# Organizational routines and environmental learning from stakeholder relations

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## Abstract

The ways in which environmental management practices are organized and contribute to organizational learning and change are company-specific. However, organizations can learn through interaction with their stakeholders. Whether stakeholders are engaged or not engaged through routines, and whether their concerns and interests are heard or not heard depends on many factors. For example, routines are affected by organizational preconditions, such as historical trajectory and mission. Routines are influenced by the structure of an organization, which provides the means of differentiation and integration, and brings into relationship different functions that relate to environmental issues. Structure also attributes formal influence and specifies channels of communication within and between organizational subunits. Routines are influenced by organizational culture, which manifests through aspects like openness, need for control, degree of formalization, organizational cohesion, and the attitude of individuals.

Actors at different levels in the organization, fulfilling different functions, use routines to craft environmental decisions. In this process internal actors serve different roles as central actors, as environmental champions or as gatekeepers to information or actors. Other actors may appear to have a more peripheral role, that is nevertheless critical to an outcome. The interplay among internal actors is also influenced by the claims or resources held by different critical external stakeholders.

Learning processes are inspired, facilitated, sped or hampered by different stakeholders and by the mediating role of these routines. The ways in which cybernetic learning processes

occur therefore depends on which stakeholders are engaged by a company and how they are engaged.

The paper considers how environmental learning is contingent on prevailing routines, the organizational fabric within which those routines occur. These routines favour or discourage learning processes. They dispose the organization toward the continuation of existing practices or provide opportunities to identify and take new directions. The ways in which companies learn from stakeholders are therefore contingent on the characteristics of their stakeholders and on prevailing organizational routines.

The paper presents case studies of two Dutch-based companies, which are regarded by their external stakeholders as environmentally pro-active. It focuses on the interaction between environmental routines, company-stakeholder interactions and environmental learning, using in-depth interviews with internal and external stakeholders, documents and guided tours. The cases describe the context of the company's operations, such as sector, size, and market. They identify major stakeholders and outline the environmental routines used by both companies.

The case studies reveal the importance of a company's vision of the connection between business and environmental issues in determining its predisposition to learning. They suggest the need to distinguish between the processes of engagement for learning from processes by which that learning is integrated into business systems and structures. In the light of these observations it is argued that the notion of environmental pro-activity is a rather blunt descriptor of environmental management practice.

*Key words: environmental management, routines, stakeholders, organizational learning*

## Organizational routines and environmental learning from stakeholder relations

The advent of more pro-active approaches to corporate environmental management during the past ten years (Hunt & Auster, 1990; Roome, 1992) has brought companies into interaction with a range of new and established stakeholders. In particular, knowledge sharing and collaborative relationships are emerging often where there has been no previous history of interaction between a company and a stakeholder (Westley & Vredenburg, 1991) or where earlier interactions could be viewed by the company as running counter to their business interests, for example the move toward more co-operative interactions between companies and regulators associated with the shift from hard to soft regulation (Glasbergen, 1998).

The focus of this paper is the development of what we term environmental learning and the way that environmental learning through company interactions with stakeholders is mediated by organizational pre-conditions (Clarke & Roome, 1999) or antecedents (see Stafford & Hartman, 1998), as well as designs and routines. The paper therefore considers the issue of environmental learning from the perspective of the company and its managers rather than its stakeholders.

From the viewpoint of a company environmental learning is defined not simply as the identification and acquisition of environmental information, knowledge and concepts that are relevant or potentially relevant to its interests. There are other important dimensions of environmental learning; especially where there is little or no previous history of engagement with stakeholders. The implication is that once a company embarks on engagement it begins a continuing, potentially irreversible process. Once involved with stakeholders it is difficult

for a company to withdraw from interaction without implications for its environmental reputation and broader corporate image.

The assumption of the paper is that engagement sets an arena for new, often loosely-coupled, learning spaces that involve actors drawn from a wide diversity of perspectives and interests into dialogue with companies. In these circumstances there is a need for the company to learn how to undertake and maintain this process of engagement. This involves identifying which stakeholders are important and assessing their salience to the company (Mitchell, Agle & Wood, 1997). It further involves developing and maintaining trust (Sharma & Vredenburg, 1998) if interaction is to continue and permit the process of learning. However, environmental learning and the maintenance of learning spaces has potential to impact the organization of the company and, specifically, the way that organizational designs and routines permit responsiveness to the actualities of stakeholder inputs and the substance of new environmental learning.

This paper examines the issue of environmental learning by drawing comparatively on case studies of two Dutch-based companies, which are acknowledged for their pro-active environmental positions. While these companies are both regarded as pro-active by their stakeholders, they demonstrate fundamentally different approaches to environmental learning with those stakeholders.

The paper is organized in five sections. First, we set out some theoretical ideas that inform our understanding of environmental learning through company/stakeholder engagement. This includes a review of organizational learning used in the research. The second section briefly discusses the major research project, which provides the context for the research reported here and outlines the method used in the two case studies. The third section describes the organizational routines and internal stakeholders in each of the focal companies.

The fourth section focuses on the major external stakeholders. The final section discusses the two cases comparatively and develops some propositions for further research.

## Theoretical Background

Writing in 1994, Roome (1994) anticipated that companies would have to develop new learning systems (to gather environmental information) and new learning structures (to engage with stakeholders) and integrate these with existing business structures and systems. This need arose from the systemic character of environmental issues and the fact that environmental concerns are both issues of science and of social opinion. He further argued that as companies adopt the principle of product stewardship, so they would have to develop the ability to capture this systemic knowledge of the environmental dimensions of products in the strategic process of product design and development. They would have to develop collaborative frameworks with actors in their supply/value chains, with their customers and with wider society.

The notion that environmental issues demand new forms of interaction between actors (companies, their stakeholders and others) is, however, not new. Chevalier & Cartwright (1966) describe environmental issues as part of a set of meta-problems. While they formulate their analysis within the frame of public policy-making, the properties they formulate for environment, as a meta-problem, are equally applicable to decisions by environmentally pro-active companies. Chevalier & Cartwright (1966) define meta-problems as interconnected problem-sets. They argue that responses to one problem in the set are likely to impact on other aspects of the set. Consequently, tractable solutions need to be devised which address the problem-set as a whole. This involves coherent multi-actor collaboration to assess problems and find solutions. However, multi-actor collaboration must contend with obstacles

created by the conflicting perspectives and interests of different actors and the absence of consensus that arises about the nature of problems or the consequences of responses. Gray (1989) contributed seminal work on the contextual frame and processual requirements of multi-actor collaborations. In more recent work Hajer (1996) views the emergence of these new collaborative approaches to environmental problems as part of a process of ecological modernization in which different actors (companies and others) are brought together to find solutions through dialogues.

We draw on two areas of theory to address issues of environmental learning through interaction between companies and their stakeholders. These are used to frame the discussion of our two case companies. The first considers the notion of engagement and integration of stakeholders to provide learning spaces available to companies. The second develops ideas from organizational learning particularly: types of learning, the stages in the cybernetic process of learning, and the roles and skills that support learning and organizational innovation.

