a higher perception of internal aspects versus external ones. The exception is liquid waste and wastewater, due to differences in production processes in the participating com-

Table 3. *Average responses to decision makers' perceptions of the impact from their own business activities based on a factor analysis – names of the identified components are specified as headlines of each grouping.*

Impact area	Component		Average Response*
	1	2	
1. ***Internal aspects:***			
The firm's activities result in large volumes of liquid waste	.810		1.83
The firm discharges large volumes of wastewater	.739		1.68
Processes have a big impact on the working environment	.628		3.01
The firm's activities result in large volumes of solid waste	.591	.301	2.78
The firm's activities require large amounts of energy	.551	.444	3.26
2. ***External aspects:***			
The firm's activities result in a high level of noise pollution		.772	2.05
The firm discharges large volumes of airborne pollution		.743	1.93
The firm's activities have a big impact on the soil		.700	1.29

**Response options were (1) completely disagree, (2) partly disagree, (3) neither disagree nor agree, (4) partly agree or (5) completely agree.*

panies: many companies may not have liquid waste or wastewater as a result of their production process.

4.5 Categories of Initiatives

Finally, the last column of Table 4 presents the average level of environmentally related issues in which initiatives may have been taken by SMEs.

In order to identify if any underlying structures should be present in the level of implementing environmentally related initiatives, a factor analysis was carried out on the responses to this scale as well (see Hair et al. 2005). The result shown in Table 4 indicates a four-factor solution. The first factor generally represents a group of initiatives which relate to aspects of the working environment and includes reductions in noise and airborne emissions as well as the replacement of environmentally damaging materials. On the other hand, the second factor comprises a group of initiatives which relate to the production process itself and includes reduction in energy consumption and solid waste, waste sorting at the source and reuse of production leftovers, and total logistics related to production. The third factor includes a group of initiatives which are related to the reduction of fluid materials in the production process, such as the consumption of water, effluents and fluid waste. The fourth and final factor characterises a group of initiatives which focus on taking back leftover materials or worn-out products from

Table 4. *Initiatives taken related to environmental issues in Danish industrial companies and underlying structure in the responses based on a factor analysis – names of the identified components are specified as headlines of each grouping.*

Initiatives	**Component**				**Average**
	1	2	3	4	Response*
1. Working environment:					
Reduction of noise	.715				2.83
Reduction of auxiliary materials	.672				2.56
Reduction of airborne emissions	.659				2.31
Reduction of raw materials	.625				2.47
Replacement of env. damaging materials	.618				2.87
Improvement of the working environment	.538	.460			3.74
2. Production process:					
Waste sorting at the source		.738			3.49
The total logistic related to supply, production and distribution		.667			2.51
Reuse of leftovers from the production		.639			3.08
Reduction of energy consumption	.381	.587			3.48
Research and product development		.516		.356	2.59
Reduction of solid waste		.465	.403		3.05
3. Fluids:					
Reduction of effluents			.843		2.23
Reduction of fluid waste			.771		2.22
Reduction of water consumption		.303	.756		2.63
Protection of the soil			.469	.301	1.42
4. Recycling:					
Take back leftover from customers				.878	1.74
Take back worn out from customers				.870	1.78

**Response options were (1) not relevant, (2) no, (3) considering, (4) to a little extent or (5) to a large extent.*

customers. It can be noted that factor two, and especially factor three, primarily characterise cost-saving initiatives.

Using the original response scale, initiatives related to the second factor seem to receive some attention, as they are found at a level where they are either considered or to a limited extent implemented (see last column of Table 4). But initiatives related to improvements of the working environment also seem to have some attention, although they are in a stage where a shift from no initiatives to considering taking initiatives can be observed. The initiatives found in the third factor are at a similar - although - lower level. Finally, initiatives related to taking back leftovers or worn-out products do not seem to be on the companies' agendas.

