The greening of black gold: towards international environmental alignment in the petroleum industry
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Conclusions, limitations and further research

From the beginning of the 1990s onwards, particularly international companies were confronted with the environmental challenge in their strategies and organisations: they had to consider the impact of environmental issues on profitability, competitiveness and reputation, and had to formulate organisational responses. These developments also triggered academic interest. On the basis of an inventory of the environmental management, international business and strategy/organisation literatures, this study has concentrated on the relationship between environmental strategy and environmental structure. This relationship was identified as the 'black box' of the debates in the literature, when differentiated on the basis of levels of analysis (country, sector, firm) and focus (general, MNC-specific).

Focusing on the international petroleum industry, the following central question was formulated: Which factors influence the relationship between environmental strategy and environmental structure in a multinational corporation? The result of the study is a presentation of developments of environmental management within a specific industry to show the dynamics of 'greening' in the powerful and complex world of 'black gold'. For its elaboration, a theoretical framework was developed which extended the concept of strategic alignment to environmental issues. This "International Environmental Alignment Framework" examined the relationships between variables of a strategic and a structural nature, related to environmental issues, within the multinational corporation. In addition, it distinguishes between three orders of fit (simple consistency, mutual reinforcement, and optimisation of effort) and the underlying drivers of alignment.

The study focused on the period 1990-2002 and consists of two parts. Part I used evidence from a broad sample of petroleum companies in the Fortune Global Top 250. This resulted in an overview of the trends in environmental strategy and environmental structure as well as an overview in the developments in strategy, structure and reputation. To examine their relationships within the framework of international environmental alignment and, to deepen the insights gained, the second part of the study consisted of four case studies: Shell; BP (including Arco and Amoco); Total (including Elf Aquitaine); and Statoil.

In this concluding chapter, the main findings of the study are presented. Firstly, an overview is given of the dynamics and changes in environmental management in the period 1990-2002, focusing on the developments in environmental strategy (12.1) and environmental structure (12.2). Subsequently, the links between environmental strategy/structure and respectively, general strategic and structural variables are highlighted (12.3): the influence of strategic variables on environmental strategy (12.3.1), and the role of structural variables with regard to environmental structure (12.3.2). An overview of the findings related to the relationship between environmental strategy and structure, and the orders of alignment are discussed in 12.4. Thereafter, the chapter continues with the theoretical and practical relevance of the study (12.5). A discussion on the limitations of the study and suggestions for further research finalise this chapter (12.6).
12.1 Developments in environmental strategy

To obtain insight into the developments in the environmental strategy of petroleum companies in the period 1990-2002, major company documents (particularly environmental reports, policies and codes of conduct) were analysed (Chapter 7), supplemented with other material and interviews for the case companies (Chapters 8, 9, 10 and 11). Table 12-1 gives an overview of the factors derived from the strategic aspects included in codes of conduct and environmental reports over the years. It indicates overall trends in relation to the sector as a whole, to country of origin, and to critical events.

Table 12-1 Patterns in profiling on environmental strategy: trends and interpretations

<table>
<thead>
<tr>
<th>Sector patterns</th>
<th>Country of origin patterns</th>
<th>Critical events and other remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Codes of conduct</td>
<td>Inclusion of environmental attention in the code and little attention to monitoring by large majority.</td>
<td>Asian companies do not have a code.</td>
</tr>
<tr>
<td>Policy</td>
<td>Inclusion of environmental policy in report by large majority of companies</td>
<td>Latin American companies do not include codes.</td>
</tr>
<tr>
<td></td>
<td>Style of reporting changed to double and triple reports</td>
<td>State ownership seems to explain early reporting of some EU companies.</td>
</tr>
<tr>
<td></td>
<td>Number of pages doubled from 26 for first to 56 for latest issues.</td>
<td></td>
</tr>
</tbody>
</table>

The great majority of companies include environmental issues in their codes and policies. There was, however, hardly any attention for monitoring in the codes of conduct. Asian companies generally had no code of conduct. The sector is characterised by a high reporting rate, but clear patterns do not stand out in the exact contents of the reports and policies. Regional distinctions do stand out with regard to the timing of the first publication of the reports, early reporters (before 1995) are mostly US companies, late reporters are mostly European, and non-reporters are Asian companies. State ownership explains the early reporting of some European companies. In addition, some of the initial disclosures can be linked to the occurrence of critical events. Over the period 1990-2002, the style of reporting explicitly changed to double and triple reports and the number of pages doubled from the first to the latest issues.

The case study companies showed different emphases in strategic profiling: a long-term survival conviction; a single-issue approach; a product focus; a regulation prevention emphasis; a size effect; and an extended technological orientation:

- Shell started to present its environmental strategy very strongly to its external stakeholders after reputation events in the mid-1990s. Building on policies, standards and guidelines, Shell replaced a single-issue approach by a broader one in which it claimed a compatibility perspective ('win-win' combination of environmental and economic goals) as essential for its long-term survival.
• BP, an early reporter, also had a strong presentation in the environmental arena. This company mainly focused on the single issue of climate change in its strategy; its style did suggest a more holistic package but structured contents did not stand out. Before the BP-dominated merger, the US counterparts had their own environmental strategies: ARCO had a history of specific profiling on the US institutional context, concentrating on clean air products as a commercially interesting market. Amoco used to present its engineering perspective of environmental innovation in an attempt to prevent further regulation. Post-merger profiling by BP's CEO implied a stronger direction in environmental strategy, although this does not explicitly reckon with the diversity of approaches still present, as a result of amongst other things, the merging of different company cultures and traditions.