*Stakeholder Engagement, Integration and Learning Spaces*

Management scholars have addressed the interaction between companies and their stakeholders from the perspective of the company. They identify the emergence of collaborative relationships (Westley & Vredenburg, 1991; Roome, 1994) or partnerships (Hartman, Hofman & Stafford, 1999) with stakeholders. An aspect of the process of engagement between companies and stakeholders has come to be termed stakeholder integration (Hart, 1995; Roome, 1994; Sharma & Vredenburg, 1998). An important outcome of stakeholder integration is the idea of learning (Roome, 1994; Sharma & Vredenburg, 1998), although Hart (1997) describes this more in terms of teaching [of stakeholders by companies].

It is noted that this literature has not really distinguished the broader process of engagement between companies and stakeholders from the narrower, more instrumental notion of integration. The distinction between engagement and integration is made here, because engagement has a potential to lead not only to learning but also to forms of collaboration and partnerships. However, bringing about forms of joint action would normally require engagement informed by principles that emphasize trust-building and notions of mutual learning and mutual rewards from action. Even though in practice the power and control of the company may corrupt this process, it is considered that integration is only one part of a broader, open and more ambitious process through which actors (companies and stakeholders) engage with one another. There are important outcomes of engagement for companies. These include endorsement for their activities (Westley & Vredenburg, 1991) or the establishment of social legitimacy (Hoffman, 1997). Engagement can also translate into joint action (Roome, 1994: Clarke & Roome, 1999; Stafford, Polonsky & Hartman, forthcoming). At present little has been said in the literature about the outcomes of mutual learning and action from the viewpoint of a focal company's stakeholders.

An important part of stakeholder integration centres on whether companies have the capabilities to enable environmental learning and collaboration with stakeholders. Hart (1995) discusses these capabilities in terms of path dependency. He suggests that the ability to integrate inputs from stakeholders is based on previously learnt skills. In a recent paper Clarke & Roome (1999) draw on a longitudinal case study of a Canadian company to suggest a number of propositions about the effectiveness of environmental learning through stakeholder interactions. These propositions suggest that engagement in environmental learning and action, which involves companies and networks of stakeholders, is influenced by a number of factors. These include a company's context and organizational pre-conditions, such as its culture, organizational processes, technologies, and position in the market; the

openness and responsiveness of the company to the multiple perspectives held by stakeholders; the ability to facilitate inputs from stakeholders at all levels of the company--strategic, environmental, technological and operational; and the availability of managers who have good connections to networks of stakeholders and who possess highly developed skills to guide the process of engagement and to synthesize the interests of a diverse array of actors.

*Organizational Learning*

Organizational learning can be viewed as a cultural phenomenon, as information processing, as an adaptive process or a system (Romme & Dillen 1997). Argyris & Schön (1978) argue that learning occurs when organizational agents detect and correct errors in their internal and external environments. Levitt & March (1996) suggest that learning implies the inclusion of lessons drawn from past experiences into organizational routines. Weick & Westley (1996) and Romme & Dillen (1997) consider that learning takes place when newly acquired insights induce an organization to adjust its behaviour. In this paper we consider organizational learning in line with Huber (1991) and Kim (1993), namely as organizations [having] changed behavioral capacities due to their increased understanding of relevant internal and external environments. We do not therefore consider adjustments to norms, values and behaviour as these are considered to be consequences of learning, not parts of the learning process.

Learning is a dynamic process. In this process observations of past events bring about information, which was unknown or unrecognized. These observations are incorporated into the present cognitive stock of an organization. This adjusted stock may influence future behaviour. Organizations do not possess perfect information at any point in time. In other words, organizational learning takes place in a context characterized, at best, by bounded

rationality and by the constraints imposed by the schema, paradigms or assumptions we use to interpret experiences.

This leads to the discussion of two very different types of learning processes in the literature, which we consider as two extremes on a continuum of learning. First there is 'single-loop learning' (Argyris & Schön, 1978, 1996), 'exploitative learning' (March, 1991; Weick & Westley, 1996), or 'adaptive learning' (Miner & Mezias, 1996; Senge, 1990). We might also call this 'operational' or 'intraparadigmatic learning'. It is concerned to better understand problems within given, fixed parameters. Organizations learn how to perform better within their existing paradigm (i.e. for a given set of values, norms, beliefs and assumptions). The classical learning curve effect (Levitt & March, 1996; Porter, 1980) is a reflection of single-loop learning.

Second there is 'double-loop learning' (Argyris & Schön, 1978, 1996), 'explorative learning' (March, 1991; Weick & Westley, 1996), or 'generative learning' (Senge, 1990). This is a form of 'strategic' or 'interparadigmatic learning'. It is learning which involves major changes in basic assumptions or schema, and may induce organizations to tread new paths or follow radical changes in their environments. Technological breakthrough innovations, major changes in the external organizational environments and altered strategic goal setting are examples of double-loop learning.

In line with Foldy & Creed (1997) we contend that single- and double-loop learning are not mutually exclusive. It is possible for them to co-exist. For example whether experiences lead to single- or double-loop learning is not dependent on the experience itself but on the capacity of the organization and its managers to use that experience to raise questions about the underlying assumptions that frame the interpretation of experiences (Senge, 1996). Even when an organization and its managers have the intent to promote

paradigmatic change, to embark on double-loop learning, this does not preclude the possibility that learning will take place within the existing paradigm as part of that process.

Huber (1991), Morgan (1997), and Romme & Dillen (1997) discussed the cybernetic model of the process of organizational learning. The process involves:

1. Information acquisition. Internal and external environments (including the major stakeholders) are scanned. The actual situation is observed.

2. Interpretation of information. Acquired knowledge is interpreted against existing parameters. These parameters act as normative filters (by colouring observations) and as reference points (new information is interpreted in comparison with existing knowledge or experience).

3. Information storage. Interpreted observations are stored into the organizational memory, including the memories of individual employees, organizational culture, documents and physical workplace structures.

4. Inference drawing. In cases of incongruity between desired and actual situations, it must be considered what actions can be taken, and what behavioural options are the preferred ones.

Other authors identify a series of critical roles and skills in organizations with capacity for learning and innovation related to their traditional business activities, although this has not been extended to environmental learning. Tushman & Nadler (1996) identify four roles. Ideas generators (who creatively link or integrate diverse ideas), champions or internal entrepreneurs (who translate these creative ideas into practice or action), gatekeepers or boundary spanners (who connect local colleagues to external ideas and sources of ideas) and sponsors, coaches or mentors (who provide resources for and who protect new ideas). According to Senge (1996), the skills available to a learning organization are based on forms of leadership that enable: the building of shared vision (the capacity to move from a single vision to a shared vision to which many in the organization contribute and commit

themselves); surfacing and testing mental models (bringing forward the underlying assumptions used to interpret observations testing both); and systems thinking (the capacity to identify interrelationships, processes and the overall nature of change).

These notions about types of learning, the cybernetic process of learning, and the roles and skills that support organizational learning inform our discussion of the two companies. They are used to reveal how the companies differ in their approach to environmental learning through interaction with their stakeholders.

## Research Background and Method

The research reported in this paper forms part of a strategic, longitudinal research program examining the dynamic aspects of environmental management in Dutch companies. This program operates under the banner of "DynEmics". It is supported by the Dutch National Science Research Council (NWO) and involves four research groups in a co-ordinated investigation of different aspects of the process of corporate environmental management. The program began in 1998 and runs through until 2002. A description of this project is provided by Roome & Dieleman (1998).

