Working Paper 1995:9

Corporate Environmentalism: Notes on Conceptualization and Explanation with Anecdotal Evidence from the Oil Industry

by

Bent Sofus Tranøy

December 1995

Corporate Environmentalism: Notes on Conceptualization and Explanation with Anecdotal Evidence from the Oil Industry

Bent Sofus Tranøy
CICERO/Department of Political Science
University of Oslo[1]
Box 1097, Blindern. 0317 Oslo, Norway.
Telephone: 47+22 85 49 58. Fax: 47+22 85 78 32
e-mail: b.s.tranoy@arena.uio.no

1Most of the work on this paper was done while I held a fellowship at the Center for International Climate and Environmental Research, Oslo (CICERO). It was completed in my present position as research fellow at the Department of Political Science, University of Oslo. The paper has been developed in continuous dialog with the NFR-sponsored Fridtjof Nansen Institute project "Environmental Challenges to International Oil Companies" run by Helge Ole Bergesen and Javier Estrada. It draws freely on insights and data acquired through working closely with these two.

1. Introduction

The project this paper originates from addressed some aspects of the oil industry's *reaction* to calls for environmental reform, especially political and consumer pressure stemming from fear of climate change. In this contribution two sets of related questions that has emerged within the overarching project is discussed: The first question is how corporate responses, in the spheres of industry and politics respectively, might be measured and conceptualized. The second question addressed is how variance in corporate environmental behaviour can be accounted for. At the end the results of these discussions is tentatively applied to a set of anecdotal evidence from three international oil companies, Shell, BP and Statoil.

The last five years have seen increasing scholarly attention to corporate environmental strategies.[2] But what constitutes corporate environmentalism? How do you conceptualize a moving target? When the aim is continuous improvement, not easily identifiable goals, when we talk of processes, attitudes and perceptions instead of concrete measuring rods, empirical indicators tend to multiply. Environmental performance can be understood in organizational, competitive and technological terms, amongst others. This paper tries to pull some strings from the recent debate on corporate environmentalism together in presenting a multidimensional typology of corporate environmental responses in what might be termed the industrial sphere.[3]

The typology is presented in section two. In section three large companies' role as political actors and some possible links between corporate environmental behaviour in the

2 The literature can be traced to at least three different sources: The academic community (e.g. Bergesen et al. 1992, Roome 1992, Fischer & Shot eds. 1993, Ketola 1993 and Schrama 1994), business consultants (Schwartz, P. et. al. 1992, Avila, J.A., and Whitehead, B.W. 1993) and representatives of organized environmentalists (Smart, B. 1992, Flavin, C. and Young J.E 1993).

3 Reflecting the above mentioned fluidity of the subject, the notions of corporate environmental "response", "behaviour" and "strategy" will be used interchangeably in this text. It is, in fact, one of the main arguments of this paper that different observers mean different things when they use these terms, and that a useful way of bringing more precision into the debate is to try and distil and distinguish the dimensions underlying various conceptions, be it of response, behaviour or strategy. While the first two terms, response and behaviour, by convention are vague and inclusive, strategy, as understood in business writing, can at first glance seem like a concept where clear definitions are available. On a general level it is usually seen as constituted by purposeful behaviour (i.e. conscious decisions) based on an idea of how to - in a given competitive environment - achieve long term goals such as survival and profit maximization. On a less abstract level on can speak of different growth strategies such as expansion of volume, vertical integration or product diversification (Chandler 1962). If one, as I, am attracted to Mintzbergs variants of "ex post" understandings of strategy as "a pattern in a stream of actions", though, conceptual clarity is lost, although, in my opinion, with a corresponding gain in realism (Mintzberg 1978, 1985, 1990), recounted in Schrama (1994).

industrial and political sphere is explored. In section four some attempts at explaining variance in corporate environmental strategy is presented in the form of two "models". This is done by combining fragments of various theoretical bodies, like microeconomic theory, theories of strategic marketplace interaction and organizational theory: Last, but not least, I employ a technique best described as commonsensical induction from a small and admittedly murky pool of observed corporate behaviour. It has not been desirable to fix the discussion to a given level of analysis, instead it frequently shifts between arguments covering whole industrial sectors, and arguments that can be helpful when analysing individual companies. In other words: The theoretical approach is exploratory and eclectic and geared towards hypothesis generation, rather than parsimonious, deductive and oriented towards the testing of hypotheses. The main motive for choosing such an approach is a perception of the study of corporate environmental strategies as still being in its infancy.[4] A problem area where neither the phenomena under study, nor the mechanisms driving it, is particularly well understood, calls for openness not theoretical closure.

2. Conceptualizing the dependent variable: Industrial sphere responses

The emerging literature on "business strategy and the environment", as can be seen from for instance several articles published in the journal carrying this name, has naturally had to address the issue of how to measure or at least conceptualize corporate and societal responses to environmental challenges. Several conceptual hierarchies or typologies have been suggested. Initially we can distinguish between typologies focusing on *perceptions and strategy* (Bergesen et al. 1992, Roome 1992, Ketola 1993) on the one hand, and *technological choices* (Trisoglio 1993, Jänicke et al. 1993, Ashford 1993) on the other. In broader terms both approaches are concerned with responses in the industrial sphere. We also need concepts able to capture variance in the political behaviour of large corporations. I will summarize and conclude the discussion on industrial sphere responses by offering a new typology in subsection 2.3 while I will return to political responses in section 3, below.

4 In his essay "The meaning of greening" Gladwin (1993:43) sets up a 10 point self-flogging agenda on behalf of research on the greening of industry. Among the criticisms offered is: Lack of precise definitions, lack of cumulativity, lack of cross-sectorial comparison, lack of dynamic approaches, unwillingness to hook up to general streams within organizational research and few efforts at building models transcending historical particulars.

2.1. Strategy typologies

The conceptual efforts that lend themselves to subsumption under the heading of strategy typologies, have at least one thing in common. They all evolve around the distinction between passive, reactive and proactive strategies. On closer inspection, however, one can identify four different dimensions that underlay the various authors' conception of strategic choices: These dimensions are:

* Legal compliance (along which responses can take on the values of passive, reactive or proactive).
* PR and Communication (along which responses can take on values of passive and aggressive).
* Organizational Architecture (where the indicator would be some measure of how great the organizational resources employed for environmental purposes are).
* Substantial Environmental Competition (along which responses could take on values of obstructive, passive, reactive and proactive.

One example of an author using the legal compliance dimension as a conceptual organizing device is Roome (1992: 18-19). In his "strategic options model" Roome distinguishes between *non-compliance, compliance, compliance plus, commercial and environmental excellence* and *leading edge*. Roome (p.18) distinguishes compliance plus from compliance (and non-compliance) by pointing out that the former strategy entails being proactive on the legal dimension, i.e. the company in question does not wait for the legislative process when setting its environmental agenda.

> In this way the company exercises control over the direction and pace of its environmental performance and is able to make critical judgements about its environmental priorities.

This in contrast to the first two categories where companies either do nothing (or at least not enough compared to legal standards) or just enough.[5]

Beyond this point, however, the typology gets less clear concerning underlying dimensions and hence more difficult to operationalize: To move past compliance plus towards

5 Non-compliance can be a contentious category: What is merely "creative bookkeeping" to some can be interpreted as downright cheating by others. For strategies used by emitter organizations to dilute regulatory standards see Knoepfel & Weidner (1983, summarized in Vogel & Kun 1987:114).

the next category, commercial and environmental excellence, the company has to go from "...encouraging organizational change..." to a position where it "...takes to a logical conclusion the view that environmental management is good management." And further it is "likely" that it has "...core corporate and managerial values focused on the achievement of quality". What characterizes a company of the leading edge category is that it "...revolves around the state of the art in environmental management, as practised by companies at the leading edge in their sector of the economy" (p.19).[6]

While Roome introduces a "strategic options model", Ketola (1993) speaks of "environmental policy" at the company level. Building on Ansoff and Mcdonnell's (1990) typology of "strategic aggressiveness" or "strategic postures", Ketola identifies five levels of environmental policy: *stable*, *reactive*, *anticipatory*, *entrepreneurial* and *creative.* The first four of these levels are described as "rather similar" to "Roome's "four (sic) strategic options".[7] The work discussed here is a preliminary analysis of the "seven sisters", based on policy documents published by the companies themselves. Here Ketola does not spend much time translating Ansoff and McDonnell's typology for her purposes. She nevertheless concludes that the sisters' policies lie on the reactive and anticipatory levels (Ketola 1993:28).[8]

In my opinion the efforts we have looked at so far are more than useful starting points. They also raise at least three problems:

1) Both by and large ignore the fact that large corporations are political as well as commercial actors. I will return to this problem in section 3 below.

2) Both lack a category for aggressive obstructive behaviour (and such behaviour can occur both in the marketplace and on the political arena). This can be handled within a revised version of a framework suggested by Bergesen et. al (1992). Obstructive market place behaviour will be discussed in subsection 2.1.1 while obstructive political behaviour will be

6 Roome (p. 19), understandably, describes this category as "...more a description of a specific form of practice than a theoretical strategy".

7 The strategic option Ketola chooses to omit is Roome's environmentally speaking most advanced category "leading edge". Why she is unwilling to go all the way and equate this category with her own concept of "creative" is hard to deduce from her text. She tends to treat her concepts as if their contents are self-evident.

8 A colloquial expression for the seven largest oil companies in the world, the "seven sisters" are Royal Dutch/Shell, Exxon, British Petroleum, Chevron, Mobil, Texaco and Gulf. When Gulf was taken over by Chevron in 1984, Amoco was "promoted" to the seventh sister (Ketola 1993:22).

dealt with in section 3.