• The results from the third case, TFE, contrast with BP and Shell. TFE decided only after the merger that its size obliged it to make an external presentation of its profile in a more comprehensive style. Before that strategic change, Elf published an environmental report but of a rather didactic and illustrative nature instead of a comprehensive presentation. Total was the only of the largest petroleum companies that did not publish externally at all. However, after the merger, the company started to refer to a compatibility perspective.

• Statoil, the fourth and last case, used to have a technological orientation similar to that of ARCO; however, Statoil's strategy seemed more comprehensive than ARCO's which was more product-oriented. In the mid-1990s, parallel to its aim of internationalisation, Statoil changed to a more cautious position. It still showed a compatibility perspective (also by including the environmental report in the annual report) and a technologically progressive environmental attitude. However, the company increased its attention for stakeholder dialogue and no longer claimed the kind of leadership it once did. Nevertheless, Statoil employees confirmed an internal drive for leadership, which was said to be stimulated by top management.

12.2 Developments in environmental structure

With regard to environmental structure, Table 12-2 gives the developments for the broad sample as found in environmental reports over the years (Chapter 7). It identifies trends related to the sector as a whole, country of origin, and specific events. The majority of the companies explicitly mention the existence of an environmental management system. A third of the reports refer to alignment of the environmental management system (EMS) with overall strategy or other management tools.
Table 12-2 Patterns in findings on environmental structure: trends and interpretations

<table>
<thead>
<tr>
<th>Sector patterns</th>
<th>Country of origin patterns</th>
<th>Critical events and other remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMS &amp; standards</td>
<td>Large similarities in mentioning a system, and short description. Alignment with overall strategy mentioned in a third of the reports</td>
<td>Latest issues specify specific parts of the company for application of the EMS</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Half of the companies refer to monitoring systems in short descriptions</td>
<td>No remarks.</td>
</tr>
<tr>
<td>Verification</td>
<td>High verification rate</td>
<td>No specific patterns</td>
</tr>
<tr>
<td>Performance</td>
<td>Increase in absolute amount of data</td>
<td>US: 'objectives' reference EU: 'continuous improvement' reference</td>
</tr>
</tbody>
</table>

The analysis of management systems showed a transition of a “one framework” format to a “multiple systems” approach, indicating a shift in authority and thus, a decentralisation. However, Latin American companies mainly chose single systems, implying an emphasis on centralisation. It is also noteworthy that only half of the companies refer to the monitoring of the systems. In those references, regional patterns are again observed: now for both the US companies (which make more references) and the Latin American companies, which make references only in the latest issues of their reports. Further, the verification rate of the sector is high: 53% of the latest issues received verification, this in comparison with 29% of the latest reports in the Fortune Global Top 250 (KPMG/AgBS, 2002). Over the years, the elements included in the procedures of verification have been extended. In addition, an increase in the absolute amount of data for environmental performance is observed for all companies, identifying a common sector trend. Within these data, regional patterns can be seen for US companies (which refer to ‘objectives’) and European companies (‘continuous improvement’). Notwithstanding these patterns, the large variety in the quantity of the data stands out, as well as the lack of clarity concerning the scope of the data.

Further exploration of those findings in the case studies leads to much variety in the developments for the different corporations. For example, variation exists as to the issues on which companies select to position themselves; the point in time they started to publish externally; the way they integrate the issues into their system; and, the issues they choose not to give attention to. The following specific results stand out:

- Shell presented the most transparent as well as the most complete picture. Starting its development at the end of the 1990s and taking a considerable amount of time on image issues, Shell implemented a management system and auditing procedures. While underlining the complexity of it all, the company implemented an assurance procedure and verification of the data of the whole company. A too low commitment of employees was recognized as a risk to the consistent implementation of those procedures.
- All three companies making up BP initiated a complete management system based on risk management from 1997 onwards, although elements were present long
before. Apart from the efforts of ISO14001 certification and the richness of environmental performance data, the information on monitoring systems and auditing is harder to interpret.

- TFE also had a management system. The merged company largely built on Total's management system and approach of risk management, a fact which illustrates that non-reporting does not necessarily relate to 'non-management' as such.

- For Statoil, the fourth and last case, a common system was developed from 1998 onwards. Its matter-of-fact name (AR21) seemed to imply a high level of integration into the rest of the organization, although internationalisation is considered a big challenge to the compliance of standards.

### 12.3 Linking environmental strategy/structure to overall strategy/structure

The developments in environmental strategy and environmental structure have been linked to those in general strategic and structural variables. An overview of the findings is given in Table 12-3.

<table>
<thead>
<tr>
<th>Proposition</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>P5</th>
<th>P6a</th>
<th>P6b</th>
<th>P6c</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector results</td>
<td>-</td>
<td>+</td>
<td>n.a.</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Case results</td>
<td>+/-</td>
<td>+/-</td>
<td>n.a.</td>
<td>+</td>
<td>+/-</td>
<td>+/-</td>
<td>+/-</td>
<td>+</td>
</tr>
<tr>
<td>Final conclusion</td>
<td>?</td>
<td>+, and</td>
<td>n.a.</td>
<td>+, and</td>
<td>+/-</td>
<td>+/-</td>
<td>+/-</td>
<td>+</td>
</tr>
</tbody>
</table>

Notes: n.a. no result available; -: no support for proposition; +: support for proposition; and: additional variables of importance; ?: further research needed.