This paper draws on preliminary findings from one of the four projects. While the research reported here focuses specifically on the influence of organizational routines in relation to environmental learning, the project from which it originates deals more broadly with the nature of the interaction between companies and their stakeholders. However, the concern is with the stakeholders identified by the companies themselves as most critical to their activities, and to the engagement with, and response to, stakeholders. The research examines this issue from the perspective of central actors in the companies- the main persons

or departments with responsibility for environmental affairs. These are generally (corporate) environmental co-ordinators or decision-makers at middle and higher management levels.

Research is conducted longitudinally and in 'real-time'. Each company is subject to two periods of intense research, the first in the course of 1999 and 2000, then again two years later. Each research period lasts for up to six months, and tracks an environmental event or issue. The longitudinal nature of the research permits insight into the evolution of environmental management practices and learning in the focal organizations. The comparison of two snapshots of company practices separated in time provides the possibility to construct an understanding of the dynamics of change around as well as between the two periods of intensive research. Case narratives are being constructed of each research period. These are checked with the companies. The two case narratives are then used to solicit from the company an explanation of the changes and dynamics described in the two case narratives. The two case narratives are also subject to analysis by the various research groups.

This paper draws on findings from two companies studied in the development of the first period case narratives. One company is in the chemical sector, the other in the food sector. Both companies are Netherlands-based producers of goods. They are chosen because of the significant environmental impacts (the chemical company) and because of the explicit goal to become ecologically sustainable in the year 2005 (the food company). The food company is seen as a forerunner in the environmental field in the Netherlands. Due to an agreement on anonymity synonyms are used for the companies.

The chemical company, Chemical, was approached through a senior member of the management team, whose commitment to the research program provided access to all the important sources of information in and around the organization. The head of the staff section Environment, Safety, and Health (ESH) and the environmental co-ordinator were identified as the central actors. Access to Food was provided by a member of the Strategic Council,

responsible for Human Resources. This person was enthusiastic about the research and was very willing to co-operate with the research team. The central actor concerning environmental issues was the corporate environmental manager, the actor around whom environmental decisions and initiatives are centred.

Central actors at Chemical and Food were interviewed by means of semi-structured interviews to identify whom they regarded as the most critical stakeholders and to gain qualitative insight into the nature and strength of the stakeholders' influence in shaping company decisions with regard to environmental issues. The stakeholders identified by the central actors as most important were then interviewed, again using a semi-structured interview, to find out how they characterized their relations with the central actors. This snowballing technique (Scott, 1991; Wasserman & Faust, 1994) was used to identify major stakeholders. These stakeholders were then interviewed to determine how they defined their (intended) influences on the central actors. It was possible to compare these perspectives of perceived and intended influence of actors. The different perspectives provided important complementarities. Dissimilarities between accounts were of interest to understand discrepancies between intended peripheral influence and perceived central actor influence.

Source triangulation (Yin, 1994) is used to develop corroborative and comparative perspectives from different interviewees. In addition several interviews were conducted jointly by two of the authors; observations made independently during the interviews were subsequently compared.

At Chemical 13 interviews were undertaken, involving 11 persons: 3 interviews with the central actors, 5 with internal stakeholders and 5 with external stakeholders. At Food 3 external stakeholders and 5 internal stakeholders were interviewed. The length of the interviews ranged from 0.75 to 2.5 hours, with an average length of 1.25 hours. All interviews used semi-structured questionnaires to guide the content of the discussion while leaving

interviewees room and time for their own explanations. The interviews were standardized but adjusted to match the nature of the interviewees. Where possible interviews were tape-recorded and detailed reports made. Reports not tape-recorded were sent to the interviewees for verification.

Further information on Chemical and Food was provided by written documents, including annual financial reports, annual environmental reports, annual overviews of activities, governmental policies, periodicals, public relations brochures, an environmental covenant between government and the industry, and organigrams. In addition, guided tours were made on the premises of the focal organizations.

**Organizational Routines**

In this section we describe the organizational preconditions, culture and structure prevailing at Chemical and Food.

Chemical

*Pre-Conditions*

Chemical is a Netherlands-based producer of chemicals, founded by a non-European parent company. Chemical is controlled by one legal entity. It employs over 1500 people in the Netherlands. The company procures many hundreds of chemicals from all over the world, to produce a few different chemical products. Chemical produces mainly for the consumer market but also manufactures professional products. Chemical's physical location in the Netherlands was chosen by its parent company in order to take advantage of the quality of a natural resource that is a critical input its production processes. It has several production lines on the same site but these are physically and organizationally separate. Each production line manufactures relatively homogeneous products. Purchasing, marketing, personnel,

administration, process engineering, research facilities, and environmental safety and health are shared by the different production lines. Chemical imports most of its material inputs from European countries and from overseas. Practically all of its output is marketed abroad.

Chemical has been pushed by its parent organization to acquire ISO 14001 environmental management system. The company wanted a formalized system to engage in a process of continuous environmental improvements. This was inspired by a sense of societal responsibility to go beyond mere legal compliance, although it clearly wanted to meet legal obligations and economic imperatives in the first place. After an initial failure to gain ISO 14001, Chemical worked with a consultancy organization to develop an extensive EMS system. A few years ago it acquired ISO certification. All departments were affected by the certification. The targets in the EMS are set at a level that is reasonably achievable. In line with Chemical's emphasis on systems it has an extensive set of manuals specifying environmental procedures and protocols.

Chemical has an elaborate organizational structure, consisting of a management team, departments, sections, supervisors, lead technicians, technicians and operators. This is spread across the four separate production lines operating at the site. The organization is highly formalized. There is considerable reliance on written communication, formal procedures and protocols in all activities.

A senior management team (MT) member is the advocate for environmental affairs in Chemical's highest administrative body. He delegates most affairs to the head of the section ESH and the (company-wide) environmental co-ordinator. Chemical identifies several important physical and resource based environmental themes, such as noise, effluent water, and solid waste. Through permanent committees these themes are regularly assessed and improved.

The company adheres to several covenants that bind industry to negotiated environmental targets agreed with government, including an important one by the national Chemical Industry. Chemical is viewed by outsiders as a relatively pro-active company. It wants to be seen by outsiders as a clean company, without any major environmental problems.

*Culture*

An extensive security check at the main entrance to Chemical impedes unexpected visits and symbolizes its relatively closed (or at least controlled) position toward the outside world. Most of the company employees do not have direct contacts with outside constituencies. Virtually all external contacts in the environmental field pass centrally through ESH members, especially the ESH head and the environmental co-ordinator. The members of ESH determine with which external stakeholders the company maintains contact. These tend to be of an operational nature (concerning permits and the promotion of Chemical's immediate interests). In their communication with outsiders, the members of ESH express a preference for certainties (e.g. unambiguous permits, even though they decrease their room for manoeuvring).

ESH is charged with scanning environmental information from outside the organization that is relevant to the company. ESH staff use a variety of antennae to detect environmental issues, including the local environmental café, a platform of organizations on the same industrial zone, municipal officers, and provincial politicians. They also draw on informal contacts with environmental staff in other chemical businesses, which occasionally reveals important information on substances, the use of control techniques or upcoming legislation.

