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CONSISTENCY AND AWARENESS GAPS IN PRO-ENVIRONMENTAL CORPORATE BEHAVIOUR

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When one embarks on an „adventure", let it be work, driven by internal motivations, it unavoidably consumes his or her energy and divides attention. This is what happened to me while elaborating my thesis, therefore I am immensely grateful to my husband for his patience, support in difficult times and all the creative ideas he helped my work with. I am equally thankful to my parents for their wholehearted, unconditional support in all times. I owe a debt of gratitude and heartfelt thanks to my tutor, Professor Dr. Sándor Kerekes, who with his professional and human support has always helped me overcome difficulties, and sacrificed even his week-ends, if necessary, to read what I had written.

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“If you want to see the rainbow, you first have to permeate the curtain of rain.”

(Dolly Parton)

INTRODUCTION

Corporate environmental awareness has already been in the focus of a great deal of research. Empirical findings provide more and more recent information to promote the in-depth understanding of this problem area. While studying literature, I experienced that researchers rarely examine corporate environmental awareness in its entirety because of complicated relationships. They rather concentrate on certain forms of its manifestation and analyse those more deeply. Of course there are synthesising efforts as well, with the limitation that they simplify reality because they are able to capture only a part of relationships.

Consequently, the core idea of my dissertation is to make an attempt and integrate the advantages of both research approach, and to contribute to the explanation of pro-environmental corporate behaviour. During my work I strived to take the most possible significant elements of environmental awareness into account and explore the inherent logic of pro-environmental organisational behaviour, providing a hopefully holistic view at the end.

In the course of analysis, I divide environmental awareness into various components and analyse organisational behaviour through these components. Based on literature, I have identified five components of awareness, which can be interpreted from the viewpoint of organisation members and the whole organisation alike. These are as follows: ecological knowledge, environmental values, environmental attitudes, willingness to act and actual behaviour.

The components of environmental awareness in their interrelation form and reflect environmentally aware behaviour. Components include several awareness elements which are inevitable for a consistent appearance of environmental awareness in practice – both in case of individuals and the organisation. However, due to the complex nature of reality and several influencing factors, environmental awareness manifests frequently in an inconsistent manner, which means “awareness gaps” to emerge between and within the various components. The aim of my empirical research is to identify those components of environmental awareness which play an important role in shaping actual behaviour, as well as to explore awareness gaps preventing corporate behaviour from being consistent, in order to understand the nature of those gaps.

Corporate environmental awareness is influenced by individual and organisational factors alike. I have incorporated the most essential factors into a model, which the theoretical part of my dissertation is based on. The essence of the model is that corporate environmental awareness can be interpreted on the one hand through the behaviour of the members of the organisation, and on the other hand, in a manner that goes beyond individuals. Behaviour of organisation members is influenced by two major groups of factors. Members of the organisation, on the one hand, dispose of environmental awareness they possess which is determined by factors falling outside the scope of the organisation, acquired in everyday life of the individuals. I will analyse these factors in the light of social psychology literature. At the same time, however, the organisation itself exerts influence on the behaviour of its members through various factors. When describing these factors I will draw upon the literature of different approaches of organisational behaviour, such as organisational learning, corporate culture, organisational motivation and organisational strategy.

Accordingly, the dissertation is structured as follows:

1. Based on the literature, first I identify and briefly describe the most important components of environmental awareness and the directions of their interrelations.
2. With the help of social psychology theories, I try to explore the most important components in the background of environmentally aware individual behaviour.
3. By establishing a model, I link individual and organisational environmental awareness with a view to characterise corporate environmental awareness.
4. Based on various schools of organisational behaviour, I analyse factors which exert profound influence on corporate environmental awareness through the members of the organisation and in the context of the organisation as a whole. To support theoretical findings, I describe the results of the most important practical research. Components of environmental awareness serve as framework of the analysis.
5. The empirical research has been done in two stages: in the first stage of the research, I identify gaps between four components of environmental awareness – ecological knowledge, environmental attitudes, willingness to

act and actual behaviour – based on a corporate sample. The questionnaire made the assessment of corporate environmental values not possible but this component cannot be neglected in characterising pro-environmental behaviour. As a proof of this, in the second stage of research, I make an in-depth analysis about how environmental values manifest in the corporate culture of a company, which shows a consistent behaviour in the other components of environmental awareness, having almost "no gaps".

The ultimate objective of my work is to explore elements reflecting consistency, as well as aspects indicating gaps in corporate environmental behaviour, in order that companies are able to recognise where they should intervene into the awareness rising process, reinforcing consistent behaviour and simultaneously narrowing awareness gaps. Furthermore, I hope that the approach, the applied methodologies and the final statements of the dissertation will broaden the literature of pro-environmental corporate behaviour.

I. INTERPRETATION OF ENVIRONMENTAL AWARENESS

I.1. Components of environmental awareness

First and foremost, I think it is important to underline that from the practical viewpoint at individual and organisational levels alike, it is essential to define ***the concept of environmental awareness***. Generally speaking, theories explaining individual behaviour do not define this concept, for the following reason: environmental awareness, environmentally aware behaviour is a concept difficult to define, because various interpretations are possible depending on one's ideology and values. Therefore, right at the point of departure we encounter the problem of having to incorporate the researcher's standpoint on the matter. Thus, researchers have made attempts to establish models which – regardless of the precise definition of the concept – may be valid in terms of the manifestation and components of awareness, as well as the factors influencing it. In the case of organisational approaches, we also encounter the problem that companies are interpreting environmental awareness in different ways determined by the way of their operation.

Moreover, from the viewpoint of the definition, it is important whether we examine environmental awareness as a state or as a process. If we analyse the awareness-shaping process and the interrelations of factors, which determine environmental awareness within an organisation, we do not necessarily need to precisely define the content of this concept. At the same time, depending on the individual definition of corporate environmental awareness given by a company, we will find differences in terms of the manifestation of environmental awareness in its individual components and also in terms of the instruments which are to shape and generate environmentally aware behaviour within a given organisation.

Literature treats this concept as a multi-dimensional construct; however, its components differ from one another in individual approaches. According to Maloney and Ward (1973), the cognitive components of environmental awareness are:

- ecological knowledge;
- the emotional affect evoked by environmental problems;

- revealed willingness to act in a pro-environmental way; and
- ecologically active contemporary behaviour.

Among the components established by Winter (1987), in addition to knowledge and willingness to act, further components such as individual values/attitudes, collective values/social norms also appear. Urban (1986) does not make mention of knowledge separately; the four components identified by him encompass values, attitudes, willingness to act in the context of environmental protection and the actual behaviour itself.

In the case of theories exploring individual environmental awareness, authors very frequently treat awareness components and the reasons behind together (see in the next chapter: Ajzen and Fishbein1980, Hines et al. 1986, Dietz et al. 1998, Kollmuss and Agyeman 2002). At the same time, the explanations of the models give us an opportunity to differentiate between awareness components and the factors influencing them.

Based on literature, I have identified five components, by means of which both individual and – in an indirect manner – organisational environmental awareness can be described. These are as follows:

- **ecological knowledge,**
- **environmental values,**
- **environmental attitudes,**
- **willingness to act,**
- **actual behaviour**.

Below, I will briefly summarize the most generally accepted approaches to individual components in order to make the relations between them easier to define.

By ***ecological knowledge*** we mean, on the one hand, factual ecological knowledge, which influences the way of thinking, shapes the process of identifying values and attitudes through which it affects willingness to act and actual behaviour. However, the vast majority of ecological knowledge is invisible and, therefore, is difficult to measure. A higher level of knowledge generally results in more efficient information processing, more informed decision-making processes and increased

capacity to adjust. This, however, does not mean that ecological knowledge unambiguously results in the appropriate level of environmental awareness in other components as well.

Environmental values are part and parcel of our value system. Values typically are "durable concepts or convictions which relate to the desired behaviour, unfold in various situations, provide orientation when evaluating events and are organised in an order of relative importance" (Hofmeister, Tóth, Törőcsik 1996, p. 88). To put in another way: "Values in a modern society are, on the one hand, the most deeply embedded cornerstones of personality, which help orientation and which by being embedded provide stability, consistency and security for people in their social lives. On the other hand, values are the socio-psychological instruments to integrate social groups, strata, classes, they are the lowest common denominators for the collective interpreting of the world around, which facilitates a collective vision" (Csepeli 1986). These two definitions make this component interpretable both at individual and organisational levels.

According to Rokeach (1968), values are the disposition of the *individual* and can be divided into two groups: terminal and instrumental values. Terminal values serve as compass in the individual's choices and behaviour, they mean preferences which the individual wants to follow during his/her life. Instrumental values are instruments in order to reach terminal values and as such they determine everyday actions of the individual. Terminal values can be individual-oriented or society-oriented. From the aspect of behaviour it is not of minor importance whether the person gives priority to individual or social values when rank-ordering values. Instrumental values can be moral values or competence values. If the person breaks moral values he/she has feeling of guilt or bad conscience. Competence values are rather individual than social. Breaking them may result in feeling of shame, but not in feeling of guilt or bad conscience. Moral values are for example honesty and responsibility, competence values are logical thinking or intelligent behaviour.

In the approach of Rokeach, value is a multi-dimensional construct: it comprises of cognitive (conscious), affective (emotional) and conative (behaviour tendency) components. In this respect, value bears resemblance to attitude. For the sake of easier interpretation, I will analyse these three components when discussing attitudes. The major difference between them is that values are of an abstract nature and there are fewer of them than of attitudes which are relating to concrete situations

and objects and which are actually based on values. As the above-listed three conceptual components of values are the main components of attitudes as well, I will analyse them in detail later on, when discussing attitudes, because they are easier to interpret in concrete situations.

Further characteristics of values are that they are not necessarily rational, we learn them in the process of socialisation and in their interrelation they constitute a system of values. The system of values is the hierarchical ranking of ideas, values, which is not necessarily harmonious. It frequently happens that we follow various values in parallel. These values might be inconsistent, incongruent with one another, in such cases they clash.

The manifestation of ecological values frequently leads to value conflicts both at individual and organisational levels. In resolving this conflict, learned rules and prioritising ecological values in the value hierarchy play an important role. The ranking, the role, the inconsistency or consistency of environmental protection within the organisation is determined by how the company can reconcile environmental considerations with its operation and strategic objectives in general, how consistently environmental protection can be incorporated into the organisation.

Measuring values is a daunting task because on the one hand revealed values do not necessarily tally with the internal system of values and, on the other hand, values cannot be observed in a direct manner. Only attitudes and value-oriented behaviour make it possible to draw conclusions as to the existence of the respective values (Hankiss 1977). This by all means is a finding of outstanding importance for empirical research.

The next important component of environmental awareness is constituted by ***environmental attitudes.*** Various definitions of attitude are known, out of which one of the most broadly accepted one is the following: "Attitude is mental and neural state of readiness organised through experience, which exerts an orientating or dynamic impact on the reactions of the individual vis-à-vis all the objects and situations which the attitude relates to" (Allport 1954, cited by Hofmeister-Tóth/Törőcsik 1996, p. 65).

Attitudes, therefore, relate to concrete situations and objects, consequently in the case of an individual, we can talk about an indefinite variety of attitudes (see Rokeach 1973). Attitudes do have an object (they relate to), a direction (positive or negative), a degree (their location between positive and negative poles), intensity

(stability, duration), relevance (significance) and they can be learnt (see in more detail, Hofmeister-Tóth 1996, pp. 67-68).

The functions of the attitude indicate the relevance of attitudes in the individual's life (Katz 1960, cited by Halász-Hunyadi-Marton 1979, and Hofmeister-Tóth 1996, pp. 69-70):

- adaptation function: a regular positive (or negative) reinforcement results in positive (or negative) attitudes,
- self-defence function: a distorted vision to defend the positive attitude of the individual towards himself,
- function to express values: attitudes make it possible for the individual to express his core values,
- cognitive function: the illusion of knowledge, which helps the individual perceive and consider his own behaviour as regulated, reasonable and appropriate.

Attitudes might emanate from various sources (based on Hofmeister-Tóth 1996):

- personal experience,
- needs,
- selective perception,
- personality (sensitivity to problems),
- group relations (family, reference group, culture and sub-culture),
- other influencing factors (experts, opinion leaders, idols).

In psychology (as I mentioned above), the concept itself is a multi-dimensional construct. At present, the most broadly accepted interpretation attaches three components to the attitude (Rokeach 1973, Sears et al. 1985):

- cognitive component,
- affective (or emotional) component,
- conative (or behaviour tendency) component.

It is obvious that according to this division, knowledge and information is part of attitudes. The conative component represents behaviour tendency, therefore, it can be linked with willingness to act. At the same time, the mentioned components influence actual behaviour in a different manner and of varying intensity. The cognitive component can be altered relatively fast, as new facts, knowledge, information are proved and accepted. According to Sears et al. 1985, the relatively simple *affective* component seems to be the most decisive vis-à-vis behaviour. At the same time, the behaviour tendency component is not always consistent with the cognitive and affective components, there are certain conditions to be met in order to achieve consistency. Intensity of the attitude influencing behaviour significantly depends on the attitude's strength, the existence of other attitudes, the ability to react to the attitude and other situational factors of the social environment (Hofmeister-Tóth 1996). Later we will see that non-environmentally oriented selective motifs of higher intensity are often able to override the primary motifs encouraging environmentally aware individual behaviour. On the other hand, behaviour which is inconsistent with the attitude has a reverse effect on the attitude itself and might induce changes to it. To explain these phenomena, several theories have been born in social psychology, from various learning theories through motivational approaches to theories on cognitive consistence (in more detail, see Sears et al. 1985, pp. 136-143). I will tackle a few of these when examining corporate environmental awareness.

Attitudes can in general be measured along cognitive and affective components (for example, questionnaire-based survey), which has various inherent distorting features: for example, the expression of the expected attitude of the respondent instead of his real attitude, the questioning situation is not spontaneous as opposed to real communication, the logic of the questionnaire and every-day life are different, the anonymity and confidentiality of the questionnaire reduce the feeling of responsibility. When carrying out attitude tests, it is worth remembering that the situation where a concrete form of behaviour manifests is always more complex and richer in various elements than the scheme/pattern in the cognitive domain of the attitude.

It is worth identifying and separating the different components of awareness if we wish to attach proper importance to them and wish to indicate that the components linked to the attitudes are not in a perfect causative relation with one another. According to the literature, it is the emotional, affective component that is

the most decisive in terms of actual behaviour. We must keep in mind, however, that various components of environmental awareness can never be examined and evaluated independently from one another. We should examine them in their entirety and take into account their interrelations as well.

Willingness to act is a revealed commitment to act, in our case in an environmentally aware manner. Though literature prefers to group “willingness to act” among the components of attitude – as a so-called "behaviour tendency" – , due to the ambiguity of causal relations, this component can also be conceived of as one deriving from established attitudes with a certain degree of likelihood and as the next stage leading to actual behaviour**.**

Based on the above findings, we can say that the first four components of environmental awareness characterise the cognitive and emotional state, and are the preconditions for ***actual behaviour.*** However, we cannot make completely safe conclusions to actual behaviour in the light of the other components. Therefore, it is advisable to monitor actual behaviour, as an explicit indicator of the success and stability of the awareness-shaping process, as well as of the interrelation and internal consistency of components, which constitute awareness. According to experience, the most frequent case of broken consistency is a situation where knowledge, revealed attitudes and values or revealed willingness to act are not reflected in the actual behaviour or are reflected in a manner that differs from expectations. In addition to this, there are cases when the motivation behind the seemingly environmentally aware behaviour is not a real change in one's values (for example, impact of trends, fashion). Such behaviour, however, is generally not long-lasting but changes according to changing circumstances. It concludes that by means of temporal comparisons, the real transformation of values can be controlled.

Based on the above approaches and practical experience the relation between the components of environmental awareness can be described the most simply as follows:

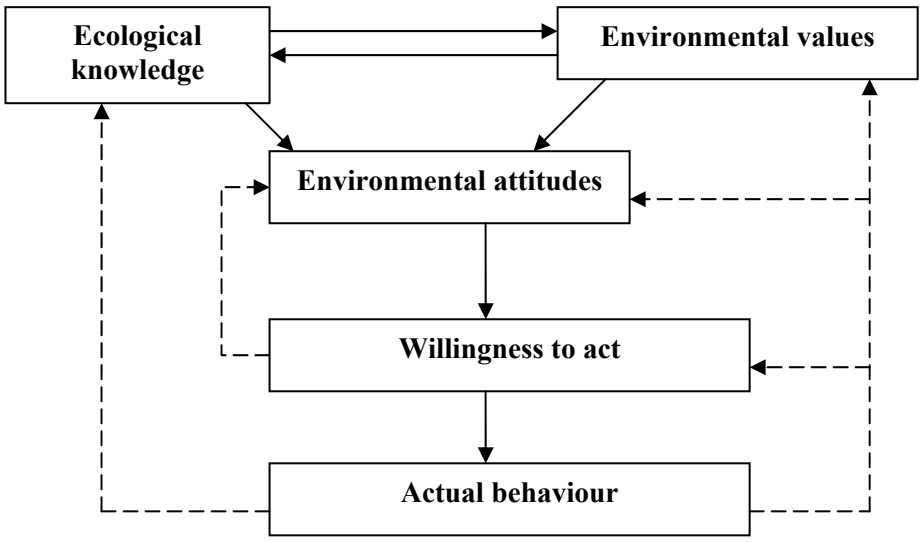


Figure 1: Relations between the components of environmental awareness

Continuous arrows indicate impacts towards action; broken lines, broken arrows indicate feedback-type impacts. I would limit myself to only a few comments related to the diagram, as the relations between components will be more visible and easier to understand on the basis of the above and in the course of the analysis of factors influencing environmental awareness.

The knowledge of environmental problems by all means has an impact on the shaping of values (for example, by increasing concerns related to the repercussions of environmental pollution and by encouraging to take a stand). At the same time, reverse effects are also significant: the ranking of environmental values in the individual's hierarchy of values essentially impacts on his willingness to acquire environmentally related knowledge in line with the selective perception and evaluation of information. Ecological knowledge and values together influence attitudes in concrete situations and through attitudes influence the willingness to act and finally, actual behaviour. Feedbacks indicate that the practical manifestation of certain components of environmentally aware behaviour modifies the previous stages. It is even more applicable to the case of actual behaviour, which very frequently represents the revealed values, environmental attitudes, knowledge and willingness to act of the individual only to a limited extent. Actual behaviour – as an experience – has a reverse impact on the other components of environmental awareness and is able to alter them.

I.2. Approaches to individual environmental awareness

Each and every model to be described below wishes to explain the awareness-shaping stages the individual goes through and the influencing factors that lead or do not lead him to environmentally aware behaviour (see Kollmuss and Agyeman 2002; Raudsepp 2001, as well as Courtney-Hall and Rogers 2002)[1]. Taking a closer look at the models, it is obvious that the basic components of environmental awareness can also be applied to the examination of other problem areas. This means that when talking about components of environmental awareness, we are interpreting the concept of awareness in the context of environmental issues. I will identify the most important components and give a detailed analysis in the next chapter when linking individual and organisational environmental awareness. In this chapter, I am not going to separate awareness components from the influencing factors (which are in the background of one or more components), but I will approach the question following the logic of literature.

According to the earliest models of environmental awareness dating back to the early 1970s (e.g. Dispoto 1977, Loundbury és Tournatsky 1977), ecological knowledge (the totality of ecological knowledge and information) leads directly to environmentally related attitudes (concerns, the process of becoming aware of problems, recognising the need to protect the environment, etc.) and finally to pro-environmental behaviour (see in detail Chan 1998, as well as Kollmuss and Agyeman 2002).

Findings of empirical research, however, soon pointed out that individual behaviour cannot be directly predicted and explained by the individual's environmental attitudes formulated in the light of ecological knowledge. Therefore, researchers started to try and explore reasons for gaps between attitudes and actual behaviour.

Ajzen and Fishbein (1980) established the "***theory of reasoned action***", which does not explicitly refer to environmental awareness but it tackles reasoned

[1] The models to be introduced generally do not define the concept of environmental behaviour. At the same time, Courtenay-Hall and Rogers (2002) as well as Gough (2002) underline that this concept is far from being unambiguous and can only be defined in relative terms, which also reflect value judgements. The definition in its structure does not but in its content does affect both the steps in the awareness-shaping process (that is components of environmental awareness) and influencing factors which facilitate or hinder the practical implementation of environmentally aware behaviour.

action in general. This theory – largely due to the mathematical background which was to facilitate empirical research – exerted major influence on the literature of social psychology.

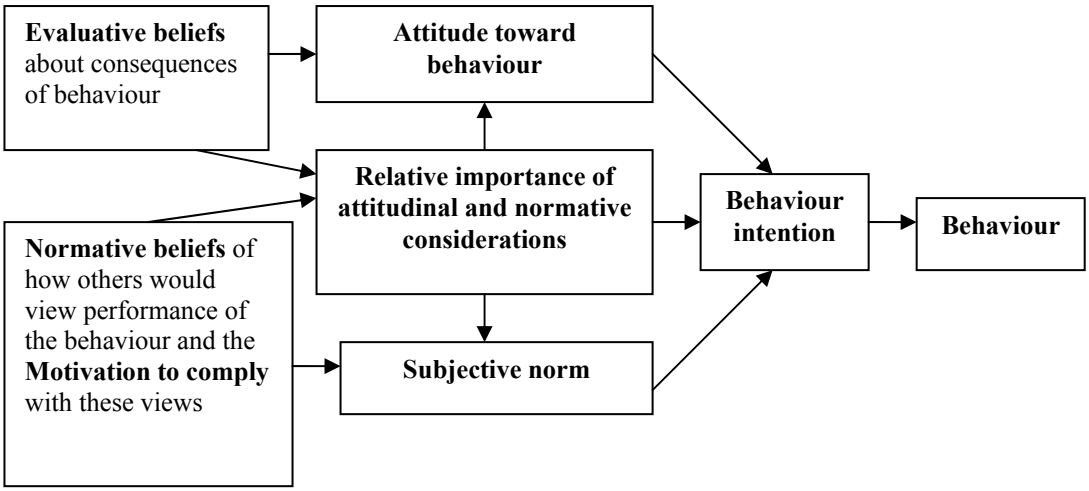


Figure 2: The theory of reasoned action (Ajzen and Fishbein 1980)

According to the authors, attitudes do not directly determine the behaviour but they influence the intention to act. The latter shapes actual behaviour. It is not only attitudes, however, that influence the intention to act, but also the "normative" pressure exerted by society. It is to be seen that attitudes always manifest attached to concrete forms of behaviour and according to the authors, they depend on two factors. More precisely, they depend on the relative importance attached to these two factors by the individual. The factor of "evaluative beliefs" indicates how the individual evaluates the consequences of the given behaviour based on his own values and beliefs. "Normative beliefs" indicate how the individual perceives the ideas of other members of the community related to a given behaviour and to what extent he is motivated to meet these expectations. In addition to attitudes, a so-called “subjective norm” also emerges in the individual related to the issue, which is influenced by normative beliefs and their relative importance. Attitudes, subjective norm and the relative importance attached to these, together influence the intention to act.

The above model is limited in the sense that it always presumes a rational action to be taken by the individual. In spite of this shortcoming, it has proved useful in further research due to its transparency and simplicity.

Later Ajzen (see Ajzen 1985 and 1991) developed the TORA and elaborated the "***theory of planned behaviour"*** (TPB). In the TPB he integrates new components: the "control beliefs" and the so-called "perceived behavioural control". Perceived behavioural control is shaped by the control beliefs and characterises how the individual considers the impact of his/her behaviour on the given issue. Persons with strong internal control are convinced that their behaviour can ensure changes, whereas persons with strong external control are convinced of the opposite.

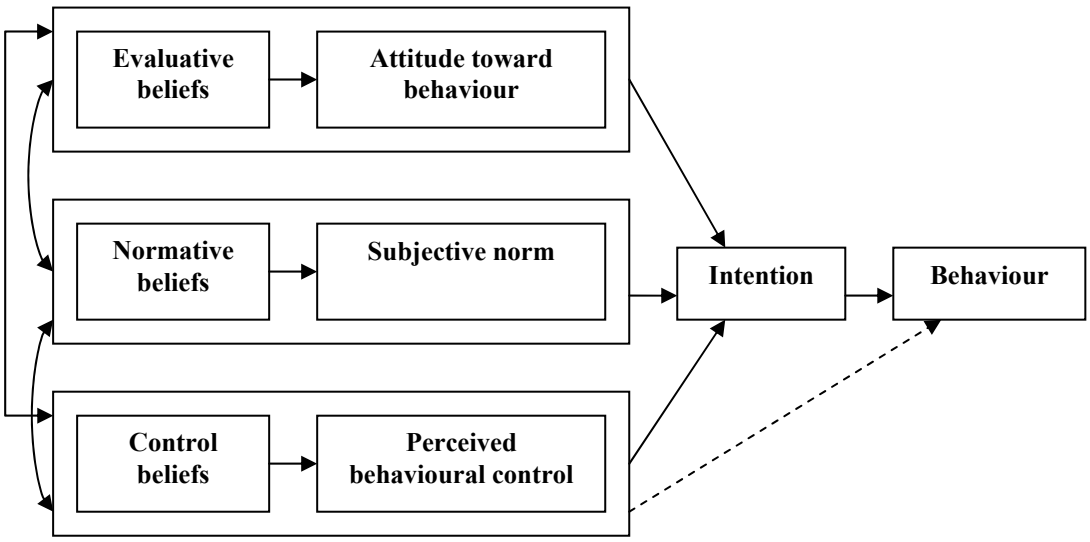


Figure 3: Theory of planned behaviour (Ajzen 1991)

The model expresses the quite complex relationships between different beliefs and the factors shaped by these beliefs (attitude, subjective norm, perceived behavioural control). These relationships together influence then the intention of the person and finally the behaviour. Ajzen attaches high importance to perceived behavioural control regarding realised behaviour. He states that perceived behavioural control influences actual behaviour twofold: through the person's intention and directly as well[2].

[2] In the latest version (Ajzen 2002) even a further component is present: the "actual behavioural control which indicates the behavioural impact of the person in a given situation. This component

Based on Ajzen's developed theory, Hines, Hungerford and Tomera established the ***"model of responsible environmental behaviour***" (Hines et al. 1986), which summarises their findings of 128 studies focusing on factors which influence the environmentally aware behaviour.

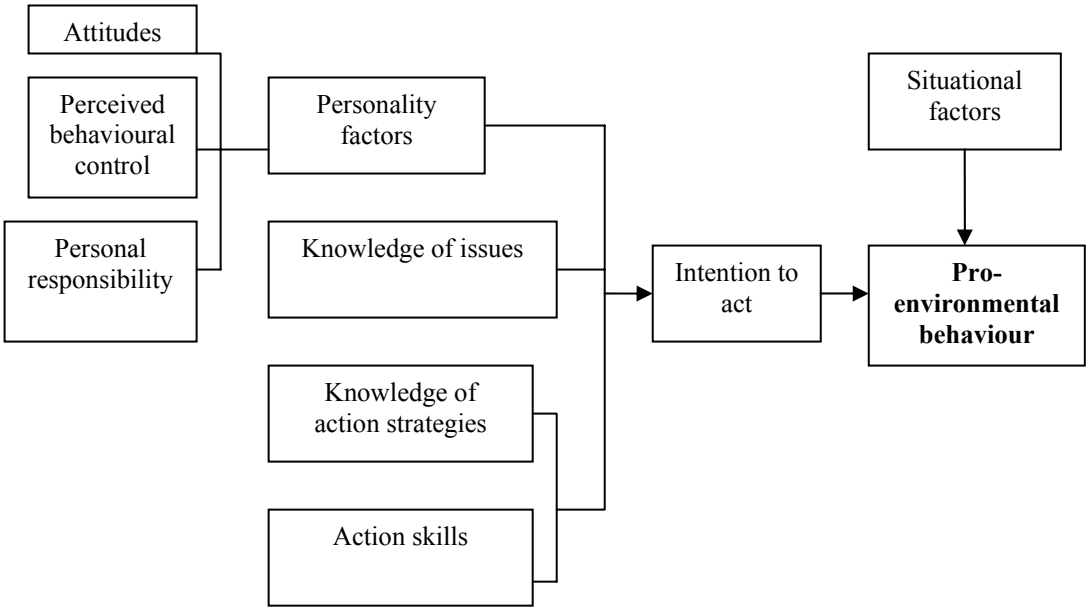


Figure 4: Model of responsible environmental behaviour (Hines et al. 1986)

The model is more refined than the theory of Ajzen inasmuch as it

- extends factors which influence personality considerations;
- finds the knowledge of ecological problems important (though it does not analyse its influence on attitudes);
- considers the knowledge of possible action strategies and the person's action skills as important preconditions for the intention to act; and
- takes into account situational factors, which in addition to the intention to act in an environmentally aware manner, might influence individuals' behaviour in concrete situations.

makes the model more dynamic as it appears first during the first action and has its influence both on the perceived behavioural control and the behaviour in the next action periods.

According to the model, personality factors are determined by attitudes, personal responsibility and perceived behavioural control. A stronger sense of responsibility encourages a stronger commitment. The knowledge of action strategies means that the person is aware of what he is to do to reduce the detrimental effects of his own activity on the environment. At the same time, his action skills might strengthen or weaken him in his intention to implement these strategies.

I have already mentioned that in this model, the intention (willingness) to act does not automatically lead to environmentally aware behaviour: so-called ***situational factors*** also influence behaviour in concrete situations. Such situational factors might be:

- economic constraints (lack of finances),
- social pressure (to act in a non-environmentally aware manner),
- opportunity to select between various actions (relative advantages and disadvantages),
- established old traditions,
- the sacrifice required by the behaviour (time and efforts),
- lack of infrastructure (important conditions to implement the given behaviour are missing), etc.

A serious step forward in establishing theories is the recognition of situational factors' role in influencing the action, because it indicates that even in the last phase of decision-making there might be gaps between the elements of environmental awareness. Therefore, it is of utmost importance to analyse each and every component of environmental awareness before judging an individual's or an organisation's environment-related behaviour.

Kollmuss and Agyeman (2002) have developed their own theory by systematically analysing the most important models of environmentally aware behaviour. This model integrates the findings of previous models.

The authors identified three groups of factors which influence the individual's behaviour vis-à-vis the environment to a varying degree: demographic factors (for example gender, qualification, age), external and internal factors. In the following I will describe only external and internal factors in detail. I leave demographic factors

out of the description because according to empirical research, internal factors seem to have a much stronger influence on the person's behaviour than demographic considerations (Dietz et al. 1998, see later).

External factors:

- ***Institutional factors***: the lack of the necessary infrastructure (e.g. for recycling, public transport, etc.) constitutes an institutional constraint;
- ***Economic factors:*** the individual's decision is remarkably influenced by his own financial means, and on the other hand, the rate of return of the environmentally friendly solution (e.g. in the case of energy saving devices);
- ***Social and cultural factors:*** according to experience, the role of social, cultural norms is quite significant in shaping individual behaviour;
- ***Political factor:*** it goes without saying that political support also influences the willingness to act by motivating it.

Internal factors:

- ***Motivation:*** The intensity and direction of the individual's internal motivation has a significant impact on his behaviour. Literature differentiates between primary and selective motifs. The former – in a conscious or covert manner – determine a large number of forms of behaviour (e.g. the ambition to lead an environmentally friendly life), whereas the latter impacts on a certain action (e.g. whether I take my car when it's raining or I opt for biking). Environmentally aware behaviour is often hampered by non-environmentally oriented motivations of higher intensity (e.g. when it's raining I opt for the car because comfort is more important for me than environmental awareness). Selective motifs, therefore, often "override" primary motifs.
- ***Environmental knowledge:*** The majority of empirical research came to the conclusion that although the knowledge of environmental problems raises concern in people, this per se is not sufficient to lead to an environmentally aware form of behaviour. Fliegenschnee and Schelakowsky (1998) claim that 80% of motifs influencing environmental awareness or the opposite can be

traced back to situational or other internal factors. This statement is supported by the striking experience of Kempton et al (1995), according to which the lack of ecological knowledge was of the same degree amongst committed environmentalists as among neutral respondents or among those opposing environmental protection. It can also be observed that certain incentives (e.g. economic advantages), cultural values and social norms can encourage individuals to act in an environmentally aware manner even if they are not driven by concerns about the environment. In the latter case, we cannot ignore the fact that such non-aware or unaware environmentally friendly behaviour is not durable and in the absence of incentives easily reverses, because it is not based on the individual's internal conviction and set of values.

- ***Values:*** According to the experience of the authors, the individual's value system is the most strongly shaped by the stimuli from his immediate environment (family, friends, neighbours, teachers, etc.). This is followed by media and politics as influencing factors in the broader environment; and next is the cultural context in which the person lives. Chawla (1998) in his survey among professional environmentalists came to the conclusion that environmental sensitivity and awareness are determined by childhood experience vis-à-vis nature, the environment-related values of the family, the views of environmental organisations, the role models (friends, teachers), and education, training (in a descending order of importance). Though the research did not focus on different manifestations of direct environmental awareness (membership in an environmental organisation is considered to be a form of indirect behaviour), the results are informative inasmuch as they underline the importance of emotional attachment to nature. According to other authors, value orientation also has a key role in behaviour. Nordlund and Garvin (2002) came to the conclusion that people with a cooperative value orientation were more aware of threats to the environment and felt a stronger moral obligation to act than persons who gave priority to self-enhancement values.
- ***Attitudes:*** most questions arise when examining the influence of attitudes on behaviour (the precise definition of attitude will follow later). We have seen that the majority of environmentally aware behaviour models consider

attitudes as an important factor, which at the same time, cannot directly determine behaviour. Environmentally friendly attitude might have a positive impact on willingness to act, but Diekman and Franzen (1996 cited by Kollmus and Agyeman 2002) claim that the sacrifice needed by environmental awareness (e.g. costs, time, efforts) can diminish the impact of attitudes. In their research, positive environmental attitude showed significant relation only with behaviour demanding moderate sacrifice (such as selective waste disposal). The authors, however, emphasize that individuals with positive environmental attitudes dispose of a stronger willingness to support political measures which aim to encourage environmentally aware behaviour (e.g. environmental taxes, the introduction of more stringent requirements, regulations, etc.). This also means that these individuals accept indirect motivation vis-à-vis their own behaviour, they support the application of adequate environmental policy measures to reverse the situation and reduce the relative costs of environmentally aware behaviour.

- ***"Environmental awareness":*** In the model of Kollmuss and Agyeman (2002) awareness means knowledge of the impact exerted by human behaviour on the environment. This "awareness" is limited by the fact that the impacts of ecological problems often unfold with some delay. Degree of nature degradation is frequently slow and gradual, and the whole issue is rather complex. These constraints, according to experience, encourage the individual to compromise.
- ***Emotional involvement:*** The mentioned research done by Chawla (1998) highlights the importance of emotional affect in shaping the individual's beliefs, values and attitudes (see above). Lack of ecological knowledge and "environmental awareness", for example, does not evoke emotions in the individual. At the same time, we have seen that unfortunately, having this knowledge per se is not sufficient for the emotional attachment to be formed. If external information contradicts our prevailing beliefs, the ambition to achieve internal consistency leads to a selective perception of information, i.e. we make efforts to avoid cognitive dissonance (see Festinger 1957). Even if ecological problems give rise to emotional reactions in the individual, it is not enough to cause him to act. No matter if we feel fear, sorrow, pain, anger or guilt, if these emotions are accompanied by the conviction that our

behaviour does not have any effective influence on the solution (one swallow does not make a summer) they lead us to non-action. In addition, negative emotions give rise to secondary psychological responses by means of which the human being makes efforts to get rid of these emotions. These defensive mechanisms might take the form of denying the problem (refusal of the reality), rational distancing, apathy and resignation (the inability to change), or delegating the problem to other people (passing the buck), in order to get rid of the feeling of guilt.

- ***Perceived behavioural control:*** in the above we have seen that from the viewpoint of action, the individual's conviction is very important. This conviction suggests that the individual is able to bring about change through his or her behaviour (in more detail see Ajzen 1991, Hines et al. 1986, Laroche et al. 2001).
- ***Responsibility and priorities:*** Our sense of responsibility is significantly shaped by our values and the locus of control (internal or external, depending on personality). In addition to this, the individual sets priorities among which his and his family's well-being is usually the first. If environmentally aware forms of behaviour are in line with personal priorities, the motivation to act increases (for example, purchasing organic food). If these two factors contradict one another, the likelihood of action is smaller (for example, purchasing a smaller flat, even if the individual could afford to have a bigger one).
- ***Old, established habits:*** these generally prevent the individual from pursuing environmentally aware behaviour.

In the case of the above-described models, in the explanation of environmentally aware behaviour individual considerations are supplemented with other influencing factors, which unfold via inter-personal relations. In the examination of corporate environmental awareness both groups of factors have a fundamental role to play, as corporate behaviour can only be "environmentally aware" if the behaviour of organisation members is also environmentally aware, in the context of the organisation. However, in establishing the appropriate organisational behaviour, it is not at all insignificant which group of factors is involved in shaping the individual's behaviour and to what extent.

According to empirical research (see Jaeger et al. 1993 and Dietz et al. 1998), the so-called ***socio-cultural factors have a stronger influence*** on the individual's environmental awareness than his general concern about ecological problems (which derives from the knowledge of ecological problems) or socio-demographic variables (e.g. age, gender). Such socio-cultural factors are:

- *group identity* (Bonaiuto et al. 1996),
- *group norms* related to pro-environmental behaviour (Widegren 1998), or
- *the character of social relations* (Jaeger et al. 1993).

The significant impact of group identity (that is the need to identify with the group), the common norms of the community regarding environmental awareness and the interpersonal relations on individual behaviour projects the potentially successful application of motivation methods within an organisation intending to shape or develop corporate environmental awareness based exactly on these socio-cultural factors. At the same time, in the case of the organisation, one must not forget about factors which, in addition to the above mentioned, generally determine individuals' behaviour in the organisation. These factors can also serve as motivating instruments to make individuals pursue the desired behaviour. I will discuss these factors in detail when linking individual and corporate environmental awareness.

Table 1 below includes the most important characteristics of the above presented theories of environmentally aware behaviour, as well as their critical assessment. As a result of an evaluative comparison of theories, Table 1 indicates both the added values and the shortcomings of every model analysed. This assessment can help us review what we can expect when using one or another model to understand the components of persons' environmental behaviour.

Table 1: Characteristics of theories referring to (environmentally) aware individual behaviour

Author(s)	Theory	Main statements of the theory	Added value of the theory	Shortcomings
Pl. Dispoto 1977, Loundbury és Tournatsky 1977	Early theories	Ecological knowledge of the person strongly influences his/her attitude, and both determine actual behaviour.	Attempts to explore the relations between knowledge, attitude and behaviour.	The models are too simple, nor reflecting the complexity of reality.
Ajzen/Fishbein 1980	Theory of reasoned action (TORA)	Attitude and subjective norm, as well as their relative importance influence intention to act, and the latest shapes actual behaviour. Attitude is affected by evaluative beliefs, subjective norm is shaped by normative beliefs.	Differentiation and weighting of attitudes and subjective norm, as well as incorporation of intention to act into the model.	The model presumes that individual's actions are always rational, and it does not analyse the difference between intention to act and actual behaviour.
Ajzen 1985 1991	Theory of planned behaviour (TPB)	Intention to act is influenced by attitude, subjective norm and perceived behavioural control (with control beliefs behind). Perceived behavioural control influences behaviour directly as well.	Introducing the concept of perceived behavioural control, improving TORA.	This model does not analyse the difference between intention to act and actual behaviour either.
Hines et al. 1986	Model of responsible environmental behaviour	Personality factors are shaped by attitudes, perceived behavioural control and personal responsibility. Personality factors, as well as knowledge of issues, knowledge of action strategies and action skills influence intention to act. In addition to intention, situational factors also have their impact on actual behaviour.	Planting new components influencing intention to act, as well as stressing the role of situational factors in shaping actual behaviour.	The model does not analyse the impact of ecological knowledge on attitudes, and takes the value system of the individual indirectly – through personal responsibility – Into account.
Kollmuss and Agyeman 2002	Model of pro-environmental behaviour	The pro-environmental behaviour of the person is influenced by internal (motivation, knowledge, values, attitudes, „awareness", emotional involvement, perceived behavioural control, responsibility and priorities, habits), external (institutional, economic, socio-cultural, political), as well as demographic factors.	Differentiation of internal and external factors, as well as representing motivators and constraints together in the model. Integration of the most important elements of previous models.	The model is quite complicated, not really suitable for empirical research.

I.3. Environmental awareness on corporate level

When examining corporate environmental awareness, individual and organisational levels link up. Corporate environmental awareness unfolds on the one hand via the behaviour of organisation members and, on the other hand it can be interpreted beyond the level of individuals. Therefore, I shall examine the factors in the background from these two perspectives.

The behaviour of organisation members is determined by their "possessed" environmental awareness (manifesting in everyday life of the person) and by all those factors which exert their influence within the organisation. The existing environmental awareness of individuals has a positive or negative influence on the efficiency of instruments applied by the organisation to achieve the desired behaviour. The willingness to acquire information, new knowledge related to environmental protection, the attitude to tasks of environmental protection and the development of a commitment and its success largely hinge upon the attitudes, values and knowledge the individual possesses in this area. The organisation applies a wide range of instruments to efficiently influence the behaviour of the members of the organisation.

At the same time, environmental awareness at the organisational level cannot be calculated as the sum total of individuals' environmental awareness. One reason for this is the difference in the meaning of environmental awareness within the organisation and in the case of individuals. Within the framework of the organisation, corporate environmental awareness is related to the activities of the organisation, whereas individual behaviour within the organisation is only a special part of the individual's environmental awareness. It is special, because the individual's organisational behaviour is motivated by other objectives than his behaviour in other areas of life. The task of the individual within the organisation is to work towards the objectives of the organisation, which the organisation facilitates through incentives. The individual's behaviour within the organisation strongly depends on the efficiency of these incentives, though to a smaller or larger degree, the behaviour is also influenced by the principles guiding the individual's decisions in his life outside the organisation. "Traditional" motivating tools, which keep the organisation going, are also key instruments regarding tasks of environmental

protection. Knowing the impacts of the factors in the background of the individual's environmental awareness can help the organisation widen the application of motivating instruments and make them more efficient in order to have its environmental protection objectives met.

The other reason why organisational level of environmental awareness cannot be conceived of as the sum of individuals' environmental awareness is the fact that individuals within the organisation are also members of various organisational groups. Action at group level might result on the one hand in synergies: due to various socio-cultural factors (e.g. group identity, interpersonal relations, group norms), the group's environmental awareness might even be larger than the sum of the environmental awareness of individuals constituting the group. Of course, under unfavourable conditions the group level environmental awareness might also be smaller than the sum of individuals' consciousness (see later the findings of Zilahy 2002). On the other hand, the level of distinct groups' environmental awareness within the organisation might differ according to the participation and awareness required by the organisation to meet its environmental protection objectives or environmental strategy. Though this phenomenon makes it more difficult to characterise environmental awareness in the context of the entire organisation, it is still possible, if we examine corporate environmental awareness of individual groups and see to what extent this corresponds within the organisation to the level of environmental awareness expected from a given group.

Figure 4 on the next page includes both the external factors which influence the environmental awareness of organisation members outside the organisation, and factors exerting their influence via the organisation on the environmental awareness of both members and indirectly the whole organisation. I have also integrated the components of environmental awareness in Figure 5, however, the representation of the relations between components would require a spatial image which goes beyond the framework of this thesis. Straight arrows indicate the directions of the effects various factors have and broken lines represent feedback, i.e. environmental awareness generated by influencing factors has a reverse effect on the individual factors and can alter those to a smaller or larger degree. Thus, we have a dynamic model of the shaping of corporate environmental awareness emphasizing the "process"-nature of forming this awareness.

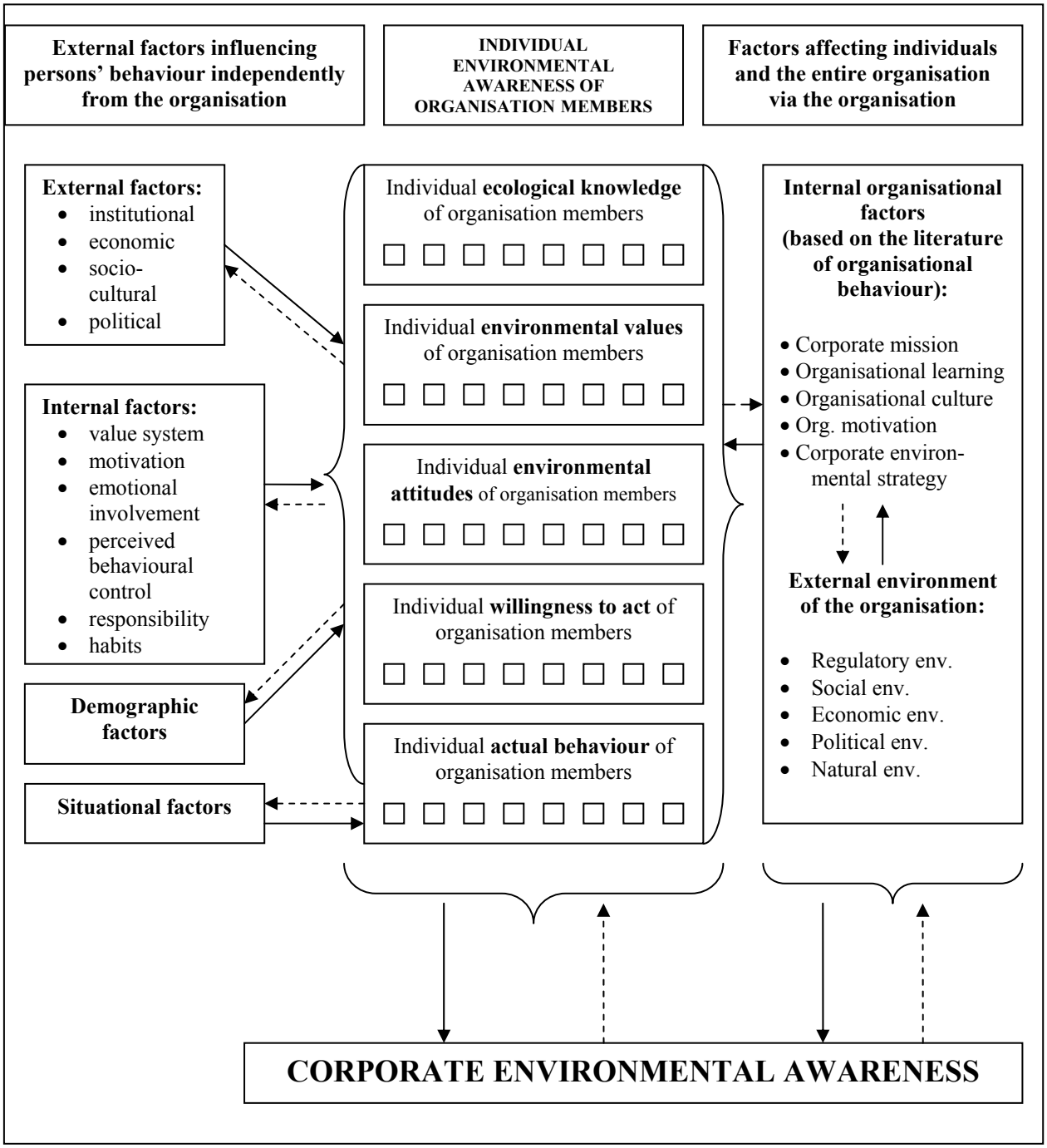


Figure 5: Organisational interpretation of environmental awareness

The factors shaping ***the individual environmental awareness of organisation members*** can basically be divided into two large groups. One group contains factors, which influence individuals outside, independently from the organisation, whereas the other group is made up of factors which exert their influence via the organisation. I have already analysed factors independent from the organisation when I described theories relating to individual's environmentally aware behaviour. Therefore, I will only refer to them when they are of outstanding importance regarding organisational behaviour. As consequence of factors independent from the organisation, the individual has a so-called “possessed” environmental awareness, which normally characterises his behaviour in everyday life. This also has a relevance regarding the individual's behaviour within the organisation, and we cannot neglect this when analysing the individual's attitude to the environmental awareness the organisation wishes to expect and communicate.

At the same time, the environmental awareness of the individual within the organisation differs from his behaviour in everyday life, because it is closely related to the environmental protection tasks and their efficient implementation as determined by the organisation. The organisation, in order to get the desired objectives achieved, applies a wide range of incentives, which also holds true in the case of performance related to environmental protection. Therefore, factors influencing the individual's environmental awareness via the organisation also include "traditional" instruments to influence behaviour.

In my opinion, ***factors unfolding through the organisation*** have a dual effect, which is also made clear by arrows in the figure above**.** They, on the one hand, directly influence the environmental awareness of organisation members, influencing at the same time corporate environmental awareness as well; on the other hand, there might also be an impact on the entire organisation, which is beyond the level of individuals, rather intangible and difficult to interpret. The affect actually the “collective unconscious” of the organisation, incorporating phenomena “spreading in the atmosphere”, being “self-evident”, but being invisible and unable to be related to the behaviour of given individuals (see Bleicher 1994).

I have divided these factors into two groups. I will highlight ***internal organisational factors*** by means of relevant schools of organisational behaviour by establishing a relation between them and the components of environmental

awareness which I judge to be strongly dependent on those schools. Various organisational behaviour approaches are generally suitable to characterise several components of awareness, in a broader sense they cover organisational behaviour as a whole. I have opted for the component-based approach because I wish to put emphasis on identifying the organisational content of awareness components and the organisational relations between components. In cases when an organisational behaviour approach goes significantly beyond the framework of a component, I will make a special mention of it.

Beside the above there have to be mentioned other internal organisational factors as well which do not influence the behaviour of organisation members directly, but still have relevance in the realisation of environmental objectives. Those are: the organisational infrastructure, financial opportunities, technological capacity, etc, which – under unfavourable conditions – can be significant obstacles of shaping pro-environmental corporate behaviour (see in detail Zilahy 2000). The analysis of these factors is very important, but it goes beyond the framework of my dissertation, as it focuses rather on behavioural aspects of organisational factors.

Factors describing the external environment of the organisation also have an impact on the individual's behaviour and corporate environmental awareness. They exert their influence mostly via the organisation. The external environment of the organisation and internal organisational factors are in relation with one another since the elements external environment – social, regulatory, economic, political and last but not least natural environment – significantly influence the changes in internal organisational factors. In practical terms it means that they influence the way an organisation responds to external pressure through its mission, learning processes, culture, motivation instruments and environmental strategy. It goes without saying that the responses given by the organisation will have a reverse effect on external impacts and will indirectly shape them. I think that as the organisation and its members perceive the pressure coming from the external environment mainly through internal organisational factors, this might be a reason why research findings indicate unambiguously organisational variables to have higher relevance in the implementation of corporate environmental behaviour. In the following chapters of my thesis I will not go into detail about external environmental factors. I will mention them only when they have a marked influence on the impacts of internal organisational factors.

II. FACTORS SHAPING CORPORATE ENVIRONMENTAL AWARENESS

II.1. Definition of corporate environmental awareness: corporate mission

The intra-organisational definition of environmental awareness is the basis and frame of corporate environmental awareness. This explicitly or implicitly is part of the ***corporate mission.*** In the above, we have seen that theories on individual behaviour generally do not touch upon a precise definition of the concept. Definitions relating to the organisation, on the other hand, are usually too broad. In my opinion, this is attributable to the fact that corporate environmental awareness is often shaped under external pressure and the concept and content of conscious behaviour is interpreted according to the nature and weight of the pressure the company has to sustain. It is true that in the awareness-shaping process it is rather the organisational variables and organisational capacities that play a more significant role – at least according to empirical research (see later). Regarding the authenticity of corporate mission, it would be essential that environmental values should be integrated into the mission, not because they are useful but because they are right (see in detail Alford/Naughton 2001). In practice, "right" and "useful" are often hard to differentiate, so the realisation of corporate mission is a better indicator for the real place of environment protection in the company's value system.

I do not aim to compare various existing definitions; let me only give an illustration as Kohli and Jaworsky put it (1990, cited by Stone and Wakefield 2000, p. 22):

> „Eco-orientation can be defined as the organization-wide effort to generate ecological intelligence pertaining to current and future societal environmental needs, disseminate this intelligence throughout organizational departments, and generate acceptance and responsiveness to these needs through the adaptation of internally developed programs which create and foster organizational and public perception of ecological concern."

In all likelihood the above definition is not meant to be concrete, and leaves room to manoeuvre for the company to decide what it means by ecological intelligence and which kind of internally developed programmes it wishes to apply in order to generate appropriate responsiveness and the perception of ecological concern.

Depending on how strictly we interpret ecological awareness, we will have different expectations vis-à-vis its forms of manifestation, i.e. its appearance in individual components of awareness. On the one hand, the enterprise when wording its corporate mission and its corporate environmental policy makes a very important step towards the emergence of environmentally aware behaviour. By making its standpoint vis-à-vis environmental issues, it also takes upon a minor or major commitment for which it can be held accountable by stakeholder groups, and which can serve within the organisation as the fundament for the establishment or shaping proper attitudes. On the other hand, the organisation needs a certain degree of environmental awareness in order to be able to formulate its environmental policy. The reason is that environmental policy reflects the willingness of the organisation to consciously incorporate environmental issues and their treatment into its mission.

Thompson (1997, cited by James et al. 1999) in his research examined the reasons for inconsistencies between the corporate environmental policy and environment protection-related activity according to three variables:

- organisational environment and interrelations;
- organisational values;
- organisational resources and capacities.

According to the author, each and every variable has to be consistent with the other two in so that the company's environmental policy and environmental protection activities should be congruent. This is only possible if the organisation attaches the same degree of importance to all the three variables, i.e. the harmonisation of values, organisational capacities as represented by attitudes and willingness to act, and the potential institutionalisation of environmental protection should carry the same emphasis.

If we wish to illustrate the degree of corporate environmental awareness on a scale, we can apply the following criteria:

- Environmental awareness increases if it is manifested in an increasing number of components in a consistent manner. In such cases, gaps between components are narrowing. According to this approach, environmental awareness can be considered of high degree if this applies to each component. It is especially important that actual behaviour should also reflect the behaviour that we expect from the company based on the other components of awareness.
- In addition to consistent appearance, the content of the awareness components is also essential: for example, the volume of ecological knowledge, the positive character of environmental attitudes, the ranking of environmental protection in the value hierarchy, willingness to act and finally, actual behaviour.

It goes without saying that applying the above criteria is not at all simple in the organisation, as corporate environmental awareness within the organisation is not homogeneous. At the same time, it contains relatively homogeneous groups, where the content and relations of awareness components are worth examining. By comparing the findings, we can characterise corporate environmental awareness.

II.2. Role of organisational learning in establishing ecological knowledge and environmentally aware behaviour

To be able to link individual and organisational components of ecological knowledge, it is advisable to depart from various schools of learning theories, since the definition of individual and organisational knowledge might differ depending on the interpretation of knowledge and learning – either individual or organisational. Therefore, in the following part of my thesis, I will select a few markedly different schools and approaches from the literature of organisational learning, which focus on the knowledge and learning of both the organisation and the members constituting the organisation. I will analyse these approaches from the following point of view: I aim to find out what lessons can be learned, what conclusions can be drawn from their statements regarding corporate environmental awareness.

The mainstream literature of organisational learning is made up of the **information processing school** (Huber 1991) and **knowledge management** relying on it (Nonaka 1994). These approaches are based on the cognitive concept of individual psychology (for its analysis see Weick and Westley 1996), as ***they project individual learning processes onto the whole organisation***. In this way, "by organisational learning they mean interpretation schemes and cognitive maps existing in individuals' minds becoming common, or changing together" (Gellei 2002, p. 39). In the context of environmental awareness this means that according to the above schools, the existing (possessed) knowledge of individuals and their ecological knowledge acquired within the organisation determine directly and indirectly the organisation's ecological knowledge. Though organisational learning is not the equivalent of the learning processes its members go through, but paradoxically, the organisation is only able to learn through the experience and actions of individuals (compare Bakacsi 1998).

According to the school of information procession, companies can select from a wide range of information acquisition strategies, in order to establish their knowledge-base necessary to meet their environmental protection objectives (Huber 1991):

- The knowledge disposable at the birth of the company;

- Learning by experience (for example, related to environmental incidents);
- Learning by observing similar organisations (for example, benchmarking, "best practices");
- Importing ecological knowledge by applying external experts and/or environmental management systems (for example, external environmental audit, EMS);
- The establishment of an internal system of information collection (for example, internal environmental audit).

The availability of information per se does not constitute knowledge. "Knowledge is generated and organised during the flow of messages constituting information" (Nonaka 1994, cited by Schaefer-Harvey 2000, p. 79). Thus, when transferring already existing knowledge and information (for example in the course of trainings), new knowledge is generated. The knowledge of individuals cannot be simply added up, there are synergies and organisational knowledge related to various individual topics (in our case this is environmental protection) is not homogeneous. This means that individual organisational units dispose of a different part and level of ecological knowledge in terms of access to information, access to knowledge, their organisational location, responsibilities, etc.

According to Nonaka, knowledge is made up of invisible (or tacit) and explicit elements and new knowledge is generated by conversion between these elements (for details see Pataki 2002). This is of importance with respect to my thesis, as when I make attempts to measure the volume of ecological knowledge within the organisation, I cannot avoid the problem of tacit knowledge being very difficult to measure and there is only an indirect way to do it, whereas it accounts for a significant proportion of organisational knowledge (see Yanow 2000). In addition, it is also an essential question how tacit knowledge can be efficiently extended, enriched if the "outcome" is difficult to evaluate.