5. Discussion And Implications

5.1 The Longitudinal Development

The stability of the increase in perceived stakeholder influence and corporate environmental initiatives observed during the last two surveys is promising - especially if it continues or even increases further. On the other hand, the development of perceived corporate environmental impact looked promising until 2007, where after a less positive trend can be observed. That is, the observed trend does not following a similar tendency. The occurrence of the economic and financial crisis from around 2008 may play a role in this situation. But since environmentally related initiatives in 2011 remained at the same level as in 2007, this seems not to be an adequate explanation. It seems more obvious that when taking environmentally related initiatives, managers conclude that the corporate impact automatically declines. Furthermore, it is interesting to note the relatively low level of the perceived awareness of the environmental impact compared to the perceived pressure from stakeholders. And it is also quite thought provoking to observe the relatively high level of environmentally related initiatives. The question is whether or not this can be taken as a sign of a proactive attitude or merely that the act of doing something makes the corporate impact less important in the managers' mind. The perceived high influence of internal and legislative stakeholder's points to the latter explanation, as already reported by Madsen and Ulhøi (2001) and more recently by Montalvo (2008).

5.2 Perceived Stakeholder Influence

When carefully interpreting how managers in the study perceive the influence of the many stakeholders, it seems that regulators in general (local and national regulators in particular) still exert a major influence when SMEs consider environmental initiatives. This falls well in line with the general expectation espoused in the literature over the last decade and a half (Montalvo 2008). However, other stakeholders, such as owners/shareholders and, to a lesser degree, employees and customers, are also perceived to exercise quite some influence. On the other hand, competitive factors do not seem to be important to the corporate greening process at present, nor are financial institutions, despite the potential effect of industrial companies' poor environmental performance on financial institutions' interests.

Mandatory health and safety schemes in Denmark may explain that employees are perceived to influence introduction of environmental initiatives to quite a large extent the high level of perceived influence by employees. This suggests that how managers are adapting corporate behaviour with regard to environmental issues tends to be based on internal interests rather than on external environmental considerations, as indicated in Table 3. Confirmation is also provided by multivariate analyses of the survey information concerning perceived stakeholder influence with regard to the nature of environmental activities, where a clear internal dimension is identified (Madsen *et al*. 1997). It should be noted that making the working environment better tends to produce an environmentally positive side effect. Furthermore, the way in which the authorities in charge of issues related to the working environment contact the companies has changed from a control-based approach to a more dialogue-based one, that is, they act as consultants and coaches rather than controllers. This change is especially advantageous to SMEs with limited resources and competencies in dealing with environmental issues.

The classification of perceived stakeholder influence into the four groups identified in this study supports other research findings from different countries, especially the legislative and internal groups (see, e.g., Fineman & Clarke 1996; Henriques & Sadorsky 1999; Buysse & Verbeke 2003; Kassinis & Vafeas 2006).

Three comments are relevant here. The first one concerns financial institutions. In the first three surveys, financial institutions are normally affiliated with a group of stakeholders perceived to have an indirect influence (see Madsen & Ulhøi 2001). But in the last survey of 2011, this stakeholder is now affiliated with the group of market based stakeholders. It is believed that this indicates a shift in financial institutions' attitudes towards environmental issues thus making more specific environmental demands on companies when they are involved in financial transactions. Secondly, in the first three surveys, regulations, owners/shareholders and employees are affiliated with the same group (see Madsen & Ulhøi 2001). In the 2011 survey, however, a clearer internal/external dimension of direct influence was observed because owners/shareholders and employees then were affiliated with a separate group compared to regulation and legislation. The third and final comment concerns the presence of secondary affiliations in the factor analysis, suggesting that the influence from some stakeholders may include a direct, as well as indirect, dimension. One typical example is employees who may influence issues related to the working environment directly or indirectly through their union.

Stakeholders, however, may often represent various interests and expectations. Studies have shown that there may be rather clear differences in various stakeholders' motives to look into firms' activities and/or performance: investors, for example, are interested in environmental information at the firm level because such information holds the potential of affecting finances (Steadman *et al*. 1996). This study, however, does not support the view that firms pay much attention to this, and investors seem not to be interested in demanding such information.