P1: vertical integration; P2: internationalisation; P3: diversification; P4: reputation; P5: centralisation; P6a: cooperative arrangements; P6b: mergers; P6c: state ownership versus private investors.

The findings will be discussed in more detail in subsections 12.3.1 and 12.3.2. A distinction is made between the results on the basis of the findings from the broad sample of companies, the results on basis of the case studies, and the final conclusions. As the table shows, the findings in the case studies do extend the earlier conclusions. For some propositions, the importance of additional variables is highlighted by the word 'and'. For others, the difference between the results requires further research indicated by a question mark: firmer statements could not be made.

#### 12.3.1 The role of strategic variables

With regard to vertical integration, the first variable of a strategic nature, the diversity within the sample turned out to be large (see Chapter 5). In addition, mergers have a varied influence on the degree of vertical integration. On the basis of the results in the sector study, no support was found for proposition P1: 'The level of vertical integration corresponds negatively with the elaboration of the corporate environmental strategy'. Although the relative inflexibility of coordination mechanisms accompanying vertical integration could hinder the development of the environmental strategy, this does not necessarily lead to a negative relationship. However, following the reasoning that sector mimicry also leads to internal learning effects, the existence of certain strictly regulated end-products in a
company's chain may stimulate environmental strategy. For the petroleum industry, the inclusion of refining and chemicals and their strict standards, for example, may lead to organisational learning and copying of procedures within the firm. This way, vertical integration would stimulate the environmental strategy, depending on the strength of this effect versus the strength of flexibility of command and control within a vertically integrated organisation.

The case studies could not add much specific information to the above-mentioned finding due to its emphasis on the E&P business division. Diverse patterns stood out: BP with its particularly low score of vertical integration showed a largely comparable strategy to Shell, which had an average score; while TFE used to have a low score before its merger and a less pronounced strategy. This leads to the conclusion that the data do not suggest a relationship between environmental strategy and vertical integration. However, further research, e.g. outside of the E&P focus, may change this conclusion, but the data of this study do not permit more extensive deliberations.

With regard to internationalisation, the analysis of the petroleum companies indicated an increasing worldwide presence, both in assets and in overall internationalisation (see Chapter 5). Over time, this development occurred simultaneously with the developments in environmental management, potentially indicating a possible relation and initial support for proposition P2: 'The level of internationalisation of a MNC corresponds positively with the elaboration of the corporate environmental strategy'. A greater international presence increases a company's exposure and therefore the potential demands of society on a company. Furthermore, the development of the environmental strategy may be spurred by the multiple institutional contexts of the companies, which require clear procedures, if only to avoid potential litigation. Thus, in order to comply with these settings and minimise coordination problems, a company would be expected to set its own standard and develop a more advanced strategy.

However, the case studies showed more complex combinations than were uncovered by the previous reasoning. While BP and TFE were most internationalised, they were not necessarily leading in environmental strategy. BP has been working to profile the company as having a proactive environmental strategy, e.g. by its climate change position and new logo. In external relations, these efforts have been paying off: ever since they were made, the company has been considered a leader. However, the company's strategy was also questioned by industry experts and subject to a variety of interpretations by company interviewees. Neither in the case of TFE, the relationship between degree of internationalisation and environmental strategy was found to be very clear. As early as 1990, both TOTAL and Elf had already reported being present in certain sensitive political contexts and in its annual reports, TOTAL used to boost on its local employment impact. At the time, the companies were both highly internationalised, but for environmental strategy the companies differed so much in their approach that the difference cannot be explained on the basis of degree of internationalisation. TFE interviewees confirmed that the increased size of the company after the merger was a reason to reconsider corporate environmental strategy; in addition, clear statements were made about the severe impact of legislative contexts on environmental management.

Looking at Shell, this company is considerably internationalised with a very pronounced environmental strategy. Its environmental strategy quickly developed after the catalyst events of 1995, and consequently their relation to reputation. The size of the impact of those events was due not only to the photogenic nature of the Brent Spar event.
and smart media tactics by NGOs but also related to Shell’s size, which corresponds to its degree of internationalisation and reputation.

Statoil is at the other extreme of the internationalisation spectrum. For internationalisation, it was one of the lowest scoring companies in the industry. The intervention of the Norwegian state used to guarantee Statoil participation in the projects on the Norwegian Continental Shelf (NCS) until 1995; its pronounced strategy is probably a result of this regime. The difficult operating conditions on the NCS also stimulated Statoil in its technological focus; Statoil employees surveyed did agree slightly more than Shell respondents with the statement that their company is well equipped to implement environmental solutions; they also scored higher than Shell on the environmental benefit of technological changes. The company is attempting to apply its experience as a nationally-owned company (NOC) in the foreign context (‘NOC NOC’ strategy), but this is confirmed to be its greatest challenge. Statoil will be confronted with the same challenges as the other companies to fuel the motor of matching intentions and performance, a challenge blemished by ‘Irangate’ in 2003. ARCO was another example of low internationalisation; its focus may be considered as comparable to Statoil and accordingly be explained by a strong institutional orientation.