Nonaka considers the process of accumulating organisational knowledge efficient only if a certain degree of redundant information is also available in the background. This means that organisational learning regarding environmental issues cannot be limited to the provision of information for certain persons in key position, but it has to penetrate the whole organisation. At the same time, however,

redundancy cannot go beyond a certain level because it leads to overburdened units. In practical terms, it means that individual organisational units do not necessarily have to dispose of the same ecological knowledge. Exactly in order to improve performance and to increase efficiency the organisation establishes organisational units, working groups to which it assigns different responsibilities and tasks. This also holds true in the case of environmental protection tasks, as well as it does with respect to other responsibilities. However, the knowledge related to ecological issues can only become an integral part of corporate culture if part of the knowledge, which is indispensable from the viewpoint of shaping attitudes, is possessed by every member of the organisation. It means that the interpretation schemes and cognitive maps related to a particular theme and existing in individuals' minds are shared by the members of the organisation (see the definition above). Related to environmental questions embedded in corporate culture, I will go into detail when talking about the interpretative approach of organisational learning and the manifestation of ecological values within the organisation.

In this approach, the organisation's ecological knowledge is made up of all the explicit and tacit elements which signify the ecological knowledge of the organisation members. The "quality" of ecological knowledge impacts of course on the way of thinking, it influences values and attitudes and thereby it also influences willingness to act and actual behaviour both at the level of organisation members and the organisation as a whole. Higher level of knowledge might also result in a more efficient information processing, better informed decision-making processes, a higher degree of adaptability, if all the other necessary conditions are provided within the organisation (for example, willingness to change, motivation, the resolution of target conflicts, etc.).

The ecological knowledge of the individual is made up of his existing ecological knowledge and the ecological knowledge acquired in the organisation. The already existing ecological knowledge of the individual, which he "possesses" ("brings along") is fundamental because on the one hand it has a significant impact on the individual's environment-related values, attitudes, willingness to act and actual behaviour, and on the other hand influences the individual's attitude to the knowledge, values and attitudes the organisation wishes to pass on. The practical experience related to the spreading of cleaner production, for example, shows that in several cases it is the seemingly most simple steps requiring minimal efforts that are

the most difficult to implement within an organisation. The so-called "good house-keeping" measures, which represent everyday actions to spare resources – e.g. switching off lights, turning off taps, stopping leakage, switching off the radiator instead of opening the window, etc. – frequently fail due to the rigid way of thinking of the organisation, the well-based habits or different sets of values (see Csutora-Kerekes 2004). Individual features in many cases are able to overcome organisational objectives, therefore serious attention must be paid to the appropriate application of motivating tools in order to achieve the desired awareness and behaviour.

In addition to the willingness to receive the knowledge that the organisation wishes to transmit, there is another problem area, also of fundamental importance, namely, the focus of extending the ecological knowledge of organisation members. Various methods might be applied according to needs. We have to see whether the main objective is to extend environmental protection-related knowledge, to establish intelligence required for decision-making or to achieve the desired forms of behaviour. Courtenay-Hall and Rogers (2002), as well as Jensen (2002) argue that knowledge transfer, which is aimed to extend knowledge, is not efficient enough to evoke concrete action. On the other hand, if we concentrate on only the achievement of the desired behaviour, this can easily lead to the application of solely the traditional performance enhancing methods, which is not sufficient to generate changes in values and to establish the intelligence required by environmentally aware behaviour, therefore, does not lead to real environmental awareness. A more favourable solution might be brought about by the successful and fruitful combination of various tools.

Davenport and Prusak (1998, p.153 cited by Klimkó 2002, p. 55) list nine success factors, which according to them are the sine qua non of generating appropriate knowledge within an organisation. These factors of success can refer to ecological knowledge, as well as to any other type of knowledge within the organisation. They become important when the vexed issues of environmental protection within the company require a high level of ecological knowledge.

1. *Knowledge-oriented corporate culture*: knowledge related to environmental issues is an essential element of corporate culture and every member of the organisation possesses a significant degree of ecological knowledge.

2. *Appropriate technical and organisational infrastructure*: the implementation of ecological knowledge of high level requires appropriate technological background and efficient organisational functioning.
3. ***Support provided by top management and their active involvement***: in the absence of commitment made by the top management, messages which encourage changing attitudes generally do not get through the organisation.
4. *Business interest driven initiative*: companies which have been the most successful in environmental protection have been able to harmonise environmental objectives with their own business interests efficiently.
5. *Process-oriented initiative*: this is a fundamental condition in generating environmental awareness because the introduction of environmental awareness requires the resolution of target- and value conflicts in addition to the transfer of knowledge. Therefore, the generation of appropriate knowledge should be treated as a process.
6. *Clear future vision, comprehensible language*: every member of the organisation should be made aware of the environmental aspects of the company's mission and the company's environmental protection-related objectives. This is indispensable for conscious thinking and environmentally aware behaviour.
7. *The availability of proper incentives*: primarily instruments which increase people's willingness to receive/to absorb environmental knowledge to be transferred by the company should be selected properly.
8. *Appropriate level of structured corporate knowledge in order to facilitate proper application*: every organisational level, unit and group should possess the part of environmental knowledge that is the most relevant for them.
9. *Knowledge transferred through the multitude of channels*: the flow of environmental knowledge through a multitude of channels is essential because knowledge itself might be of various types (e.g. theoretical, practical, etc.), and the proper transfer of various knowledge components increases the degree of their utilisation.

Support and active involvement of top management is deliberately stressed, because its importance is proven by several empirical findings (e.g. Kerekes et al. 1995, 1999, 2003; Ramus/Steger 2000, Madsen/Ulhoi 2001). Top managers are

expected to be the so-called “path-finders” (see: Leawitt 1986) within the organisation, therefore every managerial style can be successful together with a high level of top management commitment. Skyrme and Amidon (1998, cited by Klimkó p. 55) agreeing with the above success factors underline that there must be a strong representative of the theme within the organisation (see the assumption of Tóth called "There must be a champion" 2002). Regarding the implementation of environmental objectives it is very important however, where is this “champion” located in the organisation, what kind of competence and influence he/she has on procedures.

As opposed to the previously described cognitive-based schools, the **interpretative approach** emphasizes the ***cultural and collective*** nature of organisational learning and its ***process features.*** Gelei (2002, p.35) differentiates between three thoughts within interpretative approach:

1. Organisational learning as "the shaping process of embedded practical knowledge in the community";
2. Organisational learning as "the emergence of a new organisational logic in the dialogue process of dominant and innovation logics";
3. Organisational learning as "action learning and increasing organisational self-governance based on the reflective (re-)interpretation of organisational experience".

When analysing the above statements, I will exclusively concentrate on the added value they might have with a view to interpreting the organisation's ecological knowledge and the integration of environmental aspects into organisational learning processes.

The school **focusing on embedded knowledge** highlights the practical activity of groups (Weick and Westley 1996). Ecological knowledge, therefore – as well as any other type of knowledge within the organisation – in reality is ***practical knowledge generated by the community and necessary to carry out a task***. Only part of this knowledge has been made conscious, the major part of it is tacit knowledge (Yanow 2000, see above). In organisations, both community and individual *learning* is implemented in so-called *practice communities* as Wenger (2000) has put it. Practice communities are units organised around common

tasks/problems, which are not necessarily (most frequently they are not) identical with formal organisational units. They have looser borderlines and include a lot of informal elements. In the case of environment-related learning and knowledge, the organisation generally encounters the phenomenon that environmental problems to be solved go beyond the limits of individual organisational units. Therefore, the approach of the problems through practice communities is relevant in the context of ecological knowledge and learning and its application might be really fruitful in the efficient handling of environmental issues. By the application of practice communities, we can go beyond the ubiquitous practice whereby environmental protection forms under the exclusive competence of either a person or department responsible for environmental protection. Such an approach hampers the efficient flow of information and the environmentally aware implementation of tasks in the entire organisation.

As individuals participate in social interactions through their own identities (Wenger 2000) "in the course of active involvement in practice communities *individuals' own identities* are changing permanently and in parallel *community identity* is also taking shape" (Gelei 2000, pp. 44-45). The emergence of a common identity leads us to the issue of corporate culture, and so does the condition set by cognitive approaches according to which certain elements of ecological knowledge should be present in every member's knowledge, if we wish to be able to interpret corporate culture. At the same time, however, practice communities exist as "sub-cultures" within the organisation, meaning that due to various tasks and problems, their ecological knowledge and environmental awareness in general will be different. This forecasts the lack of a homogeneous corporate culture and makes it necessary to think over the possible interpretation of environmental awareness in the context of the entire organisation.

The interpretative approach, which emphasizes the embedding of knowledge, gives also of individual learning a different interpretation than cognitive approaches. In this respect, there is a similarity between individual and organisational learning. The essence of individual learning "is not learning about practice but the process of becoming a practitioner" (Brown and Duguid 1991, p. 48, cited by Gelei 2002, p. 52). As the result of this "**knowledge at the level of the individual** is the **capacity to act in a competent manner** in a given community or local context" (loc.cit.). This definition of individual learning and knowledge is extremely important with

respect to environmental awareness because a basic criterion of knowledge is that it should manifest in the behaviour or at least in action skills of the individual. Some of the research into gaps between various components of environmental awareness seek to find out why the individual's knowledge of environmental problems does not lead automatically to environmentally aware behaviour or at least willingness to act (see above, Fliegenschnee and Schelakovsky 1998). Research regarding the efficiency of environmental trainings (see Courtenay-Hall and Rogers 2002, Jensen 2002) examine how ecological knowledge should be transferred to individuals and groups to make it become "active knowledge". The above-mentioned cognitive methodologies of constructing ecological knowledge basis (Huber 1991), therefore, should by all means be made ‘operative’ within the organisation in order to be able to talk about real ecological knowledge.

The appearance of environmental protection as an objective of the organisation unavoidably gives rise to the problem of ***target conflicts***. Most frequently, it is short-term profit interests that clash with objectives of environmental protection, but the whole corporate mission might be necessary to be revised and the priority of objectives could also be changed in order to internalise a more environmentally friendly attitude. In interpretative organisational theory, this means the emergence of a **new organisational logic** (as organisational learning). The followers of the interpretative approach focusing on organisational changes, in other terms organisational innovation (for example, Bouwen 1990; Bouwen-de Visch and Steyaert 1992) in their work claim that the innovative capacities of the organisation are conditional upon organisational learning. Members of the group which promotes environmentally friendly attitude and practice, i.e. the representatives of "innovative" logics unavoidably clash with the representatives of "dominant" logics, which prevails with respect to past and present activities. The most important question is whether or not these two groups will be able to cooperate with each other in a way which leads to commitment and long-term willingness to cooperate on the part of all concerned parties. Based on this approach, we can safely predict that the success of internalising the environmentally friendly approach within the organisation will more strongly depend on the general capacity of the organisation to change than on the importance and "elevated" nature of this new objective (namely environmental protection).

The shaping of environmental awareness – as innovative logic – with respect to its content might include (see Gelei 2002, p. 63):

- cognitive elements (environmentally friendly way of thinking);
- deeper layers of organisational culture (changed organisational identity, pre-assumptions and value system by internalising environmental values);
- elements related to working, cooperation and behaviour (for example, new working methods, new organisational links, patterns of cooperation and problem-solving methods to adequately handle environmental issues);
- changes in other social relations (modified hierarchies, authorities, organisational status as the result of integrating environmental protection).

Bouwen et alia (Bouwen, de Visch and Steyaert 1992) are of the opinion that the *process* of dominant and innovative logics encountering and mutually influencing each other is even more important than differences in their contents. In our case, this exactly means the awareness-shaping process focusing on the environment within the organisation. The result is a new organisational logic which integrates the interpretation of reality by the dominant and innovative logics within the organisation, i.e. by approaching viewpoints and by establishing a commitment it makes possible to integrate environmental awareness into the operation of the organisation.

As in the case of all changes, some opposition should be expected from the organisation when establishing environmental awareness. Sproull and Hofmeister (1986, cited by Bakacsi 1996, pp. 288-289) identified five major reasons for organisational opposition.

1. The promotion of changes, on the one hand, significantly depends on the importance that organisation members attach to a given problem. Those not concerned about solving environmental questions do not feel that changes are necessary to introduce.
2. The expectations of those promoting the change are different from the expectations of the other members of the organisation concerning the outcome of the changes in question. The latter in general do not dispose of the information which the other group bases its expectations on. Therefore,

they only have the behaviour and words of the leader initiating the change to use as a point of departure, and interpret those signals in a selective manner.

3. Those initiating changes assume that everybody share their enthusiasm about these changes. Therefore, they tend to overestimate the outcome of changes.
4. Those leading the process of changes assume a larger degree of flexibility on the part of other organisation members than there actually is, and they underestimate the opposition to changes.
5. The leaders behind changes expect every stakeholder group to show an appropriate degree of enthusiasm and if this does not happen to be the case, they blame it on their colleagues' attitudes. Colleagues, on the other hand, do not wish to take the blame and complain about objective difficulties.

In my opinion, it is by all means essential to take into account the reasons for organisational opposition when establishing environmental awareness. On the one hand, they might provide an explanation for the existence of those gaps which evolve between various components of awareness – especially the one concerning actual behaviour and other components –, and on the other hand, their recognition is an important step towards their elimination and the better implementation of new "innovative" logic. In my own empirical research, I will make a profound analysis of these reasons.

The third approach within the interpretative approach to organisational learning ***focuses on the self-observing process of the organisation.*** The essence of this process is that the organisation observes its own operation and successfully uses its accumulated experience and scrutinizes the routines of operation with proper criticism. If this is done from an environmentally aware perspective, the organisation will have an increasingly clear picture of its own position, functioning and objectives, and therefore will be able to increase the environmental efficiency of its functioning. In this approach, organisational learning is a permanent double-loop learning process at community level (Argyris and Schön 1996) in which "problems are solved by changing objectives, norms, values and finally, the fundamental cognitive map" (Bakacsi1998, p. 300).

Pataki (1999) draws attention to the fact that some authors carrying out research into the environmental awareness of companies are often satisfied with

single-loop learning as well (for example, North 1992 or Elkington 1994), when radical changes do not take place at system level, but ecological knowledge only broadens the existing knowledge base of the organisation. At the same time, more and more researchers advocate the necessity of radical changes (that is double-loop learning) in order to implement real aware corporate environmental behaviour (for example, Stead-Stead 1994, Shrivastava 1995, or Purser-Park-Montouri 1995, cited by Pataki 1999, p. 79).

Individual and organisational learning take place in tandem, the two cannot be separated wholly from one another. Individual learning feeds on individual experience, therefore, real expertise according to Schön (1983) is the practical knowledge, which is more tacit than explicit (see Janov 2000). Certain representatives of this approach (for example, Reason 1994, or Torbert 1981) go even beyond this, claiming that accumulated practical experience cannot be separated from the individual's identity. The two together constitute the personal experience, which is reflected in the individual's behaviour. With regard to the topic of my thesis this means that individual knowledge in the broader sense of the word includes all the previous experience of the individual acquired in the course of his life, also with respect to the environment, and therefore, his already existing environmental awareness (as one element of his identity) influences the way he performs his tasks within the organisation.

In this interpretation, organisational knowledge can be linked to organisational practice and common experience. The success of the learning process can be measured by the process of ***institutionalisation*** of various responses given by the organisation to certain problems that is, to what extent they are integrated into rules, organisational structure, procedures, applied technology and corporate mission. In this case the major issue, therefore, is the institutionalisation of environmental protection, the evidence of which – such as the location of environmental function within the organisation, the authority it belongs to, responsibilities, the functioning of an environmental management system, etc. – are relatively easy to monitor in the organisation. However, based on my own and other researchers' empirical experience, I would not attribute success exclusively to the degree of institutionalisation. No doubt, institutionalisation means that a given problem area is accorded more attention to, but this does not necessarily make it appeal to the members of the organisation. A frequent complaint about environmental

management systems is that they require too much documentation, they are burdensome and mechanic. People being of such opinions in the organisation are not at all sure to develop the positive attitude expected from them vis-à-vis environmental protection.

In the process of institutionalisation it becomes obvious how easy or how difficult it is to make environmental protection fit into existing organisational structures, the functioning of the organisation, it turns out whether or not radical changes are needed within the organisation (instead of incremental changes, more in line with previous operation).

With respect to environmental awareness, it is also essential to examine the areas covered by the awareness-shaping and reflective process within the organisation. Torbert (1981) identifies four areas, which I am going to interpret in the context of environmental protection:

1. *The organisation is becoming more conscious of its fundamental objectives in the context of environmental protection:* this process here primarily represents the evolution of intuitive (non-rational) convictions concerning the essence of organisational changes linked to environmental protection.
2. *The organisation is becoming more conscious of its environmental strategy to be followed:* this forms the organisation's behaviour in a much more rational cognitive manner.
3. *The organisation is becoming more conscious of its concrete behaviour:* this includes decisions taken or to be taken related to environmental protection, actions, typical interactions and various skills.
4. *The organisation is becoming more conscious of the external environment:* the behaviour of the organisation is influenced by several external impacts, which might act as opportunities or threats to the organisation.

Organisational learning based on reflection can only be successful with proper management and corporate culture in the background. This, on the one hand, means that the supportive and facilitating behaviour of the management is indispensable and on the other hand, corporate culture can be characterised by consensus-based decision-making processes, seeking win-win solutions, the

openness about errors and taking responsibility, internal commitment, the permanent questioning and revision of assumptions.

It applies both to the organisation members and the organisation (company) as a whole that its environmental knowledge-base, the quality of acquired and processed information fundamentally affects the other components of environmental awareness. The shaping of environmental awareness as an organisational learning process does not only cover cognitive elements focusing on knowledge but encompasses all the components of environmental awareness, as it includes changes in values, attitudes, willingness to act and actual behaviour as well. This means that theories of organisational learning – primarily interpretative approaches among them – help a more profound understanding of the entire corporate environmental awareness and are suitable not only to explain ecological knowledge. The same applies to approaches behind further components of environmental awareness. At the same time, every school of organisational behaviour contains some marked approaches which are instrumental in highlighting the content of distinct components of corporate environmental awareness.

II.3. Reflection of environmental values in corporate culture

A company in terms of its operation is not homogeneous because individual organisational units and individuals within units dispose of various tasks and authority. Thus, environmental awareness can be interpreted in different ways in organisational units, depending on the activity of the given group and the need of this activity to reflect the degree and form of environmental aspects. Production units, the top management, marketing department, financial department, environmental department, etc. are characterised by different ecological knowledge, attitudes and opportunities to act. In my opinion, ***the set of values might be the common pool*** which can serve as a guideline for the entire organisation in deciding the significance of environmental measures in the course of performing specific tasks. Among many other things, this is one of the reasons why corporate culture based on the shared values of the organisation members is of outstanding importance in the organisational reflection of environmental awareness.

Our value system – as I have already pointed out – is the hierarchy of ideas and values, which is not necessarily harmonious. The consistent or conflicting nature of values manifests at the level of the individual in the relation between the individual and the organisation as well as in the organisational interpretation. Concerning the relation between the individual and the organisation, it is of importance to what extent the individual's values are in harmony with the company's values because the reconciliation of these two is the foundation of a stable and viable corporate culture. According to Harris and Crane (2002, p. 230 cited by Hemingway and Maclagan 2004, p. 40) the values of managers are strongly oriented towards the organisation, which also questions the prevalence of personal values over organisational values in the case of a conflict between the two. This question leads us to the area of motivation, where we can examine factors causing the members of the organisation to give preference and priority to organisational values over their own individual values. I will tackle this problem later on.

Concerning o*rganisational level*, we should start from a bit further away. When talking about the "set of values" of the organisation, the frequently discussed question arises again whether the organisation can be considered as a moral actor at all, or an ethically justified action can only be attributed to the individual, whereas

the organisation functions in a more "instrumental" way subordinating ethical questions to the objectives of the organisation (in more detail, see Pataki 2002, Moore 1999). No matter which stand the researcher takes, it holds true that the organisation has environmental values only if the values reflected in the philosophy, mission, intended strategy of the organisation, that is at the level of rhetoric are also reflected in practice, in the actual behaviour of the organisation.

Corporate culture by definition is "the system of pre-assumptions, values, convictions and beliefs accepted and commonly interpreted by the members of the organisation. These are accepted as valid by the members of the organisation, who follow and pass them on to new members as sample solutions to the problems to be followed and as a desired way of thinking and behaviour" (Schein 1985, p. 9 cited by Bakacsi 1998, p.226). Noticeably, this problem area also goes beyond one component of awareness, namely environmental values.

From the viewpoint of the embedding of an environmentally friendly attitude, there are two outstanding questions: how strong or how weak is the given corporate structure (compare Deal/Kennedy 1982) and how the issue of environmental protection can be integrated into the existing corporate culture. The most simple case is an organisation with a strong corporate culture, where environmental protection objectives do not give rise to major target conflicts[3] within the organisation. In this case, the level of environmental awareness sufficient to meet the objectives is relatively easy to achieve because members of the organisation and groups within the organisation can more easily identify with the philosophy of the organisation.

All the other cases are problematic in one way or another. It holds true in general that a strong corporate culture leads to rigidity. Therefore, if the appearance of environmental issues requires radical changes and a fundamental change in the attitudes within the organisation, this happens in a much more cumbersome way at companies with a strong corporate culture, if at all, than in companies with a weak corporate culture. Weak corporate culture means that intra-organisational sub-cultures individually are relatively strong but they do not point to the same direction. According to general experience, in such cases the organisation can better adapt to changes (see Bakacsi 1998, p. 245). The conflicting business and environment

[3] Target conflicts are unavoidable due to the nature of environmental protection and the logic of corporate operation. However, if these conflicts can be resolved within the organisation, the existing corporate culture of the company will not be harmed. On the other hand, if new objectives can only be met by revising core corporate objectives, a new corporate culture starts to emerge.

objectives of the company in this case can also hamper the development of corporate environmental awareness, except if within the organisation there is a group disposing of proper power, decision-making authority and responsibility, whicht advocates the issue of the environmental protection and is able to enforce environmental aspects.

It goes without saying that, in addition to reconciling corporate objectives, we have to take into account other factors influencing corporate culture as well. Such other factor is, for example, the financial position of the company, which in the case of difficulties might lead to the reinforcement of old behavioural patterns, irrespective of the integration opportunity of environmental objectives. This phenomenon is typical of the company which without any insight analysis refuses off-hand to integrate environmental considerations into its functioning under the pretext that "environmental protection only imposes further costs on the company".

Stakeholders in the organisation also constitute an important aspect. According to the claims of Madsen and Ulhoi (2001), the environmental measures of the company directly or indirectly depend on the fact whether the company properly assesses the pressure coming from stakeholders, its relation with the values of decision-makers within the company and the opinion of the management concerning the influence of stakeholders. The pressure exerted on the organisation by external and internal stakeholders will finally become an organisational factor through the perception of this pressure and values, and as such it shapes corporate environmental awareness, which then will be reflected in the responses given to pressure.

The interpretation of environmental awareness in the context of the entire organisation becomes possible if we take the perspective of corporate culture. On this basis, the organisation can be considered as environmentally aware, if

- organisation members have the shared or common pool related to environmental values and environmental issues which is the precondition for the entire organisation to meet the expectations with regard to environmental problems;
- subcultures within the organisation know what the should know, think as they should think, and act as they should act in order to implement environmentally aware behaviour.

In transmitting organisational culture, management has a key role, because the management has to identify "by nature" with goals, strategy and mission of the organisation (see Harris and Crane 2002). Empirical findings show that the values of managers influence the environmental performance of the company to a high degree (see Kerekes et al. 1999). Consequently, it is of high importance what kind of value system is transmitted from management towards employees.

II.4. Role of organisational motivation in shaping environmental attitudes and willingness to act

In shaping appropriate environmental attitudes and indirectly in establishing the willingness to act, motivation has a fundamental role to play. The "environmentally aware" behaviour of the organisation members is influenced, on the one hand, by the individuals' "possessed" environmental awareness and, on the other hand, other factors which generally influence behaviour within the organisation.

Organisational approaches to motivation can be divided into two groups depending on their focus (in more detail, see Bakacsi 1998):

1. The so-called **content theories** summarise the individual-related motifs, i.e. they wish to find out the wishes and needs of the members of the organisation. The appropriate instruments of motivation can be decided upon on the basis of this information.

2. **Process theories,** on the other hand, focus on how the behaviour of organisation members can be influenced and steered into the proper direction.

Based on content theories, Zilahy (2002) divided motivating factors which influence the behaviour of the members of the organisation when implementing energy efficiency measures into three categories (Table 2):

Table 2: Motivating factors influencing the implementation of energy efficiency projects (Zilahy 2002, p. 83 based on Mitchell et al. 1987 and Robbins 1993)

1. Drive	• promotion, financial reward, other incentives • job safety, resistance to changes • esteem, status • self-enhancement • environmental awareness ("possessed") • performance motivation • power motivation • competence motivation
2. Cognitive processes, abilities, knowledge	• the constraints of decision-making • setting objectives, involvement in setting objectives • professional competence • knowledge of energy efficiency measures • ability to change and learn
3. "Environmental" effects	• the presence of colleagues • environmental awareness of other members of the organisation • expectations vis-à-vis the behaviour • group norms, corporate culture • attitudes of colleagues • job features • reinforcement • social (group) dependence • technological and administrative dependence

Afterwards, the author divided the above factors according to the impact they have on the implementation of energy efficiency measures. According to this division, factors can act as constraints or incentives within the organisation. "Constraints" are factors the absence of which prevented energy efficiency measures from being implemented, however, their presence did not necessarily motivated the implementation of the mentioned measures. As opposed to this, the existence of "motivating" factors had a positive impact on improving energy efficiency, whereas their absence had a neutral effect. Zilahy in his work also measured the impact of these factors (Zilahy 2002, pp. 137-139). "Constraints" include the following:

- Factors with strong restrictive effects: constraints of decision-making processes, knowledge of measures aiming at the improvement of efficiency, technological dependencies;

- Factors with weak restrictive effects: job security, the knowledge of objectives and involvement in setting the objectives, ability to change and learn, social (group) dependence;
- Factors with no restrictive effects: professional competence, job features.

As opposed to this, "motivating" factors are:

- Strong motivators: financial reward, "acquired" environmental awareness, performance motivation, competence motivation;
- Weak motivators: esteem and status, self-enhancement, the presence of colleagues, environmental awareness of other members of the organisation, attitudes of colleagues;
- Not motivating: promotion, power motivation, reinforcement.

All the above prove that the "acquired" environmental awareness of the individual has a significant motivating effect concerning tasks that require environmentally aware behaviour. On the other hand, however, the absence of necessary knowledge elements constitutes grave constraints. It is also visible that one part of motivating factors, which are traditionally strong within the organisation, take their effect irrespective of the task to be completed (financial reward, performance and competence motivation). Another part of traditionally strong motivators, according to the experience of the author, seems to be more task-specific because they exerted only a very weak influence in the context of energy efficiency projects (for example, esteem and status, self-enhancement). The outcome indicates that the top management of the companies examined is not likely to apply motivating factors within the context of energy efficiency measures which the respondents considered as weak or neutral motivators. Besides, the environmental awareness, attitudes and presence of colleagues did not have a substantial motivating effect, what is more, group pressure had an opposite impact, it was a constraint vis-à-vis energy efficiency measures. These results lend themselves to the conclusion that in examined organisations environmental awareness was not of a high level.

The application of process theories can be well illustrated by the research of Chinander (2001), who examined the most important internal motivations of

corporate environmental awareness and applied the "expectation theory" of Vroom in relation to motivating work (Vroom 1964, in Hungarian see Bakacsi 1998, pp.104-107). Based on her research, Chinander states that there needs to be a very close link between each and every element of the motivation model because "the motivating factor is as strong as its weakest link is" (p. 287). She claims that employees can be involved in environmental activity required by the top management inasmuch as they understand:

- the link between their actions and environmental performance achieved,
- the environmental performance factors which are evaluated, and
- the degree of responsibility they have to take to achieve a certain level of environmental performance (according to the perception of rewards and punishment for a given environmental performance level).

One of the major conclusions of the research is that the environmental performance of the organisation improves if members of the organisation perceive more precisely the relation between their actions and their environmental consequences, and if they take higher responsibility for the environmental impacts of their actions.

Ramus and Steger (2000) also take the approach of process theories. They surveyed leading European companies. In this survey they found a very close link between supervisory support as well as organisational motivation on the one hand, and the employees' willingness to generate environmental innovation on the other hand. Among the instruments of supervisory support, we find competence-building, support of innovation and communication, rewards, recognition and the management of objectives and responsibilities. A method of organisational motivation can be, for example, a well-communicated environmental policy. Supervisory support focusing on environmental protection proved to be a much better motivator in terms of people’s initiatives and ideas than general, not specifically environment-related incentives. At the same time, the general experience even amongst companies committed to environmental protection was that top managements apply fewer incentives in the area of environmental activities than in the course of general business activities. This proves that they have not really recognised the potentials

that proper incentives and motivating methods have in the promotion of environmentally aware behaviour.

Tilley (1999) based on her survey identified constraints and incentives which influence the environmental attitude and behaviour of small enterprises and contribute to the better understanding of the gap between the two. According to the study, the most important constraints are as follows:

- low level of ecological intelligence (thin, insufficient knowledge base);
- low perception level of environmental problems and risks;
- economic constraints;
- inappropriate institutional background (economic infrastructure, institutional system);
- restricted economic support.

The following factors seemed to act as incentives:

- training programmes;
- successful research (extending the knowledge base);
- regulatory frame (appropriate enforcement of the regulation, greater transparency);
- institutional reform.

Tilley claims that in order to achieve the desired effect – to change the generally reactive attitude of small enterprises – it is not enough to concentrate on incentives but the strengthening of incentives and weakening constraints should take place in parallel (p. 243).

At the organisational level, one of the important motivating factors of the environmentally friendly behaviour is considered to be the application of environmental management systems. Freimann and Walther (2001) at the same time came to the conclusion that these management systems generally speaking did not justify the ability attributed to them that is they do not encourage companies to achieve a better environmental performance. The authors argue that "by introducing new and therefore frequently cleaner technologies, even companies without

ecological ambitions or with only slight ecological ambitions can achieve savings in terms of resource input and the output of waste. Accordingly, the authors say that the major winners will not be the ecologically pioneering, innovative or successfully managed companies but those which are lagging behind the most in terms of environmental protection" (op. cit. p. 95). Based on their research findings, the authors are convinced that at least at the beginning of applying environmental management systems, short-term operational objectives dominate and environmental management systems seem to have only a very slight effect on the strategic dimension of corporate policy (see also Dyllick 1999). Consequently, the majority of companies still prefer end-of-pipe technologies when selecting among instruments suitable for purposes of environment protection.

Besides, Freimann and Walther also experienced that environmental management systems only slightly aroused the interest of the companies' stakeholder groups in companies. Managers who expected the general improvement of corporate image from the introduction of EMS (environmental management system) identified only a slightly positive market benefit resulting from the application of the system. At the same time, they found that the relation and cooperation with environment authorities had improved.

The authors recommend that research into environmental management systems should pay more attention to the analysis of internal organisational conditions because the environmental management system has to be integrated into already existing conditions. Environmental protection is a multi-functional task for every member of the organisation, therefore, the success of environmental management systems largely depends on the motivation and involvement of employees (which on the basis of research findings seems to be rather an exception than a rule).

Summing up the experience derived from research into the motivating factors of corporate environmental awareness we can conclude that companies are far from fully utilising their motivating potentials by means of which they could encourage members of the organisation to achieve a higher level of environmental performance, and thereby improve corporate environmental awareness.

II.5. Relation between willingness to act and actual behaviour, or the implementation of corporate environmental strategy

The relation between willingness to act and actual behaviour at the level of the organisation can be very closely followed in the literature of strategy. In literature, this topic is linked up with the concepts of "intended" and "realised" strategy (in detail see Csutora 1999 and Baranyi 2001). Figure 6 illustrates very well this relation.

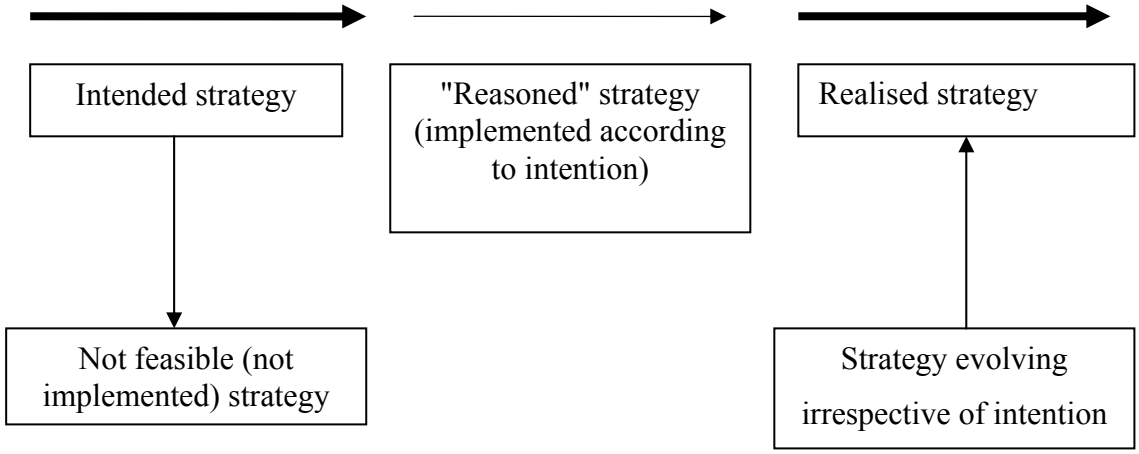


Figure 6: The evolving process of realised strategy
(*Source: Antal Mokos 1990, p. 6 cited by Baranyi, p. 31*)

There is only a part of intended, i.e. pre-meditated strategy that is implemented. This is called strategy implemented according to intention. However, realised strategy contains elements which were not present in the intended strategy. With regard to the topic of my thesis, this is relevant as the intended and realised environmental strategy of the organisation can also be conceived of as one manifestation of corporate environmental awareness. Accordingly, intended environmental strategy reflects the willingness of the organisation to act (including of course components which formulate willingness to act: the ecological knowledge, attitudes and values of the organisation); whereas realised environmental strategy qualifies environmental awareness reflected in actual behaviour.

Rhee and Lee (2003) in their study come to the conclusion that there are discrepancies between the "rhetoric" and realised environmental strategy, the latter is permanently in the process of changing, depending on various internal and external

influencing factors. The strength of influencing factors determines whether the environmental strategy exists only in rhetoric or is reflected in the actual behaviour of the company. According to Rhee and Lee, intra-organisational variables are the most likely to influence the practical implementation of corporate environmental strategy.

Steger (1988, cited by Csutora-Kerekes 2004) examines organisational environmental strategy from a different viewpoint. According to his environmental risk model, the environmental strategy to be followed by the company is basically determined by two considerations: the degree of environmental risks including internal and external environmental risks, and the market opportunities deriving from environmental measures. If the company does not properly identify its environmental risks and market opportunities deriving from environmental measures, or perceives them properly but does not act in a consistent manner, unavoidably a gap will emerge between the environmental strategy expected from the company and the one realised in practice.

Csutora (1999) extends the categories of environmental strategy identified by Steger (indifferent, defensive, offensive, innovative). She names realised strategy, which meets exactly the expectations (social pressure), as "accommodating" and redefines the categories of Steger according to their location compared to the accommodation region. Her empirical findings prove that realised environmental strategy of companies fit better the environmental strategy to be followed in the case of using the concept of “accommodation region” than using the categories of Steger.

The approach based on "strategy to be followed" differs from ideas related to intended and realised environmental strategy because the company does not necessarily dispose of an intended environmental strategy. The "environmental strategy to be followed" (expected) can be defined on a theoretical basis, taking into account environmental risks and market opportunities perceived by the company, regardless whether there are intended environmental strategy elements within the company, or we can only examine the strategy realised in the practice of the company (which contains non-intended strategic elements as well, as seen above).

The dissertation will be continued with the interpretation of the empirical research focusing on consistent elements and gaps in pro-environmental corporate behaviour with the help of awareness components.

III. CORRELATION AND GAPS IN CORPORATE COMPONENTS OF ENVIRONMENTAL AWARENESS

III.1. Background to the corporate survey

The overview of the literature shows that empirical studies of environmental awareness mainly focus on some segments of the problem area. The aim of my research was originally to explore the consistent elements and the gaps between and within all five components of environmental awareness on a corporate sample, by applying quantitative analytical methods.

In 2003 the Department of Environmental Economics and Technology at BKÁE conducted a questionnaire-based survey among Hungarian industrial companies within the framework of an OECD research project.[4] The objective of the research was to gain more information on motivations related to decision-making processes, environmental management and concrete environmental measures as well as the necessary organisational solutions in the background of drawing up corporate environmental policies and their implementation. The questionnaire is contained in Annex 1.

Sampling focused on companies active in processing industry with a labour force of over 50 workers. By means of random sampling we selected 150 companies, employing 50-99 workers (the total number of companies of this size was 1, 037 in the database of the Central Statistical Office, in Q4 of 2002); whereas we involved all the companies with a labour force of over 100 workers (1, 380 companies in total). Responding rate was 30.5%, covering 466 companies. (For the sector composition of the sample see Annex 2.)

In most industrial branches the responding rate basically corresponds with the rate in the original sample and the population. So the sample is representative with respect to these branches. Exceptions to this are the textile industry, which is

[4] The OECD research project of 2003 was carried out with the participation of seven countries: the USA, Canada, Germany, Norway, France, Japan and Hungary. On the part of the OECD Environmental Directorate the project was coordinated by Nick Johnston. The survey of Hungarian companies was directd by Dr. Sándor Kerekes, collaborators were Gábor Harangozó, Patrícia Németh and Ágnes Nemcsicsné Zsóka.

underrepresented (the responding rate is 11% instead of 19%), and machine manufacturing, which is overrepresented (28% instead of 19%).

The criterion of representative sampling in terms of company size was not met, due to the method of sampling (see Annex 3.). Since we predominantly concentrated on companies with a labour force of over 100 workers, these categories were originally overrepresented in the sample, while companies with 50-99 workers were underrepresented. We did not include companies with fewer than 50 workers in the sample.

When processing the database, I identified twelve areas along which corporate environmental awareness unfolds in practice, according to the statistical analysis. These are as follows:

1. Methods extending the ecological knowledge base of the company
2. Environmental strategy to be followed by the company
3. The weight of influence exerted by stakeholder groups
4. Factors encouraging the introduction of environmental management systems (EMS)
5. Factors encouraging concrete environmental measures
6. The application of environmental management tools
7. The introduction of an environmental management system (EMS)
8. Location of environmental function (the person responsible) in the organisation
9. The gravity of negative environmental impacts caused by the company
10. Monitoring of corporate environmental performance
11. Concrete environmental measures of the company (facility)
12. The success (efficiency) of concrete environmental measures

Variables selected for the analysis and their features are contained in Annex 4[5]. I have tested the hypotheses by means of frequency analyses, cross-tables and factor analysis.

Unfortunately, the initial objective of the research had to be partly restricted, as the questionnaire included only indirect information on environmental values of

[5] The questionnaire originally was drawn up in English, therefore the names of variables in the database are the abbreviations of the questions in English.

companies. The formulation of a written environmental policy, importance attached to different stakeholder groups and the implementation of environmental management practices regarding those important stakeholders suggest the existence of some environmental values at the company, however, I do not think that certain statements can be made having only this information. During the analysis of gaps between awareness components, I have to disregard environmental values, which is a limitation of getting a complete view about awareness gaps. Therefore, in the second part of research I concentrate on analysing the environmental values of organisation members and the organisation as a whole, with the aim of completing the following results.

III.2. Findings of the corporate survey

With the research I aimed to find out the validity of the following statement:

> **The gaps existing between various components of environmental awareness hinder environmentally aware corporate behaviour from being consistently implemented in practice.**

Below, I will divide this statement into segments with a view to identify the most essential gaps in corporate environmental awareness and highlight certain factors by means of which these gaps can efficiently be reduced.

H1: The increasing ecological knowledge of the organisation is a necessary but not sufficient precondition for adequate behaviour. Environmental awareness has to manifest in values[6], attitudes and willingness to act as well.

Conclusions regarding the ecological knowledge of the organisation can be drawn on the one hand from the number and character of information sources used to extend the knowledge base, on the other hand from perceived external and internal environmental risks and the knowledge of the activity's negative environmental impacts. In the first stage, it worth examining the relation between knowledge and actual behaviour, where actual behaviour is characterised by the concrete environmental measures taken by the organisation, the introduction of EMS and the temporal changes in the gravity of negative environmental impacts caused. If there is a gap in these areas between ecological knowledge and actual behaviour, it is advisable to take a further step and examine attitudes and willingness to act. I will describe environmental attitudes of the organisation through the consideration of implementing an EMS, the pressure coming from stakeholder groups and the

[6] As I mentioned above, the questionnaire was not suitable for measuring corporate environmental values therefore this part of the hypothesis could not be tested during the analysis. However, I think that the statement would be insufficient without mentioning the role of values in environmentally aware corporate behaviour. In the second phase of the research I pay enhanced attention to the analysis of environmental values.

importance of factors motivating environmental measures. The willingness to act on the part of the organisation is indicated on the one hand by the location of environmental function[7] in the organisation and the application of environmental management practices serving as incentives for employees.

With respect to *methods building up the ecological knowledge base of the company* the questionnaire contains several information. As the Figure 7 shows, certain questions were directly, others are indirectly related to the method of information gathering.

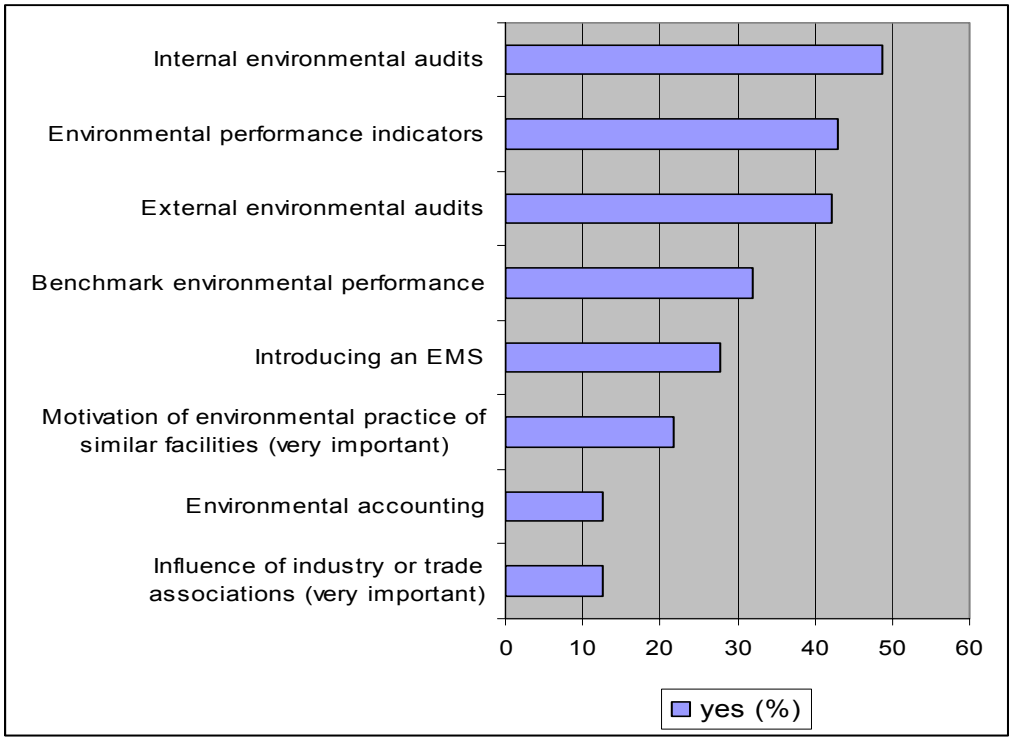


Figure 7: Frequencies of variables concerning environmental information collection methods

All in all we can conclude that the companies in the sample gather environment-related information in a rather low proportion at all, and there are only a few information sources that are utilised more frequently. Based on the categories established by Huber (1991) we can claim that part of the tools indicating an internal information gathering system (internal environmental audit, environmental

[7] Location of the environmental function means the location of the person or department responsible for environmental issues within the organisation.

performance indicators) and the importing of ecological knowledge by involving external experts (e.g. external environmental audit) are the more widely used instruments for the extension of the knowledge base (incidence rate of 42%-48%). The acquisition of knowledge through the introduction of environmental management systems is characteristic of only 27.7% of companies. The incidence of learning by observing companies with a similar profile is varied: benchmarking of environmental performance is the most frequent tool (32%), followed by observing the environmental practices of similar companies (22%) as "very important" motivation, whereas the influence of industrial and trade associations as an indirect indicator is the last one (12.5% of the companies accorded high importance to this factor) . In the case of the latter two indicators I assume that companies are the most likely to use them for which the given motivation factor is "very important" from an environmental perspective. Among internal methods of information gathering environmental accounting occurs also rarely (used by 12.5% of companies).

Increased ecological knowledge has a significant impact on actual behaviour, which is clearly demonstrated by the Figure 8.

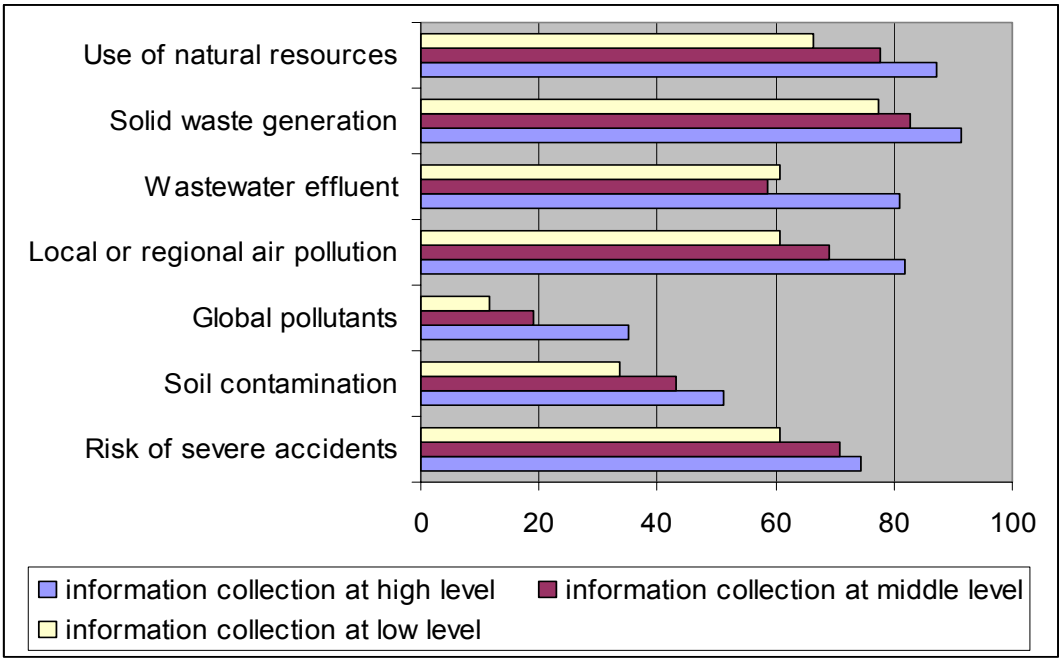


Figure 8: Concrete environmental measures corresponding to the level of information collection

The level of information gathering is determined by the number of information sources.[8] It is obvious that the more information sources are used by a company, the more *concrete environmental measures*[9] are taken.

Increase in the level of ecological knowledge, however, does not necessarily move in tandem with the success (efficiency) of action. Only in a very few cases (see Annex 5.) is there a significant relation between the number of information sources and environmental measures with a decrease in negative environmental impacts. Consequently, information is a necessary but not definitely a sufficient precondition for successful actual behaviour.

In order to nuance the picture, we have to examine the groups of questions relating to the environmental impacts of corporate activity. According to the survey, the perception of internal environmental risks is reflected in environmental measures, which means that companies perceiving considerable internal environmental risks take concrete environmental measures in a significantly higher proportion than firms admitting negligible internal environmental risks. However, this cannot be observed related to the perception of external environmental risks. In my opinion, this shows that the importance of external social pressure is underestimated by the responding companies which also can be observed in the weight of influence exerted by stakeholder groups (see later the results of H2 hypothesis). In addition, perceived gravity of negative environmental impacts shows a significant relation with the frequency of environmental measures in the case of every environmental problem. However, the degree of measures is not sufficient. In the case of very severe environmental impacts it would be justified to expect all companies to take concrete measures to mitigate those severe environmental impacts. Nevertheless, only in one case, that of the use of natural resources, does the rate of action reach 100%, as can be seen from the Figure 9.

[8] The variable contains five important information sources: external environmental audit, internal environmental audit, environmental performance indicators, benchmarking and environmental accounting. Low-level indicates the use of 1-2, medium-level 3 and high-level 4-5 information sources.

[9] When examining the relation between negative environmental impacts and environmental practices, I do not include negative aesthetic impacts, because the replies contain a great deal of inexplicable contradictions which cause distortions in the findings.

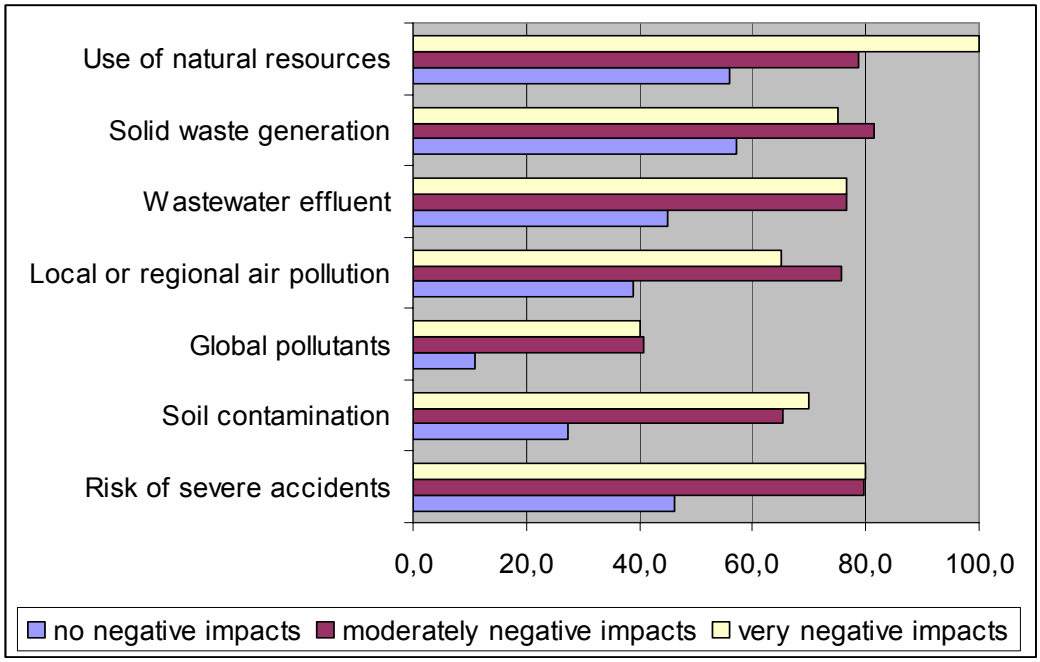


Figure 9: Environmental measures due to degree of negative environmental impacts

Besides, companies should take environmental measures in accordance with the increase in the gravity of negative environmental impacts. According to the figure above, this expectation is not met, either, because companies reporting extremely severe environmental impacts do not take proportionately more measures to mitigate these impacts than companies causing moderately negative impacts. The gap between knowledge and actual behaviour is extremely striking in the case of the emission of global pollutants, as only 40% of companies causing very negative impacts take measures to mitigate them.

The comparison of perceived environmental risks and environmental measures results in the same conclusion: the relation is significant in all problem scenarios, but far not all companies perceiving high environmental risks take concrete environmental measures (see Annex 6.)

The perceived gravity of negative environmental impacts should also be reflected in the *regular monitoring* regarding environmental problems. On the one hand, there should be some sort of gradual increase depending on the gravity of environmental impacts and on the other hand, all companies with very negative impacts should carry out regular monitoring activity (Figure 10).

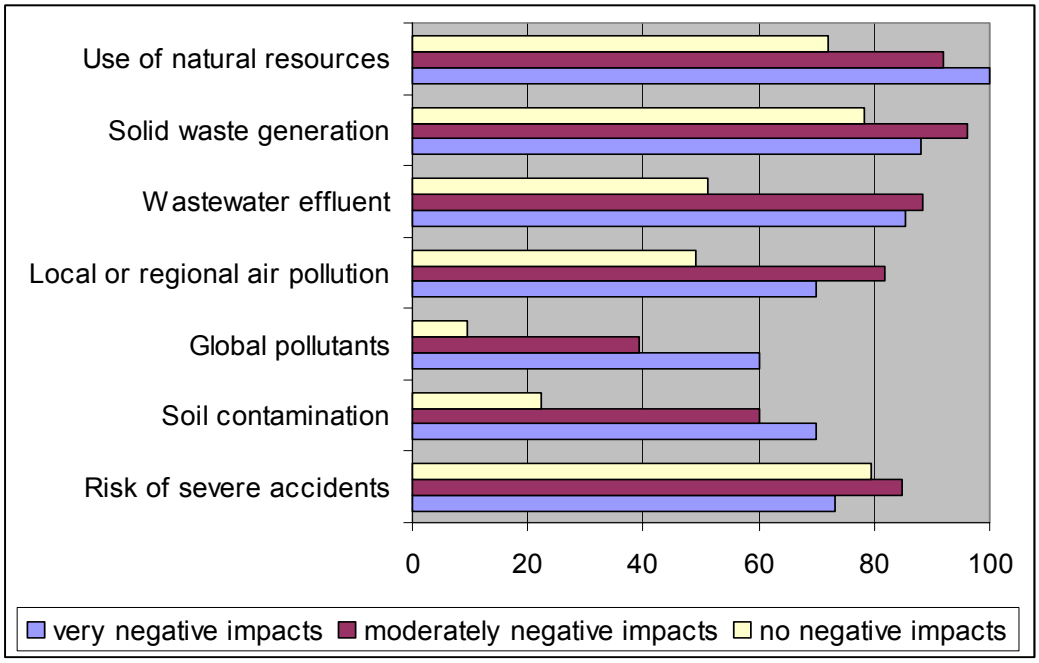


Figure 10: Regular monitoring according to the gravity of environmental impacts

According to Figure 10, the only case where there is no gap between the gravity of the environmental problem and the monitoring activity is the use of natural resources.

In the case of solid waste generation we see a tendency of the negative impact and regular monitoring moving in parallel, but not all companies causing severe negative environmental impact monitor regularly their environmental performance (the rate is 88%). Regarding waste water effluent, companies with moderately and very negative impacts carry out regular monitoring in similar ratio – 88% and 85% respectively. With regard to local/regional air pollution and the risk of severe accidents I came to the odd conclusion that the proportion of companies carrying our regular monitoring activities is higher among companies with moderately negative impacts than among those with very negative impacts. In the case of global air pollutants and soil contamination regular monitoring becomes more frequent as environmental impacts get more severe, but the gap between the very negative impact and monitoring is even wider than in the case of the other environmental problems.

In my opinion, regular monitoring of environmental performance is an important reflection of environmental attitudes within the organisation. Therefore, it

is worthwhile to examine whether or not favourable attitudes ensure adequate actual behaviour.

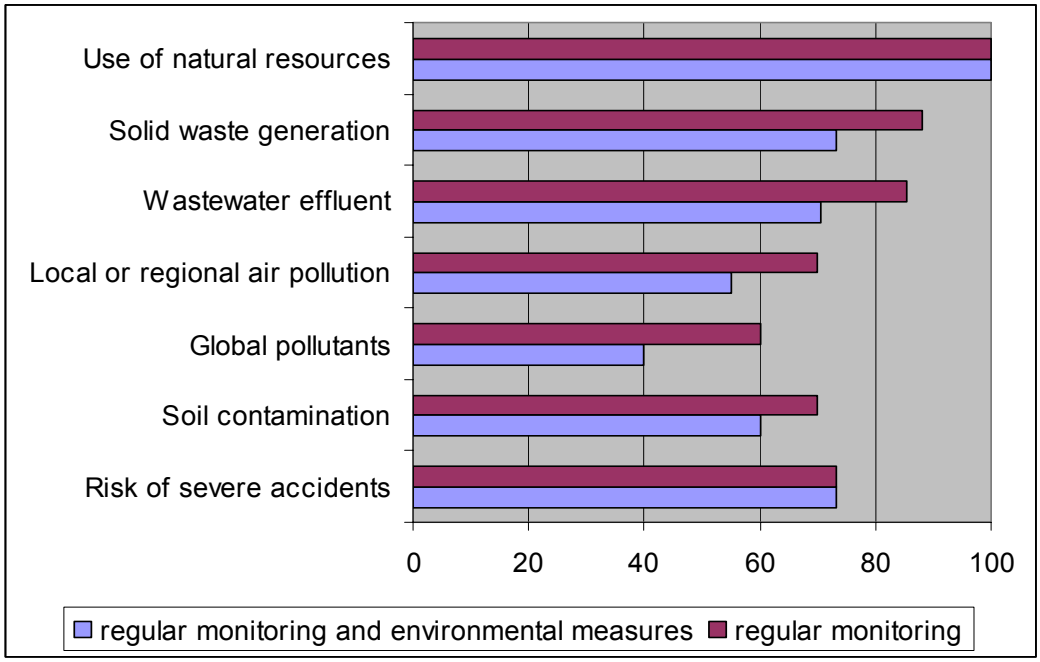


Figure 11: Regular monitoring and environmental measures in the case of very negative environmental impacts

Findings show (Figure 11) that virtually in all cases of environmental problems there is an awareness gap regarding monitoring activity (as attitude) and concrete environmental measures (as actual behaviour) as well. Only at the use of natural resources it is realised that all companies regularly monitoring their very negative environmental impacts take concrete measures to mitigate these impacts.