Internally there are extensive communication structures. There are many committee meetings, within and across departments. These are organized on a permanent or ad-hoc basis.

Environmental initiatives are mainly initiated from the top. The process here is regularized. After MT commitment for an initiative, it passes through a range of committees before being implemented. Hierarchical differences are acknowledged and respected at Chemical.

Written documents are abundant. Extensive minutes are taken of committee meetings. Detailed manuals are employed to guide production processes, including the formalized EMS. Company-specific periodicals are circulated with some regularity among all Chemical employees.

Environmental issues permeate all layers of the organization. Enthusiastic individuals are identified horizontally and vertically across the organization to take the lead to promote solutions to environmental problems, in addition to their other routine activities. This complements the work of those whose primary activity is environmental affairs (an ESH section of over 10 persons).

*Structure and Internal Stakeholders*

The environmental aspects of Chemical's organizational design are set out in Figure 1. The MT is at the top of the Chemical hierarchy. It is headed by a foreign [to the Netherlands] representative of the parent company. Each of the other MT members represents a functional area, e.g. a production unit, personnel affairs, or engineering. Environmental affairs are part of the portfolio of a senior MT member. This body sets objectives, which are centred on a number of critical themes.

[insert Figure 1 about here]

The ESH staff section, which comes under the engineering department of the senior MT member, provides advice to the MT. The ESH head and the environmental (company-wide) co-ordinator maintain most external environment-related contacts. This allows the

company to speak with one voice. External contacts involve critical interaction with local (permit-issuing or -maintaining) authorities and, less frequently the gathering of important new information. ESH is also in charge of internal co-ordination of environmental affairs.

Standing, theme-oriented committees elaborate environmental objectives, which are specified by MT. An MT member heads every committee. Apart from an ESH representative, membership of these committees includes representatives (i.e. co-ordinators) of all departments concerned with the particular environmental theme. They formulate operational plans (which may be crafted with the help of a quantitative stakeholder-weighing technique devised by the consulting company that assisted Chemical). These plans are implemented by different departments.

Plans are communicated through the departmental co-ordinators (backed by departmental heads) to the different section heads of the departments concerned. The section heads routinely appoint 'problem owners', who are responsible for the resolution of specific operational problems. Problem owners constitute ad-hoc project groups, consisting of people from one or several departments, which have the required expertise to realize the operational objectives, set by the standing committees.

The ad-hoc committees reflect on possible solutions, which tend to be based on experiences acquired previously or elsewhere in the organization. The best looking solutions and their financial implications are communicated to the standing committee for approval. Once approval is granted, the solutions are then realized.

EMS-specific implementation and review activities go through a similar process. All environment-related processes are embedded in clear, formalized structures and extensive internal communication.

Food

*Pre-Conditions*

Food has a long-standing tradition (of about a century) in the manufacturing and marketing of consumer food products. The company has more than 20 subsidiaries, which spread over 4 continents. The corporate headquarters are based in the Netherlands, where there are also several subsidiaries. Food has recently taken over a number of companies in the food sector. Food produces branded food products for the consumer market. It employs over 1000 people in the Netherlands and twice this number overseas. A Dutch family owned Food for many generations. Its current president-director is a member of this family, even though the shares of the company are now traded on the stock market.

The president-director is strongly committed to the development of environmental values within the company. On his initiative, environment was explicitly incorporated in the company's mission statement as a core value. He is very active as a keeper of these environmental values within the highest administrative bodies of the company. He regularly launches initiatives to stimulate environmental awareness throughout the company. Within a few years, the president-director will retire.

Food formulated the ambition to become ecologically sustainable by the year 2005. It established an assessment system, which includes quantitative yardsticks around globally recognized environmental themes, such as the greenhouse effect, acidification and water use. These yardsticks measure the performance of every subsidiary against each of these environmental themes. There is a recognition that much has been achieved but that there is a long way to go before the sustainability objective will be reached.

Among Food's environmental achievements is the creation of an environmental awareness, especially at higher and middle levels of office personnel. Wherever possible, attention is paid to energy saving and minimization of resource use. There is a green office plan, internal documents are printed on two sides of recycled paper, and all company-owned

cars run on Liquid Propane Gas. There are similar initiatives at the factory level. However, Food lacks a systematic approach to these issues. Improvement plans exist, but much work remains to be done on their implementation and realization. An important remaining challenge is to bring procurement, production and sales to more sustainable levels, especially given the adverse trading position which has affected many of Chemical's subsidiaries over the past few years. The pressures on the company and its limited resources force it to choose between attention to environment issues and short-term economic imperatives. Because so much remains to be done, Food prefers keeping a low environmental profile, even though its reputation in the outside world is excellent.

The corporate environmental manager has been actively involved in crafting a uniform and effective environmental management system (EMS). He focused on the strategic aspects of the company EMS, while leaving its operationalization largely to environmental staff in subsidiaries. Another main task is to reflect on the company's realization of the sustainability challenge.

*Culture*

Food has an open culture and the company is engaged in dialogue with a fairly large number of divergent constituencies. At the corporate level, these dialogues are mainly of a strategic nature, while they tend to be focused on operations at the subsidiary level. Throughout the organization, there seems to be an openness to communicate with others, both inside and outside the organization; with existing stakeholders and potentially interesting new ones.

Communications are informal. They tend to be on a first-name basis, even with relatively unknown outsiders. There are numerous face-to-face meetings, while there seems to

be no extensive use of written documentation or records. The use of electronic, interactive communication (e.g. e-mail or databases) is encouraged.

Environmental values are very actively cultivated by a number of individuals at top and middle levels of management. A small group, led by the president-director, wants to spread these values throughout the company. They have to leverage a large majority of benevolent but passive people to accept the company values around sustainable development, while taking into account the resistance of a small minority. Corporate staff members also promote environmental values during on-the-job technical training.

While people in all departments and positions can be 'environmentally infected', there seem to be some splits in the importance attached to the company's environmental values. The highest commitment is rather at the top than the bottom of the company. There is more active support from staff positions than line functions, more intense involvement in the offices than in the factories, and more environmental concern from production than with marketing.

*Structure and Internal Stakeholders*

The environmental aspects of Food's organizational design are set out in Figure 2. The group management team (MT) is the highest corporate authority at Food. It consists of the president-director, who also acts as an environmental gatekeeper, some functional vice-presidents (manufacturing, human resources, etc.) and some regional vice-presidents (of business units in Europe, Americas, etc.). It crafts corporate strategies, including one for environment (as one of the central corporate values).

[insert Figure 2 about here]

A corporate staff consisting of the corporate environmental manager and a few assistants, provide advice to the group MT and develop initiatives to promote the corporate

key values in a uniform way. The corporate environmental manager and the president-director regularly attune their actions, in order to speak with one voice.

Food's subsidiaries are situated all over the world. A general manager, who is in charge of implementing corporate strategies and policies, heads each subsidiary. General managers are evaluated on the basis of their performance in all key areas, including environment. They delegate environmental affairs to environmental co-ordinators, who fulfil this function on top of their 'ordinary' functions.