In conclusion, the contrasting evidence for the case companies shows that the degree of internationalisation is an important variable influencing environmental strategy but that the relation is interacted/intervened upon by both size of the company and legislative background in home and host countries. The proposition is both confirmed and rejected in the case findings; the final conclusion, therefore, refers to the importance of other variables. The third variable in the framework, **diversification**, and its accompanying proposition P3, were not further investigated (see Chapter 5).

Reputation was included and seen as a potential intervening (affecting direction) and/or interacting (affecting magnitude) influence on environmental strategy. For reputation, a common sector effect of an overall declining reputation was observed (see Chapter 6). In timing, the increase in external disclosure seems to relate to this decline leading to initial support for proposition P4: A company’s involvement in environmental management corresponds to its experience of negative reputation change. This applies especially to Shell. However, increased involvement does not result from negative reputation change only; other factors such as visibility and size also play a role in the reputation effect. BP illustrates this: it is a company that profiled itself extensively in the environmental arena, but had not experienced a catalyst event before that. For both Shell and BP, reporting and campaigning efforts seem to have paid off in an improved reputation, even though criticisms remain, e.g. illustrated by the copycat NGO-activism on their environmental reports. The durability of the improvements in reputation in relation to new critical events would require actual new critical events in order to be addressed thoroughly.

The developments within the four case-study companies showed that reputation is indeed a strongly motivating factor for the companies, strengthened by size and visibility. Catalyst events were important because they directly influenced the visibility of the companies. Nevertheless, the survey amongst Shell employees showed a 25% ‘No’ answer to the importance of catalyst events for causing changes in the environmental strategy. This is remarkable considering Shell’s experience with Brent Spar. It must also be noted that changes in environmental strategy also appeared without explicit reputation effects. Indirectly, because of the high level of cooperation and interdependence between the companies (e.g. in solving the effect of spills) as well as their focus on risk management, the events also affect other companies. In addition, the study reconfirms the importance of
reputation effects in relation to catalyst events. Their potential to speed up the process within a single company is undoubted, while their impact on other companies, due to the high level of cooperation between them, stands out as well. However, it is recognised that the effect of reputation status is interacted upon by the size and visibility of the companies. It therefore remains difficult to draw definite conclusions, and this is certainly an area that needs further investigation in follow-up research.

12.3.2 The role of structural variables

The first variable for structure was degree of centralisation. For the large sample of companies studied, the analysis showed that European companies became more decentralised over the period 1990-2002, while US companies tended to centralise (see Chapter 5). Relating these data to environmental structure, this was approached by the different elements of management systems, performance and monitoring procedures. The management systems showed a trend for decentralisation for both the European and the US companies (moving from a "one framework" format to a "multi-systems" approach). However, the Latin American companies with their centralised organisational structure seemed to prefer a "one framework" format. With regard to performance, a trend for centralisation was also observed in the goal setting referred to by US companies and their more explicit references to different formats of monitoring (internal, external, central), indicating a larger corporate hold than for the European companies.

The previous results indicated some cautious, initial support for proposition P5: The degree of centralisation in organisational structure is positively related to the degree of centralisation in environmental structure. However, for the cases, which were all European, the examination of degree of centralisation resulted in a range of more diverse observations with regard to the relationship with environmental structure. Their management systems started to develop primarily in the second half of the 1990s: by 2002, all companies claimed to have such a system but their initial start-up could not be explained by the general organisational structure although centralised structures seemed to facilitate the speed of implementation of the environmental structure.

The second variable of a structural nature is structure of ownership (see Chapter 5). It was operationalised by means of three aspects: engagement in cooperative arrangements; mergers; and state ownership versus ownership by private investors (in the case studies). With regard to the first aspect, engagement in cooperative arrangements (proposition P6a), US companies had a relatively high average of almost 30% of their operations in minority partnerships, but this average hides the diverse scores of the companies. This diversity implies that US companies have varied possibilities for direct control, depending on the company. European companies had an even higher score of almost 40% (0.38 for 1995) of their operations in minority ownership. It means that they will need to discuss environmental protocols with other partners in a large part of their operations. The first examinations did not provide direct support for proposition P6a: Working in cooperative arrangements stimulates a company to take a more advanced approach in its environmental structure. The contrasting effects of processes of mutual learning and information exchange together with delaying procedures and different foci of attention of companies were too large. Subsequently, the case studies confirmed the conflicting evidence. Especially in the interview results, a multitude of contrasting and cautious answering emerged, underlining the difficulty of negotiations about standards in partnerships and consortia.
With respect to the influence of the second variable of a structural nature, proposition P6b states that: ‘After an initial delaying effect, mergers then stimulate the development of the environmental structure of a company’. Mergers were the most important overall organisational change in the sector in the 1990s. In a few years’ time, the top league of companies changed completely. From the petroleum companies in the Fortune Global Top 250, only Latin American companies did not participate in mergers at all. Exceptions in the European context were ENI, Shell and Statoil. Some initial support for this proposition is observed in the approach to the environmental reporting after mergers, e.g. ChevronTexaco explicitly refers to continuing deployment of its EMS after the merger and TotalFinaElf started reporting after the merger. The latter effect can be attributed to a changing approach due to increased visibility (and therefore a size effect) but is also a possible anticipation of the institutional setting in France where, in the meantime, reporting has become compulsory.