3) The third problem is that when we go beyond the compliance plus-level the issue of what constitutes the defining criteria or underlying dimension gets blurred. One senses dimensions like organizational architecture, core values and technological choices. The problem is that the way these are bundled makes the effort of unbundling complicated, and maybe not even worthwhile. If we allow this lack of conceptual clarity to persist, however, we are bound to run into, or even conceal, problems when analysing corporate environmentalism. This problem will be sought resolved when I propose a new typology in subsection 2.3.

2.1.1 Pure PR vs a substantial competition motive and organizational restructuring

Bergesen et. al (1992:1-2) have suggested an alternative framework, specially designed to capture oil industry responses, but sufficiently abstract in form to merit comparison with approaches that are explicitly general in scope. This cumulative typology is essentially built around three industrial sphere dimensions:

PR-and market communication: This dimension is used to single out companies that restricts its environmental efforts to measures that can be handled by its public relations department. This company has engaged in market communication, but has nothing of substance to back their appeal to the environmentally oriented consumer and the public at large. Bergesen et. al's label for such a company is *green marketeer*.

Organizational architecture: This dimension is used to distinguish companies that, in addition to cultivating their green images, also commit themselves to limited but observable changes in their organization and strategic planning (through establishing in-house capacity for environmental auditing, planning and training etc). Companies that go this far are given the label *Cautious adapters*, by Bergesen et. al.

(Propensity to engage in) *Substantial green competition*: This dimension is used to distinguish companies that not only see new competitive opportunities arising from the green agenda, but who actually commit substantial financial and human resources to improving their environmental performance. In the case of the oil industry this would, according to Bergesen et al (1992: 1), be the development of more energy efficient processes, renewables and offset projects. This kind of proactive company is given the label *green frontrunner*. Bergesen et. al tacitly assumes that this dimension is dichotomous: Companies are either engaging in

substantial environmental competition, or they are not. It is my contention that this dimension, on logical grounds, can be extended. That is, one can envisage an inversion or, as it were, perversion of the competition motive: It is plausible that some companies, when confronted with products and processes more environmentally benign than their own, can choose a strategy where they try to halt the progress of their competitors through competitive marketplace action of a less than benign character. Oil companies, for instance, could be tempted to try and arrest an impending switch to less carbon intensive fuels through price competition or by buying (and withholding) patents on competing products.[9]

The introduction of the substantial environmental competition dimension, and letting this be the defining criteria for the category green frontrunning, produces a need to clarify the relationship between green frontrunning and being proactive on the legal dimension. It follows from the logic of competition (i.e. the need to stand out from your competitors) that in most cases green frontrunning would include being ahead of the legislative process. But this does not necessarily work the other way round: it is conceivable that companies can have other motives for going beyond compliance than customer appeal. One is the administrative motive mentioned by Roome. That is the administrative advantage of setting your own pace and priorities when choosing technological solutions in your process and product development. Such a desire to be less dependent on the legislative process is less spectacular and likely to produce less dramatic results than competition led product and process improvement, but it is still a mechanism likely to work in favour of the environment.

The demarcation line between administrative and competitive motivations for environmental improvement can also be expressed in terms of how environmentally motivated investment primarily is perceived. Calculating the real return of any investment is always done under considerable insecurity, and it is difficult for decision makers to give complete attention to all the variables that will influence the real return on any given investment. Because of the uncertainty stemming from the development of the legislative process and "green" demand, to

9 We should note that Bergesen et al's "operationalization" of the substantial environmental competition dimension, as applied to the oil industry, is closely linked to the global environmental problem of climate change. As this follows from the way they pose their research question and this is done explicitly, it must be considered legitimate to posit such a link. Nevertheless, when studying the oil industry we should be aware that several companies have engaged in environmental competition in gasoline qualities (i.e.lead contents), which has not necessarily been followed up in their response towards the evolving climate change agenda. This emphasizes that the green agenda is made up of several issues, which although related, might have to be treated separately in empirical analysis.

name two variables that should enter the calculus of any firm contemplating environmentally relevant investments, such decisions are, if anything, even more difficult to make than "normal" investment decisions. This point can be expressed in terms of a "perceptions of the financial implications of environmentally motivated investments" dimension. Because of the fundamental insecurity surrounding such investments, what aspects corporate culture tends to emphasize is of significance. For instance, companies of the green frontrunner category will pay particular attention to the potential revenue raising effect of green investments. They might even have to take a fairly long term view, expecting the investment to make a negative net contribution while the green market is being cultivated and consumers are educated. This is in contrast to companies primarily driven by what we termed the administrative motive. Here the attitude towards green investment (or investment with a green component) is still primarily positive and explorative. Even so, such companies will be more perceptive of opportunities for the environmentally motivated investments reducing other costs e.g. waste production and energy use, than of any potential positive effect through increased sales and revenue. Finally some corporate cultures will be characterised by a mind set that is primarily negative. These companies will tend to perceive (the marginal) cost related to environmentally motivated improvements of products and processes primarily as an add on cost, where gross expenditure more or less equals the real cost.

The upshot of this discussion is that we can add one dimension to our pool, a perceptions of financial implications-dimension. This dimension could take on the values "fearful of increasing costs", "looking for cost-reductions" and "seeking income opportunities". It might also be added that the political behaviour dimension is unspecified for all of Bergesen's categories. In fact what we described as the political dimension of our problematique is not worked into the framework of Bergesen et al. Instead their typology includes one category of industrial response which is primarily defined through the (obstructive) political action it implies. We shall return to this category, *The intransigent fighter*, in section 3.

2.2. Technological choices approach

One weakness of the management and strategy indicators discussed above, is that they

represent an indirect approach to environmental problems. The approaches advocated by Roome, Ketola and Bergesen et al. are all concerned with how business responses to environmental problems can be understood in terms of legal standards, organizational adaptation and competitive moves. In contrast to this, the technological choices approach directly addresses the more tangible aspects of environmental problems and their solutions.

The technological choice approach can take a distinction between three levels of environmentalism, depending on the kind of technological solution sought, as its organizing principle. The three levels are:

* End of pipe/clean up solutions.
* Solutions at the production processes level.
* Solutions implying the substitution of products and consumption patterns.

This approach is as valid for discussing regulative efforts as for the present discussion of corporate environmentalism. The levels can also with some plausibility be linked to separate time periods: Clean up and end-of-pipe solutions were at the top of the green agenda and was gradually made more stringent during the seventies and eighties. In the nineties the debate in advanced capitalist economies is more often than not to be found somewhere between the process and product levels.

The distinction along the technological choices dimension is not clear-cut, and in particular the middle layer focusing production processes can be somewhat difficult to defend as a separate category. In their work on "ecological structural policy", Jänicke, Mönch and Binder (1993:159) circumvent this problem by reducing the typology to two categories:

> *A remedial "end-of-pipe" strategy that does not revise existing problematic technologies and a preventive strategy that alters production and consumption ex ante towards ecologically better adapted forms.*

Compared to the approach advocated here, the difference is that they join changes at the level of the production process with changes at the level of product or consumption patterns. The reason for this is that whether a given environmental strategy contributes to "alleviating several forms of (global) environmental stress" is constitutive for their typology. Jänicke et al. mention waste production, high consumption of water, land and other resources, high risk intensity, CO_2 and residual emissions as stress factors. It is obvious that both process and product-based change have the potential to achieve improvement thus defined.[10]

10 Ashford (1993:277) makes a similar two level distinction, between end-of-pipe on the one hand and

If one focuses first and foremost on the global environmental problems of climate change and ozone depletion, however, the argument for distinguishing product from process is stronger. For both these problems, consumer goods (e.g. cars, refrigerators and spray cans) have been major sources of pollutants (CO_2 and CFCs). While for instance the paper industry can address major environmental problems and achieve significant reductions in resource use and key emissions through changes at the input and processes level (recirculation and chlorine-free processes to name two specific aspects) no option of *comparable* significance is available at the input and process level regarding several of the production chains consuming fossil fuels and CFCs. It should, however, be stressed that this is a pragmatic rather than a distinction of principle and it should not be interpreted as saying that process related change is unimportant in energy and CFC consumption.[11]

The product/process divide takes on further significance when seen in light of the substantial environmental competition motive. To bring a new, environmentally more benign product on to the shelves is - other things being equal - a much stronger marketing statement than any measure located at the process level. On a more practical level companies concentrating their environmental effort at the product level would be expected to employ techniques such as eco-labelling and life-cycle cost analysis.

2.3. Summing up: Towards a typology of industrial sphere responses

The preceding discussion has shown that it is possible to employ at least six different dimensions when seeking to generate categories meant to capture industrial sphere responses. These dimensions are:

* Legal compliance
* Substantial Environmental Competition
* Perception of Financial Implications

---

pollution prevention on the other. Pollution prevention is defined as including 1) The substitution of materials used as inputs 2) process redesign, and 3) final product reformulation.

11 Regarding the CO2 issue for instance, fuel switching is a key issue and our proposed line of thinking displays its arbitrary qualities in that it would locate fuel switching in power generation at the process level (consumers still get the same product, electricity) while fuel switching from gasoline to propane (or even electricity that could be supplied by coal fired utilities) in cars would be classified as a change at the product level.

* Technological Choice
* PR and Communication
* Organizational Architecture

Summing up, the paragraphs above have pointed out several purposes a new effort ought to serve. First of all, there is a need to economize and simplify. The present multitude of variables should be reduced and organized in one scheme. Secondly, there is a need to increase flexibility in a way that allows us to accommodate "surprising" combinations along the various dimensions distilled from the typologies reviewed. These two requirements may seem contradictory, but by combining logic and pragmatism there might be a way around this problem. I would suggest a strategy made up of four steps. 1)Take the organizational architecture and PR dimensions out of the system of formalized expectations that the typology represents. 2) Choosing one of the industrial sphere dimensions - the legal - as the foundation for a industrial sphere response typology. 3) Using elements from the substantial environmental competition, the perceptions of financial implications and technological choice dimensions to "add on" to this typology. 4) Establishing a separate typology of political responses. All four steps should contribute to the task of constructing a manageable and conceptually economical typology of industrial sphere responses, while steps one and four increases our conceptual flexibility by allowing us to discuss action along the political, organizational and PR-dimensions separately whenever this may prove desirable.