By combining environmental problems, cumulative variables[10] can be generated relating to negative environmental impacts, regular monitoring and environmental measures (Figure 12).

[10] Cumulative variables are typically 0 in the case of „yes" answers given to 0-4 questions and 1 if „yes" answers are given to 5-7 questions.

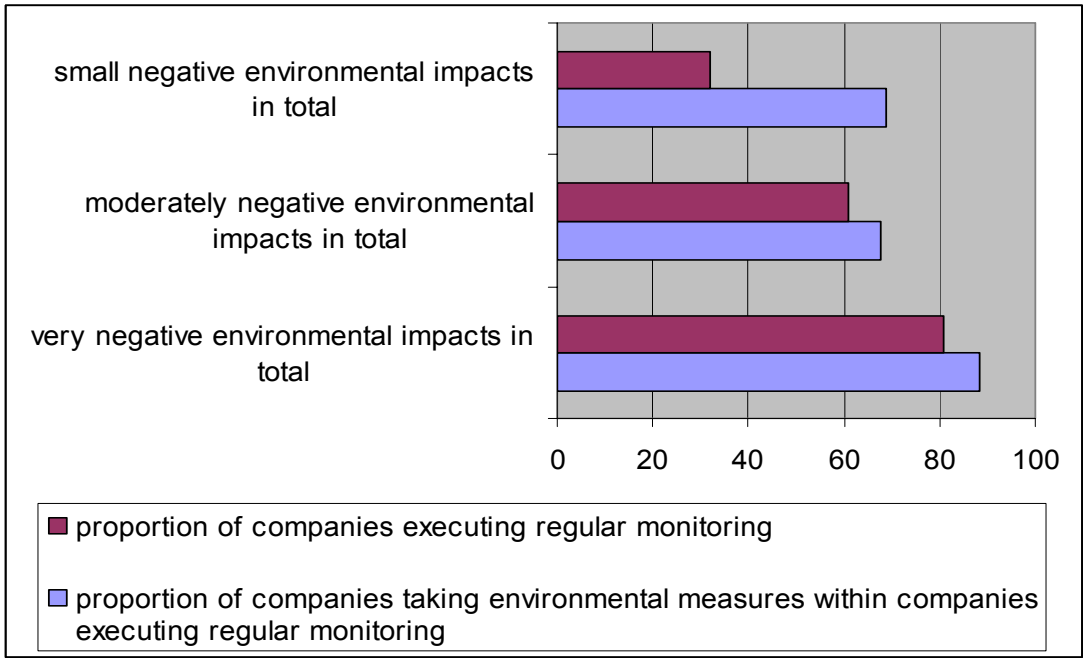


Figure 12: Regular monitoring and environmental measures according to the gravity of environmental impacts with respect to all environmental problems

The comparison of cumulative variables shows that monitoring activity becomes more frequent as problems are increasingly severe, however, companies carrying our regular monitoring take environmental measures in significantly higher proportion (though still less than 100%) only in the case of very negative environmental impacts.

Gaps between ecological knowledge and actual behaviour can also be identified with regard to the introduction of *an environmental management system (EMS)*. Interestingly enough, the gravity of environmental impacts is in significant relation with the introduction of EMS in the case of only a few environmental problems. One reason for this, in my opinion, is that EMS is not the only solution to managing environmental risks, since proper environmental measures can very well be taken without EMS as well, and the introduction of EMS imposes some burdens on companies (extensive documentation, additional costs, etc.), which is a preventive factor for some companies from implementing such a system. Another reason might be that respondents underestimated the environmental impacts of their companies. This assumption is proved by several findings which reveal during the analysis of gaps within environmental awareness components.

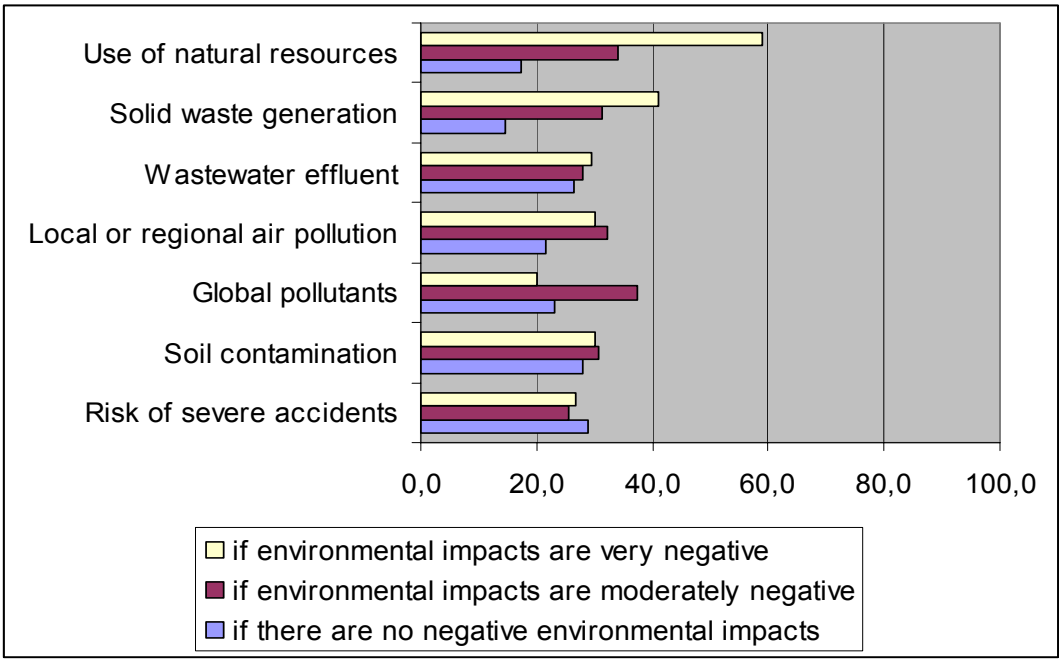


Figure 13: Proportion of companies introducing EMS, according to the gravity of environmental problems

In the case of the use of natural resources and solid waste generation, a significantly higher proportion of companies with very negative impacts introduced an EMS than those with moderately negative impacts (Figure 13). This tendency was not present in the case of local and regional air pollution, though in the case of local air pollution companies with very negative and moderately negative impacts introduced an EMS in a significantly higher ratio than those with no negative impacts on the environment. Regarding wastewater effluent, soil contamination and risk of severe accidents there was no relation of any sort between the two variables.

Moreover, it is interesting to observe the decision-making process of companies with very negative impacts on the introduction of EMS. Figure 14 is a graphic representation of the gap between knowledge and actual behaviour.

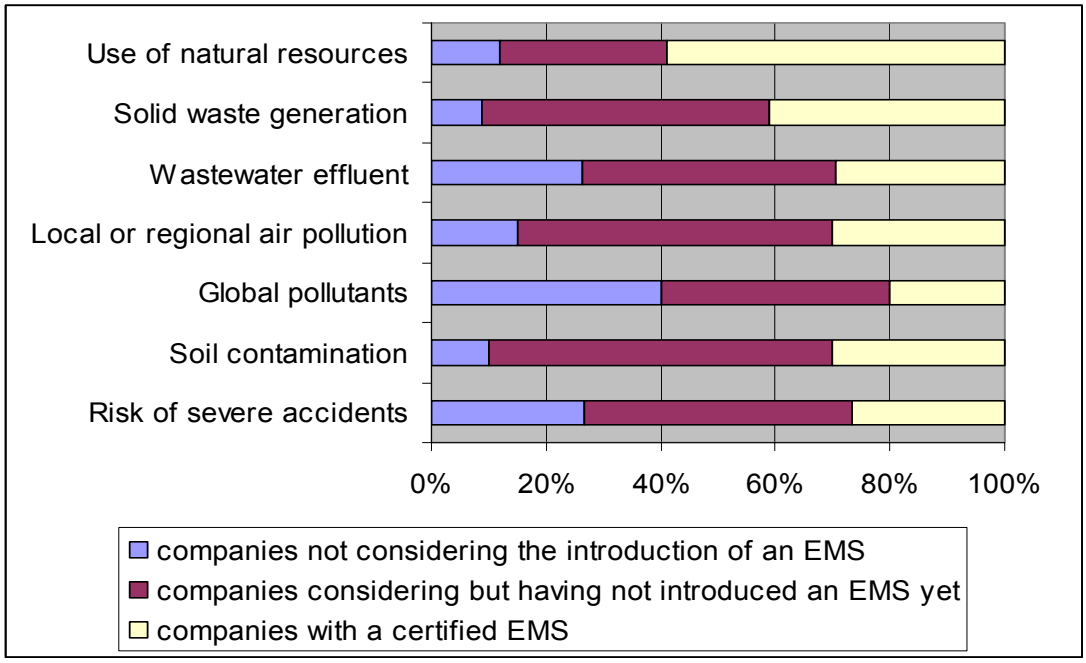


Figure 14: Consideration and implementation of EMS at companies with very negative environmental impacts

In the overwhelming majority of environmental problems companies with very negative environmental impact consider the introduction of EMS. Favourable attitude, however, is reflected in the actual behaviour at a fewer percent of companies, i.e. much fewer decided to actually introduce an EMS. This finding confirms the earlier experience that very frequently not even knowledge and favourable attitude together are sufficient to action corresponding to the gravity of environmental impacts.

We can examine the same question from the opposite perspective as well: how do companies with an EMS rate the environmental impacts of their activities. The responses are described by Figure 15 below.

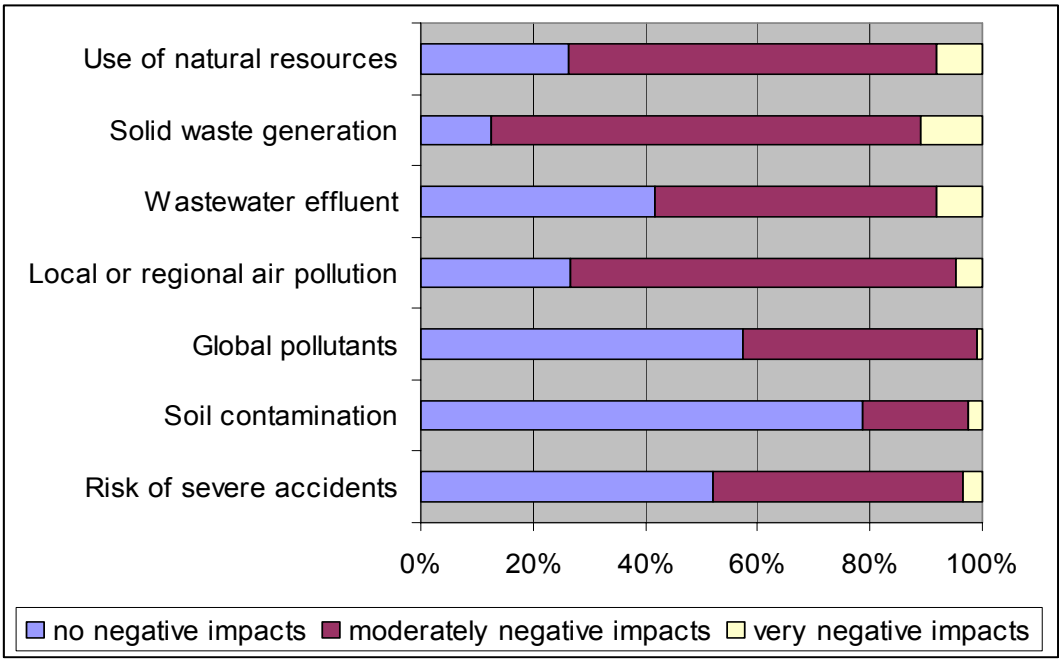


Figure 15: Gravity of environmental impacts caused by companies applying EMS

It is visible that only an insignificant percentage of companies with an EMS rate their activities as having very negative environmental impacts, but except for global air pollutants and soil contamination the majority of companies rate their activities as having a moderately negative environmental impacts, which indicates that the introduction of EMS might be justified with respect to pollution reduction.

The decisive role of favourable attitudes is also reflected in *environmental management practices*. According to my assumption, high-level ecological knowledge of the organisation is not enough to the application of certain environmental management tools. Attitudes shaped by the influence of stakeholders are also necessary, these then will be reflected in the application of environmental management tools aimed at those stakeholder groups.

Stakeholders depending on their influence can be divided into four groups, by means of a factor analysis (Table 3). For the details of the factor analysis see Annex 7.

Table 3: Factors according to the influence of stakeholders

Factor	Variables with the highest factor scores	Factor score
F1: External stakeholders	Influence of environmental organisations	0,859
	Influence of industry or trade associations	0,808
	Influence of neighbourhood/community groups	0,598
	Influence of labour unions	0,584
	Influence of banks and other lenders	0,522
F2: Internal stakeholders	Influence of management employees	0,845
	Influence of non-management employees	0,815
	Influence of shareholders and investment funds	0,600
	Influence of corporate headquarters	0,560
F3: Buyers and suppliers	Influence of household consumers	0,787
	Influence of commercial buyers	0,758
	Influence of suppliers	0,464
F4: Public authorities	Influence of public authorities	0,946

Findings are in accord with the conclusions of Madsen and Ulhoi (2000) inasmuch as public authority proved to be the most important stakeholder in this sample as well (for 99% of the companies this stakeholder is at least moderately important, for 79% it is very important). Public authority is a "secondary" interest group (it is not directly involved in corporate transactions, activities). In the ranking, public authority is followed by "primary" stakeholders, either directly involved in corporate activities or providing input for them. Such entities are: corporate headquarters, management employees, commercial buyers, and shareholders/investment funds. They are followed by household consumers and suppliers of goods and services[11], whereas the smallest influence from an environmental perspective is exerted by "external" stakeholders. Frequencies are illustrated in Figure 16.

[11] It is important to note that originally the method classified „suppliers" as external stakeholders, but the factor scores were so close in the first and third factor that I classified this variable to factor 3, in order to facilitate interpretation.

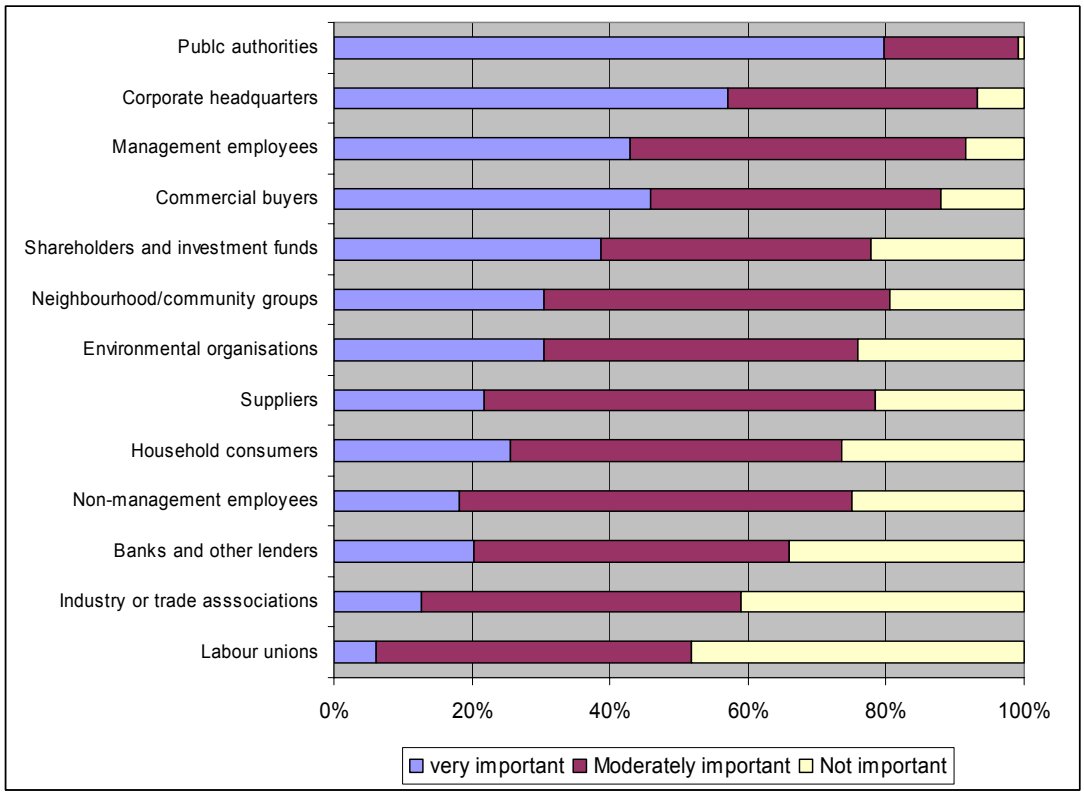


Figure 16: Influence of stakeholders on the environmental practices of the company

The importance accorded to various stakeholder groups has a strong influence on the selection and implementation of environmental management tools vis-à-vis these groups (see Annex 8.). Companies ranking suppliers as "very important" stakeholders pay significantly more attention to the evaluation of suppliers' environmental performance, and in a higher ration require them to introduce environmental measures.

The influence of stakeholders seems to be so definitive in this area that it is likely to be a much more important aspect than the degree of the organisation's ecological knowledge. The figure below shows that even in the case of high-level ecological knowledge[12] the evaluation of suppliers' environmental performance is not automatic. It is clearly suppliers' influence that impacts on the application of this environmental management practice (Figure 17).

[12] In this case high-level ecological knowledge is characterised by the use of five essential information sources – external audit, internal audit, environmental performance indicators, benchmarking and environmental accounting.

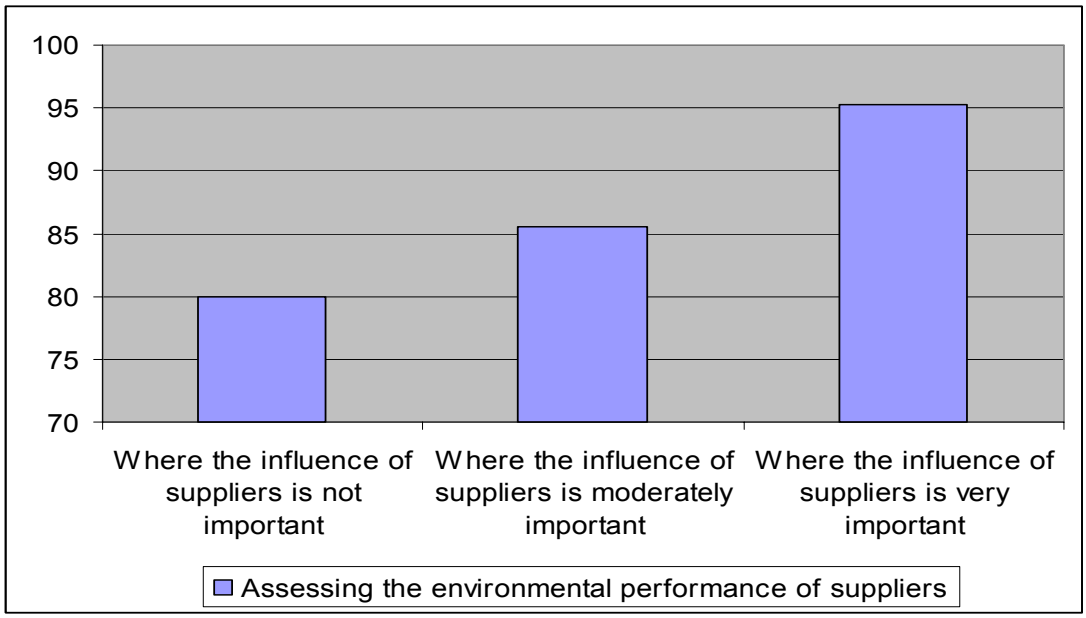


Figure 17: Evaluation of suppliers' environmental performance due to their influence, in the case of high-level ecological knowledge

40% of companies rating commercial buyers as highly important inform them on ways to reduce their environmental impacts (among companies who rate the importance of commercial buyers low this proportion is only 13%). Figure 18 indicates this finding.

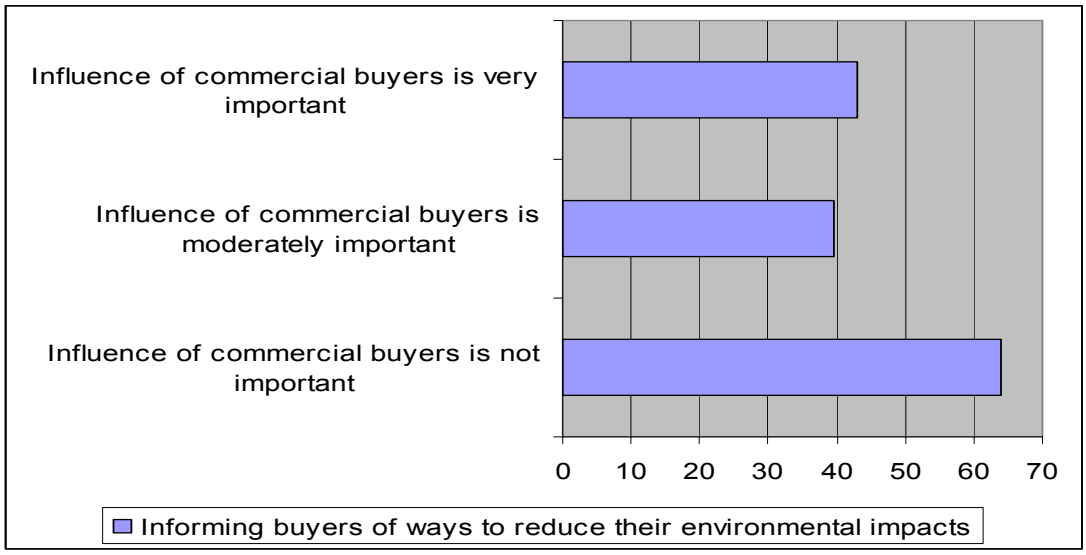


Figure 18: Information provided for commercial buyers in the case of high-level ecological knowledge

We can see that concerning the introduction of the environmental management tool with respect to commercial buyers it is again the importance of attitudes (that is the influence of commercial buyers) that dominates and not the ecological knowledge of the organisation (Figure 18).

Similarly, the influence of neighbourhood/community groups seems to be of much higher importance in the decision on preparing a public environmental report than the knowledge base (Figure 19).

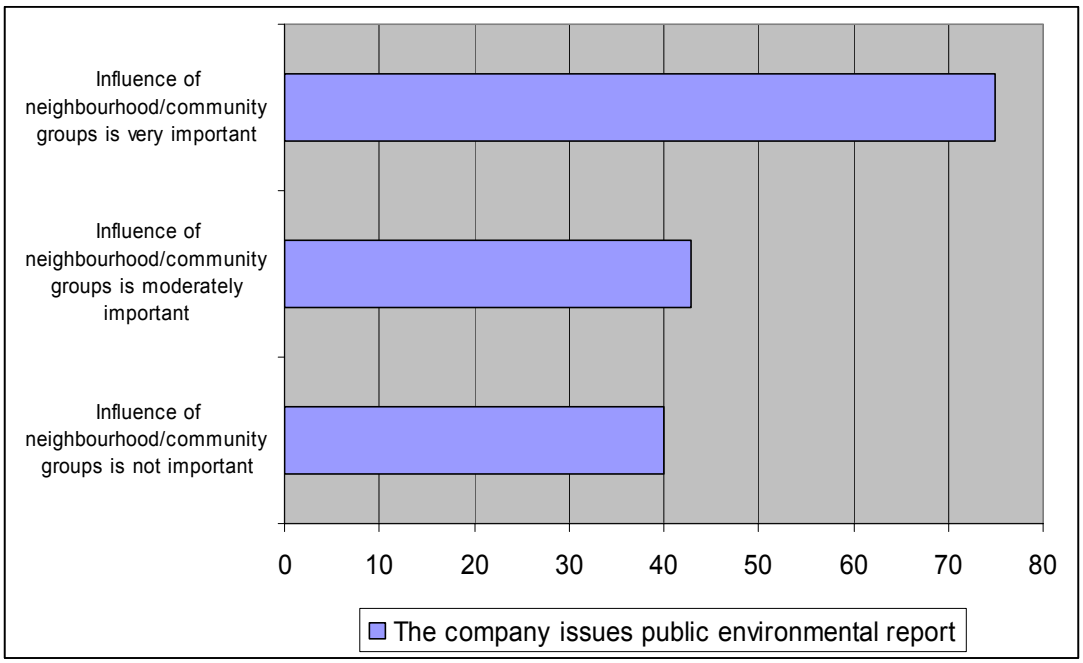


Figure 19: Preparation of a public environmental report based on the influence of neighbourhood/community groups, in the case of high-level ecological knowledge

The influence of employees is reflected in the frequency of both environmental training programmes and environmental criteria used in employees' evaluation and/or compensation. 54% of companies attaching high importance to the influence of employees launched environmental training programmes for them, whereas only 27% of those which rank the decision-shaping influence of employees insignificant did the same. A similar tendency can be observed in relation to the environmental criteria used in the evaluation and/or compensation of employees (see Annex 8). In addition, the assumption that knowledge per se is not sufficient to

trigger actual behaviour is also proven in the case of these environmental management tools (see Annex 9).

The application of environmental management tools with respect to employees also has a significant impact on environmental measures[13], as can be seen from Figures 20 and 21 below.

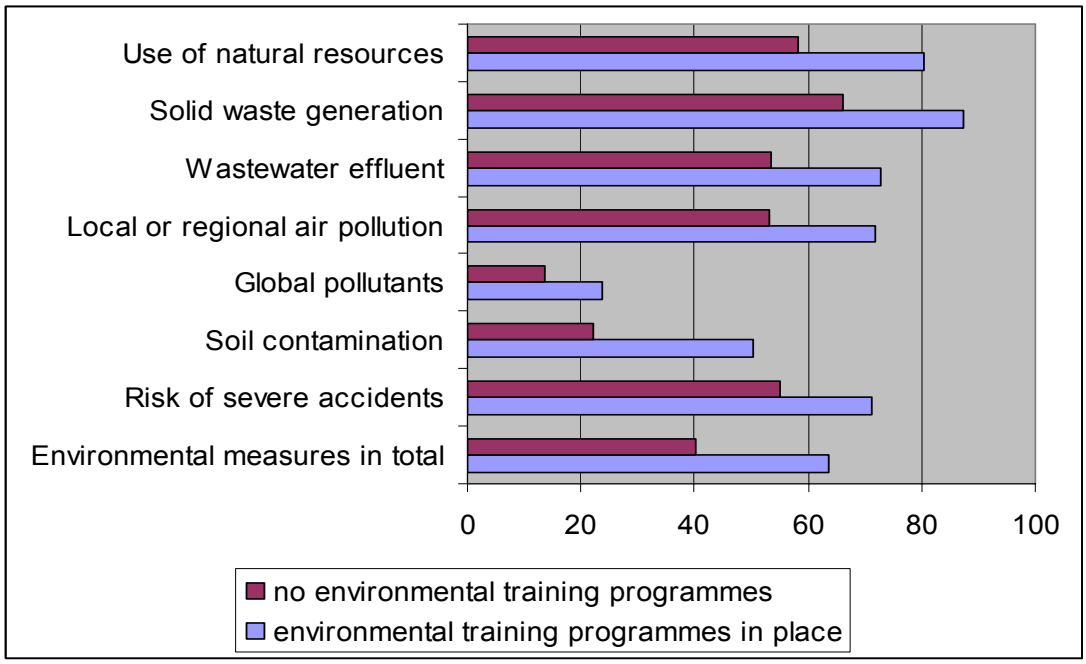


Figure 20: Relation between environmental training programmes and environmental measures

Companies that launched environmental training programmes for their employees took a substantially larger number of environmental measures than those with no such training programmes.

[13] In the case of both environmental management tools the only exception is measures targeted at global air pollutants, where the relation is not significant, only shows the signs of a tendency.

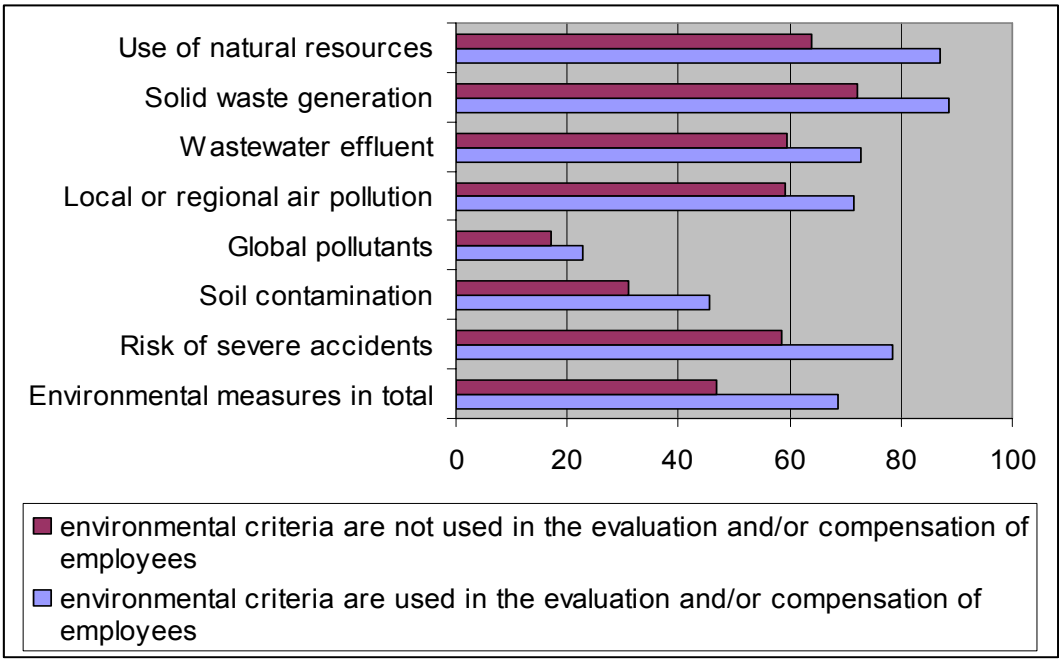


Figure 21: Relation between using environmental criteria in the evaluation/compensation of employees and environmental measures taken

Environmental criteria used in the evaluation/compensation of employees are obviously accompanied by more frequent application of environmental measures.

Besides, establishing environmental training programmes is also related to changes in environmental impacts. Figure 22 below very well demonstrates that among companies organising environmental trainings for their employees a significantly larger proportion managed to reduce their negative environmental impacts in the last three years than among companies with no such trainings.[14]

[14] Exception is wastewater effluent, where the relation is not significant, but the tendency is there.

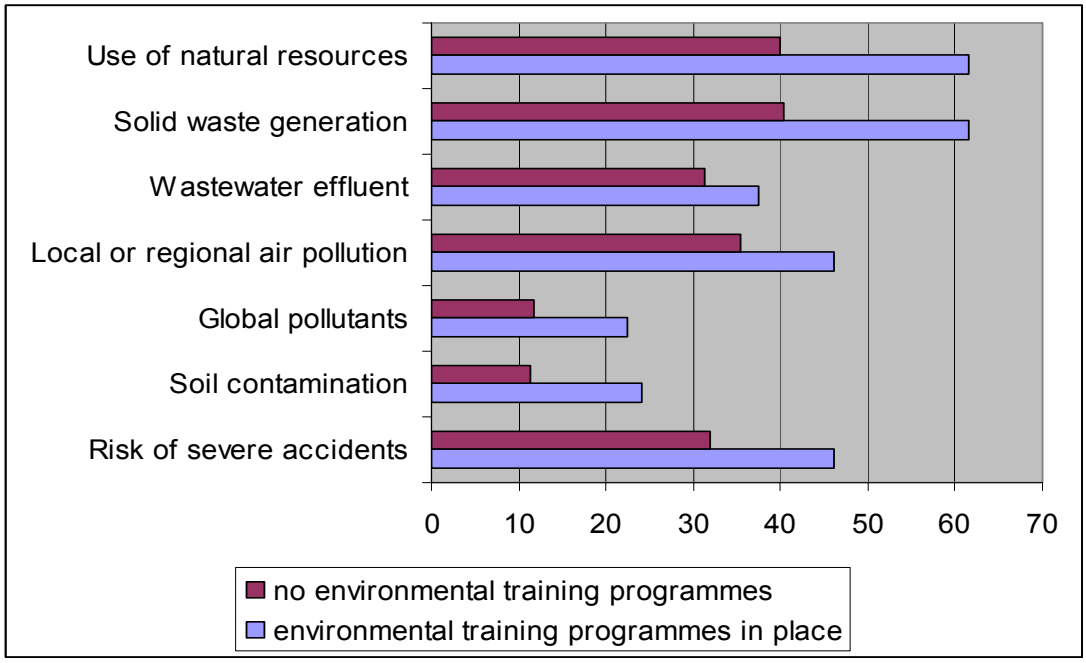


Figure 22: Relation between environmental training programmes and the reduction of environmental impacts

The above findings lead to the conclusion that the environmental performance of the company hinges upon the application of environmental management tools which increase employees' environmental awareness in more components at the same time (knowledge, attitudes, and willingness to act[15]). These tools are therefore appropriate indicators for willingness to act as well.

A further indicator of willingness to act might be the location of *environmental function within the organisation*. According to the literature, this is strongly influenced by the perception of external and internal environmental risks (see Kerekes/Rondinelli/Vastag 1995, cited by Csutora/Kerekes 2004, pp. 137-141). For the most part this is backed by the findings of the present survey (Figure 23).

[15] This finding tallies with that of Chinander (2001), who claims that using environmental criteria in the evaluation of employees have a remarkable effect on their environmental performance.

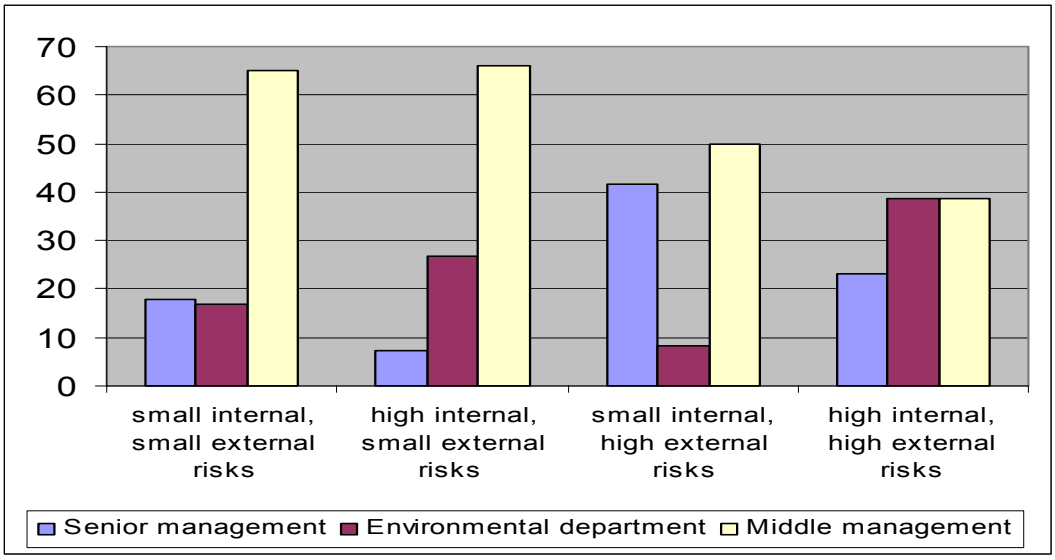


Figure 23: Relation between environmental risks and the location of environmental function within the organisation

If internal and external environmental risks are low, companies do not feel the necessity to change their organisational structure, therefore environment-related tasks are generally integrated into the activity of some other functional unit, with reporting obligations to middle-management. If both external and internal environmental risks are high, a clear tendency is for a large number of companies to give environmental protection a higher importance and establish a specialised environmental department or delegate this function directly to the authority of top-management. According to the research findings the concrete decision depends on the type of environmental risks. In the case of significant internal environmental risks the establishment of a specialised environmental department is more frequent, whereas increased external risks result in the more intensive involvement of top-management.

Tendencies are clearly visible on the figure above, but the level of middle-management as location of the environmental function still prevails, even in the case of high internal and/or external environmental risks. However, proper environmental measures are taken only by companies that place the person or persons responsible for environmental issues in the organisational function which best corresponds to the environmental risks of the firm (Figure 24).

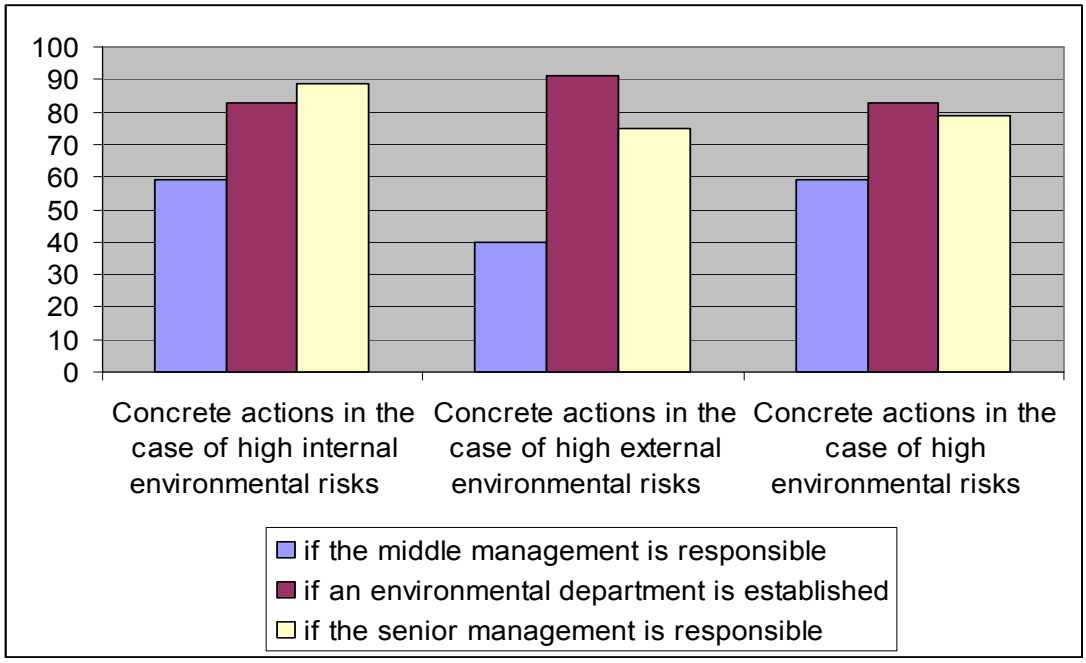


Figure 24: Frequency of environmental measures depending on the environmental function, in the case of high environmental risks

Among companies with high internal and/or external environmental risks those take proportionately more environmental measures which established a specialised environmental department or made the top-management responsible for environmental issues. Consequently, the knowledge of environmental risks is not sufficient to induce action, a proper willingness to act is also indispensable, which is reflected, among others, in the location of environmental function within the organisation.

In conclusion, the relations examined prove the statement of the hypothesis that ecological knowledge is necessary but – in the absence of favourable attitudes and willingness to act –not a sufficient precondition for actual behaviour. Favourite attitudes and willingness to act increase the probability of appropriate actual behaviour to a high degree (although desired behaviour cannot be guaranteed in all cases even under such conditions, as we have seen). A further conclusion is that in order to increase corporate environmental awareness, the shaping of attitudes and willingness to act should be given more emphasis within corporate practice.

H2: The influence of environmental attitudes on actual behaviour in reality depends only on the strongest motivations.

The hypothesis might seem striking at first sight. Generally speaking we expect that during the decision-making process various considerations have their own impacts (though with different weights) on the outcome of the decision. Yet, based on my previous experience related to the environmental practices of companies I claim that it is only the strongest motivations that shape the actual behaviour within an organisation.

The organisation's environmental attitudes are characterised in the questionnaire by the motivations with respect to the implementation of an environmental management systems, factors stimulating environmental measures and the influence of stakeholders.

The importance of motivations related to *the introduction of EMS* has been as follows (Figure 25):

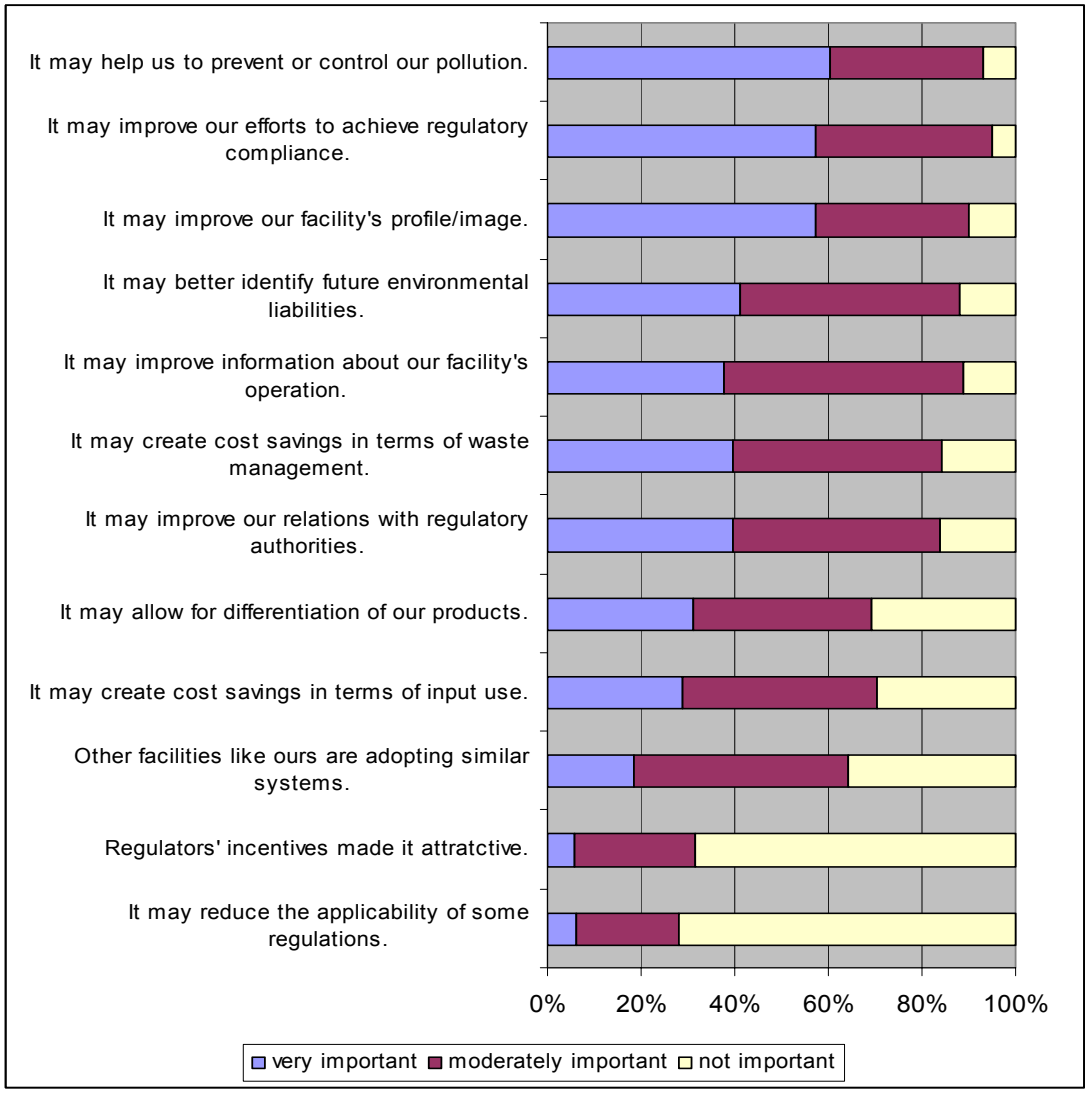


Figure 25: Importance of motivations related to the introduction of EMS

Undoubtedly, the most important motivations have been the prevention and control of environmental incidents, regulatory compliance and the improvement of corporate profile/image. It is worth examining the importance of these motivations for companies only considering the implementation of and those having actually implemented an environmental management system (Figure 26).

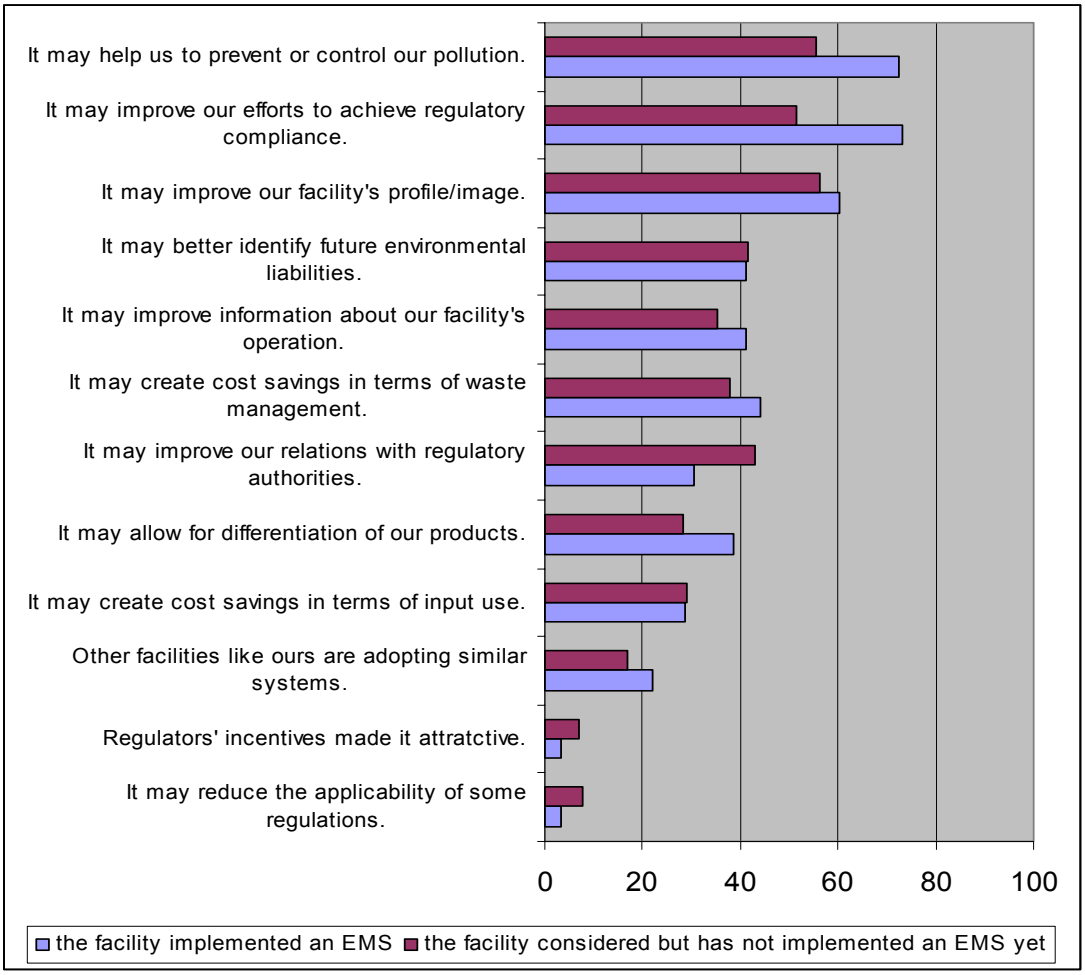


Figure 26: EMS-motivations: the proportion of „very important" replies among companies only considering and those having implemented an EMS already

Surprisingly, in the case of most motivations no significant differences can be observed in the importance of the given motivation between companies only considering and those having already implemented such a system. The demarcation line between consideration and implementation is the result of the differences in the evaluation of the two most important motivations – pollution prevention and regulatory compliance. Companies having actually implemented the system attached significantly higher importance to the prevention or control of environmental incidents and regulatory compliance than companies which are only considering the implementation of EMS.

In the case of other motivations related to the introduction of EMS, there is no particular difference between the responses given by the two groups of companies, which seems to prove that these factors themselves are not of decisive importance

vis-à-vis the implementation of the system, though they might have some complementary role.

For 60% of those having introduced an EMS, the motivation of improved corporate profile/image is very important, which suggests that it might have more than only a negligible role in the decision-making process. The same is indicated by the analysis of strategy to be followed and realised strategy.

Based on the model of Steger/Meima (1988, p. 262, cited by Csutora/Kerekes 2004, p.141) companies in the sample can be classified into the four categories of environmental strategy to be followed as below (Table 4):

Table 4: Environmental strategy to be followed in the sample

Market opportunities ***Environmental risks***	Negligible	Significant
Negligible	**Indifferent: 67.5%**	**Offensive: 9.5%**
Significant	**Defensive: 17.7%**	**Innovative: 5.3%**

Further research sheds light upon the finding that companies when implementing environmental management systems EMS pursue the *environmental strategy*[16] to be followed on the basis of perceived environmental risks and perceived market opportunities (Figure 27). In this case market opportunities inherent in environmental measures correspond with the profile/image improving motivations.

[16] I constructed the variable of environmental risks on the basis of the degree of external and internal environmental risks. If at least one of the risks was classified as „significant", I classified the environmental risks as „significant" also. The underestimation of environmental risks is indicated by the fact that even using this method of classification, more than 2/3 of the companies look „indifferent". It is important to note that in the sample external and internal risks move in tandem, which is understandable, but should not necessarily be the case, as one or the other risk element could bear different significance according to the specificities of the given company.

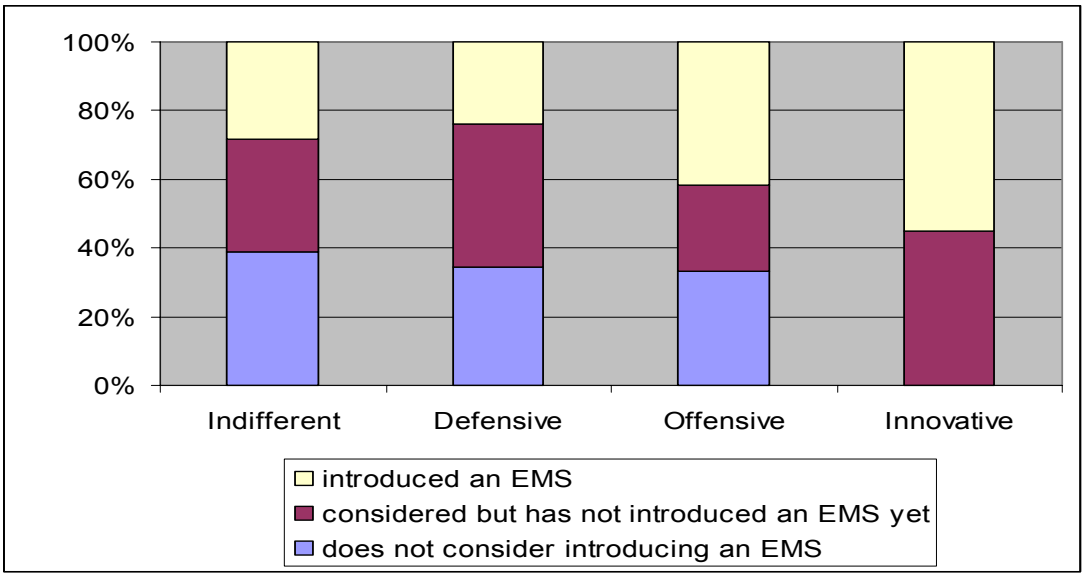


Figure 27: Relation between the environmental strategy to be followed and the decision on EMS implementation

The important decision-shaping role of market opportunities deriving from environmental measures is clearly demonstrated by the fact that companies facing offensive or innovative environmental strategy implemented an EMS in a significantly higher proportion than companies with a defensive or indifferent environmental strategy to be followed.

The above findings show that the likelihood of implementing an EMS is higher among companies for which the otherwise most important motivations are top priorities.

Figure 28 below indicates the importance of *motivations with respect to environmental measures*. The most important motivations are definitely in harmony with motivations regarding the introduction of EMS.

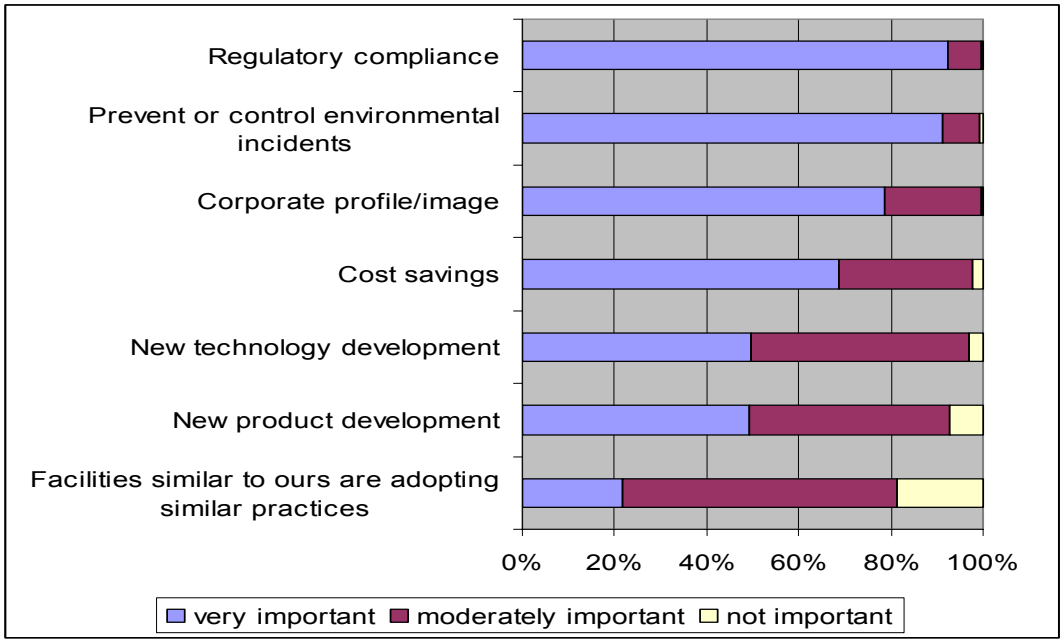


Figure 28: Importance of motivations with respect to environmental measures

It is interesting to examine how environmental measures are influenced by the importance of motivations (Figure 29).

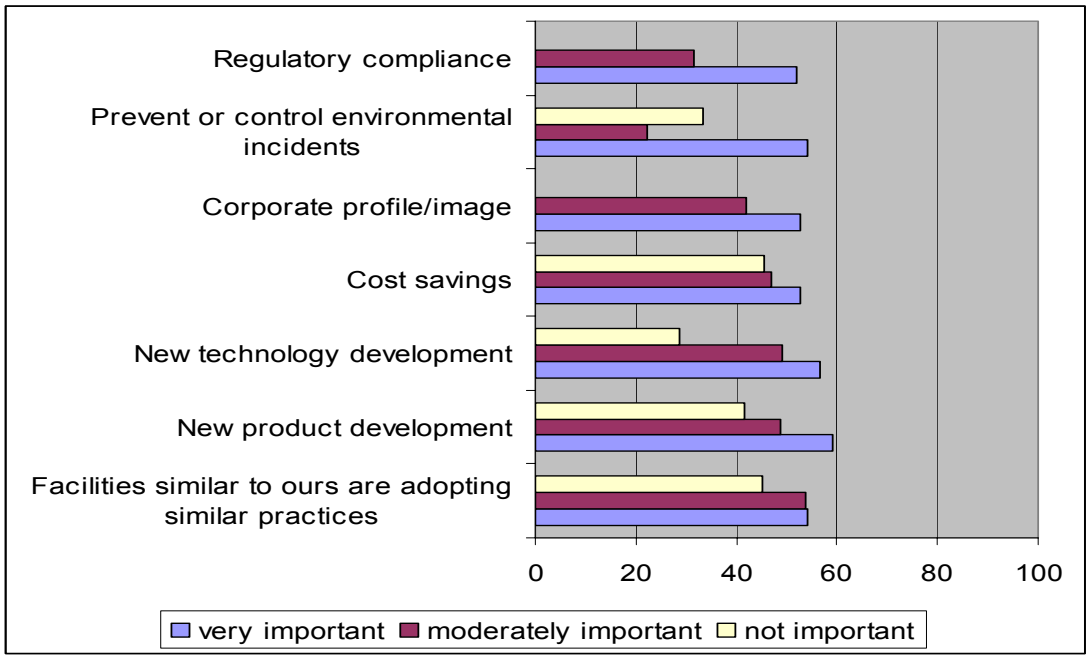


Figure 29: Implementation of significant environmental measures[17] in accordance with the importance of motivations regarding such measures

[17] By significant number of environmental measures I mean measures taken with respect to at least five environmental problems. In the analysis here I use the cumulative variable of environmental practices.