However, the increase in complexity due to mergers can also delay the development of an environmental structure. This argument has been further examined in the case studies. The changes in TFE’s approach to environmental management after its merger demonstrated the stimulating effect of mergers. For BP, it is less clear how the combination of the companies after the merger affected its environmental structure; BP seemed to dominate, leading to an extension of a decentralised approach. Both Shell and Statoil did not experience a merger but appeared to have a more developed environmental structure than the other two. Therefore, the overall result is multifaceted. The effect of mergers seems to depend on the dominance of a specific partner in the merger and the resulting increases in size and thus in visibility; single conclusions could not be drawn from the data.

The third element of structure of ownership concerned whether a company is owned by the state or private investors. The accompanying proposition P6c was formulated: State ownership as such does not influence environmental structure; its effect is related to the institutional setting within the country. In the results of the sector study, the influence of state ownership stood out in the early reporting by some European companies (see Chapter 7) as well as the low internationalisation and high centralisation of Latin American companies (see Chapter 5). Within the case studies, state ownership influences clearly stood out for Statoil and TFE. For Statoil, the early development of its environmental strategy fell in line with the demanding legislative context; for TFE, the more flexible institutional environment resulted in a different, less systematic approach, which leads to further support for this proposition.

Notwithstanding the absence of a direct overall relationship and straightforward support for the propositions, the information provided by the case studies suggests that the development of the systems is related to the characteristics within the organisational structure: centralised organisational structures quicken the process of implementation of the EMS.

- BP was the most decentralised company for both minority- and majority-owned affiliates and its EMS was characterised by a similar decentralised approach: an extensive set of expectations had to guide operating companies in their choices for an internal independent system. Amoco’s history (US in origin) showed that many elements had been triggered by the legislative context at an earlier date; in addition, the development of BP’s decentralised EMS may be explained by BP’s relatively high score of minority ownership; with a third of its affiliates in minority own-
ership, the company joined developments in the sector as a whole instead of proceeding on its own course.

- Statoil was the most centralised and smallest company in 2002. Its system seemed to be well integrated, although information about monitoring systems was somewhat scarce. It would seem that the development of the system was eased not only by the direct and short lines of communication and authority in this company but also by the further implementation of the system into the company's operations.

- TFE first centralised in the period 1990-1995 and then decentralised after its merger, while its figures for minority-owned affiliates showed a pattern of centralisation. Considering the Statoil example, this would feed the expectation that the company developed the basic elements of its system before 1995 after which further implementation and integration became more difficult because of the decentralisation process. But, in practice, the development of TFE's system could only be examined after the merger when more information came forward and the company became more transparent: the system has indeed not been implemented as much as it might have been with a more centralised structure. TFE's management system as such was only mentioned as one of a total of twelve elements. Similar to the BP case, the ratio of minority/majority affiliates may have played a role. For both Total and Elf, the ratio was above average, decreasing the span of control and maybe slowing the implementation of a systematic approach.

- Starting as the most centralised company in the sample for 1990, Shell decentralised around 1995 but had centralised again by 2002. This led to a decentralised position like TFE's but with a clearly different history and a seemingly totally different EMS: i.e. accompanied by a clear monitoring system and a rather high level of transparency and level of access for external audiences. In the employee survey, Shell's positive score on the regularity of auditing was also higher than Statoil's even though for both companies, answers were diverse on the exact regularity of the audits.

12.4 Towards International Environmental Alignment?

In the period 1990-2002, environmental management changed from an operational to a strategic issue, which strengthened the relation between environmental strategy and environmental structure. This study has examined which factors determine this relationship; it framed the dynamics of elements of a strategic and structural nature in its newly developed International Environmental Alignment Framework. The previous section showed that at least some of the identified strategic and structural variables do indeed play an important role. However, in a more narrow focus, the concept of international environmental alignment concentrates on the relationship between environmental strategy and environmental structure. About this relationship, four 'alignment' propositions were formulated. Table 12-4 gives an overview of the results, which stood out from the case studies.

<table>
<thead>
<tr>
<th>Proposition</th>
<th>P7a</th>
<th>P7b</th>
<th>P8</th>
<th>P9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case results</td>
<td>+/-</td>
<td>n.a.</td>
<td>-</td>
<td>+, ?</td>
</tr>
</tbody>
</table>

Notes: P7a: centr. env structure vs stage of env strategy; P7b: influence order alignment on P7a; P8: congruity and level of alignment; P9: commitment; n.a.: no result available; -: no support for proposition; +: support for proposition; and: additional variables of importance; ?: further research needed.
In relation to the first alignment proposition, P7a: *The level of centralisation of the environmental structure is positively related to the stage of the environmental strategy*, it can be argued that the case studies did provide support for a positive relationship. Due to the complexity of the relationships, and the intervening variables on several relationships, contrasting evidence is found as well. This leads to the conclusion that the relationship cannot be characterised as singular and exclusive. Bearing this evidence in mind, the result for proposition P7b: *The higher the order of alignment, the weaker the relationship mentioned in proposition P7a*, is hard to characterise as conclusive and is therefore characterised as not available in the table. Subsequently, proposition P8 states: *Congruity in the level of centrality of organisational structure and environmental structure results in a higher level of environmental alignment*. No support for this proposition could be found on the basis of the empirical results of this study.