Environmental co-ordinators of subsidiaries are in charge of (operational) contacts with local authorities (province and municipality) in order to obtain environmental permits. Besides, they lead green teams, consisting of representatives from different functional areas throughout the subsidiary, a technical corporate staff member, and an outside consultant. Presently, environmental initiatives tend to be implemented on an ad-hoc basis. The green teams are not yet fully operational, because of a lack of resources (especially time). Shortly, they are planned to become fully operational.

The proposed modus operandi of green teams is to brainstorm around a problem defined higher in the organization, e.g. to reduce its impact on the greenhouse phenomenon. The definition of such objectives tends to be vague, leaving room for subsidiary-specific interpretation. Team members raise ideas which are based on experiences elsewhere in the subsidiary, in other subsidiaries of Food (through the input of a technical staff member of the green team), or outside the company (through the input of outside consultants). After analysis, the best ideas are considered against corporate environmental yardsticks. They are explored in more detail, as to costs (and the possibilities of internal subsidies), scope and timing. Small projects are implemented with the approval of the general manager. Larger projects need prior approval higher in the organization. Once approval has been given, they are prioritized and converted into action plans for the next period.

Food applies a total quality management system with the intention to set up environmental management along the same lines. Presently Food does not have a formalized externally certified EMS (such as ISO 14001).

Once a year the group MT and the general managers meet for an international management meeting, during which past and future strategies and policies are discussed. The meeting is preceded by international meetings for each of the key strategic values. The corporate environmental manager discusses, evaluates and plans with the environmental co-ordinators of all subsidiaries. The outcomes of these meetings provide inputs to the management meeting.

Throughout the year most communication between subsidiaries regarding environmental affairs occurred through the corporate environmental manager. He envisages a greater decentralization of communication to operate through an interactive computerized information system. All environmental co-ordinators will have direct access to this system and will be able to communicate directly with each other.

People involved in environmental management perceive problems linked to organizational capacity. The corporate manager's perception stems from the large span of control given to him and his assistants. The subsidiary co-ordinators are dissatisfied because environmental tasks have been added to more imperative, routine tasks, which take most of their time. For the near future, increased resources are scheduled to unblock some of these capacity issues.

**External Stakeholders**

This section discusses the major external stakeholders of the two companies, such as identified by the respective central actors.

Chemical

The major external stakeholders at Chemical are set out in Table 1. It identifies stakeholders, the basis for the interaction between the company and the stakeholder, the stakeholder's perception of that interaction, and other comments. Chemical engaged a consulting company to provide it with a quantitative assessment of its stakeholders. It uses this advice on stakeholders in its internal assessment of important environmental issues and themes.

Virtually all contacts with external stakeholders and those from outside the organization who are interested in Chemical's environmental issues and affairs pass through the ESH section, especially the head of ESH and, to a lesser extent, the environmental co-ordinator. Chemical wants to speak with one voice to outside stakeholders but declares itself open to any external stakeholder.

The most important external stakeholders, both now and in the past, are governmental bodies (especially the province and the regional water board). During the past few years other stakeholders have emerged as important to Chemical, such as the chemical trade association, the national employers association and the Ministry of Environmental Affairs.

A major contextual environmental issue for Chemical is the continued availability of a crucial natural resource, its effluent water and noise. These issues are applicable to the same set of external stakeholders. Governmental bodies are the most important stakeholder because of their 'claims' on Chemical. This is in contrast with the other stakeholders, the trade and employers' associations, with which Chemical established contacts because of the expected spin-off from membership of these organizations.

[Insert Table 1 about here]

Chemical views governmental bodies as critical, as the company wants to comply with the prevailing legislation. Members of Chemical's ESH section closely monitor new legislation, through governmental publications and periodicals of trade and employers' associations. Chemical tends to go beyond legal obligations.

Chemical recently became a member of the national chemical trade association. The association was a party to the 1993 Chemical Industry Covenant, in which emission reductions of a number of substances were set as 'voluntary' objectives with government. Through the covenant the industry agreed to self-regulation in order to prevent more stringent governmental legislation. There are overall objectives for the industry in the Netherlands, with individual companies responsible for implementation. Companies set targets and annually report to the trade association and national government on how well they performed. The association exerts pressure on its associated members in the case of non-compliance or insufficient performance, and negotiates with government to revise the objectives in the covenant. Chemical adheres to the covenant.

The head of ESH at Chemical is a member of several of the working groups of the national employers' association. Unlike the working groups of the chemical trade association, these groups do not dwell on specific, individual problems. The employers' association wants to speak with one voice with third parties, especially national government, so that its members' common interests are best served.

Chemical does not consider consumers, suppliers or environmental non-governmental organizations (NGOs) as important environmental stakeholders.

Chemical's main external stakeholders perceive it to be a relatively environmentally pro-active organization.

Food

Food recognizes a wide range of external stakeholders. Only the Dutch stakeholders are discussed in this paper, although Food has contacts with many stakeholders at the international level. The stakeholders identified by the corporate environmental manager are government (on national, regional and local levels), the European Commission, banks, trade (i.e. physical distribution partners), (environmental) NGOs, neighbours, universities, customers and shareholders. The most important of these external stakeholders are set out in Table 2 and discussed below.

[insert Table 2 about here]

Food identifies a wide variety of external stakeholders as relevant for a number of reasons and in connection with a range of environmental themes. The stakeholders mentioned by Food have been fairly constant over time. All stakeholders identified by Food hold the opinion that the company is a front-runner in the field of the corporate environmental management, and see it as having a pro-active attitude. They are aware that Food's sustainability vision goes well beyond legislative requirements. Indeed Food finds that legislation in the Netherlands does not stimulate the move toward sustainable development.

Food regards national government as important, because it sets national environmental policy framework and standards. From Food's perspective it is important to have a very good, continuing dialogue with government, especially in relation to a shared interest in sustainable development. Food sees this relationship as a partnership through which both partners can learn and contribute new impulses to the national environmental policy plan. These can have repercussions for business, such as the challenge to implement positive developments that lead toward sustainable development. Food is frequently invited by the Ministries of Environmental Affairs and of Economic Affairs to participate in research and to engage in

pilot projects or theme-oriented discussions. National government views Food as a very pro-active company.

In the case of legislation Food deals with provincial government. The province issues permits (noise and other issues), that are enforced by local government. At the European level Food has regular contacts with the European Commission, especially concerning the covenant on packaging.

Food views banks as stakeholders, because they help the company acquire green investments certificates, which provide preferential interest rates on loans. Food deals with two of the main banks in the Netherlands and with two banks that have a strong environmental commitment in their operating portfolio. The banks interact with the Ministry of Economic Affairs, which audits the certificates for green investment. In order to get the certificate Food must demonstrate its use of sustainable environmental techniques.

Trade is regarded as an important stakeholder for Food, especially the distributors that Food uses to transport its products to retailers. These distributors are not only responsible for the distribution of the products; they also do the orderpicking and store the products. Food sees many possibilities to achieve environmental and economic advantages in transport. Stakeholders in Food's supply-chain are therefore important in determining, whether these win-win situations can be realized. Food uses primarily one transport/physical distribution company. However, Food's influence over this company is moderated, because products are distributed according to customers' (retailers') demands after leaving the distributors' warehouses. Moreover, the transporter does not take the lead to environmentally friendly initiatives. Although the transporter knows Food's environmental policy, he does not come forward with his own initiatives. His operational concerns are more focused on price and delivery schedules.