Based on the hypothesis (H2) I expected regulatory compliance, the prevention of environmental incidents and perhaps corporate image to exert decisive influence on environmental measures. Instead, according to the figure above, actual behaviour is not only influenced by the importance of the strongest motivations. Except for cost savings and the practice of similar facilities, all the other motivations have a significant impact on environmental measures (at a significance-level of 0.07, by all means). In the majority of cases, even the tendency is present that, in accord with the increasing importance of motivations, companies take significant number of environmental measures in an increasing proportion.

Regarding the efficiency of environmental measures the outcome is surprising: the reduction of companies' negative environmental impacts in the last three years was only affected by the motivation of preventing environmental incidents.[18] At the same time it is interesting to see that in case when cost savings are at least moderately important for a company, this resulted in significant improvement in environmental impacts (see Annex 11).

Findings point to the conclusion that in the case of environmental measures all motivations should be placed proper emphasis on, apart from the fact that in terms of efficiency, most probably the prevention of the most severe environmental risks (environmental incidents) and motivations leading to direct economic benefits (cost savings) will be given priority.

Beside the above, *stakeholders* might also act as important motivations with respect to corporate environmental practices. As we have seen before companies perceive the highest pressure on their environmental activity from regulatory authorities, corporate headquarters, management employees and commercial (institutional) buyers[19]. The importance of the first three groups of stakeholders has a significant influence on the frequency of environmental measures in terms of nearly all environmental problems. The other stakeholder groups however, do not have a decisive impact at all. It is true that the influence of some of the latter stakeholders has a strong correlation with the cumulative variable made up of environmental

[18] There was a significant relation with respect to all environmental problems.
[19] Institutional and commercial buyers most probably carry such a weight beacuse the majority of the companies in the sample produce for the corporate sector.

measures, which means that companies attaching high importance also to stakeholders other than the strongest ones take determining environmental measures in a significantly higher proportion than those which focus only on the strongest stakeholder groups (see Annex 12/a).

Findings also reveal that the implementation of EMS is mainly influenced by the importance of internal stakeholders like corporate headquarters, management employees and non-management employees, as well as by some external stakeholders like banks and community groups (see Annex 12/b).

H3: There is synergy between certain components of corporate environmental awareness.

There are not only "one-way" relations between the components of corporate environmental awareness. Effects and counter-effects, the interrelation between components might significantly affect organisational behaviour, by indirectly reducing the gaps between the elements of awareness.

The corporate decision on the implementation of an environmental management system for example has a substantial effect on the collection of environmental information. According to Huber (1991) the implementation of EMS itself is a tool of information gathering in order to establish the corporate ecological knowledge base. At the same time, companies with an EMS use other information gathering tools also in a much higher proportion than companies with no environmental management systems, as the relevant EMS standards include the majority of information collection practices (Figure 30).

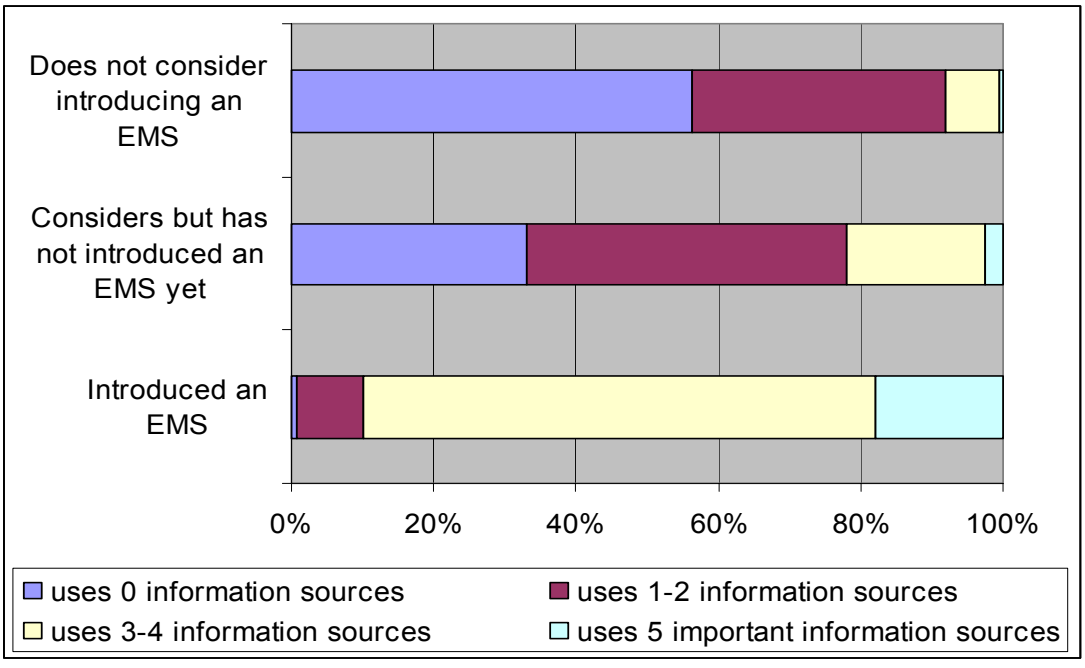


Figure 30: Number of environmental information sources used, according to the decision on implementing an EMS[20]

Findings show that the consideration of an EMS is already an essential step forward in collecting environmental information, which represents synergy between attitudes and knowledge. The implementation of an environmental management system, however, results even compared to this in a fundamental improvement, which indicates a strong interrelation between knowledge and actual behaviour (Figure 31).

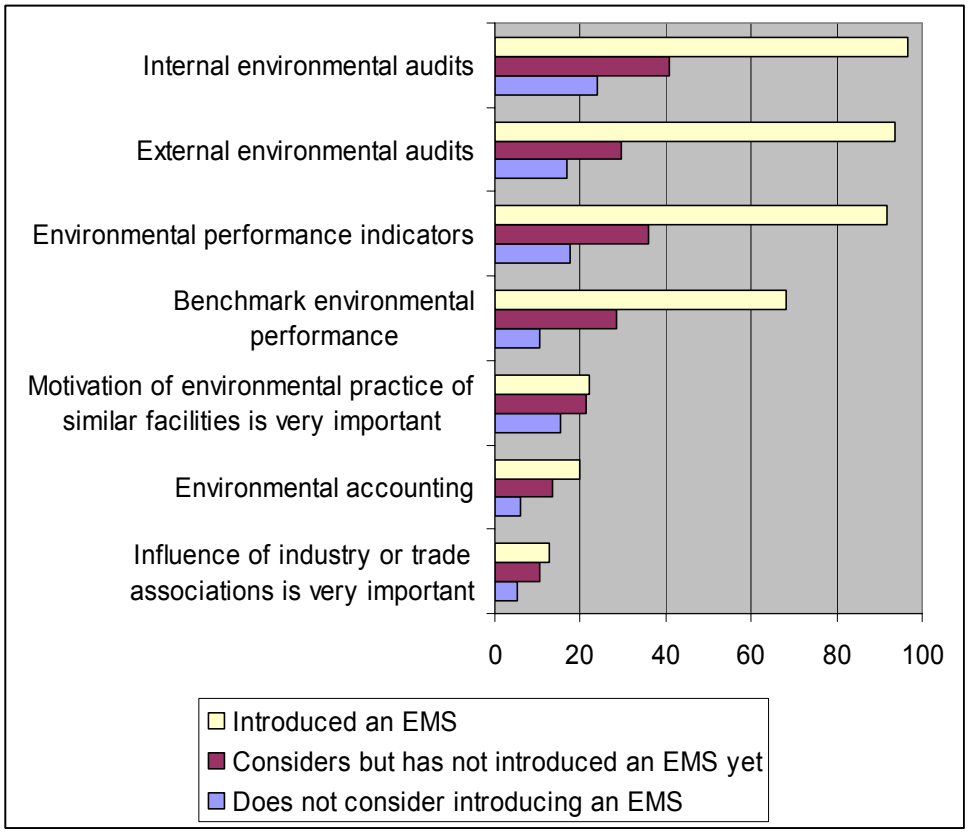


Figure 31: Relation between the decision on an EMS and environmental information gathering

Direct indicators of environmental information gathering are in a significant relation with the consideration and implementation of EMS. On the contrary, the two indirect indicators – motivation of environmental practices of similar facilities and the influence of industry/trade associations – are independent from the decision on the implementation of an environmental management system. This outcome indirectly shows that the spreading of self-regulation culture has been rather limited

[20] The five information sources in the variable: external environmental audit, internal environmental audit, environmental performance indicators, benchmarking, environmental accounting.

so far: the application of the so-called “best practice” does not have an adequate motivation for companies to implement an environmental management system.

In parallel to the implementation of EMS, the application of other environmental management tools also increases remarkably, which again contribute to the increase of corporate environmental awareness. Findings are demonstrated by Figure 32.

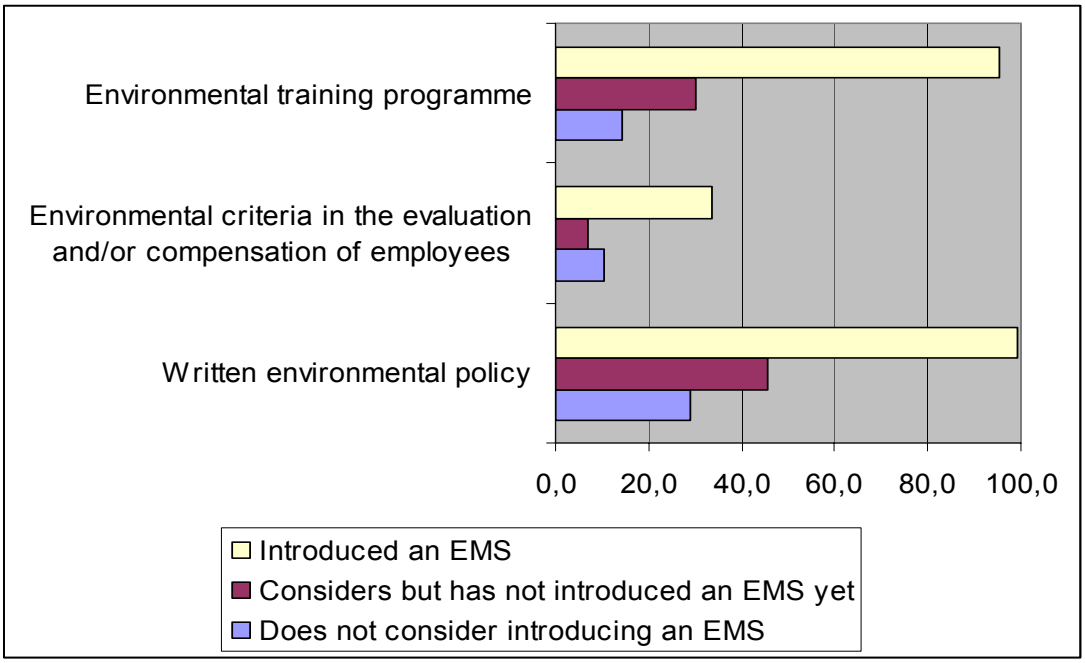


Figure 32: Application of environmental management tools depending on the consideration and implementation of EMS

It is noticeable that with the implementation of EMS, the frequency of environmental training programmes for employees rises to nearly 100%, which has a favourable effect on organisational environmental awareness in several components at the same time (e.g. knowledge, values, attitudes and willingness to act). In addition, environmental criteria in evaluation/compensation are more frequently applied as well which in an indirect manner increases the willingness to act and makes it easier to monitor the practical utilisation of new knowledge driven by the environmental training programmes within the organisation. Earlier we have already shed some light upon the significant correlation between these environmental management tools and the environmental measures taken by the company that is, they have a positive impact on actual behaviour as well. Companies with an EMS

have a written environmental policy, which expresses their commitment and thereby strengthens environmental attitudes.

Parallel with the implementation of an environmental management system the location of the person responsible for environmental issues within the company is also often changed (Figure 33).

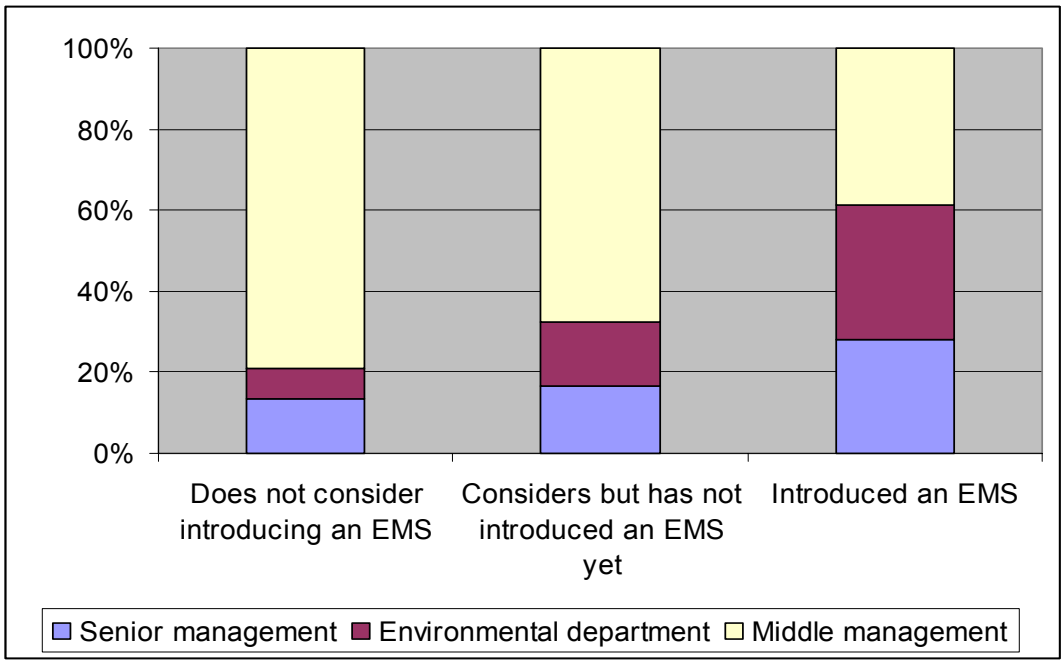


Figure 33: Location of environmental function within the organisation, due to decision on EMS

It is visible that at companies not considering the implementation of EMS in the majority of cases (79%) the person responsible for environmental issues is subordinated to one of the functional middle-managers. As opposed to this practice, 61% of companies with an EMS either delegates this task to top-management level (28%) or establishes a specialised environmental department (33%). The organisational representation of the importance of environmental issues therefore undergoes spectacular changes. Thus, the gap between willingness to act and actual behaviour is getting significantly reduced, though it does not disappear completely, as 39% of companies with an EMS, a relatively high proportion, keeps the environmental function at the level of middle management.

The location of the person responsible for environmental issues within the organisation and the importance attached to the influence of stakeholders essentially influence the environmental information gathering methods, i.e. they have an indirect impact on ecological knowledge. Where the responsible person is at the level of top management or a specialised environmental department is set up, the internal information gathering methods are significantly more characteristic than among companies where the environmental function is at middle management level (Annex 13/a). The increasing influence of internal stakeholders results in the same outcome (Annex 13/b).

H4: There exist gaps within the components of corporate environmental awareness as well.

According to my assumption, the variables characterising the individual components of corporate environmental awareness do not always move properly together, thus gaps also evolve within individual components of awareness.

Within ***ecological knowledge,*** there is a gap between the perception of environmental risks and the assessment of the company's environmental impacts. In the majority of environmental problems, a rather high proportion – outstandingly high in the case of air pollutants – of respondents assessing their companies' environmental impacts as "very negative" said that the environmental risks of the company were negligible. A certain degree of consistency in the responses could be observed only in relation to the use of natural resources and the risk of severe environmental incidents (Figure 34).

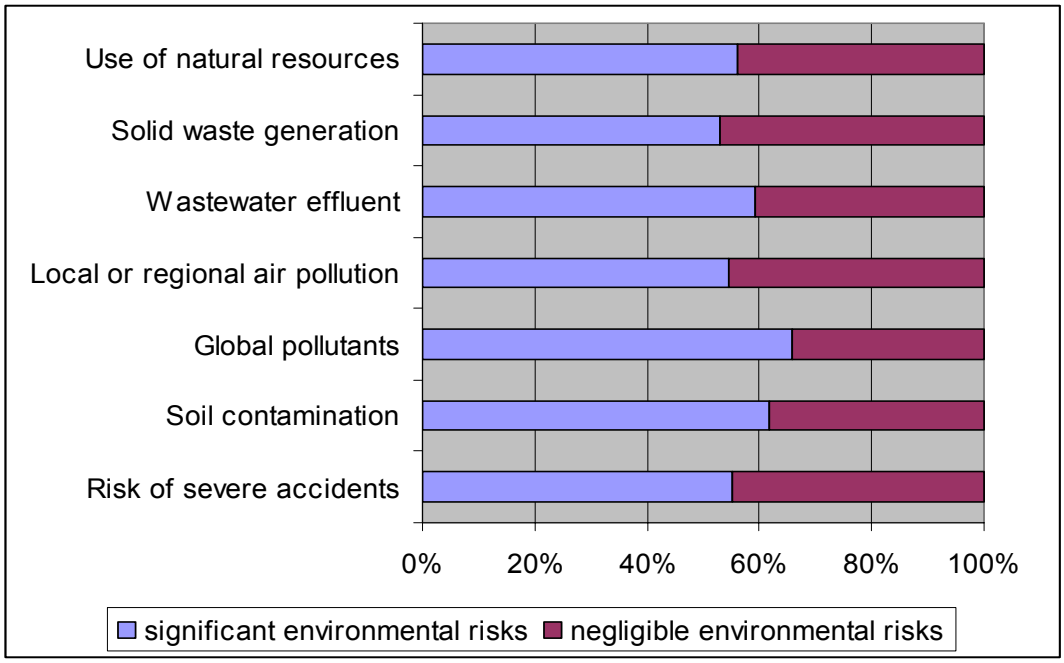


Figure 34: Assessment of environmental risks in the case of "very negative" environmental impacts

To be able to identify potential gaps within ***environmental attitudes*** I first carried out a factor analysis regarding the motivations to implement an EMS and the motivations of concrete environmental measures. In the analysis I involved only companies considering the implementation of EMS, so as to have variables regarding the very same sample of companies (for the background information of the factor analysis see Annex 14).

Table 5: Factors derived from motivations of an EMS implementation and motivations of environmental measures

Factor	Variables with the highest factor scores	Factor score
F1: Business aspects	EMS may create cost savings in terms of waste management.	0,836
	EMS may create cost savings in terms of input use.	0,834
	EMS may improve information about our facility's operation.	0,438
	Environmental measures may improve corporate image.	0,409
F2: Development	Environmental measures may contribute to new product development.	0,863
	Environmental measures may contribute to new technology development.	0,848
F3: Long-run survival	Environmental measures help prevent or control environmental incidents.	0,808
	Environmental measures result in cost savings.	0,663
	With the help of environmental measures regulatory compliance can be achieved.	0,599
F4: Regulatory compliance, pollution prevention	EMS may improve the efforts to achieve regulatory compliance.	0,773
	EMS may better identify future environmental liabilities.	0,708
	EMS may help prevent or control pollution.	0,533
F5: Relation with regulatory authorities	Regulators' incentives made EMS attractive.	0,816
	EMS may reduce the applicability of some regulations.	0,593
	EMS may improve relations with regulatory authorities.	0,592
F6: Similar environmental practices	Other facilities like ours are adopting similar environmental management systems.	0,817
	Facilities similar to ours are adopting similar environmental practices.	0,644
F7: Marketing benefits	EMS may allow for differentiation of our products.	0,837
	EMS may improve the facility's profile/image.	0,570

Table 5 shows that there is only one factor containing motivations relating to the implementation of EMS and motivations of environmental measures at the same time, namely the factor of similar environmental practices. This by all means is a peculiar finding, since earlier, when analysing motivations separately, we have seen that similar motivations have the strongest influence on both the implementation of EMS and the environmental practices of the company.

It is worthwhile to examine the difference in the proportion of "very important" answers in the case of companies considering and not considering an EMS with respect to the motivations of environmental practices (Figure 35).

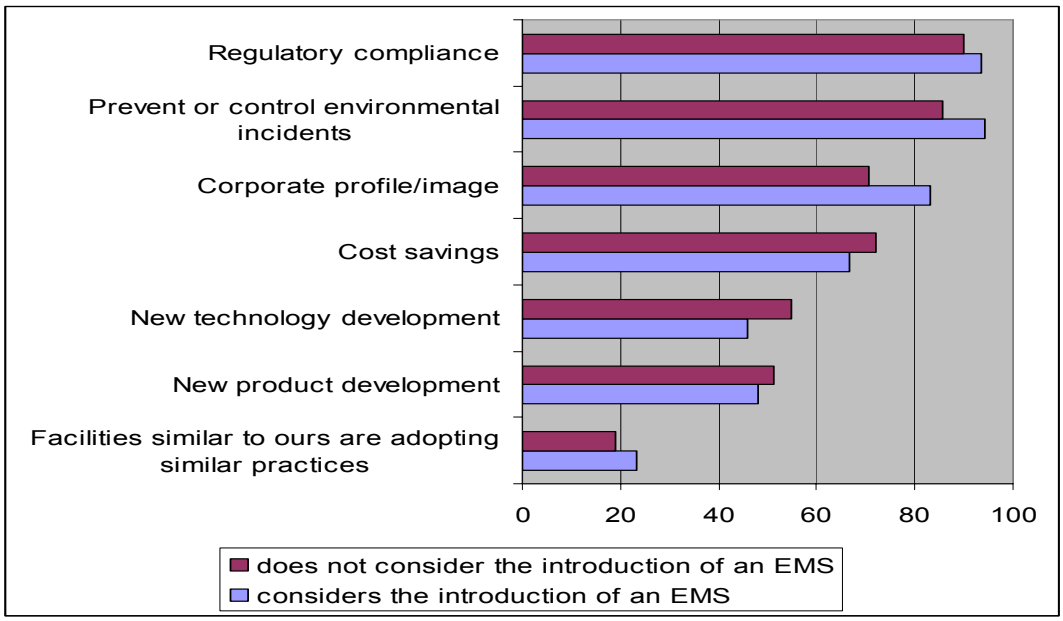


Figure 35: "Very important" motivations of environmental practices and the consideration of implementing an EMS

According to the figure, in the case of the prevention of environmental incidents and corporate image the given motivating factor is more important for companies considering than for those not considering the introduction of EMS. This finding confirms the assumption that the factor analysis did not justify, namely that the strongest motivations regarding the implementation of EMS and environmental practices move at least in part closely together. Regulatory compliance looks very important for all companies. In the other cases there seems to be no relation between the ratio of "very important" motivations of environmental practices and the consideration of implementing an EMS.

The influence of stakeholders according to the results is more related to motivations of environmental practices than to motivations of an EMS (Annex 15). The influence of regulatory authorities and striving at regulatory compliance move together only in the case of environmental practices, but not in the case of EMS. The influence of internal stakeholders – corporate headquarters, management employees, non-management employees – is significantly related to the motivations of new technology development and cost savings (influencing environmental practices). Out of the motivations of an EMS, however, it is only the cost savings at input and output side that are related to the influence of management employees and non-management employees. At the same time, the influence of customers (household consumers and commercial buyers) moves together with motivations relating to products and the improvement of the corporate image. – both in the case of environmental practices and the implementation of EMS.

The application of certain environmental management tools is far from 100% even among companies with an EMS, as shown by Figure 36, which indicates a gap within ***actual behaviour***.

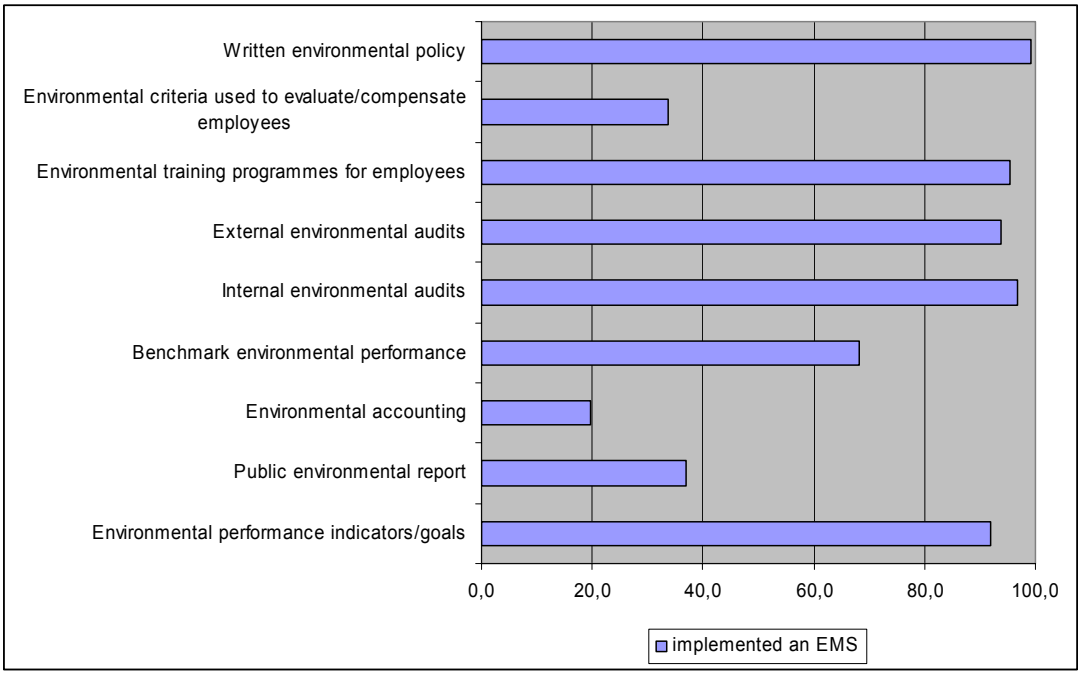


Figure 36: Environmental management practices among companies with EMS

Benchmarking of environmental performance within the industrial branch is done by 2/3 of companies with an EMS, whereas only 1/3 of such companies prepared a public environmental report and applies environmental criteria in the evaluation/compensation of employees. Environmental accounting occurs only at 1/5 of companies.

A further gap within actual behaviour is that concrete environmental measures (environmental practices) do not always go together with an adequate improvement in environmental impacts. To prove this statement I examined the changes in the environmental impact per unit of output with respect to the individual environmental problems, due to environmental measures (Figure 37).

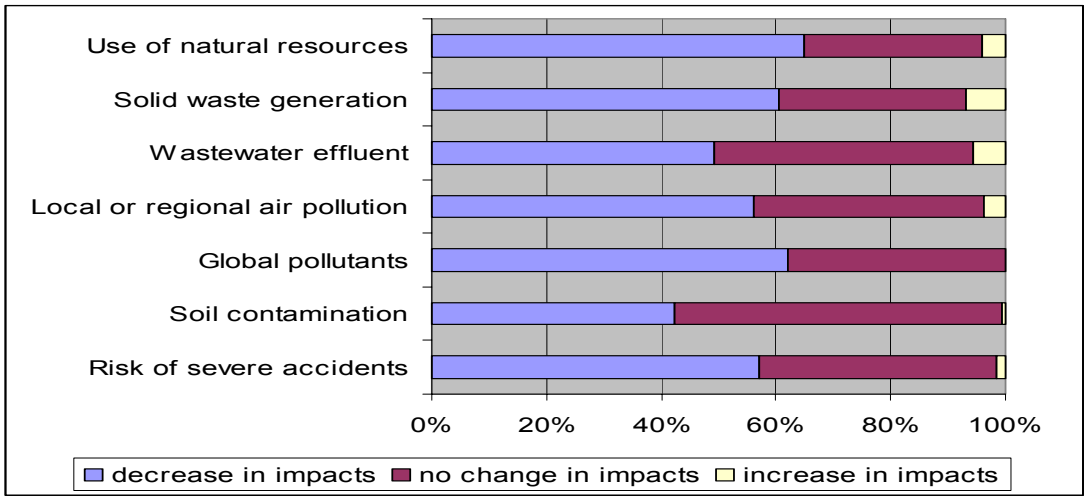


Figure 37: Changes in the environmental impact per unit of output with respect to the individual environmental problems, due to environmental measures

According to Figure 37, in the case of every environmental problem there is a high proportion of companies where the state of the environment has not improved in spite of environmental measures (even it has not deteriorated either).

In addition, companies with very negative environmental impacts experienced more often a further deterioration of environmental impacts, in spite of the measures taken (Figure 38).

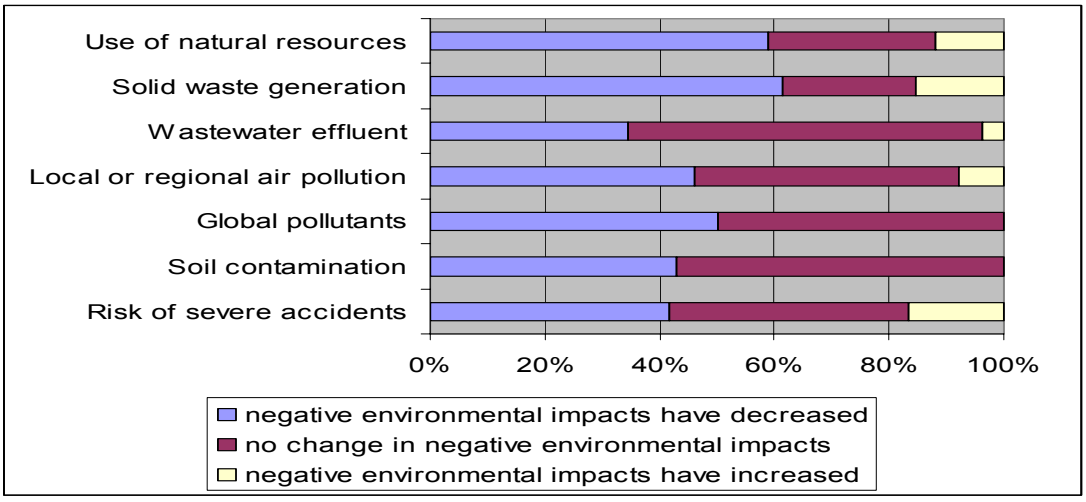


Figure 38: The efficiency of environmental measures in the case of very negative environmental impacts

In conclusion we can claim that significant gaps can be identified even within the components of corporate environmental awareness.

However, as a consequence of limitations of the company survey I could not examine the role of environmental values and the relating gaps in corporate behaviour during this phase of research. This will be in the focus of the next research phase when I analyse the characteristics of the organisational culture of a selected company.

IV. ENVIRONMENTAL VALUES AND CORPORATE CULTURE AT A SELECTED COMPANY

IV.1. Background of the qualitative survey

The questionnaire-based survey of the corporate sample proved to be suitable to identify gaps between four components of environmental awareness – knowledge, attitudes, willingness to act and actual behaviour – but at the same time it does not contain enough information on values in a reliably measurable manner, furthermore it does not facilitate a more profound analysis of the reasons for gaps between awareness components. Therefore, in the second stage of the research I will conduct a more detailed analysis of an enterprise with particular emphasis on environment-related elements of corporate culture, concentrating primarily on environmental values of the organisation and its members. My objective is to prove that the component of values can by no means be ignored when examining environmental awareness, and to prove that both quantitative and qualitative research methods are needed for a more comprehensive picture to be drawn.

a) Characteristics of the selected enterprise

For the purpose of the qualitative analysis I deliberately selected an enterprise which in the course of its activities encounters at least medium, or rather significant internal and external environmental risks, and disposes of a stable, properly functioning environmental management system. Such an enterprise should have a high-degree, socially acknowledged environmental awareness, and environmental protection should be integrated into its corporate culture.

The enterprise involved in the research participated in the questionnaire-based corporate survey in 2003. According to the perception of the respondent, the environmental management and activity of the company has the following features:

- Internal and external environmental risks of the enterprise, as well as market opportunities of the company offered by environment protection are significant.

- The enterprise causes very negative environmental impacts in the areas of natural resource use, solid waste generation, waste water effluent and risk of severe accidents. In case of other environmental problems the environmental impacts are considered to be moderately negative.
- The company regularly monitors its environmental performance and it is also successful in concrete environmental measures. Between 2000 and 2003 the firm achieved generally positive changes concerning the environmental impact per unit of output (its use of water and energy as well as waste water effluent significantly dropped). Out of the major problems it was only the risk of severe accidents that the company could not reduce, but the situation did not become more severe, concerning all environmental problems.
- The person responsible for environmental issues is subordinated to top management within the organisation.
- The enterprise introduced an environmental management system and applies all essential environmental management tools.
- The introduction of the environmental management system (EMS) was motivated most by the ambition to prevent environmental pollution and to improve the relation with regulatory authorities, to achieve cost savings in waste management and to improve information on the operation of the company; other motivating factors were rated as being of medium importance.
- Regarding stakeholders, it is the corporate headquarters, management employees and local communities that have the strongest impact on the environmental activity of the company, but the majority of all the other stakeholders also have a moderately important role.
- The environmental activities of the enterprise are most motivated by the prevention and management of environmental accidents, regulatory compliance and the intention to improve corporate image (other motivating factors are perceived to be moderately important).

The findings indicate that with the quantitative methods applied in the previous part of the research we would not identify a large number of awareness gaps concerning the environmental activities of the selected company. The enterprise is

consequent in applying environmental management tools, its performance monitoring and environmental measures are in line with the severity of the negative environmental impacts caused by its activities. Its environmental measures are predominantly successful, the importance of stakeholders corresponds to environmental risks of the company and they tally with factors which motivated the introduction of the environmental management system, and environment protection measures.

Based on the quantitative analysis this enterprise would certainly be classified as one with higher than average environmental awareness, and could serve as an example to be followed by other companies. This is the very reason why it is exciting to examine whether or not the opinions of organisation members working in different units of the company and levels of the hierarchy back this predominantly positive picture, void of any contradictions. If for example, in this second research phase respondents' opinions will hugely vary concerning environmental values of the organisation members and the organisation itself, and attach different importance to environmental protection in their own value system, we will have a proof as to the importance of values in examining the gaps between environmental awareness components. We cannot neglect the analysis of value, even if there are no contradictions in corporate behaviour concerning the interrelation of the other four components. Furthermore, if respondents' opinions differ on the environmental activity of the company, the environmental awareness of the organisation's members, the efficiency of performance motivators applied by the company and the future opportunities to increase environmental awareness, we may come to the conclusion that the picture is not at all as homogeneous as it is shown by the questionnaire-based survey. Consequently, when evaluating the environmental awareness of enterprises, the application of qualitative research methods is absolutely necessary in addition to quantitative instruments.

b) Hypotheses of the qualitative research

Based on preliminary considerations, in the second stage of my research I will depart from the following assumption:

> **One of the main reasons for the contradicting reflection of environmentally aware corporate behaviour is the imperfect integration of environment protection into corporate culture.**

The first step was to identify the most important themes which in my opinion are instrumental in making the integration of environment protection into corporate culture visible:

- possessed environmental awareness of the respondent,
- the role of environment protection within the company,
- environmental awareness in the behaviour of organisation members,
- organisational instruments applied to increase environmental awareness,
- opportunities to increase corporate environmental awareness.

The imperfect integration of environment protection into corporate culture in my assumption can best be grasped if the members of the organisation have hugely different opinions concerning the reflection of the basic environmental elements of corporate culture in the organisation. Therefore, making the above hypothesis concrete, in the course of the research I will test the following hypothesis:

H5: The opinions of responding organisation members differ on

a) **the importance of environment protection for the company;**
b) **the environmental awareness of employees;**
c) **the efficiency of motivating tools applied by the company to increase environmental awareness;**
d) **motivation tools necessary to increase environmental awareness.**

According to the findings of the questionnaire survey in 2003, the selected company disposes of a strong environmental management, therefore, we can rightly expect certain environment-related elements of corporate culture to exist, which are evaluated by respondents in a uniform way, i.e. elements which indicate the partial integration of environment protection into corporate culture. These elements reflect the increasing role of environment protection and might serve in the future as a basis for an environment-oriented corporate culture. Drawing upon the findings of previous empirical studies I expect the following:

H6: Organisation members appreciate the environmental commitment of the company and acknowledge the dominant role of the top management.

c) Research methodology

The aim of the research is to explore the elements of corporate environmental awareness which are present in a uniform manner (or at least very similarly) in the minds of every member of the organisation involved in the research, as well as those where respondents' opinions differ. To test hypotheses I applied the so-called **Q-methodology,** which classifies respondents according to the similarity or diversity of their opinions into relatively homogeneous groups and highlights the factors judged by respondents in very similar or a very different manner.

Q-methodology was developed by William Stephenson (see Stephenson 1953), in order to systematically analyse human subjectivity. "The Q-methodology is listed among qualitative methods due to the emphasis on the subjective nature of attitudes and opinions" (Hofmeister-Tóth 2005, p.2.), and "is primarily used to explore opinions, attitudes/orientations and value systems" (op.cit. p.3). The methodology is predominantly used in Anglo-Saxon countries (see inter alia Brown 1996, Barry and Proops 1999). The International Society of Scientific Study of Subjectivity has been organising Q-conferences since 1985 on every year, which have proved to be outstandingly useful in discussing the application of the methodology and its further potentials. In Hungary the methodology is not well-known, although it has already been applied in a few cases, also in the field of environment protection (see Pósvai 2001, Szabó 2002).

Based on Hofmeister-Tóth (2005) the most important areas of Q-methodology applications are as follows:

- political public opinion and attitude research,
- clinical psychology, pedagogy,
- research into marketing-, media-, and advertising,
- research into consumer behaviour,
- research into environmental awareness,
- research into gender specificities.

The main objective of the Q-methodology is to typify opinions related to a given issue by means of quantitative analytical techniques. In reality this is a

"reverse" factor-analysis, which instead of creating latent variables from variables puts respondents into various factors – into so-called opinion-groups – based on the similarity or divergence of their opinions. The qualitative nature of the methodology is due to the fact that it requires neither a certain sample size as precondition for reliable quantitative analysis, nor representativeness. The methodology by generating typical opinions assists the researcher in shape recognition, but it is not suitable to generate representative types. The analysis generally involves 10-50 respondents, selected according to fixed criteria. Owing to its specific features, Q-methodology serves as bridge between qualitative and quantitative research methodologies, combining the advantages of both research traditions (Brown 1996, p. 561.).

Q-methodology applies a special technique for data collection, called ***Q-sort technique***. The essence of the technique is that the researcher provides the respondents with cards showing statements, words, possibly pictures. Respondents are supposed to rank the randomly numbered cards according to their preferences. They are assisted with an evaluative scale provided in advance. Respondents first get acquainted with the topic and the content of the cards, then start sorting them. Usually, they first divide cards into three groups. One group is composed of cards containing statements which respondents agree with, the second group is made up of statements respondents do not agree with, and the third one contains statements which respondents have a neutral attitude to. Afterwards respondents continue sorting the statements according to the categories of the scale, comparing cards to one another and giving special consideration to each and every statement, in order to be able to rank them. The evaluative scale usually contains 7 (-3…+3), 9 (-4…+4), or 11(-5…+5) categories, depending on the number of cards.

The sorting will result in the individual rank order of each respondent. These rankings are called ***Q-sorts***. In the evaluation process the method compares preference orders in pairs (that is Q-sorts) and determines their correlations. The process results in an inter-correlation matrix, out of which ***factors***, i.e. ***typical Q-sorts*** containing the "common denominator" of individual opinions, can be generated by means of principal component or centroid method.

In the next stage it is more suitable to transform factors into a more simple factor structure by means of VARIMAX or manual rotation, to make findings easier to interpret. It goes without saying that every preference ranking has to do with all factors, but individuals can very well be associated with one of the typical Q-sorts,

based on their responses. This means that the method based on the otherwise latent divergences and similarities classifies respondents into the most homogeneous groups possible. Individual opinions thus will surface in a structured form, which is easy to interpret in statistical terms. The final outcome, factors, contain respondents with very similar preferences and their rankings.

Q-methodology is “an innovative process in social sciences, which might supplement both quantitative and qualitative research” (Brown 1993, cited by Hofmeister-Tóth 2005, p.12). Supplementary, because it requires a small sample and does not demand representativeness, therefore it cannot substitute representative surveys. “The Q-methodology can especially be applied in cases where behaviour is difficult to communicate, or no conscious standard standpoints are disposable, as yet” (Hofmeister-Tóth 2005, p.12.). I am of the opinion that the integration of environment protection into corporate culture is by all means such a case therefore it is worthwhile to apply the method in order to test hypotheses.

d) The application of the Q-methodology to examine corporate culture

In the application of Q-methodology the careful formulation of statements to be ranked is of outstanding significance from two perspectives. As respondents have to rank statements based on comparisons of pairs, statements have to be worded in a way which makes them comparable and facilitate the establishment of an order of agreement.

The researcher has to decide on either a "forced distribution" or a "free distribution" when applying Q-sort technique. In the case of forced distribution respondents classify a fixed number of cards into the categories of the evaluative scale, which guarantees their preference order to display a slightly flatter distribution than normal. This requirement makes the methodology convenient to provide statistically interpretable results, even in the case of few respondents. A forced distribution is generally applied when respondents are not fully aware of their own preferences, thus their own standpoint stabilises during the process of sorting (decision making), when ranking various statements" (Hofmeister-Tóth 2005, p.8.). As the organisational shaping of environmental awareness is a permanent process, which has still only few "well-established" techniques, in this case forced distribution may be justified. At the same time, we have to be careful that the ranking of statements should be able to follow the desired normal flat distribution. Too many positive or negative statements might make the decision making process more difficult, might discourage respondents from sorting and will certainly distort results.

In the light of the above, I selected the statements suitable for testing the hypothesis in two stages. Firstly, I formulated 46 statements – partly in a positive, partly in a negative form -, which were tested in a simple questionnaire-based manner at another company, with the participation of 30 people. The statements are included in Annex 16. Respondents evaluated statements without any constraints of the Q-method, separately from one another on a scale of 9 categories (+4…-4), according to the degree to which they agreed with the statements. The simple evaluation helped to select statements which did not convey information valuable with respect to the analysis, because they characterised the integration of environment protection into corporate culture or the values of respondents to a

smaller degree than other statements. In addition, I had to reword some of the statements to make the remaining 36 statements convenient to meet the requirements of the Q-method that is to help respondents individually sort statements. When evaluating preliminary statements, respondents tended to agree with too many statements, especially in the case of some respondents (e.g. the environmental manager).

When designing the Q-sample containing the final statements, the question of structure also arose. In the case of a non-structured Q-sample, statements are selected by means of interviews, group discussions, or ordinary opinions. Contrary to this, the design of a structured Q-sample is based on preliminary theoretical considerations, where the same number of statements is assigned to each theoretical category. The Q-sample I designed is closer to the structured method as it was based on preliminary theoretical considerations. However, I did not assign precisely the same number of statements to each topic but as many as I thought would suffice to characterise the given theme. The even distribution of statements was not made possible by the number of statements, either.

The statements in the resulting Q-sample (i.e. the cards to be sorted) according to themes[21]: are as follows:

Statements relating to individuals' inherent environmental awareness:

1. I feel to be personally responsible for the future environment of my children and grandchildren.
2. People could put an end to harmful processes by consciously changing their life-styles.
3. Environmental problems are primarily caused by corporate activities.
4. If I see people ignore the protection of the environment, I am also discouraged from making efforts.
5. I like routine, and rarely change my habits.
6. I think I personally cannot do much for the environment.
7. If my friends started to radically reduce their consumption as of tomorrow, I would follow their examples.
8. To live an environmentally friendly life I need to sacrifice a lot.

The role of environment protection in the company:

9. The activities of our company pose significant risks to the environment.

10. The management of our company pays sufficient attention to managing environmental problems.

14. Our company deals with environment protection only because it is obliged by law to do so.

18. When it comes to profit and cost issues, environmental considerations are ignored by the company.

19. If there was no environmental manager at the company, environmental objectives would certainly not be achieved.

20. Environment protection is equally important for everybody at the company.

28. The environmental objectives of the company are always fully achieved.

Environmental awareness in the behaviour of the members of the organisation:

11. Cleanliness and order are high priority for the employees of our company.

12. The employees of our company always respect health and safety instructions.

17. Every employee is aware of the environment protection objectives of the company.

21. The employees of the company have sufficient knowledge to realise what they are supposed to do to protect the environment.

22. The employees of the company are not motivated by their internal convictions when meeting environment protection tasks but by the obligatory instructions.

30. The full achievement of environment protection objectives of the company is prevented by the lower than necessary environmental awareness of employees.

26. Me and the colleagues in my immediate surroundings have a very similar value system.

Tools applied to increase environmental awareness:

13. Employees always receive appropriate feedback concerning the environmental output of their work.

15. The top management of the company often talks to employees about the importance of environment protection.

[21] Cards with the statements are contained in Annex 19. in numerical order.

16. The environmental training launched by the company improved employees' attitudes a great deal.
23. The main objective of the environmental training of the company is to increase employees' environment-related knowledge; the encouragement of employees' environmentally aware behaviour is only of secondary importance.
24. The company asks the opinion of its employees in questions of environment protection.
25. The company applies direct incentives – rewards, acknowledgement – to motivate employees to take environment-related initiatives.
31. The introduction of the environmental management system has fundamentally changed the values of employees vis-à-vis environment protection.
32. The current environmental management tools of the company are not sufficient to achieve proper environmental performance.

Opportunities to increase corporate environmental awareness:

27. Employees should be given more say in decisions relating to environment protection.
29. The company should apply various methods to encourage employees to achieve better environmental performance.
33. I think employees can better encourage one another to behave properly than rules can.

Previously I have already described the characteristics of the environmental management and environmental activities at the selected company. In this research I involved managers and employees working within one division of the company at two sites, in different organisational units, with the aim to find out how environment protection is reflected in corporate culture at different levels of the company. Details of the survey settlement are contained in Annex 17.

Respondents sorted the above 33 statements on a scale ranging from -4 to +4, according to the degree to which they agreed with them. In compliance with the forced distribution, I predetermined the exact number of statements that can be assigned to the values of the scale in order to meet the requirement of the quasi-normal distribution (see Table 6).

Table 6: Sorting of statements based on forced distribution

	Completely disagree				Indifferent				Fully agree
Scale value	-4	-3	-2	-1	0	1	2	3	4
Number of statements to be sorted	2	3	4	5	5	5	4	3	2

I coded the answers with the help of the so-called "Q-sort scheme" (see Annex 18), and so emerged each respondent's preference order, i.e. the ***Q-sorts***.

Afterwards, the Q-method is applied as described before, by means of a computer software[22]. The software based on the similarities and differences of Q-sorts, generates typical Q-sorts (factors) from individual preference rankings. The principal component method proved to be more convenient to generate factors than the centroid method, because the former had a stronger explanatory power with respect to the results.

In order to ensure greater transparency, I rotated factors. In the research I tested both rotation methods and finally opted for the evaluation of the results generated by VARIMAX rotation method. There is more than one reason for it. On the one hand, the research is more of an exploratory nature, which means that hypotheses relate to the existence of assumed differences of opinions and not the precise content of differences (that is concrete statements where respondents' opinions vastly differ). In such cases VARIMAX rotation is recommended by the authors of the method. In addition, by applying manual rotation the explanatory power of the factors could not be increased and it was cumbersome to define the adequate number of factors.

[22] The program and the accompanying manual can be downloaded from the following website: http://www.rz.unibw-muenchen.de/~p41bsmk/qmethod/ , as interpreted by Peter Schmolck.

IV.2. Results generated by Q-methodology

Q-methodology originally generated eight factors from individual sorting. In order to maintain proper explanatory power, I kept five out of the eight factors, which after the VARIMAX rotation explain 62% of the variance. All the primary research results are contained in Annex 20.

The tables of results generated by Q-methodology facilitate a rather nuanced analysis of opinions. Factors deriving from the selected method can be characterised according to several criteria. First, the program establishes *the ranking of statements with respect to each factor,* by computing the average scale values (e.g. -4, +2, etc.) attached to each statement by respondents in the same factor. By the comparison of the averages, statements are sorted in each factor. The ranking that emerges this way is displayed in two forms. On the one hand, in the original order of statements, indicating the average relating to them in every factor and the ranking position (see Table 20/6 in Annex 20.). On the other hand, statements are listed factor by factor, in a descending order according to *normalised factor scores* (i.e. weighted averages) (see Tables 20/8-12 in Annex 20).

Afterwards, the method establishes *the differences between factors*, i.e. it compares factors in pairs, comparing normalised factor scores with respect to each statement, and displays statements in a descending array of differences between normalised factor scores (see Tables 20/13-22 in Annex 20). This means that statements where the opinions of respondents in the examined two factors differ the most will be found at the top and bottom of the list (this is where the absolute value of differences in normalised factor scores is the highest).

In the next step of the analysis the program with respect to each statement (in their original order) gives the scale value which can be considered as typical in the given factor. This is done in the case of every factor (see Table 20/23 in Annex 20). *Factor Q-sort values* (or typical replies) will then be displayed for each statement, *sorted by consensus versus disagreement* (see Table 20/24 in Annex 20).

In each factor there are *distinguishing statements,* where the opinions of respondents in the same factor are divergent the most from those of respondents in all the other factors (see Tables 20/27-31 in Annex 20). This does not necessarily mean extremely positive (+4) or extremely negative value (-4) in the ranking. It is

possible that there is a big difference due to the weighted average (normalised factor score).

Finally, the program displays *the statements where consensus emerged*, the judgement of which does not significantly differ in the comparison of any pair of factors (see Table 20/32 in Annex 20).

The very existence of factors indicates that environment protection is not reflected in corporate culture in a uniform manner, as respondents had different opinions regarding several environmental questions in the context of the organisation or the behaviour of its members. In the forthcoming parts of my thesis I will carry out a detailed analysis of the individual typical Q-classes, opinion groups, and will identify the most important statements where opinions differ in individual factors the most or show similarities.

a) Typical opinion groups at the enterprise

Typical opinion groups can be interpreted with the help of the rotated factor matrix, which is contained in Table 7. Decisive elements of each factor – namely the respondents represented best by a given factor – are indicated with X[23].

[23] Based on the decisive factor elements we can see that there are two respondents who cannot be classified into any factors due to their contribution to the factors. This is partly because their factor weights were under 0.5, and they had approximately the same factor weight in absolute value in two factors. I will consider them as outsiders. In addition, respondent no.20 has a rather high negative factor weight with regard to factor no.2, whereas his other factor weights are rather low. I will exclude him from the research, as well.

Table 7: Rotated factor matrix[24]

Q-classes	1. Factor	2. Factor	3. Factor	4. Factor	5. Factor
1.	0.0179	0.3051	0.2186	**0.7465X**	0.1450
2.	**0.6265X**	0.3229	0.1987	0.2804	0.1717
3.	**0.6928X**	0.0635	0.1120	-0.1832	0.3783
4.	0.2107	-0.2184	0.0736	**0.5512X**	0.3749
5.	0.4742	-0.1051	-0.1113	**0.5986X**	-0.1186
6.	0.1134	**0.6487X**	0.0393	-0.1286	0.3077
7.	0.3515	0.3502	0.0020	0.1802	**0.6391X**
8.	-0.0621	-0.5245	**0.5771X**	-0.0138	-0.1344
9.	**0.5937X**	0.4392	-0.1778	-0.1279	-0.1009
10.	0.4842	-0.4767	-0.0528	0.2376	0.2770
11.	0.2362	0.0093	**0.7037X**	0.2318	0.0547
12.	0.0333	-0.1448	0.0723	**0.7745X**	0.1443
13.	**0.7710X**	-0.2633	0.1031	0.0233	0.2175
14.	-0.0152	-0.1280	0.1943	**0.5716X**	0.1008
15.	0.0093	0.1976	**0.7530X**	0.2496	-0.2364
16.	0.0698	**0.7513X**	0.1254	-0.0581	-0.0319
17.	0.0588	0.1279	**0.6619X**	0.0962	0.4031
18.	-0.0169	-0.3829	-0.1885	**0.6023X**	-0.2161
19.	0.3920	0.1698	0.1264	0.4236	0.4653
20.	0.1033	**-0.7667X**	0.0619	0.3733	0.2780
21.	0.3316	-0.1710	0.2844	-0.0120	**0.6643X**
22.	0.2453	0.0338	0.0004	0.1528	**0.7518X**
23.	-0.0072	-0.0685	**0.5031X**	-0.1045	0.3175
24.	-0.0612	-0.4144	0.2654	**0.5883X**	0.2800
25.	**0.5099X**	0.3405	0.3424	0.3215	0.1923
26.	-0.1619	-0.1454	0.0377	0.4691	**0.6322X**
Explained Variance in %	12	13	10	15	12
Number of decisive variables	4	3	5	7	4
Average reliability coefficient	0.800	0.800	0.800	0.800	0.800
Composite reliability	0.941	0.923	0.952	0.966	0.941
Standard deviation of factor scores	0.243	0.277	0.218	0.186	0.243

First, I will present factors based on the normalised factor scores (weighted averages) relating to statements and the factor Q-sort values (the typical values) attached to the statements in individual factors (in line with Tables 20/8-12 and 20/24). The data of respondents are included in Annex 21.

[24] Due to forced distribution the average of scale values attached to statements is 0.000, with a standard deviation of 2.236, with regard to each Q-sort.

Factor 1: Satisfied, value-centred respondents

Respondents in Factor 1 evaluated environmental activities of the company basically positively. They are absolutely convinced of the environmental commitment of the company, the efforts made by the management, the importance of the environmental manager, the proper operation of the environmental management system and the efficiency of the environmental training. They have a favourable judgement of the changes in employees' values and attitudes. They perceive the value system of their immediate colleagues as similar. This is the reason why I call them value-centred. They seem to be satisfied with the tools applied by the company to motivate employees' environmental performance, in spite of certain shortcomings (lack of rewards, acknowledgement), and they do not deem it necessary to diversify motivating tools. They would, however, give more say to employees in environmental questions. Employees generally receive proper feedback as to the environmental output of their work. According to the opinions of respondents in this factor, employees are aware of the company's environmental objectives and respect health and safety instructions.

In addition to the largely positive picture, there are certain problems to remedy: employees do not have sufficient environmental knowledge, do not always maintain cleanliness and environmental objectives are not fully achieved (but according to the respondents it is not attributable to the lack of environmental awareness).

The individual attitude of respondents in Factor1 is characterised by a high degree of responsibility and a strong internal control[25]. They do not insist on their routine, habits, environment protection for them is not a sacrifice, and to some extent they believe in the effectiveness of changes in individuals' life-style. At the same time, they would not be willing to radically reduce their consumption; they would in all likelihood to apply other methods to protect the environment.

This factor is predominantly made up of middle managers and employees working for the company for 30-40 years, in functional areas other than production.

[25] The existence of strong internal control is proved by the fact that the negligence and polluting behaviour of others would not discourage respondents from pursuing activities they deem right.

Factor 2: Loyal value-pessimists

Respondents in Factor 2 have exceptional, nearly unbelievable convictions, largely different from those in other factors, as to the full achievement of environmental objectives, employees' knowledge of environmental issues, their attitudes and law-abiding behaviour, the motivating tools to be proper, the role of top management and environmental protection being equally important for everybody at the company. This explains why I call them loyal.

At the same time they are sceptical regarding the efficiency of environmental management system in shaping values, and the importance of the environmental manager. Their values differ from those of their colleagues in their immediate surroundings. Since they are rather negative with respect to the set of values, I call them "value-pessimists".

Their individual attitudes are also markedly different from those of respondents in other factors. While they think that environmental problems are not caused by companies in the first place, they deny any personal responsibility. They think one individual cannot do too much for the environment; neither would it be too much beneficial to change their life-styles.

The factor is composed of middle–aged managers at the lower level of management, working in the area of production and being with the company for 15-20 years.

Factor 3: Critical respondents

Factor 3 is made up of respondents who are rather critical about the environmental behaviour of the company as a whole. They find the initiatives of the top management basically successful. They think that environmental management system is enough to ensure proper environmental performance; the company is not motivated only by laws and regulations to pay attention to environmental issues. Employees have sufficient environmental knowledge to successfully perform their own tasks; the company asks the opinion of employees and provides feedback for them in environmental issues. At the same time they also think that environmental objectives are not fully achieved (though it is not primarily due to the lack of environmental awareness on the part of employees), and the environmental manager

is not indispensable with respect to the achievement of environmental objectives. Training in environmental issues has improved employees' attitudes, but the environmental management system has not had any impact on the values of employees. Employees are not driven by their inherent convictions when meeting environmental objectives, they do not respect health and safety instructions, and do not maintain cleanliness as expected. Trainings also extended the knowledge of employees, and yet, not everybody is aware of the environmental objectives of the company. It is also true, however, that according to respondents in this factor, the top management does not talk enough to employees about the importance of environment protection. Environment protection, therefore (maybe due to the previously mentioned shortcoming) is not equally important for everybody at the company.

Consequently, there is a lot to do in the area of motivation: the company does not apply direct motivators. A larger number of motivating tools should be applied, though critical respondents are of the opinion that it is not absolutely necessary to give more say to employees in environmental questions.

Respondents in this factor in their personal lives are aware of their personal responsibility, their room for acting and the possible positive consequences of changing their life-styles. At the same time they very much stick to their habits, routines, environment protection for them is a sacrifice, and they would not be willing to reduce their current consumption levels.

The majority of critical respondents work in production and the deputy-CEO responsible for environment policy objectives also belongs to this factor.