The two dimensions that are omitted (PR and communication and organizational architecture) are left out for different reasons. The problem with linking the PR dimension to the others is both logical and empirical in origin. As indicated when discussing Bergesen et. al's typology, one can envisage a company trying to portray itself as "green" at almost any level of environmental achievement. With organizational architecture the problem is more practical. One would expect a fairly neat fit between an organization's attitude and response to the green agenda - which is what the typology is meant to capture - and the number of people employed in environmental performance monitoring, research, training and so on - which is what the organizational architecture dimension expresses. Our practical problem is that preliminary research indicates that all the major oil companies (and most probably all self-respecting industrial entities) have a formal organizational structure in place. At face value they look similar. This means that gauging the real impact of such formal structures becomes

the interesting research question. And the kind of data required to perform such an exercise is beyond the scope of this paper.

Omitting the PR- and communication and organizational architecture dimensions, we are left with four dimensions. Still, the number of dimensions included does not allow the construction of a logically exhaustive framework. Instead the combination of values on the full set of dimensions is constitutive for each category. (To facilitate the readers understanding of the underlying logic the dimensions that take on a new value for each category is in bold typeface).

Table 1. Typology depicting probable linkages between 4 dimensions:

Dimension/Category:	
	Non-compliance:
Legal Compliance:	Passive
Subst. Environmental Competition:	Possibly obstructive
Technological Choice:	End-of-pipe (if any)
Financial Implications:	Fearful of increasing costs
	Cautious adapter:
Legal Compliance:	**Reactive**
Subst. Environmental Competition:	**Passive**
Technological Choice:	End-of-pipe, towards process-stage
Financial Implications:	Fearful of increasing costs
	Beyond compliance:
Legal Compliance:	**Proactive**
Subst. Environmental Competition:	Passive, or Reactive
Technological Choice:	**Process-stage oriented**
Financial Implications:	**Seeking potential cost reductions**
	Green frontrunner:
Legal Compliance:	Proactive
Subst. Environmental Competition:	**Proactive**
Technological choice:	**Product-stage oriented**
Financial implications:	**Seeking income opportunities**

The argument for constructing the typology this way can be spelt out by discussing the dimensions consecutively: Judged by their respective weaknesses and strengths the legal dimension - as applied by Roome - is the most promising. It yields three fairly easily

operationalized categories, and given values on the legal dimension can arguably be linked - if not accurately correlated - to values on the substantial environmental competition, technological choice and financial implications dimensions. The three categories *non compliance, cautious adapter (or compliance)* and *beyond compliance* correspond to the values of passive, reactive and proactive on the legal dimension.

If we look for linkages to the competition dimension, it seems that the highest probability of finding price competition and patent hoarding (i.e. aggressive obstructive marketplace behaviour) will be with companies that follow a non-compliant practice on the legal dimension. It also follows that this kind of company takes a negative view of the financial implications of seeking environmental improvement.

The next category, or behavioral pattern, cautious adaptation, can logically be linked to a passive stance on the substantial environmental competition dimension. At this historical juncture it is also likely that such a company has gone far in implementing end-of-pipe solutions in line with present regulatory requirements. It is consistent with this logic that a cautious adapter *primarily* views environmental expenditure as an add-on cost, with a net negative contribution to the bottom line, whether we are talking of end-of-pipe or process related measures. Companies that go beyond compliance are in their turn primarily driven by what we described as the administrative motive or the wish to control the pace and direction of their own environmental agenda. And while it is not engaging in environmental competition at the product level, it is plausible that this kind of company more actively explores the potential for cost reductions related to *process-measures*.

The category that signals the highest form of environmental achievement, green frontrunner, is not distinguished from the one below it in the conceptual hierarchy by the value it represents on the legal dimension. It is difficult to distinguish between degrees of proactivness on this dimension. This is also the point where Roome's typology gets rather obscure, and it is an advantage to be able to draw upon the other typologies. As I have pointed out before, Bergesen et. al's category green frontrunner, is constituted by its value on the substantial environmental competition dimension. To this we can add the technological choice and financial implications dimensions: The ultimate strategy for companies that view the green agenda primarily as a vehicle for improving their competitive position and hence a financial opportunity will be to develop and market new products, catering for the

environmentally aware consumer through providing opportunities for shifts in consumption patterns.

3. Corporate entities as actors in environmental politics

So far the discussion has been restricted to possible industrial sphere responses to the green agenda. But it is obvious when it comes to large corporations, like most international oil companies, that they are political as well as marketplace actors.

The international coal industry's position on climate change can illustrate an extremely defensive position on the political arena. Representatives of this industry have been fighting political regulation both in the US and in the EC/EU, while (like OPEC) publicly claiming that fear of climate change is scientifically unsubstantiated. Du Pont's handling of the CFC-Ozone issue to a certain extent illustrates a proactive, opportunity seeking approach to an important item on the green agenda: It has been argued that when Du Pont made its famous 1988 decision to stop producing CFC, it was looking not only for regulatory favours (securing that new regulation should grant "their" CFC-alternatives - HCFC and HFC - status as at least "transitional substances") and an increased market share (Doyle 1992:88) but also increased value added since HCFC and HFC initially could be marketed as high margin speciality chemicals which from the company's viewpoint compared favourably with the commodity trade in CFCs (Maxwell & Weiner 1993).

However interesting these specific examples might be; it is a trivial fact that large corporations are players on two arenas simultaneously. But it is less trivial that this opens for a complex combination of strategies: It is, for example, perfectly plausible to expect a company to engage in political obstruction to win time and reduce tax expenses, while at the same time working on the development of new processes and/or products in the hope of reaping longer term competitive benefits in the market. Judging from Doyle's (1992:87-88) account of Du Pont's role in the process leading up to international regulation of CFC emissions, the company can be described as employing exactly such tactics. It lobbied against all regulation from when the ozone issue first appeared on the American agenda in 1974, but instigated quite intensive research into alternatives as early as 1975. Allowing for a slight easing off during the first years of the not particularly environmentally minded Reagan administration, one can say

that Du Pont's tactics were brought to their logical strategic conclusion, when the company decided to lobby and market CFC-substitutes quite aggressively between the signing of Montreal protocol in 1987 and the London amendments to the protocol of 1990.

In an effort to systematize expectations of corporate behaviour on the arenas where environmental policies are made, Bergesen et. al's category the intransigent fighter is a useful starting point. This type of company is characterized by considering talk of climate change threatening. It will take a high public profile stressing the uncertainty surrounding climate change, and it will invest in lobbying scientific fora and political institutions, trying to stop costly political regulations. Bergesen et al. (1992:2) expect consistency between the intransigent fighters political stance and its industrial sphere response. They don't expect it to make any "internal preparations to live with climate change policies". Judged as a tool for discussing reactions along the political dimension, this leaves Bergesen et al's effort insufficient for four reasons:

1) It brings together one P.R., two lobbying indicators (scientific and political lobbying) and (implicitly a cluster of) industrial sphere response(s) that are not necessarily correlated.

2) It is almost exclusively preoccupied with company reactions to climate change.

3) It underestimates the potential for cooperation between companies and regulatory authorities.

4) It is oblivious to the possibility of political exchange being mediated through trade organizations and other forms of organized interest (see subsection 3.1 below).

The first point indicates that the present cluster of indicators should be unbundled before empirical analysis. Our framework should allow us to expect various combinations of political and economic strategies. For example: Choice of public profile should not be among the defining criteria for the intransigent fighter. The nature of lobbying is more often than not discrete. The question whether the intransigent fighter chooses to market its sceptical stance, or not, should be kept open and not be part of a deductively formed expectation. And as can be deduced from the Du Pont CFC-case. It is not inconceivable to find - for instance - a company engaged in political obstruction to win time, while preparing an industrial sphere response along the lines of substantial environmental competition.

This possibility of companies presenting a split picture, reminds us of the second point

above: The need to be clear about the fact that the green agenda is made up of several issues. It also highlights the need to establish a separate typology of political responses.

The third issue I would raise is that Bergesen et. al's approach implicitly limits the range of active political responses to one option: Companies are expected to be either intransigent fighters or not. Logically we should be able to distinguish between at least three active strategies along the political behaviour dimension: In addition to *intransigent fighting* we can distinguish between *environmental advocacy* and an approach that we might describe as *constructive compromise seeking*.

Environmental advocacy would mean that a company sees potential benefits from a more stringent regulatory regime. Such an advantage can be realized through two slightly different mechanisms. Firstly new regulation can improve the competitive position of a company's product(s) through increasing taxation on competing products and production techniques. The Du Pont-HCFC-case is a good example of this kind of dynamic working for a global environmental problem, but there are several other cases that document corresponding effects in other industries.[12] Secondly if the company in question has ownership rights to the relevant technology it can derive profits from the sale of these rights.

The relationship between governments and companies seeking *constructive compromises* would be characterized by substantial negotiations where the companies would be prepared to shoulder "reasonable" costs to improve their environmental performance. Hence in addition to obvious issues such as the definition of critical loads and taxing structure the company's main target in the negotiation would be to secure that regulative specifications regarding choice of technology and sequencing allow for maximum cost-efficiency.

3.1. The potential role of organized group interest.

The fourth source of insufficiency in Bergesen et al's conceptual framework arises from the fact that many corporations channel substantial parts of their political activity through trade organizations, specialized lobbying offices and other forms of organized group interest.

12 For example, in the 1980's Chrysler, which makes relatively more small cars than their main american competitors, lobbied for high fuel economy standards, which its competitors opposed. Another American example is the way companies who market low sulphur coal have pressed for anti-acid rain legislation, while the waste management business is ripe with examples of companies rooting for legislation that will increase waste producers dependence on their treatment facilities ("Regulate us, please", The Economist 8/1 1994:65).