It must not be forgotten that corporate decision makers play an important role in strategically mediating stakeholder influence. Managers who have particular views and/or expectations of the power and relevance of various stakeholders may be predisposed to favour certain categories over others. Another problem is the distinction between primary and secondary stakeholders (Clarkson 1995). Such a distinction might, for example, lead some managers to only pay attention to primary stakeholders. This, however, is not supported by the findings of this research. In recent years, several examples have actually been seen in which secondary stakeholders, such as environmental pressure groups, can pose serious threats to a firm and its future development (e.g., the Shell Brent Spar example).

As revealed by the regression analysis, perceived stakeholder influence generally plays a role for SMEs when considering environmentally related actions, although the level is not that convincing. And even if the interaction in the regression analysis is insignificant, managers' rather reactive perception of stakeholder influence in general may explain the low perception of the environmental impact of their own business activities. It is tempting to conclude that SME compliance with regulations seems to be sufficient to avoid further environmental consequences of the business activities. This is somewhat in contradiction to managers' awareness of environmental issues reported by Gadenne *et al*. (2009).

5.3 Awareness of Corporate Environmental Impact

Because the perception of companies' corporate impact has the lowest influence when managerial initiatives are taken, increasing this awareness may be a valuable way to improve the situation. But the question is whether this can be done without increased stakeholder influence. This also seems to be in contrast to a recent Chinese study that found that pressures from supply chains, customers and communities have a positive effect on driving cleaner production and management performance, whereas pressure due to regulation has a negative effect (Zhang *et al*. 2007).

A previous study found that a broad voluntary implementation of greener production and management practices, such as those based upon environmental management systems, does not seem to be the case (see, e.g., Madsen & Ulhøi 2001). Thus, the principle of volunteering does not appear to encourage a sufficient number of businesses to introduce environmental initiatives that go further than those demanded by legislation. After a tendency towards stagnation, the environmental debate has recently intensified with a focus on climate change. However, this recent development does not seem to have brought more strategic and long-term initiatives with it (McKinsey 2011).

5.4 Environmentally Related Initiatives

It appears that the majority of environmental actions launched can be attributed to areas in which businesses immediately obtain a cost-reduction effect. This can be understood in the light of rising costs of energy, water consumption and deposition of waste introduced by national, as well as regional and local, authorities. As stated by Porter and van der Linde (1995a), such a situation influences a company's competitive balance as well as the environmental strain upon its physical surroundings. But it also indicates that companies are avoiding greater and more costly initiatives that can only pay for themselves over a good many years.

Launched or contemplated cleaner production and management-related initiatives serve two purposes. Either an initiative reduces the impact of the firm on the physical environment or it leads to some form of cost reduction. The fact that these two objectives can be considered at the same time typically has a motivational effect on the companies as well as a positive derived effect on the surrounding environment.

When assessing the reasons for a decline in the initiatives launched during the observed period, it is natural to focus upon businesses' tendency to become more focussed on the bottom line, not least during regimes of serious economic recessions, as characterised the last period of the longitudinal study (2007–2011). In addition to environmental conditions, one must consider other major incidents which may have affected the situation for SMEs in the period leading up to this point in time. Therefore, when a shift is detected, like that in 2007, it is natural to point to the positive economic climate of the previous period and the fact that Denmark at that time had just accepted the role of hosting the 2009 UN climate conference (COP15), which created a renewed debate on environmental and climate issues. But it is noteworthy that the level reached in 2011 is very much like the level in 2007 in spite of the economic crisis, which began around 2008. This could indicate a situation where environmentally related initiatives in SMEs have come to stay—voluntarily or due to pressure.

It is also worth noting that increases in initiatives first and foremost occurred in areas that quickly saw completed initiatives pay for themselves (i.e., the era of the 'low-hanging fruit'). Many businesses have therefore already reaped the benefits of introducing environmental initiatives. The next phases of initiatives will most likely be slower, as they demand the introduction of more complex technologies and thus greater investment. Therefore, it seems that companies are mainly reactive in their attitude towards environmental issues.