Factor 4: Respondents missing environmental awareness the most

The fourth group of respondents differs from all the other groups inasmuch as its members perceive the lack of environmental awareness on the part of the organisation members and hold this accountable for all the environmental problems surfacing at the company. According to the concrete answers, environmental objectives are not always met, which is due to the low level of environmental awareness. Not everybody knows the environmental objectives of the company, employees do not have sufficient knowledge to perform their tasks, they are not driven by inherent convictions but by binding instructions. Employees do not respect

health and safety instructions, do not maintain cleanliness. It is not all surprising, as the company does not motivate employees to take environmental initiatives, does not ask their opinion in environmental decisions and does not provide any feedback. Only the environmental training has some effect on attitudes and the environmental management system on the set of values, but these effects are not positive enough, since the environmental management system does not ensure proper environmental performance. Environmental protection is equally important for everybody – but only verbally. Undoubtedly, more motivators should be applied, except for giving more say to employees.

Regarding the role of the top management and the environmental manager, respondents in this group are appreciative. Their personal attitudes are characterised by a high degree of responsibility and are of the opinion that people could put an end to harmful processes by changing their life-styles. Though they do not stick strongly to their habits, they would choose not to reduce their consumption. Environmentally friendly life requires some sacrifice – they say.

The factor is composed mainly of low-level and middle-managers from various organisational units of the division. Respondents have been working for the company for at least 25-30 years, their two-thirds attended university or college.

Factor 5: Dissatisfied respondents in need of motivation

According to the findings respondents in this factor evaluate the environmental risks of the company relatively the highest. They have contradictory opinions as for the environmental awareness of employees. They think employees have sufficient environmental knowledge and more or less are aware of the company's environmental objectives, which are usually fully achieved. At the same time employees are not motivated by their inherent convictions but by binding laws and regulations, though the environmental management system and trainings have had positive effects on their values and attitudes. The cause of environment protection is not at all equally important for everybody at the company, what is more, respondents think that they and their immediate colleagues have different value system. Knowledge is sufficient, but the values of the members of the organisation are different. Employees respect health and safety instructions, but do not maintain

cleanliness properly. Respondents deem the environmental management system as insufficient to promote the achievement of environmental objectives.

Respondents in Factor 5 are clearly bothered by the lack of motivation. In their opinions the company does not motivate its employees by rewards or acknowledgment of their performance to improve their environmental performance, does not ask the opinion of employees and does not provide any feedback for them. They would clearly need more motivators and more say in environmental questions. Hence is the name of the factor.

They feel personally responsible for the future of their children and could also take action, even though they blame companies for most environmental problems. They are not bound by their routine and habits, environment protection for them does not mean any sacrifice, if they are convinced of something, they act accordingly. They would even be ready to reduce their consumption levels.

Respondents in this factor work in the area of production, some of them have been working for a few years now as non-management employees, others are since 15-20 years at the company and are currently members of low- and middle-management. The majority of respondents graduated from an apprenticeship or vocational secondary school (except for the middle-manager, who has a college degree).

Characteristics of typical opinion groups are indicated in Table 8.

Table 8: Characteristics of typical opinion groups

Factors / Criteria	Factor1: Satisfied, value-centred respondents	Factor 2: Loyal value-pessimists	Factor 3: Critical respondents	Factor 4: Respondents missing environmental awareness	Factor 5: Dissatisfied respondents, in need of motivation
Typical opinion	- The environmental activities of the company are sufficient - The values and environmental awareness of organisation members undergo favourable changes - The company does not apply direct motivators, but - there is no need to diversify motivating tools applied.	Extremely positive opinion of - the environmental activities of the company, - the behaviour of employees, - motivation. - However, values of employees do not change and are extremely divergent. - The role of the environmental manager is dubious.	Critical opinions of - the company's environmental activities, - employees' behaviour, and - the environmental manager. - Initiatives taken by the management are successful but incomplete as yet. - Motivation is not sufficient. - More motivating tools should be applied, except for giving more say to employees.	- Problems are clearly caused by the lack of environmental awareness on the part of employees. - EMS is not sufficient to ensure adequate environmental performance. - The management and the environmental manager work properly. - More motivating tools should be applied, except for giving more say to employees.	- Contradicting opinion of corporate environmental awareness. - Knowledge is sufficient but values do not converge. - EMS is not sufficient to ensure adequate environmental performance. - The lack of motivation is the most severe problem. - More motivating tools should be applied and employees should be given more say.
Individual set of values of respondents	High degree of responsibility, internal control (strong perceived behaviour control), but they are unwilling to reduce their own consumption.	They refuse to take individual responsibility; do not believe in the benefit of changing life-styles.	High degree of responsibility, but strongly stick to old habits. Environmentally friendly life is a sacrifice, would not like to reduce their consumption.	High degree of responsibility, but their willingness to act is uncertain. They are flexible.	They have a high degree of responsibility, capacity and willingness to act. Environmentally friendly life is not a sacrifice.
Features of respondents (features of the majority by factors)	Middle managers and employees working for the company for 30-40 years, not in production (6 people).	Middle-aged managers at low-level management, working for the company in production for 15-20 years (2 people).	Employees predominantly working in production and the deputy CEO responsible for environment (5 people).	More qualified low- and middle-managers from the division, working for the company for 25-30 years (7 people).	Employees working here for a few years; low and middle-managers in production working for the company for 15-20 years (5 people).

Groups of opinions (namely factors) can be delineated relatively well, based on their above descriptions. At the same time it is interesting to examine the distinguishing statements, over which rankings of respondents in the different factors diverge the most. Q-methodology has two analytical tools to examine this with. I will describe the outcome of the analysis below.

b) Distinguishing statements in individual factors

The method identifies the so-called "distinguishing statements" in each factor, the judgement of which is the most different from that in other factors (see Tables 20/27-31 in Annex 20).

The opinion of **the satisfied respondents** differ the most from that of the others with respect to the values shared with colleagues in their immediate surroundings. The satisfied participants have the most favourable opinion in this question (statement no.26), and the same applies to the commitment of the company to dealing with environmental questions beyond compliance (statement no.14).

The **loyal respondents** are more positive than anybody else concerning the knowledge of environmental objectives (statement no.17) and their achievement (statement no.28.), employees' concerns about cleanliness (statement no.11), and the motivating tools applied by the company (statements no.13 and 25). On the other hand, in the question of personal responsibility, they are lagging very much behind (statement no.1.).

The **critical respondents** have more negative opinions than anybody else on the equal importance of environment protection for everybody (statement no.20). In their views, the profit and cost considerations are able to overshadow environment protection (statement no.18), according to the others this is not true. They have the strongest belief in personal responsibilities (negative reply to statement no.6), at the same time they insist the most on keeping up their old habits (statement no.5).

Respondents missing environmental awareness the most have the most negative opinions on employees' knowledge of environmental objectives (statement no.17), their environmental knowledge sufficient to perform their tasks (statement no.21), and the reception of feedback from the company (statement no.13). As opposed to all other factors, these respondents think that the reason why the

environmental objectives of the company are not fully met is the low level of environmental awareness (statement no.30).

Last but not least, the group of **the respondents dissatisfied** took an extremely positive stand inasmuch as they do not perceive environmentally friendly life-style as a sacrifice (statement no.8.). They do not let themselves be discouraged from doing what they think is the right thing to do (statement no.4).

c) Differences between factors in pairs

I have mentioned that the Q-method, in addition to identifying distinguishing statements, compares factors in pairs by establishing the differences in normalised factor scores with respect to each statement, then displays the statements in a descending order of the differences between them (see Tables 20/13-22 in Annex 20.). Thus, statements over which opinions the most differ in the two factors will be found at the top and bottom of the list.

The opinions of respondents in factors 1 and 2 the most differ concerning the set of values, responsibility, the knowledge of employees and motivating tools, as demonstrated by Table 9 (and the Table 20/13 in Annex 20).

Table 9: Statements showing the largest difference in opinions in factors 1 and 2

Satisfied value-centred	Statement	Loyal value-pessimists	Difference
1.780	I feel to be personally responsible for the future of my children.	-1.602	3.382
0.874	Environmental problems are primarily caused by corporate activities.	-1.662	2.535
1.125	Me and the colleagues in my immediate surroundings have very similar value system.	-0.880	2.005
1.505	The introduction of the environmental management system has changed the values of employees.	-0.418	1.923
0.585	The environmental manager is indispensable.	-1.168	1.753
0.291	Employees should be given more say.	-1.325	1.615
	…		
-0.313	Environmental objectives are always achieved.	1.646	-1.959
-0.463	Employees have sufficient knowledge of environment protection.	1.500	-1.963
-0.977	The company applies direct incentives – rewards, acknowledgement – to motivate employees to take environment-related initiatives.	1.270	-2.247

It is visible that the satisfied, value-centred respondents have a stronger sense of their own responsibility, in spite of the fact that they blame companies more than individuals for environmental problems.

Respondents in factors 1 and 3, that is the satisfied value-centred and the critical participants take very different stands on the commitment of the company to environmental matters, the efficiency of tools to increase corporate environmental awareness, employees' behaviour and personal attitudes. The satisfied ones have much more favourable opinions of these issues (see Table 20/14 in Annex 20).

The demarcation line between the satisfied value-centred (factor1) and those missing environmental awareness the most (factor 4) is the difference concerning the current and future motivating tools to increase environmental awareness, which is not surprising (see Table 20/15 in Annex 20). According to the satisfied group the company asks the opinion of its employees in matters of environment protection, employees know environmental objectives and receive feedback, the level of environmental awareness is not an obstacle, and the environmental management system is efficient in ensuring the desired environmental performance. Those in factor 4 are of the opposite opinion and would like to see various other motivating tools.

The satisfied ones (factor1) and the dissatisfied (factor 5) very much disagree regarding the efficiency of the environmental management system, the role of the environmental manager and the involvement of employees (see Table 20/16 in Annex 20).

The loyal (factor 2) and the critical (factor 3) respondents have very different judgements of a large number of statements, which is understandable. In the context of the company, they differ with regard to commitment, employees' behaviour, environmental awareness (the loyal ones are much more positive). Their inherent environmental awareness is markedly different in terms of the degree of responsibility and the conviction that individuals can take action themselves (see the concept of perceived behaviour control earlier). In this question, the critical respondents have much more favourable opinions. At the same time, loyal ones would be more willing than the critical ones to reduce their consumption, in spite of the denial of their individual responsibility (see Table 20/17 in Annex 20).

The average ranking of the loyal ones (factor 2) is also very much different from that of those missing environmental awareness the most (factor 4), with respect

to corporate environmental awareness. However, the environmental manager is rejected by the loyal ones, whereas respondents in factor 4 find it an indispensable position to achieve objectives. The latter are much more convinced that people by changing their life-styles could put an end to harmful processes and people are personally responsible for the future of their children (see Table 20/18 in Annex 20).

The loyal (factor 2) and the dissatisfied (factor 5) participants differ in terms of their opinions on the efficiency of the current and future motivating tools of the company to increase environmental awareness. Furthermore, the dissatisfied blame companies much more for environmental problems, at the same time they also have a much stronger sense of responsibility than respondents in the other factor (see Table 20/19 in Annex 20).

The comparison of the normalised factor scores of the critical group (factor 3) and those missing environmental awareness the most (factor 4) is exciting because both groups criticise corporate environmental awareness rather sharply. Findings, however, indicate that respondents in the two factors put emphasis on different statements in their criticism. The critical ones criticise more strongly the lack of a uniform set of values and criticise the environmental manager, as well. The respondents represented by factor 4 , as opposed to this, attribute the non-achievement of environmental objectives to the low level of employees' environmental awareness, awareness of the organisation members in general, and the lack of significant motivating tools such as asking the opinion of employees and giving them feedback. In their everyday lives the critical ones stick more strongly to their routine, old habits (see Table 20/20 in Annex 20).

Critical respondents (factor 3) and the participants dissatisfied (factor 5) show extremely different individual attitudes. For the critical ones to live in an environmentally friendly way is a sacrifice, all the more so as they do not wish to give up their old habits. Thus, they would not be willing to reduce their consumption, and do not represent any marked position when judging the influence of other people's irresponsible behaviour on their own environmental awareness. In this respect the dissatisfied are much more determined, based on their ranking they are much more open to an environmentally friendly life-style. In the context of the organisation, the two groups have completely different opinions on the achievement of environmental objectives. According to the critical ones the situation is much more worrying, since profit- and cost-considerations sometimes overshadow

environmental aspects. The judgement of the efficiency of the environmental management system is also interesting. According to the critical respondents the system itself would be sufficient to achieve environmental objectives, but its efficiency is reduced by its incapability to change employees' values and top management does not provide the necessary back-up by talking to employees about the importance of environment protection. According to the respondents dissatisfied, the impact of EMS on values is sufficient, but other organisational tools would also be needed, such as the asking the opinion of the employees or giving rewards to motivate them, if the company wishes to achieve its environmental objectives (see Table 20/21 in Annex 20).

Lat but not least, respondents missing environmental awareness (factor 4) hold accountable the low level of employees' environmental awareness, non-compliance with instructions (primarily health and safety rules), and the generally low level of awareness for the inadequate results. As opposed to this, the dissatisfied participants (factor 5) are of the opinion that the lack of a uniform attitude, the "weakness" of the environmental manager and the lack of employees' involvement prevent the company the most from achieving its objectives (see Table 20/22 in Annex 20).

The most important elements of divergent opinions in the various factors are worth demonstrating in a figure (Figure 39).

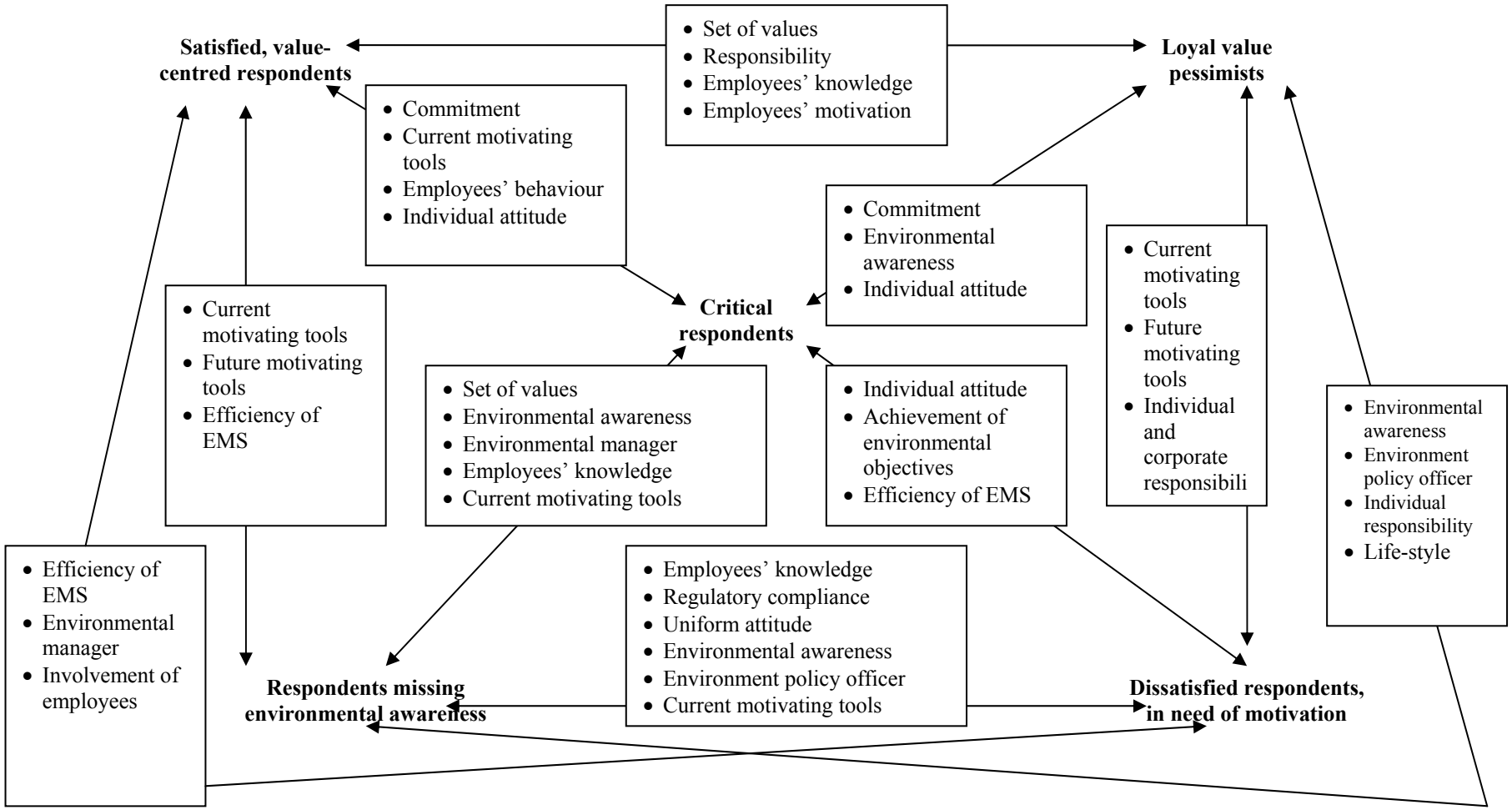


Figure 39: The most important elements resulting in different opinions in factors

d) Characteristics of corporate culture

We have seen above the different opinions of respondents represented in various factors, which indicate that the judgement of the importance, role and "implementation" of environment protection is not uniform within the organisation, consequently, environment protection for the time being is not "perfectly"[26] integrated into the corporate culture of the enterprise examined. In the light of the general characteristics, distinguishing statements and statements provoking the largest differences in the opinions of factors the previously formulated hypotheses can be tested.

Below is a summary of the opinions reflecting rather heterogeneous opinions:

- Environment protection is equally important for everybody in the company.
- Me and the colleagues in my immediate surrounding have similar sets of values.
- Environmental objectives are always fully achieved.
- If there was no environmental manager at the company, environmental objectives would certainly not be achieved.
- Employees have sufficient ecological knowledge to realise what they are supposed to do to protect the environment.
- The environmental management system has changed employees' values.
- The current environmental management system is not sufficient to achieve adequate environmental performance.
- The company asks the opinion of its employees in issues of environment protection.
- Employees always receive proper feedback concerning the environmental output of their work.
- More motivating tools should be applied to improve environment protection.
- Employees should be given more say in environment protection-related decisions of the company.
- Employees respect health and safety instructions.

The listed statements highlight the environmental weaknesses of corporate culture, since respondents gave various judgements when considering them. It indicates that these issues do not constitute an unambiguously integral part of corporate culture. Respondents' opinions obviously vary regarding some of the statements on the role of environment protection in corporate activities (H5/a). In my opinion, environment protection would form an integral part of corporate culture if all respondents agreed at least in part that environmental questions are equally important for every member of the organisation. According to the findings, unfortunately this is not the case, and conflicting opinions also reveal the reasons. Colleagues do not share the same sets of values, which prevents them from stimulating one another to the appropriate degree. The environmental manager is not unanimously trusted by organisation members, which hinders the successful communication and consideration of environmental aspects. From these it follows that respondents represented by individual factors judge differently the achievement of environmental objectives, i.e. the environmental objectives of the company are not likely to be fully achieved.

Respondents' opinions diverge as to the environmental awareness of the members of the organisation, however, the features of respondents – organisational unit, position, qualification, age, length of employment at the company (for details see Annex 21) - do not correspond clearly with opinions. The hypothesis (H5/b) therefore has proven to be generally valid, but based on the findings the judgement of the environmental awareness of the members of the organisation does not depend on the concrete unit or level of management the respondent works at. This is an essential conclusion, as it indicates that the perception of environmental awareness does not hinge upon access to information or decision-making authority. *Individual attitude* is likely to be much more decisive. This is also supported by the fact that the corporate environmental awareness of a company, which is leading in terms of environmental management and environmental actions, has given rise to vastly different opinions.

[26] By „perfectly" I mean unambiguously and consistently.

Taking a closer look at the individual attitudes of respondents in each factor it turns out that the loyal respondents neglect their individual responsibility as for the protection of the environment, this is probably the reason why they are so "lenient" when judging the reflection of environmental awareness in the behaviour of the members of the organisation. In all the other factors respondents have a stronger sense of responsibility, which makes them more critical within the context of the company as well. At the same time, respondents who in their own lives make strong efforts to take responsibility and conduct an environmentally friendly life-style, are also conscious of their own and their colleagues' behaviour in their corporate environment (the group of dissatisfied respondents), and criticise the entire company. Respondents with contradictions in their inherent environmental awareness (the group of critical participants and those missing environmental awareness the most) are typically more sensitive to such contradictions in terms of awareness also within the company. Critical respondents feel their own personal responsibility and find changing their life-styles as of utmost importance, and yet, they would be unwilling to change their old habits. Respondents missing environmental awareness the most are also fairly responsible people in their way of thinking, but they would hardly make efforts to reduce their consumption.

As we can see, there are interesting correlations between individual attitudes and the judging of corporate environmental awareness, at the same time the Q-methodology does not make it possible to statistically examine causal relations in a reliable manner, because statements relating to the two areas were included in the same set of cards, i.e. they were also compared in the course of sorting. A more reliable examination of the relations could have been possible if individual attitude had been the subject of separate questions, independently from statements relating to the organisation and serving as independent variables.

With respect to the efficiency of the current motivating tools to increase environmental awareness opinions also differed markedly (H5/c). Findings tend to show that the company applies various motivating tools in a selective way: most probably it asks the opinion of certain employees in environmental questions and gives feedback as well, whereas it does not involve others. Many doubt the efficiency of the environmental management system: on the one hand the beneficial impact of EMS on values is not unequivocal; on the other hand some respondents do not deem the application of EMS sufficient to achieve adequate environmental performance.

Opinions also differ as regards motivating tools suitable for the purpose (H5/d): should employees be given more say in matters of environment protection and is there any need to diversify the motivating tools applied. Those satisfied and the critical respondents for example do not find it necessary to introduce other types of motivators, contrary to the other three factors, where the respondents do.

When examining corporate culture and the position of environment protection in it, in addition to statements reflecting heterogeneous opinions it is by all means wise to examine statements which are judged similarly by respondents. The content of these statements might serve as the basis of an emerging environment-centred corporate culture.

Based on the typical answers in individual factors, respondents in all the factors are in agreement:[27] with the following statements:

- The management of our company pays sufficient attention to managing environmental problems.
- I think employees can better encourage one another to behave properly than rules can.
- The environment training launched by the company improved employees' attitudes a great deal.[28].
- People could put an end to harmful processes by consciously changing their everyday lives.

Respondents' opinions point to the same direction regarding the below statements, which all the factors negated[29]:

- Our company deals with environment protection only because it is obliged by law to do so.
- The main objective of the environmental training of the company is to increase employees' environment-related knowledge; the encouragement of employees' environmentally aware behaviour is only of secondary importance.

[27] Agreement means that in individual factors the typical answer is not negative; in most factors it is positive.
[28] Based on the method this is the only statement where consensus emerged, where answers do not differ significantly in the comparison of factors in pairs.
[29] Negation (negative answer) means that the majority of typical answers in individual factors are negative (or 0).

- If I see people ignore the protection of the environment, I am also discouraged from making efforts.
- If my friends started to radically reduce their consumption as of tomorrow, I would follow their examples.

The findings contain a great deal of valuable information, even though the degree of agreement or disagreement over the statements is certainly different in individual factors. According to respondents *the role of the management is fundamental* in the adequate treatment of environmental problems, and the overwhelming majority of respondents working in different units and level of the organisation reported positively about this.

In the area of motivation, *socio-cultural factors* (e.g. group identity, group norm, and features of social relations – in detail see the theoretical part of the thesis) should by all means be paid more attention to, because these are considered to improve efficiency much more than rules do.

The favourable impact of environmental training on attitudes and willingness to act is proved by the judgement of two statements, which indicates that by means of *environmental trainings* encouraging proper behaviour corporate environmental awareness can perceivably be improved.

Conveying the environmental commitment of the company to employees is obviously an important part of corporate culture, as respondents working in different organisational units share the opinion that the company takes responsibility for the environment, beyond compliance with environmental regulations.

Two statements refer to the individual attitude of respondents. They do not let others discourage them: if they are environmentally aware, they persist in what they are doing. On the other hand, however, they refuse to radically reduce their own consumption, not even the good example of their friends could convince them to do so. Both statements demonstrate that *personal convictions, values are of decisive importance regarding individual behaviour*, which is rather stable and difficult to change. This might have positive and negative consequences alike.

Opinions seem to be fairly close in factors in the case of some further statements as well.

Respondents are predominantly in agreement with the following statements:

- The top management of the company often talks to employees about the importance of environment protection.
- Every employee is aware of the environment protection objectives of the company.
- I feel to be personally responsible for the future of my children.

Respondents are predominantly in disagreement with the following statements (opinions are pointing to the same direction):

- When it comes to profit and cost issues, environmental considerations are ignored by the company.
- I think I personally cannot do much for the environment.
- The full achievement of environment protection objectives of the company is prevented by the lower than necessary environmental awareness of employees.
- The company applies direct incentives – rewards, acknowledgement – to motivate employees to take environment-related initiatives.

Respondents are predominantly indifferent regarding the following statements (replies around 0):

- The activities of our company pose significant environmental risks.
- Cleanliness and order are high priority for the employees of our company.
- The employees of the company are not motivated by their internal convictions when meeting environment protection tasks.

Several statements confirm the positive attitude of the management, the commitment of the company and the feeling of individual responsibility. The majority of respondents do not identify the low level of environmental awareness as major obstacle to the fulfilment of environmental objectives. At the same time respondents obviously could not take a stand in the question on caring about cleanliness and whether employees are motivated by personal convictions when meeting tasks of environment protection. The company should by all means give more consideration to the more successful application of tools motivating employees

to improve environmental performance. It is all the more so, as the company fails to apply even the most obvious – and usually effective – methods (rewards, incentives, acknowledgement).

The judgements regarding environmental risks are also interesting. This factor, in comparison with others, was finally positioned in the middle, which must be due to the constraints of the Q-method, since in the light of the findings of the questionnaire and the company's environmental performance, the risks posed by the company to the environment can be considered as significant.

Opinions characterising the corporate (environmental) culture of the selected company are summarised in Table 10.

Table 10: Opinions characterising corporate culture

Factors / Criteria	1. Satisfied, value-centred respondents	2. Loyal value-pessimists	3. Critical respondents	4. Respondents missing environmental awareness	5. Dissatisfied respondents, in need of motivation
Converging opinions	• The company is committed to environmental issues. • The attitude of top management in shaping corporate environmental awareness is positive; the role of the management is decisive. • Socio-cultural factors have a stronger motivating power than rules do. • Environmental training had a favourable impact on the attitude and willingness to act of organisation members. • Regarding respondents' individual values: strong perceived behaviour control, at the same time rejection of radical self-restriction.				
Predominantly converging opinions	• The company conveys its commitments to employees through the top management. • Employees are well aware of corporate environmental objectives. • The achievement of environmental objectives is not hindered primarily by the lack of environmental awareness; neither do profit-considerations take precedence over environment protection. • Respondents were uncertain regarding employees' attitude to cleanliness and whether they are driven by internal convictions when performing environment-related tasks (see values around 0 in ranking). • The company does not apply direct motivators (rewards, acknowledgement) to encourage employees to take environmental initiatives.				
Heterogeneous opinions	Regarding the importance of environment protection for the company: • importance of environment protection for organisation members; • achievement of environment-related objectives; • the role of the environmental manager in the achievement of environment-related objectives. Regarding the environmental awareness of organisation members: • similar values shared by colleagues; • sufficient knowledge of environmental issues; • compliance with health and safety prescriptions. Regarding current motivators to increase environmental awareness: • the role of EMS in changing values and the achievement of adequate environmental performance; • asking the opinion of employees in environmental questions; • proper feedback for employees. Regarding motivating tools suitable for the purpose: • diversified motivators to improve environmental performance; • higher degree of employee involvement in decision-making at to environmental questions.				

V. CONCLUSIONS

The main objective of the dissertation was to examine pro-environmental corporate behaviour with the help of the components of environmental awareness. Based on the literature of social psychology and that of organisational behaviour I identified five components of environmental awareness: ecological knowledge, environmental values, environmental attitudes, willingness to act, and actual behaviour. These components in their interactions are shaping and reflecting pro-environmental behaviour which can be interpreted at both individual and organisational levels.

During the research I primarily concentrated on corporate environmental awareness which is influenced by both individual and organisational factors. I gave attention to these factors in the theoretical part of the thesis, based on a self-constructed model. Behaviour of organisation members is actually the outcome of the interrelation between their "possessed" environmental awareness and the impulses exerted by the organisation. Consequently, corporate environmental awareness can be interpreted on the one hand through the behaviour of organisation members and on the other hand, it expresses at a level beyond individuals – mainly due to synergies and group-level action.

The approach of environmental awareness through its components indicates that behaviour can only be considered as aware if it appears consistently in all elements – in each of its components. However, complexity of reality, the often unpredictable interaction of behaviour-shaping factors cause inconsistencies in the behaviour of individuals and the organisation, which results in "gaps" emerging in environmental awareness.

Based on the theoretical background, my empirical research aimed to explore the significant relations between the components of corporate environmental awareness which construct the consistent patterns of organisational behaviour, as well as to highlight the gaps existing between and within the awareness components which prevents corporate behaviour from being fully consistent in practice. I summarise the findings of the first research stage according to these two aspects.

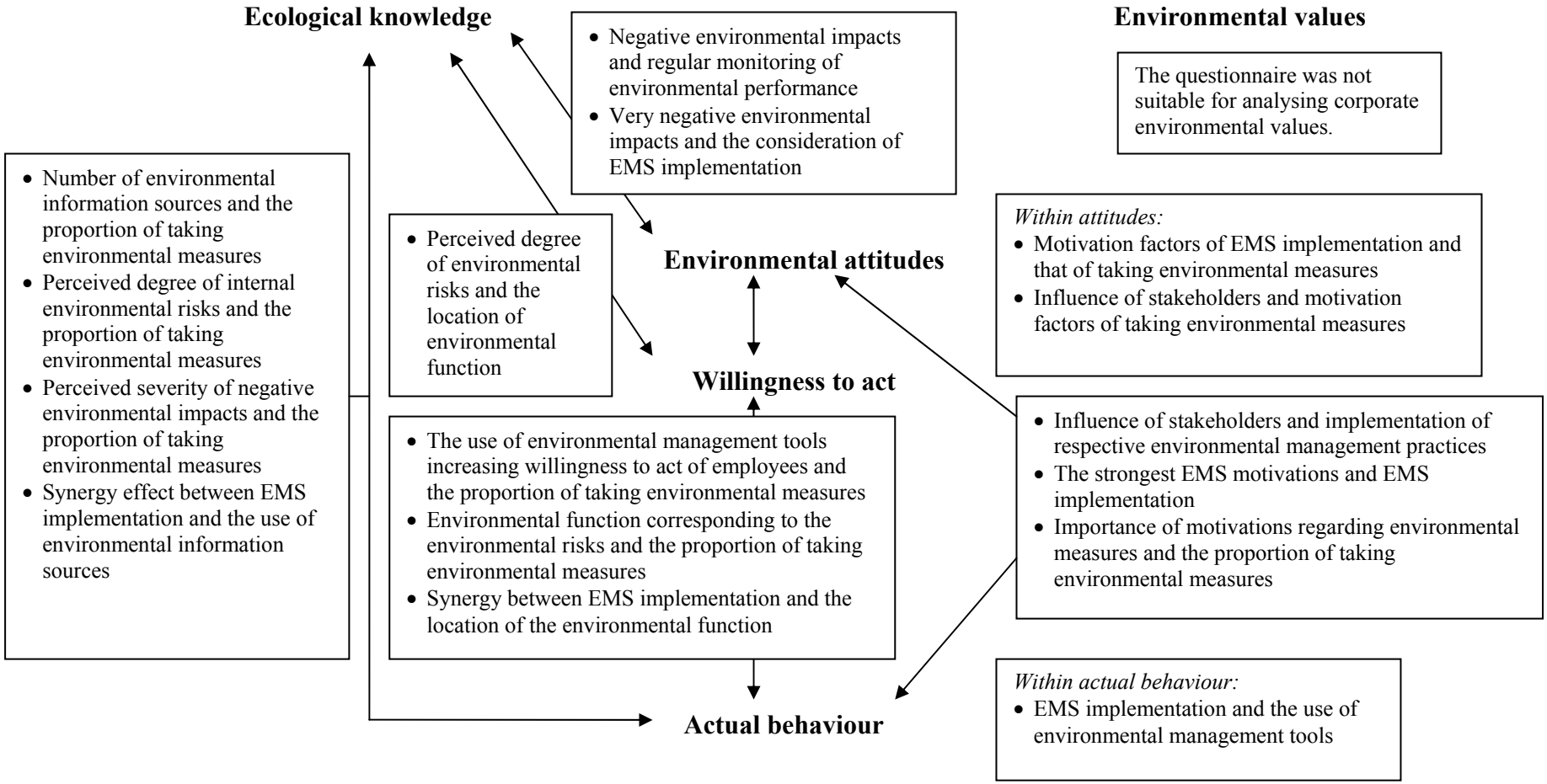


Figure 40: Significant relationship between variables characterising components of corporate environmental awareness

Findings included in Figure 40 indicate that ecological knowledge is an important precondition for actual behaviour. Degree of environmental measures taken by the company is in proportion with the perceived degree of internal environmental risks and potential negative environmental impacts, as well as with the number of environmental information sources used by the company. Of course, perceived environmental risks are not necessarily the real environmental risks, but companies obviously take environmental measures according to the *perceived* degree of environmental problems. The selection of appropriate information sources is of high importance in right perception of environmental problems. The awareness shaping process can be accelerated by implementing an environmental management system. The introduction of EMS obviously requires the perception of environmental problems which is clear as pollution prevention and regulatory compliance are its two most important incentives, indicating that in case of the analysed manufacturing companies considerable pollution must be present. At the same time, implementation of EMS results in a wider use of other environmental information sources which contributes to an increasing ecological knowledge base of the company.

Ecological knowledge does not directly affect actual behaviour, but via attitudes and willingness to act. It is shown by perceived environmental risks (as well as by negative environmental impacts) influencing significantly both the environmental attitudes of firms (see regular monitoring of environmental performance and consideration of EMS implementation as consequences), and companies' willingness to act (expressed in the location of environmental function within the organisation).

Furthermore, consistency can be detected within environmental attitudes of firms, as motivations of concrete environmental measures are in line with similar motivations of EMS implementation (see: pollution prevention, regulatory compliance, or cost savings), as well as with the importance of stakeholders concerning those motivations (e.g. the importance of regulatory compliance and regulatory authorities, or the importance of technology development and internal stakeholders).

Appropriate environmental attitudes are inevitable for favourable actual behaviour. The use of environmental management tools depends to a high degree on the importance of stakeholder groups targeted by those EM tools (e.g. importance of employees and implementation of environmental training programmes). Further

analysis has shown that attitudes are in this respect even more important than knowledge base. Obviously, high level corporate ecological knowledge alone could not guarantee the implementation of environmental management practices, only in the presence of favourable attitudes, which meant high importance of stakeholders concerned.

When requiring companies to take environmental measures, one has to consider that the frequency of taking environmental measures is in significant relation only with the influence of the most important stakeholders. This result indicates that only stakeholders having the ability to put high pressure on companies' environmental activity can motivate firms to take considerable actions.

Not surprisingly, the importance of motivations regarding environmental measures has a significant impact on the proportion of environmental measures taken. More surprising is that the decision on EMS implementation is based only on the most important motivating factors, other factors exert marginal influence. This finding is in concordance with the behaviour-shaping ability of stakeholders, and reflects that companies in the sample are mainly willing to act under high pressure.

Appropriate willingness to act is also essential in reaching desirable organisational behaviour. Companies applying the environmental management tools which are targeted to increase willingness to act of employees (e.g. environmental training programmes, environmental criteria in evaluation/compensation of employees) take environmental measures in a much higher percentage than those not utilising thee advantages of these tools.

As we have seen, perceived degree of environmental risks has its influence on the location of environmental function within the organisation. Right decision is reflected in actual behaviour: companies which locate the environmental function in accordance with the degree of environmental risks take significantly more environmental measures than those not attaching high importance to a right location. The implementation of EMS contributes to a high degree to appropriate placement of environmental function into the organisational structure.

Findings show fairly strong causal relations between the components of pro-environmental corporate behaviour. However, relations are not deterministic, as indicated by awareness gaps, summarised in the Figure 41.

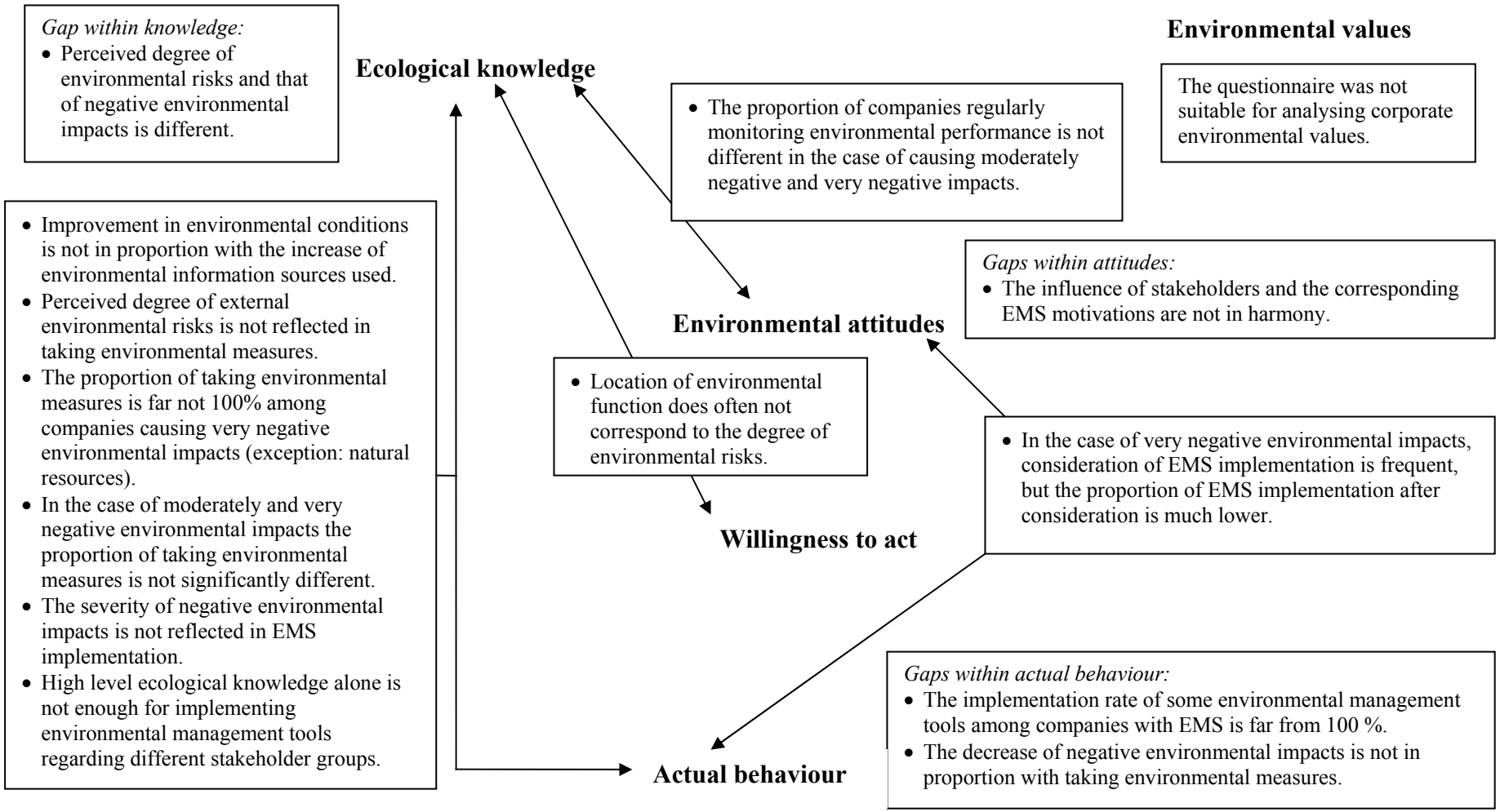


Figure 41: Gaps between and within the components of corporate environmental awareness

Companies (actually the respondents) perceive the degree of environmental risks and the degree of possible negative environmental impacts in a different way. It is a general limitation of questionnaire-based surveys that the researcher cannot decide whether the perception of the problem is right. The only thing he/she can make is a comparison between answers regarding the same problem area. Therefore, the only conclusion we can draw from those different answers is that respondents underestimated the degree of environmental risks compared to the degree of negative environmental impacts. Consequently, the degree of negative environmental impacts is presumably a better indicator for ecological knowledge in this special empirical case.

Going from component to component of environmental awareness, it can be detected that perceived degree of negative environmental impacts in the "moderately important" – "very important" region has often no decisive role on the reaction of companies. For regular monitoring of environmental performance the presence of negative environmental impacts is enough, implementation of regular monitoring is not influenced by the severity of environmental impacts. The same can be detected in the case of the severity of environmental impacts and the proportion of environmental measures taken.

By contrast, in the case of considering the implementation of EMS the severity of negative environmental impacts is important although in the concrete decision about implementing such a system other influencing factors seem to dominate this consideration aspect (which means that the EMS will not be introduced if other incentives are missing).

The underestimation of the importance of environmental risks manifests in the following: frequency of taking environmental measures is not in proportion with the perceived degree of external environmental risks which means that considerable external environmental risks are not able to motivate companies towards appropriate action. Furthermore, location of environmental function within the organisation often does not reflect the importance of environmental risks.

Efficiency of environmental measures is also hard hit if the company's actual behaviour is not congruent with the negative environmental impacts caused. The company may increase the number of environmental information sources used, but the number of information sources used does not guarantee alone an adequate decrease in negative environmental impacts. There are several companies which do

not take actions in case of very severe environmental impacts or do not achieve the desired improvement in the state of the environment with their environmental measures.

The opportunities implied in environmental management systems are not fully utilised by companies either, because several environmental management tools (e.g. environmental criteria in the evaluation of employees, environmental accounting, public environmental report, benchmarking) are not used by a quite high proportion of firms having implemented EMS.

Due to the existence and nature of awareness gaps it seems to be worth for companies revising the whole process from gathering the necessary environmental information to actual behaviour, with special attention to the following:

- whether they appropriately perceive their environmental risks as well as the negative environmental impacts;
- whether they monitor their environmental performance according to the degree of environmental risks (negative environmental impacts);
- whether they locate environmental responsibility into the organisational function corresponding the environmental risks of the company, expressing the importance of environmental issues in that way;
- whether they take environmental measures regarding environmental problems to the necessary degree;
- whether they achieve appropriate improvement in environmental impacts with their environmental measures; and
- whether they implement environmental management practices according to the utility of those practices.

Results of the survey made it obvious that in the examination of pro-environmental corporate behaviour both quantitative and qualitative research methodologies have their relevance; there is a sense to combine those methods. The questionnaire-based survey proved to be suitable to exploring several relations and gaps regarding four awareness components – ecological knowledge, environmental attitudes, willingness to act and actual behaviour. However, corporate environmental awareness is to a high degree influenced by the awareness of its members, the key element of which – namely the individual value system – cannot be measured based

on the opinion of only one respondent. Similarly, environmental values manifesting at organisational cannot be assessed via the perception of one organisation member, either.

Consequently, the priority of the second research phase was to observe the organisational culture of a selected company. I chose deliberately a firm for the analysis which participated in the corporate survey and the pro-environmental behaviour of which seemed to be almost fully consistent due to the quantitative methods applied. I was curious whether a more profound examination of the fifth component of environmental awareness – namely that of environmental values – sheds light on some awareness gaps which can nuance the picture received about the company in the first research stage.

The reflection of environmental values within the company can very well be grasped in the specificities of corporate culture. The extent to which environment protection is integrated into corporate culture can be measured by the opinions of organisation members working in different organisational units, regarding the basic elements of corporate culture. I applied the Q-method to analyse this problem area. I formulated 33 statements as for corporate environmental awareness, the value system of managers and employees, as well as for the individual value system of respondents. Respondents sorted the statements according to the degree to which they were in agreement with them. Based on the individual rankings, by the application of the Q-method, I identified five typical opinion groups (factors), which represent respondents according to the similarities and differences between their opinions. By the comparison of individual rankings and the characteristics of typical opinion groups the Q-method facilitates the exploration of the strengths and weaknesses of corporate culture. Strengths are referred to by statements judged very similarly by respondents, whereas weaknesses can be identified on the basis of statements which provoked conflicting opinions.

According to respondents the commitment of the company and the top management to environmental protection is of an adequate level, which is a favourable and necessary starting point for the emanation of an environmentally aware corporate culture. Based on the findings, it is still worth building upon initiatives taken by the management, because respondents acknowledge the efficiency and effectiveness of these initiatives. Obviously, environmental trainings are also successful.

At the same time, incentive methods to motivate the environmental awareness of the organisation members are to be profoundly revised. The company, on the one hand, applies very few, otherwise well-established and successful methods to increase employees' environmental performance, on the other hand it does not make use of the motivating power inherent in socio-cultural factors (group identity, group norm, interpersonal relations), which respondents unequivocally find more efficient than complex regulation. The management should by all means consider the potentials offered by suitable motivating tools as well as the position and opportunities of the environmental manager.

It seems that questions and actions concerning the value system of organisation members and that of the entire company should be given much more emphasis. The efforts made by the company so far to establish a uniform corporate environmental awareness have failed to deliver expected results. However, the individual value system of organisation members seems to be of decisive importance with respect to their behaviour within the organisation, therefore this component should be much more in the focus.

All in all, the examined company is on the right track to consistently establish corporate environmental awareness, as it tries to build on a sound base and it potentially disposes of the instruments by means of which employees can be motivated to reach the desirable behaviour. The environmental performance of the company is adequate from the perspective of "an outsider", measured against social expectations. The company in this respect is legitimate. However, in order to achieve genuine environmental awareness, the value system should be modified more substantially and motivating tools should be applied more successfully.

In both research stages my objective was to interpret strengths and weaknesses of pro-environmental corporate culture. This approach can be useful for companies when striving for the improvement of their environmental awareness. The organisation can efficiently build on consistent elements of their behaviour, by further strengthening favourable effects. Simultaneously, it has a reason finding the gaps in organisational behaviour and possibly narrowing or eliminating those awareness gaps.

Finally, I hope that with the approach, the applied methodologies and the findings of my work I can achieve a valuable contribution to the research of pro-environmental corporate behaviour.

ANNEX

A) Annex to the quantitative research

Annex 1: The OECD questionnaire

Environmental Policy Tools and Firm-Level Management and Practices:

An International Survey

National Policies Division
OECD Environment Directorate

SECTION 1: MANAGEMENT SYSTEMS AND TOOLS IN YOUR FACILITY

*This section contains questions related to your **facility**'s general management systems and tools, as well as those which relate to the environment. If your firm has many production facilities, please answer with reference to the facility at which you are located or with which you are most familiar. This is true of all subsequent sections, except the final section which is related to the firm as a whole.*

1.1. Does your facility have at least one person with **explicit responsibility** for environmental concerns?

Yes	❑	1
No	❑	0

If no, please proceed to question 1.3.

1.2. Which of the following **best describes the location** of this individual within your facility? (*Please tick only one box*.)

Senior management	❑	1
Production/operations	❑	2
Finance/accounting	❑	3
Specialised environmental department (or equivalent)	❑	4
External/media relations	❑	5
Marketing/Sales	❑	**6**
Purchasing	❑	**7**
Human resources	❑	8
Product development	❑	9
Other department (please specify)_____	❑	10

1.3. While **purchasing and/or marketing goods and services**, does your facility regularly consider the following measures? *(Please tick one box for each row.)*

	Yes	No
	1	0
Assessing the environmental performance of our suppliers	❑	❑
Requiring suppliers to undertake environmental measures	❑	❑
Informing buyers of ways to reduce their environmental impacts	❑	❑

1.4. Which **practices** have been established in your facility in order to implement environmental management? *(Please tick one box for each row.)*

	Yes	No
	1	0
Written environmental policy	❑	❑
Environmental criteria used in the evaluation and/or compensation of employees	❑	❑
Environmental training program in place for employees	❑	❑
Carry out external environmental audits	❑	❑
Carry out internal environmental audits	❑	❑
Benchmark environmental performance	❑	❑
Environmental accounting	❑	❑
Public environmental report	❑	❑
Environmental performance indicators / goals	❑	❑
Other practice (please specify) _____		

1.5. Has your facility **considered introducing** an environmental management system?

Yes	❑	1
No	❑	0

If yes, please assess the importance of the following motivations. *(Please tick one box for each row.)*

	Not Important 1	Moderately Important 2	Very Important 3
It may help us to prevent or control our pollution	❑	❑	❑
It may improve our efforts to achieve regulatory compliance	❑	❑	❑
It may reduce the applicability of some regulations	❑	❑	❑
It may better identify future environmental liabilities	❑	❑	❑
It may improve our relations with regulatory authorities	❑	❑	❑
Regulators' incentives made it attractive	❑	❑	❑
It may allow for differentiation of our products	❑	❑	❑
It may improve our facility's profile/image	❑	❑	❑
It may create cost savings in terms of use of inputs	❑	❑	❑
It may create cost savings in terms of waste management	❑	❑	❑
It may improve information about our facility's operations	❑	❑	❑
Other facilities like ours are adopting similar systems	❑	❑	❑
Other reasons (please specify)_____	❑	❑	❑

1.6. Has your facility actually **implemented** an **environmental management system**?

Yes	❑	1	Year _ _ _ _
In progress	❑	2	
No	❑	0	

If no or in progress, please proceed to Question 1.8.

If yes: Has your facility acquired any of the following **certifications in environmental management**?

	Yes 1	No 0	Year
EMAS	❑	❑	_ _ _ _
ISO 14001	❑	❑	_ _ _ _

1.7. Were the expected **benefits** of adopting an environmental management system as great as had been anticipated?

Yes	❑	1
No	❑	0

1.8. Has your facility implemented any of the following **other management practices**? *(Please tick one box for each row.)*

	Yes 1	No 0
Quality management system (e.g. ISO 9000)	❑	❑
Health and safety management system	❑	❑
Full-cost or activity-based accounting	❑	❑
Management accounting system	❑	❑
Process or job control system	❑	❑
Inventory or materials requirement planning	❑	❑
Other (please specify)_____		

1.9. To what extent are the **environmental activities** of your facility **integrated** with the following management practices? *(Please tick one box for each row.)*

	Not at all	Partially	Fully	Not applicable	
		1	2	3	4
Quality management system (e.g. ISO 9000)	❑	❑	❑	❑	
Health and safety management system	❑	❑	❑	❑	
Full-cost or activity-based accounting	❑	❑	❑	❑	
Management accounting system	❑	❑	❑	❑	
Process or job control system	❑	❑	❑	❑	
Inventory or materials requirement planning	❑	❑	❑	❑	
Other (please specify)_____	❑	❑	❑	❑	

SECTION 2: ENVIRONMENTAL MEASURES, INNOVATION AND PERFORMANCE

*In this section, you are asked to provide an overall picture of how your **facility** has sought to address the environmental impacts of its production activities through technical measures and innovations.*

2.1. How important do you consider each of the following potential **negative environmental impacts** from your facility's products and production processes? *(Please tick one box for each row.)*

	No Negative Impacts	Moderately Negative Impacts	Very Negative Impacts	Not Applicable
	1	2	3	4
Use of natural resources (energy, water, etc.)	❑	❑	❑	❑
Solid waste generation	❑	❑	❑	❑
Wastewater effluent	❑	❑	❑	❑
Local or regional air pollution	❑	❑	❑	❑
Global pollutants (e.g. greenhouse gases)	❑	❑	❑	❑
Aesthetic effects (noise, smell, landscape)	❑	❑	❑	❑
Soil contamination	❑	❑	❑	❑
Risk of severe accidents	❑	❑	❑	❑
Other negative environmental impact (please specify)_____	❑	❑	❑	❑

2.2. Taking into consideration the negative environmental impacts stated above, which of the following **environmental performance measures** does your facility **regularly monitor**? *(Please tick one box for each row.)*

	Yes	No	Not Applicable
	1	0	2
Use of natural resources (energy, water, etc.)	❑	❑	❑
Solid waste generation	❑	❑	❑
Wastewater effluent	❑	❑	❑
Local or regional air pollution	❑	❑	❑
Global pollutants (e.g. greenhouse gases)	❑	❑	❑
Aesthetic effects (noise, smell, landscape)	❑	❑	❑
Soil contamination	❑	❑	❑
Risk of severe accidents	❑	❑	❑
Other environmental performance measure (please specify)_____	❑	❑	❑

2.3. Has your facility undertaken **concrete actions to reduce environmental impacts** associated with the following? *(Please tick one box for each row.)*

	Yes	No	Not Applicable
	1	0	2
Use of natural resources (energy, water, etc.)	❑	❑	❑
Solid waste generation	❑	❑	❑
Wastewater effluent	❑	❑	❑
Local or regional air pollution	❑	❑	❑
Global pollutants (e.g. greenhouse gases)	❑	❑	❑
Aesthetic effects (noise, smell, landscape)	❑	❑	❑
Soil contamination	❑	❑	❑
Risk of severe accidents	❑	❑	❑
Other negative environmental impacts (please specify)_____	❑	❑	❑

2.4. If your facility has undertaken significant **measures** specifically related to its **production technologies**, which of the following most closely characterises the nature of such measures? *(Please tick only one box.)*

Changes in production processes which reduce pollution emissions and/or resource use	❑	1
End-of-pipe technologies which reduce pollution emissions or allow for resource recovery	❑	0

2.5. If your facility has undertaken significant **technical measures** which reduce the environmental impacts associated with its activities, which of the following most closely characterises the nature of such measures? *(Please tick only one box.)*

Changes in production technologies	❑	1
Changes in product characteristics	❑	0

2.6. Has your facility experienced a **change in the environmental impacts per unit of output** of its products or production processes in the last three years with respect to the following? *(Please tick one box for each row.)*

	Significant Decrease		No Change		Significant Increase	Not Applicable	
Use of natural resources (energy, water, etc.)	❑	❑	❑	❑	❑	❑	1
Solid waste generation	❑	❑	❑	❑	❑	❑	
Wastewater effluent	❑	❑	❑	❑	❑	❑	
Local or regional air pollution	❑	❑	❑	❑	❑	❑	
Global pollutants (e.g. greenhouse gases)	❑	❑	❑	❑	❑	❑	
Aesthetic effects (noise, smell, landscape)	❑	❑	❑	❑	❑	❑	
Soil contamination	❑	❑	❑	❑	❑	❑	
Risk of severe accidents	❑	❑	❑	❑	❑	❑	
Other negative environmental impact (please specify)_____	❑	❑	❑	❑	❑	❑	

SECTION 3: THE INFLUENCE OF STAKEHOLDERS AND MOTIVATIONS ON ENVIRONMENTAL PRACTICES

*In this section, you are asked to provide information on the relative importance of different stakeholder groups and motivations on decisions regarding your **facility's** environmental practices.*

3.1. How important do you consider the **influence** of the following **groups or organisations** on the environmental practices of your facility? *(Please tick one box for each row.)*

	Not Important 1	Moderately Important 2	Very Important 3	Not Applicable 4
Public authorities (government, state, municipal)	❑	❑	❑	❑
Corporate headquarters	❑	❑	❑	❑
Household consumers	❑	❑	❑	❑
Commercial buyers	❑	❑	❑	❑
Suppliers of goods and services	❑	❑	❑	❑
Shareholders and investment funds	❑	❑	❑	❑
Banks and other lenders	❑	❑	❑	❑
Management employees	❑	❑	❑	❑
Non-management employees	❑	❑	❑	❑
Labour unions	❑	❑	❑	❑
Industry or trade associations	❑	❑	❑	❑
Environmental groups or organisations	❑	❑	❑	❑
Neighbourhood/community groups & org.	❑	❑	❑	❑
Other groups or organisations (please specify)_____	❑	❑	❑	❑

3.2. How **important** do you consider the following **motivations** to have been with respect to the environmental practices of your facility? *(Please tick one box for each row.)*

	Not Important 1	Moderately Important 2	Very Important 3	Not Applicable 4
Prevent or control environmental incidents	❑	❑	❑	❑
Regulatory compliance	❑	❑	❑	❑
Corporate profile/image	❑	❑	❑	❑
Cost savings	❑	❑	❑	❑
New technology development	❑	❑	❑	❑
New product development	❑	❑	❑	❑
Facilities similar to ours are adopting similar practices	❑	❑	❑	❑
Other reasons (please specify)_____	❑	❑	❑	❑

SECTION 4: PUBLIC ENVIRONMENTAL POLICY

*In this section you will be asked about the nature of public environmental policy, and how it affects your **facility**. Responses should reflect the role of all relevant public authorities (municipal, state, etc…).*

4.1. Please assess the following **environmental policy instruments** in terms of their impacts on your facility's production activities. *(Please tick one box for each row.)*

	Not Important 1	Moderately 2	Very 3	Not Applicable 4
Input bans	❑	❑	❑	❑
Technology-based standards (e.g. abatement equipment)	❑	❑	❑	❑
Performance-based standards (e.g. emission levels)	❑	❑	❑	❑
Input taxes (including energy)	❑	❑	❑	❑
Emission or effluent taxes or charges	❑	❑	❑	❑
Tradable emission permits or credits	❑	❑	❑	❑
Liability for environmental damages	❑	❑	❑	❑
Demand information measures (e.g. eco-labels)	❑	❑	❑	❑
Supply information measures (e.g. recognition programs)	❑	❑	❑	❑
Voluntary / negotiated agreements	❑	❑	❑	❑
Subsidies / tax preferences	❑	❑	❑	❑
Technical assistance programmes	❑	❑	❑	❑
Other policy instrument (please specify)_____	❑	❑	❑	❑

4.2. Do the **regulatory authorities** have programmes and policies in place to encourage your facility to use an environmental management system?