Non-governmental organizations are important to Food, because ‘societal awareness' of environmental issues is ranked as an important issue to Food’s strategic commitment to environment and sustainable development. NGOs promote ecological awareness, nationally and internationally. They regularly invite Food to contribute financial resources to their objectives. The company also has involvement with the WorldWide Fund for Nature.

Food does not deny that their financial contribution to these projects is a matter of public relations and thus helps to boost the company’s image. But it declares that the primary aim is to promote societal awareness of sustainable development.

Food sees environmental pressure groups as critical to the company’s future. The company wants to maintain open communication with these organizations. It always responds in an open and transparent way to questions. Food has continuing relationships with a range of environmental pressure groups, ranging from Greenpeace, Milieudefensie, and Natuur & Milieu to regional environmental groups. A regional environmental group sees Food as a very pro-active company, compared with others. In contrast Food does not see these groups as having pro-active ideas. Food views their attitude as rather reactive.

Food fosters positive interactions with the neighbours of its operating plants, striving for open communication to inform local people wherever possible. Complaints are taken seriously.

While competitors are important economic stakeholders, they are not seen as important from an environmental vantagepoint. Food’s environmental position and policy make it a leader in its sector.

Food maintains close contacts with a number of Dutch Universities. Universities provide support in the areas of technological development, in trade, transport and environmental management systems. An example is research on the possibilities of one of Food’s transport providers to use more environmentally friendly transport means.

Food's final customers are viewed as the company's most important stakeholders. Yet Food does not have a clear view of how customers perceive the company's environmental values. The Corporate Environmental Manager is particularly worried that consumers act as a brake to business leaders in sustainable development. Consequently, consumers have little positive influence on Food's environmental policy. The company is presently engaged in a study of consumer attitudes toward sustainable development.

Shareholders have become more important to Food, as it recently moved from private ownership to a public stock market listing. The original stock-owning family remains a major shareholder, but there are now several other shareholders. Shareholders are important to Food's environmental position because of its strategic significance and the need to gain consent for this long-term strategy of environmental investments with their longer payback periods.

Food sees itself as a successful player in its market, amongst other things because of its pro-active image and policy. The company recently went through a tough set of trading and market conditions.

**Discussion and Comparison**

It is recognized that comparison between Chemical and Food is problematic, because the stakeholders at Chemical are considered from the vantage point of the *plant*, whereas Food's stakeholders are seen from the *corporate* level. This discussion nevertheless seeks to synthesize the position toward environmental learning through stakeholder interaction at Chemical and Food, and then draws out some points of comparison between the two companies.

The main aspects of the interaction between Chemical and its stakeholders are that environmental issues arise because of the nature of the company's activity. There is a top-level commitment to an environmentally responsible position by a company under the influence of its overseas parent. As part of this commitment Chemical has sought to develop a formalized EMS based on ISO 14001. This is consistent with the company's formalized structures and routines. Consultants have helped the company to develop the EMS and to identify a set of important environmental stakeholders. Chemical now uses this stakeholder weighting system as part of its routine processes to review and determine responses to environmental issues and themes.

The structural and cultural conditions at Chemical combine to create what we see as an externally closed, internally open approach to environmental learning. The company draws on the content of environmental learning inputs from stakeholders which are filtered through the ESH section into a highly structured decision process based on standing, theme-oriented committees and an ad hoc (but systematically organized) process of action planning and implementation.

Decision making on environmental affairs is firmly controlled by the company, especially on the most critical regulatory issues, even though the regulator is open to more fluid interactions. Where Chemical's environmental vision can be detected, it is based on a beyond-compliance position of risk management based on the implementation of an environmental management system and a formalized organizational structure. These routines provide the company with a protective shield that enables it to make timely yet controlled decisions – to be a good corporate citizen. Chemical emphasizes the routinization of the cybernetic elements of the process of learning as part of its control system rather than the human dimensions of vision, surfacing and testing mental models and systems thinking.

In terms of the roles of ideas generators, champions and sponsors. These are evident at Chemical, but their focus is with the development of organizational designs and routines; both to identify environmental stakeholders and to deal systematically with the acquisition of environmental information through the EMS and decision making structures. Key members of Chemical's ESH section act as environmental information gatekeepers for the company. In this sense it is surprising that Chemical does not explicitly identify its consultants, used to help determine its stakeholder relations and EMS, or the use of the local environmental café as stakeholders linked to the content of environmental learning.

Chemical's overall approach to interaction with environmental stakeholders is focused on the content of environmental issues and the development of structured responses to those issues. The company uses an elaborate internal communication structure, and devotes ample technical resources to cope with external demands. The issues of major importance arise from the environmental demands of Chemical's production processes. We would characterize this as single-loop learning.

The main aspects of the interaction between Food and its stakeholders are that environmental affairs are important due to the company's active leadership in environmental management and sustainable development. This commitment stems from the president-director, and is not yet fully shared within the company. Even so this commitment is part of the company's mission and provides a vision for the company's actions. Food does not have a formalized EMS in place, yet it has ambitious environmental targets and a set of management routines to ensure that its vision is addressed as a core dimension of the company's overall strategy.

These structural and cultural conditions combine to create what we might term an externally open, internally open approach to environmental learning. Food is porous to environmental information and ideas drawing on content, developing and implementing

environmental management routines and processes, and engaging in mutual learning with a range of stakeholders in ways that are consistent with its forward looking vision of sustainable development. Food appears to have identified a set of important stakeholders with whom it might learn.

Food's attention is not confined to routinization of the cybernetic elements of the learning process. An important aspect of Food's position on interaction with stakeholders is found in its vision, as well as the surfacing and testing of mental models and systems thinking. The president-director and the corporate environmental manager at Food have important roles here in developing this vision. The corporate environmental manager confines much of his time to strategic contacts, overall structures and dreaming about the realization of sustainability. However, there is also close involvement in the visioning process from Food's Strategic Council, Technology Board, general managers of business units, and others.

In the case of surfacing and testing mental models of Food, decisions on environmental affairs are open to outside inputs. However, Food's leadership position suggests that it is setting an agenda and that it is open to ideas that align with its strategic vision of Food as a sustainable enterprise.

Evidence for systems thinking is found in Food's appreciation of the interaction between the company and networks of stakeholders. It is also evident in the acknowledgement that sustainable development impacts company values, image, organizational structure, products, packaging, processes, supply-chain relationships, and interaction with a range of stakeholders. Sustainable development is a matter for science and society. There is an appreciation of the fundamental direction of changes in the economic and environmental systems and the barriers to change.

The roles of idea generators, champions and sponsors are also shared as the company seeks to push forward its concept of sustainable development. In line with this the company engages with external stakeholders to gain their input to build its vision in action.

The overall outcome of this approach is that Food's interaction with environmental stakeholders focuses on single-loop and double-loop learning combined. Food is simultaneously trying to develop and implement better environmental management practices as well as seeking to push forward its interpretation of the paradigm of sustainable business. The capacity for single- and double-loop learning is linked to the notion that Food is learning how to learn about sustainable development with (some of) its stakeholders. For example through joint projects with government, universities, NGOs and banks.