Bergesen et al. do not distinguish between company-based lobbying and lobbying taking place through intermediary organizations. Interest groups should not, in this analytical context be seen as a third arena in addition to the marketplace and the political arena. Rather they are perceived as an alternative medium through which political strategies can be pursued. Logically we can expect two of the three political strategies outlined at the company level to be reproduced through this channel. Both constructive compromise seeking and intransigent fighting are viable interest group strategies. Environmental advocacy, however, is not. The reason for this is that the motive for environmental advocacy is linked to individual companies. It is assumed to originate in a given company's desire to draw a competitive advantage from a position of monopoly or at least strong technological advantage. By its nature this is not the kind of motive that can be shared within an industry-wide interest organisation.[13] Industry living exclusively of environmental problems can form an exception this "rule" though: It is thinkable that for instance the waste treatment industry in a given country can, if it is sufficiently homogenous, take a common, organizable interest in stronger regulation of waste disposal - e.g. lobbying for the inclusion of more substances on the list substances that require special treatment.[14]

At the flip side of this coin, a theory of collective action approach can lead us to expect that interest organizations can be useful as institutional facilitators for the sharing of costs related to establishing "political goods" that yield non-rivalrous and non-excludable consumption within the sector. Given certain parameters, e.g. the presence of selective incentives, the number of corporate actors and the extent to which the organization is encompassing (Olson 1965, 1982) both intransigent fighting and constructive compromise seeking can be portrayed as an attempt to produce industry-wide public goods.

The delay or dilution of stronger and therefore more costly industry-wide

13 The environmental advocacy logic can however be reproduced through the interest group channel at the international level. It is viable that industry interests in an EU member with particularly stringent environmental standards can advocate the generalization of their national regulatory standards at a European level, because this would give companies already adapted to these standards a competitive edge (or nullify a disadvantage) in the European market. A concrete example is the German car industry who's bodies have been lobbying the European Commission for the adoption of German standards on recycling of scrapped cars (Patterson ed 1993:86).

14 "Regulate us, please", The Economist 8/1 1994:65. One should, however, be wary of claims to "greenery" by the waste treatment industry. As Trisoglio (1993:89) notes, closer inspection can reveal that these industries rather than encouraging sustainability, often rely on the continued growth in pollution for their profitability

environmental regulation can fit the description of an industry-wide public good. A cost many companies would be particularly eager to defer this way is the potential loss of stature and public standing that can be incurred through appearing as an environmental laggard caught engaged in clandestine political action against the protection of the environment. In cases of involuntary exposure the interest group channel has the advantage, seen from the angle of any given company, that it diffuses the political responsibility as well as the other costs of the operation.

An example of constructive efforts is when state-industry research collaboration on identifying major environmental problems and mitigation strategies produce industry-wide public goods. It is possible to organize this kind of enterprise in such a way that it provides selective incentives, for instance by linking access to results to financial contributions.

4. Towards explaining corporate behaviour

In this chapter I will try to identify some possible explanations of corporate responses in the industrial sphere. I will try to pinpoint some potential determinants of corporate environmental strategy that can be found in the structural environment the companies act in. All these structures are related to the commercial environment of the businesses. I will not make a similar attempt at deducing hypotheses about systematic relationships (or covariation) between structural or institutional properties of political environments and the political strategies chosen by corporate entities.

This means that there is a lack of balance between the broad range of possible outcomes discussed under the conceptual schemes above, and the degree to which this variance can be explained by the more causal-analysis oriented section that follows. This is a serious weakness, because if one wants to move towards a more complete understanding of corporate environmentalism the political and the industrial logics involved need to interpreted in an integrated framework. To take an obvious example of how the two spheres interact: Industrial sphere responses will often be triggered by political events. By this I don't mean cases where a company is simply responding to regulation by adhering to the required standard or solution. That is - in most cases - to trivial an occurrence to merit attention. A more interesting dynamic is to found when the anticipation of political regulation works as a determinant of environmentally important technological innovation (Ashford 1993:282,

Maxwell & Weiner: 1993:21).[15]

4.1. Degree of embeddedness in present product spectre: Barriers to exit

The basic proposition here is that environmental responsiveness requires an ability to change or in other words, flexibility. Given the imperatives of the climate change agenda, change - in the context of the oil industry - must denote preparedness to give priority to low or non-fossil energy products and services in the future. Cast in the terms of the typology established above: To qualify as a green frontrunner, to cater for green consumerism at the product level, ultimately, individual oil companies will have to sell a lot less oil and oil based products and much more gas, renewables and/or energy conservation. The general question, then, becomes what factors impede and enhance such radicalism in long term strategy formulation? In this subsection I will present a brief argument for two factors that may justify further inquiry: The potential for alternative employment of a company's resources and degree of vertical integration and functional interdependence between co-owned units at various stages of the production chain.

Regarding potential for alternative employment of resources, non-mobile oil production platforms is a case in point. These installations can represent hundreds of millions of dollars in capital investment and they are extremely inflexible because no alternative employment is known for them. The installations are tied to a given geographical area which initially was not chosen, but given, by nature's distribution of oil and gas in set geological patterns. This kind of situation can be compared to that faced by a refiner or a chemicals producer confronted with an environmentally motivated demand for new products. For producers in such a situation it is plausible to assume that the barriers to change are lower. They must invest in new production technology and they may demand new inputs, but they will often be able to utilize infrastructure such as transportation facilities and plants, hence their starting up costs will be lower because a smaller share of their initial investment will be made redundant by the decision to go for a new product.

One problem with this argument is that I am here arguing as if it was possible to

15Ashford (199?: 279) propagates the idea that regulatory agents should seek to stimulate this kind of dynamic when he argues that "[...] it is now possible to fashion regulatory strategies for eliciting the best possible technological response to achieve specific health, safety, or environmental goals.

establish under what conditions a - in one sense unpredictable - phenomenon will occur: To what degree circumstances will be technologically serendipitous in the sense that innovation creates opportunities for utilizing existing investments for new purposes is by its nature partly unpredictable. My defence for this is the assumption that economic activities that essentially are resource extracting or mining activities, like oil production, are less prone to experience this kind of technologically serendipitous circumstance, than economic activities where the value added is totally dependent on technology at the outset like (petro)chemical engineering.

The oil industry's degree of embeddedness is also linked to a general tendency for major companies to be vertically integrated. Even though conventional organizational wisdom has had it that such companies should be organized in profit centres and most oil companies are organized accordingly, it still holds that a structure where one company controls the process from extraction of a natural resource through processing to marketing of the finished products, strengthens the mutual dependence of the component parts of the production chain. Investments in one area is justified not only in terms of pay back on the invested capital, but also for its strategic value at other levels of the production chain. In contrast, an independent industrial entity that buys its inputs in a free market converts it and sells on to whoever pays the most at the retail level, is, other things being equal, less embedded in its present product spectre.[16]

An initial hypothesis under this perspective, accordingly, would be that the oil industry will not exhibit impressive flexibility when confronted with a green agenda critical of its main products. A more nuanced version would say that the higher the sunk costs are for a given product, and the more embedded this product is in a vertically integrated ownership structure, the smaller the chance of its being replaced by one carrying significantly less environmental impact.

4.2. Position in production chain and degree of monopsony power:

16 To this argument one might add that particularly oil production is tied up to a very solid social and ideological structure that some would hold is constitutive to (or at least is one of the most powerful symbols of) modern living. The usage of cars, running on petrol, is strongly linked to the patterns of transport around which our modern societies are organized. Hence this creates a very powerful alliance encompassing most of us as car owners, the oil industry, car manufacturers, those living off road construction and government planners.

While degree of monopsony power[17] influences a company's *ability* to take on environmental challenges, its position in the production chain can influence its *desire* to do so. The link between monopsony power and ability is straightforward: The more monopsony power a commercial actor enjoys, the greater its ability to pass costs and risks related to environmental improvement on to its suppliers.[18] A large purchaser in a dispersed market is in a position to make demands on its suppliers. Those failing to comply with the buyer company's standards, risk loosing their customer. The risk posed to the purchasing company is significantly smaller. This point can, of course, be stated in the converse: Companies subjected to monopsony power, can, other things being equal, be assumed to have a higher propensity to venture into projects related to environmental improvement than other companies. Here, however, we focus on the purchasing party. One reason for this is that they provide the dynamism in the relationship, another reason is that purchasers are one step nearer the consumer in the production chain.[19] The significance of position in the production chain is what the next point addresses:

The hypothesized link between position in production chain and desire for environmental improvement rests on the assumption that the closer a product is to the retail level, the more consumer attention it will receive. In a world were consumers held perfect and unlimited information about production processes, resource use and environmental impacts, the concept of proximity to retail level would be irrelevant. But in this world, where information (and capacity to absorb the information available) is limited, it is reasonable to assume that green consumerism will tend to focus on the environmental impact of consumer

17 The concept "degrees of monopsony power" is used here in a relatively relaxed manner. I do not look for cases where a purchaser is the only buyer of a given product or service. Rather I want to capture commercial relationships characterized by an asymmetrical distribution of power in favour of the buying party.

18 I am grateful to professor Martin Jänicke for drawing my attention to this argument. He has, of course, no responsibility for the way I understand and employ it here.

19 In a survey covering five industries in five european countries (Patterson ed. 1993:22-23) the researchers found little evidence that purchasers were exerting systematic environmental pressure on their suppliers. The survey - which did not consider the distribution of power variable - did, still come up with two findings of interest for the present argument. In the automotive sector vehicle assembly companies hardly mentioned environmental factors when giving their criteria for supplier selection. Parts of the component supply industry, however, considered themselves to be under considerable pressure from car makers. In the (petro)chemical sector most companies anticipated environmental management of suppliers to be strengthened in this decade.

products and the production processes immediately preceding their presence on the shelves.[20]

In other words: Consumers do sometimes demand environmentally more benign products to a degree that makes catering for this demand commercially interesting, and the likelihood of this increases the closer you get to the retail level. The expectations generated by the monopsony power and position in the production chain hypotheses, can be combined in a two by two matrix:

Table 3 Table depicting the relationship between degree of monopsony power, position in production chain and propensity to engage in environmental competition and environmental betterment in general.