The last proposition, P9, states: *The level of commitment is positively related to the alignment of environmental management*. Due to its different level of analysis (the individual employee), the variable of commitment only allowed for examination within two case studies, the ones that participated in the survey. In the results, the answers of Shell employees did show a significant, positive correlation between continuance commitment and age; a significant negative correlation between affective commitment and duration of employment, and no significant relationships for forced commitment.

Comparison of the average scores for Statoil and Shell showed that Statoil’s results were quite similar. The tentative overall conclusion may be that commitment to a compatibility perspective will be higher for older employees who find the company’s survival [continuance] at stake. Employees whose work duration was shorter than five years show a commitment based on personal values, which may illustrate their belief in the options of the industry for high-quality environmental management, on the assumption that they would not apply for a job at a company that did not behave in conformity with their personal beliefs. With regard to proposition P9, both observations provide further insights.

Focusing on the relationship between environmental strategy and environmental structure, the previous findings are further illustrated by the shifting positions of the companies in the case studies (Figure 12-1). Although it is important to note that the reflection of environmental alignment in a single position is an abstraction of reality, the figure does show that, in the period 1990-2002, almost all companies have moved to the fourth quadrant.

**Figure 12-1 Companies’ position in the model of corporate greening, 1990-2002**

<table>
<thead>
<tr>
<th>Approach to implementing corporate greening</th>
<th>passive/reactive</th>
<th>active/proactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy commitment</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Total 1990</td>
<td>Shell '90</td>
<td>TPE 2002</td>
</tr>
<tr>
<td>Shell 1990</td>
<td>ARCO 1990</td>
<td>BP 1990</td>
</tr>
<tr>
<td>BP 1990</td>
<td>Shell 2002</td>
<td>Statoil 2002</td>
</tr>
<tr>
<td>Elf 1990</td>
<td>BP 2002</td>
<td>Amoco 1990</td>
</tr>
<tr>
<td>Statoil 1990</td>
<td>Statoil 2002</td>
<td></td>
</tr>
</tbody>
</table>
In short, being in the fourth quadrant means that policy commitment is high and that the approach to the implementation of greening is active. As such, this can lead to different orders of alignment. However, the flash symbol in the figure indicates the frequent occurrence of complex situations for all of the companies. For those situations, company statements about the application of the best applicable version of standards can certainly be found, but the stories and examples of other, contrasting, practices are widely published as well. Ultimately, this leads to the conclusion that the contents of the figure should always be translated to the operation at hand; this translation may deeply affect the conclusion about a company’s environmental alignment. Different orders of alignment and different drivers of their relationship (as discussed in Chapter 3) can be seen for the case companies:

- **Shell** clearly experienced a critical event, which made the company move from a somewhat unclear position between the first and second quadrant to an advanced position in the fourth quadrant. In the case studies, it is an example of one of the most transparent companies. For 2002, Shell is characterised as having a strong case for environmental alignment; it is considered to be in the second order of alignment where strategy and structure can be mutually reinforcing. Its position builds on the replacement of a single-issue approach to a total package in a comprehensive whole, partly by an increased centralised approach. The company does not reach the third order of alignment because of the fragility of its operations in sensitive areas and the need for a further increase of the commitment of its employees. Shell seems to take the direction of ‘competitive potential’, with environmental strategy as a driver and business leadership as a criterion for performance.

- **BP** shows an active position for 2002 as well. Its position builds on the history of three companies with different profiles. BP has a strong presentation but eventually primarily a single-issue approach focused on climate change. Because BP’s position is considered slightly imbalanced (e.g. due to the non-transparency of its monitoring system and its fragility in relation to merger effects), it is placed somewhat higher in the fourth quadrant than Shell. Due to this imbalance, its order of alignment is characterised as being on the brink of second order fit. The direction of its alignment results in a combination of strategy execution, technology transformation and competitive potential depending on future elaborations.

- **TFE** is the only company in the second quadrant. Its position is related to an imbalance between the external presentations of Elf and Total. Only after its merger did the company start to expose itself more extensively. However, its management system is hard to grasp. Although certain examples of the company’s performance provide evidence of further advancement and a potential for change, for 2002, the company is characterised in the first order of alignment. The direction of its alignment is characterised as technology transformation but might change as well if the company can acquire the required levels of commitment in its different national settings.

- For 2002, Statoil resembles Shell, but in a national setting. The difference is that the starting position of the company for 1990 was in the fourth quadrant as well, which was probably stimulated by the institutional setting. Therefore, the direction of its alignment is characterised as technology transformation but with elements of competitive potential considering its ‘NOC NOC’ strategy. The order of its alignment is characterised as in the second order of reinforcing activities. It cannot be labelled as third order because of the challenges that Statoil is and will be facing in its internationalisation efforts.
In conclusion, the framework of International Environmental Alignment confirms the importance of reputation, critical events and institutional background; in addition, exploratory insights were developed with regard to the impact of vertical integration, internationalisation, degree of centralisation, cooperative arrangements, mergers, and state ownership. The size of the company and the level of commitment displayed by its employees appeared as additional factors of importance.

As announced in Chapter 1, the aim of this study was to expand the knowledge on the integration of environmental issues in the organisation and management of MNCs. Integration was defined as "the quality of the state of collaboration that exists among departments that are required to achieve unity of effort by the demands of the environment" (Lawrence and Lorsch, 1969:11). Therefore, within the results, a further distinction is made concerning the importance of certain variables as related to the order of the alignment as well as to the drivers behind certain orders of alignment (see Table 12-5).