Opportunities for learning and action at Food and Chemical are also available to subsidiaries and operating units. These ideas are worked out through green teams and ad hoc committees (at Food and Chemical respectively) and approved through the normal business structure. However, at Food there is a tension between the strategic vision of sustainable development and the operational realities in subsidiaries or operating units. Conflicting strategic and operational interests and priorities influence internal learning and action. At Chemical, where the vision is less ambitious and there is a strong respect for hierarchical authority, there is effective local implementation.

Food and Chemical are both recognized by their stakeholders as being environmentally pro-active. Both companies acknowledge the importance of regulators and government. However, they interact with their stakeholders in fundamentally different ways. Taken with the overall evidence from the cases this leads us to suggest that describing company environmental management behaviour as pro-active means using a poorly differentiated term to categorize company interactions with environmental stakeholders.

In conclusion, the main distinctions between the companies appear to stem from the nature of the vision they hold. Chemical locates its ESH section in the Engineering Department. Its stakeholder set derives from the physical environmental limits, resource demands, and pressures that the company's processes, rather than its products, place on the environment. Chemical's vision is to be seen as a good company by controlling those environmental impacts. Inputs from its stakeholders are important to ensure that it is doing what is regarded as environmentally correct. It minimizes risks to its operations by emphasising formal management routines. Chemical sees implementation of control as its responsibility alone.

In contrast, Food's vision takes all its environmental impacts into account ranging from company image, strategy and organizational design, through products, packaging and processes onto supply chain and distribution issues. This enables it to view its environmental stakeholders as a source from which it can learn as well as teach. How much of Food's position is determined by the environmental valuekeeper on the Strategic Council is not clear. However, from the position of president-director he is convinced of the need for Food to become a sustainable company. Food's corporate environmental manager shares this view. Both stimulate environmental processes that address the need better to understand Food's physical environmental issues, to develop management routines and designs, and to engage in a continuing dialogue with stakeholders. Food appears to have an implicit acknowledgement that social and institutional dimensions of sustainable development are important. Unlike Food, Chemical has no clear environmental figurehead(s).

Food, however, sees some of its stakeholders as partners with whom action projects are possible. It also is clear that some of its stakeholders cannot help contribute to its vision of sustainability. Food's vision on sustainable development, and the position of its environmental valuekeeper, mean that it is rather critical of the more limited vision of some of

its external environmental stakeholders, seeing them as reactive rather than pro-active. In contrast Chemical sees some of its stakeholders as rather troublesome. It accepts the permits it is given and seeks to implement these in its own way rather than using the regulators as a source of input and advice, as they would like.

The study of Chemical and Food leads us to define the engagement with environmental stakeholders in mutual learning as a core capability of pro-active corporate environmental management practice. Whereas the integration of stakeholder inputs into company decision-making routines, as seen at Chemical, is an accommodative, rather than a pro-active, environmental management practice.

The cases also suggest that an important determinant of the orientation of the process of engagement is the vision of environmental values and environmental management held by the company. Although other important skills and roles support the translation of that vision into action.

We distinguish, then, between a vision that seeks to synthesize business and environmental issues, seeing internal and external stakeholders as a source of ideas and inputs to that process and as the ground for future action (as is the case at Food) as against a vision where environmental management and stakeholder inputs are subordinated to conventional business objectives, with environmental issues and stakeholders accommodated to reduce corporate risk (as is the case at Chemical). Indeed the issue for Food is making connections between the loose-coupling that enables learning with external stakeholders and the more formal structure the company has in place for the implementation of ideas. The issue for Chemical is that the tight control of the process of stakeholder integration appears to serve as a barrier to the evolution of mutual learning and joint action. We do not regard Chemical's approach as a hallmark of pro-active corporate environmental management.

This leads us to advance the following propositions that can be tested in future research.

**Proposition 1**: A strategic vision that synthesizes the business and environmental dimensions of a company's activities is a pre-condition for the successful development of an organizational structure and a process of engagement with stakeholders that enables mutual learning with those stakeholders to occur.

**Proposition 2**: A strategic vision which synthesizes the business and environmental dimensions of a company's activities is a necessary pre-condition for double-loop learning to bring about substantive improvements in business and environmental performance.

**Proposition 3**: Companies that successfully learn how to engage in mutual learning and action with their environmental stakeholders and stakeholder networks are more likely to be a source of business and environmental innovation than companies without this form of engagement.

**Proposition 4**: Human resource capabilities to develop an integrated business and environmental vision and to engage in learning with stakeholders is more critical to innovation in environmental management than organizational structure, such as provided by environmental management systems.

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Table 1 Chemical's External Environmental Stakeholders

| Stakeholder | Basis for Interaction | Stakeholder Perception | Additional Observations |
|---|---|---|---|
| Government<br>Province<br><br>Regional Water Board<br><br>City Government | ▪ Permit to exploit the natural resource used in its processes<br><br>▪ Noise level permit<br><br>▪ Air emissions & solid waste and energy efficiency permit<br><br>▪ Chemical partially purifies its effluent water before it goes to the regional Water Board. Chemical needs a permit specifying quantity and composition of effluent water it expects to provide each year. This permit is obtained after intensive consultations with the responsible authorities. | ▪ Provincial representatives believe Chemical goes too much its own way without discussion. It implements permits according to its own interpretation, without sufficient communication to corroborate interpretations.<br><br>▪ The authorities feel that Chemical makes excessive claims on their time, yet create too rigid a structure (that provides too little discretion) for itself | ▪ Permit becomes more restrictive at periodic review<br>▪ Consultations with other companies on the exchange of noise 'excess' and 'shortage'.<br>▪ Chemical's investment in energy and waste efficiency is influenced by level of government charges and levies on waste and energy<br>▪ Single 'permit on outlines' requires an organization specific environmental action plan. Until this happens three separate permits are necessary<br>▪ Permit requires intensive consultations with Water Board<br>▪ Chemical self-assesses effluent water. Water Board takes samples to verify own reporting. |
| National Government Ministry of Environmental Affairs (VROM) | ▪ Permit policy for province is inspired by national legislation and covenants.<br>▪ Water Board policy is largely crafted at the national level. | | |
| Chemical Trades Association | ▪ Head of ESH is member of several of the association's working groups. | ▪ Groups review routine and new environmental problems and may provide creative solutions.<br>▪ Groups have an early warning role for member companies. | ▪ Association uses networks with chemical companies for technical & legal information for Chemical.<br>▪ A representative of the trade association considered a trouble-shooter if a problem arises with governmental body<br>▪ Gives advice on the implementation of environmental management systems (EMSs). |
| National Employers Association | ▪ Head of ESH is member of several of the association's working groups | | ▪ The purpose of these groups is to align all employers, nation-wide, across all sectors |