Degree of consumer-exposure:	Degree of monopsony power: Low	High
Low	1	2
High	3	4

1) The first cell represents companies that have few incentives and little opportunity to engage in green competition and green betterment in general. The transparency (vis a vis consumers) of their activities is low. Neither do they have ample opportunity for passing on costs and risk. The general hypothesis stemming from this is that companies corresponding to this category will display little market driven improvement of environmental performance.

Since it can be assumed that all major oil companies have some degree of monopsony power (see below) and since all of them have business at the retail level (gas stations) in some

20 The above mentioned survey of European industry (Patterson ed. 1993:32) underscores this point. In the (petro)chemical industry companies active "downstream" were found to focus primarily on consumer preferences as a determinant for environmental change, while companies active "upstream" (e.g. suppliers of feedstock and chemical intermediate suppliers) considered regulatory bodies more influential. It is added, however, that consumer pressure has been limited and confined to specific product ranges such as paints, detergents and petrol.

of their markets, none of them match this description. On the other hand, several companies supplying the majors with intermediary goods and services do.

2) Cell number two represents companies that exercise monopsony power and therefore have some leverage over their suppliers, but at the same time lack incentives stemming from consumer pressure. Since forcing suppliers to improve their environmental performance is a low cost, low risk activity companies matching this description have not got much to loose by pursuing this line of action. Our general hypothesis would therefore be that enjoying a high degree of monopsony power can be a sufficient condition for requiring improved environmental performance from suppliers. Since the international oil industry is dominated by vertically integrated companies, room for the monopsony mechanism is limited. Even integrated oil companies have external suppliers, however, and the sheer size of a major oil company (and its average investment project) gives reason to believe that they often enjoy an asymmetrical distribution of power in relation to their suppliers. An example of an area where the relationship has elements of monopsony power, but where transparency is low, is deliveries to platform and refinery construction and operations. Keeping in mind the low cost, low risk argument above, cell number 2 yields the expectation that the oil industry will exercise a pressure for improved environmental performance from their suppliers when taking deliveries to their platforms and refineries.

3) The third cell represents companies that have potential incentives for environmental efforts because of consumer exposure, but that lack the ability to pass costs related to this improvement on to suppliers. Applied to the oil industry this logic can be applied to generate different expectations from companies with different shares of their assets held downstream. One could expect, for instance, that companies that operates both refineries and gas stations are more willing to experiment with gasoline qualities and the environmental quality of other consumer products, than companies that are not or only marginally engaged at the retail level.

4) The fourth cell is meant to capture companies that have both the incentives and the means for letting others pay for their environmental improvements. In theory large retail chains facing a more dispersed supply side matches this description. Since Shell, BP and Statoil all are

vertically integrated companies, however, this box does not yield much in terms of specific propositions for this study. One point of interest can be deduced though: To the degree that oil industry run gas stations buy consumer products from other suppliers than themselves, they can be expected to exert pressure on suppliers for more environmentally sound products.

5. Empirical illustrations

In this section I will try to shed some light on the theoretical points made, by drawing on findings[21] from initial research done on the environmental strategies of three different oil companies, Shell, Statoil and BP.[22] The material gathered does not allow anything close to a full ranking of the companies based on the typologies developed above. Since two of the three companies in question have world wide operations ranging from forestry and oil production to gasoline sales which, in turn, can be linked to environmental problems ranging from local pollution and the aesthetics of gasoline station architecture to global warming, this would be a colossal if not impossible task anyway. Further, the complexity and multitask character of each company makes it unlikely that one all-embracing categorization would be fair and meaningful. For these reasons, the ambition is rather to link evidence of an anecdotal character to the typologies of industrial sphere and political responses to organize a discussion of some visible aspects of company strategies. Some points will be made at a general or company level, while others will require a disaggregation of strategies down to the level of "individual" environmental problems.

I will discuss the applicability and relevance of the industrial sphere and political response types together, pairing strategies that logically might go together, starting with the environmentally most advanced positions, green frontrunning and environmental advocacy, while this empirical section will be concluded before we come to practices that might qualify for the labels of intransigent fighting and non-compliance. This limitation of the empirical discussion is solely related to the quality of the data available at the time of writing.

---

21 The bulk of the "data" referred to in this section has been collected in collaboration with the NFR-sponsored Fridtjof Nansen Institute project "Environmental Challenges to International Oil Companies" run by Helge Ole Bergesen and Javier Estrada (cfr. footnote 1).

22 All of these entities are in reality "industrial groups" consisting of separately organized companies. When nothing else is stated, however, the usage here of the labels Shell, BP and Statoil refers to the group level or more specifically, group headquarters.

5.1 Green frontrunning and environmental advocacy

Evidence collected so far indicates that, seen from a climate change perspective, the concept of green frontrunning, defined as companies entering into substantial environmental competition primarily at the product level, has little relevance for any of the entities I am interested in here. Statoil to take one example - convey an impression that they are willing to go beyond compliance on several issues, but it is shy of trying to put this into a marketing advantage for - amongst other reasons - fear that it might backfire. The climate change agenda has left the oil industry in a position verging on the precarious - and the general perception seems to be that attempts at trying to turn it to an advantage is to risky.[23] There is, however, one product where the concept of green frontrunning has some relevance for the international oil industry and that is the case of unleaded petrol and I will return to that below.

The conclusion that there is so far no substantial environmental competition based on the public's fear of climate change is strengthened when one sees the company's explicit strategies in light of the climate change imperative of reducing the consumption of carbon intensive fuels and giving priority to renewables and energy efficiency. I have not found any evidence indicating that the companies have serious plans of changing their product mix in such a direction. The companies are not, if we apply the criteria connected to the green frontrunner category, competing on new products seeking new sources of revenue in environmentally more friendly products. This is also constitent with their messages concerning strategy at its most general level, which are all very similar. The message from all three companies is: "We have a core business strategy, we are an oil and gas company and we are sticking to getting better at what we do best." In reality this to a large degree translates into aiming for producing traditional products at a lower cost. But more importantly, the core business strategy blocks any bold venture into renewables or other radical departures geared towards developing a market for climate change charged products. Rather than starting up

23 Dow Chemical's vice president for EHS, David Buzzelli, (Avila and Whitehead 1993:55) puts the general point of the pitfalls of aggressive green marketing this way: "Ultimately this temporary advantage is likely to become a handicap. Courting long-term prosperity through green marketing, or through claims that are not sustainable, is asking for trouble. Expectations will rocket beyond what you can achieve, and you will end up disappointing your constituents".

new projects outside their core activity areas, the companies are in the process of divesting the non-core businesses they already have.

Shell is the company that went farthermost in diversifying in the seventies. This decade saw both drastic increases in the oil prices, which made alternative energy sources more price competitive, and a general perception of oil scarcity that stimulated interest in other business opportunities. In 1978, Shell formed an umbrella organization called the Non Traditional Business Sector (NTB) which came to include activities ranging from solar energy to biomass and metals. In line with its stated core business strategy Shell is currently downsizing its NTB activity significantly. Research on renewables has been cut back (Estrada and Bergesen 1994:65) and in July 1994, in what has been described as "one of the biggest transfers of mineral resources in history", the group sold off the bulk of its metals and mining arm to the tune of 1.2 billion US dollars.[24] This sell out not-withstanding, Shell is still a company with diverse interests and this could potentially be a platform for moderate experiments with new energy products developed outside the mother-organization. Such a practice would, however, run counter to Shell's strong brand name policy. Shell is a strong brand name globally, and it is company policy to guard this asset tightly.

BP's core business strategy has, to a larger degree than what is the case with the other companies, been seen as a necessity brought on by a very tight financial situation. Although it made profits again in 1993, in 1992 BP reported losses for the first time in its history (£352 million) and the subsequent restructuring and savings programme severely constrained investments in general, and "forced" the company to concentrate its financial resources on improving the performance of its core business of oil and gas.[25] The group has, however, maintained its Solar energy wing, but this activity can be described as low key and marginal compared to total group activities. On the other hand, there is no particular reason to believe that BP is planning to off-load this business in the near future. Consequently one can say that BP Solar remains a potential basis for future "green frontrunning".

Unlike the other two, *Statoil*, has never had a history of substantial non-traditional business activity. Our findings indicate that the climate change agenda has not changed this.

---

24 "Shell in $1bn minerals transfer", The Guardian 27/7 1994.

25"BP makes a return to the black", Financial Times 3/3 1994.

Neither of the problems that Statoil perceive as its two biggest strategic worries are related to the environmental agenda as such. They are 1) that the company is too dependent on North Sea oil upstream, and 2) that it has too much of its assets upstream compared to their distributional capacity.[26] While problem number two is hard to address in the highly mature Western European market for gasoline and oil, problem number one is being dealt with in a fairly aggressive manner. Newspaper reports inform us that the company is seeking alliances literally all over the world, as new regions are being opened up. The biggest and seemingly most advanced of these projects is a potential multi billion (NOK) project Statoil (together with BP) is trying to get rolling in Aserbajdsjan.[27] Statoil's CEO Harald Norvik has put the need to expand territorially quite bluntly: " To be able to develop further an organization the size of Statoil, we first and foremost have to find more oil".[28] The fact that Statoil's strategy is centred on developing as an oil and gas company does not stop them from doing research on renewables and energy efficiency. Mostly this activity has what can be termed a monitoring function, i.e the main purpose is to avoid being caught unaware, if a radical breakthrough is made, rather than going for the breakthrough themselves. There is at least one exception from this though: In their own judgement Statoil have one of the world's most advanced programmes on solid oxid fuel cells. So far (late 1995) the project has cost in the region of 100 million N.kr.[29]

The exploratory hypotheses in section 4 above, focus mostly on structural properties, but talking to oil industry representatives it becomes obvious that this perspective needs to be supplemented by an historical perspective. In short, the industry itself places a lot of weight on their experience with diversification efforts of the seventies and early eighties, when defending their core business strategy. It can be argued that this account has a certain arbitrary quality to it. When asked to justify the core business strategy different companies present by and large

---

26 Statoil sell approximately 10 percent of their production through their own outlets, while several of the majors actually sell more oil retail than what they produce themselves. This structure makes Statoil very vulnerable in case of shifts in profitability from upstream to downstream operations.