Yes ❑ 1
No ❑ 0

If yes, please indicate programmes which regulatory authorities have in place to encourage your facility to use an environmental management system. *(Please tick one box for each row.)*

	Yes 1	No 0
Reducing the frequency of their regulatory inspections	❑	❑
Expediting environmental permits	❑	❑
Consolidating environmental permits	❑	❑
Waiving environmental regulations	❑	❑
Reducing stringency of regulatory thresholds	❑	❑
Providing technical assistance	❑	❑
Providing financial support	❑	❑
Providing special recognition or award	❑	❑
Providing preferences for public procurement	❑	❑
Providing information about the value of such systems	❑	❑
Other incentive (please specify)_____	❑	❑

4.3. How would you describe the **environmental policy regime** to which your facility is subject? *(Please tick only one box.)*

Not particularly stringent, obligations can be met with relative ease ❑ 1
Moderate stringency, requires some managerial and technological responses ❑ 2
Very stringent, has a great deal of influence on decision-making within the facility ❑ 3

4.4. How many times has your **facility** been **inspected** by public environmental authorities (central, state/province and municipal governments) in the last three years? _____

SECTION 5: FACILITY CHARACTERISTICS

*This section is intended to help us obtain a general picture of your **facility**'s market, ownership structure, size and sale, as well as the nature of its commercial market.*

5.1. How would you, in general, classify the **primary customers** for your facility's products? *(Please tick only one box.)*

Other manufacturing firms	❑	1
Wholesalers or retailers	❑	2
Households	❑	3
Other facilities within your firm	❑	4

5.2. What **best characterises the scope** of your facility's market? *(Please tick only one box.)*

Local	❑	1
National	❑	2
Regional (neighbouring countries)	❑	3
Global	❑	4

5.3. With how many other firms did your facility **compete on the market** for its most commercially important product within the past three years? *(Please tick only one box.)*

Less than 5	❑	1
5-10	❑	2
Greater than 10	❑	3

5.4. Please assess the following factors in your facility's **ability to compete** on the market for its most important product within the past three years. *(Please tick one box for each row.)*

	Not Important 1	Moderately Important 2	Very Important 3
Product price	❑	❑	❑
Product quality	❑	❑	❑
Firm image	❑	❑	❑
Established relationships with buyers	❑	❑	❑

5.5. What is the approximate **age of your facility** (in years)?_____

5.6. How many **people** were **employed full-time** by your facility on average over the last three years? _____

5.7. Please estimate your facility's average **annual expenditures on research and development** over the last three years? _____

5.8. Does your facility have a budget for **research and development** specifically related to **environmental matters**?

Yes	❑	1
No	❑	2

If yes, what percentage of your total budget for research and development has been allocated to environmental matters in the last three years? _____

5.9. Please estimate your facility's **average annual value of shipments** over the last three years._____

5.10. How has the value of shipments from your facility **changed** in the last three years? *(Please tick only one box.)*

They have significantly decreased	❑	1
They have decreased	❑	2
They have stayed about the same	❑	3
They have increased	❑	4
They have significantly increased	❑	5

If you are able to do so, please estimate your facility's **change in average annual value of shipments** over the last three years (in percentage per year)? _____

5.11. How would you assess your facility's **overall business performance** over the past three years? *(Please tick only one box.)*

Revenue has been so low as to produce large losses	❑	1
Revenue has been insufficient to cover costs	❑	2
Revenue has allowed us to break even	❑	3
Revenue has been sufficient to make a small profit	❑	4
Revenue has been well in excess of costs	❑	5

5.12. Please indicate the industrial sector in which you would place the **main production activity** of your facility. *(Please tick only one box.)*

Manufacture of food products and beverages	❑	15
Manufacture of tobacco products	❑	16
Manufacture of textiles	❑	17
Manufacture of wearing apparel, dressing and dyeing of fur	❑	18
Tanning and dressing of leather; manufacture of luggage, handbags, footwear, etc.	❑	19
Manufacture of wood and products of wood and cork, except furniture	❑	20
Manufacture of paper and paper products	❑	21
Publishing, printing and reproduction of recorded media	❑	22
Manufacture of coke, refined petroleum products and nuclear fuel	❑	23
Manufacture of chemicals and chemical products	❑	24
Manufacture of rubber and plastics products	❑	25
Manufacture of other non-metallic mineral products	❑	26
Manufacture of basic metals	❑	27
Manufacture of fabricated metal products, except machinery and equipment	❑	28
Manufacture of other machinery and equipment	❑	29
Manufacture of office, accounting and computing machinery	❑	30
Manufacture of electrical machinery and apparatus	❑	31
Manufacture of radio, television and communication equipment	❑	32
Manufacture of medical, precision, and optical instruments, watches and clocks	❑	33
Manufacture of motor vehicles, trailers and semi-trailers	❑	34
Manufacture of other transport equipment	❑	35
Manufacture of furniture	❑	36
Recycling	❑	37
Other (please specify) _____	❑	99

Statistical Code:

TEAOR: _ _ _ _

SIC: _ _ _ _

SECTION 6: ENVIRONMENTAL RISKS

This section helps us to get a picture about the environmental risks of your facility, and the market potential in environment protection.

6.1. Assess the **environmental risks of your facility based on its activity** (risks based on the applied technology, education level of the employees, input materials etc.).

Insignificant	❑	1
Considerable	❑	2
I do not know	❑	0

6.2. Assess the **threats** concerning your **facility** based on **external conditions** (for example location of the facility, NGOs, media, ecological conditions etc.).

Insignificant	❑	1
Considerable	❑	2
I do not know	❑	0

6.3. Assess the **market potential of your facility connected to the environment protection** (for example selling eco-products or –technologies, offering services or consultancy in the field of environment protection etc.).

Insignificant	❑	1
Considerable	❑	2
I do not know	❑	0

SECTION 7: FIRM CHARACTERISTICS

*This section is intended to help us obtain a general picture of your **firm** of which your facility is a part. The first four questions should be completed by all respondents. The last four should be completed by firms with more than one facility.*

7.1. Is your firm listed on a **stock exchange**?

Yes	❑	1
No	❑	0

7.2. Is your firm's **head office** located in a **foreign country**?

Yes	❑	1
No	❑	0

If yes, in which country? _____

7.3. Does your firm have **an environmental department** (or equivalent such as environmental, health and safety department)?

Yes	❑	1
No	❑	0

7.4. How many **different production facilities** does your firm have? _____

*Please answer the following questions if your firm has **more than one facility**.*

7.5. Please estimate your firm's average **annual expenditures on research and development** over the last three years? _____

7.6. Does your firm have a budget for **research and development** specifically related to **environmental matters**?

Yes ❑ 1
No ❑ 0

If yes, what percentage of your total budget for research and development has been allocated to environmental matters in the last three years? _____

7.7. How many **people** are presently **employed full-time** by your firm?_____

7.8. Please estimate your **firm's average annual value of shipments** over the last three years. _____

Thank you for taking the time to complete this questionnaire!

This concludes our survey. Thank you for helping us to learn about facility-level and firm-level environmental activities. More information about OECD's work in related areas can be found at www.oecd.org. The main results and reports obtained from this survey will be posted at this web address beginning in early 2004. Thank you again for your assistance.

Please complete the details below:

Name and title --

Facility name --

Firm name --

Address --

Postcode --

Email --

Please characterise your responsibilities. *(Please tick only one box.)*

Senior management	❑	1
Production/operations	❑	2
Finance/accounting	❑	3
Specialised environmental department (or equivalent)	❑	4
External/media relations	❑	5
Marketing/Sales	❑	**6**
Purchasing	❑	**7**
Human Resources	❑	8
Product Development	❑	9
Other (please specify)_____	❑	10

If you have any comments concerning the issues addressed in this questionnaire, feel free to state them below:

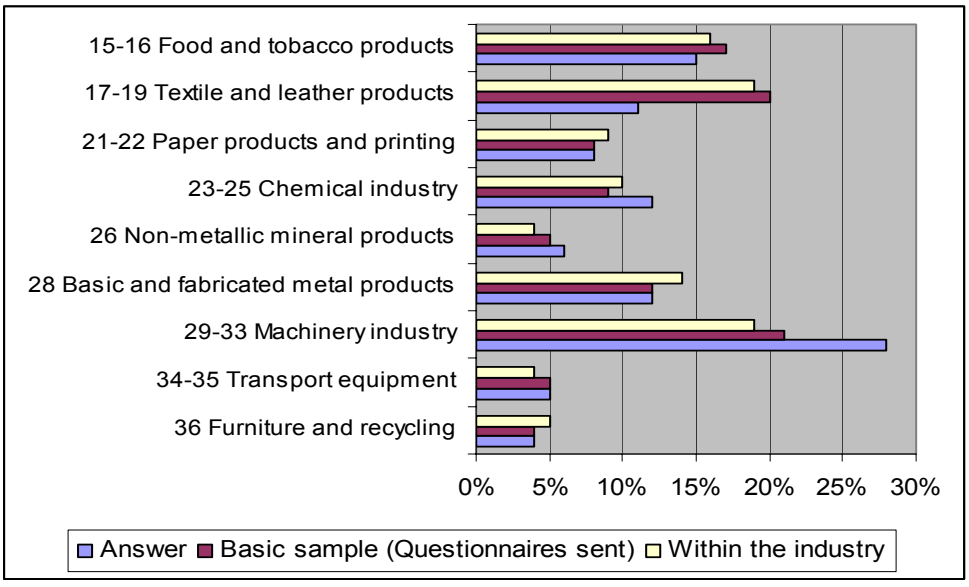
PLEASE RETURN THE COMPLETED QUESTIONNAIRE IN THE ENCLOSED PRE-PAID ENVELOPE. THANK YOU AGAIN FOR YOUR ASSISTANCE.

Annex 2: Industrial sector structure of the sample

a) Frequencies in the industry and the basic sample, as well as answers

Code	Sector	Industry	Basic sample	Answers (piece)	Pct. of answers (%)
15	Food products and beverages	388	252	69	27,4%
16	Tobacco products	5	4	1	25,0%
17	Textiles	122	80	13	16,3%
18	Wearing apparel, dressing	236	162	26	16,0%
19	Tanning and dressing of leather	97	65	11	16,9%
20	Wood (except furniture)	80	42	15	35,7%
21	Paper	45	30	8	26,7%
22	Publising, printing	83	48	12	25,0%
23	Coke, refined petroleum etc.	2	2	2	100,0%
24	Chemicals	80	53	21	39,6%
25	Rubber and plastic products	157	80	33	41,3%
26	Other non-metallic mineral p.	104	70	25	35,7%
27	Bssic metals	56	36	12	33,3%
28	Fabricated metal products	283	146	41	28,1%
29	Other machinery and equipment	214	134	51	38,1%
30	Office, accounting and computing machinery	13	9	2	22,2%
31	Electrical machinery	114	84	37	44,0%
32	Radio, television equipment	79	63	21	33,3%
33	Medical etc. instruments	49	33	14	42,4%
34	Motor vehicles, trailers	74	61	14	23,0%
35	Other transport equipment	25	18	8	44,4%
36	Furniture	104	54	13	24,1%
37	Recycling	7	4	3	75,0%
	Other or missing			14	
Total		**2417**	**1530**	**466**	**30,5%**

b) Distribution within the industry, in the basic and the final sample



Annex 3: Distribution data according to the number of employees

Number of employees	Industry (X_i)	Basic sample (N_i)	Answers (n_i)	Pct. of answers (n_i/N_i)	Distribution within the industry (X_i/X)	Distribution in the basic sample (N_i/N)	Distribution in the final sample (n_i/n)[a]	Difference of distribution (n_i/n- X_i/X)[b]
50-99	1037	150	31	20,7%	42,9%	9,8%	7,0%	-35,9
100-249	805	805	200	24,8%	33,3%	52,6%	44,8%	+11,5
250-999	497	497	186	37,4%	20,6%	32,5%	41,7%	+21,1
>1000	78	78	29	37,2%	3,2%	5,1%	6,5%	+3,3
Missing value			20					
Total	**2417**	**1530**	**466**	**30,5%**	**100,0%**	**100,0%**	**100,0%**	

a) Firms with known number of employees are 100% (missing values eliminated).
b) Difference in percent point.

Annex 4: Variables sorted by components of corporate environmental awareness

1. Variables characterising corporate environmental knowledge			
Content of variable	**Name of variable**	**Values of variable**	**Scale type**
The organisation arranges external environmental audits.	empeaud	Yes / No	Nominal
The organisation carries out internal environmental audits.	empiaud	Yes / No	Nominal
The organisation benchmarks its environmental performance.	empbnch	Yes / No	Nominal
The organisation applies environmental performance indicators.	empindic	Yes / No	Nominal
The organisation implemented environmental accounting.	empacct	Yes / No	Nominal
Environmental training program is in place for employees.	emptrain	Yes / No	Nominal
Knowledge of potential negative environmental impacts of the organisation's activity (2.1 – modified variables, "not applicable" is missing value)	Impnr2 Impwst2 Impww2 Impapol2 Impgpol2 Impaest2 Impsoil2 Imprisk2	- No negative impacts - Moderately negative impacts - Very negative impacts	Ordinal
Perception of external environmental risks of the organisation's activity	exrisk2	- insignificant - considerable	Nominal
Perception of internal environmental risks of the organisation's activity	endrisk2	- insignificant - considerable	Nominal
The organisation regularly monitors environmental performance measures related to environmental problem areas (2.2. – modified variables, "not applicable" is missing value)	Measnr2 Meawst2 Measww2 Measapo2 Measgpo2 Measaes2 Meassoi2 Measris2	Yes / No	Nominal
2. Variables characterising corporate environmental values			
The questionnaire does not contain questions relating directly to the environmental values of the organisation. Based on attitude questions and concrete environmental activity, some indirect conclusions can be made which were hard to be measured properly during the survey. Consequently, manifestation of corporate environmental values will be analysed in the second phase of research, focusing on organisational culture.			

3. Variables characterising corporate environmental attitudes			
Content of variable	**Name of variable**	**Values of variable**	**Scale type**
The organisation has written environmental policy.	empwrit	Yes / No	Nominal
The organisation has public environmental report.	emprprt	Yes / No	Nominal
Assessing the environmental performance of suppliers is in place.	assupl	Yes / No	Nominal
Requiring suppliers to undertake environmental measures is in place.	reqsupl	Yes / No	Nominal
Informing buyers of ways to reduce their environmental impacts is in place.	infbuy	Yes / No	Nominal
The organisation has considered introducing an environmental management system (EMS).	empcons	Yes / No	Nominal
Importance of motivations to introduce an EMS (1.5)	Emtprev Emtrgc Emtliab Emtrglt Emtrginc Emtdiff Emtimg Emtsving Emtwst Emtinfop Emtcomp	- Not important - Moderately important - Very important	Ordinal
Considered influence of stakeholder groups son the environmental practices of the organisation. (3.1. – modified variables, “not applicable” is missing value)	Inflpaut2 Inflcorp2 Inflcons2 Inflsppl2 Inflinv2 Inflbank2 Inflmgmt2 Inflwork2 Influnio2 Inflind2 Inflengo2 Inflcomm2	- Not important - Moderately important - Very important	Ordinal
Importance of motivations with respect to the environmental practices of the organisation (3.2. – modified variables, “not applicable” is missing value)	Amtprev2 Amtrgc2 Amtimg2 Amtsav2 Amttech Amtprod Amtsiml	- Not important - Moderately important - Very important	Ordinal

4. Variables characterising willingness to act of the organisation.			
Content of variable	**Name of variable**	**Values of variable**	**Scale type**
Environmental criteria are used in the evaluation and / or compensation of employees.	empeval	Yes / No	Nominal
The organisation has at least one person with explicit environmental responsibility.	persenv	Yes / No	Nominal
Location of the person responsible for environmental concerns (modified variables)	persloc2	-senior mgmt -middle mgmt -Environm. department	Nominal
5. Variables characterising actual behaviour of the organisation.			
Content of variable	**Name of variable**	**Values of variable**	**Scale type**
The organisation has undertaken concrete actions to reduce environmental impacts associated with environmental problem areas (2.3. – modified variables, "not applicable" is missing value)	Actnr2 Acwwst2 Actww2 Actaopol2 Actgpol2 Actaest2 Actsoil2 Actrisk2	Yes / No	Nominal
Change in environmental impacts per unit of output in the last three years with respect to the environmental problem areas. (2.6. – modified variables, "not applicable" is missing value)	Cimpnr2 Cimpwst2 Cimpww2 Cimpapo2 Cimpgpo2 Cimpaes2 Cimpsoi2 Cimpris2	- Significant decrease -Decrease -No change -Increase - Significant increase	Ordinal
The organisation actually implemented an environmental management system (EMS).	emsactl	- Yes - In progress - No	Ordinal
The organisation implemented environmental management practices (1.4.)	Empwrit Empeval Emptrain Empeaud Empiaud Empbench Empacct Emprprt Empindic	Yes / No	Nominal

Annex 5: Number of information sources and improvement in environmental conditions

a) Use of natural resources

Crosstab

			CIMPNR2			
			decrease	no change	increase	Total
info-collection (reduced)	low level	Count	65	64	8	137
		% within info-collectio (reduced)	47,4%	46,7%	5,8%	100,0%
	middle level	Count	33	23	2	58
		% within info-collectio (reduced)	56,9%	39,7%	3,4%	100,0%
	high level	Count	63	28	3	94
		% within info-collectio (reduced)	67,0%	29,8%	3,2%	100,0%
Total		Count	161	115	13	289
		% within info-collectio (reduced)	55,7%	39,8%	4,5%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8,915[a]	4	,063
Likelihood Ratio	9,017	4	,061
Linear-by-Linear Association	8,174	1	,004
N of Valid Cases	289		

a. 2 cells (22,2%) have expected count less than 5. The minimum expected count is 2,61.

b) Solid waste generation

Crosstab

			CIMPWST2			
			1,00	2,00	3,00	Total
info-collection (reduced)	low level	Count	68	59	10	137
		% within info-collectio (reduced)	49,6%	43,1%	7,3%	100,0%
	middle level	Count	34	19	5	58
		% within info-collectio (reduced)	58,6%	32,8%	8,6%	100,0%
	high level	Count	61	26	7	94
		% within info-collectio (reduced)	64,9%	27,7%	7,4%	100,0%
Total		Count	163	104	22	289
		% within info-collectio (reduced)	56,4%	36,0%	7,6%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6,350[a]	4	,174
Likelihood Ratio	6,387	4	,172
Linear-by-Linear Association	3,181	1	,074
N of Valid Cases	289		

a. 1 cells (11,1%) have expected count less than 5. The minimum expected count is 4,42.

c) Wastewater effluent

Crosstab

			CIMPWW2			Total
			1,00	2,00	3,00	
info-collection (reduced)	low level	Count	44	82	11	137
		% within info-collectio (reduced)	32,1%	59,9%	8,0%	100,0%
	middle level	Count	15	42	1	58
		% within info-collectio (reduced)	25,9%	72,4%	1,7%	100,0%
	high level	Count	44	45	5	94
		% within info-collectio (reduced)	46,8%	47,9%	5,3%	100,0%
Total		Count	103	169	17	289
		% within info-collectio (reduced)	35,6%	58,5%	5,9%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11,931[a]	4	,018
Likelihood Ratio	12,353	4	,015
Linear-by-Linear Association	4,798	1	,028
N of Valid Cases	289		

a. 1 cells (11,1%) have expected count less than 5. The minimum expected count is 3,41.

d) Local or regional air pollution

Crosstab

			CIMPAPO2			
			1,00	2,00	3,00	Total
info-collection (reduced)	low level	Count	56	76	5	137
		% within info-collecti (reduced)	40,9%	55,5%	3,6%	100,0%
	middle level	Count	23	31	4	58
		% within info-collecti (reduced)	39,7%	53,4%	6,9%	100,0%
	high level	Count	48	41	5	94
		% within info-collecti (reduced)	51,1%	43,6%	5,3%	100,0%
Total		Count	127	148	14	289
		% within info-collecti (reduced)	43,9%	51,2%	4,8%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4,174[a]	4	,383
Likelihood Ratio	4,155	4	,385
Linear-by-Linear Association	1,029	1	,310
N of Valid Cases	289		

a. 2 cells (22,2%) have expected count less than 5. The minimum expected count is 2,81.

e) Global air pollutants

Crosstab

			CIMPGPO2			
			1,00	2,00	3,00	Total
info-collection (reduced)	low level	Count	20	113	4	137
		% within info-collecti (reduced)	14,6%	82,5%	2,9%	100,0%
	middle level	Count	8	50		58
		% within info-collecti (reduced)	13,8%	86,2%		100,0%
	high level	Count	27	66	1	94
		% within info-collecti (reduced)	28,7%	70,2%	1,1%	100,0%
Total		Count	55	229	5	289
		% within info-collecti (reduced)	19,0%	79,2%	1,7%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10,759[a]	4	,029
Likelihood Ratio	11,216	4	,024
Linear-by-Linear Association	7,595	1	,006
N of Valid Cases	289		

a. 3 cells (33,3%) have expected count less than 5. The minimum expected count is 1,00.

f) Soil contamination

Crosstab

			CIMPSOI2			
			1,00	2,00	3,00	Total
info-collection (reduced)	low level	Count	19	118		137
		% within info-collectio (reduced)	13,9%	86,1%		100,0%
	middle level	Count	10	48		58
		% within info-collectio (reduced)	17,2%	82,8%		100,0%
	high level	Count	29	64	1	94
		% within info-collectio (reduced)	30,9%	68,1%	1,1%	100,0%
Total		Count	58	230	1	289
		% within info-collectio (reduced)	20,1%	79,6%	,3%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12,748[a]	4	,013
Likelihood Ratio	12,539	4	,014
Linear-by-Linear Association	8,205	1	,004
N of Valid Cases	289		

a. 3 cells (33,3%) have expected count less than 5. The minimum expected count is ,20.

g) Risk of severe accidents

Crosstab

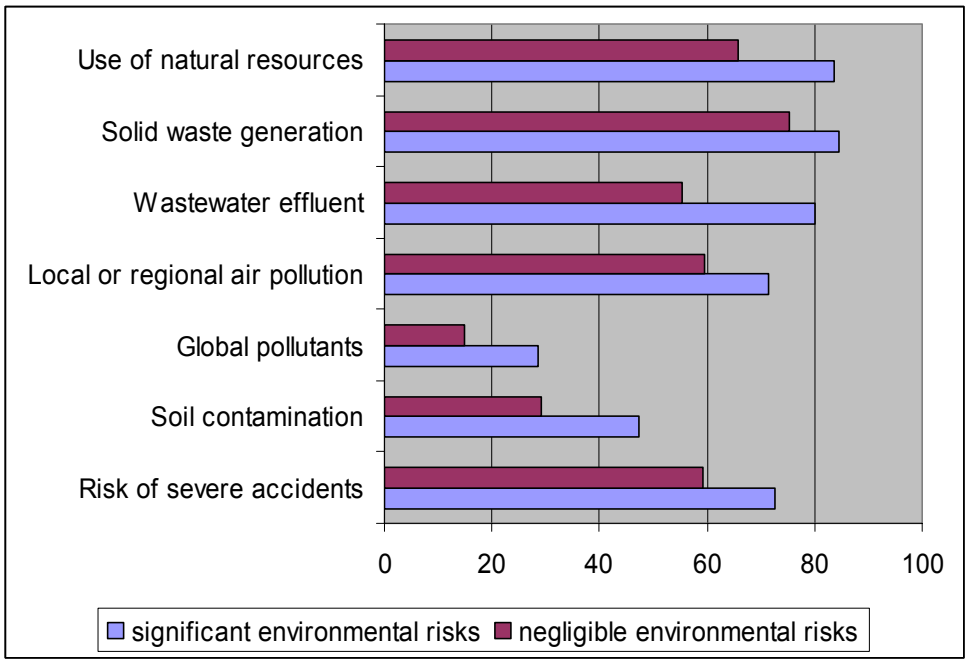
			CIMPRIS2			Total
			1,00	2,00	3,00	
info-collection (reduced)	low level	Count	51	83	3	137
		% within info-collecti (reduced)	37,2%	60,6%	2,2%	100,0%
	middle level	Count	25	32	1	58
		% within info-collecti (reduced)	43,1%	55,2%	1,7%	100,0%
	high level	Count	49	44	1	94
		% within info-collecti (reduced)	52,1%	46,8%	1,1%	100,0%
Total		Count	125	159	5	289
		% within info-collecti (reduced)	43,3%	55,0%	1,7%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5,194[a]	4	,268
Likelihood Ratio	5,208	4	,267
Linear-by-Linear Association	5,099	1	,024
N of Valid Cases	289		

a. 3 cells (33,3%) have expected count less than 5. The minimum expected count is 1,00.

Annex 6: Relation between perceived environmental risks and the frequency of concrete environmental measures



Annex 7: Factor analysis for the influence of stakeholder groups

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,814
Bartlett's Test of Sphericity	Approx. Chi-Square	625,263
	df	78
	Sig.	,000

Communalities

	Initial	Extraction
Influence of public authorities on the environmental practices (new)	1,000	,912
Influence of corporate headquarters on the environmental practices (new)	1,000	,650
Influence of household consumers on the environmental practices (new)	1,000	,680
Influence of commercial buyers on the environmental practices (new)	1,000	,659
Influence of suppliers on the environmental practices (new)	1,000	,576
Influence of shareholders and investment funds on the environmental practices (new)	1,000	,643
Influence of banks on the environmental practices (new)	1,000	,525
Influence of management employees on the environmental practices (new)	1,000	,747
Influence of non-management employees on the environmental practices (new)	1,000	,748
Influence of labour unions on the environmental practices (new)	1,000	,537
Influence of trade associations on the environmental practices (new)	1,000	,687
Influence of environmental groups on the environmental practices (new)	1,000	,751
Influence of neighbourhood/community groups on the environmental practices (new)	1,000	,480

Extraction Method: Principal Component Analysis.

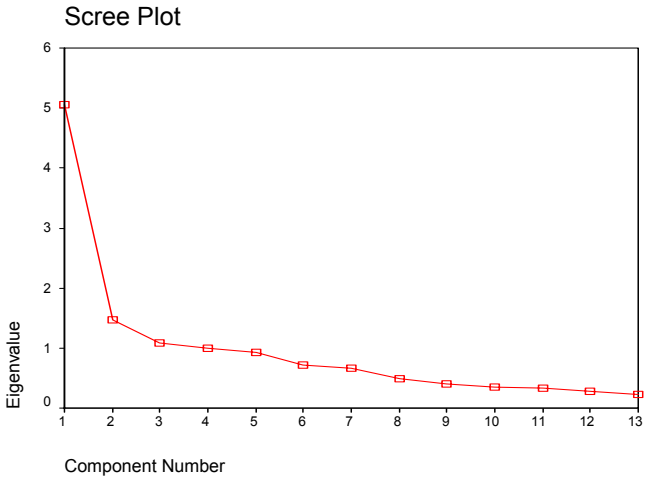
Correlation Matrix

		Influence of public authorities on the environmental practices (new)	Influence of corporate headquarters on the environmental practices (new)	Influence of household consumers on the environmental practices (new)	Influence of commercial buyers on the environmental practices (new)	Influence of suppliers on the environmental practices (new)	Influence of shareholders and investment funds on the environmental practices (new)	Influence of banks on the environmental practices (new)	Influence of management employees on the environmental practices (new)	Influence of non-management employees on the environmental practices (new)	Influence of labour unions on the environmental practices (new)	Influence of trade associations on the environmental practices (new)	Influence of environmental groups on the environmental practices (new)	Influence of neighbourhood/community groups on the environmental practices (new)
Correlation	Influence of public authorities on the environmental practices (new)	1,000	,266	,128	,083	,302	,137	,146	,126	,116	,149	,193	,102	,142
	Influence of corporate headquarters on the environmental practices (new)	,266	1,000	,387	,317	,294	,575	,318	,410	,427	,303	,212	,095	,260
	Influence of household consumers on the environmental practices (new)	,128	,387	1,000	,465	,347	,358	,269	,165	,257	,319	,295	,243	,480
	Influence of commercial buyers on the environmental practices (new)	,083	,317	,465	1,000	,510	,431	,446	,334	,333	,264	,246	,231	,257
	Influence of suppliers on the environmental practices (new)	,302	,294	,347	,510	1,000	,385	,505	,265	,325	,489	,357	,431	,354
	Influence of shareholders and investment funds on the environmental practices (new)	,137	,575	,358	,431	,385	1,000	,541	,461	,424	,413	,220	,220	,260
	Influence of banks on the environmental practices (new)	,146	,318	,269	,446	,505	,541	1,000	,349	,355	,431	,442	,492	,306
	Influence of management employees on the environmental practices (new)	,126	,410	,165	,334	,265	,461	,349	1,000	,663	,295	,185	,260	,314
	Influence of non-management employees on the environmental practices (new)	,116	,427	,257	,333	,325	,424	,355	,663	1,000	,500	,259	,272	,359
	Influence of labour unions on the environmental practices (new)	,149	,303	,319	,264	,489	,413	,431	,295	,500	1,000	,495	,423	,299
	Influence of trade associations on the environmental practices (new)	,193	,212	,295	,246	,357	,220	,442	,185	,259	,495	1,000	,587	,463
	Influence of environmental groups on the environmental practices (new)	,102	,095	,243	,231	,431	,220	,492	,260	,272	,423	,587	1,000	,487
	Influence of neighbourhood/community groups on the environmental practices (new)	,142	,260	,480	,257	,354	,260	,306	,314	,359	,299	,463	,487	1,000

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,049	38,838	38,838	5,049	38,838	38,838	2,820	21,696	21,696
2	1,466	11,274	50,112	1,466	11,274	50,112	2,446	18,818	40,513
3	1,080	8,309	58,422	1,080	8,309	58,422	2,148	16,524	57,037
4	1,001	7,697	66,119	1,001	7,697	66,119	1,181	9,082	66,119
5	,929	7,145	73,263						
6	,721	5,547	78,810						
7	,662	5,090	83,901						
8	,483	3,716	87,617						
9	,404	3,107	90,723						
10	,357	2,749	93,472						
11	,336	2,585	96,057						
12	,277	2,131	98,188						
13	,236	1,812	100,000						

Extraction Method: Principal Component Analysis.



Component Matrix [a]

	Component			
	1	2	3	4
Influence of banks on the environmental practices (new)	,715	9,61E-02	-4,4E-02	-5,7E-02
Influence of suppliers on the environmental practices (new)	,697	,149	,254	5,59E-02
Influence of shareholders and investment funds on the environmental practices (new)	,689	-,401	4,40E-02	-7,7E-02
Influence of labour unions on the environmental practices (new)	,684	,150	-,179	,122
Influence of non-management employees on the environmental practices (new)	,668	-,326	-,432	8,86E-02
Influence of commercial buyers on the environmental practices (new)	,620	-,159	,296	-,402
Influence of neighbourhood/community groups on the environmental practices (new)	,617	,295	-9,0E-03	-,115
Influence of trade associations on the environmental practices (new)	,615	,538	-7,9E-02	,112
Influence of environmental groups on the environmental practices (new)	,609	,572	-,231	3,05E-03
Influence of management employees on the environmental practices (new)	,605	-,421	-,442	9,62E-02
Influence of corporate headquarters on the environmental practices (new)	,597	-,488	,190	,139
Influence of household consumers on the environmental practices (new)	,581	7,77E-03	,453	-,370
Influence of public authorities on the environmental practices (new)	,300	-5,7E-03	,457	,783

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

Rotated Component Matrix [a]

	Component			
	1	2	3	4
Influence of environmental groups on the environmental practices (new)	,859	9,64E-02	5,86E-02	-3,7E-02
Influence of trade associations on the environmental practices (new)	,808	5,85E-02	,106	,136
Influence of neighbourhood/community groups on the environmental practices (new)	,598	,143	,320	2,14E-03
Influence of labour unions on the environmental practices (new)	,584	,395	,148	,131
Influence of banks on the environmental practices (new)	,522	,349	,356	6,36E-02
Influence of suppliers on the environmental practices (new)	,488	,167	,464	,307
Influence of management employees on the environmental practices (new)	,168	,845	6,55E-02	-6,0E-03
Influence of non-management employees on the environmental practices (new)	,276	,815	9,07E-02	-9,4E-04
Influence of shareholders and investment funds on the environmental practices (new)	,112	,600	,506	,121
Influence of corporate headquarters on the environmental practices (new)	-3,0E-02	,560	,451	,364
Influence of household consumers on the environmental practices (new)	,240	2,45E-02	,787	4,62E-02
Influence of commercial buyers on the environmental practices (new)	,173	,229	,758	-4,4E-02
Influence of public authorities on the environmental practices (new)	,123	4,83E-02	2,22E-02	,946

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Component Transformation Matrix

Component	1	2	3	4
1	,620	,553	,521	,196
2	,748	-,631	-,194	-,067
3	-,230	-,522	,631	,525
4	,060	,150	-,541	,825

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Annex 8: Influence of stakeholder groups and the implementation of respective environmental management tools

a) Influence of household consumers on environmental practices – Informing household consumers of ways to reduce their environmental impacts

Crosstab

			Informing buyers of ways to reduce their environmental impacts		
			no	yes	Total
Influence of household consumers on the environmental practices (new)	not important	Count	51	19	70
		% within Influence of household consumers on the environmental practices (new)	72,9%	27,1%	100,0%
	moderately important	Count	81	47	128
		% within Influence of household consumers on the environmental practices (new)	63,3%	36,7%	100,0%
	very important	Count	32	34	66
		% within Influence of household consumers on the environmental practices (new)	48,5%	51,5%	100,0%
Total		Count	164	100	264
		% within Influence of household consumers on the environmental practices (new)	62,1%	37,9%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8,718[a]	2	,013
Likelihood Ratio	8,717	2	,013
Linear-by-Linear Association	8,494	1	,004
N of Valid Cases	264		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 25,00.

b) Influence of commercial buyers on the environmental practices – Informing buyers of ways to reduce their environmental impacts

Crosstab

			Informing buyers of ways to reduce their environmental impacts		
			no	yes	Total
Influence of commercial buyers on the environmental practices (new)	not important	Count	40	6	46
		% within Influence of commercial buyers on the environmental practices (new)	87,0%	13,0%	100,0%
	moderately important	Count	97	62	159
		% within Influence of commercial buyers on the environmental practices (new)	61,0%	39,0%	100,0%
	very important	Count	101	69	170
		% within Influence of commercial buyers on the environmental practices (new)	59,4%	40,6%	100,0%
Total		Count	238	137	375
		% within Influence of commercial buyers on the environmental practices (new)	63,5%	36,5%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12,567[a]	2	,002
Likelihood Ratio	14,432	2	,001
Linear-by-Linear Association	7,699	1	,006
N of Valid Cases	375		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 16,81.

c) Influence of suppliers on the environmental practices – Assessing environmental performance of suppliers

Crosstab

			Assessing environmental performance of suppliers		
			no	yes	Total
Influence of suppliers on the environmental practices (new)	not important	Count	50	36	86
		% within Influence of suppliers on the environmental practices (new)	58,1%	41,9%	100,0%
	moderately important	Count	89	138	227
		% within Influence of suppliers on the environmental practices (new)	39,2%	60,8%	100,0%
	very important	Count	18	67	85
		% within Influence of suppliers on the environmental practices (new)	21,2%	78,8%	100,0%
Total		Count	157	241	398
		% within Influence of suppliers on the environmental practices (new)	39,4%	60,6%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24,464[a]	2	,000
Likelihood Ratio	25,154	2	,000
Linear-by-Linear Association	24,395	1	,000
N of Valid Cases	398		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 33,53.

d) Influence of suppliers on the environmental practices – Requiring suppliers to undertake environmental measures

Crosstab

			Requiring suppliers to undertake environmental measures		
			no	yes	Total
Influence of supplier on the environmenta practices (new)	not important	Count	55	31	86
		% within Influence of suppliers on the environmental practices (new)	64,0%	36,0%	100,0%
	moderately importar	Count	106	120	226
		% within Influence of suppliers on the environmental practices (new)	46,9%	53,1%	100,0%
	very important	Count	22	66	88
		% within Influence of suppliers on the environmental practices (new)	25,0%	75,0%	100,0%
Total		Count	183	217	400
		% within Influence of suppliers on the environmental practices (new)	45,8%	54,3%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26,869[a]	2	,000
Likelihood Ratio	27,785	2	,000
Linear-by-Linear Association	26,569	1	,000
N of Valid Cases	400		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 39,35.

e) Influence of non-management employees – Implementing an environmental training program for employees

Crosstab

			The facility established an environmental training program for employees		
			no	yes	Total
Influence of non-management employees on the environmental practices (new)	not important	Count	67	25	92
		% within Influence non-management employees on the environmental practices (new)	72,8%	27,2%	100,0%
	moderately importan	Count	101	109	210
		% within Influence non-management employees on the environmental practices (new)	48,1%	51,9%	100,0%
	very important	Count	31	36	67
		% within Influence non-management employees on the environmental practices (new)	46,3%	53,7%	100,0%
Total		Count	199	170	369
		% within Influence non-management employees on the environmental practices (new)	53,9%	46,1%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17,682[a]	2	,000
Likelihood Ratio	18,299	2	,000
Linear-by-Linear Association	12,938	1	,000
N of Valid Cases	369		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 30,87.

f) Influence of non-management employees – Using environmental criteria in the evaluation and/or compensation of employees

Crosstab

			The facility established an environmental evaluation of employees		
			no	yes	Total
Influence of non-management employees on the environmental practices (new)	not important	Count	83	8	91
		% within Influence of non-management employees on the environmental practices (new)	91,2%	8,8%	100,0%
	moderately importan	Count	171	38	209
		% within Influence of non-management employees on the environmental practices (new)	81,8%	18,2%	100,0%
	very important	Count	50	16	66
		% within Influence of non-management employees on the environmental practices (new)	75,8%	24,2%	100,0%
Total		Count	304	62	366
		% within Influence of non-management employees on the environmental practices (new)	83,1%	16,9%	100,0%

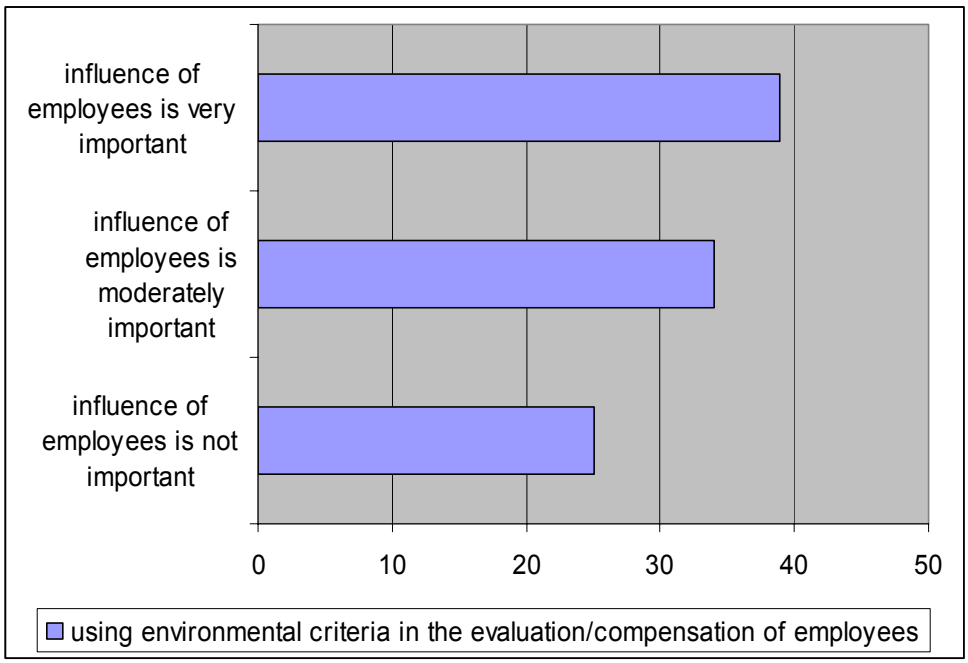
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7,025[a]	2	,030
Likelihood Ratio	7,533	2	,023
Linear-by-Linear Association	6,832	1	,009
N of Valid Cases	366		

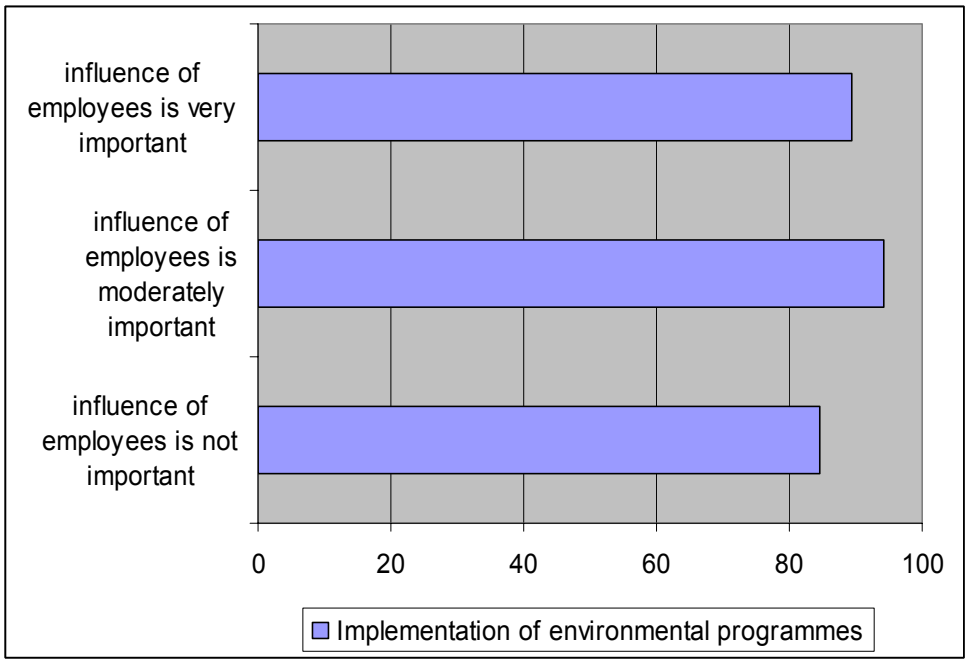
a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 11,18.

Annex 9:

a) Using environmental criteria in the evaluation and/or compensation of employees, based on the influence of employees, in the case of high-level corporate ecological knowledge



b) Implementation of environmental training programmes based on the influence of employees, in the case of high-level corporate ecological knowledge



Annex 10: Influence of motivations regarding environmental measures on the change of negative environmental impacts

a) Motivation of prevent or control environmental incidents and the change in environmental impacts regarding natural resources

Crosstab

Count

		CIMPNR2			
		decrease	no change	increase	Total
Motivation of prevent or control of environmental incidents in environmental practices (new)	not important	1	1	1	3
	moderately important	10	25	1	36
	very important	212	176	14	402
Total		223	202	16	441

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16,493[a]	4	,002
Likelihood Ratio	12,016	4	,017
Linear-by-Linear Association	8,094	1	,004
N of Valid Cases	441		

a. 4 cells (44,4%) have expected count less than 5. The minimum expected count is ,11.

b) Motivation of prevent or control environmental incidents and the change in environmental impacts regarding solid waste

Crosstab

Count

		CIMPWST2			
		1,00	2,00	3,00	Total
Motivation of prevent or control of environmental incidents in environmental practices (new)	not important	1	1	1	3
	moderately important	10	25	1	36
	very important	212	165	25	402
Total		223	191	27	441

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14,762[a]	4	,005
Likelihood Ratio	12,937	4	,012
Linear-by-Linear Association	5,737	1	,017
N of Valid Cases	441		

a. 4 cells (44,4%) have expected count less than 5. The minimum expected count is ,18.

c) Motivation of prevent or control environmental incidents and the change in environmental impacts regarding waste water effluent

Crosstab

Count

		CIMPWW2			
		1,00	2,00	3,00	Total
Motivation of prevent or control of environmental incidents in environmental practices (new)	not important		2	1	3
	moderately important	4	30	2	36
	very important	146	240	16	402
Total		150	272	19	441

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16,300[a]	4	,003
Likelihood Ratio	15,500	4	,004
Linear-by-Linear Association	11,966	1	,001
N of Valid Cases	441		

a. 4 cells (44,4%) have expected count less than 5. The minimum expected count is ,13.

d) Motivation of prevent or control environmental incidents and the change in environmental impacts regarding local air pollutants

Crosstab

Count

		CIMPAPO2			
		1,00	2,00	3,00	Total
Motivation of prevent or control of environmental incidents in environmental practices (new)	not important		3		3
	moderately important	10	25	1	36
	very important	168	220	14	402
Total		178	248	15	441

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5,279[a]	4	,260
Likelihood Ratio	6,497	4	,165
Linear-by-Linear Association	3,206	1	,073
N of Valid Cases	441		

a. 4 cells (44,4%) have expected count less than 5. The minimum expected count is ,10.

e) Motivation of prevent or control environmental incidents and the change in environmental impacts regarding soil contamination

Crosstab

Count

		CIMPSOI2			
		1,00	2,00	3,00	Total
Motivation of prevent or control of environmental incidents in environmental practices (new)	not important	1	2		3
	moderately important		36		36
	very important	74	327	1	402
Total		75	365	1	441

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8,638[a]	4	,071
Likelihood Ratio	14,658	4	,005
Linear-by-Linear Association	4,007	1	,045
N of Valid Cases	441		

a. 5 cells (55,6%) have expected count less than 5. The minimum expected count is ,01.

f) Motivation of prevent or control environmental incidents and the change in environmental impacts regarding risks of environmental accidents

Crosstab

Count

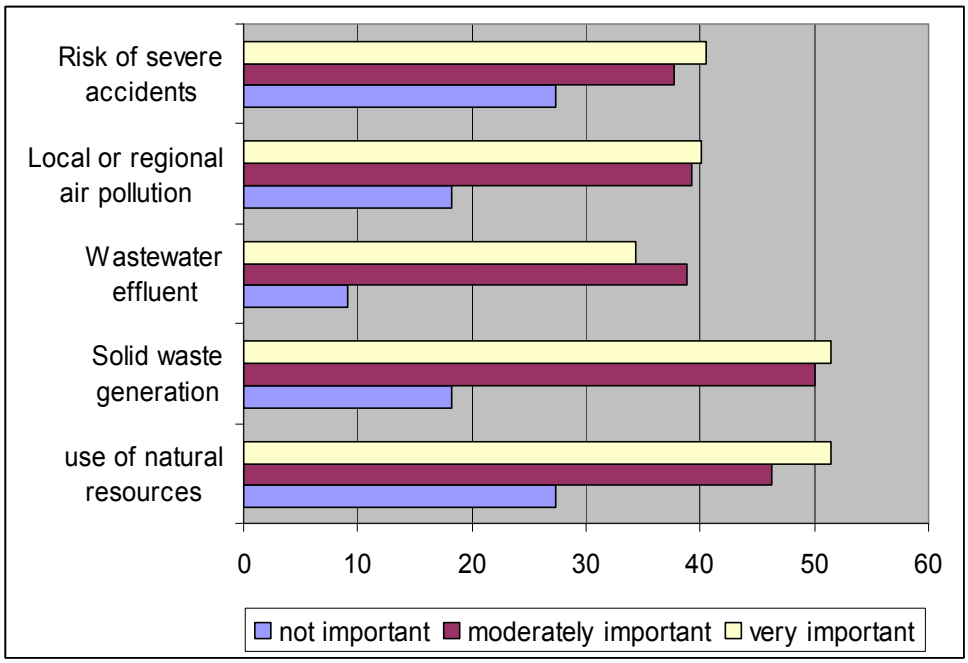
		CIMPRIS2			
		1,00	2,00	3,00	Total
Motivation of prevent or control of environmental incidents in environmental practices (new)	not important		3		3
	moderately important	8	28		36
	very important	168	229	5	402
Total		176	260	5	441

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8,152[a]	4	,086
Likelihood Ratio	9,983	4	,041
Linear-by-Linear Association	5,986	1	,014
N of Valid Cases	441		

a. 5 cells (55,6%) have expected count less than 5. The minimum expected count is ,03.

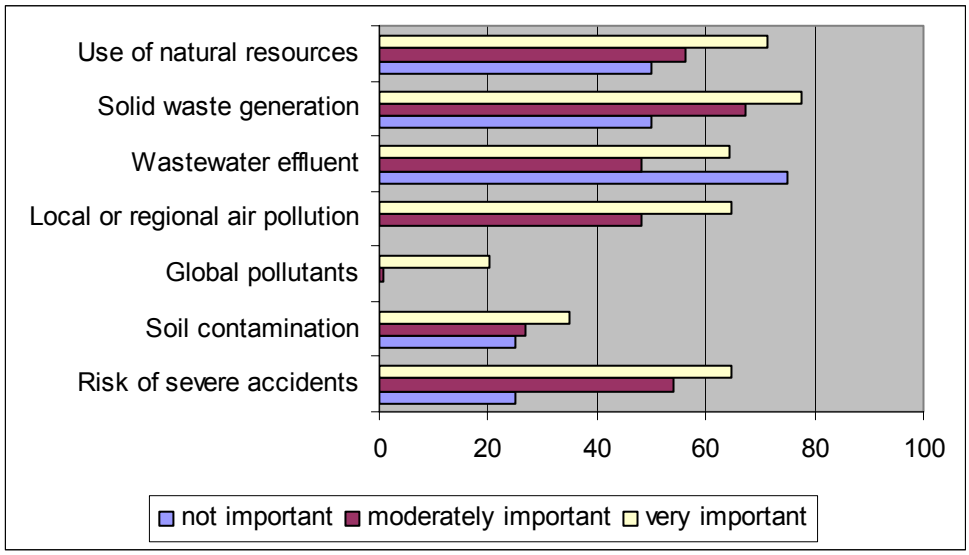
Annex 11: Importance of cost savings (as motivation) and the decrease of environmental impacts in case of different environmental problems



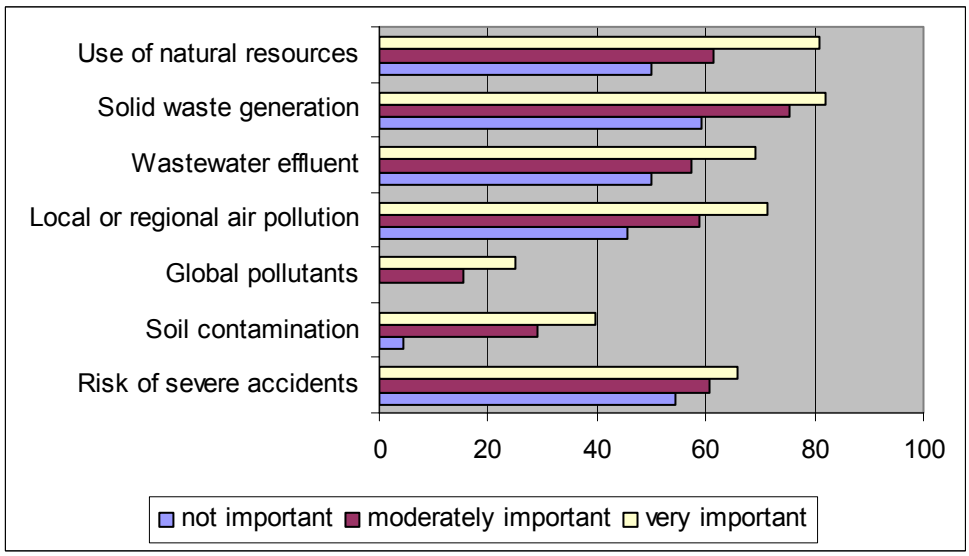
Annex 12:

a) Relation between the influence of stakeholders and the frequency of environmental measures taken

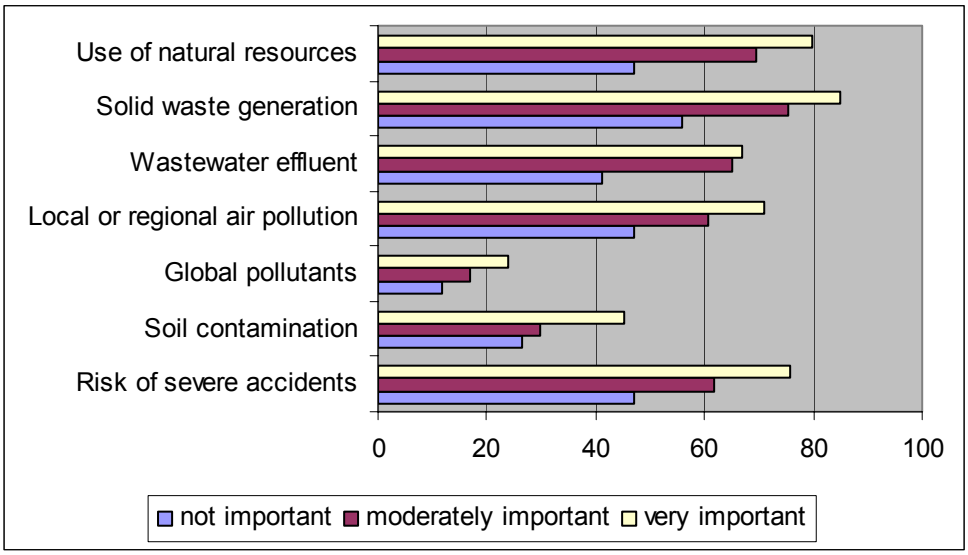
The influence of public authorities and the frequency of environmental measures:



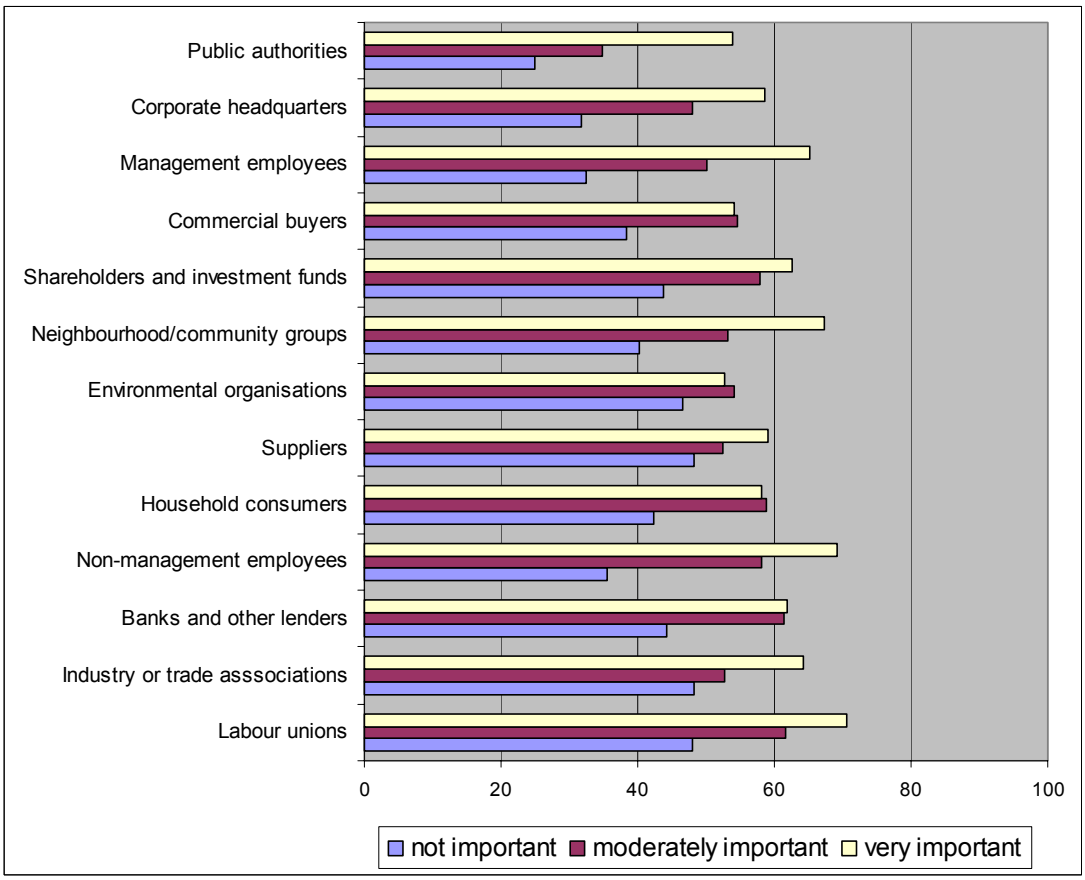
The influence of corporate headquarters and the frequency of environmental measures:



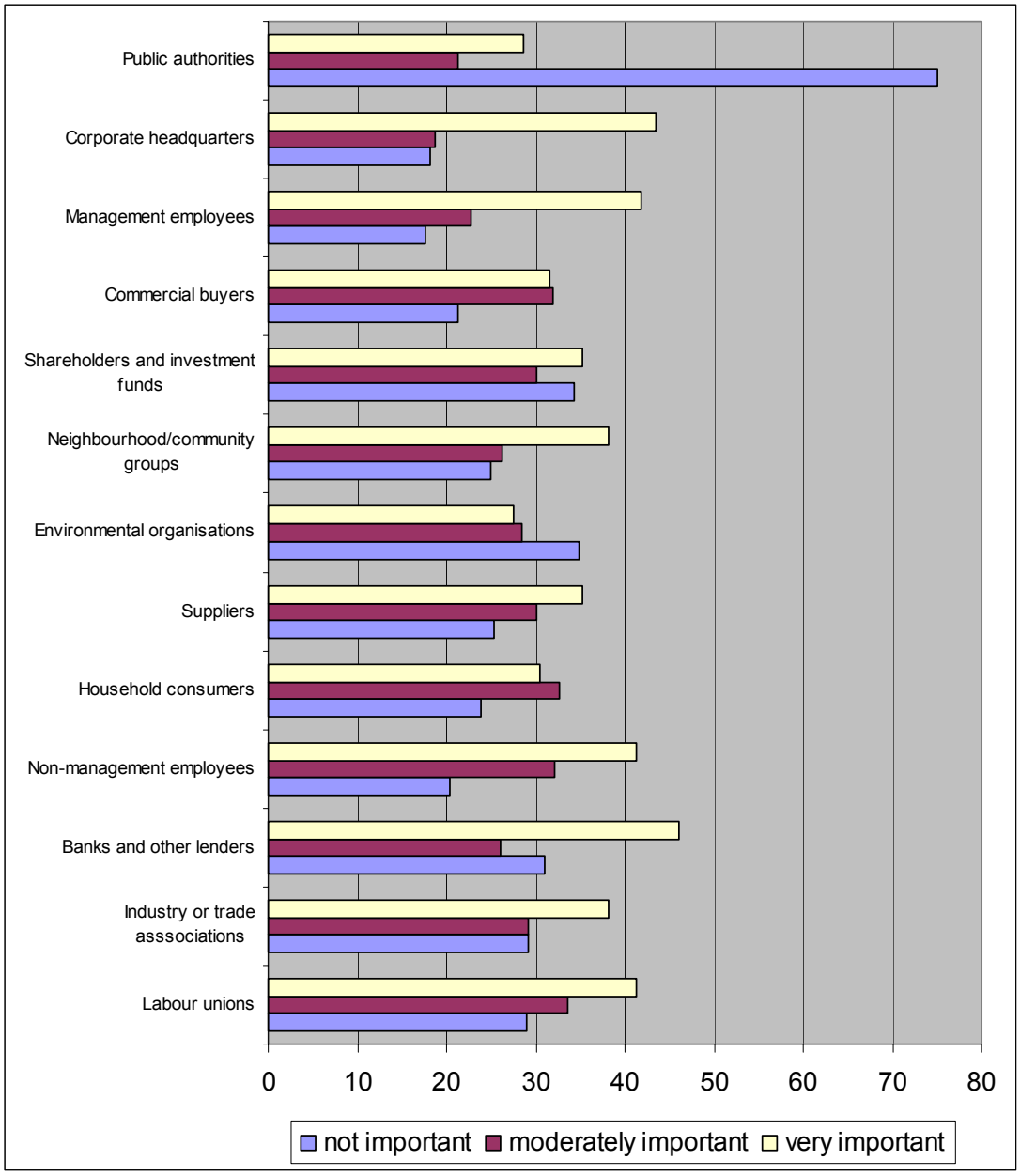
Influence of management employees and the frequency of environmental measures:



Influence of stakeholders and the frequency of significant environmental measures (all environmental problems included)

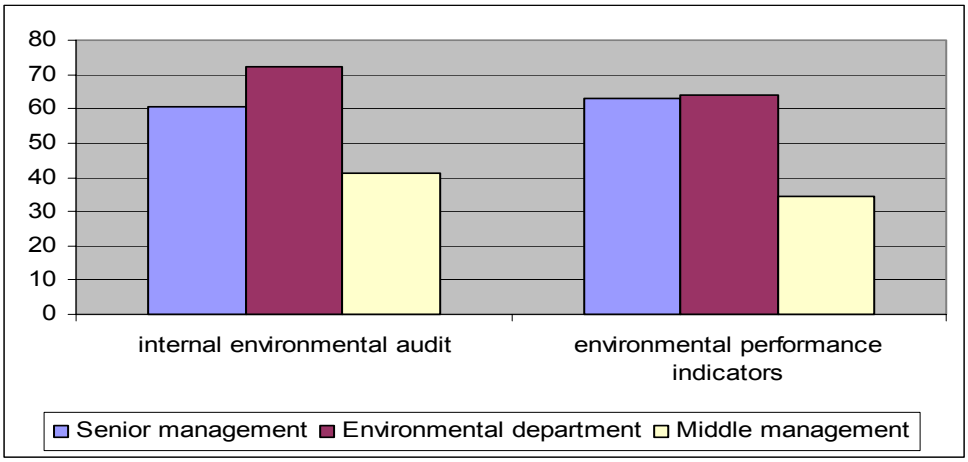


12/b) Relation between the influence of stakeholders and EMS implementation



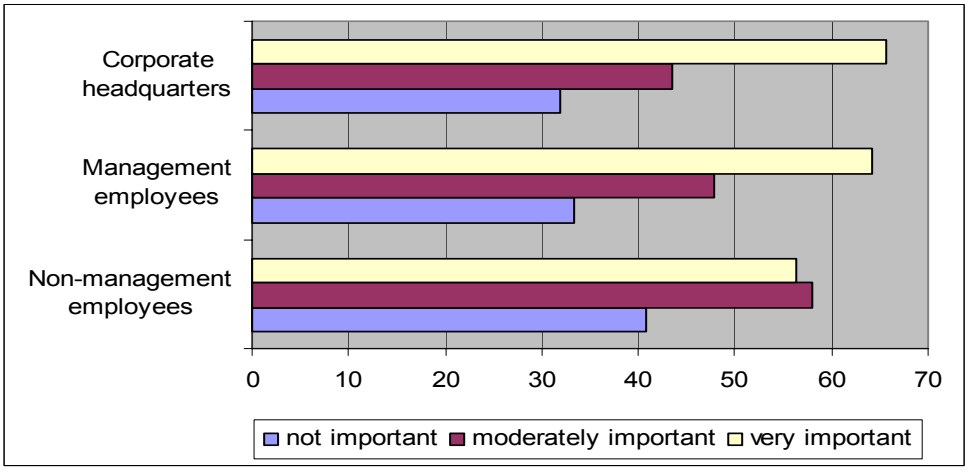
Annex 13:

a) Relation between location of environmental function and internal collection methods of environmental information

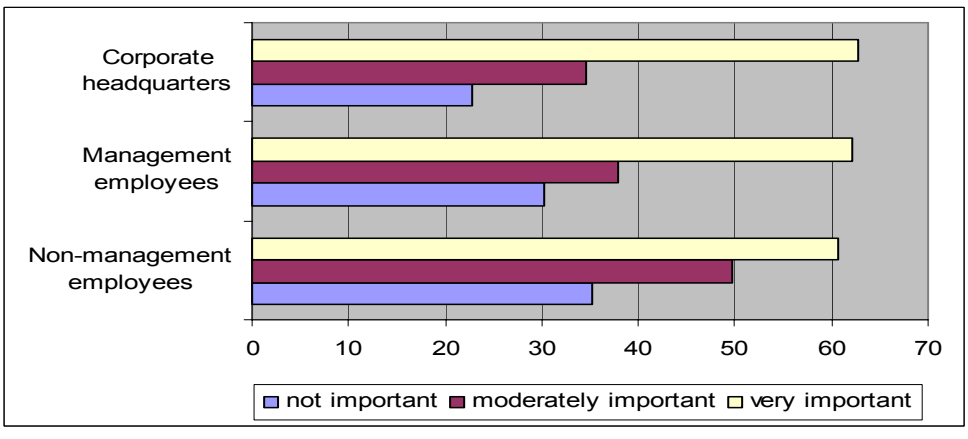


b) Relation between influence of internal stakeholders and internal collection methods of environmental information

Carrying out internal environmental audits:



Implementation of environmental performance indicators:



Annex 14: Factor analysis for motivations of EMS implementation and those of taking environmental measures (for companies considering the implementation of an EMS)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,700
Bartlett's Test of Sphericity	Approx. Chi-Square	647,623
	df	171
	Sig.	,000

Communalities

	Initial	Extraction
EMS may help to prevent or control pollution	1,000	,586
EMS may improve efforts to achieve regulatory compliance	1,000	,658
EMS may reduce the applicability of some regulations	1,000	,544
EMS may better identify future environmental liabilities	1,000	,550
EMS may improve relations with regulatory authorities	1,000	,488
Regulators' incentives made EMS attractive	1,000	,757
EMS may allow for differentiation of our products	1,000	,747
EMS may improve our facility's image	1,000	,637
EMS may create cost savings in input use	1,000	,754
EMS may create cost savings in waste management	1,000	,736
EMS may improve information about our operation	1,000	,379
Other facilities are adopting similar systems	1,000	,731
PREVCONS	1,000	,684
RGLCCONS	1,000	,593
IMGCONS	1,000	,400
SAVCONS	1,000	,561
TECHCONS	1,000	,752
PRODCONS	1,000	,793
SIMLCONS	1,000	,605

Extraction Method: Principal Component Analysis.

Correlation Matrix

		EMS may help to prevent or control pollution	EMS may improve efforts to achieve regulatory compliance	EMS may reduce the applicability of some regulations	EMS may better identify future environmental liabilities	EMS may improve relations with regulatory authorities	Regulators' incentives made EMS attractive	EMS may allow for differentiation of our products	EMS may improve our facility's image	EMS may create cost savings in input use	EMS may create cost savings in waste management	EMS may improve information about our operation	Other facilities are adopting similar systems	PREVCONS	RGLCCONS	IMGCONS
Correlation	EMS may help to prev or control pollution	1,000	,352	,091	,155	,103	,040	,236	,147	,163	,228	,191	-,036	,115	,125	,070
	EMS may improve eff to achieve regulatory compliance	,352	1,000	,043	,318	,122	-,096	,105	,231	,065	,148	,257	,050	,098	,152	,035
	EMS may reduce the applicability of some regulations	,091	,043	1,000	,107	,227	,256	,091	,037	,237	,197	,157	,204	-,081	,049	,147
	EMS may better ident future environmental liabilities	,155	,318	,107	1,000	,169	-,001	,162	,129	,130	,128	,090	,165	,083	,167	,168
	EMS may improve relations with regulato authorities	,103	,122	,227	,169	1,000	,253	,106	,134	,210	,309	,244	,151	,091	-,043	,122
	Regulators' incentives made EMS attractive	,040	-,096	,256	-,001	,253	1,000	,086	,029	,032	,014	,005	,155	,109	-,010	,045
	EMS may allow for differentiation of our products	,236	,105	,091	,162	,106	,086	1,000	,426	,274	,138	,160	,129	,147	,000	,129
	EMS may improve our facility's image	,147	,231	,037	,129	,134	,029	,426	1,000	,366	,206	,247	,174	,254	,197	,267
	EMS may create cost savings in input use	,163	,065	,237	,130	,210	,032	,274	,366	1,000	,633	,285	,201	,104	,209	,349
	EMS may create cost savings in waste management	,228	,148	,197	,128	,309	,014	,138	,206	,633	1,000	,270	,115	,173	,119	,271
	EMS may improve information about our operation	,191	,257	,157	,090	,244	,005	,160	,247	,285	,270	1,000	,233	,123	,054	,094
	Other facilities are adopting similar syste	-,036	,050	,204	,165	,151	,155	,129	,174	,201	,115	,233	1,000	,040	,043	,106
	PREVCONS	,115	,098	-,081	,083	,091	,109	,147	,254	,104	,173	,123	,040	1,000	,290	,243
	RGLCCONS	,125	,152	,049	,167	-,043	-,010	,000	,197	,209	,119	,054	,043	,290	1,000	,200
	IMGCONS	,070	,035	,147	,168	,122	,045	,129	,267	,349	,271	,094	,106	,243	,200	1,000
	SAVCONS	,051	,057	,053	,055	,000	,076	,165	,212	,156	,176	,011	,032	,436	,226	,171
	TECHCONS	-,029	-,064	,152	,048	,052	,067	,089	,081	,164	,093	,061	,091	,178	,195	,286
	PRODCONS	-,055	-,137	,144	,045	,032	,021	,143	,098	,208	,168	,006	,105	,214	,077	,290
	SIMLCONS	,000	,049	,115	,047	,106	,032	,174	,252	,180	,191	,098	,390	,125	,061	,265

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,775	19,867	19,867	3,775	19,867	19,867	2,139	11,257	11,257
2	2,019	10,626	30,492	2,019	10,626	30,492	2,003	10,542	21,798
3	1,619	8,524	39,016	1,619	8,524	39,016	1,767	9,302	31,101
4	1,207	6,354	45,370	1,207	6,354	45,370	1,659	8,733	39,834
5	1,196	6,296	51,666	1,196	6,296	51,666	1,510	7,947	47,781
6	1,134	5,966	57,632	1,134	5,966	57,632	1,452	7,644	55,425
7	1,004	5,286	62,918	1,004	5,286	62,918	1,424	7,493	62,918
8	,923	4,858	67,776						
9	,867	4,563	72,339						
10	,766	4,030	76,369						
11	,761	4,004	80,373						
12	,666	3,506	83,879						
13	,642	3,377	87,257						
14	,539	2,839	90,096						
15	,462	2,429	92,525						
16	,446	2,348	94,873						
17	,421	2,216	97,088						
18	,287	1,510	98,598						
19	,266	1,402	100,000						

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component						
	1	2	3	4	5	6	7
EMS may create cost savings in input use	,664	,143	,128	-,110	-,475	-,175	-8,8E-02
EMS may create cost savings in waste management	,601	,211	,110	2,76E-02	-,546	-9,7E-02	-9,8E-02
EMS may improve our facility's image	,573	,176	-,207	-,242	,205	-,363	-4,8E-02
IMGCONS	,556	-,188	-4,1E-02	-4,0E-02	-,189	9,03E-02	-9,5E-02
SIMLCONS	,491	-,265	,200	-,413	,268	4,09E-02	-9,9E-02
EMS may allow for differentiation of our products	,460	,154	-6,3E-02	-,158	,289	-,436	,457
SAVCONS	,443	-,325	-,377	,279	,106	-,163	-4,5E-02
EMS may improve information about our operation	,423	,387	,128	-,139	-3,2E-02	-2,8E-02	-,114
PRODCONS	,482	-,661	4,37E-02	-5,1E-02	-7,6E-02	,123	,313
TECHCONS	,467	-,620	3,87E-02	-1,6E-02	-2,5E-02	,270	,273
EMS may improve effort to achieve regulatory compliance	,278	,550	-,318	-6,4E-02	,178	,362	,101
EMS may help to prever or control pollution	,306	,467	-,240	,171	-3,5E-02	5,33E-02	,428
EMS may reduce the applicability of some regulations	,350	6,05E-02	,511	,279	-4,3E-02	,233	,150
PREVCONS	,450	-,169	-,462	,323	,177	-,185	-,262
RGLCCONS	,360	-5,5E-02	-,442	,173	-5,6E-02	,305	-,373
EMS may improve relations with regulatory authorities	,376	,281	,407	,316	4,36E-03	-1,0E-02	-4,5E-02
Regulators' incentives made EMS attractive	,172	-3,0E-02	,401	,638	,353	-,180	-4,2E-02
Other facilities are adopting similar systems	,383	3,17E-02	,417	-,292	,423	,109	-,365
EMS may better identify future environmental liabilities	,336	,284	-,110	1,02E-02	,220	,536	9,21E-02

Extraction Method: Principal Component Analysis.

a. 7 components extracted.

Rotated Component Matrix[a]

	Component						
	1	2	3	4	5	6	7
EMS may create cost savings in waste management	,836	8,10E-02	8,82E-02	5,94E-02	,123	-4,2E-02	3,82E-02
EMS may create cost savings in input use	,834	,138	8,21E-02	1,38E-03	6,12E-02	8,33E-02	,151
EMS may improve information about our operation	,438	-,142	-1,5E-02	,248	,112	,252	,173
IMGCONS	,409	,366	,265	7,32E-02	2,37E-03	,153	-1,7E-02
PRODCONS	8,77E-02	,863	,134	-9,5E-02	1,83E-02	6,30E-02	9,31E-02
TECHCONS	3,62E-02	,848	,139	2,40E-02	4,84E-02	9,43E-02	-7,1E-03
PREVCONS	6,14E-02	5,50E-02	,808	2,87E-02	6,00E-02	2,31E-02	,138
SAVCONS	3,72E-02	,285	,663	-3,5E-02	5,53E-02	-5,4E-02	,180
RGLCCONS	,177	7,64E-02	,599	,314	-,109	5,37E-02	-,289
EMS may improve efforts to achieve regulatory compliance	8,22E-02	-,156	7,78E-02	,773	-6,8E-02	2,99E-02	,133
EMS may better identify future environmental liabilities	1,06E-02	,115	5,13E-02	,708	9,86E-02	,148	-4,1E-02
EMS may help to prevent or control pollution	,189	-2,4E-02	2,74E-02	,533	,117	-,345	,362
Regulators' incentives made EMS attractive	-,143	-3,3E-02	,202	-,142	,816	5,09E-02	8,34E-02
EMS may improve relations with regulatory authorities	,323	-6,2E-02	-1,8E-02	,127	,593	9,73E-02	4,71E-02
EMS may reduce the applicability of some regulations	,228	,264	-,184	,165	,592	6,61E-02	-7,6E-02
Other facilities are adopting similar systems	8,58E-02	1,10E-02	-1,7E-02	9,10E-02	,215	,817	2,72E-02
SIMLCONS	,118	,373	4,90E-02	6,01E-03	-3,4E-02	,644	,184
EMS may allow for differentiation of our products	9,41E-02	,122	4,24E-02	,107	7,54E-02	6,31E-02	,837
EMS may improve our facility's image	,300	-4,8E-02	,325	,116	-9,2E-02	,305	,570

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Component Transformation Matrix

Componen	1	2	3	4	5	6	7
1	,584	,408	,393	,294	,232	,306	,323
2	,277	-,714	-,241	,542	,123	-,085	,196
3	,143	,073	-,614	-,291	,610	,357	-,116
4	-,124	-,066	,412	-,006	,709	-,514	-,210
5	-,701	-,101	,181	,208	,230	,501	,345
6	-,141	,316	-,157	,667	-,019	,092	-,634
7	-,189	,451	-,429	,218	,055	-,498	,528

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

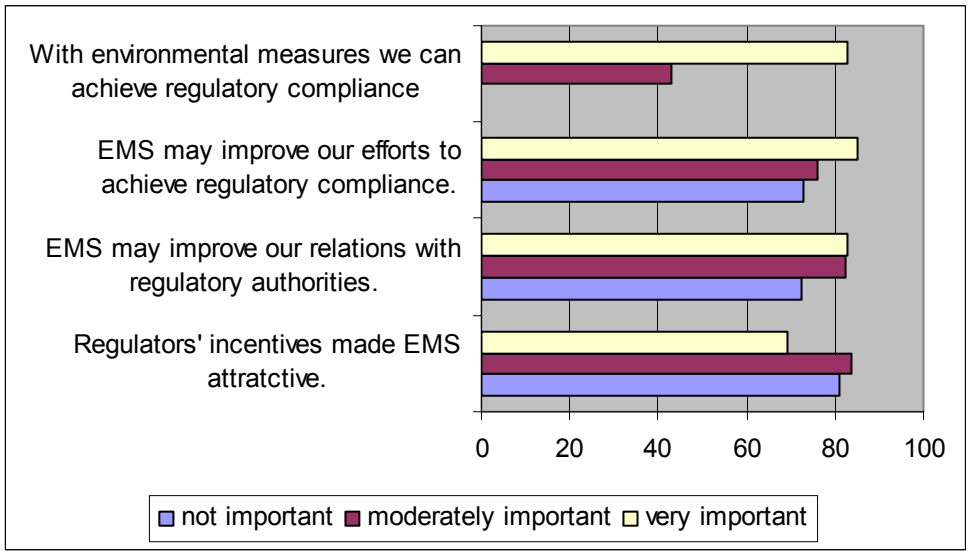
Component Score Coefficient Matrix

	Component						
	1	2	3	4	5	6	7
EMS may help to preve or control pollution	,006	,058	-,070	,310	,072	-,343	,244
EMS may improve effor to achieve regulatory compliance	-,071	-,044	-,004	,492	-,073	,010	,013
EMS may reduce the applicability of some regulations	,047	,160	-,172	,113	,378	-,054	-,113
EMS may better identify future environmental liabilities	-,133	,103	-,034	,496	,041	,077	-,125
EMS may improve relations with regulatory authorities	,107	-,081	-,020	,015	,378	-,003	-,041
Regulators' incentives made EMS attractive	-,184	-,087	,184	-,124	,603	-,015	,053
EMS may allow for differentiation of our products	-,098	,060	-,091	-,018	,009	-,057	,654
EMS may improve our facility's image	,053	-,136	,136	-,058	-,131	,177	,360
EMS may create cost savings in input use	,462	-,016	-,044	-,137	-,060	-,046	-,005
EMS may create cost savings in waste management	,479	-,031	-,022	-,090	-,001	-,135	-,096
EMS may improve information about our operation	,188	-,134	-,050	,068	,004	,147	,035
Other facilities are adopting similar system	-,062	-,104	-,017	,023	,071	,613	-,074
PREVCONS	-,059	-,114	,517	-,064	,055	-,007	,016
RGLCCONS	,057	-,049	,379	,180	-,082	,046	-,356
IMGCONS	,178	,126	,082	,000	-,059	,036	-,116
SAVCONS	-,071	,056	,381	-,074	,050	-,099	,082
TECHCONS	-,078	,472	-,055	,076	,002	-,044	-,035
PRODCONS	-,037	,472	-,067	-,021	-,024	-,079	,057
SIMLCONS	-,044	,123	-,056	-,018	-,108	,436	,076

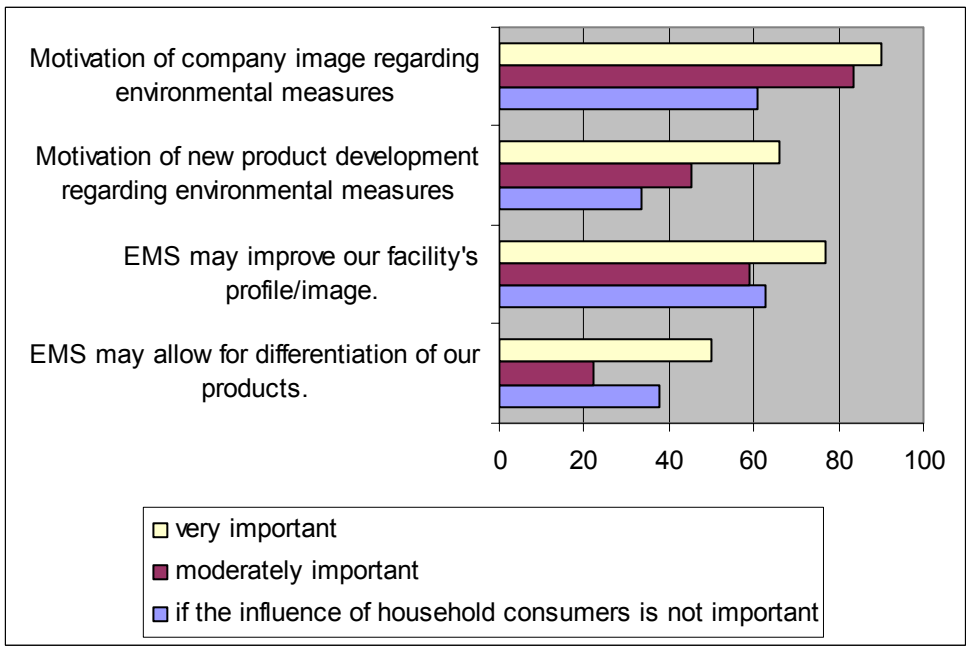
Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Component Scores.

Annex 15: Relation between the influence of stakeholders and the importance of other motivating factors

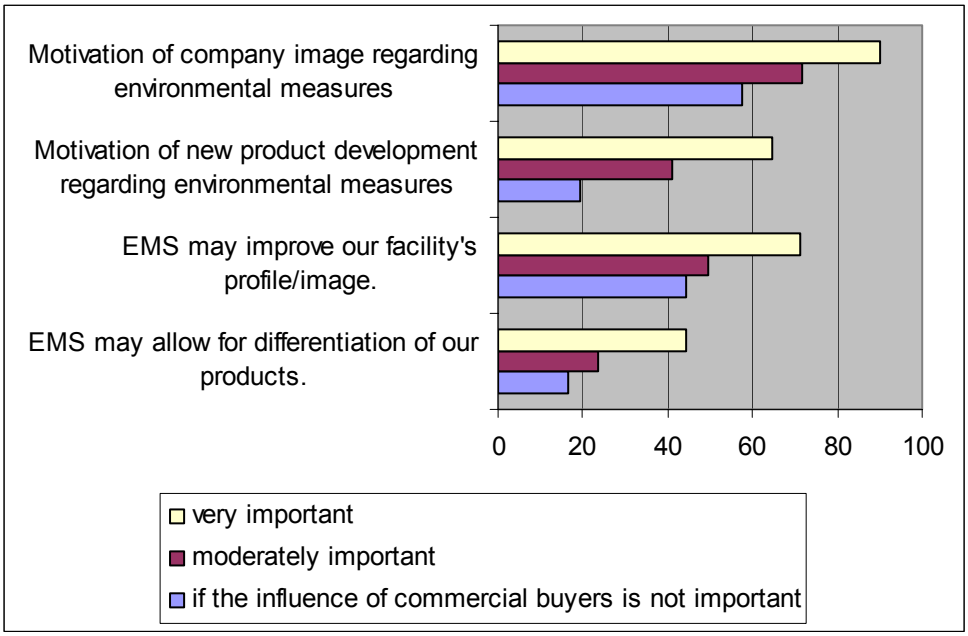
a) Importance of relating motivations, if the influence of public authorities is very important



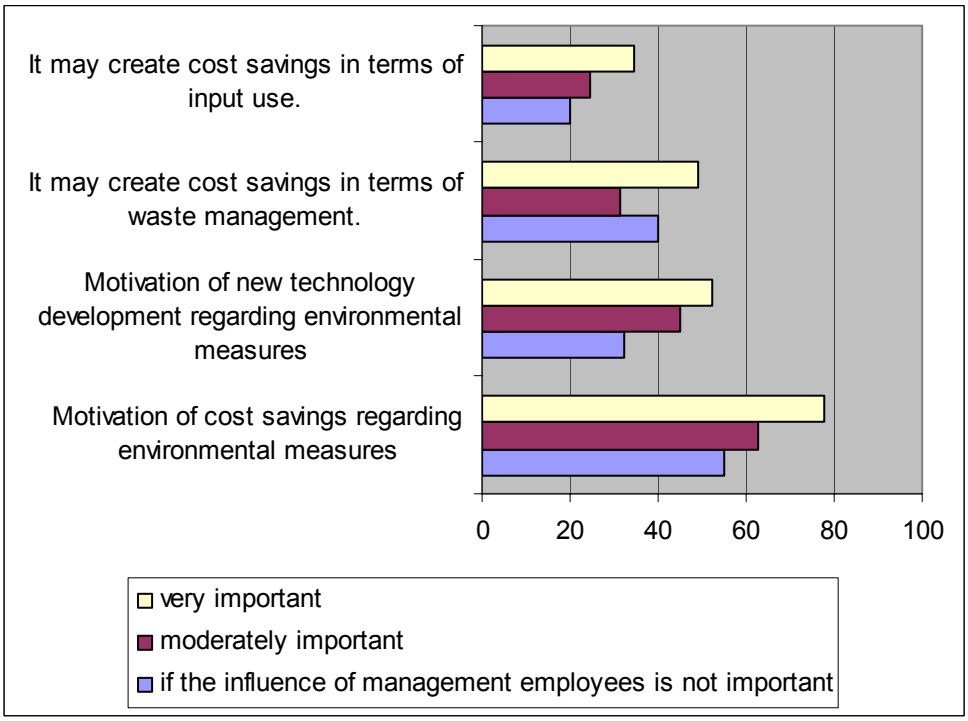
b) Proportion of „very important" relating motivations according to the importance of household consumers



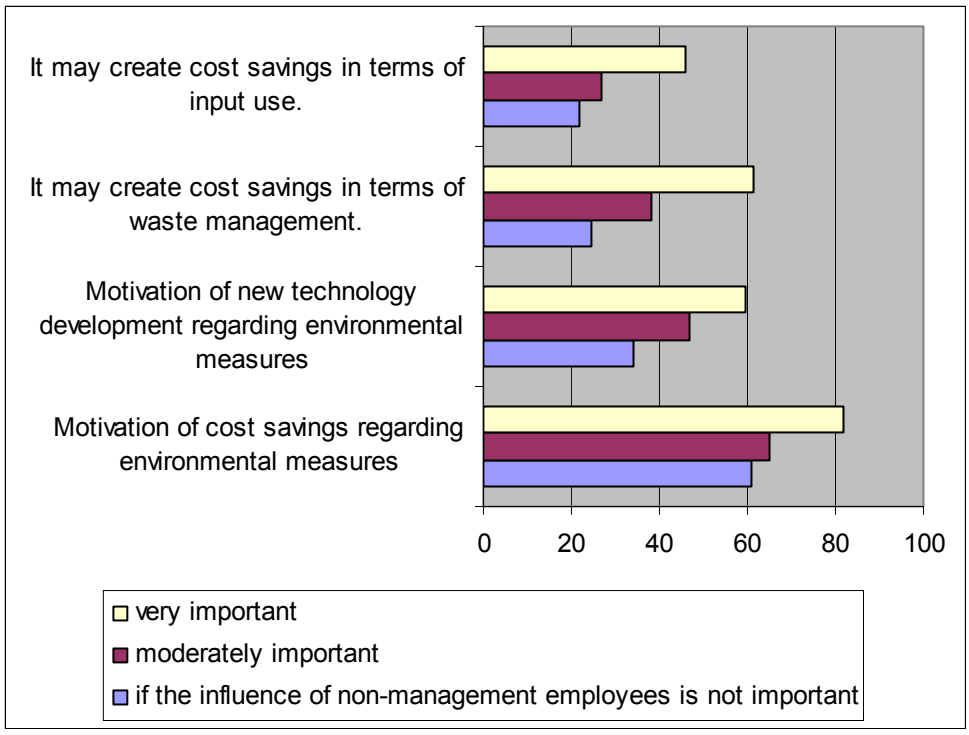
c) Proportion of „very important" relating motivations according to the importance of commercial buyers



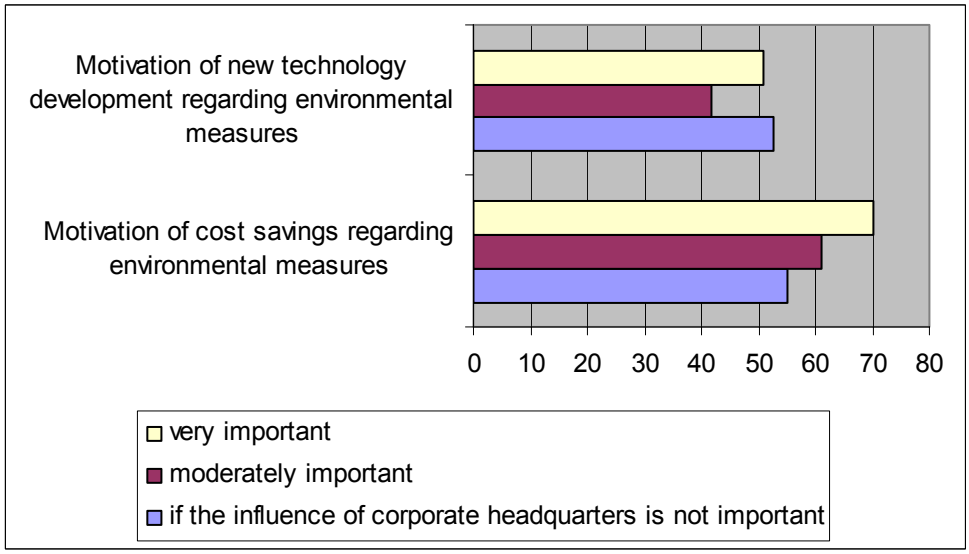
d) Proportion of „very important" relating motivations according to the importance of management employees



e) Proportion of „very important" relating motivations according to the importance of non-management employees



f) Proportion of „very important" relating motivations according to the importance of corporate headquarters



B) Annex to the qualitative research

Annex 16: Preliminary questionnaire to test the statements for the Q-method

Please, rank the following statements on a scale ranging from -4 to +4 reflecting the degree to which you agree with them, by circling the number. Please, rank every statement, if possible.

Values on the scale indicate the following:

-4 : I totally disagree

0 : I partly agree, partly disagree

+4 : I fully agree

1. I think environmental problems in the world are increasingly frequent and severe.	**-4**	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**
2. I am very worried that the Earth is a on fast track to destruction due to man-made environmental problems.	**-4**	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**
3. Environmental problems are primarily caused by corporate activities.	**-4**	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**
4. People could put an end to harmful processes by consciously changing their everyday lives.	**-4**	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**
5. I am convinced that selective waste disposal can bring major positive results in the area of environment protection.	**-4**	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**
6. If I see people ignore the protection of the environment, I am also discouraged from making efforts.	**-4**	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**
7. I feel to be personally responsible for the future environment of my children and grandchildren.	**-4**	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**
8. If people were charged for the waste they do not dispose of selectively, everybody would immediately shift to selective waste disposal.	**-4**	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**
9. If I have a choice between driving to work or taking public transport, I opt for the car.	**-4**	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**
10.I like routine and rarely change my habits.	**-4**	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**

11.I think I personally cannot do much for the environment.	**-4 -3 -2 -1 0 1 2 3 4**
12.I would need much more material goods than I can currently afford to buy.	**-4 -3 -2 -1 0 1 2 3 4**
13.If my friends started to radically reduce their consumption as of tomorrow, I would follow their examples.	**-4 -3 -2 -1 0 1 2 3 4**
14.To live an environmentally friendly life I need to sacrifice a lot.	**-4 -3 -2 -1 0 1 2 3 4**
15.If people perceived more strongly the pressure coming from their communities (as used to be the case earlier in villages) even people not worrying too much about the environment would live a more environment friendly life.	**-4 -3 -2 -1 0 1 2 3 4**
16.The activities of our company pose significant environmental risks.	**-4 -3 -2 -1 0 1 2 3 4**
17.The management of our company pays sufficient attention to managing environmental problems.	**-4 -3 -2 -1 0 1 2 3 4**
18.Cleanliness and order are high priority for the employees of our company.	**-4 -3 -2 -1 0 1 2 3 4**
19.In the building I work, lights are often left switched on unnecessarily.	**-4 -3 -2 -1 0 1 2 3 4**
20.In breaks between stages of work processes employees always switch off machines that should not be permanently used.	**-4 -3 -2 -1 0 1 2 3 4**
21.Our company deals with environment protection only because it is obliged by law to do so.	**-4 -3 -2 -1 0 1 2 3 4**
22.The top management of the company often talks to employees about the importance of environment protection.	**-4 -3 -2 -1 0 1 2 3 4**
23.The environment training launched by the company improved employees' attitudes a great deal.	**-4 -3 -2 -1 0 1 2 3 4**

24.Environment trainings are indispensable for workers to learn about the environmental impacts of their company's activities.	**-4 -3 -2 -1 0 1 2 3 4**
25.Every employee is aware of the environment protection objectives of our company.	**-4 -3 -2 -1 0 1 2 3 4**
26.When it comes to profit and cost issues, environmental considerations are ignored by the company.	**-4 -3 -2 -1 0 1 2 3 4**
27.Without the environmental department, the company's environmental objectives would certainly not be achieved.	**-4 -3 -2 -1 0 1 2 3 4**
28.Environment protection is equally important for everybody at the company.	**-4 -3 -2 -1 0 1 2 3 4**
29.The company is able to motivate people to subordinate their own interests to those of the company, if necessary.	**-4 -3 -2 -1 0 1 2 3 4**
30.The employees of the company have sufficient knowledge to realise what they are supposed to do to protect the environment.	**-4 -3 -2 -1 0 1 2 3 4**
31.The employees of our company are not motivated by their internal convictions when meeting environment protection tasks but by the obligatory instructions.	**-4 -3 -2 -1 0 1 2 3 4**
32.The main objective of our company's environmental training is to increase employees' environment-related knowledge; the encouragement of their environmentally aware behaviour is only of secondary importance.	**-4 -3 -2 -1 0 1 2 3 4**
33.The company asks the opinion of its employees in questions of environment protection.	**-4 -3 -2 -1 0 1 2 3 4**
34.The company applies direct incentives – rewards, acknowledgement – to motivate employees to take environment-related initiatives.	**-4 -3 -2 -1 0 1 2 3 4**

35.Me and the colleagues in my immediate surroundings have very similar sets of values.	**-4 -3 -2 -1 0 1 2 3 4**
36.Employees should be given more say in decisions relating to environment protection.	**-4 -3 -2 -1 0 1 2 3 4**
37.The environmental objectives of the company are always fully achieved.	**-4 -3 -2 -1 0 1 2 3 4**
38.The company can easily integrate tasks of environment protection with its other tasks.	**-4 -3 -2 -1 0 1 2 3 4**
39.The company should apply various methods to encourage employees to achieve better environmental performance.	**-4 -3 -2 -1 0 1 2 3 4**
40.The full achievement of environment protection objectives of the company is prevented by the lower than necessary environmental awareness of employees.	**-4 -3 -2 -1 0 1 2 3 4**
41.The company would need many more environment-related initiatives taken by employees.	**-4 -3 -2 -1 0 1 2 3 4**
42.The company's environmental policy is in full compliance with its general business policy.	**-4 -3 -2 -1 0 1 2 3 4**
43.The current environmental management tools of the company are not sufficient to achieve adequate environmental performance.	**-4 -3 -2 -1 0 1 2 3 4**
44.By introducing a standardised environmental management system (ISO 14001) we could substantially improve our environmental performance.	**-4 -3 -2 -1 0 1 2 3 4**
45.I think employees can better encourage one another to behave properly than rules can.	**-4 -3 -2 -1 0 1 2 3 4**
46.If the company applied environmental criteria in performance assessment, the efficiency of the achievement of environmental objectives would improve.	**-4 -3 -2 -1 0 1 2 3 4**

You are kindly requested to fill in the form below. The data will serve purely statistical purposes.

Sex: female male

Age: ……years

Highest level of qualification: Primary school
Apprenticeship school
Vocational secondary school
Secondary grammar school
College
University

Field of studies: Technical sciences
Economic sciences
Humanities
Law
Other, please specify:……

How long have you been working for the company? ……..

Which department do you work at? .....

Your position: ……

Management level: Top management
Middle-management
Not in managerial position

Should you have any comment or opinion regarding the survey, please indicate it below:……
……

THANK YOU FOR YOUR ASSISTANCE AND COOPERATION!

Annex 17: The procedure of applying the Q-method in the survey:

1. I put cards containing the scale of -4 … +4 with the number of statements to be sorted to those categories on the table, before respondents.
2. After I informed respondents of the objective of the survey and the essence of the methodology, respondents were given 33 cards with a statement on each.
3. First I asked respondents to rank the cards under the corresponding scale values, according to the degree of their agreement with them, irrespective of the prescribed ("forced") distribution.
4. Finally, in order to comply with distribution requirements, respondents compared statements ranked close to one another in pairs. This lead to the final individual ranking of the 33 statements.
5. In the last stage, respondents filled in the personal data sheet, and I – based on the ranking – established the Q-sort scheme with respect to each respondent.

Annex 18:

a) Q-method sorting scheme to register data:

-4	-3	-2	-1	0	1	2	3	4

b) Personal data of respondents

Sex: female male	**How long have you been working for the company?** ……..
Age: ……years	**Which department do you work at?** .....
Highest qualification: Primary school Apprenticeship school Vocational secondary school Secondary grammar school College University	**Your position**: …… **Level of management**: Top management Middle-management Low level of management Employee
Field of study: Technical sciences Economic sciences Agriculture Humanities Law Paper manufacturing Other, please, specify:……	**Should you have any comment or opinion regarding the survey, please indicate it below:** ……..

Annex 19: Cards containing the statements and the scale values

1. I feel to be personally responsible for the future environment of my children and grandchildren.	**2. People could put an end to harmful processes by consciously changing their life-styles.**
3. Environmental problems are primarily caused by corporate activities.	**4. If I see people ignore the protection of the environment, I am also discouraged from making efforts.**
5. I like routine, and rarely change my habits.	**6. I think I personally cannot do much for the environment.**
7. If my friends started to radically reduce their consumption as of tomorrow, I would follow their examples.	**8. To live an environmentally friendly life I need to sacrifice a lot.**
9. The activities of our company pose significant risks to the environment.	**10. The management of our company pays sufficient attention to managing environmental problems.**
11. Cleanliness and order are high priority for the employees of our company.	**12. The employees of our company always respect health and safety instructions.**
13. Employees always receive appropriate feedback concerning the environmental output of their work.	**14. Our company deals with environment protection only because it is obliged by law to do so.**
15. The top management of the company often talks to employees about the importance of environment protection.	**16. The environmental training launched by the company improved employees' attitudes a great deal.**
17. Every employee is aware of the environment protection objectives of the company.	**18. When it comes to profit and cost issues, environmental considerations are ignored by the company.**
19. If there was no environmental manager at he company, environmental objectives would certainly not be achieved.	**20. Environment protection is equally important for everybody at the company.**
21. The employees of the company have sufficient knowledge to realise what they are supposed to do to protect the environment.	**22. The employees of the company are not motivated by their internal convictions when meeting environment protection tasks but by the obligatory instructions.**
23. The main objective of the environmental training of the company is to increase employees' environment-related knowledge, the encouragement of employees' environmentally aware behaviour is only of secondary importance.	**24. The company asks the opinion of its employees in questions of environment protection.**
25. The company applies direct incentives – rewards, acknowledgement – to motivate	**26. Me and the colleagues in my immediate surroundings have a very similar value system.**

employees to take environment-related initiatives.	
27. Employees should be given more say in decisions relating to environment protection.	**28. The environmental objectives of the company are always fully achieved.**
29. The company should apply various methods to encourage employees to achieve better environmental performance.	**30. The full achievement of environment protection objectives of the company is prevented by the lower than necessary environmental awareness of employees.**
31. The introduction of the environmental management system has fundamentally changed the values of employees vis-à-vis environment protection.	**32. The current environmental management tools of the company are not sufficient to achieve proper environmental performance.**
33. I think employees can better encourage one another to behave properly than rules can.	**0: indifferent** **(5 statements)**

-4: I fully disagree (2 statements)	**+4: I fully agree (2 statements)**
-3: I quite disagree (3 statements)	**+3: I quite agree (3 statements)**
-2: I moderately disagree (4 statements)	**+2: I moderately agree (4 statements)**
-1: I disagree a bit (5 statements)	**+1: I agree a bit (5 statements)**

Annex 20: Results of Q-method

PQMethod2.11 Opinions at the company

Table 20/1: Correlation Matrix Between Sorts

SORTS		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	dunabesz	100	49	3	34	41	15	35	3	-3	0	29	54	3	38	32	9	26	18	37	12	11	27	8	41	42	39
2	dunaszal	49	100	47	25	28	30	56	-8	31	22	34	18	46	12	21	14	34	-12	59	3	17	37	3	18	47	-3
3	dunalogi	3	47	100	10	13	36	41	-14	29	19	18	-3	65	-1	5	4	12	-16	36	3	58	37	19	6	39	6
4	dunaberu	34	25	10	100	40	-6	30	3	-9	54	16	49	28	34	14	-11	21	29	45	48	35	33	31	41	34	44
5	dunalaka	41	28	13	40	100	-11	9	-2	4	45	16	34	21	29	11	-8	-9	32	36	34	12	28	-9	17	41	9
6	dunagepv	15	30	36	-6	-11	100	36	-35	23	-14	-1	-17	7	1	12	32	34	-30	13	-47	8	26	-4	-24	23	-1
7	dunatech	35	56	41	30	9	36	100	-21	29	21	24	17	32	9	-5	29	40	-11	58	12	39	58	8	7	35	31
8	dunavizm	3	-8	-14	3	-2	-35	-21	100	-24	14	29	17	8	10	21	-26	26	11	-14	39	12	-5	26	26	-3	3
9	dunaadmi	-3	31	29	-9	4	23	29	-24	100	4	-1	-10	36	-15	-14	44	3	-12	7	-36	-7	9	-8	-38	39	-12
10	csepanya	0	22	19	54	45	-14	21	14	4	100	7	30	41	22	-8	-29	13	24	31	50	32	46	22	32	21	13
11	csepvigh	29	34	18	16	16	-1	24	29	-1	7	100	22	34	23	46	12	51	-2	36	18	24	12	22	36	34	22
12	csepgyve	54	18	-3	49	34	-17	17	17	-10	30	22	100	17	37	16	-9	4	52	45	32	16	22	18	56	26	47
13	csepszem	3	46	65	28	21	7	32	8	36	41	34	17	100	17	-5	-16	18	6	32	36	44	20	4	21	29	22
14	csepgyek	38	12	-1	34	29	1	9	10	-15	22	23	37	17	100	24	-25	37	26	21	31	9	16	-9	40	15	34
15	csepmuve	32	21	5	14	11	12	-5	21	-14	-8	46	16	-5	24	100	24	37	-3	11	-2	8	-13	27	20	34	-8
16	csepelok	9	14	4	-11	-8	32	29	-26	44	-29	12	-9	-16	-25	24	100	2	-24	13	-59	2	1	14	-30	34	-9
17	csepszvi	26	34	12	21	-9	34	40	26	3	13	51	4	18	37	37	2	100	-9	32	14	34	34	29	23	41	25
18	cseperom	18	-12	-16	29	32	-30	-11	11	-12	24	-2	52	6	26	-3	-24	-9	100	-8	44	-14	-8	-13	45	-3	19
19	cseppseg	37	59	36	45	36	13	58	-14	7	31	36	45	32	21	11	13	32	-8	100	24	44	39	12	30	46	35
20	csepcsop	12	3	3	48	34	-47	12	39	-36	50	18	32	36	31	-2	-59	14	44	24	100	34	23	2	57	-6	49
21	csepseg2	11	17	58	35	12	8	39	12	-7	32	24	16	44	9	8	2	34	-14	44	34	100	49	24	34	51	41
22	csepaelo	27	37	37	33	28	26	58	-5	9	46	12	22	20	16	-13	1	34	-8	39	23	49	100	34	24	31	39
23	csepgepk	8	3	19	31	-9	-4	8	26	-8	22	22	18	4	-9	27	14	29	-13	12	2	24	34	100	6	19	11
24	csepvill	41	18	6	41	17	-24	7	26	-38	32	36	56	21	40	20	-30	23	45	30	57	34	24	6	100	14	56
25	csepgepv	42	47	39	34	41	23	35	-3	39	21	34	26	29	15	34	34	41	-3	46	-6	51	31	19	14	100	24
26	csep1seg	39	-3	6	44	9	-1	31	3	-12	13	22	47	22	34	-8	-9	25	19	35	49	41	39	11	56	24	100

Table 20/2: Unrotated Factor Matrix

	Factors							
	1	2	3	4	5	6	7	8
SORTS								
1 dunabesz	0.5772	0.0076	0.4111	-0.4502	-0.1201	-0.0591	-0.0247	-0.0625
2 dunaszal	0.5881	0.4496	-0.0026	-0.1705	0.2594	-0.2036	-0.1714	-0.0833
3 dunalogi	0.4523	0.4774	-0.3656	0.2569	0.2027	-0.1216	0.1450	-0.2592
4 dunaberu	0.6794	-0.2293	-0.0834	-0.1175	-0.0834	0.3020	-0.1472	0.0217
5 dunalaka	0.4843	-0.1525	-0.1466	-0.4596	0.3607	0.1799	-0.2596	-0.2242
6 dunagepv	0.0934	0.6783	0.0901	-0.0677	-0.2548	-0.2705	-0.2385	0.0350
7 dunatech	0.5872	0.4734	-0.1650	-0.0683	-0.2939	-0.0987	-0.0099	0.1442
8 dunavizm	0.1395	-0.4321	0.2900	0.5002	0.2997	0.0649	0.0134	0.2240
9 dunaadmi	0.0392	0.6132	-0.2468	-0.2422	0.3262	0.0701	0.2058	0.5027
10 csepanya	0.5484	-0.2334	-0.4456	0.0875	0.1904	0.2630	-0.3657	0.1449
11 csepvigh	0.5181	0.0677	0.4471	0.2401	0.2780	-0.1622	0.1894	0.0306
12 csepgyve	0.5957	-0.3697	0.1449	-0.3634	-0.0587	0.2065	0.2265	0.0643
13 csepszem	0.5531	0.1354	-0.4266	0.1987	0.4201	-0.2608	0.2511	0.1107
14 csepgyek	0.4684	-0.2982	0.2207	-0.1832	-0.0260	-0.3889	-0.2575	0.1560
15 csepmuve	0.2615	0.0710	0.7393	0.0912	0.3100	0.0492	-0.1096	-0.2212
16 csepelok	-0.0521	0.6592	0.3215	-0.2156	-0.0471	0.3611	0.2744	0.0713
17 csepszvi	0.5200	0.2058	0.4083	0.3721	-0.1080	-0.2600	-0.2354	0.3455
18 cseperom	0.2062	-0.5990	-0.0494	-0.4076	0.1483	0.0258	0.1481	0.2619
19 cseppseg	0.7163	0.2262	-0.0472	-0.1414	-0.0887	0.0131	0.0254	-0.2610
20 csepcsop	0.5212	-0.6659	-0.2582	0.1912	0.0256	-0.1207	-0.0045	-0.0162
21 csepseg2	0.6262	0.1404	-0.1958	0.4358	-0.1460	0.0739	0.2196	-0.2766
22 csepaelo	0.6146	0.2062	-0.2695	0.1180	-0.3783	0.1654	-0.2775	0.1061
23 csepgepk	0.2879	0.0719	0.2257	0.4726	-0.0849	0.6321	-0.0856	0.1010
24 csepvill	0.6085	-0.5170	0.1447	0.0211	-0.1074	-0.1538	0.2103	-0.1154
25 csepgepv	0.6172	0.4138	0.1654	-0.1166	0.2008	0.2081	0.1106	-0.0077
26 csep1seg	0.5791	-0.2437	-0.0058	-0.0222	-0.5227	-0.0763	0.3849	0.1150
Eigenvalues	6.5117	3.9566	2.2599	1.9691	1.5388	1.3536	1.0923	0.9513
% expl.Var.	25	15	9	8	6	5	4	4

Table 20/3: Cumulative Communalities Matrix

	Factors 1 Thru							
	1	2	3	4	5	6	7	8
SORTS								
1 dunabesz	0.3332	0.3332	0.5023	0.7050	0.7194	0.7229	0.7235	0.7274
2 dunaszal	0.3459	0.5480	0.5480	0.5771	0.6444	0.6858	0.7152	0.7221
3 dunalogi	0.2045	0.4325	0.5661	0.6321	0.6732	0.6880	0.7091	0.7763
4 dunaberu	0.4616	0.5142	0.5211	0.5349	0.5419	0.6331	0.6547	0.6552
5 dunalaka	0.2345	0.2578	0.2793	0.4906	0.6206	0.6530	0.7204	0.7707
6 dunagepv	0.0087	0.4688	0.4769	0.4815	0.5464	0.6196	0.6764	0.6777
7 dunatech	0.3448	0.5689	0.5962	0.6008	0.6872	0.6969	0.6970	0.7178
8 dunavizm	0.0195	0.2062	0.2903	0.5405	0.6303	0.6345	0.6347	0.6849
9 dunaadmi	0.0015	0.3776	0.4385	0.4971	0.6035	0.6084	0.6508	0.9036
10 csepanya	0.3007	0.3552	0.5538	0.5614	0.5977	0.6669	0.8006	0.8216
11 csepvigh	0.2684	0.2730	0.4729	0.5305	0.6078	0.6341	0.6700	0.6710
12 csepgyve	0.3548	0.4915	0.5125	0.6446	0.6480	0.6907	0.7420	0.7461
13 csepszem	0.3059	0.3242	0.5063	0.5458	0.7222	0.7903	0.8533	0.8656
14 csepgyek	0.2194	0.3083	0.3570	0.3905	0.3912	0.5424	0.6088	0.6331
15 csepmuve	0.0684	0.0734	0.6199	0.6282	0.7243	0.7267	0.7388	0.7877
16 csepelok	0.0027	0.4373	0.5407	0.5872	0.5894	0.7198	0.7950	0.8001
17 csepszvi	0.2704	0.3128	0.4795	0.6180	0.6296	0.6972	0.7526	0.8720
18 cseperom	0.0425	0.4013	0.4038	0.5699	0.5919	0.5926	0.6145	0.6831
19 cseppseg	0.5131	0.5643	0.5665	0.5865	0.5944	0.5946	0.5952	0.6634
20 csepcsop	0.2717	0.7151	0.7817	0.8183	0.8190	0.8335	0.8336	0.8338
21 csepseg2	0.3922	0.4119	0.4502	0.6402	0.6615	0.6670	0.7152	0.7917
22 csepaelo	0.3777	0.4202	0.4928	0.5068	0.6498	0.6772	0.7542	0.7655
23 csepgepk	0.0829	0.0881	0.1390	0.3624	0.3696	0.7691	0.7765	0.7867
24 csepvill	0.3703	0.6376	0.6585	0.6589	0.6705	0.6941	0.7384	0.7517
25 csepgepv	0.3810	0.5522	0.5796	0.5932	0.6335	0.6768	0.6890	0.6891
26 csep1seg	0.3353	0.3947	0.3947	0.3952	0.6685	0.6743	0.8224	0.8357
cum% expl.Var.	25	40	49	57	62	68	72	76

QANGLES File Not Found - Apparently VARIMAX Was Used

Table 20/4: Factor Matrix with an X Indicating a Defining Sort

	Loadings				
QSORT	1	2	3	4	5
1 dunabesz	0.0179	0.3051	0.2186	0.7465X	0.1450
2 dunaszal	0.6265X	0.3229	0.1987	0.2804	0.1717
3 dunalogi	0.6928X	0.0635	0.1120	-0.1832	0.3783
4 dunaberu	0.2107	-0.2184	0.0736	0.5512X	0.3749
5 dunalaka	0.4742	-0.1051	-0.1113	0.5986X	-0.1186
6 dunagepv	0.1134	0.6487X	0.0393	-0.1286	0.3077
7 dunatech	0.3515	0.3502	0.0020	0.1802	0.6391X
8 dunavizm	-0.0621	-0.5245	0.5771X	-0.0138	-0.1344
9 dunaadmi	0.5937X	0.4392	-0.1778	-0.1279	-0.1009
10 csepanya	0.4842	-0.4767	-0.0528	0.2376	0.2770
11 csepvigh	0.2362	0.0093	0.7037X	0.2318	0.0547
12 csepgyve	0.0333	-0.1448	0.0723	0.7745X	0.1443
13 csepszem	0.7710X	-0.2633	0.1031	0.0233	0.2175
14 csepgyek	-0.0152	-0.1280	0.1943	0.5716X	0.1008
15 csepmuve	0.0093	0.1976	0.7530X	0.2496	-0.2364
16 csepelok	0.0698	0.7513X	0.1254	-0.0581	-0.0319
17 csepszvi	0.0588	0.1279	0.6619X	0.0962	0.4031
18 cseperom	-0.0169	-0.3829	-0.1885	0.6023X	-0.2161
19 cseppseg	0.3920	0.1698	0.1264	0.4236	0.4653
20 csepcsop	0.1033	-0.7667X	0.0619	0.3733	0.2780
21 csepseg2	0.3316	-0.1710	0.2844	-0.0120	0.6643X
22 csepaelo	0.2453	0.0338	0.0004	0.1528	0.7518X
23 csepgepk	-0.0072	-0.0685	0.5031X	-0.1045	0.3175
24 csepvill	-0.0612	-0.4144	0.2654	0.5883X	0.2800
25 csepgepv	0.5099	0.3405	0.3424	0.3215	0.1923
26 csep1seg	-0.1619	-0.1454	0.0377	0.4691	0.6322X
% expl.Var.	12	13	10	15	12

Table 20/5: Free Distribution Data Results

QSORT		MEAN	ST.DEV.
1	dunabesz	0.000	2.236
2	dunaszal	0.000	2.236
3	dunalogi	0.000	2.236
4	dunaberu	0.000	2.236
5	dunalaka	0.000	2.236
6	dunagepv	0.000	2.236
7	dunatech	0.000	2.236
8	dunavizm	0.000	2.236
9	dunaadmi	0.000	2.236
10	csepanya	0.000	2.236
11	csepvigh	0.000	2.236
12	csepgyve	0.000	2.236
13	csepszem	0.000	2.236
14	csepgyek	0.000	2.236
15	csepmuve	0.000	2.236
16	csepelok	0.000	2.236
17	csepszvi	0.000	2.236
18	cseperom	0.000	2.236
19	cseppseg	0.000	2.236
20	csepcsop	0.000	2.236
21	csepseg2	0.000	2.236
22	csepaelo	0.000	2.236
23	csepgepk	0.000	2.236
24	csepvill	0.000	2.236
25	csepgepv	0.000	2.236
26	csep1seg	0.000	2.236