Table 12-5 Factors related to International Environmental Alignment

<table>
<thead>
<tr>
<th>Order of alignment</th>
<th>Driver of alignment</th>
<th>Influences of a strategic nature</th>
<th>Influences of a structural nature</th>
<th>Other influences</th>
</tr>
</thead>
<tbody>
<tr>
<td>First order</td>
<td>Corporate strategy</td>
<td>Internationalisation</td>
<td>Degree of centralisation?</td>
<td>Institutional setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mergers?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cooperative arrangements?</td>
<td></td>
</tr>
<tr>
<td>Second order</td>
<td>Corporate and</td>
<td>Internationalisation</td>
<td>Degree of centralisation?</td>
<td>Institutional setting</td>
</tr>
<tr>
<td></td>
<td>environmental</td>
<td>Vertical integration?</td>
<td>Mergers?</td>
<td>Size</td>
</tr>
<tr>
<td></td>
<td>strategy</td>
<td>Reputation</td>
<td>Cooperative arrangements?</td>
<td>Visibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Critical event</td>
<td>Commitment</td>
<td></td>
</tr>
<tr>
<td>Third order</td>
<td>Discussion about applicability for this sector...</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The table shows that the world of petroleum MNC’s behavioural patterns in corporate greening is rather complex and that there are ample opportunities for further research (see section 12.6). For example, one cannot conclude that certain elements of strategy explicitly relate to a specific order of alignment and a specific alignment perspective. The table shows clearly that degree of internationalisation is an important factor at the outset of the environmental strategy, especially when accompanied by a catalyst event. However, a lower degree of internationalisation due to a smaller size does not necessarily lead to a different strategy: the demands of a company’s institutional background can override the effect of a low degree of visibility. Likewise, this means that catalyst events are not the only factor leading to changes in environmental strategy.

The cases already indicated that a status of late or early reporting does not necessarily refer to a certain status of alignment, and nor does a high quality public relations machine. Furthermore, the effect of organisation structure in the format of degree of centralisation and structure of ownership (especially state ownership) generated various effects. In addition, while the concept of alignment does refer to the balance between the elements of strategy and structure and their mutual reinforcement in which different constellations can be observed, it does not guarantee quality as such. However, reputation, commitment, size and visibility do emerge as crucial factors to attain the second order of alignment. In addition, environmental strategy becomes an additional driver for that order, while corporate strategy is the single driver for the first order of alignment. With regard to the alignment perspectives mentioned for the direction of alignment, this finding represents an extension of the earlier model.
With regard to the concept of International Environmental Alignment, it means that seemingly similar approaches are accounted for by a complexity of explanations. This finding illustrates Porter’s remark about the value of using a framework, in which he stated that the interaction between the variables cannot be rigorously drawn but that it helps to select among the alternatives available (Porter, 1991). One of the deeper questions is whether a petroleum company can ever reach the third order of alignment, optimisation of effort, and how that should be defined, considering the nature of the activities involved.

12.5 Theoretical and practical relevance

The relevance of the study, as outlined in the introduction in Chapter 1, is of both a theoretical and practical kind. The theoretical contribution to the field of environmental management consists of the identification of the ‘grey’ and ‘black boxes’ within the literature, and the sector-wide approach examining the developments in a particular industry over a longer period of time. The advantage of this approach is that it pays attention to the dynamics between the elements relevant to the MNC, at different levels of analysis. The study has thus also aimed to provide insights into the process of environmental management within multinational corporations, particularly in the petroleum industry in the period 1990-2002.

The contribution to the international business and strategy/organisation literature is in the enrichment of the strategic alignment model to become the International Environmental Alignment framework. This covers the interaction between factors of a strategic and structural nature as well as the direction and order of the relationships. Exploring developments within the internal organisation of the company in response to external influences adds to previous approaches and explores new territory that lies ahead.

The theoretical and empirical parts of this study might also be helpful to practitioners (managers, policy makers and other stakeholders, some of whom will be specifically mentioned below). This contribution firstly involves the actual information given about the developments in the petroleum industry in the period 1990-2002, and the aspects concerning NGO influence, external pressure, critical events, reputation, and managerial and corporate responses, both in terms of strategy and organisation. Secondly, the concept of International Environmental Alignment represents a contribution because it suggests ways in which environmental and general issues, processes, strategies and structures might be linked (or not). This may lead to further consideration of the opportunities to improve the level and order of alignment within an organisation, and thus provide options for improvement of companies’ performance in these areas.

For host governments, the study may give input to the question of how much the economic impact of the companies is worth in relation to their environmental impact if a ‘win-win’ situation is not clearly at stake. It might be interesting for a host government to make MNCs compete on environmental issues, but considering the high rate of cooperative arrangements in the industry, application of those standards to other kinds of companies, e.g. the nationally-based ones, can be a consideration. This also relates to the strengthening position that host governments may wish to take in order to create a certain level of commitment to environmental issues.

For companies operating in the sector, considerations involve options for competitive advantage (resulting from the pursuance of different strategies) and/or the choice to accept the common sector approach. The complexity of these judgements is not only related to normative beliefs but also to the economic feasibility of certain technological im-
provements in relation to margins, and to the potential of smaller companies and state-owned companies. It is also related to possibilities for keeping a low profile in comparison with companies with a high public profile and the influence of stakeholder groups, such as consumers. These will also be issues for shareholders to take into account.