27"Statoils pengemasking går tom", Aftenposten 5/8 1994.

28 Statoil magasin 1994, page 3. (My translation).

29 Senior Research officer, Olav Kaarstad, Statoil, personal communication 24/02/95. It should be added that comparing the size of different companies' research effort at given topics is problematic, since many companies view such numbers as confidential business information.

identical arguments. That is, they infer from the industry's relative lack of success in running hotels, metal industry and other non-oil and gas activities in the 1980's, that they cannot be successful in producing energy from renewable sources beyond the turn of the century. In our conversations with oil industry planners, analysts and decision-makers, we detected no attempt to make a finer analysis of under what conditions a departure from the beaten path will succeed and when it will not. All non-oil and gas activities are implicitly assumed to be subject to the same *unidentified* forces and causal mechanisms that are seen to have determined the fate, profitability-wise, of the non traditional engagements of the seventies. The present conventional wisdom is consequently formulated along the lines of: "In the seventies we were very confident, we looked at our combined technological, financial and organizational resources and felt that they could be applied, successfully, to other lines of business. Today we are more humble, and stick to what we already know".

One interesting aspect of this, is that the companies have not grown adverse to risk taking in general. They are competing fiercely for the privilege of risking billions of dollars in new oil producing regions, where the prospects of return not only hinge on the companies' ability to make precise geological judgements and find efficient organizational and technological solutions (factors that can be seen as endogenous to the companies) but where the line between success and failure might very well be drawn by political developments (that under normal conditions are exogenous to them). Statoil's desire to invest billions of NOK, in Aserbajdsjan, a new state suffering from low institutional capacity, contested claims over its oil resources and enjoying war-like relations with their closest neighbours, is a case in point here.

These arguments indicate that "institutional" theories of herd behaviour can contribute to our understanding of present thinking in the oil industry, partly at the expense of theories positing calculation and a free and uninhibited weighing of options. In a recent work on the institutionalization and deinstitutionalization of organisational form and strategy, Davies et. al. (1994) review literature that demonstrate herd like behaviour in corporate decisions on these issues.[30] In the post war era the so called portfolio model of management grew and became

30 The following quote from DiMaggio and Powel (1991) illustrates the neoinstitutionalist line of thinking on imitation rather well: While a variety of social structural arrangements may be possible and technically adequate in principle, to be adopted they must be congnitively "available" to the relevant actors - to both potential adaptors and to those providing resources. What is available, as well as what is ruled out, follows in part from what has gone before. Thus imitation and rule- following reduce some of the "cognitive start-up

the prevailing mode in the country that has until recently been the chief supplier of strategic and managerial fads and tools, the USA. The portfolio model implied both a practice (growth through diversification) and a form (the conglomerate, Davis et. al 1994:552). The conglomerate form entails business organizations made up of unrelated business units, i.e. units that are neither potential buyers, suppliers, competitors nor complements to each other and where the main function of corporate headquarters was to be an internal capital market and a supplier of general management skills. The so-called portfolio planning technique was marketed by leading management consultants such as Boston Consulting Group and McKinsey, while a leading organizational theorist like Oliver Williamson (1975) lent the model legitimacy by claiming that it allowed well run multidivisional firms an opportunity to take over and rehabilitate poorly run business by spreading their managerial talents on general issues such as financial control and marketing. The demise of the portfolio model from the mid eighties onwards, Davis et. al. (1994:554-556) attribute to several factors. One is that the Reagan administration relaxed barriers both to vertical and horizontal integration and to hostile takeovers in the stockmarket.[31] Davis et. al's data show both the hardly surprising fact that the rate of hostile takeovers increased enormously in the eighties and more significantly, that conglomerates were much more prone to be subjected to takeovers than more focused firms of a less diversified structure. This way a model that, according to Davis et al, had never proved its worth in terms of performance - or stock market pricing - was finally deinstitutionalized through a ferocious power struggle facilitated by deregulation and financial innovation. Gradually, the management consultancy business, and leading business writers (e.g. Peters and Waterman 1987), got the message, and now "preach an unanimous gospel: make it lean, mean and centred on core business".[32]

Returning to the oil industry, it probably holds true as a general proposition that it was fairly slow to take up the conglomerate form. One reason for this could be that the industry

---

costs" for organizations. (Quoted in Davies, Deikman and Tinsley 1994: 550).

31 "Hostile bust-up takeovers" where the buyers single out conglomerates on the criterion that the value of the component parts surpass the stock market value of the conglomerate as such, increased enormously in the eighties. In cases where this pricing logic applied (or was thought to apply by external financiers), a high degree of "leveraging" was possible, allowing small firms or even individual actors to buy much larger firms, in it self a minor revolution in corporate America.

32"More Baskets, Choicer Eggs". The Economist 21 october 1989:75-76.

had developed and, despite of American anti-trust efforts, was through the post war era able to maintain a structure of (multinational) vertical integration. The interesting point, however, is that when the oil industry got serious doubts about the future availability of the resource (the widespread perception of resource scarcity of the early seventies), and saw enormous price hikes make alternative fuels more competitive they had an "available" cognitive model to legitimize their move into non traditional businesses, the portfolio model. And when prices fell in the mid eighties (and experience told them that the management of conglomerates was difficult), a new model was cognitively available. So to return to the point made above, rather than subject various degrees of relative failure in the NTB sector to careful analysis trying to establish under what conditions the oil industry can diversify - the whole idea of diversification was scrapped, blocking, for the foreseeable future, any plan of bringing alternative sources of energy to the market.

There is, however, one case where the oil industry has participated in something resembling substantial green competition i.e. marketing a new, environmentally more benign, product. The product, of course, is leaded petrol. As the specifics of marketing strategies tend to be treated as a commercial secret, written information on the subject is not easy to come by, but a leading public relations officer of the Danish arm of Kuwait Petroleum oil company ("Q8") has given an interesting contribution to our knowledge of how an oil company perceives and acts upon the opportunity to cater for a green market (Feldthus 1991). As unleaded petrol was introduced over large parts of Western Europe, at more or less the same time, the Danish case is - in several respects - relevant for several other countries.

Q8 was the first company to market unleaded gasoline in Denmark and there are several interesting pointers to be drawn from their story. Firstly the company decided to spend heavily on information and advertising, making the sale of unleaded petrol the most visible part of their image-building efforts, only after market research demonstrated a significant shift in consumer attitudes to the green agenda: During a few years in the mid eighties there was a substantial swing - in public opinion - from seeing the environment and technology as contradictory forces to viewing technology as an instrument of environmental improvement (Feldthus 1991:43). At first the marketing of unleaded petrol had proved very difficult. Despite of substantial breaks given through reductions in indirect taxation, and the strong political message communicated through legislation making catalytic converters mandatory in

all new cars, sales were sluggish and market research helped the company identify the problem as one of information and trust: A large amount of Danish car owners did not know that their car could run on unleaded petrol. As late as in 1989 - four years after the product was introduced, only 300 000 out of a total of 800 000 owners, who had the option technically, were actually using unleaded petrol. The company attacked and helped resolve this problem (in 1992 more than 70 percent of all petrol sold was unleaded) by way of a massive information campaign. Large and detailed advertisements, showing many of the most popular cars that could, but were often not, run on unleaded petrol were displayed and car manufacturer's logos were borrowed to increase the credence of the message.

The implications of this story can - as seen from an environmentalist viewpoint - be interpreted both pessimistically and optimistically. The pessimist would probably say that there will be few cases where so many factors are right: It was a technically sufficient product, it was subsidized significantly, and the forced introduction of catalytic converters secured that the arrival of the day when the product would be the only viable gasoline was a question of turnover in the market for cars. But even under these highly favourable conditions, the conversion process was slow and difficult. As Feldthus (1991:42) puts it: Car owners did not give the environment the benefit of doubt. The discrepancy Q8 observed between the number of people interested in environmental matters, and actual consumer behaviour in the gasoline market, induced them to invest in more detailed market research, breaking down positions on environmental issues in finer categories. The Danish findings here were that only 20% - said - they were willing to make an economic sacrifice for the environment. And the oil company representative is clear in her conclusion: The case of unleaded petrol has been understood as a case of green marketing, but it was based on pragmatism not idealism. "We (Q8) will never cater for a small group of idealists" (p.50).

The optimistic interpretation would focus more on the achieved results. If one gets - as one eventually did in the case of unleaded petrol - all the factors right. When political authority, oil companies and car importers are cooperating, spending time and resources on educating the public, strong results are attainable. And Q8 has drawn the conclusion that it was worth the effort. Market research has shown that their standing in general and their environmental standing in particular has improved in corporate image surveys.

When it comes to environmental advocacy, unleaded petrol is a case where companies

committed to the product logically could develop an interest in tax discrimination (i.e. an interest in stronger environmental regulation). I am not able to establish whether this has been the case in any countries, or whether political authorities has had the initiative in all the countries that has gone through the process of introducing unleaded petrol. On a more general level however, it should follow from the companies' core business strategies, and subsequent lack of interest in substantial environmental competition, that what I defined as environmental advocacy will not be a widespread practice within the oil industry. Noting in the limited evidence collected for this study challenges this assumption.