5.5 Summing Up

Although there are differences in the research focus and manner of gathering information, the results obtained in the Danish surveys can, with some degree of caution, be compared to corresponding research previously published. Thus, Dahlmann *et al*. (2008) and Minciullo (2012) also report that compliance with regulations and economic concerns are the major focus of environmental initiatives.

At face value, voluntary cleaner production and management approaches appear to be important steps in the right direction. However, environmentally concerned stakeholders may be less capable (in terms of power and resources) of safeguarding their position as 'equal' dialogue partners. In light of this, green industrialists have become increasingly effective in influencing the dialogue because they have their own outlets (journals, publishers, conferences and networks) and often have easy access to political and economic support (Jamison 2000).

6. Conclusion

This longitudinal and explorative study set out to answer several questions. For instance, what drivers motivate SMEs to implement greener production and management practices? What has been the trend over the last decade and what have been the effects? It was found that local, national and international regulations, as well as owners/shareholders and employees (i.e., stakeholders with a clear, direct influence), are the most significant drivers of change. But a different tendency could be observed over the years. Generally, the surveys indicate that even if some stakeholders drive green corporate actions, the level is not particularly high. Following from the corporate actions taken, the effects seem to manifest themselves most clearly in relation to the working environment and in relation to the production process. Typically, these include a reduction in energy consumption and solid waste, waste sorting at the source and reuse of production leftovers as well as the total logistics related to the production.

Whether these approaches are enough to reduce/prevent/mitigate the environmental consequences of business activities is still not known. Given the urgency and seriousness of environmental challenges facing the business sector, time does not seem to be an unlimited resource. Environmental management systems and cleaner production are primarily about processes, measurements of physical flows (i.e., quantitative issues) and/or substitutions. Sustainability is also about qualitative issues such as human values, social and economic justice and relationships between generations. Therefore, if a situation beyond simple compliance and cost savings is wanted, industry's acceptance of its ethical and social responsibilities must be increased.

Cleaner production and management practices provide useful principles which all firms can implement beneficially and which have proven to be an efficient way of harvesting the low-hanging fruits. However, because market forces do not seem to be efficient drivers for an increasingly responsible and proactive approach to the environment, a call for different and radical approaches to doing business is required. For this to happen, there is likely to be a continuous need for legislation at the local, national and international levels.

Therefore, this study points to some important implications for research, as differences in the results reported here and elsewhere may depend upon differences in institutional and political contexts. Future studies need to address this dimension using a cross-national comparison. In terms of practical and/or policy implications, it is unlikely that the business community will accept this wider agenda without significant pressure from stakeholders. Currently, stakeholder pressure is rather moderate, and business managers do not seem to realise the competitive advantages that may appear in the future. Furthermore, the discrepancy between awareness of corporate environmental impact and initiatives taken does not seem logical. Therefore, more radical developments of cleaner production and management initiatives are needed, which in turn would require a shift in existing corporate values and a re-examination of the dominant ideology surrounding cleaner production and management strategies. In this way the current level of initiatives may not only be stabilised at its present level but hopefully increased. Future research should also look into possible cross-sectional differences to establish if industry affiliation and/or company sizes seriously affect the willingness to take environmental initiatives.

Note

1 This paper is based on a previous and shorter conference paper version presented at CRRC in 2012. Please direct all communication to the second author. Usual disclaimers apply.

Reference

Biondi, V., Iraldo, F. & Meredith, S. (2002). Achieving sustainability through environmental innovation: The role of SMEs. *International Journal of Technology Management, 24*(5), 612–626.

Buysse, K. & Verbeke, A. (2003). Proactive Environmental Strategies: A Stakeholder Management Perspective. *Strategic Management Journal*, *24*(5), 453–470.

Clarkson, M.B.E. (1995). A Stakeholder Framework for Analyzing and Evaluating Corporate Social Performance. *Academy Management Review, 20*(1), 92–117.

Dahlmann, F., Brammer, S. & Millington, A. (2008). Environmental management in the United Kingdom: new survey evidence. *Management Decision*, *46*(2), 264–283.