On the basis of this study, consumers and other pressure groups can reflect on their (potential) power to 'take away' a company's license to operate, in this case, licence for sales, for a shorter or longer period of time. However, this requires a high level of transparency if consumers' opinions are to be influenced, as well as a high level of engagement; both may be difficult to attain because of the factual distance between engaged consumers in developed countries and the operations of petroleum companies in developing countries. A topic of debate remains the degree to which, and whether, consumers would start to differentiate their buying behaviour if they had more complete information on the environmental quality of a company's operations and, for example, the origin of the product they buy. It is also important to consider to what extent NGO campaigns always hit the right 'target', in other words, how useful it is, viewed from a societal perspective, to focus on the most active and transparent company just because it has turned out to be vulnerable to public pressure and discloses a considerable amount of information.

12.6 Limitations of the study and further research

The limitations of a broad study such as this one are usually as many as the opportunities for further research it provides. Here, they are categorised as limitations of method and general limitations. With regard to the method, there are several imperfections. One of them is related to the broad focus of the study. One might argue that the analysis of environmental management practices is of no special use unless one delves into the operational practice. The limitation of using companies external documentation was therefore acknowledged and identified as a challenge: to try to get behind the reports and brochures.

Nevertheless, the decision to concentrate on the corporate level did result in the use of certain data sources which can be characterised as below the optimum, although no alternatives were found. The value of corporate environmental reports has been discussed extensively in the previous chapters, as well as the lack of information on the coverage of performance data and their reliability and quality. Although the 'maturing' of the issue provides a future scenario with less of these problems, the absence of a conclusive, composite environmental performance indicator makes it hard or maybe even impossible to compare companies vis-à-vis their overall environmental performance. In addition, some of the variables were hard to operationalise in practice, due to methodological complexities of a different nature (e.g. use of different terminology and definitions, relationships between variables, measurement complexities, availability of data, level on the part of interviewees and their (un)willingness to share information).

Some of these issues were solved by the use of proxies; for others, information remained hard to find. In addition, the multitude of variables made it difficult to come to definite conclusions. In that sense, this study has merely focused on providing insights into the complexity, indicating likely relationships and thus leaving many opportunities for follow-up research to be carried out in larger sets of (also smaller) companies, in other sectors and/or focused specifically on companies from a particular institutional context. Further attention to state versus private ownership might be interesting as well, particularly in the oil sector, where so many companies are under strong government influence. The last
aspect gains in importance because of the pressure on companies to increase their participation in new fields and to reconsider the ending of their operations in maturing fields. This also relates to the cooperation in consortia and the discussion on the impact of joint ventures on environmental standards.

In addition, it would be valuable to expand the research to lower levels of decision making within the companies, or to specific business units and their interrelationships. This also applies to an expansion of the exploratory findings on orders of alignment, and the relevance of the International Environmental Alignment Framework for individual variables. Finally, the 'typical case' sampling strategy, as discussed in Chapter 4, could be expanded, for example with ExxonMobil. This would be worthwhile particularly because ExxonMobil, in contrast to other companies, seemed to pay less attention to strategic profiling and external disclosure for a long period of time, while its structure was considered impressive, as far as economically-sound operations and cost-driven environmental management were concerned. Several interviewees indicated that, notwithstanding Exxon's posture on climate change, its performance as such was really admirable, based on an efficiency drive, and that they did not understand why Exxon did not make use of this record to improve its environmental image. The case is especially interesting because ExxonMobil's seems to be changing its external profiling, as far as is indicated by an advertisement in the New York Times in May 2004 ("Taking on the world's toughest energy challenges"; "We are all in this together"; "Our commitment to good corporate citizenship never will [change]").

The example of ExxonMobil shows the dynamic nature of International Environmental Alignment. In relation to the findings, this is also illustrated by the options to investigate the following, new proposition: A company situated in a higher level of environmental alignment will be less vulnerable to the impact of critical events. In order to confirm or reject this proposition, one would need to compare the effect of subsequent events on a single company, which in the meantime had changed its order of alignment. Translating this to the data from the case studies, this would mean that, for example, TFE's reputational impact should be greater than Shell's or Statoil's in the case of a critical event, because of its placement in a lower order of alignment. In practice, this is hard to operationalise. When relating it to the wider framework of corporate social responsibility, eventually initial support for the proposition is gained from Statoil's experiences in Iran. After the company was fined, the reputation issue seems to have faded. It can be argued that companies with a higher order of alignment only need temporary extra action to respond to the reputation change; while companies positioned in a lower order of alignment need to adjust their strategy and structure more profoundly to regain confidence.

Nevertheless, questions remain as to whether transparency of effort and engagement can and/or should compensate a potential lack of sustainability, and/or what the benefit of a good environmental reputation will be when (and if) 'cheap oil' ends and consumption patterns continue at present levels. For developing countries, oil production may be the only way to escape from poverty, but it can also be the Trojan Horse leading to an increase of poverty by environmental destruction, which in turn would contribute to further political instability. In his 1991-book, Yergin noted that "with the fate of the planet itself seeming to be in question, the hydrocarbon civilisation that oil built could be shaken to its foundations" (Yergin, 1991: 787). It is up to consumers, producers and other stakeholders to decide to what degree this is the case. The findings in this study show the role of different strategy and structure variables in the integration of environmental issues. Now that the strategies and the systems seem to be put in place, the debate has just begun.