5.2 Beyond compliance and constructive compromise seeking

If green frontrunning primarily addresses the relationship between product development and market forces, beyond compliance is inherently bound up in the relationship between process improvements and political regulation. And in cases where regulation means technical standards set by relatively independent regulatory bodies, and not indirect taxes, the quality of the communication and trust in the relationship between the regulator and regulated will be of importance. The argument turns on the fact that anticipated regulation can impact corporate investment in environmental improvement as can environmental investment impact future regulation. It is the way these two impacts are linked, which can be crucial to realizing a mutually beneficial outcome, while achieving the right kind of linkage in its turn is dependent on the quality of the communication between the parties. This will be illustrated in the following:

The historically learnt "fact" that demands on emission control invariably grows stronger over time, can in itself be an incentive to go beyond compliance with specific technologies at given times. When a company is planning to replace or rehaul their production technology, one aspect that has to be taken into consideration is how far in terms of emissions reductions it shall go immediately and what emission reductions can be achieved through piecemeal improvement. To invest for the exact standard required at any given time does not necessarily represent an optimal solution. Particularly if the company expects future standards to get more stringent, it might be cheaper and more efficient to take the cost up front and invest in more sophisticated environmental solutions at a time of its choosing, instead of

waiting for new standards determined by an unpredictable political administrative process beyond the company's control. This can increase capital expenditure and hence the initial financial strain, but in some cases the discounted cost of getting the technology in place at once will be lower than that of doing several small changes to a technology not initially designed for the kind of environmental standard that eventually becomes the required standard.

If a company chooses to follow this strategy - optimizing the phasing in of new technological solutions in terms of anticipated emission control standards - this can be subsumed under what I called the administrative motive. That is, this kind of investment decision can - in principle - be made independently of any positive effects the environmentally more benign technology might have on other costs such as waste generation or energy use. But this administrative motive might be choked in the cradle if the company is not allowed the freedom to, to a certain extent, set its own environmental agenda: If the regulator responds by immediately taking the improved emission standard as its new base-line, one important incentive to go beyond compliance in the future is weakened.

Statoil's experience with (various types of) emission control illustrates this point. As recently as around the turn of the decade, Statoil feared that the body responsible for setting emission standards, *Statens Forurensings Tilsyn*, would subject it to this kind of, in Statoil's view, unreasonable treatment. Since then relations have improved. One view is that this is hinges on simple factors such as the time and resources the agency's bureaucrats can allocate to given projects, and the quality of relationships - down to the individual corporate and agency employee. Statoil's new found trust that beyond compliance moves on its part will not result in immediate new baselines, is one of two reasons why the company recently decided to go beyond present requirements when investing in new SO_2 clean up facilities at their *Mongstad* refinery. The other significant factor impacting its decision being that the available technology is relatively cheap.

One area where the whole oil industry seemingly have moved beyond compliance is within ship-wetting. That is, it seems now to be common practice within the international oil industry to exceed IMO standards.[33] The liability aspect concerning tankers became very clear to the industry after the Exxon Valdez accident. The damages paid out by Exxon after this

33 "Aftenposten" 25/08/94.

single incident, were so high they could have broken the backs of smaller and financially weaker actors. This means that the priority given to ship-wetting can be interpreted in cost-benefit terms. It also demonstrates the impact singular "incidents" can have on corporate learning, it comes down to magnitude, apparently.

Another development that could be seen as a functional equivalent to beyond compliance in legalistic terms, is a practice where the companies push suppliers to improve their environmental performance. Statoil has its own programme for "developing" suppliers which focuses, among other things, suppliers' waste-treatment practices and how the products purchased by Statoil stand up when subjected to life-cycle cost analysis. An interesting point is that Statoil does not do the analysis, instead it sets stringent standards for how it should be done. This way authority is exercised in the market, forcing companies dependent on their relationship to Statoil to develop environmentally, much the same way government intervention works on other environmental issues.

5.3 Creating a world-view consistent with cautious adaption

If any general bracketing of the companies discussed here were to be attempted, cautious adaption would probably be the final choice: There is no reason to believe that the companies are not as a general rule compliant with whatever regulations they are confronted with, but similarly there are few areas were the companies signal a will to move ahead of regulation in search of reaping what I termed administrative benefits, not to say a market advantage. The general message conveyed by the companies is that the climate change agenda in particular and the environmental agenda in general is a strategic parameter which demands constant attention and monitoring, but since reasonable profitability seems distant for most renewables and hence new products, most of what is done is done at the process level, yielding non-dramatic improvements in emissions and energy efficiency. In conversations with oil industry officials the term "no-regret options" appears frequently, indicating that the kind of process improvements most likely to be undertaken are those that contribute positively to the financial - as well as the environmental - balance sheet in the short to medium term. This view is also likely to inform lobbying efforts towards command and control measures: If regulations can be restricted to a level where compliance means no-regret in financial terms, the companies have achieved their aim. This tells us that the dominant attitude on the perceptions

of financial implications dimension can be described as fearful of increasing costs.

A very general indicator of cautious adaption behaviour, is that none of the three companies in question have a policy of implementing strict company standards independently of geographical location. Since national regulations and requirements vary, such a policy would by default have produced beyond compliance outcomes in states that have comparatively lax legislation on for example emissions.[34]

This does not mean that significant improvements cannot take place. It merely means that whatever level of environmental improvement is achieved, to a large degree still is a function of the level of political regulation, and not a function of market driven logics. Norway imposed a "Carbon-tax" in 1991 and around this time Norwegian efforts at reducing flaring and increasing energy efficiency at platforms increased substantially. In 1993 $C0_2$ emissions per unit oil and gas were reduced by 8 percent in the Norwegian sector of the North Sea, an achievement which compares very favourably with the British sector.[35] Another development-line that should be seen in light of the Norwegian Carbon-tax is Statoil's efforts to make geological and/or ocean disposal of CO_2 a viable option. The company is fairly optimistic about the prospects for this, and it will do a pioneer project on this in 1996, but this concepts ramifications for actual CO_2 emission level is at present difficult to evaluate.

A different and more indirect approach to company attitudes to the overarching strategic questions the threat of climate change raises, is to study their scenario production. Shell pioneered this technique for planning in a rapidly changing world, and Statoil is one of many companies who have copied it. The fundamental logic is to create different but internally consistent development pictures and study the implications for your business of these different scenarios. The idea is that you don't know which picture represents the most likely development, but that together they shall cover a broad range of possible outcomes, so that if your fundamental strategy holds up to all of them, you are some way towards securing your long-term future. The scenarios currently in use in Shell and Statoil share some fundamental characteristics. One is that they both have one scenario where they extrapolate current trends

34 The reluctance to employ stringent company-wide standards compares unfavourably with what is becoming the norm in the chemicals industry, if we are to believe the spokespeople of Dow Chemicals (Avila and Whitehead 1993).

35 Virkningen av CO2-avgiften på olje og gassutvinning i Norge, Delrapport 4: Econ Energi 1994, and Summary Report, OLF Environmental Programme Phase II, The Norwegian Oil Industry Association 1993.

of economic liberalism, which is seen as good for world growth and ultimately, demand for oil and gas. Another type of scenario sees a more regionalized, fragmented world with slower growth rates. Both companies integrate an environmental dimension in all their scenarios, Statoil also has one which evolves around the environmental dimension, called "environmental shock". The crucial point however, is that none of the scenarios produced fundamentally challenges the core business strategy. In the low growth and/or Carbon-tax scenarios, energy demand and prices are "saved" by 3-world growth, and in Statoil case, by a relative increase in the profitability of gas which is convenient for a company that holds a large proportion of their assets in this resource.

For organizational theorists it must be interesting to ask what purpose scenario-production actually serves. One can envisage that strategy is actually shaped by what the scenario-producers come up with, but it is also plausible that causal arrow points the other way: That the scenario-producers know what current trends in top management strategic thinking is, and that they thus have self-imposed limitations on to what degree they allow their scenarios to challenge this thinking. This be as it may, the message from the collected scenario efforts of Shell and Statoil is consistent with an environmental strategy along the lines of cautious adaption.

6. Conclusions: Gauging the promise of the conceptual scheme.

With more than the usual caveats regarding the anecdotal character of the evidence used, and the experimental nature of the conceptual and theoretical work done, in trying to sum up, what has the present inquiry shown? First of all, I have found virtually nothing in terms of green frontrunning and not much beyond compliance, particularly not when it comes to measures relevant to the climate change agenda. It is my contention that the industrial sphere typology has stood up to its first test: It can give (as far as my data allow) a descriptive analysis of the state of environmental affairs in the oil industry. I have been able to categorize the responses I have knowledge of, utilizing a full set of dimensions, without straining severely the linking of dimensions and values posited in subsection 2.3.

But how can the lack of environmental radicalism be explained? My hypotheses depart from general traits shared by the major actors of the oil industry. One consequence of this is that to actually try and test my set of hypotheses would require cross industrial comparisons.

So, when I use the term explain here, I do not refer to anything more ambitious than the hope that my hypotheses can contribute to a structured first cut at some of the mechanisms and structural properties accounting for what I daringly call the oil industry's relative lack of progress in acting on the challenge posed by the threat of climate change.

My first hypothesis posited that the oil industry in general has two characteristics; a low potential for redeployment of their resources, and high degree of vertical integration and functional interdependence between co-owned units at various stages of the production chain. Both point towards a high degree of embeddedness in its present product spectre. Or, in other words, there are in the oil industry strong barriers to exit.