Donaldson, T. & Preston, L.E. (1995). The stakeholder theory of the corporation: concepts, evidence, and implications. *Academy of Management Review*, *20*(1), 65–91.

Fineman, S. & Clarke, K. (1996). Green Stakeholders: Industry Interpretations and Response. *Journal of Management Studies, 33*(6), 715–30.

Freeman R.E. (1984) *Strategic Management: A Stakeholder Approach.* Boston, MA.: Pitman

Friedman, A.L. & Miles, S. (2002). SMEs and the environment: evaluating dissemination routes and handholding levels. *Business Strategy and the Environment*, *11*(5), 324–341.

Gadenne. D.L., Kennedy, J. & McKeiver, C. (2009). An Empirical Study of Environmental Awareness and Practices in SMEs. *Journal of Business Ethics, 84*(1), 45–63.

Garcés-Ayerbe, C., Ribera-Torres, P. & Murillo-Luna, J.L. (2012). Stakeholder pressure and environmental proactivity: Moderating effect of competitive advantage expectations. *Management Decisions*, *50*(2), 189–206.

Gilbert, M.J. (1993) *Achieving Environmental Management Standards. A-Step-by-Step Guide to Meeting BS7750.* London, UK: Pitman Publications Limited

Gladwin, T.N. (1977) *Environment, Planning and the Multinational Corporation,* Jai Press, Greenwich, Conn.

González-Benito, J., Lannelongue, G. & Queiruga, D. (2011). Stakeholders and environmental management systems: a synergistic influence on environmental imbalance. *Journal of Cleaner Production*, *19*(14), 1622–1630.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. & Tatham, R.L. (2005) *Multivariate Data Analysis* (6th ed.). Upper Saddle River, NJ.: Pearson Education/Prentice-Hall.

Henriques, I. & Sadorsky, P. (1999). The Relationship Between Environmental Commitment and Managerial Perceptions of Stakeholder Importance. *Academy of Management Journal*, *42*(1), 87–99.

Hillary, R. (2000), *Small and medium-sized enterprises and the environment: business imperatives*, Sheffield, U.K: Greenleaf Publishing.

Jamison, A. (2000). On the ambiguities of greening innovation. *The European Journal of Social Sciences Research, 13*(3), 249–264.

Kassinis, G. & Vafeas, N. (2006). Stakeholder Pressures and Environmental Performance. *Academy of Management Journal*, *49*(1), 145–159.

Madsen, H. & Ulhøi, J.P. (1996a). Environmental Management in Danish Manufacturing Companies: Attitudes and Actions. *Business Strategy and the Environment*, *5*(1), 22–29.

Madsen H. & Ulhøi J.P. (1996b). Environmental and Resource Management: Managerial Implications and Empirical Evidence', in Ulhøi J.P. and Madsen H. (eds.); *Industry and the Environment — Practical Applications of Environmental Management Approaches in Business, Proceedings of the 3rd Conference of the Nordic Business Environmental Management Network, March 28-30, Aarhus, Denmark*, The Aarhus School of Business, Aarhus DK, 235–246.

Madsen, H.; Ulhøi, J.P. (1999), *Environmental Management Initiatives and Stakeholder Influences*, in: Dobers. P.; Wolff, R. (eds.), *Contemporary Nordic Research in Corporate Environmental Management*, BAS Publisher, Göteborg.

Madsen, H. & Ulhøi, J.P. (2001). Integrating Environmental and Stakeholder Management. *Business Strategy and the Environment, 10*(2), 77–88.

Madsen, H. & Ulhøi, J.P. (2006). Have Trends in Corporate Environmental Management Influenced Companies' Competitiveness?', in Schaltegger, S. and Wagner, M. (eds.), *Managing the Business Case for Sustainability, The Integration of Social, Environmental and Economic Performance*, Greenleaf Publishing, Sheffield, UK, 256–273.