Table 2 Food's External Environmental Stakeholders

| Stakeholder | Basis for Interaction | Stakeholder Perception | Additional Observations |
|---|---|---|---|
| National Government Ministry of Environment Affairs (VROM)<br><br>Ministry of Economic Affairs (NOVEM) | ▪ Regulation<br>▪ Learning partners for sustainable development through research & pilot projects<br>▪ Approves green investment certificates given by Banks | ▪ Food is seen as a beyond compliance partner<br>▪ Partner of choice due to shared ambitions | |
| Government<br>Provincial<br>City | ▪ Province as Permits issuer<br>▪ City as Permit enforcer | | |
| European Commission | ▪ Regular contacts on packaging covenants and legislation | | |
| Banks | ▪ Provides green investment certificates | | ▪ Certificates given by Banks and overseen by NOVEM |
| Trade (retail and physical distribution) | ▪ Greening supply and distribution chain for transport<br>▪ Greening office supplies | ▪ Food recognized for its leadership position | ▪ Food initiates new ideas and projects |
| NGOs | ▪ Societal awareness of green and sustainability issues<br>▪ Food as financial donor to NGO projects | | ▪ Food has a product endorsement with an environmental NGO with part of the profit going to the NGO's activities |
| Environmental groups | ▪ Basis of green credibility | ▪ Food seen as highly pro-active | ▪ Food does not believe it learns much from such groups but realizes their importance as allies |
| Neighbours | ▪ Open liaison at operating sites | | |
| Universities | ▪ Research partner to push forward new practices – production, distribution and management systems | | |
| Shareholders. | ▪ Provide legitimacy for company's long term sustainable development strategy | | |
| Customers | ▪ Food sees customer positions on sustainable development strategy as important | | ▪ Company has no clear view that customers support its sustainability strategy but is undertaking market research at present on customer attitudes |

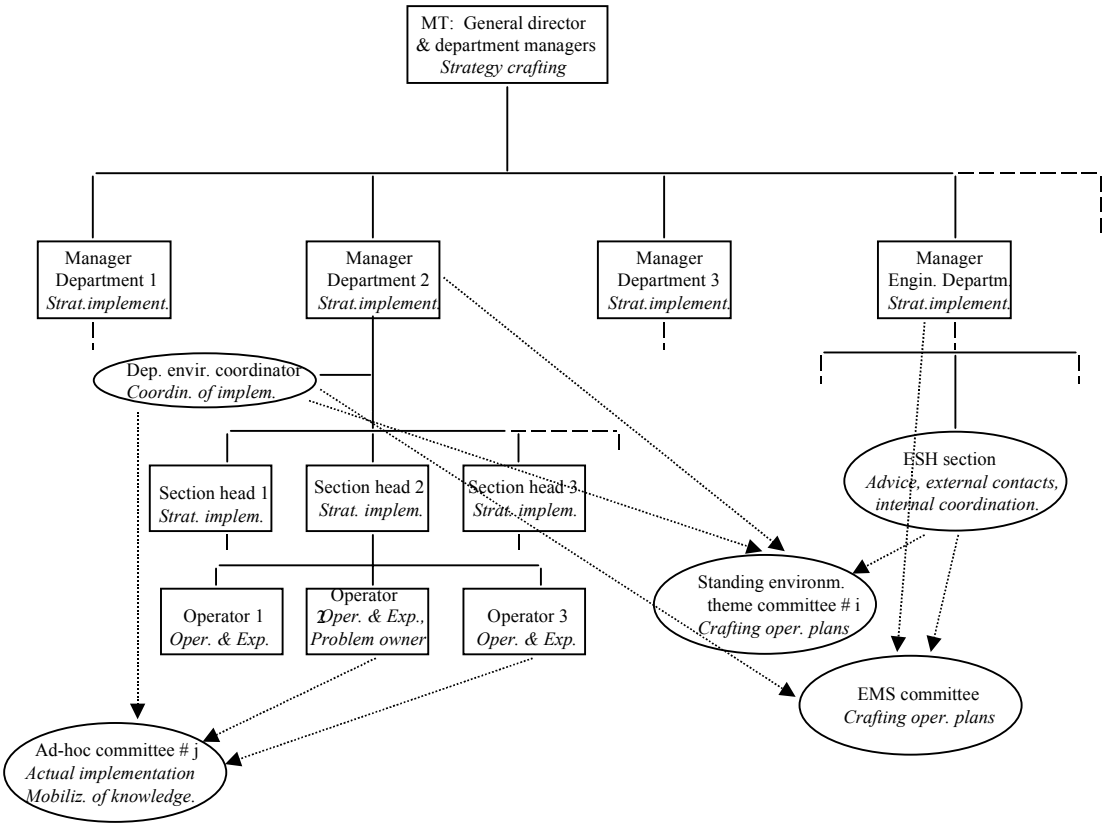


**Figure 1 - Environmental Design of Chemical**

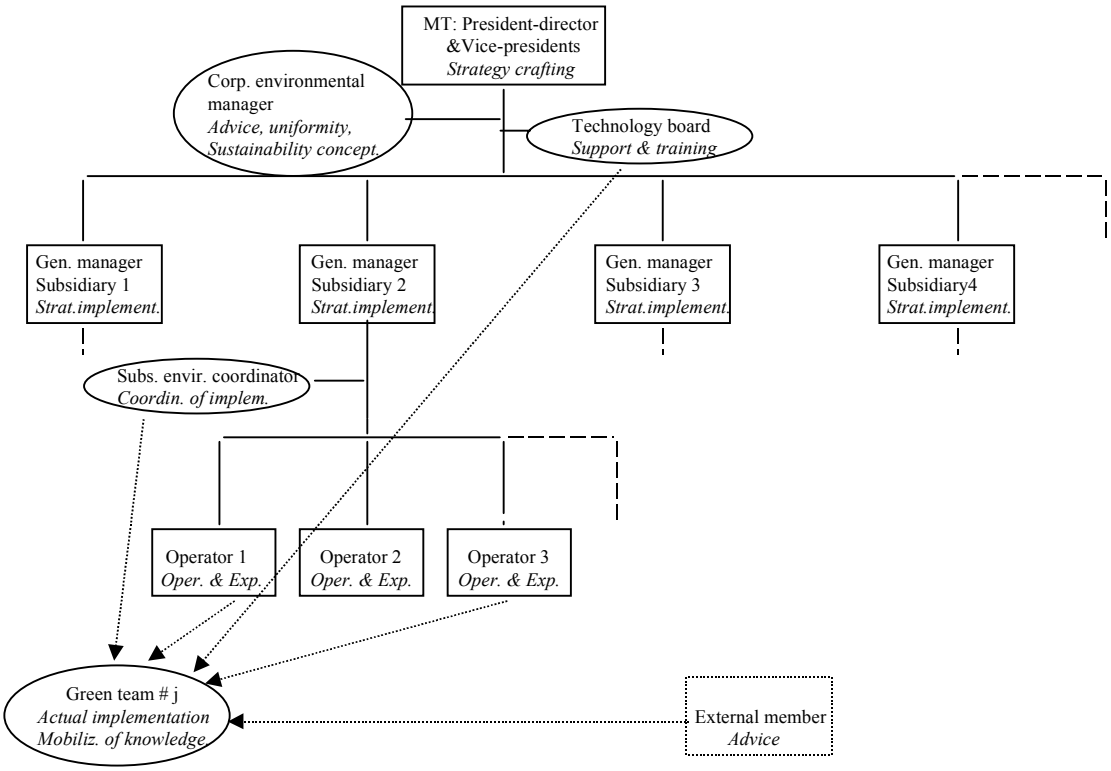


**Figure 2 - Environmental Design at Food**