This observation might seem obvious and bordering on the trivial. And the presence of strong barriers to exit is clearly part of the explanation why the oil industry has not reacted to the threat of climate change by forceful expansion into alternative energy sources and technologies. But when posed a bit more moderately, the question reveals the limitations of a perspective focusing solely on structural barriers to change. Instead of looking for fast change, one could look for signs of an emerging strategy on climate change on the part of the industry. The very nature of its business, the cumbersome and time consuming process of going from geological prospecting to bringing petrol to the pump, has always required a gearing towards long time planning in the oil industry. And it is conceivable that some oil companies, when confronted with the prospect of climate change, could very gradually down-size the carbon intensive component of their activity while actively seeking out new business opportunities that would be sustainable in a world geared towards combating climate change. The point is that I have found only negligible signs of such a development, and the discussion of the drivers behind the core business strategy currently prevailing in the industry shows that this phenomenon can not be fully accounted for by focusing the above mentioned structural barriers to change. Because, the first oil crises actually triggered a industry wide, significant departure from traditional core businesses, and the structural barriers (i.e.vertical integration and lack of alternative employment of investments) were as relevant then as they are now. Instead as the discussion above showed, other factors and mechanisms have to be introduced when explaining the core business strategy. In short, the traumatic experience of running various loss-making NTBs, interpreted through the available cognitive framework of current business thinking, which in turn was reinforced by low oil prices and an abundance of new

business opportunities within the traditional business areas of the oil industry, tell us more about why the oil industry is increasing its exposure to a potential "carbon crisis" as opposed to hedging its bets and diversifying into more "sustainable" business areas.

Moving on to the second explanatory model introduced, where proximity to consumers and degree of monopsony power was juxtaposed, we can also draw one tentative conclusion: The degree of monosopony power is at present a more important determinant of corporate behaviour than proximity to consumers in environmental issues. The reason is probably that "green consumerism" is not that well developed, not even in advanced capitalist economies. The Q8 unleaded petrol case demonstrated that consumers can be as slow, if not slower, as business in accepting more sustainable options. Petrol quality, and more generally the issue of what form of energy your day to day transport is run on, goes right to the heart of most household's "capital investment programs". Our cars are very important to us, and when in doubt, even unreasonable doubt in a technological sense, Danish consumers chose to err on the side of pollution.

On the other hand, Statoil's programme for developing their suppliers show that corporate strategy can be moved towards more sustainable practices even when the proximity to consumers is low. That is, forcing suppliers to Statoil's production process is a low visibility activity of little value in image and marketing terms, but it is still deemed attractive enough to be undertaken, probably because it is a low-cost, low-risk way of doing something with your environmental performance.

REFERENCES:

Ansoff, H.I. and Mcdonnell, E.,1990: *Implanting Strategic Management*, London: Prentice Hall.

Ashford, N.A. 1993: "Understanding Technological Responses of Industrial Firms to Environmental Problems: Implications for Government Policy", in Fischer,K & J. Schot (eds); *Environmental Strategies for Industries. International Perspectives on Research Needs and Policy Implications*. Washington D.C.: Island Press

Avila, J.A., and Whitehead, B.W. 1993: What is Environmental Strategy? And interview with Dow Chemical CEO, Frank P. Popoff, and Vice-president, EHS, David T. Buzzelli, *The McKinsey Quarterly* 1993, no. 4.

Bergesen, H. O., Bann, C. and Pearce, D.W.1992: *Environmental Challenges to International Oil Companies* - a research plan with empirical illustrations, Lysaker: The Fridtjof Nansen Institute.

Brickman, R., Jasanoff, S., & Ilgen, T. 1982: Chemical Regulation and Cancer: A Cross-National Study of Policy and Politics. Cornell University: Program on Science, Technology and Society.

-, 1985: Controlling Chemicals: The Politics of Regulation in Europe and the United States. Ithaca: Cornell University Press.

Chandler, A.D. 1962: *Strategy and Structure*, Cambridge: MIT Press.

Collins, J. and Porras, J 1991: “Organizational Vision and Visionary Organizations”, *California Management Review*, Fall issue.

Davies, G.F., Deikman K.A., and Tinsley C.H, 1994: "The Deinstitutionaliazation of Coglomerate firms", American Sociological Review, Vol 59 (547-570).

Dexter, L.A. 1970: *Elite and specialized Interviewing*, Evanston: Northwestern University Press.

Doyle, J., 1992: Hold the Applause: A Case Study of Corporate Environmentalism, *The Ecologist*, Vol 22, No.3.

Estrada, J & Bergesen, H.O., 1994: *Environmental Issues and How They Affect Oil Companies*, Lysaker: The Fridtjof Nansen Institute.

Feldthus, H.1991: "De markedsmæssige muligheder ved et grønt idégrunnlag - analyse og vurdering", in L. Vedsø (ed) *Green Management*, Herning: Systeme

Fischer, K. and Schot, J. 1993: *Environmental Strategies for Industry*, Washington DC: Island Press.

Flavin, C. and Young J.E 1993: "Shaping the Next Industrial Revolution", in *State of World 1993*, Worldwatch Institute, New York: W.W. Norton & Company.

Gladwin, T. 1993 "The Meaning of Greening" in Fischer, K. and Schot, J. (eds) *Environmental Strategies for Industry*, Washington DC: Island Press.

Hansen, M.T. 1992: *Not Business as Usual: Be Aware of the Emerging New Belief Structure in Business Organizations,* Unpublished paper, Graduate School of Business, Stanford University.

Holling, C.S. 1979: "Myths of Ecological Stability, in G. Smart and W. Stansbury (eds) Studies in Crisis Management, Montreal: Butterworth.

IPCC (Intergovernmental Panel on Climate Change) 199O: *Globale klimaendringer* Oslo: Miljøverndepartementet.

IPCC (Intergovernmental Panel on Climate Change) 1992: *Climate Change 1992.* Cambridge: Cambridge University Press.

Jänicke, M., Mönch, H. and Binder, M., 1993: "Ecological Aspects of Structural Change" *Intereconomics, July/August 1993.*

Jasanoff, S., 1986: *Risk Management and Political Culture,* Social Research Perspectives, New York: Russel Sage Foundation.

Maxwell, J.H., & Weiner, S.L., 1993: Green Conciousness or Dollar Diplomacy? The British Response to the Threat of Ozone Depletion, *International Environmental Affairs,*vol. 5, no. 1, pp. 19-41

Mintzer, I. M. (ed.) !992: *Confronting Climate Change: Risks Implications and Responses,* Cambridge: Cambridge University Press 1992.

Mintzberg, H. and Waters, J. A. 1990: "Does decisions get in the way?" *Organization Studies,* no. 11, 1990.

Nelsen B. F. 1992: "Explaining Petroleum Policy in Britain and Norway, 1962-90". *Scandinavian Political Studies.* Vol 15 no. 4.

NFR/NTNF (Norwegian Research Council) 1993: *Separasjon og Deponering av Karbondioksid,* Oslo: Kværner Engineering a.s.

Odell, P.R. 1981: *Oil and World Power,* Harmondsworth: Penguin.

Olson, M. 1965: *The Logic of Collective Action,* Cambridge: Harward University Press.

Olson, M. 1982: *The Rise and Decline of Nations,* New Haven: Yale University Press.

OLF (The Norwegian Oil Industry Association) 1993: *OLF Environmental Programme Phase 2, Summary Report.*

Olsen, J.P. (ed.) 1989: *Petroleum og politikk,* Oslo: Tano.

Olsen, J. P. 1992: *Analyzing Institutional Dynamics,* Norwegian Research Centre in Organization and Management, Bergen: Working paper 92/14.

Patterson, W. (ed.) 1993: Environmental Profiles of European Business, London: Earthscan.

Peters, T & Waterman R. H., 1987: *In Search of Excellence: Lessons from America's Best-Run Corporations*: New York: Harper & Row.

Porter, M.E. (ed.)1986: *Competition in Global Industries*, Boston: Harward Business School Press.

Porter, M.E. 1991: "America's Green Strategy", *Scientific American* April 1991.

Roome, N. 1992: "Developing Environmental Management Strategies", *Business Strategy and the Environment.* Part 1, Spring 1992.

Schrama, G.J.I. 1994: *The Available Scope for Corporate Environmental Strategies* Paper prepared for the Third International Research Conference of the Greening of Industry Network, Copenhagen, November 13-15, 1994.

Schwartz, P., Collyns, N., Hamik, K. & Henri, K, 1992: "Modifying the Mandate of Existing Institutions: Corporations, in Mintzer (ed.), *Confronting Climate Change: Risks Implications and Responses*.

Schwarz, M. & Thompson, M. 1990: *Divided We Stand: Redifining Politics, Technology and Social Choice*. London: Harvester Wheatsheaf.

Smart, B. 1992: *Beyond Compliance: A New Industry View of the Environment*, A World Resources Institute Book.

Smith, D. 1992: "Strategic Management and the Business Environment: What Lies Beyond the *Business Strategy and the Environment.* Part 1, Spring 1992.

Timmerman, P. 1986: "Myths and Paradigms of Interactions Between Development and Environment, in W.C. Clark and R.E. Munn (eds) *Sustainable Development in The Biosphere*. Cambridge: Cambridge Univerity Press.

Trisoglio, A. 1993: International Business and Sustainable Development", in Bergesen and Parmann (eds.) *Green Globe Yearbook 1993*, Oxford: Oxford University Press.

United Nations 1993:*World Investment Report* . New York: UNCTAD programme on Transnational Corporations

Vogel, D., 1986: *National Styles of Regulation*, Ithaca: Cornell University Press.

Vogel, D. & Kun, V. 1987: The Comparative Study of Environmental Policy: A review of the Literature, In M. Dierkes et al. [red.]: *Comparative Policy Research*. Aldershot: Gower.

Walderhaug, K. 1992: *Storforetakenes betydning i Norsk Industri: En sammenligning mellom 1936 og 1990*. Bergen: SNF arbeidsnotat 70/1992

Williamson, O. 1975: *Markets and Hierarchies: Analysis and Antitrust Implications*, New York: Free Press.

World Resources Institute 1992: *World Resources 1992-93. A Guide to the Global Environment.* New York/Oxford: Oxford University Press.