Madsen, H., Sinding, K. & Ulhøi, J.P. (1997). Sustainability and Corporate Environmental Focus — An Analysis of Danish Small and Medium Sized Companies. *Managerial Decisions and Economics, 18*(6), 443–453.

McKinsey (2011) *The business of sustainability: McKinsey Global Survey results*. http://www.mckinsey.com/insights/energy_resources_materials/the_business_of_sustainability_mckinsey_global_survey_results (Accessed 29 August 2013).

Minciullo, M. (2012). Are Italian firms proactive in Sustainability practices?', paper presented at the 12th EURAM Conference. 6–8 June 2012. Rotterdam, Holland.

Montalvo, C. (2008). General wisdom concerning the factors affecting the adoption of cleaner technologies: a survey 1990–2007. *Journal of Cleaner Production*, *16*(1) Supplement 1, S7–S13.

Murillo, D. & Lozano, J. M. (2006). SMEs and CSR: An Approach to CSR in their Own Words', *Journal of Business Ethics. Special issue: Small and Medium-sized Enterprises & Corporate Social Responsibility: Identifying the Knowledge Gaps, 67*(3), 227–240.

Nidumolu, R., Prahalad, C.K. and Rangaswami, M.R. (2009). Why sustainability is now the key driver of innovation. *Harvard Business Review*, *September* 2009, 57–64.

Porter, M.E. & van der Linde, C. (1995a). A Green and Competitive: Ending the Stalemate. *Harvard Business Review*, *73*(5), 120–133.

Porter, M.E. & van der Linde, C. (1995b). Toward a New Conception of the Environment-Competitiveness Relationship, *Journal of Economic Perspectives*, *9*(4), 97–118.

Rothery, B. (1993). *Implementing the Environmental Management Standard and the EC Eco-Management Scheme.* Aldershot, UK.: Gower Press.

Schaper, M. (2002). The challenge of environmental responsibility and sustainable development: implications for SME and entrepreneurship academics. In Füglistaller, U. et al. (eds.), *Radical changes in the World: will SMEs soar or crash*?, Recontres de St. Gallen, St. Gallen, Switzerland.

Schmidheiny, S. (1992) *Changing course. A gobal business perspective on development and the environment* (with the Business Council for Sustainable Development. Cambridge, MA.: MIT Press,

Sheldon, C. (1997). *ISO 14001 and Beyond.* Sheffield, UK.: Greenleaf Publishing.

Stead, W.E. & Stead, J.G. (1992) *Management for a Small Planet.* Newbury Park, CA.: Sage.

Steadman, M., Albright, T. & Dunn K. (1996) Stakeholder Group Interest in the New Manufacturing Environment. *Managerial Auditing Journal, 11*(2), 4–9.

Taylor, B. (1994) *Environmental Management Handbook.* London, UK.: Pitman Publishing.

Ulhøi, J.P. (1993). Corporate Environmental and Resource Management. What, Why and How?, *International Journal of Management, 10*(4), 440–451.

Ulhøi, J.P. & Madsen, H. (2005). The firm-nature relationship: Past experiences and future challenges', in Sharma, S. and Aragón-Correa, J.A. (eds.), *Corporate environmental strategy and competitive advantage*. Cheltenham, UK.: Edward Elgar Publishing.

Ulhøi, J.P.; Madsen, H.; Kjær, M. (1999), *Training for Environmental Management - Industry and Sustainability (Consolidated report)*, Office for Official Publications of the European Communities, Luxembourg.

Ulhøi J.P., Madsen H. & Rikhardsson P.M. (1996) *Training in Environmental Management — Industry and Sustainability (Part 1): Corporate Environmental and Resource Management and Educational Requirements*. Luxembourg: Office for Official Publications of the European Communities.

Welford, R. (1995) *Environmental Strategy and Sustainable Development. The Corporate Challenge of the 21st Century.* London, UK.: Routledge.

Zhang, B., Bi, J., Yuan, Z., Ge, J., Liu, B. & Bu, M. (2007). Why do firms engage in environmental management? An empirical study in China. *Journal of Cleaner Production*, *16*(10), 1036–1045.