Table 20/6: Rank Statement Totals with Each Factor

No.	Statement	Factors 1		2		3		4		5	
1	I feel responsible for the future of my children.	1.78	1	-1.60	32	1.47	3	1.90	2	2.33	1
2	People could achieve success with life-style changes.	0.02	16	-0.25	17	1.29	5	1.80	3	0.94	5
3	Environmental problems are primarily caused by companies.	0.87	8	-1.66	33	-1.57	30	-0.05	16	1.52	2
4	If people ignore environm. protection, I get discouraged.	-1.45	32	-0.72	25	-0.27	23	-0.82	27	-2.19	3
5	I like routine and rarely change my habits.	-0.12	18	-0.35	19	1.58	2	-0.44	22	-0.64	23
6	I personally cannot do much for the environment.	-0.24	21	0.09	14	-1.72	32	-0.43	21	-0.87	28
7	If my friends reduced consumption, I would do the same.	-1.40	30	0.01	15	-1.89	33	-0.38	20	0.41	15
8	For pro-environmental behaviour I need to sacrifice a lot.	-1.14	27	-0.03	16	0.40	11	0.37	11	-1.87	32
9	Our company causes significant environmental risks.	-0.13	19	-0.36	20	-0.02	17	-0.31	19	0.61	9
10	The management pays sufficient attention to environment.	1.68	2	0.59	11	1.15	6	0.86	7	0.79	7
11	Cleanliness is high priority for employees.	-0.07	17	0.94	8	-0.18	20	-0.56	23	-0.03	19
12	The employees respect health and safetyinstructions.	1.24	4	0.88	9	-1.22	28	-1.44	32	0.52	12
13	Employees get feedback on their environmental performance.	0.37	12	1.79	1	0.18	14	-1.12	29	-0.40	21
14	We deal with environment protection only up to compliance.	-2.05	33	-0.41	22	-0.18	19	-0.78	26	-0.80	26
15	Managers often talk to employees about environment prot.	0.26	14	0.98	7	-0.21	21	0.14	13	1.18	3
16	Environmental training improved the attitudes of employees.	0.89	7	0.76	10	0.42	10	0.19	12	0.03	18
17	Every employee is aware of environmental objectives.	0.76	9	1.52	3	0.00	16	-0.58	24	0.16	17
18	Profit issues can overshadow environment protection.	-1.14	28	-1.24	30	0.27	13	-0.65	25	-0.85	27
19	The environmental manager is indispensable for success.	0.59	10	-1.17	29	-1.58	31	0.46	10	-1.31	30
20	Environment protection is equally important for everybody.	0.12	15	1.17	6	-1.47	29	0.61	9	-0.79	25
21	Employees have sufficient knowledge to act properly.	-0.46	24	1.50	4	1.03	7	-1.09	28	0.78	8
22	Employees are not motivated by their internal convictions.	-0.52	25	-0.26	18	0.40	12	0.12	14	0.24	16
23	Environmental training primarily aims at knowledge rising.	-0.25	22	-1.01	27	0.02	15	-0.01	15	-0.43	22
24	The company asks the opinion of its employees.	1.23	5	0.36	12	0.66	8	-1.43	31	-0.95	29
25	Company applies direct incentives to motivate employees.	-0.98	26	1.27	5	-0.34	24	-1.61	33	-1.35	31
26	Me and my colleagues have very similar value system.	1.12	6	-0.88	26	0.45	9	-0.22	18	-0.38	20
27	Employees should e given more say in environmental decision	0.29	13	-1.32	31	-0.03	18	-1.15	30	0.61	10
28	The company’s environmental objectives are fully achieved.	-0.31	23	1.65	2	-0.54	25	-0.20	17	0.60	11
29	Various methods would be needed to motivate employees.	-0.19	20	-0.52	24	1.95	1	1.99	1	1.04	4
30	Targets are not achieved due to low env. awareness.	-1.34	29	-0.40	21	-0.23	22	1.64	4	-0.68	24
31	EMS fundamentally changed the values of employees.	1.50	3	-0.42	23	-0.63	27	1.15	6	0.45	14
32	Current EMS is not sufficient for proper env. performance.	-1.41	31	-1.16	28	-0.55	26	0.85	8	0.88	6
33	Employees can motivate each other better than rules can.	0.49	11	0.26	13	1.33	4	1.18	5	0.45	13

Table 20/7: Correlations Between Factor Scores

	1	2	3	4	5
1	1.0000	0.0656	0.1683	0.1522	0.4431
2	0.0656	1.0000	-0.0165	-0.3402	-0.0835
3	0.1683	-0.0165	1.0000	0.3061	0.2222
4	0.1522	-0.3402	0.3061	1.0000	0.3981
5	0.4431	-0.0835	0.2222	0.3981	1.0000

Table 20/8: Normalized Factor Scores -- For Factor 1

No.	Statement	No.	Z-SCORES
1	I personally feel responsible for the future of my children.	1	1.780
10	The management pays sufficient attention to environment.	10	1.676
31	EMS fundamentally changed the values of employees.	31	1.505
12	The employees respect health and safety instructions.	12	1.240
24	The company asks the opinion of its employees.	24	1.227
26	Me and my colleagues have very similar value system.	26	1.125
16	Environmental training improved the attitudes of employees.	16	0.894
3	Environmental problems are primarily caused by companies.	3	0.874
17	Every employee is aware of environmental objectives.	17	0.762
19	The environmental manager is indispensable for success.	19	0.585
33	Employees can motivate each other better than rules can.	33	0.489
13	Employees get feedback on their environmental performance.	13	0.369
27	Employees should e given more say in environmental decisions.	27	0.291
15	Managers often talk to employees about environment protection.	15	0.260
20	Environment protection is equally important for everybody.	20	0.120
2	People could achieve success with life-style changes.	2	0.022
11	Cleanliness is high priority for employees.	11	-0.068
5	I like routine and rarely change my habits.	5	-0.124
9	Our company causes significant environmental risks.	9	-0.128
29	Various methods would be needed to motivate employees.	29	-0.186
6	I personally cannot do much for the environment.	6	-0.242
23	Environmental training primarily aims at knowledge rising.	23	-0.250
28	The company’s environmental objectives are fully achieved.	28	-0.313
21	Employees have sufficient knowledge to act properly.	21	-0.463
22	Employees are not motivated by their internal convictions.	22	-0.520
25	The company applies direct incentives to motivate employees.	25	-0.977
8	For pro-environmental behaviour I need to sacrifice a lot.	8	-1.138
18	Profit issues can overshadow environment protection.	18	-1.143
30	Targets are not achieved due to low environmental awareness.	30	-1.345
7	If my friends reduced their consumption, I would do the same.	7	-1.400
32	Current EMS is not sufficient for proper env. performance.	32	-1.413
4	If people ignore environment protection, I get discouraged.	4	-1.454
14	We deal with environment protection only up to compliance.	14	-2.052

Table 20/9: Normalized Factor Scores -- For Factor 2

No.	Statement	No.	Z-SCORES
13	Employees get feedback on their environmental performance.	13	1.792
28	The company's environmental objectives are fully achieved.	28	1.646
17	Every employee is aware of environmental objectives.	17	1.515
21	Employees have sufficient knowledge to act properly.	21	1.500
25	The company applies direct incentives to motivate employees.	25	1.270
20	Environment protection is equally important for everybody.	20	1.168
15	Managers often talk to employees about environment protection.	15	0.982
11	Cleanliness is high priority for employees.	11	0.940
12	The employees respect health and safety instructions.	12	0.880
16	Environmental training improved the attitudes of employees.	16	0.760
10	The management pays sufficient attention to environment.	10	0.593
24	The company asks the opinion of its employees.	24	0.363
33	Employees can motivate each other better than rules can.	33	0.261
6	I personally cannot do much for the environment.	6	0.086
7	If my friends reduced their consumption, I would do the same.	7	0.005
8	For pro-environmental behaviour I need to sacrifice a lot.	8	-0.029
2	People could achieve success with life-style changes.	2	-0.249
22	Employees are not motivated by their internal convictions.	22	-0.261
5	I like routine and rarely change my habits.	5	-0.348
9	Our company causes significant environmental risks.	9	-0.363
30	Targets are not achieved due to low environmental awareness.	30	-0.402
14	We deal with environment protection only up to compliance.	14	-0.408
31	EMS fundamentally changed the values of employees.	31	-0.418
29	Various methods would be needed to motivate employees.	29	-0.520
4	If people ignore environment protection, I get discouraged.	4	-0.724
26	Me and my colleagues have very similar value system.	26	-0.880
23	Environmental training primarily aims at knowledge rising.	23	-1.011
32	Current EMS is not sufficient for proper env. performance.	32	-1.157
19	The environmental manager is indispensable for success.	19	-1.168
18	Profit issues can overshadow environment protection.	18	-1.238
27	Employees should e given more say in environmental decisions.	27	-1.325
1	I personally feel responsible for the future of my children.	1	-1.602
3	Environmental problems are primarily caused by companies.	3	-1.662

Table 20/10: Normalized Factor Scores -- For Factor 3

No.	Statement	No.	Z-SCORES
29	Various methods would be needed to motivate employees.	29	1.953
5	I like routine and rarely change my habits.	5	1.579
1	I personally feel responsible for the future of my children.	1	1.466
33	Employees can motivate each other better than rules can.	33	1.326
2	People could achieve success with life-style changes.	2	1.294
10	The management pays sufficient attention to environment.	10	1.154
21	Employees have sufficient knowledge to act properly.	21	1.031
24	The company asks the opinion of its employees.	24	0.663
26	Me and my colleagues have very similar value system.	26	0.455
16	Environmental training improved the attitudes of employees.	16	0.421
8	For pro-environmental behaviour I need to sacrifice a lot.	8	0.403
22	Employees are not motivated by their internal convictions.	22	0.398
18	Profit issues can overshadow environment protection.	18	0.275
13	Employees get feedback on their environmental performance.	13	0.185
23	Environmental training primarily aims at knowledge rising.	23	0.016
17	Every employee is aware of environmental objectives.	17	-0.002
9	Our company causes significant environmental risks.	9	-0.016
27	Employees should e given more say in environmental decisions.	27	-0.028
14	We deal with environment protection only up to compliance.	14	-0.182
11	Cleanliness is high priority for employees.	11	-0.183
15	Managers often talk to employees about environment protection.	15	-0.206
30	Targets are not achieved due to low environmental awareness.	30	-0.230
4	If people ignore environment protection, I get discouraged.	4	-0.267
25	The company applies direct incentives to motivate employees.	25	-0.339
28	The company’s environmental objectives are fully achieved.	28	-0.539
32	Current EMS is not sufficient for proper env. performance.	32	-0.548
31	EMS fundamentally changed the values of employees.	31	-0.633
12	The employees respect health and safety instructions.	12	-1.223
20	Environment protection is equally important for everybody.	20	-1.466
3	Environmental problems are primarily caused by companies.	3	-1.569
19	The environmental manager is indispensable for success.	19	-1.580
6	I personally cannot do much for the environment.	6	-1.717
7	If my friends reduced their consumption, I would do the same.	7	-1.889

Tale 20/11: Normalized Factor Scores -- For Factor 4

No.	Statement	No.	Z-SCORES
29	Various methods would be needed to motivate employees.	29	1.987
1	I personally feel responsible for the future of my children.	1	1.896
2	People could achieve success with life-style changes.	2	1.804
30	Targets are not achieved due to low environmental awareness.	30	1.636
33	Employees can motivate each other better than rules can.	33	1.183
31	EMS fundamentally changed the values of employees.	31	1.148
10	The management pays sufficient attention to environment.	10	0.862
32	Current EMS is not sufficient for proper env. performance.	32	0.852
20	Environment protection is equally important for everybody.	20	0.610
19	The environmental manager is indispensable for success.	19	0.464
8	For pro-environmental behaviour I need to sacrifice a lot.	8	0.367
16	Environmental training improved the attitudes of employees.	16	0.188
15	Managers often talk to employees about environment protection.	15	0.144
22	Employees are not motivated by their internal convictions.	22	0.123
23	Environmental training primarily aims at knowledge rising.	23	-0.009
3	Environmental problems are primarily caused by companies.	3	-0.045
28	The company’s environmental objectives are fully achieved.	28	-0.204
26	Me and my colleagues have very similar value system.	26	-0.218
9	Our company causes significant environmental risks.	9	-0.306
7	If my friends reduced their consumption, I would do the same.	7	-0.378
6	I personally cannot do much for the environment.	6	-0.434
5	I like routine and rarely change my habits.	5	-0.441
11	Cleanliness is high priority for employees.	11	-0.558
17	Every employee is aware of environmental objectives.	17	-0.576
18	Profit issues can overshadow environment protection.	18	-0.645
14	We deal with environment protection only up to compliance.	14	-0.776
4	If people ignore environment protection, I get discouraged.	4	-0.820
21	Employees have sufficient knowledge to act properly.	21	-1.094
13	Employees get feedback on their environmental performance.	13	-1.122
27	Employees should e given more say in environmental decisions.	27	-1.155
24	The company asks the opinion of its employees.	24	-1.434
12	The employees respect health and safety instructions.	12	-1.441
25	The company applies direct incentives to motivate employees.	25	-1.608

Table 20/12: Normalized Factor Scores -- For Factor 5

No.	Statement	No.	Z-SCORES
1	I personally feel responsible for the future of my children.	1	2.331
3	Environmental problems are primarily caused by companies.	3	1.521
15	Managers often talk to employees about environment protection.	15	1.184
29	Various methods would be needed to motivate employees.	29	1.041
2	People could achieve success with life-style changes.	2	0.938
32	Current EMS is not sufficient for proper env. performance.	32	0.879
10	The management pays sufficient attention to environment.	10	0.788
21	Employees have sufficient knowledge to act properly.	21	0.776
9	Our company causes significant environmental risks.	9	0.610
27	Employees should e given more say in environmental decisions.	27	0.608
28	The company’s environmental objectives are fully achieved.	28	0.598
12	The employees respect health and safety instructions.	12	0.524
33	Employees can motivate each other better than rules can.	33	0.452
31	EMS fundamentally changed the values of employees.	31	0.446
7	If my friends reduced their consumption, I would do the same.	7	0.414
22	Employees are not motivated by their internal convictions.	22	0.243
17	Every employee is aware of environmental objectives.	17	0.159
16	Environmental training improved the attitudes of employees.	16	0.034
11	Cleanliness is high priority for employees.	11	-0.031
26	Me and my colleagues have very similar value system.	26	-0.383
13	Employees get feedback on their environmental performance.	13	-0.396
23	Environmental training primarily aims at knowledge rising.	23	-0.430
5	I like routine and rarely change my habits.	5	-0.639
30	Targets are not achieved due to low environmental awareness.	30	-0.676
20	Environment protection is equally important for everybody.	20	-0.795
14	We deal with environment protection only up to compliance.	14	-0.798
18	Profit issues can overshadow environment protection.	18	-0.854
6	I personally cannot do much for the environment.	6	-0.866
24	The company asks the opinion of its employees.	24	-0.950
19	The environmental manager is indispensable for success.	19	-1.315
25	The company applies direct incentives to motivate employees.	25	-1.346
8	For pro-environmental behaviour I need to sacrifice a lot.	8	-1.873
4	If people ignore environment protection, I get discouraged.	4	-2.193

Table 20/13: Descending Array of Differences Between Factors 1 and 2

No.	Statement	No.	Type 1	Type 2	Difference
1	I personally feel responsible for the future of my children.	1	1.780	-1.602	3.382
3	Environmental problems are primarily caused by companies.	3	0.874	-1.662	2.535
26	Me and my colleagues have very similar value system.	26	1.125	-0.880	2.005
31	EMS fundamentally changed the values of employees.	31	1.505	-0.418	1.923
19	The environmental manager is indispensable for success.	19	0.585	-1.168	1.753
27	Employees should e given more say in environmental decisions.	27	0.291	-1.325	1.615
10	The management pays sufficient attention to environment.	10	1.676	0.593	1.083
24	The company asks the opinion of its employees.	24	1.227	0.363	0.863
23	Environmental training primarily aims at knowledge rising.	23	-0.250	-1.011	0.761
12	The employees respect health and safety instructions.	12	1.240	0.880	0.360
29	Various methods would be needed to motivate employees.	29	-0.186	-0.520	0.334
2	People could achieve success with life-style changes.	2	0.022	-0.249	0.270
9	Our company causes significant environmental risks.	9	-0.128	-0.363	0.235
33	Employees can motivate each other better than rules can.	33	0.489	0.261	0.228
5	I like routine and rarely change my habits.	5	-0.124	-0.348	0.223
16	Environmental training improved the attitudes of employees.	16	0.894	0.760	0.134
18	Profit issues can overshadow environment protection.	18	-1.143	-1.238	0.095
32	Current EMS is not sufficient for proper env. performance.	32	-1.413	-1.157	-0.256
22	Employees are not motivated by their internal convictions.	22	-0.520	-0.261	-0.259
6	I personally cannot do much for the environment.	6	-0.242	0.086	-0.328
15	Managers often talk to employees about environment protection.	15	0.260	0.982	-0.722
4	If people ignore environment protection, I get discouraged.	4	-1.454	-0.724	-0.731
17	Every employee is aware of environmental objectives.	17	0.762	1.515	-0.753
30	Targets are not achieved due to low environmental awareness.	30	-1.345	-0.402	-0.943
11	Cleanliness is high priority for employees.	11	-0.068	0.940	-1.009
20	Environment protection is equally important for everybody.	20	0.120	1.168	-1.048
8	For pro-environmental behaviour I need to sacrifice a lot.	8	-1.138	-0.029	-1.110
7	If my friends reduced their consumption, I would do the same.	7	-1.400	0.005	-1.405
13	Employees get feedback on their environmental performance.	13	0.369	1.792	-1.424
14	We deal with environment protection only up to compliance.	14	-2.052	-0.408	-1.644
28	The company’s environmental objectives are fully achieved.	28	-0.313	1.646	-1.959
21	Employees have sufficient knowledge to act properly.	21	-0.463	1.500	-1.963
25	The company applies direct incentives to motivate employees.	25	-0.977	1.270	-2.247

Table 20/14: Descending Array of Differences Between Factors 1 and 3

No.	Statement	No.	Type 1	Type 3	Difference
12	The employees respect health and safety instructions.	12	1.240	-1.223	2.464
3	Environmental problems are primarily caused by companies.	3	0.874	-1.569	2.442
19	The environmental manager is indispensable for success.	19	0.585	-1.580	2.165
31	EMS fundamentally changed the values of employees.	31	1.505	-0.633	2.138
20	Environment protection is equally important for everybody.	20	0.120	-1.466	1.586
6	I personally cannot do much for the environment.	6	-0.242	-1.717	1.475
17	Every employee is aware of environmental objectives.	17	0.762	-0.002	0.764
26	Me and my colleagues have very similar value system.	26	1.125	0.455	0.670
24	The company asks the opinion of its employees.	24	1.227	0.663	0.564
10	The management pays sufficient attention to environment.	10	1.676	1.154	0.522
7	If my friends reduced their consumption, I would do the same.	7	-1.400	-1.889	0.489
16	Environmental training improved the attitudes of employees.	16	0.894	0.421	0.473
15	Managers often talk to employees about environment protection.	15	0.260	-0.206	0.467
27	Employees should e given more say in environmental decisions.	27	0.291	-0.028	0.319
1	I personally feel responsible for the future of my children.	1	1.780	1.466	0.314
28	The company’s environmental objectives are fully achieved.	28	-0.313	-0.539	0.226
13	Employees get feedback on their environmental performance.	13	0.369	0.185	0.184
11	Cleanliness is high priority for employees.	11	-0.068	-0.183	0.114
9	Our company causes significant environmental risks.	9	-0.128	-0.016	-0.112
23	Environmental training primarily aims at knowledge rising.	23	-0.250	0.016	-0.266
25	The company applies direct incentives to motivate employees.	25	-0.977	-0.339	-0.638
33	Employees can motivate each other better than rules can.	33	0.489	1.326	-0.836
32	Current EMS is not sufficient for proper env. performance.	32	-1.413	-0.548	-0.865
22	Employees are not motivated by their internal convictions.	22	-0.520	0.398	-0.918
30	Targets are not achieved due to low environmental awareness.	30	-1.345	-0.230	-1.115
4	If people ignore environment protection, I get discouraged.	4	-1.454	-0.267	-1.187
2	People could achieve success with life-style changes.	2	0.022	1.294	-1.272
18	Profit issues can overshadow environment protection.	18	-1.143	0.275	-1.418
21	Employees have sufficient knowledge to act properly.	21	-0.463	1.031	-1.494
8	For pro-environmental behaviour I need to sacrifice a lot.	8	-1.138	0.403	-1.541
5	I like routine and rarely change my habits.	5	-0.124	1.579	-1.703
14	We deal with environment protection only up to compliance.	14	-2.052	-0.182	-1.870
29	Various methods would be needed to motivate employees.	29	-0.186	1.953	-2.139

Table 20/15: Descending Array of Differences Between Factors 1 and 4

No.	Statement	No.	Type 1	Type 4	Difference
12	The employees respect health and safety instructions.	12	1.240	-1.441	2.681
24	The company asks the opinion of its employees.	24	1.227	-1.434	2.660
13	Employees get feedback on their environmental performance.	13	0.369	-1.122	1.490
27	Employees should e given more say in environmental decisions.	27	0.291	-1.155	1.445
26	Me and my colleagues have very similar value system.	26	1.125	-0.218	1.343
17	Every employee is aware of environmental objectives.	17	0.762	-0.576	1.338
3	Environmental problems are primarily caused by companies.	3	0.874	-0.045	0.919
10	The management pays sufficient attention to environment.	10	1.676	0.862	0.814
16	Environmental training improved the attitudes of employees.	16	0.894	0.188	0.706
21	Employees have sufficient knowledge to act properly.	21	-0.463	-1.094	0.631
25	The company applies direct incentives to motivate employees.	25	-0.977	-1.608	0.631
11	Cleanliness is high priority for employees.	11	-0.068	-0.558	0.489
31	EMS fundamentally changed the values of employees.	31	1.505	1.148	0.357
5	I like routine and rarely change my habits.	5	-0.124	-0.441	0.317
6	I personally cannot do much for the environment.	6	-0.242	-0.434	0.192
9	Our company causes significant environmental risks.	9	-0.128	-0.306	0.178
19	The environmental manager is indispensable for success.	19	0.585	0.464	0.121
15	Managers often talk to employees about environment protection.	15	0.260	0.144	0.117
28	The company’s environmental objectives are fully achieved.	28	-0.313	-0.204	-0.109
1	I personally feel responsible for the future of my children.	1	1.780	1.896	-0.116
23	Environmental training primarily aims at knowledge rising.	23	-0.250	-0.009	-0.241
20	Environment protection is equally important for everybody.	20	0.120	0.610	-0.491
18	Profit issues can overshadow environment protection.	18	-1.143	-0.645	-0.498
4	If people ignore environment protection, I get discouraged.	4	-1.454	-0.820	-0.635
22	Employees are not motivated by their internal convictions.	22	-0.520	0.123	-0.643
33	Employees can motivate each other better than rules can.	33	0.489	1.183	-0.694
7	If my friends reduced their consumption, I would do the same.	7	-1.400	-0.378	-1.022
14	We deal with environment protection only up to compliance.	14	-2.052	-0.776	-1.276
8	For pro-environmental behaviour I need to sacrifice a lot.	8	-1.138	0.367	-1.505
2	People could achieve success with life-style changes.	2	0.022	1.804	-1.782
29	Various methods would be needed to motivate employees.	29	-0.186	1.987	-2.173
32	Current EMS is not sufficient for proper env. performance.	32	-1.413	0.852	-2.265
30	Targets are not achieved due to low environmental awareness.	30	-1.345	1.636	-2.981

Table 20/16: Descending Array of Differences Between Factors 1 and 5

No.	Statement	No.	Type 1	Type 5	Difference
24	The company asks the opinion of its employees.	24	1.227	-0.950	2.177
19	The environmental manager is indispensable for success.	19	0.585	-1.315	1.900
26	Me and my colleagues have very similar value system.	26	1.125	-0.383	1.508
31	EMS fundamentally changed the values of employees.	31	1.505	0.446	1.059
20	Environment protection is equally important for everybody.	20	0.120	-0.795	0.914
10	The management pays sufficient attention to environment.	10	1.676	0.788	0.887
16	Environmental training improved the attitudes of employees.	16	0.894	0.034	0.860
13	Employees get feedback on their environmental performance.	13	0.369	-0.396	0.764
4	If people ignore environment protection, I get discouraged.	4	-1.454	-2.193	0.739
8	For pro-environmental behaviour I need to sacrifice a lot.	8	-1.138	-1.873	0.734
12	The employees respect health and safety instructions.	12	1.240	0.524	0.717
6	I personally cannot do much for the environment.	6	-0.242	-0.866	0.625
17	Every employee is aware of environmental objectives.	17	0.762	0.159	0.603
5	I like routine and rarely change my habits.	5	-0.124	-0.639	0.515
25	The company applies direct incentives to motivate employees.	25	-0.977	-1.346	0.369
23	Environmental training primarily aims at knowledge rising.	23	-0.250	-0.430	0.180
33	Employees can motivate each other better than rules can.	33	0.489	0.452	0.037
11	Cleanliness is high priority for employees.	11	-0.068	-0.031	-0.037
18	Profit issues can overshadow environment protection.	18	-1.143	-0.854	-0.290
27	Employees should e given more say in environmental decisions.	27	0.291	0.608	-0.317
1	I personally feel responsible for the future of my children.	1	1.780	2.331	-0.551
3	Environmental problems are primarily caused by companies.	3	0.874	1.521	-0.647
30	Targets are not achieved due to low environmental awareness.	30	-1.345	-0.676	-0.669
9	Our company causes significant environmental risks.	9	-0.128	0.610	-0.739
22	Employees are not motivated by their internal convictions.	22	-0.520	0.243	-0.763
28	The company’s environmental objectives are fully achieved.	28	-0.313	0.598	-0.911
2	People could achieve success with life-style changes.	2	0.022	0.938	-0.916
15	Managers often talk to employees about environment protection.	15	0.260	1.184	-0.924
29	Various methods would be needed to motivate employees.	29	-0.186	1.041	-1.226
21	Employees have sufficient knowledge to act properly.	21	-0.463	0.776	-1.239
14	We deal with environment protection only up to compliance.	14	-2.052	-0.798	-1.254
7	If my friends reduced their consumption, I would do the same.	7	-1.400	0.414	-1.814
32	Current EMS is not sufficient for proper env. performance.	32	-1.413	0.879	-2.292

Table 20/17: Descending Array of Differences Between Factors 2 and 3

No.	Statement	No.	Type 2	Type 3	Difference
20	Environment protection is equally important for everybody.	20	1.168	-1.466	2.634
28	The company's environmental objectives are fully achieved.	28	1.646	-0.539	2.185
12	The employees respect health and safety instructions.	12	0.880	-1.223	2.104
7	If my friends reduced their consumption, I would do the same.	7	0.005	-1.889	1.895
6	I personally cannot do much for the environment.	6	0.086	-1.717	1.803
25	The company applies direct incentives to motivate employees.	25	1.270	-0.339	1.609
13	Employees get feedback on their environmental performance.	13	1.792	0.185	1.608
17	Every employee is aware of environmental objectives.	17	1.515	-0.002	1.517
15	Managers often talk to employees about environment protection.	15	0.982	-0.206	1.189
11	Cleanliness is high priority for employees.	11	0.940	-0.183	1.123
21	Employees have sufficient knowledge to act properly.	21	1.500	1.031	0.468
19	The environmental manager is indispensable for success.	19	-1.168	-1.580	0.412
16	Environmental training improved the attitudes of employees.	16	0.760	0.421	0.339
31	EMS fundamentally changed the values of employees.	31	-0.418	-0.633	0.215
3	Environmental problems are primarily caused by companies.	3	-1.662	-1.569	-0.093
30	Targets are not achieved due to low environmental awareness.	30	-0.402	-0.230	-0.172
14	We deal with environment protection only up to compliance.	14	-0.408	-0.182	-0.226
24	The company asks the opinion of its employees.	24	0.363	0.663	-0.300
9	Our company causes significant environmental risks.	9	-0.363	-0.016	-0.347
8	For pro-environmental behaviour I need to sacrifice a lot.	8	-0.029	0.403	-0.432
4	If people ignore environment protection, I get discouraged.	4	-0.724	-0.267	-0.456
10	The management pays sufficient attention to environment.	10	0.593	1.154	-0.561
32	Current EMS is not sufficient for proper env. performance.	32	-1.157	-0.548	-0.609
22	Employees are not motivated by their internal convictions.	22	-0.261	0.398	-0.659
23	Environmental training primarily aims at knowledge rising.	23	-1.011	0.016	-1.027
33	Employees can motivate each other better than rules can.	33	0.261	1.326	-1.064
27	Employees should e given more say in environmental decisions.	27	-1.325	-0.028	-1.296
26	Me and my colleagues have very similar value system.	26	-0.880	0.455	-1.335
18	Profit issues can overshadow environment protection.	18	-1.238	0.275	-1.513
2	People could achieve success with life-style changes.	2	-0.249	1.294	-1.542
5	I like routine and rarely change my habits.	5	-0.348	1.579	-1.927
29	Various methods would be needed to motivate employees.	29	-0.520	1.953	-2.474
1	I personally feel responsible for the future of my children.	1	-1.602	1.466	-3.067

Table 20/18: Descending Array of Differences Between Factors 2 and 4

No.	Statement	No.	Type 2	Type 4	Difference
13	Employees get feedback on their environmental performance.	13	1.792	-1.122	2.914
25	The company applies direct incentives to motivate employees.	25	1.270	-1.608	2.878
21	Employees have sufficient knowledge to act properly.	21	1.500	-1.094	2.594
12	The employees respect health and safety instructions.	12	0.880	-1.441	2.321
17	Every employee is aware of environmental objectives.	17	1.515	-0.576	2.091
28	The company's environmental objectives are fully achieved.	28	1.646	-0.204	1.850
24	The company asks the opinion of its employees.	24	0.363	-1.434	1.797
11	Cleanliness is high priority for employees.	11	0.940	-0.558	1.498
15	Managers often talk to employees about environment protection.	15	0.982	0.144	0.839
16	Environmental training improved the attitudes of employees.	16	0.760	0.188	0.572
20	Environment protection is equally important for everybody.	20	1.168	0.610	0.557
6	I personally cannot do much for the environment.	6	0.086	-0.434	0.520
7	If my friends reduced their consumption, I would do the same.	7	0.005	-0.378	0.383
14	We deal with environment protection only up to compliance.	14	-0.408	-0.776	0.368
4	If people ignore environment protection, I get discouraged.	4	-0.724	-0.820	0.096
5	I like routine and rarely change my habits.	5	-0.348	-0.441	0.094
9	Our company causes significant environmental risks.	9	-0.363	-0.306	-0.057
27	Employees should e given more say in environmental decisions.	27	-1.325	-1.155	-0.170
10	The management pays sufficient attention to environment.	10	0.593	0.862	-0.269
22	Employees are not motivated by their internal convictions.	22	-0.261	0.123	-0.385
8	For pro-environmental behaviour I need to sacrifice a lot.	8	-0.029	0.367	-0.395
18	Profit issues can overshadow environment protection.	18	-1.238	-0.645	-0.593
26	Me and my colleagues have very similar value system.	26	-0.880	-0.218	-0.662
33	Employees can motivate each other better than rules can.	33	0.261	1.183	-0.922
23	Environmental training primarily aims at knowledge rising.	23	-1.011	-0.009	-1.002
31	EMS fundamentally changed the values of employees.	31	-0.418	1.148	-1.566
3	Environmental problems are primarily caused by companies.	3	-1.662	-0.045	-1.616
19	The environmental manager is indispensable for success.	19	-1.168	0.464	-1.632
32	Current EMS is not sufficient for proper env. performance.	32	-1.157	0.852	-2.009
30	Targets are not achieved due to low environmental awareness.	30	-0.402	1.636	-2.038
2	People could achieve success with life-style changes.	2	-0.249	1.804	-2.052
29	Various methods would be needed to motivate employees.	29	-0.520	1.987	-2.508
1	I personally feel responsible for the future of my children.	1	-1.602	1.896	-3.497

Table 20/19: Descending Array of Differences Between Factors 2 and 5

No.	Statement	No.	Type 2	Type 5	Difference
25	The company applies direct incentives to motivate employees.	25	1.270	-1.346	2.616
13	Employees get feedback on their environmental performance.	13	1.792	-0.396	2.188
20	Environment protection is equally important for everybody.	20	1.168	-0.795	1.962
8	For pro-environmental behaviour I need to sacrifice a lot.	8	-0.029	-1.873	1.844
4	If people ignore environment protection, I get discouraged.	4	-0.724	-2.193	1.470
17	Every employee is aware of environmental objectives.	17	1.515	0.159	1.356
24	The company asks the opinion of its employees.	24	0.363	-0.950	1.313
28	The company's environmental objectives are fully achieved.	28	1.646	0.598	1.048
11	Cleanliness is high priority for employees.	11	0.940	-0.031	0.971
6	I personally cannot do much for the environment.	6	0.086	-0.866	0.953
16	Environmental training improved the attitudes of employees.	16	0.760	0.034	0.726
21	Employees have sufficient knowledge to act properly.	21	1.500	0.776	0.724
14	We deal with environment protection only up to compliance.	14	-0.408	-0.798	0.390
12	The employees respect health and safety instructions.	12	0.880	0.524	0.357
5	I like routine and rarely change my habits.	5	-0.348	-0.639	0.291
30	Targets are not achieved due to low environmental awareness.	30	-0.402	-0.676	0.274
19	The environmental manager is indispensable for success.	19	-1.168	-1.315	0.147
33	Employees can motivate each other better than rules can.	33	0.261	0.452	-0.190
10	The management pays sufficient attention to environment.	10	0.593	0.788	-0.195
15	Managers often talk to employees about environment protection.	15	0.982	1.184	-0.202
18	Profit issues can overshadow environment protection.	18	-1.238	-0.854	-0.385
7	If my friends reduced their consumption, I would do the same.	7	0.005	0.414	-0.409
26	Me and my colleagues have very similar value system.	26	-0.880	-0.383	-0.497
22	Employees are not motivated by their internal convictions.	22	-0.261	0.243	-0.504
23	Environmental training primarily aims at knowledge rising.	23	-1.011	-0.430	-0.581
31	EMS fundamentally changed the values of employees.	31	-0.418	0.446	-0.864
9	Our company causes significant environmental risks.	9	-0.363	0.610	-0.974
2	People could achieve success with life-style changes.	2	-0.249	0.938	-1.186
29	Various methods would be needed to motivate employees.	29	-0.520	1.041	-1.561
27	Employees should e given more say in environmental decisions.	27	-1.325	0.608	-1.932
32	Current EMS is not sufficient for proper env. performance.	32	-1.157	0.879	-2.036
3	Environmental problems are primarily caused by companies.	3	-1.662	1.521	-3.182
1	I personally feel responsible for the future of my children.	1	-1.602	2.331	-3.932

Table 20/20: Descending Array of Differences Between Factors 3 and 4

No.	Statement	No.	Type 3	Type 4	Difference
21	Employees have sufficient knowledge to act properly.	21	1.031	-1.094	2.125
24	The company asks the opinion of its employees.	24	0.663	-1.434	2.097
5	I like routine and rarely change my habits.	5	1.579	-0.441	2.020
13	Employees get feedback on their environmental performance.	13	0.185	-1.122	1.306
25	The company applies direct incentives to motivate employees.	25	-0.339	-1.608	1.269
27	Employees should e given more say in environmental decisions.	27	-0.028	-1.155	1.126
18	Profit issues can overshadow environment protection.	18	0.275	-0.645	0.920
26	Me and my colleagues have very similar value system.	26	0.455	-0.218	0.673
14	We deal with environment protection only up to compliance.	14	-0.182	-0.776	0.594
17	Every employee is aware of environmental objectives.	17	-0.002	-0.576	0.575
4	If people ignore environment protection, I get discouraged.	4	-0.267	-0.820	0.553
11	Cleanliness is high priority for employees.	11	-0.183	-0.558	0.375
10	The management pays sufficient attention to environment.	10	1.154	0.862	0.292
9	Our company causes significant environmental risks.	9	-0.016	-0.306	0.290
22	Employees are not motivated by their internal convictions.	22	0.398	0.123	0.275
16	Environmental training improved the attitudes of employees.	16	0.421	0.188	0.233
12	The employees respect health and safety instructions.	12	-1.223	-1.441	0.217
33	Employees can motivate each other better than rules can.	33	1.326	1.183	0.143
8	For pro-environmental behaviour I need to sacrifice a lot.	8	0.403	0.367	0.036
23	Environmental training primarily aims at knowledge rising.	23	0.016	-0.009	0.025
29	Various methods would be needed to motivate employees.	29	1.953	1.987	-0.034
28	The company’s environmental objectives are fully achieved.	28	-0.539	-0.204	-0.335
15	Managers often talk to employees about environment protection.	15	-0.206	0.144	-0.350
1	I personally feel responsible for the future of my children.	1	1.466	1.896	-0.430
2	People could achieve success with life-style changes.	2	1.294	1.804	-0.510
6	I personally cannot do much for the environment.	6	-1.717	-0.434	-1.283
32	Current EMS is not sufficient for proper env. performance.	32	-0.548	0.852	-1.400
7	If my friends reduced their consumption, I would do the same.	7	-1.889	-0.378	-1.512
3	Environmental problems are primarily caused by companies.	3	-1.569	-0.045	-1.523
31	EMS fundamentally changed the values of employees.	31	-0.633	1.148	-1.781
30	Targets are not achieved due to low environmental awareness.	30	-0.230	1.636	-1.866
19	The environmental manager is indispensable for success.	19	-1.580	0.464	-2.044
20	Environment protection is equally important for everybody.	20	-1.466	0.610	-2.076

Table 20/21: Descending Array of Differences Between Factors 3 and 5

No.	Statement	No.	Type 3	Type 5	Difference
8	For pro-environmental behaviour I need to sacrifice a lot.	8	0.403	-1.873	2.276
5	I like routine and rarely change my habits.	5	1.579	-0.639	2.218
4	If people ignore environment protection, I get discouraged.	4	-0.267	-2.193	1.926
24	The company asks the opinion of its employees.	24	0.663	-0.950	1.613
18	Profit issues can overshadow environment protection.	18	0.275	-0.854	1.129
25	The company applies direct incentives to motivate employees.	25	-0.339	-1.346	1.007
29	Various methods would be needed to motivate employees.	29	1.953	1.041	0.913
33	Employees can motivate each other better than rules can.	33	1.326	0.452	0.874
26	Me and my colleagues have very similar value system.	26	0.455	-0.383	0.838
14	We deal with environment protection only up to compliance.	14	-0.182	-0.798	0.616
13	Employees get feedback on their environmental performance.	13	0.185	-0.396	0.580
30	Targets are not achieved due to low environmental awareness.	30	-0.230	-0.676	0.446
23	Environmental training primarily aims at knowledge rising.	23	0.016	-0.430	0.446
16	Environmental training improved the attitudes of employees.	16	0.421	0.034	0.387
10	The management pays sufficient attention to environment.	10	1.154	0.788	0.366
2	People could achieve success with life-style changes.	2	1.294	0.938	0.356
21	Employees have sufficient knowledge to act properly.	21	1.031	0.776	0.255
22	Employees are not motivated by their internal convictions.	22	0.398	0.243	0.155
11	Cleanliness is high priority for employees.	11	-0.183	-0.031	-0.152
17	Every employee is aware of environmental objectives.	17	-0.002	0.159	-0.161
19	The environmental manager is indispensable for success.	19	-1.580	-1.315	-0.265
9	Our company causes significant environmental risks.	9	-0.016	0.610	-0.627
27	Employees should e given more say in environmental decisions.	27	-0.028	0.608	-0.636
20	Environment protection is equally important for everybody.	20	-1.466	-0.795	-0.671
6	I personally cannot do much for the environment.	6	-1.717	-0.866	-0.851
1	I personally feel responsible for the future of my children.	1	1.466	2.331	-0.865
31	EMS fundamentally changed the values of employees.	31	-0.633	0.446	-1.079
28	The company’s environmental objectives are fully achieved.	28	-0.539	0.598	-1.138
15	Managers often talk to employees about environment protection.	15	-0.206	1.184	-1.391
32	Current EMS is not sufficient for proper env. performance.	32	-0.548	0.879	-1.427
12	The employees respect health and safety instructions.	12	-1.223	0.524	-1.747
7	If my friends reduced their consumption, I would do the same.	7	-1.889	0.414	-2.303
3	Environmental problems are primarily caused by companies.	3	-1.569	1.521	-3.089

Table 20/22: Descending Array of Differences Between Factors 4 and 5

No.	Statement	No.	Type 4	Type 5	Difference
30	Targets are not achieved due to low environmental awareness.	30	1.636	-0.676	2.312
8	For pro-environmental behaviour I need to sacrifice a lot.	8	0.367	-1.873	2.239
19	The environmental manager is indispensable for success.	19	0.464	-1.315	1.779
20	Environment protection is equally important for everybody.	20	0.610	-0.795	1.405
4	If people ignore environment protection, I get discouraged.	4	-0.820	-2.193	1.374
29	Various methods would be needed to motivate employees.	29	1.987	1.041	0.947
2	People could achieve success with life-style changes.	2	1.804	0.938	0.866
33	Employees can motivate each other better than rules can.	33	1.183	0.452	0.731
31	EMS fundamentally changed the values of employees.	31	1.148	0.446	0.702
6	I personally cannot do much for the environment.	6	-0.434	-0.866	0.432
23	Environmental training primarily aims at knowledge rising.	23	-0.009	-0.430	0.421
18	Profit issues can overshadow environment protection.	18	-0.645	-0.854	0.208
5	I like routine and rarely change my habits.	5	-0.441	-0.639	0.198
26	Me and my colleagues have very similar value system.	26	-0.218	-0.383	0.165
16	Environmental training improved the attitudes of employees.	16	0.188	0.034	0.154
10	The management pays sufficient attention to environment.	10	0.862	0.788	0.073
14	We deal with environment protection only up to compliance.	14	-0.776	-0.798	0.022
32	Current EMS is not sufficient for proper env. performance.	32	0.852	0.879	-0.027
22	Employees are not motivated by their internal convictions.	22	0.123	0.243	-0.119
25	The company applies direct incentives to motivate employees.	25	-1.608	-1.346	-0.262
1	I personally feel responsible for the future of my children.	1	1.896	2.331	-0.435
24	The company asks the opinion of its employees.	24	-1.434	-0.950	-0.483
11	Cleanliness is high priority for employees.	11	-0.558	-0.031	-0.527
13	Employees get feedback on their environmental performance.	13	-1.122	-0.396	-0.726
17	Every employee is aware of environmental objectives.	17	-0.576	0.159	-0.735
7	If my friends reduced their consumption, I would do the same.	7	-0.378	0.414	-0.792
28	The company’s environmental objectives are fully achieved.	28	-0.204	0.598	-0.803
9	Our company causes significant environmental risks.	9	-0.306	0.610	-0.916
15	Managers often talk to employees about environment protection.	15	0.144	1.184	-1.040
3	Environmental problems are primarily caused by companies.	3	-0.045	1.521	-1.566
27	Employees should e given more say in environmental decisions.	27	-1.155	0.608	-1.762
21	Employees have sufficient knowledge to act properly.	21	-1.094	0.776	-1.870
12	The employees respect health and safety instructions.	12	-1.441	0.524	-1.964

Table 20/23: Factor Q-Sort Values for Each Statement

No.	Statement	No.	Factor Arrays 1	2	3	4	5
1	I personally feel responsible for the future of my children.	1	4	-4	3	4	4
2	People could achieve success with life-style changes.	2	0	0	3	3	3
3	Environmental problems are primarily caused by companies.	3	2	-4	-3	0	4
4	If people ignore environment protection, I get discouraged.	4	-4	-2	-1	-2	-4
5	I like routine and rarely change my habits.	5	0	0	4	-1	-1
6	I personally cannot do much for the environment.	6	-1	1	-4	-1	-2
7	If my friends reduced their consumption, I would do the same.	7	-3	0	-4	-1	0
8	For pro-environmental behaviour I need to sacrifice a lot.	8	-2	0	1	1	-4
9	Our company causes significant environmental risks.	9	0	-1	0	0	2
10	The management pays sufficient attention to environment.	10	4	1	2	2	2
11	Cleanliness is high priority for employees.	11	0	2	-1	-1	0
12	The employees respect health and safety instructions.	12	3	2	-2	-4	1
13	Employees get feedback on their environmental performance.	13	1	4	1	-3	-1
14	We deal with environment protection only up to compliance.	14	-4	-1	0	-2	-2
15	Managers often talk to employees about environment protection.	15	1	2	-1	1	3
16	Environmental training improved the attitudes of employees.	16	2	1	1	1	0
17	Every employee is aware of environmental objectives.	17	2	3	0	-1	0
18	Profit issues can overshadow environment protection.	18	-2	-3	1	-2	-2
19	The environmental manager is indispensable for success.	19	1	-3	-3	1	-3
20	Environment protection is equally important for everybody.	20	0	2	-3	2	-2
21	Employees have sufficient knowledge to act properly.	21	-1	3	2	-2	2
22	Employees are not motivated by their internal convictions.	22	-2	0	1	1	0
23	Environmental training primarily aims at knowledge rising.	23	-1	-2	0	0	-1
24	The company asks the opinion of its employees.	24	3	1	2	-3	-3
25	The company applies direct incentives to motivate employees.	25	-2	3	-1	-4	-3
26	Me and my colleagues have very similar value system.	26	2	-2	2	0	-1
27	Employees should e given more say in environmental decisions.	27	1	-3	0	-3	1
28	The company’s environmental objectives are fully achieved.	28	-1	4	-2	0	1
29	Various methods would be needed to motivate employees.	29	-1	-1	4	4	3
30	Targets are not achieved due to low environmental awareness.	30	-3	-1	-1	3	-1
31	EMS fundamentally changed the values of employees.	31	3	-1	-2	2	1
32	Current EMS is not sufficient for proper env. performance.	32	-3	-2	-2	2	2
33	Employees can motivate each other better than rules can.	33	1	1	3	3	1

Variance = 4.848 St. Dev. = 2.202

Table 20/24: Factor Q-Sort Values for Statements sorted by Consensus vs. Disagreement (Variance across normalized Factor Scores)

No.	Statement	No.	Factor Arrays 1	2	3	4	5
16	Environmental training improved the attitudes of employees.	16	2	1	1	1	0
22	Employees are not motivated by their internal convictions.	22	-2	0	1	1	0
9	Our company causes significant environmental risks.	9	0	-1	0	0	2
23	Environmental training primarily aims at knowledge rising.	23	-1	-2	0	0	-1
10	The management pays sufficient attention to environment.	10	4	1	2	2	2
33	Employees can motivate each other better than rules can.	33	1	1	3	3	1
11	Cleanliness is high priority for employees.	11	0	2	-1	-1	0
15	Managers often talk to employees about environment protection.	15	1	2	-1	1	3
18	Profit issues can overshadow environment protection.	18	-2	-3	1	-2	-2
6	I personally cannot do much for the environment.	6	-1	1	-4	-1	-2
14	We deal with environment protection only up to compliance.	14	-4	-1	0	-2	-2
4	If people ignore environment protection, I get discouraged.	4	-4	-2	-1	-2	-4
26	Me and my colleagues have very similar value system.	26	2	-2	2	0	-1
17	Every employee is aware of environmental objectives.	17	2	3	0	-1	0
2	People could achieve success with life-style changes.	2	0	0	3	3	3
27	Employees should e given more say in environmental decisions.	27	1	-3	0	-3	1
28	The company’s environmental objectives are fully achieved.	28	-1	4	-2	0	1
5	I like routine and rarely change my habits.	5	0	0	4	-1	-1
31	EMS fundamentally changed the values of employees.	31	3	-1	-2	2	1
7	If my friends reduced their consumption, I would do the same.	7	-3	0	-4	-1	0
8	For pro-environmental behaviour I need to sacrifice a lot.	8	-2	0	1	1	-4
19	The environmental manager is indispensable for success.	19	1	-3	-3	1	-3
20	Environment protection is equally important for everybody.	20	0	2	-3	2	-2
13	Employees get feedback on their environmental performance.	13	1	4	1	-3	-1
21	Employees have sufficient knowledge to act properly.	21	-1	3	2	-2	2
32	Current EMS is not sufficient for proper env. performance.	32	-3	-2	-2	2	2
30	Targets are not achieved due to low environmental awareness.	30	-3	-1	-1	3	-1
24	The company asks the opinion of its employees.	24	3	1	2	-3	-3
25	The company applies direct incentives to motivate employees.	25	-2	3	-1	-4	-3
29	Various methods would be needed to motivate employees.	29	-1	-1	4	4	3
12	The employees respect health and safety instructions.	12	3	2	-2	-4	1
3	Environmental problems are primarily caused by companies.	3	2	-4	-3	0	4
1	I personally feel responsible for the future of my children.	1	4	-4	3	4	4

Table 20/25: Factor Characteristics

	Factors				
	1	2	3	4	5
No. of Defining Variables	4	3	5	7	4
Average Rel. Coef.	0.800	0.800	0.800	0.800	0.800
Composite Reliability	0.941	0.923	0.952	0.966	0.941
S.E. of Factor Scores	0.243	0.277	0.218	0.186	0.243

Table 20/26: Standard Errors for Differences in Normalized Factor Scores

(Diagonal Entries Are S.E. Within Factors)

Factors	1	2	3	4	5
1	0.343	0.368	0.326	0.305	0.343
2	0.368	0.392	0.353	0.334	0.368
3	0.326	0.353	0.309	0.287	0.326
4	0.305	0.334	0.287	0.263	0.305
5	0.343	0.368	0.326	0.305	0.343

Table 20/27: Distinguishing Statements for Factor 1

(P < .05 ; Asterisk (*) Indicates Significance at P < .01)

Both the Factor Q-Sort Value and the Normalized Score are Shown.

			Factors							
			1		2		3		4		5	
No.	Statement	No.	RNK	SCORE	RNK	SCORE	RNK	SCORE	RNK	SCORE	RNK	SCORE
26	Me and my colleagues ...	26	2	1.12	-2	-0.88	2	0.45	0	-0.22	-1	-0.38
21	Sufficient knowledge ...	21	-1	-0.46	3	1.50	2	1.03	-2	-1.09	2	0.78
8	Environment is sacrifice..	8	-2	-1.14	0	-0.03	1	0.40	1	0.37	-4	-1.87
4	If people ignore ...	4	-4	-1.45	-2	-0.72	-1	-0.27	-2	-0.82	-4	-2.19
14	Only up to compliance ...	14	-4	-2.05*	-1	-0.41	0	-0.18	-2	-0.78	-2	-0.80

Table 20/28: Distinguishing Statements for Factor 2

(P < .05 ; Asterisk (*) Indicates Significance at P < .01)

Both the Factor Q-Sort Value and the Normalized Score are Shown.

			Factors							
			1		2		3		4		5	
No.	Statement	No.	RNK	SCORE	RNK	SCORE	RNK	SCORE	RNK	SCORE	RNK	SCORE
13	Employees get feedback ...	13	1	0.37	4	1.79*	1	0.18	-3	-1.12	-1	-0.40
28	Env. targets are achieved	28	-1	-0.31	4	1.65*	-2	-0.54	0	-0.20	1	0.60
17	Every employee is aware .	17	2	0.76	3	1.52	0	0.00	-1	-0.58	0	0.16
25	Direct incentives .	25	-2	-0.98	3	1.27*	-1	-0.34	-4	-1.61	-3	-1.35
11	Cleanliness is priority...	11	0	-0.07	2	0.94*	-1	-0.18	-1	-0.56	0	-0.03
1	I feel rsponsibility ...	1	4	1.78	-4	-1.60*	3	1.47	4	1.90	4	2.33

Table 20/29: Distinguishing Statements for Factor 3

(P < .05 ; Asterisk (*) Indicates Significance at P < .01)

Both the Factor Q-Sort Value and the Normalized Score are Shown.

		Factors									
			1		2		3		4		5
No.	Statement	No.	RNK	SCORE	RNK	SCORE	RNK	SCORE	RNK	SCORE	RNK SCORE
5	I like routines ...	5	0	-0.12	0	-0.35	4	1.58*	-1	-0.44	-1 -0.64
26	Me and my colleagues ...	26	2	1.12	-2	-0.88	2	0.45	0	-0.22	-1 -0.38
18	Profit overshadows env....	18	-2	-1.14	-3	-1.24	1	0.27*	-2	-0.65	-2 -0.85
20	Env. is equally important	20	0	0.12	2	1.17	-3	-1.47	2	0.61	-2 -0.79
6	I cannot do much for env. .	6	-1	-0.24	1	0.09	-4	-1.72*	-1	-0.43	-2 -0.87

Table 20/30: Distinguishing Statements for Factor 4

(P < .05 ; Asterisk (*) Indicates Significance at P < .01)

Both the Factor Q-Sort Value and the Normalized Score are Shown.

		Factors									
			1		2		3		4		5
No.	Statement	No.	RNK	SCORE	RNK	SCORE	RNK	SCORE	RNK	SCORE	RNK SCORE
30	Low env. aw. prevents .. .	30	-3	-1.34	-1	-0.40	-1	-0.23	3	1.64*	-1 -0.68
3	Companies cause env. pr...	3	2	0.87	-4	-1.66	-3	-1.57	0	-0.05*	4 1.52
17	Every employee is aware .	17	2	0.76	3	1.52	0	0.00	-1	-0.58	0 0.16
21	Sufficient knowledge ...	21	-1	-0.46	3	1.50	2	1.03	-2	-1.09	2 0.78
13	Employees get feedback ...	13	1	0.37	4	1.79	1	0.18	-3	-1.12	-1 -0.40

Table 20/31: Distinguishing Statements for Factor 5

(P < .05 ; Asterisk (*) Indicates Significance at P < .01)

Both the Factor Q-Sort Value and the Normalized Score are Shown.

			Factors							
			1		2		3		4		5	
No.	Statement	No.	RNK	SCORE	RNK	SCORE	RNK	SCORE	RNK	SCORE	RNK	SCORE
29	Various motivations ...	29	-1	-0.19	-1	-0.52	4	1.95	4	1.99	3	1.04*
28	Env. targets are achieved.	28	-1	-0.31	4	1.65	-2	-0.54	0	-0.20	1	0.60*
31	EMS changed attitudes ...	31	3	1.50	-1	-0.42	-2	-0.63	2	1.15	1	0.45
20	Env. is equally important	20	0	0.12	2	1.17	-3	-1.47	2	0.61	-2	-0.79
8	Env. is sacrifice ...	8	-2	-1.14	0	-0.03	1	0.40	1	0.37	-4	-1.87
4	If people ignore ...	4	-4	-1.45	-2	-0.72	-1	-0.27	-2	-0.82	-4	-2.19

Table 20/32: Consensus Statements -- Those That Do Not Distinguish Between ANY Pair of Factors.

All Listed Statements are Non-Significant at P>.01, and Those Flagged With an * are also Non-Significant at P>.05.

			Factors							
			1		2		3		4		5	
No.	Statement	No.	RNK	SCORE	RNK	SCORE	RNK	SCORE	RNK	SCORE	RNK	SCORE
16	Env. training improved ..	16	2	0.89	1	0.76	1	0.42	1	0.19	0	0.03

QANALYZE was completed at 16:41:48

Annex 21: Characteristics of respondents in the different factors

	Code	Workplace	Assignment	Qualification	Age	Years spent at the company
Factor 1	2. dunaszal	Transport	Employee	College	45	22
	3. dunalogi	Logistics	Middle manager	University	55	30
	9. dunaadmi	Water board	Employee	Secondary school	47	30
	10. csepanya	Basic material management	Middle manager	University	61	45
	13. csepszem	Human resources	Middle manager	Technical school	59	45
	25. csepgepv	Production	Employee	Industrial school	31	8
Factor 2	6. dunagepv	Production	Lower manager	Primary schools	30	13
	16. csepelok	Production	Lower manager	Secondary school	42	21
	20. csepcsop (-)	Production	Middle manager	Technical school	50	15
Factor 3	8. dunavizm	Water board	Employee	Technical school	49	30
	11. csepvigh	Assistant general manager	Top manager	University	59	13
	15. csepmuve	Production	Middle manager	University	47	22
	17. csepszvi	Production	Employee	Technical school	43	23
	23. csepgepk	Production	Employee	Primary schools	40	10
Factor 4	1. dunabesz	Purchasing	Middle manager	College	43	20
	4. dunaberu	Investment	Employee	College	52	34
	5. dunalaka	Preventive maintenance	Lower manager	Technical school	48	24
	12. csepgyve	Production	Middle manager	University	49	30
	14. csepgyek	Production preparation	Middle manager	University	60	36
	18. cseperom	Power station	Employee	Technical school	52	31
	24. csepvill	Electric plant	Lower manager	College	45	16
Factor 5	7. dunatech	Production	Middle manager	College	39	15
	19. cseppseg	Production	Employee	Industrial school	33	5
	21. csepseg2	Production	Employee	Industrial school	31	6
	22. csepaelo	Production	Lower manager	Industrial school	35	21
	26. csep1seg	Production	Employee	Industrial school	32	9

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